ROUGE RIVER COLLABORATIVE ILLICIT DISCHARGE ELIMINATION PLAN
2018-2019 PROGRESS REPORT



Prepared by:

Alliance of Rouge Communities
OURS TO PROTECT
Working together, restoring the river

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March 19, 2020

A. Purpose

This report summarizes the activities undertaken to implement the Rouge River Collaborative Illicit Discharge Elimination Program (IDEP) plan (Plan) which was approved by the Michigan Department of Environment, Great Lakes and Energy (EGLE) in September 2017. The Plan is part of the municipal separate storm sewer system (MS4) permits for several communities in the Rouge River watershed. The report includes activities implemented by or on behalf of members of the Alliance of Rouge Communities (ARC) from January 1, 2018 through December 31, 2019. The permittees participating in the Plan during the reporting period are listed below. Note that Schoolcraft College and Wayne County Airport Authority were recently added to the Plan. It is anticipated that these permittees will be included in subsequent progress reports.

Participating Permittees	
Beverly Hills, Village of	Northville, City of
Bingham Farms, Village of	Northville Township
Birmingham, City of	Novi, City of
Bloomfield Hills, City of	Oak Park, City of
Bloomfield Township	Plymouth, City of
Canton Township	Plymouth Township
Dearborn Heights, City of	Redford Township
Farmington, City of	Southfield, City of
Farmington Hills, City of	Troy, City of
Franklin, Village of	Walled Lake, City of
Garden City, City of	Wayne, City of
Inkster, City of	Westland, City of
Lathrup Village, City of	West Bloomfield Township
Livonia, City of	
Melvindale, City of	Henry Ford College
Oakland County*	Wayne County*

**Participating in the Plan but will provide a separate report of county activities per their approved progress report schedule.*

B. Action Strategy Status

The status of each action strategy includes a description of each activity, progress made during the reporting period and status of each metric.

IDEP #1: Mapping of Storm Sewer Systems

Description: The permittees will have their storm sewer maps available which include the location of outfalls, enclosed and open storm drains, roads and waters of the state. In addition, the ARC will develop a GIS database of the storm sewer system maps by July 30, 2020. For Wayne and Oakland counties, this requirement will be dealt with under their individual stormwater management plans.

Goal:

- 100% of outfalls mapped in GIS
- 100% of storm sewers mapped in GIS

Status:

Metric	Status
Portion of watershed (area) where known outfalls are mapped in GIS	100% (based on permittee land area)
Portion of watershed with storm sewers in GIS	95% (based on permittee land area)

Description of Progress:
Most permittees provided the ARC with their outfall and storm sewer GIS data. The permittees that still need to provide their storm sewer system in GIS format are listed in Table 1.

Table 1 – Anticipated Completion Dates for Storm Sewer GIS

Permittee	Anticipated Completion Date
Beverly Hills	Spring 2020
Franklin	Spring 2020
Lathrup Village	TBD
Melvindale	TBD
Redford Township	Spring 2020

IDEP #2: Outfall Prioritization and Dry Weather Screening

Description: The ARC will identify by March 30, 2018 and screen priority outfalls by December 30, 2018 in each city or village. The ARC will determine outfalls with suspicious discharges within 30 days of completion of screening of all outfalls in a municipality. Cities/Townships/Villages will perform dry weather screening of new outfalls within 6 months of construction, taking ownership or discovery. For Wayne and Oakland counties, this requirement will be dealt with under their individual stormwater management plans.

Goal: Screen 100% of priority outfalls

Status:

Metric	Status
Number priority outfalls identified	471
Percent of priority outfalls screened	100%
Number of new outfalls identified	3
Percent of new outfalls screened	100%
Number of suspicious discharges identified (based on screening results)	29 (Category A and B outfalls)

Description of Progress:
Based on outfall data compiled from the municipalities, the ARC has estimated that there are 1,591 outfalls in the watershed (Table 2). Of those, 1,505 are owned by cities and villages and were subject to the outfall screening requirement. The ARC prioritized the city- and village-owned outfalls, as outlined in the Plan, and identified 471 (31%) priority outfalls that required screening (Table 2).

Table 2 - Outfall Prioritization Results

IDEP Plan Permittee	No. of Outfalls	No. of Outfalls selected for Screening	% Outfalls Screened
Beverly Hills	56	15	27%
Bingham Farms	9	5	56%
Birmingham	35	24	69%
Bloomfield Hills	57	14	25%
Bloomfield Twp.	15	N/A	N/A
Canton Twp.	51	N/A	N/A
Dearborn Heights	10	10	100%
Farmington	49	16	33%
Farmington Hills	107	47	44%
Franklin	7	2	29%
Garden City	1	1	100%
Inkster	10	4	40%
Lathrup Village	0	0	N/A
Livonia	570	137	24%
Melvindale	2	2	100%
Northville	57	13	23%
Northville Twp.	3	N/A	N/A
Novi	27	9	33%
Oak Park	0	0	N/A

IDEP Plan Permittee	No. of Outfalls	No. of Outfalls selected for Screening	% Outfalls Screened
Plymouth	27	24	89%
Plymouth Twp.	6	N/A	N/A
Redford Twp.	0	N/A	N/A
Southfield	72	16	22%
Troy	55	11	20%
Walled Lake	29	6	21%
Wayne	95	52	55%
West Bloomfield Twp	10	N/A	N/A
Westland	229	64	28%
Henry Ford College	2	N/A	N/A
Total	**1591**	**472**	**31%**

N/A = screening was not required for this permittee

In 2018, all 471 outfalls were screened, and the results were categorized for follow-up measures as outlined in the Plan (Table 3). In 2019, the ARC resampled 25 Category C outfalls to determine their final priority ranking. Eight of those outfalls will need to be investigated as shown in Table 4. These efforts were summarized in reports that were distributed to the permittees (Appendix A). Combining the initial screening results and the resampling result, 29 outfalls required additional investigations as shown in Table 5.

Table 3 - Initial Priority Outfall Screening Results

Category	*E. coli* range	Number of outfalls
Category A	> 10,000 cfu/100mL or unexplained physical conditions	11
Category B	between 5,001 and 10,000 cfu/100mL	10
Category C	between 1,001 and 5,000 cfu/100mL	24
Category D	≤ 1,000 cfu/100mL	426

Table 4 - Category C Outfall Resampling Results

Community	No. of Outfalls Resampled	No. of Outfalls needing Investigations
Beverly Hills	2	1 (Cat A)
Dearborn Hgts	3	0
Farmington	2	0
Livonia	9	2 (Cat A and B)
Northville	3	3 (Cat A and B)
Plymouth	2	1 (Cat B)
Walled Lake	1	0
Wayne	2	1 (Cat A)
Westland	1	0

Table 5 - Final Priority Outfall Screening Results

Category	Number of Outfalls		
	Initial Results	Rescreening Results	Final Results
Category A	11	4	15
Category B	10	4	14
Category C	24	N/A	N/A
Category D	426	17	443
Total	**471**	**25**	**471**

Canton and Bloomfield townships identified 3 additional outfalls that fall under the MS4 permit. They were screened by the individual communities and no suspicious discharges were present (See Appendix A).

IDEP #3: Advanced Investigations

Description: The goal of this activity is to 1) locate source(s) of suspected illicit discharge(s) in the initial priority areas and upstream of the priority outfalls, and 2) oversee the correction of any identified illicit discharges. The initial priority areas will be investigated until December 30, 2018 and the priority outfalls will be investigated through the end of the permit cycle.

Goals:

- Follow the advanced investigation protocol for initial priority areas and priority outfalls.
- 100% of illicit connections/discharges resolved or a plan in place for elimination.

Status:

Metric	Status
Total number of illicit discharge investigations needed (outfalls)	39
From previous priority areas	8
From priority outfall screening	29
From other efforts	2
Number of investigations closed	11 (28%) (8 priority outfalls and 3 priority areas)
Number of investigations remaining	28 (72%) (23 priority outfalls and 5 priority areas)
Number of illicit discharges identified	13
Number corrected	12 (including 3 from the previous period)
Number unresolved	4

Description of Progress:
Below is a list of the 39 outfalls that required investigations during the reporting cycle. A summary by community is provided in Table 6.

- Beverly Hills: BV66, BV51
- Birmingham: BH32
- Bloomfield Twp: CH Stevens No. 3 Drain, CH Stevens No. 4 Drain
- Farmington: AH5, AH8, US 16 Drain
- Farmington Hills: FH54b, FH01
- Livonia: 411, U2008223, U200822B, U2008221, 6038, 13002, U2008231, M2008117, U2008238, 2680, L1619, L3582, Levan Rd South 42”, Outfall Levan Rd. South
- Northville: NV03, NV22, NV23, NV57
- Novi: NO23
- Plymouth: PY8, PY27, PY5, Harvey St, Park St., Hartsough St.
- Southfield: Fracassi Drain, 8 Mile Drain
- Wayne: WN21A
- Westland: SWOF-00278

Table 6 - Outfalls that Required Investigations

Permittee	Investigations Originating from				Total No. of Outfalls	Lead Agency
	Previous Priority Areas	Outfall Screening		Other Efforts		
		Cat A	Cat B			
Beverly Hills		2			2	ARC
Birmingham		1			1	ARC
Bloomfield Twp.	2				2	OCWRC
Farmington			2		2	ARC
Farmington Hills		2			2	ARC
Livonia		5	7	2	14	WCESD
Northville		2	2		4	ARC
Novi		1			1	ARC
Plymouth	3	1	2		6	WCESD
Southfield	2				2	OCWRC
Wayne		1			1	WCESD
Westland		1			1	WCESD
Total	**8**	**16**	**13**	**2**	**39**	

In partnership with the local communities, the ARC, Wayne County Environmental Services Department (WCESD) and Oakland County Water Resource Commissioner's Office (OCWRC) investigated several of the drains that displayed suspicious discharges. Investigations were conducted on 24 of the 39 outfalls, and investigations were closed out on 10 of the outfalls. The status of these investigations is provided in Table 7 and detailed investigation reports can be found in Appendix B.

Table 7 - Status of Investigations by Outfall

Permittee	Outfall ID	Status	Result
Beverly Hills	BV66	Began	Sewage sources suspected
	BV51	Not yet started	
Birmingham	BH32	Completed	No sources found
Bloomfield Twp.	CH Stevens No. 3 Drain	Completed	1 failed septic system on Charing Cross St. (corrected) and animal sources identified (addressed)
	CH Stevens No. 4 Drain	Ongoing	1 failed septic system on Dover St. (corrected)
Farmington	AH5, AH8	Completed	Private outfalls, not investigated
	US 16 Drain	Completed	3 illicit sewage connections (identified previously and corrected during the current reporting cycle)
Farmington Hills	FH54b	Completed	Illegal dumping from restaurant (addressed)
	FH01	Began	Animal sources suspected
Livonia	411	Completed	No sources found
	U2008223	Completed	No sources found
	U200822B	Completed	No sources found
	U2008221	Began	Sewage sources suspected
	6038	Not yet started	

Permittee	Outfall ID	Status	Result
	13002	Not yet started	
	U2008231	Not yet started	
	M2008117	Not yet started	
	U2008238	Not yet started	
	2680	Not yet started	
	L1619	Not yet started	
	L3582	Not yet started	
	Levan Rd South 42”	Began	Sewage sources suspected
	Outfall Levan Rd. South	Completed	No sources found
Northville	NV03	Began	Animal sources suspected
	NV22	Not yet started	
	NV23	Not yet started	
	NV57	Not yet started	
Novi	NO23	Began	Animal source identified (addressed)
Plymouth	PY8	Ongoing	Sewage sources suspected
	PY27	Not yet started	
	PY5	Not yet started	
	Harvey St (with Beech/Palmer St.)	Ongoing	4 illicit sewage connections (corrected)
	Mill/Park St.	Ongoing	3 illicit sewage connections
	Amelia St.		1 illicit sewage connection
	McKinley St.		1 illicit sewage connection (corrected)
	Hartsough St.	Completed	1 illicit sewage connection (corrected)
Southfield	Fracassi Drain	Ongoing	
	8 Mile Drain	Ongoing	
Wayne	WN21A	Not yet started	
Westland	SWOF-00278	Began	Non-bacteria issue

A total of 13 illicit discharges were identified including 12 illicit connections containing sewage from residential homes. The other illicit discharge was illegal dumping from a restaurant that contained food waste. Three previously discovered illicit connections in Farmington and all but four of the illicit connections in Plymouth have been corrected as shown in Table 8. These corrections result in the elimination of 646,050 gallons of untreated wastewater and 7,133 lbs of pollutants on an annual basis (Tables 9 and 10).

Table 8 – Number and Type of Illicit Discharges (IDs) Discovered and Resolved

	A	B	C	A+B-C
County	**No. of Known IDs at beginning of Reporting Period**	**No. IDs Discovered During Reporting Period**	**No. of IDs Resolved During Reporting Period**	**No. of Unresolved IDs at the end of Reporting Period**
Sanitary Sewage from Illicit Connections from Residences				
Farmington	3	0	3	0
Plymouth	0	10	6	4
Sanitary Sewage from Failed Residential Septic Systems				
Bloomfield Twp	0	2	2	0
Illegal Dumping				
Farmington Hills	0	1	1	0
Total	**3**	**13**	**12**	**4**

Table 9 - Volume of Sewage Eliminated from Surface Waters

Community Name	Household Size	Number of households with failed septics or illicit connections	Annual Wastewater Volume (gallons/year)
Data sources	[a]	[b]	
Plymouth	2.08	6	**341,640**
Bloomfield Twp	2.44	2	**133,590**
Farmington	2.08	3	**170,820**
Total			**646,050**

Table 10 - Amount of Pollutants Eliminated from Surface Waters

Parameter	Average Concentration (mg/L)[i]	[i]Data Source	Pollutant Load (lbs/year)			
			Plymouth	Bloomfield Twp	Farmington	Totals
Total Solids	690	[d]	1,963	768	981	**3,712**
Total Suspended Solids	243	[d]	691	270	346	**1,307**
BOD	221	[d]	629	246	314	**1,189**
Ammonia	8.5	[d]	24	9	12	**46**
Total Phosphorus	9	[d]	26	10	13	**48**
Surfactant	13.5	[d]	38	15	19	**73**
Potassium	6	[e]	17	7	9	**32**
Total Organic Carbon	47	[f]	134	52	67	**253**
Fats, Oil & Grease	88	[d]	250	98	125	**473**
Total Pollutant Load (lb/year)			3,772	1,475	1,886	**7,133**

Data Sources:

[a] SEMCOG (Household size estimates for Southeast Michigan).

[b] County Database (from WCDPH-EHD for Wayne County).

[c] *Environmental Health Ready Reference*. Michigan Environmental Health Association. March 2004.

[d] *Onsite Wastewater Treatment Systems Manual.* U.S. EPA EPA/625/R-00/008. February 2002. Table 3-7 .

[e] Pitt, Robert, et al. *Investigations of Inappropriate Pollutant Entries into Storm Sewer Systems, A Users Guide*. U.S EPA. EPA/600/R-92/238. January 1993.

[f] *Onsite Wastewater Treatment Systems Manual.* U.S. EPA EPA/625/R-00/008. February 2002. Table 3-18 .

In addition to the efforts described above, Bloomfield Twp and Northville Twp conducted investigations in their jurisdictions to identified illicit discharges. Bloomfield Twp's investigations centered on the failed septic system found on Dover St. Northville Twp's investigations included wet weather sampling along Johnson Creek and its tributaries to locate areas with high *E. coli* counts. These efforts are detailed in Appendix B.

IDEP #4: Staff Training

Description: The permittees will have at least one person who is competent at the IDEP Investigator Level. Permittees will have 50% of their field staff trained at the Alert Observer Level by March 31, 2021. In addition, permittees will remind staff of *E. coli* problems in Priority Areas and encourage reporting, annually.

Goals:

- 1 person per permittee trained at Investigator Level
- 50% of field staff trained at the Alert Observer Level.

Status:

Metric	Status
Portion of permittees with 1 or more staff trained at the Investigator level (of the 29 participating permittees)	69%
Number of field staff employed by the permittees (FTEs)	485
Portion of field staff trained at the Alert Observer level (or higher)	68%

Description of Progress:
The ARC offered or partnered in three IDEP Investigator and three Alert Observer training sessions during the permit period. They were held on October 8, 2018 and October 23 and 24, 2019. See Appendix C for recent staff training records.

There are 485 field staff employed by the permittees as shown in Appendix C. Of these, 329 staff (68%) are trained at the awareness level or greater: 169 at the investigator level and 160 at the awareness level. Most permittees have more than 1 person trained at the investigator level and more than 50% trained at the alert observer level, while others fall short of these targets. The permittees that need more staff training (Table 11) will be targeted by the ARC in 2020.

Table 11 - Permittees needing IDEP Training

Community	Number of Staff Needing Investigator Level Training	Number of Staff Needing Alert Observer Level Training*
Beverly Hills		3
Birmingham		14
Dearborn Heights	1	18
Garden City	1	
Inkster	1	5
Melvindale	1	3
Novi		9
Redford Township		1

*To achieve the 50% training goal.

IDEP #5: Pollution Complaint Response

Description: Permittees will have a method for recording and tracking pollution complaints from staff and the public. Permittees will follow-up on the complaints. The ARC will maintain a list of community contacts who are responsible for complaint response.

Goal: 100% of complaints addressed

Status:

Metric	Status
Number of complaints received and referred or investigated	29
Number of issues identified	20
Portion of issues resolved	100%

Description of Progress:
The permittees received 29 pollution complaints. A pollution issue was confirmed on 20 of the 29 complaints, and all issues were investigated and resolved. Documentation of the complaints is provided in Appendix D.

IDEP #6: Inspection of ARC Member-Owned Facilities

Description: Dye-test permittee owned or operated facilities (within the watershed) to ensure they are properly draining to the sanitary sewer.

Goals:

- 100% of ARC Member existing facilities dye tested.
- 100% of issues addressed.

Status:

Metric	Status
Number of facilities owned by permittees	222
Portion of facilities dye tested	86%
Number of issues found	3
Portion of issues addressed	66%

Description of Progress:
There are 222 municipal owned facilities in the watershed as detailed in Appendix E. Of these, 191 (86%) were dye tested to ensure that they were properly connected to the sanitary sewer (Appendix E). The dye testing revealed improper plumbing at 3 facilities. Two out of three issues were corrected. The outstanding issue is not scheduled for correction because of limited potential for an illicit discharge at that facility.

Table 12 lists the communities that still need to dye test their facilities.

Table 12 - Facilities needing dye testing

Permittee	No. of Facilities	Anticipated Completion Date
Beverly Hills	3	Summer 2020
Birmingham (golf course only)	1	Summer 2020
Bloomfield Hills	2	Summer 2020
Lathrup Village	2	Summer 2020
Novi	11	Summer 2020
West Bloomfield Twp.	12	TBD

IDEP #7: IDEP Work Group

Description: Permittees will meet twice a year to discuss IDEP-related topics including the annual advanced investigations work plan, progress of advanced investigations, lessons learned, any road blocks encountered with implementing the plan, and recommendations for improving the plan.

Goals:

- Hold at least 2 work group meetings per year.
- 80% member participation.
- 2 meeting summaries per year.

Status:

Metric	Status
Number of meetings per year	1
Number of meeting summaries per year	1
Portion of members in attendance at meetings	55% over both years

Description of Progress:
Two Technical Committee meetings were held during the reporting period. In 2018, 7 of 28 permittees were represented, while in 2019, 24 of 28 permittees were represented at the meeting (Appendix F). Beginning in 2019, the meetings were advertised as mandatory, so the higher level of attendance seen in 2019 is expected to continue.

C. Other Efforts

Each permittee included in this report has its own IDEP ordinance or policy and procedures in place. Copies of these ordinances and policies have been submitted to EGLE.

Appendix A

Dry Weather Outfall Screening Supporting Documentation

Appendix A1. Watershed-wide Screening Summary

Appendix A2. Category C Outfall Resampling Report

Appendix A3. New Outfalls Screening Forms from the Communities

Appendix A1

Watershed-wide Screening Summary

To: ARC Technical Committee
From: Annette DeMaria, ARC Staff
Date: September 20, 2018
Re: Results of 2018 Outfall Screening

Each of you have received the results of the outfall screening conducted in your community. To give you a perspective of the conditions in the entire watershed, we have compiled the individual community results for your information.

There are 1,505 outfalls regulated by the MS4 permit in the Rouge River watershed that are owned by cities and villages within the ARC[1]. There are an additional 81 outfalls owned by townships which brings the total number of regulated community outfalls to 1,585. The number of outfalls owned by county agencies is still being determined.

Of the 1,505 outfalls, 471 (31%) were identified as priority for screening. These outfalls were screened in 2018 and classified for additional investigations according to the Rouge River Collaborative IDEP Plan. The results of the screening are summarized in Table 1 and Figure 1. Additional details are provided in Attachment A.

Table 1. 2018 Outfall Screening Results Summary

Investigation Category	Number/Percent of Outfalls	Next Steps
A: E. coli > 10,000 or Unexplained physical conditions	11 (2%)	Begin IDEP investigations in 2019
B: E. coli btw 5,001 and 10,000	10 (2%)	Begin IDEP investigations in 2020 or later
C: E. coli btw 1,001 and 5,000	24 (5%)	Resample twice more within 12 months. If any E. coli value is above 5,000, then investigate.
D: E. coli ≤ 1,000	426 (91%)	No further action

E. coli values in cfu/100 mL

Of the 471 outfalls, 21 (Categories A and B) require additional investigations to determine if an illicit discharge is present. Two-thirds of these outfalls are owned by communities in Wayne County and the remaining are in Oakland County (Table 2 and Figure 2).

Twenty-four outfalls (Category C) need to be resampled within the next 12 months (Table 2 and Figure 2). If each of three results remain at or below 5,000 cfu/100 mL, then no further action is needed. However, if any one of the three results are above 5,000 cfu/100 mL, then the outfall will be moved to Category B.

[1] Outfall prioritization and screening was not required in townships, so they are not the subject of this memo.

Lastly, 426 (91%) of the outfalls were in Category D which requires no further actions during this permit cycle (unless unusual conditions are noted, or a complaint is received).

Table 2. Additional Investigation requirements by Community

	Number of Outfalls			
Community	**Category A**	**Category B**	**Category C**	**Category D**
Beverly Hills	1		2	12
Bingham Farms				5
Birmingham	1			23
Bloomfield Hills				14
Dearborn Heights			3	7
Farmington		2	1	13
Farmington Hills	2			45
Franklin				2
Garden City				1
Inkster				4
Livonia	4	6	9	118
Melvindale				2
Northville	1		3	9
Novi		1		7
Plymouth	1	1	2	20
Southfield				16
Troy				11
Walled Lake			1	5
Wayne			2	50
Westland	1		1	62
Total	**11**	**10**	**24**	**426**

Follow-up investigations and resampling will be undertaken by the ARC beginning in 2019. The recommended approach will be discussed at an upcoming Technical Committee meeting. Individual communities may wish to proceed with investigations outside of the ARC. Please contact ARC staff if you take this course of action, so efforts are not duplicated.

If you have any questions, please contact me at 313-963-6600 or ademaria@ectinc.com.

Legend

- Category A [E. coli >10,000* or unexplained physical characteristics]
- Category B [E. coli between 5,001 and 10,000*]
- Category C [E. coli between 1,001 and 5,000*]
- Category D [E. coli < 1,000*]
- Could not locate
- Rouge River & Tributaries
- Roads
- CTV boundaries
- Lakes

*MPN/100 mL

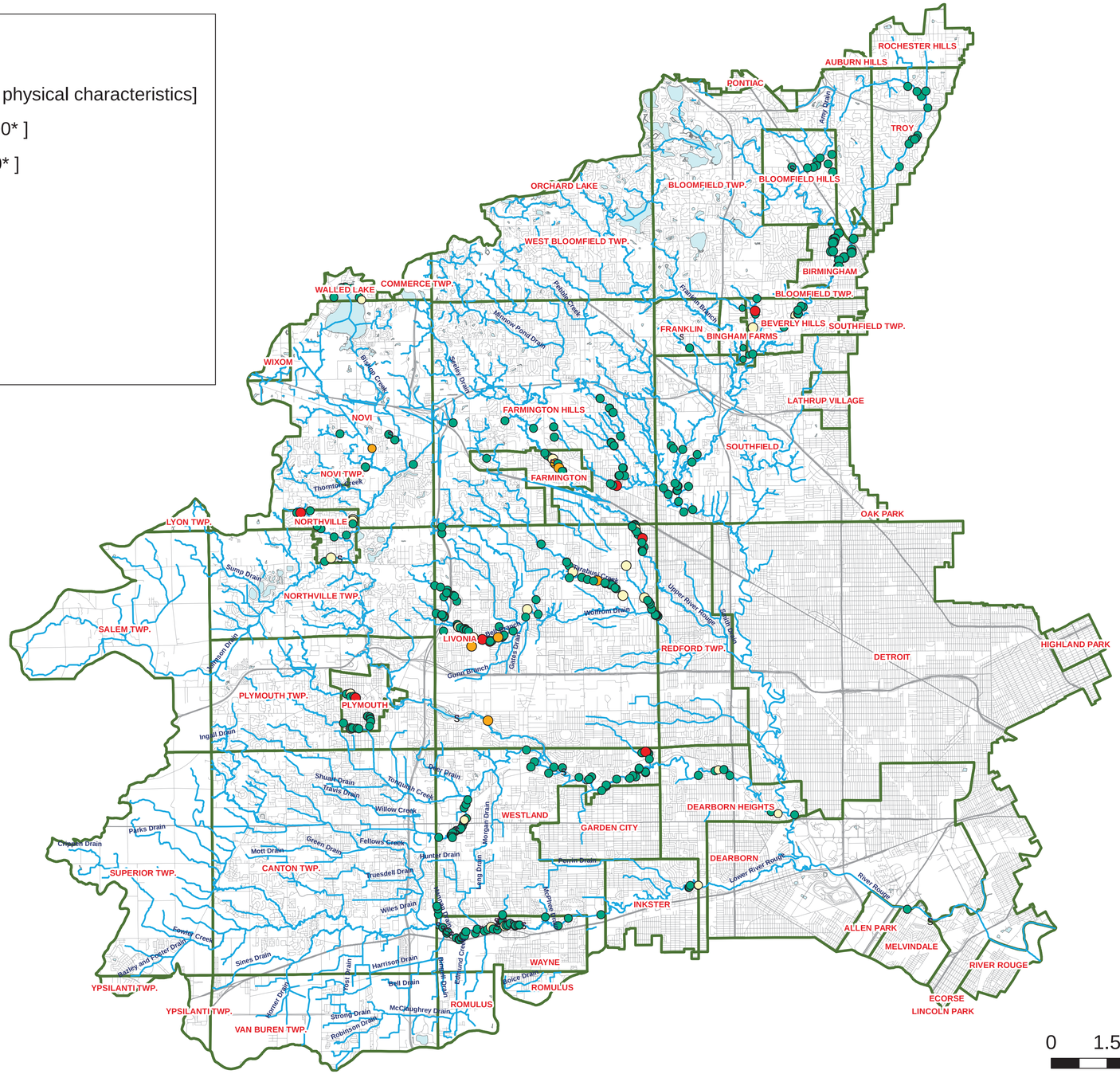


Figure 1. Rouge River Watershed 2018 Outfall Survey Results

Environmental Consulting & Technology, Inc.

8/31/2018

P:\ARC\GIS\Maps\Rouge Followup Outfalls -v3.mxd

Legend

Follow up outfall category

- Category A [E. coli >10,000 or unexplained phys-ical characteristics]
- Category B [E. coli between 5,001 and 10,000]
- Category C [E. coli between 1,001 and 5,000]
- Rouge River & Tributaries
- Roads
- CTV boundaries
- Lakes

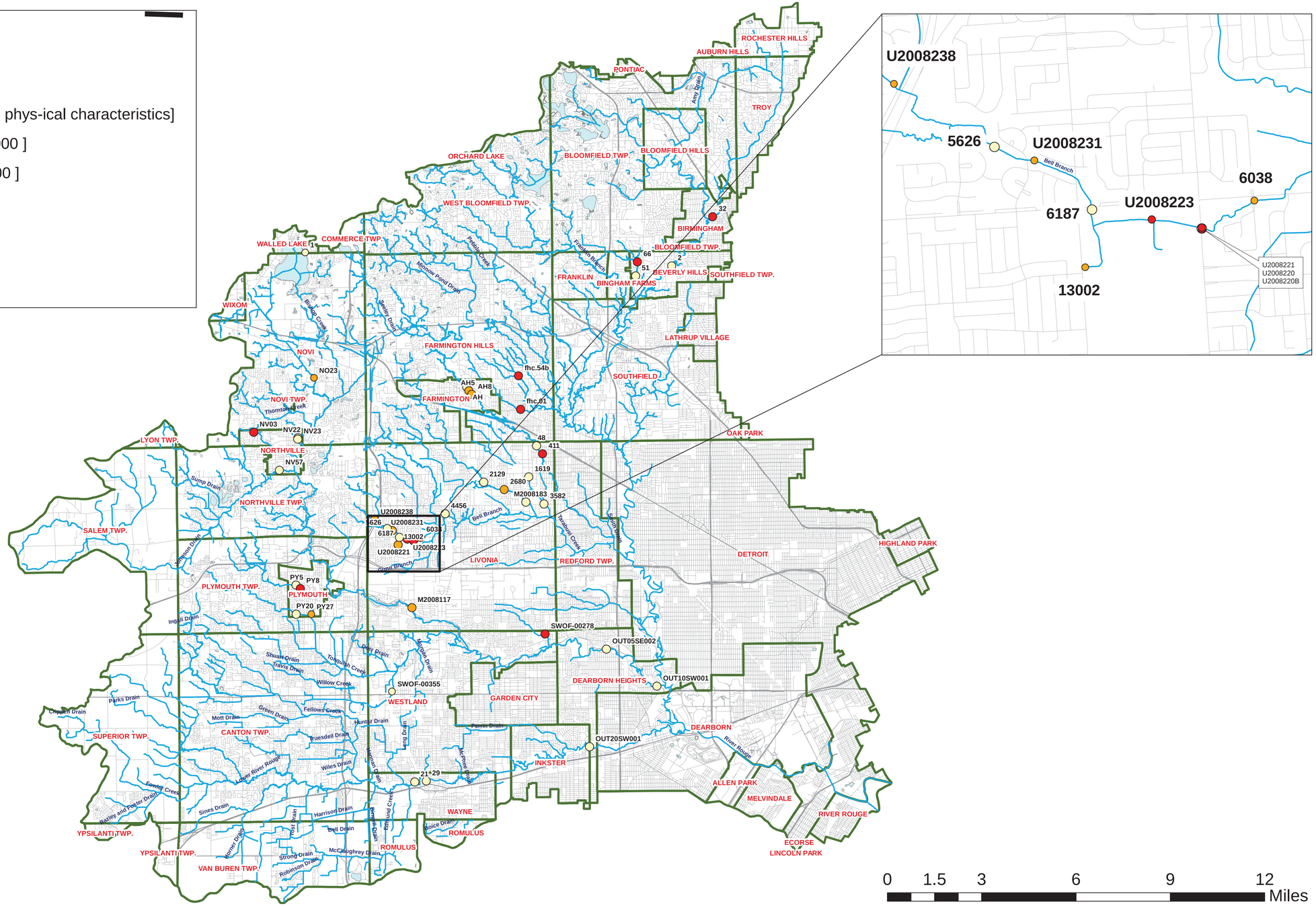


Figure 2. Rouge River Outfalls Requiring Additional Investigations

ECT Environmental Consulting & Technology, Inc.

1/25/2019

ARC Results of 2018 Outfall Screening
September 20, 2018

Attachment A.

2018 Outfall Screening Details – Categories A, B and C (arranged by E. coli Concentration)

City	Outfall ID	Investigation Category	Diameter (in)	Material	*E.coli* MPN/100 ml	Comment
Westland	SWOF-00278	A	54		NA	physical conditions
Livonia	U2008220B	A	18	RCP	NA	physical conditions
Farmington Hills	fhc54B	A		RCP	10	physical conditions
Farmington Hills	fhc.01	A	21	RCP	>24,196	
Plymouth	PY8	A	36	Clay	>24,196	
Livonia	U2008221	A	30	RCP	>24,196	
Livonia	411	A	42	RCP	>24,196	
Northville	NV03	A	48	RCP	24,196	
Livonia	U2008223	A	24	RCP	17,329	
Birmingham	32	A	24	Concrete	12,997	
Beverly Hills	66	A	24	Concrete	12,033	
Livonia	6038	B	36	RCP	9,208	
Farmington	AH5	B	18	RCP	8,664	
Livonia	13002	B	76	RCP	8,664	
Novi	NO23	B	18	RCP	7,701	
Farmington	AH8	B	18	CMP	7,270	
Livonia	U2008231	B	12	CMP	7,270	
Livonia	M2008117	B	72	RCP	7,270	
Plymouth	PY27	B	24	RCP	6,488	
Livonia	U2008238	B	36x48	RCP	6,131	
Livonia	2680	B	36x48	RCP	5,172	
Wayne	21	C	36	RCP	4,352	
Livonia	5626	C	36	RCP	4,352	
Northville	NV57	C	unknown		3,873	
Westland	SWOF-00355	C	36		3,255	
Beverly Hills	51	C	24	CMP	3,076	
Northville	NV23	C	42	RCP	3,076	
Wayne	29	C	30	RCP	3,076	
Northville	NV22	C	42	RCP	2,755	
Dearborn Heights	OUT10SW001	C	unknown	RCP	2,400	
Livonia	3582	C	48x36	RCP	2,382	
Livonia	48	C	29x46	RCP	2,282	
Dearborn Heights	OUT20SW001	C	36	RCP	2,098	
Livonia	M2008183	C	36	RCP	2,064	
Livonia	1619	C	72	RCP	2,064	
Livonia	6187	C	120	RCP	1,935	
Walled Lake	1	C	12	CMP	1,670	
Livonia	2129	C	36	RCP	1,607	
Plymouth	PY5	C	30	RCP	1,500	
Beverly Hills	2	C	12	CMP	1,334	
Farmington	AH	C	24	CMP	1,296	
Plymouth	PY20	C	48	RCP	1,274	
Livonia	U2008220	C	18	RCP	1,198	
Dearborn Heights	OUT05SE002	C	36	CMP	1,054	
Livonia	4456	C	36	CMP	1,050	

Investigation Categories:	A: *E. coli* >10,000 MPN/100 mL or Unexplained physical characteristics	Next Steps:	Investigate
	B: *E. coli* between 5,001 and 10,000 MPN/100 mL		Investigate
	C: *E. coli* between 1,001 and 5,000 MPN/100 mL		Resample (twice)

Appendix A2

Category C Outfall Resampling Report

Annette DeMaria, P.E., PMP
Executive Director

Auburn Hills
Beverly Hills
Bingham Farms
Birmingham
Bloomfield Hills
Bloomfield Twp.
Canton Twp.
Commerce Twp.
Dearborn Heights
Farmington
Farmington Hills
Franklin
Garden City
Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
Northville
Northville Twp.
Novi
Oak Park
Oakland County
Orchard Lake
Plymouth
Plymouth Twp.
Redford Twp.
Rochester Hills
Romulus
Schoolcraft College
Southfield
Troy
University of Michigan-Dearborn
Van Buren Twp.
Walled Lake
Washtenaw County
Wayne
Wayne County
Wayne County Airport Authority
West Bloomfield Twp.
Westland
Wixom

Cooperating Partners:
Cranbrook Institute of Science
Friends of the Rouge
Great Lakes Water Authority
Rouge River Advisory Council
SEMCOG
Southeastern Oakland County Water Authority

Alliance of Rouge Communities
OURS TO PROTECT
Working together, restoring the river

TO: **Karen Mondora, ARC Technical Committee Chair**

FROM: **Annette DeMaria, Executive Director**

DATE: **January 28, 2020**

SUBJECT: **Category C Outfall Resampling Results**

In 2019, ARC staff re-inspected 26 Category C outfalls in the Rouge River Watershed to determine if future illicit discharge investigations were required. We determined that eight of the outfalls will require additional investigations. These outfalls are in the Village of Beverly Hills and the cities of Livonia, Northville, Plymouth and Wayne. No further investigations are required for the remaining 18 outfalls.

This memorandum summarizes the findings of the 2019 resampling efforts.

Background

In 2018, ARC staff conducted dry weather screening of stormwater outfalls in the Rouge River watershed in accordance with the Rouge River Collaborative Illicit Discharge Elimination Plan (Plan). Based on the results of that screening, twenty-four outfalls were designated to the Category C priority level. Category C outfalls have *E. coli* concentrations between 1,001 and 5,000 MPN/100 ml and are required to be sampled two more times within 12 months to determine if illicit discharge investigations are warranted.

Methodology

The conditions for resampling matched those of the first outfall screening effort. Screening was conducted after a period of at least 48 hours of no rainfall. Screening included notation of depth of flow as well as observations of the surrounding stream and the outfall discharge (See Attachment A). During the original screening, an upstream manhole was surveyed if an outfall was found to be submerged, disconnected, or otherwise unable to be sampled. In these cases, the same manhole was resampled during subsequent screenings.

Each outfall was generally resampled twice. However, if the result from the first resampling event was above 5,000 MPN/100 ml, the outfall was not resampled a second time as it already qualified for elevated prioritization.

According to the Plan, if any of the *E. coli* results are above 5,000 MPN/100 ml, then the outfall is elevated to Category A or B (based on the *E. coli* concentration) and additional illicit discharge investigations are required. The remaining outfalls are designated as Category D and no future actions are required (See Table 1).

Table 1. Priority Categories for Illicit Discharge Investigations

Category	Criteria (MPN/100 mL)	Follow-up Action
A	*E. coli* >10,000 or unexplained physical characteristics	Conduct advanced investigations – 1st priority
B	*E. coli* between 5,001 and 10,000	Conduct advanced investigations – 2nd priority
C	*E. coli* between 1,001 and 5,000	Resample 2 more times within 12 months and elevate to Category A or B if either *E. coli* count is > 5,000. Otherwise move to Category D.
D	*E. coli* ≤1,000	None

Results

Samples were collected in August and September 2019. Most of the *E. coli* concentrations remained below 5,000 MPN/100 ml (Table 2). This resulted in 17 outfalls being reclassified as Category D. At the remaining eight outfalls, at least one sample had *E. coli* concentrations above 5,000 MPN/100 ml. These outfalls were reclassified as Category A where *E. coli* concentrations exceeded 10,000 MPN/100 ml and Category B where *E. coli* were between 5,001 and 10,000 MPN/100 ml (Table 2).

In 2020, the ARC will begin investigating the Category A and B outfalls in accordance with the Plan and as directed by the Technical Committee.

X:\Alliance of Rouge Communities\2019 Alliance of Rouge communities\Tech Com\IDEP\Resampling Cat C\Cat C resampling summary.docx

Table 2. Outfall Resampling Results

				Resample 1		Resample 2		
Community	**Outfall ID**	**Original Sample Date**	**Original Sample *E. coli* [MPN/100 mL]**	**8/1/19 *E. coli* [MPN/100 mL]**	**8/15/19 *E. coli* [MPN/100 mL]**	**9/19/19 *E. coli* [MPN/100 mL]**	**9/20/19 *E. coli* [MPN/100 mL]**	**Final Designation**
Beverly Hills	BH-2	6/26/2018	1,334	---	383	75	---	Cat D
Beverly Hills	BH-51	7/9/2018	3,076	---	201	>24,196	---	Cat A
Dearborn Heights	DH-Out05SE002	5/29/2018	1,054	3,448	---	---	379	Cat D
Dearborn Heights	DH-Out10SW001-2*	5/29/2018	2,098	20	---	---	75	Cat D
Dearborn Heights	DH-Out20SW001	5/30/2018	2,400	No flow	---	---	No flow	Cat D
Farmington	F-AH	6/8/2018	1,296	---	637	906	---	Cat D
Farmington	F-AH-1	---	---	---	10	97	---	Cat D
Livonia	L-1619	7/12/2018	2,064	---	15,531	---	---	Cat A
Livonia	L-3582	7/12/2018	2,382	1,935	---	5,475	---	Cat B
Livonia	L-4456	7/13/2018	1,050	31	---	10	---	Cat D
Livonia	L-5626	7/16/2018	4,352	98	---	---	20	Cat D
Livonia	L-6187	7/19/2018	1,935	1,725	---	241	---	Cat D
Livonia	L-2129-1*	7/13/2018	1,607	243	---	231	---	Cat D
Livonia	L-48-1*	7/12/2018	2,282	---	1,211	1,317	---	Cat D
Livonia	L-M2008183-1*	7/12/2018	2,064	<1	---	<10	---	Cat D
Livonia	L-U2008220	7/16/2018	1,198	---	<10	<10	---	Cat D
Northville	N-22	6/7/2018	2,755	---	>24,196	---	---	Cat A
Northville	N-23	6/7/2018	3,076	---	9,804	---	---	Cat B
Northville	N-57-1	6/8/2018	3,873	---	6,131	---	---	Cat B
Plymouth	PY-20	5/1/2018	1,274	---	1,223	1,616	---	Cat D
Plymouth	PY-5	5/1/2018	1,500	---	8,164	---	---	Cat B
Walled Lake	WL-1	7/11/2018	1,670	---	41	10	---	Cat D
Wayne	WN-29	5/25/2018	3,076	20	---	---	404	Cat D
Wayne	WN-21A	5/29/2018	4,352	>24,196	---	---	---	Cat A
Westland	WE-SWOF-00355	5/11/2018	3,255	<1	---	---	201	Cat D

*Outfall IDs of the form XX-XXX-# indicate that the first or second upstream manhole was sampled instead of the outfall.

Attachment A. Field Notes

Community	Outfall ID	Resample 1 Notes	Resample 2 Notes
Beverly Hills	BH-2	1/4" flow, sediment deposits	1/4" flow, sediment deposits
Beverly Hills	BH-51	1/4" flow	1/4" flow, foamy appearance to water
Dearborn Heights	DH-Out05SE002	1/2" flow	1/2" flow
Dearborn Heights	DH-Out10SW001-2	Manhole. Sampled trough, depth of flow unknown.	Manhole. Sampled trough, depth of flow unknown.
Dearborn Heights	DH-Out20SW001	No flow	No flow
Farmington	F-AH	Partially submerged	Partially submerged
Farmington	F-AH-1	Manhole not sampled during first effort, but necessary because outfall is submerged. Sampled trough. Depth of flow unknown.	Manhole not sampled during first effort, but necessary because outfall is submerged. Sampled trough. Depth of flow unknown.
Livonia	L-1619	Slow flow, oily sheen	---
Livonia	L-3582	Slow flow, oily sheen	Slow flow
Livonia	L-4456	1/4" flow, sediment deposits.	1/4" flow, sediment deposits, foamy appearance
Livonia	L-5626	1/4" flow, broken concrete near outfall	1/4" flow, broken concrete near outfall
Livonia	L-6187	2.5" flow	2.5" flow
Livonia	L-2129-1	Manhole. Depth of flow unknown.	Manhole. Depth of flow unknown.
Livonia	L-48-1	Manhole, sampled trough. Shallow flow.	Manhole, sampled trough. Shallow flow.
Livonia	L-M2008183-1	Manhole. Depth of flow unknown.	Manhole. Depth of flow unknown.
Livonia	L-U2008220	1/8" flow	1/8" flow
Northville	N-22	1/4" flow	---
Northville	N-23	Slow flow	---
Northville	N-57-1	Manhole, sampled trough. 2.25" flow	---
Plymouth	PY-20	Partially submerged	Partially submerged
Plymouth	PY-5	Partially submerged	---
Walled Lake	WL-1	2" flow	2" flow
Wayne	WN-29	2" flow	2" flow
Wayne	WN-21A	Manhole. Sampled inlet A (24" pipe, bottom of manhole) with heavy flow. Depth of flow unknown.	---
Westland	WE-SWOF-00355	1/4" flow	1/4" flow

Appendix A3

New Outfalls Screening Forms from the Communities

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	Outfall 16-05 - Manhole in greenbelt on east side of Dublin north of Exeter		
Date of Observation:	10 / 18 / 2018	Time:	12:00 PM
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☑ Institutional
- ☐ Open Space
- ☐ Woods

Other: Bloomfield Township Campus

Known Industries: _____

Notes (e.g. origin of outfall, if known): Storm sewer for parking lot

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other: _____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	None
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	None
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	None
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	None

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: No flow from storm sewer

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments:

Section 8: General Comments

Comments:

Section 9: Reporting Information

Comments:		Date Observed:	10/18/2018
		Time Observed:	12:00 PM
Investigated By:	Cory Borton	Date Reported:	10/18/2018



Cover of manhole to Outfall 16-05



Outfall is east invert (top of picture)

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	Outfall 16-06 - Catch basin in Exeter at SE corner of cable station property		
Date of Observation:	10 / 18 / 2018	Time:	12:20 PM
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☑ Institutional
- ☐ Open Space
- ☐ Woods

Other: Bloomfield Township Campus

Known Industries: _____

Notes (e.g. origin of outfall, if known): Storm sewer for cable station and parking lots

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: Other:	Circular Pipe Dimensions: Dia: 15 in. Elliptical Pipe Dimensions: Width: ____ in. Height: ____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:	Depth: ____ ft. Top Width: ____ ft. Bottom Width: ____ ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other:	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	None
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	None
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	None
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	None

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: Sample taken at outfall. Could not locate upstream manhole

Section 9: Reporting Information

Comments: _____		Date Observed:	10/18/2018
_____		Time Observed:	12:20 PM
Investigated By:	_Cory Borton_____	Date Reported:	10/18/2018



Catch Basin within Exeter Road



Inside of catch basin.

Appendix B

Advanced Investigations Documentation

Appendix B1. 2018 Wayne County IDEP Investigation Report

Appendix B2. 2019 Wayne County IDEP Investigation Report

Appendix B3. 2018 Oakland County IDEP Investigation Report

Appendix B4. 2019 Oakland County IDEP Investigation Cat A and B Results Summary

Appendix B5. 2019 Oakland County Water Resources Commissioners Office IDEP Summary

Appendix B6. Bloomfield Township Investigation Records

Appendix B7. Northville Township Wet Weather Sampling Report

Appendix B1

2018 Wayne County IDEP Investigation Report

Wayne County Illicit Discharge Elimination Program
ARC IDEP Services 2018 Report
December 2018

Summary

Wayne County performed source identification advanced investigations within the City of Plymouth in three investigation areas in addition to field screening/water quality sampling at 28 locations within the priority areas identified in the Rouge River Collaborative IDEP Plan. The City of Plymouth and Wayne County continued contacting residents and performing residential dye tests on a voluntary basis in two investigation areas during 2018.

Dye testing of all homes on the two streets in the Harvey Street target area was completed and four illicit connections were identified at four residences (2017 and 2018 activities combined). The Harvey Street outfall was resampled after the illicit connections were corrected. The *Escherichia coli* (*E. coli*) concentrations were elevated, indicating that other illicit discharges are present. All but one of the residences was dye tested in the Mill Street target area, and as of the date of this report, one illicit connection was identified at one residence, a duplex.

One residence with an illicit connection was discovered in the City of Plymouth Hartsough investigation area. Further investigation upstream of the outfall for that area is recommended after elevated *E. coli* concentrations were present during outfall resampling after correction of the illicit connection.

The results of the field screening/water quality sampling suggest that additional investigations upstream of D62.4 on the North Branch Tonquish Creek are recommended to survey for active *E. coli* sources. Additional investigations upstream of sites D62A on the North Branch Tonquish Creek, G94A on the Sines Drain, and L51A, L51B.3, L51.B1 and L51B on the McKinstry Drain to investigate older *E. coli* sources is recommended.

Introduction

Wayne County Department of Public Services, Water Quality Management Division (WQMD) utilized IDEP Field Investigation funding (ARC 2018 Budget TC2 allocated to Wayne County) to perform source identification advanced investigation in the City of Plymouth, perform field screening in priority areas identified by the ARC Technical Committee, and provide written and oral summaries of activities at ARC Technical Committee meetings and for the ARC's Annual Report.

Task 1: Field Investigations

WQMD coordinated with ARC staff and the City of Plymouth to continue dye testing in residential areas in the Harvey Street and Park Street municipal separate storm sewer systems (MS4). The Harvey Street MS4 is tributary to Byron Creek which flows into the South Branch of Tonquish Creek. The Park Street MS4, where Mill Street drains, discharges into the Middle Branch of the Rouge River.

Harvey Street Investigation Area

The City of Plymouth continued dye testing residences on Beech and Palmer streets within the Harvey Street investigation area in January 2018. There were 39 addresses targeted in the investigation area. The City dye tested 25 residences in 2017 and eight in 2018. Three of the residences were discovered to be discharging to the storm sewer, as illicit connections. The fourth residence, a dye test was not

performed, but considered an illicit connection as the lead was directly across from the lead of a residence that had an illicit connection. The lead from this residence was connected to the sanitary sewer when correction of the home across the street was performed. The illicit connections were corrected at the other three residences in September 2018. Appendix A Table 1a contains a list of residences dye tested in this investigation area. Figure 1 is the investigation area status map. One-hundred percent of the targeted residences were investigated/dye tested. However, subsequent sampling at Harvey Street outfall in November revealed an *E. coli* concentration of 17,000 CFU/100 ml which indicates that one ore more illicit discharges are likely still present in the system.

Figure 1: Harvey Street Investigation Area Status



Park Street/Mill Street Investigation Area

WQMD coordinated with the City of Plymouth to continue to perform voluntary dye testing of residences on Mill Street. There are now 30 addresses (up from 21 previously reported) identified on Mill Street that are targeted for dye-testing. The additional residences are part of a multifamily dwelling where one unit was tested, and the rest of the units utilize the same connection. Multiple rounds of notification letters were issued by the City to residences that did not respond. WQMD received the calls and scheduled the dye-test appointments. The City provided traffic control support as needed.

In order to further isolate the segment of the storm sewer where the illicit connection(s) may be located, WQMD installed a wire sanitary debris trapping device in the Mill Street storm sewer near 188 N. Mill Street in October 2018. The trap was placed along the bottom of the manhole near the outlet during dry weather. No sanitary debris was observed or collected on the trap after 2.5 days of deployment. In addition, water samples were collected at the time of installation and removal where very low *E. coli* concentrations were detected. The lack of sanitary debris and the low *E. coli* results indicate that there no active illicit discharges upstream of 188 N. Mill Street (See Table 1A).

Table 1A Dry Weather Screening Results Summary Park/Mill Street Investigation Area

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)
1	10/26/2018	11:15	Mill Street	188 N. Mill St Storm manhole	NA
1	11/15/2018	10:10	Mill Street	188 N. Mill St Storm manhole	80

Fifteen residential dye tests were performed with the assistance of City of Plymouth staff in 2018 for a total of 22. An illicit connection was identified at one residence, a duplex (Figure 2). At the time of this report, one residence in the investigation area still needs dye testing. The City of Plymouth is attempting to identify the property owner of the rental unit since multiple letters and a site visit did not obtain a response.

Appendix A Table 1b contains a list of residences dye tested in this investigation area. Figure 2 is the investigation area status map. Ninety-seven percent of residences in the Mill Street investigation area are dye tested.

Figure 2 Mill Street Investigation Area Investigation Status Map



Hartsough Street Investigation Area

WQMD continued to coordinate with the City of Plymouth to delineate and sample the drainage area of outfall #11/24.

WQMD assisted the City of Plymouth with the investigation of a suspicious discharge that was reported by utility crews performing underground work in the investigation area. Sanitary debris was observed in a storm sewer manhole located at the intersection at Maple and Harding Streets. On August 16, 2018, dry weather *E. coli* samples were collected at this manhole and at two others in the investigation upstream of the Maple/Harding Street manhole and on other laterals to the storm sewer line discharging to Outfall #11/24. One of the manholes on an east lateral was dry. More samples were not collected as a rainstorm started producing runoff into the storm sewer. The water sample collected at the manhole where the sanitary debris was observed had an *E. coli* concentration of 1000 CFU/100mL.

Additional dry weather sampling was performed in November 2018, where a sample was collected at the outfall and at upstream laterals. The monitoring sampling data is summarized in Table 1B and Figure 3.

The City of Plymouth identified one residence with an illicit connection on the Maple Street storm sewer line and this residence was connected to the sanitary sewer in September 2018. However, subsequent sampling at outfall #11/24 in November revealed an *E. coli* concentration of 5,400 CFU/100 ml which indicates that an illicit discharge may still be present in the system.

Table 1B: Dry Weather Screening Results Summary Hartsough Street Investigation Area

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)
2	8/16/2018	13:50	Outfall #24 Hartsough North Branch Tonquish Creek	Maple/Harding St	1000
3	8/16/2018	14:05	Outfall #24 Hartsough North Branch Tonquish Creek	Roose Veterinary Clinic parking area storm	600
4	8/16/2018	14:15	Outfall #24 Hartsough North Branch Tonquish Creek	Fairground Park storm (between Joy and Coolidge)	280
5	8/16/2018	14:20	Outfall #24 Hartsough North Branch Tonquish Creek	Manhole near 746 Coolidge	NA
6	8/16/2018	14:29	Outfall #24 Hartsough North Branch Tonquish Creek	Maple/Kellogg	NA

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)
6	11/15/2018	10:02	Outfall #24 Hartsough North Branch Tonquish Creek	Maple/Kellogg	NA
7	11/15/2018	9:40	Outfall #24 Hartsough North Branch Tonquish Creek	Harding/Wing	NA
8	11/15/2018	9:50	Outfall #24 Hartsough North Branch Tonquish Creek	Deer/Maple	NA

The field data associated with samples collected in all three investigation areas can be found in Appendix A Table 2.

It is recommended that the Harvey Street and Hartsough Street outfalls be resampled in Spring 2019, previous sampling data be reviewed, and additional investigations be conducted in the City of Plymouth Harvey Street residential target areas based on the outfall sampling results. Further investigation upstream of outfall #11/24 (OF24) is also recommended to determine source(s) of elevated *E. coli* in both MS4s.

Figure 3: Dry Weather Monitoring investigation area



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Field Screening Priority Areas

Under this subtask, WQMD identified 28 sites for monitoring, procured lab services, collected water samples and provided data management and analysis. Samples collected were analyzed for *E. coli*, dissolved oxygen, conductivity, water temperature and visual observations were also recorded at each site. The sites sampled were within priority areas identified in the ARC's Collaborative IDEP. The purpose of the sampling was to help further isolate/refine source identification priority areas for future collaborative IDEP advanced investigations.

The samples were collected from within the Lower 1, Middle 1-Tonquish Creek, and the Upper Rouge (Bakewell Drain, Beitz Drain and Bell Creek). The communities where the sampling occurred are: Canton Township, Van Buren Township, Plymouth Township, Cities of Plymouth and Livonia as shown in Table 2. The map of the sites is in Figure 4.

The sampling was performed during dry weather (48 hours or more without precipitation greater than 0.10 inches) on July 12 and August 15, 2018. Samples were analyzed for *E. coli* and the human *Bacteroidetes* marker which identifies the relative amount of human DNA in a sample.

Table 2: 2018 IDEP Field Screening Sampling Locations

Number	Site ID	Site Description	Watershed	Community
1	G94A	Sines Drain/Beck Rd	Lower	Canton Township
2	G94A.1	Sines Drain/Denton Rd	Lower	Canton Township
3	G94A.2	Sines Drain/Mott Rd	Lower	Canton Township
4	L51.B1	McKinstry Drain/Morton Taylor Rd	Lower	Canton Township
5	L51A	Fisher-Leng/Sheldon Rd	Lower	Canton Township
6	L51A.1	Fisher-Leng Drain/Belleville Rd	Lower	Canton Township
7	L51	McKinstry Drain/Michigan Ave	Lower	Van Buren Township
8	L51.B2	McKinstry Drain/Sheldon Rd North	Lower	Van Buren Township
9	L51B	McKinstry Drain/Van Born Rd	Lower	Van Buren Township
10	L51B.3	McKinstry Drain/Sheldon Rd South	Lower	Van Buren Township
11	D62.4	North Branch Tonquish Creek/Burroughs	Middle	Plymouth City
12	D62A	North Branch Tonquish/Ford St	Middle	Plymouth City
13	D62A.1	North Branch Tonquish/Hartsough	Middle	Plymouth City
14	D62A.2	North Branch Tonquish Creek/Harvey St	Middle	Plymouth City
15	D62A.3A	North Branch Tonquish/Hartsough Outfall west	Middle	Plymouth City
16	D62A.3B	North Branch Tonquish/Hartsough Outfall east	Middle	Plymouth City
17	GP5	North Branch Tonquish Creek/Kellogg St outlet	Middle	Plymouth City
18	D62D	South Branch Tonquish Creek/JoAnn	Middle	Plymouth Township
19	PT28.1	South Branch Tonquish Creek/Canton Center	Middle	Plymouth Township
20	U14.1	Bell Creek/Farmington Rd	Upper	Livonia
21	U14.2	Barlow Drain Outfall	Upper	Livonia
22	U14.3	Gates Drain/Amherst	Upper	Livonia
23	U14.4	LD-11 Extension North of Five Mile East of Ellen Dr	Upper	Livonia
24	U14.5	Bakewell Drain	Upper	Livonia
25	U14.6	Bell Creek/Oakdale	Upper	Livonia
26	U14.7	Bell Creek/Six Mile	Upper	Livonia

Number	Site ID	Site Description	Watershed	Community
27	U14.8	Bell Creek/Ronnie	Upper	Livonia
28	U15	Beitz/Six Mile	Upper	Livonia

Of the 28 sites that were surveyed, 25 had dry weather flow and were sampled.

Table 3 is a summary of the sampling data by subwatershed, number of samples per subwatershed, and the breakdown of the results by the Collaborative IDEP E. coli screening criteria (see Appendix B for complete results).

Table 3 Monitoring Data Summary Utilizing Collaborative IDEP Screening Criteria

Subwatershed	Number of samples	Number of dry weather samples 0 - 1000 CFU/100 mL *E. coli*	Number of dry weather samples 1000 - 5000 CFU/100 mL *E. coli*	Number of Dry Weather samples >5000 CFU/100 mL *E. coli*
Upper	8	6	2	0
Middle 1	9	8	1	0
Lower 1	8	8	0	0

Three of the 25 sites had *E. coli* concentrations exceeding 1,000 CFU/100 mL (12 percent). None of the sites exceeded 5000 CFU /100 mL. The sites exceeding 1,000 CFU /100 mL are summarized in Table 4 including sampling results from 2017 and 2016 where applicable.

Bacteriodes Human Specific marker (BST) sampling

Of the 25 sites sampled, 19 were analyzed for the human *Bacteriodes* marker. The presence of the marker above 1,000 gene copies/100 mL is typically used as a threshold to indicate potential human source of bacteria present when correlated with high *E. coli*. In addition, according Michigan State University (MSU), sites where the marker exceeds the *E. coli* concentration is an indicator of previous contamination. This is because the *E. coli* analysis only enumerates live cells, while the *Bacteriodes* test considers both live and dead cells.

Based on the number of gene copies, human sources are indicated at seven sites that are in the City of Plymouth, Canton Township and Van Buren Township. However, of those seven sites, only one (D62.4 in Plymouth) had elevated *E. coli* concentrations. This indicates that there may be an active human source of *E. coli* upstream of D62.4. At the remaining six sites, there is indication that older human *E. coli* sources may be present. Select analytical results can be found Table 4 with all results in Appendix B.

Based on these findings, it is recommended to conduct additional investigations at the following sites:

- Upstream of D62.4 on the North Branch of Tonquish Creek to look for active *E. coli* sources; and
- Upstream of D62A on the North Branch of Tonquish Creek, G94A on the Sines Drain, and L51A, L51B.3, L51.B1 and L51B on the McKinstry Drain to look for older *E. coli* sources.

D62.4 should have higher priority over the other sites based on the higher *E. coli* concentration and gene copies. It is suggested, based on previous experience and findings, that locations where there are sanitary/storm sewer crossovers be identified and mapped.

Table 4: 2018 Dry Weather Screening Sites with *E. coli* and BST 1000 or greater

Number	Site ID	Site Description	Date	2018 *E. coli* (CFU/100mL)	*Bacteriodes* human specific marker Arithmetric Average Gene Copies/100mL	2017 *E. coli* (CFU/100 mL)	2016 *E. coli* (CFU/100 mL)	Watershed	Community	Comments
1	G94A	Sines Drain/Beck Rd	8/15/2018	240	1565.47	987	97	Lower	Canton Township	
2	L51.B1	McKinstry Drain/Morton Taylor	8/15/2018	80	10226.67	NA	NA	Lower	Canton Township	very slow flow; new fence at culvert crossing
3	L51A	Fisher-Leng/Sheldon Rd	8/15/2018	40	4523.33	1396	14136	Lower	Canton Township	slight flow between footbridge and Sheldon Rd
4	L51B	McKinstry Drain/Van Born Rd	8/15/2018	80	1840.8	NA	NA	Lower	Van Buren Township	very slow flow; lots of nutrient load producing algal growth. In 2017, no sample- low water
5	L51B.3	McKinstry Drain/Sheldon Rd	8/15/2018	40	3445.6	NA	NA	Lower	Van Buren Township	Very slow and shallow flow present. In 2017, no sample- very low flow
6	D62.4	North Branch Tonquish	7/12/2018	1300	19352	2987	771	Middle	Plymouth City	Sanitary sewer crossing under Burroughs checked- no leakage noted
7	D62A/OF9	North Branch Tonquish/Ford St	7/12/2018	20	5270.67	771	NA	Middle	Plymouth City	Sample collected at an outfall under crossing. Steady flow present.
8	U14.2	Barlow Drain Outfall	7/12/2018	1800	NA	1043	NA	Upper	Livonia	Manhole sample. Manhole is located in a park. Trickle flow. Enough water for 1/2 a sample
9	U14.5	Bakewell Drain	7/12/2018	1300	786.67	1017	NA	Upper	Livonia	Slow/minimal flow

Task 2 IDEP Training

Two IDEP Investigator training workshops were presented in 2018. The Investigator training workshop is a half-day session that includes a group problem solving exercise. The first of the two worrkshops was hosted by the City of Rochester Hills, who arranged for the training venue at Van Hoosen Farm Calf Barn, City of Rochester. The training workshop was held on April 12, 2018 with 56 persons attending. The workshop received positive reviews and the majority of attendees stating that the workshop was worthwhile and informative. Forty-one of the 56 (73 percent) of the attendees were representatives of (or consultants representing) ARC member communities.

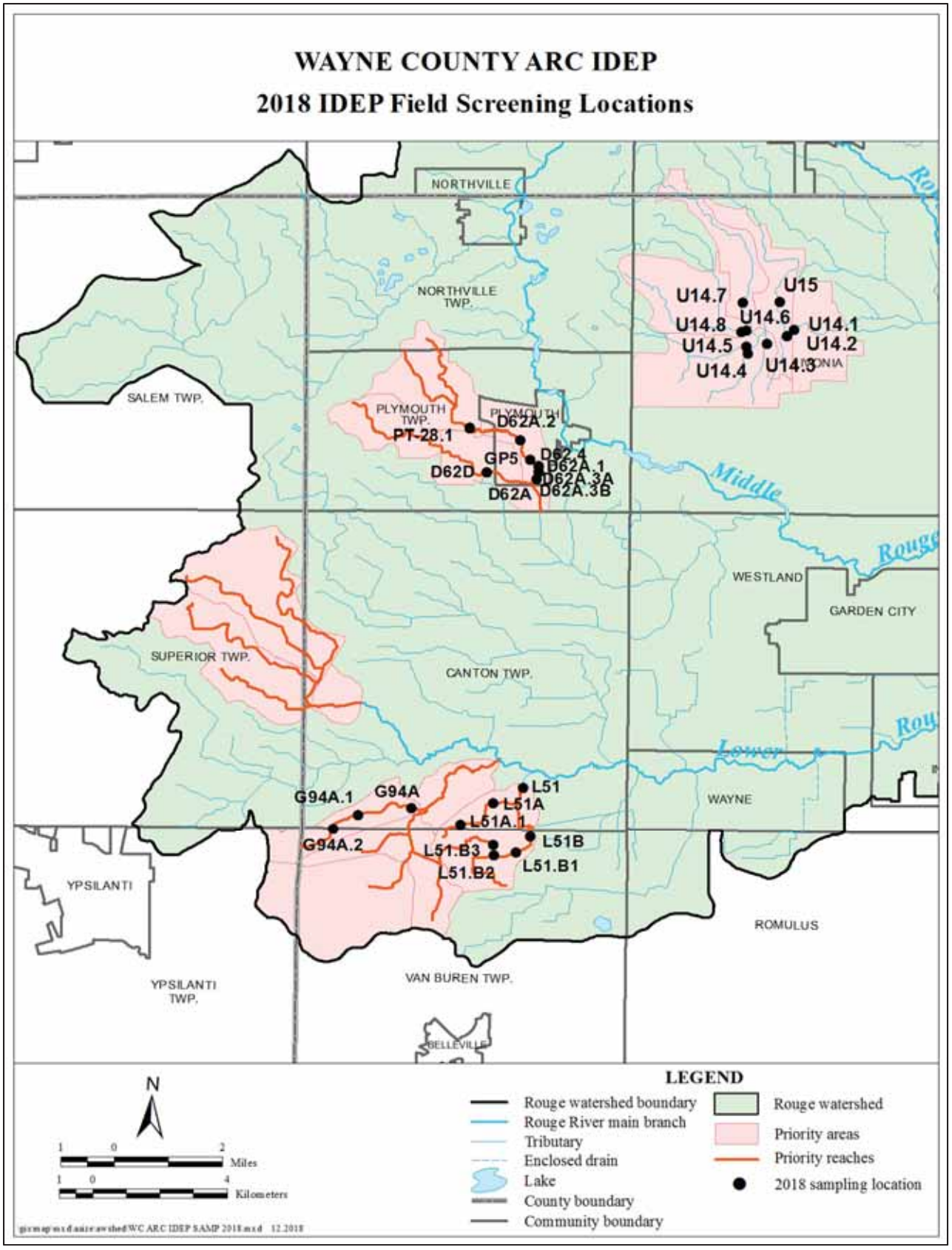
The Alliance of Rouge Communities (ARC) partnered with the Southeast Michigan Partners for Clean Water to present the 2nd IDEP Investigator training. The workshop was held on October 9, 2018 at Schoolcraft College VisTaTech Center in Livonia. Sixty-six people attended the workshop. Thirty-five of the 66 attendees (53 percent) were representatives from the ARC community membership.

Appendix C contains the attendance lists for both workshops.

Task 3 Reporting

Written progress summaries of IDEP activities were provided with each quarterly invoice. The 2017 IDEP Activities Summary was completed and the 2018 activities summary drafted.

Figure 4: 2018 Field Screening Sampling Locations



Appendix A
City of Plymouth Residential Dye Testing
Data Tables

CITY OF PLYMOUTH
RESIDENTIAL DYE TESTING
HARVEY STREET INVESTIGATION AREA

Number	Address	Homeowner	Phone Number	Date of Appt./Test	Time of Appt.	Description of plumbing in the home	Description of fixture	Time Dye In	Dye In By	Time Dye Out	Observed By	Location of Dye	Manhole Location
1	1061 Palmer	Jennifer		1/3/2018	9:00 AM	3 stacks							
						Basement: bath and laundry, 1st floor: half bath and kitchen, 2nd floor: 2 baths	First floor half bath toilet	9:02 AM	Adam	9:15 AM	Steve	Sanitary	Intersection of Harvey and Palmer
2	1128 Palmer	Nicole & Joseph	734-673-2593	1/4/2018	8:00 AM	1 stack							
						On crawl space: Bath, kitchen, and laundry	First floor bath toilet	8:23 AM	Adam	8:31 AM	Adam Mike	Sanitary	
3	1117 Palmer	Laurie	734-560-2282	1/4/2018	10:00 AM	1 main lead							
			734-674-6761			3 full baths, 1 half bath, kitchen, second floor laundry, utility at basement	First floor half bath toilet	10:03 AM	Adam	10:10 AM	Steve	Sanitary	
4	1048 Beech	Terry	734-673-3378	1/5/2018	8:00 AM	1 stack							
						Crawl space foundation: 2 full bath, kitchen, laundry	First floor full bath toilet	8:00 AM	Adam	8:20 AM	Steve Adam	Sanitary	Intersection of Harvey and Beech
5	1159 Beech	Shilpa	734-233-0961	1/9/2018	9:00 AM								
						Sanitary sump pump - basement bath, bar sink. 4 baths total, kitchen and laundry. Sanitary sewer lead 2' +/- off of basement floor.	First floor half bath toilet	9:36 AM	Adam	9:58 AM	Mike Dave	Storm	
6	1112 Palmer	Chris	None	1/19/2018	8:30 AM	1 stack							
						1 full bath, kitchen, laundry	First floor bath toilet	8:42 AM	Adam	8:45 AM	Mike	Sanitary	Mid block on Palmer
7	774 S. Harvey	Ben	989-763-3789	1/22/2018	9:00 AM								
						1 bath, kitchen, laundry in basement	First floor bath toilet	9:09 AM	Adam	9:13 AM	Steve	Sanitary	Mid block on Harvey between Beech and Carol
8	1004 Beech	Tina	734-404-5888	1/24/2018	7:30 AM	1 stack							
			734-334-0327			1 lead: 1 bath, kitchen, laundry, pump, 3 feet +/- off basement floor	First floor bath toilet	8:26 AM	Adam	8:39 AM	Steve	Sanitary	Intersection of Harvey and Palmer
9	1145 Palmer	Katie	734-620-0400	1/29/2018	8:30 AM	Original foundation and plumbing							
						4 baths, laundry at basement, kitchen	Basement bath toilet	8:35 AM	Adam	8:53 AM	Adam Mike	Sanitary	Mid block on Palmer
10	1062 Palmer	Jennifer	N/A	1/29/2018	N/A								
						Called number on "For Rent" sign at this property when completing above dye test. Onfirmed that the property was connected to the sanitary							
11	1127 Palmer	Adam	815-325-4290	2/2/2018	7:30 AM								

CITY OF PLYMOUTH
RESIDENTIAL DYE TESTING
HARVEY STREET INVESTIGATION AREA

						Kitchen, 2 full baths, 2 half baths	First floor half bath toilet	7:41 AM	Adam	8:58 AM	Mike	Sanitary	Mid block on Palmer
12	1043 Palmer	Clayton	734-254-9063	2/6/2018	2:00 PM								
						1 stack, Kitchen, 1 full bath, sewer at rear of house 3 ft +/- off floor	First floor bath toilet	2:27 PM	Adam	2:42 PM	Mike	Sanitary	Intersection of Palmer and Harvey
13	1002 Palmer	Amy	734-564-7710	4/5/2018	8:30 AM	This property was confirmed to be connected correctly with the replacement of the water meter							
14	1163 Palmer	NO RESPONSE				This property was not tested, but was confirmed to be connected to the sanitary with the correction of 1150 Palmer						Storm*	
15	765 McKinley	NO RESPONSE				This property was tested and verified with exterior cleanout to be located on McKinley. Not part of investigation area.							

*Note: This address was considered the second illicit connection found on Palmer Street

CITY OF PLYMOUTH
RESIDENTIAL DYE TESTING
MILL STREET INVESTIGATION AREA

Number	Address	Homeowner	Phone Number	Date of Appt./Test	Time of Appt.	Description of plumbing in the home	Description of fixture	Time Dye In	Dye In By	Time Dye Out	Observed By	Location of Dye	Manhole Location
1	261 N. Mill St	Tim Smith		4/3/2018	9:00 AM	undetermined # of stacks							
						Basement: 1/2 bath and laundry, 1st floor: full bath and kitchen, 2nd floor: 1 bath all stacked	Basement half bath toilet	9:14 AM	Sue	9:19 AM	Steve Dave	Sanitary	In front of 202 N. Mill St
2	202 N. Mill St	Dave Cirelli		4/3/2018	9:24 AM	1 stack							
						Basement: laundry, 1st floor: kitchen, 2nd floor: 1 bath all stacked	Bath toilet	9:24AM	Sue	9:27 AM	Steve	Sanitary	In front of 202 N. Mill St
3	100 Rose St	John Cumming		4/13/2018	10:00AM	one lead							
						apartment units; all tied to one lead that drains out to Rose St	Laundry Room utility sink	10:05AM	Sue	10:11AM	Steve	Sanitary	intersection of Mill/Rose
4	300 N. Mill St	Jerry (maintenance)		4/13/2018	walk up	undetermined # of stacks							
						3 apartment buildings; all connected on north end. Maintenance staff says the buildings drain to the center	Bath toilet Apartment #17	10:25AM	Sue	10:40AM	Steve	Sanitary	intersection of Mill/Rose
5	243 N. Mill St	Megan Centana		6/22/2018	9:55AM	undetermined # of stacks							
							1st floor bathroom toilet	9:55AM	Sue	9:59AM	Steve Nancy	Sanitary	intersection of Mill/Rose
6	315 N. Mill St	George Bergevin		6/22/2018	10:00AM	undetermined # of stacks							
						3 apartments in one building; all connected to the same discharge line	Basement laundry room sink	10:05AM	Sue	10:21AM	Steve Nancy	Sanitary	intersection of Mill/Rose
7	104 N. Mill St	Stephanie Merlo		6/28/2018	4:20PM	undetermined # of stacks							
		(Nadima Bibi Trust)				apartment unit in rear apartment building; plumbing stacked; connects to line on Union Street	Bathroom toilet	4:22PM	Sue	not seen			
							Bathroom toilet	4:35 PM	Sue	not seen			
							Bathroom toilet	4:55PM	Sue	5:11PM	Adam Mike	Sanitary	Intersection of Mill/Union

CITY OF PLYMOUTH
RESIDENTIAL DYE TESTING
MILL STREET INVESTIGATION AREA

Number	Address	Homeowner	Phone Number	Date of Appt./Test	Time of Appt.	Description of plumbing in the home	Description of fixture	Time Dye In	Dye In By	Time Dye Out	Observed By	Location of Dye	Manhole Location
8	201 N. Mill St	John/Rachel Kay		6/28/2018	4:00PM	one stack							
						groundwater sump in basement; sump discharges into laundry tub; fixtures stacked	Kitchen sink	4:06PM	Sue	4:12PM	Adam Mike	Sanitary	Intersection of Mill/Union
9	114 N. Mill St	Kelly		7/2/2018	1:00PM	2 stacks							
						laundry drains to 1 stack; upstairs plumbing goes to second stack	Kitchen sink	12:58PM	Sue	1:06PM	Mike Dave	Sanitary	Intersection of Mill/Union
							Laundry Room utility sink	1:04PM	Sue	1:14PM	Mike Dave	Sanitary	Intersection of Mill/Union
10	210 N. Mill St	Sara Wagner		7/2/2018	1:00PM	undetermined # of stacks							
							Bathroom toilet	1:21PM	Sue	1:28PM	Mike Dave	Sanitary	Intersection of Mill/Union
11	157 N. Mill St	John Rae		7/23/2018	2:30PM	undetermined # of stacks							
	Mill Manor Apts					3 apartment units in building; all units drain to a 4 inch pipe in center of building out to Amelia St side. Cleanout visible	Laundry Room utility sink	2:30PM	Sue	2:40PM	Steve Dave Nancy	Sanitary	Intersection of Mill/Amelia
12	150 N. Mill St	Phillip and Mary Ann Hartley		11/16/2018	9:00AM	2 stacks							
						laundry in basement drains to 1 stack; upstairs plumbing goes to second stack	Bathroom toilet	9:10AM	Sue	9:14AM	Nancy and Steve	Storm	Intersection of Mill/Amelia
13	140 N. Mill St	Phillip and Mary Ann Hartley		11/20/2018	4:00PM	one stack							
							Bathroom toilet	4:15PM	Mike	4:18PM	Nancy and Adam	Sanitary	Intersection of Mill/Amelia
14	254 N. Mill St	William Dunn		12/5/2018	1:30PM	two stacks at rear of house; both drain to one line							
							Bathroom toilet	1:45PM	Sue	1:50PM	Adam and Mike	Sanitary	Mill between Rose and Amelia
15	215 N. Mill St			12/5/2018	NA	one stack							
							Bathroom toilet	2:06PM	Sue	2:09PM	Adam and Mike	Sanitary	Mill between Rose and Amelia

Appendix B
2018 ARC IDEP Field Screening
Data Table

2018 WATER QUALITY DATA
ARC IDEP FIELD SCREENING

Number	Site ID	Site Description	Date	Time	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	Water Temperature (°C)	*E. coli* (CFU/100 mL)	*Bacteriodes* human specific marker Arithmetic Average Gene Copies/100mL	Dry Weather Flow Depth (in)	Watershed	Community	Water Clarity	Water Color	Odor	Visible Debris/Pollution	Precipitation	Comments
1	G94A	Sines Drain/Beck Rd	8/15/2018	8:40	NA	NA	NA	240	1565.47	4	Lower	Canton Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	
2	G94A.1	Sines Drain/Denton Rd	8/15/2018	8:51	NA	NA	NA	NA	NA	NA	Lower	Canton Township	NA	NA	NA	NA	None	No flow-stream is dry
3	G94A.2	Sines Drain/Mott Rd	8/15/2018	8:56	NA	NA	NA	NA	NA	NA	Lower	Canton Township	NA	NA	NA	NA	None	Standing water-no flow. Crossing dry on upstream side
4	L51.B1	McKinstry Drain/Morton Taylor	8/15/2018	10:10	NA	0.3833	NA	80	10226.67	12	Lower	Canton Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	very slow flow; new fence at culvert crossing
5	L51A	Fisher-Leng/Sheldon Rd	8/15/2018	9:30	NA	0.961	NA	40	4523.33	3	Lower	Canton Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	slight flow between footbridge and Sheldon Rd
6	L51A.1	Fisher-Leng Drain/Belleville Rd	8/15/2018	9:10	NA	0.634	NA	ND	951.87	2	Lower	Canton Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	Low water level, slight flow, phragmites present, paper and plastic trash on ditch line
7	L51	McKinstry Drain/Michigan Ave	8/15/2018	10:35	NA	0.836	NA	80	802.4	4	Lower	Van Buren Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	very slow flow; lots of nutrient load producing algal growth
8	L51.B2	McKinstry Drain/Sheldon Rd	8/15/2018	10:00	NA	0.897	NA	60	849.9	3	Lower	Van Buren Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	Very slow flow, small fish in deep pool under road crossing
9	L51B	McKinstry Drain/Van Born Rd	8/15/2018	10:20	NA	0.564	NA	80	1840.8	4	Lower	Van Buren Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	very slow flow; lots of nutrient load producing algal growth
10	L51B.3	McKinstry Drain/Sheldon Rd	8/15/2018	9:45	NA	0.3119	NA	40	3445.6	3	Lower	Van Buren Township	Highly Turbid	Light Brown	None/Natural	None	None	Very slow and shallpw flow present
11	D62.4	North Branch Tonquish Creek/Burroughs	7/12/2018	9:55	7.84	2.238	19.3	1300	19352	3	Middle	Plymouth City	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	Santiary sewer crossing under Burroughs checked-no leakage noted
12	D62A	North Branch Tonquish/Ford St	7/12/2018	9:00		0.913	17.4	20	5270.67	trickle	Middle	Plymouth City	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	Sample collected at an outfall under crossing. Steady flow present.
13	D62A.1	North Branch Tonquish/Hartsough	7/12/2018	9:25	7.69	2.24	19.1	20	NA	6	Middle	Plymouth City	Slightly Turbid	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	Sample collected instream.
14	D62A.2	North Branch Tonquish Creek/Harvey St	8/15/2018	11:20	NA	0.892	NA	ND	692.27	3	Middle	Plymouth City	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	small amount of tannin foam; good flow in creek. Small PVC outfall on right bank discharging at time
15	D62A.3A	North Branch Tonquish/Harsough	7/12/2018	9:35		1.954	17.3	120	503.47*	0.5	Middle	Plymouth City	Clear	Clear	Faint Musty	None	None	Outfall sampled on west side of Hartsough crossing. Lots of flow; musty odor
16	D62A.3B	North Branch Tonquish/Harsough	7/12/2018	9:30		2.775	18.3	ND	ND	1	Middle	Plymouth City	Clear	Clear	None/Natural	None	None	Outfall sampled on east side of Hartsough crossing
17	GP5	North Branch Tonquish Creek/Kellogg St outlet	8/15/2018	11:30	NA	0.819	NA	200	778.8	18	Middle	Plymouth City	Slightly Turbid	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	some small fish observed
18	D62D	South Branch Tonquish Creek/JoAnn	7/12/2018	8:45				20	747.33	4	Middle	Plymouth Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	Sample collected instream. An outfall in upstream crossing had trickle flow. Outfall is on north side
19	PT28.1	South Branch Tonquish Creek/Canton Center	8/15/2018	11:05	NA	0.541	NA	ND	ND	1	Middle	Plymouth Township	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	tannin foam in outfall discharge; outall on right bank had clear trickle flow.. Pedestrian told field
20	U14.1	Bell Creek/Farmington Rd	7/12/2018	10:55	5.55	2.073	19.6	700	637.2	18	Upper	Livonia	Clear	Clear	None/Natural	None	None	
21	U14.2	Barlow Drain Outfall	7/12/2018	11:10	NA	NA	NA	1800	NA	trickle	Upper	Livonia						Manhole sample. Manhole is located in a park. Trickle flow. Enough water for 1/2 a sample bottle
22	U14.3	Gates Drain/Amherst	7/12/2108	NA	NA	NA	NA	NA	NA	NA	Upper	Livonia	NA	NA	NA	NA	None	Open drain- no flow and stream dry to bed
23	U14.4	LD-11 Extension North of Five Mile East of	7/12/2018	11:25	1.41	1.122	17.7	20	637.2	24	Upper	Livonia	Moderately Turbid	Clear	None/natural	None	None	Green frogs present
24	U14.5	Bakewell Drain	7/12/2018	11:45	4.74	2.718	19.3	1300	786.67	24	Upper	Livonia	Highly Turbid	Clear	None/Natural	None	None	Slow/minimal flow
25	U14.6	Bell Creek/Oakdale	7/12/2018	12:50	3.91	2.378	21	340	NA	12	Upper	Livonia	Clear	Clear	None/Natural	Natural (leaves, limbs, weeds)	None	

2018 WATER QUALITY DATA
ARC IDEP FIELD SCREENING

Number	Site ID	Site Description	Date	Time	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	Water Temperature (°C)	*E. coli* (CFU/100 mL)	*Bacteriodes* human specific marker Arithmetric Average Gene Copies/100mL	Dry Weather Flow Depth (in)	Watershed	Community	Water Clarity	Water Color	Odor	Visible Debris/Pollution	Precipitation	Comments
26	U14.7	Bell Creek/Six Mile	7/12/2018	12:35	9.42	2.774	21.8	420	NA	4	Upper	Livonia	Clear	Clear	None/Natural	None	None	
27	U14.8	Bell Creek/Ronnie	7/12/2018	13:10	5.31	1.294	18.8	360	NA	3	Upper	Livonia	Clear	Clear	None/Natural	None	None	
28	U15	Beitz/Six Mile	7/12/2018	12:40	7.14	1.259	17.6	20	NA	12	Upper	Livonia	Clear	Clear	None/Natural	None	None	

*1/3 of replicate copies positive, which indicates a very low level of contamination
ND: Non-detect
NA: Not applicable

Appendix C
2018 Partners for Clean Water Regional IDEP Training Workshop Attendees List

ALLIANCE OF ROUGE COMMUNITIES (ARC)
IDEP TRAINING WORKSHOP ATTENDANCE
ROCHESTER, MI
APRIL 12, 2018

Last Name	First Name	Affilitation	Phone Number	E-mail	Address	City	State	ZIP
Mc Carty	Mark	Oakland Co. Water Resources Commission	(248) 858-1105	sellersm@oakgov.com	1 Public Works Drive	Waterford	MI	48328
Wittke	Tom	Oakland Co. Water Resources Commission	(248) 858-1105	sellersm@oakgov.com	1 Public Works Drive	Waterford	MI	48328
Ignash	Mike	Oakland Co. Water Resources Commission	(248) 858-1105	sellersm@oakgov.com	1 Public Works Drive	Waterford	MI	48328
Roberts	Pat	Oakland Co. Water Resources Commission	(248) 858-1105	sellersm@oakgov.com	1 Public Works Drive	Waterford	MI	48328
Miller	Scott	Washtenaw County Water Resources Comm.	(734) 222-6833	millers@ewashtenaw.org	705 N. Zeeb Road	Ann Arbor	MI	48103
Matthews	Barb	Hubbell, Roth & Clark, Inc.	(248) 285-0218	bmatthews@hrcengr.com	555 Hulet Drive	Bloomfield Hills	MI	48302
Anderson	Kyle	Hubbell, Roth & Clark, Inc.	(248) 285-0218	bmatthews@hrcengr.com	555 Hulet Drive	Bloomfield Hills	MI	48302
Kohn	Joel	Oakland Co. Water Resources Commission	(248) 858-5565	kohnj@oakgov.com	1 Public Works Drive, Bldg. "95W"	Waterford	MI	48328
Fadoir	Ron	Oakland Co. Water Resources Commission	(248) 858-5565	fadoirr@oakgov.com	1 Public Works Drive, Bldg. "95W"	Waterford	MI	48328
Belair	Robert	Charter Twp. of Canton	(734) 394-5284	bob.belair@canton-mi.org	4847 Sheldon Road S.	Canton	MI	48188
Trella	Dean	Washtenaw County Road Commission	(734) 327-6685	trellad@wcroads.org	555 N. Zeeb	Ann Arbor	MI	48103
McGregor	Craig	Washtenaw County Road Commission	(734) 327-6685	trellad@wcroads.org	555 N. Zeeb	Ann Arbor	MI	48103
Campbell	Scott	Farmington Hills - Engineering Inspector	(248) 871-2560	scampbell@fhgov.com	31555 W. 11 Mile Road	Farmington Hills	MI	48336
Keller	Christopher	City of Farmington	(248) 473-7250	jleach@farmgov.com	33720 W. 9 Mile Road	Farmington	MI	48335
Wilson	John	City of Farmington	(248) 473-7250	jleach@farmgov.com	33720 W. 9 Mile Road	Farmington	MI	48335
Guibord	Christopher	City of Farmington	(248) 473-7250	jleach@farmgov.com	33720 W. 9 Mile Road	Farmington	MI	48335
Kozlowski	Alex	West Bloomfield Township	(248) 451-4818	akozlowski@wbtownship.org	4550 Walnut Lake Road	West Bloomfield	MI	48323
Beattie	George	West Bloomfield Township	(248) 451-4816	gbeattie@wbtownship.org	4550 Walnut Lake Road	West Bloomfield	MI	48325
Ryan	Jason	City of Livonia - Public Service Department	(734) 466-2715	pappel@ci.livonia.mi.us	12953 Farmington Road	Livonia	MI	48150
Shewcradt	Darrell	City of Livonia - Public Service Department	(734) 466-2715	pappel@ci.livonia.mi.us	12953 Farmington Road	Livonia	MI	48150
Szwejkowski	Lindsay	City of Livonia - Public Service Department	(734) 466-2715	pappel@ci.livonia.mi.us	12953 Farmington Road	Livonia	MI	48150
Buchholz-Lewis	Kim	City of Livonia - Public Service Department	(734) 466-2715	pappel@ci.livonia.mi.us	12953 Farmington Road	Livonia	MI	48150
Thomson	Brian	Northville Township	(248) 662-0482	bthomson@twp.northville.mi.us	44405 Six Mile Road	Northville	MI	48168
Nicoloff	Corey	Northville Township	(248) 662-0482	cnicoloff@twp.northville.mi.us	44405 Six Mile Road	Northville	MI	48168
Villalobos	Brenden	Northville Township	(248) 662-0482	bvillalobos@twp.northville.mi.us	44405 Six Mile Road	Northville	MI	48168
Swailes	Timothy	Northville Township	(248) 662-0482	tswailes@twp.northville.mi.us	44405 Six Mile Road	Northville	MI	48168
Carruthers	Scott	City of Troy - Street and Drains Operations	(248) 524-3501	scott.carruthers@troymi.gov	4693 Rochester Road	Troy	MI	48085
Sackner	Mike	City of Troy - Street and Drains Operations	(248) 524-3501	scott.carruthers@troymi.gov	4693 Rochester Road	Troy	MI	48085
Farnum	Troy	City of Troy - Street and Drains Operations	(248) 524-3501	scott.carruthers@troymi.gov	4693 Rochester Road	Troy	MI	48085
Scholten	James	Plymouth Township - Department of Public Works	(734) 564-2853	dhamann@plymouthtwp.org	46555 Port Street	Plymouth Township	MI	48170
Nelson	David	Plymouth Township - Department of Public Works	(734) 564-2853	dhamann@plymouthtwp.org	46555 Port Street	Plymouth Township	MI	48170
Pyle	Greg	Charter Twp. of Canton	(734) 397-1011	gpyle@canton-mi.org	4847 Sheldon Road S.	Canton	MI	48188
Carpenter	Jennifer	Commerce Township - (KER Engineering, Inc.)	(248) 960-7060	jcarpenter@commercetwp.com	2009 Township Drive	Commerce	MI	48390
Stahly	Aaron	City of Auburn Hills - Department of Public Works	(248) 364-6933	astahly@auburnshill.org	1500 Brown Road	Auburn Hills	MI	48326
Deman	Jason	City of Auburn Hills - Department of Public Works	(248) 364-6910	jdeman@auburnhills.org	1500 Brown Road	Auburn Hills	MI	48326
Whitten	Tim	City of Walled Lake	(248) 624-4847	publicservices@walledlake.com	1499 E. West Maple Road	Walled Lake	MI	48390
Streeter	Dave	Washtenaw County Water Resources Comm.	(734) 222-3850	streeterd@ewashtenaw.org	705 N. Zeeb Road, P. O. Box 8645	Ann Arbor	MI	48107
Gurley	Jeff	City of Marysville	(810) 364-8340	khohf@cityofmarysvillemi.com	200 E. 14th Street	Marysville	MI	48040
Eisen	Ann	City of Marysville	(810) 364-8340	khohf@cityofmarysvillemi.com	200 E. 14th Street	Marysville	MI	48040

ALLIANCE OF ROUGE COMMUNITIES (ARC)
IDEP TRAINING WORKSHOP ATTENDANCE
ROCHESTER, MI
APRIL 12, 2018

Last Name	First Name	Affilitation	Phone Number	E-mail	Address	City	State	ZIP
Kennedy	Corey	Waterford Township - Department of Public Works	(248) 618-7456	hcardenas@waterfordmi.gov	5245 Civic Center Drive	Waterford	MI	48329
Saffron	Kyle	Waterford Township - Department of Public Works	(248) 618-7456	hcardenas@waterfordmi.gov	5245 Civic Center Drive	Waterford	MI	48329
Solhelm	Shane	Waterford Township - Department of Public Works	(248) 618-7456	hcardenas@waterfordmi.gov	5245 Civic Center Drive	Waterford	MI	48329
Williams	Jim	City of Rochester - Department of Public Works	(248) 651-5165	jdickinson@rochestermi.org	1141 N. Wilcox	Rochester	MI	48307
Perry	Austin	City of Rochester - Department of Public Works	(248) 651-5165	jdickinson@rochestermi.org	1141 N. Wilcox	Rochester	MI	48307
Ahlgreen	Chris	City of Rochester - Department of Public Works	(248) 651-5165	jdickinson@rochestermi.org	1141 N. Wilcox	Rochester	MI	48307
Pollizzi	Tim	City of Rochester Hills - Water Resources	(248) 656-4600	pollizzit@rochesterhills.org	1000 Rochester Hills Dr.	Rochester Hills	MI	48309
Durham	Jason	Independence Township - Department of Public Works	(248) 625-8222	dziegler@indtwp.com	6050 Flemings Lake Road	Clarkston	MI	48346
Hagerman	Steve	Independence Township - Department of Public Works	(248) 625-8222	dziegler@indtwp.com	6050 Flemings Lake Road	Clarkston	MI	48346
Bristle	Mitch	City of Saline - Street/Water/Sewer Maintenance	(734) 4295624 X2612	rmarion@cityofsaline.org	100 N. Harris Street	Saline	MI	48176
Hatfield	James	City of Saline - Street/Water/Sewer Maintenance	(734) 4295624 X2612	rmarion@cityofsaline.org	100 N. Harris Street	Saline	MI	48176
Cox	Todd	Livingston County Drain Commissioner's Office	(517) 546-0040	tcox@livgov.com	2300 E. Grand River Ave., Ste. 105	Howell	MI	48843
Wilkins	Eric	Pittsfield Charter Township - Utilities	(734) 822-2106	weirichb@pittsfield-mi.gov	4467 Concourse Drive	Ann Arbor	MI	48108
Cobb	Dan	Pittsfield Charter Township - Utilities	(734) 822-2106	weirichb@pittsfield-mi.gov	4467 Concourse Drive	Ann Arbor	MI	48108
Pitts	Victor	Pittsfield Charter Township - Utilities	(734) 822-2106	weirichb@pittsfield-mi.gov	4467 Concourse Drive	Ann Arbor	MI	48108
Stone	Christopher	City of Westland-Department of Public Service	(734) 728-1770		37137 Marquette Rd	Westland	MI	48185
Sypniewski	Paul	City of Westland-Department of Public Service	(734) 728-1770		37137 Marquette Rd	Westland	MI	48185

Alliance of Rouge Community (ARC)

Registration for Illicit Discharge Elimination Program Investigator Training

Sign In — Illicit Discharge Elimination Program Investigator Training

Initials	Name	Organization	Email
	Noah Alessi	Oakland County Parks And Recreation	Brokenshawb@oakgov.com
	Ashley Allen	Hubbell, Roth & Clark	aallen@hrcengr.com
	Mike Allen	City of St. Clair Shores	kleina@scsmi.net
	Paulina Appel	City of Livonia	pappel@ci.livonia.mi.us
	Slava Atkins-Dovbenko	Oakland County Parks And Recreation	mackeys@oakgov.com
	Mike Baker	Oakland Count Water Resource Commissioners Office	bakerm@oakgov.com
	Nic Chapman	Oakland Count Water Resource Commissioners Office	chapmann@oakgov.com
	David Conklin	City of St. Clair Shores	conklind@scsmi.net
	Andrew Cox	Macomb County	andrew.cox@macombgov.org
	Mike Daniels	City of Westland	mdaniels@cityofwestland.com
	Monica Daniels	City of Detroit	danielsm@detroitmi.gov
	Steve Dendler	Oakland County Parks And Recreation	denlers@oakgov.com
	Marcuz Dilbert	Village Of New Haven	dkettlewellvnhdpw@comcast.net
	Michael Dittmar	City of Westland	mdittmar@cityofwestland.com
	Trish Dotson	City of Livonia	tdotson@ci.livonia.mi.us
	Travis Early	City of Romulus	tearly@romulusgov.com
	Zach Ernie	City of St. Clair Shores	kleina@scsmi.net
	Phil Ferro	City of Southgate	pferro@ci.southgate.mi.us
	Mathew Fiems	Wayne County	mfiems@waynecounty.com
	Brent Florek	Grosse Ile Township	bflorek@charlesraines.com
	Greg Flynn	Charter Township Of West Bloomfield	gflynn@wbtownship.org
	Jon Frazho	City of St. Clair Shores	kleina@scsmi.net
	Mark F. Gaworecki	Hennessey Engineers, Inc.	mfgaworecki@hengineers.com
	Devin Harris	West Bloomfield Water Utilities Department	dharris@wbtownship.org
	Katherine Hartman	Charter Township Of West Bloomfield	kat.a.hartman@gmail.com
	Nicole Harvey	City of Romulus	nharvey@romulusgov.com
	James D. Hollandsworth	Hennessey Engineers, Inc.	jdhollandsworth457@gmail.com
	Patrick Horvath	City of Livonia	tdotson@ci.livonia.mi.us
	Scott David Hungerford	Charter Township Of West Bloomfield	s_hungerford@wbtownship.org
	Chris Iadonisi	City of Livonia	tdotson@ci.livonia.mi.us
	Joe Jenkins	City of Wyandotte	jjenkins@wyandottemi.gov
	Joel Joslin	Oakland County Parks And Recreation	pardyk@oakgov.com
	Russ Kennedy	City of Westland	
	Joe Ketchum	Charter Township Of West Bloomfield	jketchum@wbparks.org

Registration for Illicit Discharge Elimination Program Investigator Training

Bonnie Krauss	Charter Township Of Washington	kraussb@washingtontwpmi.org
John LaBeau	City of Livonia	tdotson@ci.livonia.mi.us
David W. Lear, P.E.	City of Livonia	dlear@ci.livonia.mi.us
Mike Lewis	City of Livonia	tdotson@ci.livonia.mi.us
Tim Lovelady	City of Livonia	tdotson@ci.livonia.mi.us
Andrew Madry	City of St. Clair Shores	kleina@scsmi.net
Bill Martin	MNC Ltd	mnc@mncl.ca
Brian Martin	City of Wyandotte	bmartin@wyandottemi.gov
Robert Merinsky	Charter Township Of Waterford	rmerinsky@waterfordmi.gov
Scott Miller	Washtenaw County	millers@washtenaw.org
Luke Murchie	Oakland County Parks And Recreation	murchiel@oakgov.com
James Pigott	Henry Ford College	jpigott@hfcc.edu
Craig Plank	City of Romulus	kritter@romulusgov.com
Gregory Pudelek	Henry Ford College	gjpudelek@hfcc.edu
David Raftery	Charter Township Of Orion	draftery@oriontownship.org
Michael Reamer	West Bloomfield Water Utilities	mreamer@wbtownship.org
Mike Rogers	Oakland Count Water Resource Commissioners Office	rogersmw@oakgov.com
Shane Rudolph	City of Rochester Hills	rudolphs@rochesterhills.org
Sermed Saif	Tri-County Engineering Consultants	SSaif@Tri-CountyEng.com
Kathleen Sexton	Clinton River Watershed Council	kathleen@crwc.org
Andrew Stone	Village of Wolverine Lake	dpw@wolverinelake.com
Christopher Stone	City of Westland	cstone@cityofwestland.com
Bob Tarabula	City of Southgate	btarabula@ci.southgate.mi.us
Lisa Vanella	Oakland County Parks And Recreation	vanellal@oakgov.com
Jimmy Ward, II	Oakland County Parks And Recreation	jimmyward925@gmail.com
Arthur Wenzel	Village Of South Rockwood	
Franklin Wenzel	Village Of South Rockwood	fwenzel@villageofsouthrockwoodm
Michael Wieczorek	Henry Ford College	mpwieczorek@hfcc.edu
Wendy Wilson	Macomb County	wendy.wilson@macombgov.org
Sheldon Wood	City of St. Clair Shores	kleina@scsmi.net

Total Registrants **66** **Total Quantity**

ARC Member Community

Appendix D
Dry Weather Screening Field Forms

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 6/12/18

Time: 0845 Military

Site ID#: D62D

Location: S. Branch Tonquish @ Ann

Field Crew: ST NG

Ambient Temp.: 70 Dry Weather Flow Depth: ~~4"~~ 4" in stream

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: D62D Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): _____

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): 20

(TSS) 242.38

Total coliforms (MPN): _____

:30 Geometric Mean 45M Average Colonies 100ml

General Remarks: outfall in culvert - northside - trickle

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	X
Foam	
Trash:	
Floating	Fixed
Sewage Solids:	
Floating	Fixed
Floating Green Scum	

Natural ✓ (leaves, limbs, weeds)

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 0900 Military

Site ID#: D62A

Location: N. Branch Tonquish @ Ford St OUTFALL

Field Crew: ST NG

Ambient Temp.: 70 Dry Weather Flow Depth: trickle - outfall

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: D62A Dissolved Oxygen (mg/L) _____

Water Temperature (°C): 17.4 Conductivity (*m*S/cm): 0.913

From the lab

Total Suspended Solids (mg/L): _____ (TSS) *E. coli* (MPN): 20

Bacteroides HSM Genes/100 mL 522067 Total coliforms (MPN): _____

General Remarks: _____

Water Clarity

Clear	X
Slightly Turbid	____
Moderately Turbid	____
Highly Turbid	____
Opaque	____

Odor

None/Natural	X
Musty:	
Faint____ Strong____	
Sewage/Fishery	
Faint____ Strong____	
Anaerobic/Septic	
Faint____ Strong____	

Water Color

Clear	X	Brown:	____
Green	____	Light	____
Gray	____	Medium	____
Black	____	Dark	____
Milky/White	____		

Visible Debris/Obvious Pollution

None	X	Natural	X
Foam	____	(leaves, limbs, weeds)	
Trash:			
Floating	____	Fixed	____
Sewage Solids:			
Floating	____	Fixed	____
Floating Green Scum	____		

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 925 Military

Site ID#: D62A.1

Location: Hartsaugh - instream

Field Crew: STNG

Ambient Temp.: 70 Dry Weather Flow Depth: 6" in stream

Weather: Sunny

Rain yesterday: No Amount: Rain Today: No Amount:

Sample ID: D62A.1 Dissolved Oxygen (mg/L) 7.69

Water Temperature (°C): 19.1 Conductivity (*m*S/cm): 2.249

From the lab

Total Suspended Solids (mg/L): (TSS) *E. coli* (MPN): 20

Total coliforms (MPN):

General Remarks:

Water Clarity

Clear	
Slightly Turbid	X
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	X	Natural	X
Foam		(leaves, limbs, weeds)	
Trash:			
Floating		Fixed	
Sewage Solids:			
Floating		Fixed	
Floating Green Scum			

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 930 Military

Site ID#: D62A.3B

Location: Hartsough - outfall East

Field Crew: STNG

Ambient Temp.: 70 Dry Weather Flow Depth: 1"

Weather: Sunny

Rain yesterday: NO Amount: _____ Rain Today: NO Amount: _____

Sample ID: D62A.3B Dissolved Oxygen (mg/L) _____

Water Temperature (°C): 18.3 Conductivity (*m*S/cm): 2.775

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): NO

(TSS)

NO

BACTERIODES HSM GENE COPIES/100ML Total coliforms (MPN): _____

General Remarks: Vigorous Flow

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	X
Foam	
Trash:	
Floating	Fixed
Sewage Solids:	
Floating	Fixed
Floating Green Scum	

Natural _____
(leaves, limbs, weeds)

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 935 Military

Site ID#: D62A.3A

Location: Hartsough - outfall west

Field Crew: ST NG

Ambient Temp.: 70 Dry Weather Flow Depth: 1/2"

Weather: Sunny

Rain yesterday: NO Amount: _____ Rain Today: NO Amount: _____

Sample ID: D62A.3A Dissolved Oxygen (mg/L) _____

Water Temperature (°C): ~~17.3~~ 17.3 Conductivity (*m*S/cm): 1.954

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): 120

(TSS) 503.47

Bacteriodes Avg Gene Copies/100ml Total coliforms (MPN): _____

General Remarks: Viscous flow - musty odor

Water Clarity

Clear	X
Slightly Turbid	____
Moderately Turbid	____
Highly Turbid	____
Opaque	____

Water Color

Clear	X	Brown:	____
Green	____	Light	____
Gray	____	Medium	____
Black	____	Dark	____
Milky/White	____		

Odor

None/Natural	____
Musty:	
Faint	X
Strong	____
Sewage/Fishery	
Faint	____
Strong	____
Anaerobic/Septic	
Faint	____
Strong	____

Visible Debris/Obvious Pollution

None	X	Natural	____
Foam	____	(leaves, limbs, weeds)	
Trash:			
Floating	____	Fixed	____
Sewage Solids:			
Floating	____	Fixed	____
Floating Green Scum	____		

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 955 Military

Site ID#: D62.4

Location: Burroughs - Upstream

Field Crew: STNG

Ambient Temp.: 70 Dry Weather Flow Depth: 3"

Weather: Sunny

Rain yesterday: NO Amount: Rain Today: NO Amount:

Sample ID: D62.4 Dissolved Oxygen (mg/L) 7.84

Water Temperature (°C): 19.3 Conductivity (*m*S/cm): ~~7.84~~ 2.238

From the lab

Total Suspended Solids (mg/L): (TSS) *E. coli* (MPN): 1300

Human Marker Bacteriodes AA Gene Copies/100ml 19352 Total coliforms (MPN):

General Remarks: Sanitary under Burroughs is good - no leaking.

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Odor

None/Natural X

Musty:
Faint_____ Strong_____

Sewage/Fishery
Faint_____ Strong_____

Anaerobic/Septic
Faint_____ Strong_____

Visible Debris/Obvious Pollution

None X Natural X (leaves, limbs, weeds)

Foam ____

Trash:
Floating _____ Fixed _____

Sewage Solids:
Floating _____ Fixed _____

Floating Green Scum ____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1055 Military

Site ID#: 014.1

Location: Bell Creek @ Farmington Rd

Field Crew: ST NG

Ambient Temp.: 75 Dry Weather Flow Depth: 18" instream

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: 014.1 Dissolved Oxygen (mg/L) 5.55

Water Temperature (°C): 19.6 Conductivity (*m*S/cm): ~~5.55~~ 2.073

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): 200
(TSS)

BACTERIODES Gene Copies/rxn 632.2 Total coliforms (MPN): _____

General Remarks: _____

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural X

Musty:
Faint ____ Strong ____

Sewage/Fishery
Faint ____ Strong ____

Anaerobic/Septic
Faint ____ Strong ____

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None X Natural X
(leaves, limbs, weeds)

Foam ____

Trash:
Floating ____ Fixed ____

Sewage Solids:
Floating ____ Fixed ____

Floating Green Scum ____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1110 Military

Site ID#: U14.2

Location: Barlow Drain in Park manhole

Field Crew: STNG

Ambient Temp.: 80 Dry Weather Flow Depth: trickle

Weather: Sunny

Rain yesterday: NO Amount: _____ Rain Today: NO Amount: _____

Sample ID: U14.2 Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): _____

From the lab

Total Suspended Solids (mg/L): _____ (TSS) *E. coli* (MPN): 1800

Total coliforms (MPN): _____

General Remarks: E coli only 1/2 bottle.

Water Clarity

Clear	____
Slightly Turbid	____
Moderately Turbid	____
Highly Turbid	____
Opaque	____

Odor

None/Natural	____
Musty:	
Faint____ Strong____	
Sewage/Fishery	
Faint____ Strong____	
Anaerobic/Septic	
Faint____ Strong____	

Water Color

Clear ____	Brown: ____
Green ____	Light ____
Gray ____	Medium ____
Black ____	Dark ____
Milky/White ____	

Visible Debris/Obvious Pollution

None ____	Natural ____
Foam ____	(leaves, limbs, weeds)
Trash:	
Floating ____	Fixed ____
Sewage Solids:	
Floating ____	Fixed ____
Floating Green Scum ____	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1125 Military

Site ID#: U14.4

Location: LD-11 Extension

Field Crew: ST NG

Ambient Temp.: 80 Dry Weather Flow Depth: 24? Instream

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: U14.4 Dissolved Oxygen (mg/L) 1.41

Water Temperature (°C): 17.7 Conductivity (*m*S/cm): 1.122

From the lab

Total Suspended Solids (mg/L): _____ (TSS) *E. coli* (MPN): 20

Bacteroides Human Specific Marker 632.2 Ave Gene Copies/100ml Total coliforms (MPN): _____

General Remarks: Green frog talking to us

Water Clarity

Clear	____
Slightly Turbid	____
Moderately Turbid	X
Highly Turbid	____
Opaque	____

Odor

None/Natural	X
Musty:	
Faint____ Strong____	
Sewage/Fishery	
Faint____ Strong____	
Anaerobic/Septic	
Faint____ Strong____	

Water Color

Clear X	Brown: ____
Green ____	Light ____
Gray ____	Medium ____
Black ____	Dark ____
Milky/White ____	

Visible Debris/Obvious Pollution

None ____	Natural X (leaves, limbs, weeds)
Foam ____	
Trash:	
Floating ____	Fixed ____
Sewage Solids:	
Floating ____	Fixed ____
Floating Green Scum ____	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1145 Military

Site ID#: 014.5

Location: Bakewell @ Ellen Drive

Field Crew: ST NS

Ambient Temp.: 80 Dry Weather Flow Depth: 24" INStream

Weather:

Rain yesterday: No Amount: Rain Today: No Amount:

Sample ID: 014.5 Dissolved Oxygen (mg/L) 4.74

Water Temperature (°C): 19.3 Conductivity (*m*S/cm): 2.718

From the lab

Total Suspended Solids (mg/L): (TSS) *E. coli* (MPN): 1300

Enterococcus HSM Gene Copies/100mL 7866.7 Total coliforms (MPN):

General Remarks: Slow/minimal flow

Water Clarity

Clear	
Slightly Turbid	
Moderately Turbid	
Highly Turbid	X
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	Natural X
Foam	(leaves, limbs, weeds)
Trash:	
Floating ____	Fixed ____
Sewage Solids:	
Floating ____	Fixed ____
Floating Green Scum	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1220 Military

Site ID#: 015

Location: Beitz Drain @ 6 mile

Field Crew: STNG

Ambient Temp.: 80 Dry Weather Flow Depth: 12" in Stream

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: 015 Dissolved Oxygen (mg/L) 7.14

Water Temperature (°C): 17.6 Conductivity (*m*S/cm): 1.259

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): 20
(TSS)

Total coliforms (MPN): _____

General Remarks: _____

Water Clarity

Clear	X
Slightly Turbid	____
Moderately Turbid	____
Highly Turbid	____
Opaque	____

Odor

None/Natural X

Musty:
Faint____ Strong____

Sewage/Fishery
Faint____ Strong____

Anaerobic/Septic
Faint____ Strong____

Water Color

Clear	X	Brown:	____
Green	____	Light	____
Gray	____	Medium	____
Black	____	Dark	____
Milky/White	____		

Visible Debris/Obvious Pollution

None ____ Natural X
Foam ____ (leaves, limbs, weeds)
Trash:
Floating ____ Fixed ____
Sewage Solids:
Floating ____ Fixed ____
Floating Green Scum ____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1235 Military

Site ID#: UT. 7

Location: Bell @ 6 mile instream

Field Crew: STWG

Ambient Temp.: 80 Dry Weather Flow Depth: 4"

Weather: Sunny

Rain yesterday: No Amount: Rain Today: No Amount:

Sample ID: UT. 7 Dissolved Oxygen (mg/L) 9.42

Water Temperature (°C): 21.8 Conductivity (*m*S/cm): 2.774

From the lab

Total Suspended Solids (mg/L): (TSS) *E. coli* (MPN): 420

Total coliforms (MPN):

General Remarks:

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	X	Natural	//
Foam		(leaves, limbs, weeds)	
Trash:			
Floating		Fixed	
Sewage Solids:			
Floating		Fixed	
Floating Green Scum			

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1250 Military

Site ID#: UT4.6

Location: Bell @ Oakdale

Field Crew: STNG

Ambient Temp.: 80 Dry Weather Flow Depth: 12"

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: UT4.6 Dissolved Oxygen (mg/L) 3.91

Water Temperature (°C): 21.0 Conductivity (*m*S/cm): 2.378

From the lab
Total Suspended Solids (mg/L): _____ (TSS) *E. coli* (MPN): 340
Total coliforms (MPN): _____

General Remarks: behind # 16051 Riverside Dr.
red shutter house - easy access

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Visible Debris/Obvious Pollution

None	Natural X
Foam	(leaves, limbs, weeds)
Trash:	
Floating ____	Fixed ____
Sewage Solids:	
Floating ____	Fixed ____
Floating Green Scum ____	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 7/12/18

Time: 1310 Military

Site ID#: U14.8

Location: Bell & Ronnie (at Six Mile)

Field Crew: STNG

Ambient Temp.: 80 Dry Weather Flow Depth: 3" Instream

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: U14.8 Dissolved Oxygen (mg/L) 5.31

Water Temperature (°C): 18.8 Conductivity (*m*S/cm): 1.294

From the lab

Total Suspended Solids (mg/L): _____ (TSS) *E. coli* (MPN): 360

Total coliforms (MPN): _____

General Remarks: _____

Water Clarity

Clear	✓
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	✓
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	✓	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	Natural ✓
Foam	(leaves, limbs, weeds)
Trash:	
Floating	Fixed
Sewage Solids:	
Floating	Fixed
Floating Green Scum	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

No Sample - Dry

Date: 7/12/18

Time: N/A Military

Site ID#: 014.3

Location: Gates Drain @ Amherst

Field Crew: ST NG

Ambient Temp.: 80 Dry Weather Flow Depth: _____

Weather: Sunny

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: 014.3 Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): _____

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): _____
(TSS)

Total coliforms (MPN): _____

General Remarks: Dry - No Sample

Water Clarity

Clear ____
Slightly Turbid ____
Moderately Turbid ____
Highly Turbid ____
Opaque ____

Odor

None/Natural ____
Musty:
Faint____ Strong____
Sewage/Fishery
Faint____ Strong____
Anaerobic/Septic
Faint____ Strong____

Water Color

Clear ____ Brown: ____
Green ____ Light ____
Gray ____ Medium ____
Black ____ Dark ____
Milky/White ____

Visible Debris/Obvious Pollution

None ____ Natural ____
Foam ____ (leaves, limbs, weeds)
Trash:
Floating ____ Fixed ____
Sewage Solids:
Floating ____ Fixed ____
Floating Green Scum ____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18

Time: 840 Military

Site ID#: G94A

Location: Sines Dr @ Beck

Field Crew: ST NG

Ambient Temp.: 70°

Dry Weather Flow Depth: 4"

Weather: Overcast

Rain yesterday: No Amount: _____

Rain Today: No Amount: _____

Sample ID: G94A

Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____

Conductivity (*m*S/cm): _____

From the lab

Total Suspended Solids (mg/L): _____ (TSS)

E. coli (MPN): 240

Total coliforms (MPN): _____

General Remarks: _____

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	Natural X
Foam	(leaves, limbs, weeds)
Trash:	
Floating	Fixed
Sewage Solids:	
Floating	Fixed
Floating Green Scum	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

No Sample

SAW Water Sample Data 2015

Date: 8/15/18

Time: 851 Military

Site ID#: G94A.1

Location: Sines @ Denton

Field Crew: ST NG

Ambient Temp.: 70 Dry Weather Flow Depth: _____

Weather: Overcast

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: _____ Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): _____

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): _____
(TSS)

Total coliforms (MPN): _____

General Remarks: No flow - Stream is dry

Water Clarity

Clear ____
Slightly Turbid ____
Moderately Turbid ____
Highly Turbid ____
Opaque ____

Odor

None/Natural ____
Musty:
Faint____ Strong____
Sewage/Fishery
Faint____ Strong____
Anaerobic/Septic
Faint____ Strong____

Water Color

Clear ____ Brown: ____
Green ____ Light ____
Gray ____ Medium ____
Black ____ Dark ____
Milky/White ____

Visible Debris/Obvious Pollution

None ____ Natural ____
Foam ____ (leaves, limbs, weeds)
Trash:
Floating ____ Fixed ____
Sewage Solids:
Floating ____ Fixed ____
Floating Green Scum ____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

No Sample

SAW Water Sample Data 2015

Date: 8/15/18

Time: 856 Military

Site ID#: G94A.2

Location: Sines @ Mott

Field Crew: ST NG

Ambient Temp.: _____ Dry Weather Flow Depth: _____

Weather: _____

Rain yesterday: _____ Amount: _____ Rain Today: _____ Amount: _____

Sample ID: _____ Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): _____

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): _____
(TSS)

Total coliforms (MPN): _____

General Remarks: Standing water - No flow
dry on upstream side

Water Clarity

Clear _____
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural _____
Musty:
Faint_____ Strong_____
Sewage/Fishery
Faint_____ Strong_____
Anaerobic/Septic
Faint_____ Strong_____

Water Color

Clear ____ Brown: ____
Green ____ Light ____
Gray ____ Medium ____
Black ____ Dark ____
Milky/White ____

Visible Debris/Obvious Pollution

None ____ Natural _____
Foam ____ (leaves, limbs, weeds)
Trash:
Floating _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum ____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18

Time: 910 Military

Site ID#: L51A.1

Location: Fisher-Leng @ Belleville Rd

Field Crew: ST NG

Ambient Temp.: 70 Dry Weather Flow Depth: 3"

Weather: overcast

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: L51A.1 Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): 2.631

From the lab

Total Suspended Solids (mg/L): _____ (TSS) *E. coli* (MPN): ND

Total coliforms (MPN): _____

General Remarks: low water level, slight flow, phrags
Paper/plastic trash w/in ditch line

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None	Natural
Foam	(leaves, limbs, weeds)
Trash:	
Floating	Fixed
Sewage Solids:	
Floating	Fixed
Floating Green Scum	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18

Time: 930 Military

Site ID#: ~~LS1A~~ LS1A

Location: Fisher-Leng @ Sheldon

Field Crew: ST NG

Ambient Temp.: 70 Dry Weather Flow Depth: 3"

Weather: overcast

Rain yesterday: No Amount: ____ Rain Today: No Amount: ____

Sample ID: LS1.A Dissolved Oxygen (mg/L) ____

Water Temperature (°C): ____ Conductivity (*m*S/cm): 0.961

From the lab

Total Suspended Solids (mg/L): ____ (TSS) *E. coli* (MPN): 40

Total coliforms (MPN): ____

General Remarks: Slight flow btwn foot bridge & Sheldon.

Water Clarity

Clear	X
Slightly Turbid	____
Moderately Turbid	____
Highly Turbid	____
Opaque	____

Water Color

Clear	X	Brown:	____
Green	____	Light	____
Gray	____	Medium	____
Black	____	Dark	____
Milky/White	____		

Odor

None/Natural X

Musty:
Faint____ Strong____

Sewage/Fishery
Faint____ Strong____

Anaerobic/Septic
Faint____ Strong____

Visible Debris/Obvious Pollution

None X Natural ____ (leaves, limbs, weeds)

Foam ____

Trash:
Floating ____ Fixed ____

Sewage Solids:
Floating ____ Fixed ____

Floating Green Scum ____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18
Time: 945 Military

Site ID#: L51B3
Location: McKinstry Drain @ Sheldon South
Field Crew: STNs

Ambient Temp.: 75 Dry Weather Flow Depth: 3"

Weather: Overcast
Rain yesterday: No Amount: ____ Rain Today: No Amount: ____

Sample ID: L51B3 Dissolved Oxygen (mg/L) ____
Water Temperature (°C): ____ Conductivity (*m*S/cm): 0.3119

From the lab
Total Suspended Solids (mg/L): ____ *E. coli* (MPN): 40
(TSS)
Total coliforms (MPN): ____

General Remarks: Very slow flows, ditch line has flow, turbidity

Water Clarity

Clear	____
Slightly Turbid	____
Moderately Turbid	____
Highly Turbid	X
Opaque	____

Water Color

Clear	____	Brown:	____
Green	____	Light	X
Gray	____	Medium	____
Black	____	Dark	____
Milky/White	____		

Odor

None/Natural	X
Musty:	
Faint____ Strong____	
Sewage/Fishery	
Faint____ Strong____	
Anaerobic/Septic	
Faint____ Strong____	

Visible Debris/Obvious Pollution

None	X
Foam	____
Trash:	
Floating ____	Fixed ____
Sewage Solids:	
Floating ____	Fixed ____
Floating Green Scum	____
Natural (leaves, limbs, weeds)	____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18

Time: 1000 Military

Site ID#: L51.B2

Location: McKinstry Drain @ Sheldon North

Field Crew: STNG

Ambient Temp.: 75 Dry Weather Flow Depth: 3"

Weather: Overcast

Rain yesterday: No Amount: Rain Today: No Amount:

Sample ID: L51.B2 Dissolved Oxygen (mg/L):

Water Temperature (°C): Conductivity (*m*S/cm): 0.897

From the lab

Total Suspended Solids (mg/L): (TSS) *E. coli* (MPN): 60

Total coliforms (MPN):

General Remarks: Very slow flow, small fish under culvert

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	X
Opaque	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Odor

None/Natural X

Musty:
Faint Strong

Sewage/Fishery
Faint Strong

Anaerobic/Septic
Faint Strong

Visible Debris/Obvious Pollution

None X Natural X (leaves, limbs, weeds)

Foam

Trash:
Floating Fixed

Sewage Solids:
Floating Fixed

Floating Green Scum

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18

Time: 1010 Military

Site ID#: LS1.B1

Location: McKinstry Drain @ Morton Taylor

Field Crew: ST NG

Ambient Temp.: 75 Dry Weather Flow Depth: 12"

Weather: Overcast

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: LS1.B1 Dissolved Oxygen (mg/L): _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): 0.3333

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): 80
(TSS)

Total coliforms (MPN): _____

General Remarks: Very Slow Flow

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Odor

None/Natural X

Musty:
Faint_____ Strong_____

Sewage/Fishery
Faint_____ Strong_____

Anaerobic/Septic
Faint_____ Strong_____

Visible Debris/Obvious Pollution

None X Natural ✓
Foam _____ (leaves, limbs, weeds)
Trash:
Floating _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18

Time: 1020 Military

Site ID#: L513

Location: McKinstry Drain @ VanBorn

Field Crew: ST NG

Ambient Temp.: 75 Dry Weather Flow Depth: 4"

Weather: clear/cool

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: L-513 Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): 0.564

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): 80
(TSS)

Total coliforms (MPN): _____

General Remarks: Slow flow large amount of nutrient load algae.

Water Clarity

Clear	X
Slightly Turbid	____
Moderately Turbid	____
Highly Turbid	____
Opaque	____

Odor

None/Natural	X
Musty:	
Faint____ Strong____	
Sewage/Fishery	
Faint____ Strong____	
Anaerobic/Septic	
Faint____ Strong____	

Water Color

Clear	X	Brown:	____
Green	____	Light	____
Gray	____	Medium	____
Black	____	Dark	____
Milky/White	____		

Visible Debris/Obvious Pollution

None ____	Natural X
Foam ____	(leaves, limbs, weeds)
Trash:	
Floating ____	Fixed ____
Sewage Solids:	
Floating ____	Fixed ____
Floating Green Scum ____	

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18

Time: 1035 Military

Site ID#: L51

Location: McKinstry Drain @ Michigan Ave

Field Crew: ST NG

Ambient Temp.: 80 Dry Weather Flow Depth: 6"

Weather: Overcast

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: L51 Dissolved Oxygen (mg/L): _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): 0.836

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): 80
(TSS)

Total coliforms (MPN): _____

General Remarks: _____

Water Clarity

Clear	____
Slightly Turbid	____
Moderately Turbid	X
Highly Turbid	____
Opaque	____

Water Color

Clear	X	Brown:	____
Green	____	Light	____
Gray	____	Medium	____
Black	____	Dark	____
Milky/White	____		

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Visible Debris/Obvious Pollution

None	X
Natural (leaves, limbs, weeds)	____
Foam	____
Trash:	
Floating ____ Fixed ____	
Sewage Solids:	
Floating ____ Fixed ____	
Floating Green Scum	____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
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SAW Water Sample Data 2015

Date: 8/15/18

Time: 1105 Military

Site ID#: PT28.1 outfall (N.E. side)

Location: SB Tonquish Ck @ Carter Center

Field Crew: ST NG

Ambient Temp.: 80 Dry Weather Flow Depth: 1"

Weather: PT28.1

Rain yesterday: No Amount: _____ Rain Today: No Amount: _____

Sample ID: PT28.1 Dissolved Oxygen (mg/L) _____

Water Temperature (°C): _____ Conductivity (*m*S/cm): 0.341

From the lab

Total Suspended Solids (mg/L): _____ *E. coli* (MPN): NO
(TSS)

Total coliforms (MPN): _____

General Remarks: tannin foam from outfall
Other outfall had slight discharge

Water Clarity

Clear	X
Slightly Turbid	
Moderately Turbid	
Highly Turbid	
Opaque	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Odor

None/Natural X

Musty:
Faint_____ Strong_____

Sewage/Fishery
Faint_____ Strong_____

Anaerobic/Septic
Faint_____ Strong_____

Visible Debris/Obvious Pollution

None X Natural _____
Foam _____ (leaves, limbs, weeds)
Trash:
Floating _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18
Time: 1120 Military

Site ID#: D62A.2
Location: NB Tonquish Ck @ Harvey
Field Crew: ST NG

Ambient Temp.: 80 Dry Weather Flow Depth: 3"

Weather: overcast
Rain yesterday: No Amount: Rain Today: No Amount:

Sample ID: D62A.2 Dissolved Oxygen (mg/L):
Water Temperature (°C): Conductivity (*m*S/cm): 0.892

From the lab
Total Suspended Solids (mg/L): (TSS) *E. coli* (MPN): NO
Total coliforms (MPN):

General Remarks: good flow, Sm amount of tannin

Water Clarity
Clear X
Slightly Turbid
Moderately Turbid
Highly Turbid
Opaque

Odor
None/Natural X
Musty:
Faint Strong
Sewage/Fishery
Faint Strong
Anaerobic/Septic
Faint Strong

Water Color
Clear X
Green
Gray
Black
Milky/White
Brown:
Light
Medium
Dark

Visible Debris/Obvious Pollution
None Natural X
Foam (leaves, limbs, weeds)
Trash:
Floating Fixed
Sewage Solids:
Floating Fixed
Floating Green Scum

WAYNE COUNTY DEPARTMENT OF DEPARTMENT OF PUBLIC SERVICES
WATER QUALITY MANAGEMENT DIVISION

SAW Water Sample Data 2015

Date: 8/15/18
Time: 1130 Military

Site ID#: GP5
Location: Kellogg St. Outlet
Field Crew: ST NG

Ambient Temp.: 80 Dry Weather Flow Depth: 18 4

Weather: overcast

Rain yesterday: No Amount: Rain Today: No Amount:

Sample ID: GP5 Dissolved Oxygen (mg/L):

Water Temperature (°C): Conductivity (*m*S/cm): 0.319

From the lab
Total Suspended Solids (mg/L): (TSS) *E. coli* (MPN): 200
Total coliforms (MPN):

General Remarks: Slightly turbid
Some Small Fish observed

Water Clarity

Clear	X
Slightly Turbid	X
Moderately Turbid	
Highly Turbid	
Opaque	

Odor

None/Natural	X
Musty:	
Faint ____ Strong ____	
Sewage/Fishery	
Faint ____ Strong ____	
Anaerobic/Septic	
Faint ____ Strong ____	

Water Color

Clear	X	Brown:	
Green		Light	
Gray		Medium	
Black		Dark	
Milky/White			

Visible Debris/Obvious Pollution

None ____	Natural X (leaves, limbs, weeds)
Foam ____	
Trash:	
Floating ____	Fixed ____
Sewage Solids:	
Floating ____	Fixed ____
Floating Green Scum ____	

Appendix B2

2019 Wayne County IDEP Investigation Report

Wayne County Illicit Discharge Elimination Program
ARC IDEP Services 2019 Report

Executive Summary

Wayne County Department of Public Services Environmental Services Division (ESD) performed source identification advanced investigations in the Cities of Plymouth, Westland, and Livonia.

City of Plymouth
Four target areas in the City of Plymouth were investigated during 2019: Harvey Street, Mill/Park Street, Outfall 11/24, and Outfall PY8.

Harvey Street: After corrections were made to the illicit connections found on Palmer and Beech Streets the Harvey Street outfall was resampled several times by ESD. The *Escherichia coli* (*E. coli*) concentrations were reduced but still of concern. The laterals to the Harvey Street storm sewer line were resampled and based on this work, a section of storm sewer with elevated *E. coli* concentrations was discovered. The City of Plymouth plans to televise this storm sewer segment.

Mill/Park Area: During televising of utilities in the area performed by Consumer's Energy, three residences with illicit connections were identified. Two along Mill Street and a third from a residence on Amelia Street, which is tributary to the Mill Street storm sewer. There are a total of four residences with unresolved illicit connections identified in the Mill/Park Street investigation area.

Outfall 11/24: After corrections were made to the illicit connection found in the Outfall 24/Hartsough investigation area, the outfall was resampled by ESD. *E. coli* concentrations were reduced below investigation threshold levels. No further investigative action is needed at this time.

Outfall PY8: Elevated *E. coli* and physical evidence of a sewage discharge were identified at the outfall. ESD investigated and sampled the storm sewer system upstream of the outfall. The results were low, non-detect or not enough flow to sample. Based on these results televising of the PY8 storm sewer system by the City of Plymouth is planned.

City of Livonia
Two target areas in the City of Livonia were investigated during 2019: Outfall 411/Fargo Road and Bakewell Drain/Levan Road area.

Outfall 411/Fargo Road: Outfall 411 and six manholes up system were sampled. Eight samples (including samples from multiple inlets into the same manhole) were collected. None of the samples collected exceeded 500 CFU/100 mL *E. coli* and there was no visual evidence of illicit discharges observed. No further investigative action is recommended at this time.

Bakewell Drain/Levan Road: ESD performed dry weather screening of four priority outfalls in the City of Livonia and two additional outfalls that were discharging during dry weather at the time of investigation. Three of the outfalls had *E. coli* concentrations below investigation threshold levels and no further investigative action is recommended at this time. One outfall, tributary to the

Bakewell Drain, had elevated *E. coli.* Another Bakewell Drain outfall had suspicious staining. A third Bakewell Drain outfall, a 42-inch concrete pipe, was sampled and had elevated *E. coli* at the outfall and in the upstream storm sewer line. It is recommended that these outfalls/storm sewer lines receive further investigation.

City of Westland
ESD conducted a follow up investigation of an outfall in the City of Westland with a suspicious discharge that was discovered during the ARC's outfall survey. The outfall had some clear dry weather flow and there was a chalky-white discharge was evident on the streambank. The outfall should be revisited in 2020.

Task 1: Field Investigations
In addition to ESD's typical IDEP investigation methods, select samples were analyzed for the Human *Bacteroides* marker. The presence of the marker above 1,000 gene copies/100 mL is used as a threshold to indicate potential human source of bacteria present when correlated with elevated *E. coli*.

City of Plymouth
ESD coordinated with ARC staff and the City of Plymouth to continue investigations in residential areas in the Harvey Street and the Park Street municipal separate storm sewer systems (MS4). The Harvey Street MS4 is tributary to Byron Creek, the South Branch of Tonquish Creek. The Park Street MS4, where Mill Street drains, discharges to the Middle Branch of the Rouge River. Investigations were continued in the outfall 11/24 drainage area, and initiated in PY8 outfall drainage area. Both these outfalls discharge to the North branch Tonquish Creek.

Harvey Street Investigation Area
During 2017 and 2018, the City of Plymouth dye tested residences on Beech and Palmer streets within the Harvey Street investigation area. Illicit connections were discovered a three of the residences. The fourth residence, a dye test was not performed, but considered an illicit connection as the lead was directly across from the lead of a residence that had an illicit connection. These illicit connections were corrected in 2018. One-hundred percent of the targeted residences were investigated/dye tested. However, subsequent sampling at Harvey Street outfall in November 2018 revealed an *E. coli* concentration of 17,000 CFU/100 ml, which indicated that more illicit discharges may still be present in the system.

During 2019, ESD resampled the Harvey Street outfall and reinvestigated the laterals on the Harvey street storm sewer. The Harvey Street outfall was resampled three times in 2019. Although the *Escherichia coli* (*E. coli*) concentrations were reduced from 2018, they still ranged from 1,200 to 5,500 cfu/100 ml. In addition, low levels of *Bacteroides* were found in the outlet.

The storm sewer laterals of the Harvey Street line were resurveyed in August and September 2019 and the Jener Street lateral was found to have elevated *E. coli* concentrations; so this segment was further investigated in December 2019. The *E. coli* concentrations were much lower in the December samples, but physical signs (tissues and baby wipes) of illicit discharge were observed. The *Bacteroides* in the Jener/Linden Street storm sewer was fairly high indicating a human source

of *E. coli*. The *Bacteroides* level was much higher than the *E. coli* concentration, which may be an indication of past contamination.

Figure 1 details the investigations performed in the Harvey Street investigation area.

It is recommended that the City televise the Jener/Linden street storm sewer, and depending on the findings, additional investigations of the Harvey Street laterals and Jener Street may be necessary.

Park Street/Mill Street Investigation Area
During 2018 investigations on Mill Street, an illicit connection was identified at one residence, a residential duplex. One residence in the investigation area still needed dye testing. The City of Plymouth attempted to identify the property owner of the rental unit since multiple letters and a site visit did not obtain a response. Utility work performed on Mill Street by Consumers Energy in 2019 revealed information that assisted the City of Plymouth and ESD in their investigations. The televising confirmed that the address that was not dye tested in 2018 (189 N. Mill) appears properly connected to the sanitary line. Based on that finding, investigators determined that the dye testing was not necessary.

The utility company televising the storm sewers on Mill Street discovered an illicit connection at a triplex (195 S. Mill) near the Park Street/Mill Street intersection. This residence is just south of the area that the dye testing was performed, but still within the Park Street storm sewer drainage area. The utility company televising also revealed a single story residence (485 S. Mill Street) on the east side of Mill Street, south of Park Street, that is also connected into the storm sewer.

The televising also revealed suspect lines from two buildings that were already dye tested and from Mill Street under 100 Rose Street. In this vicinity, the property owner at 315 N. Mill Street is experiencing sewer issues. As a result, the City of Plymouth is conducting televising/sewer repair of the line under 100 Rose Street line to order to determine the extent of the line, and the City is verifying the sewer connection for 315 N. Mill Street.

There was another storm sewer on the west side of Mill Street (between Amelia and Rose Streets) identified during the televising. The west side storm sewer was built in the late 1800s and was not investigated by ESD during the IDEP investigations in recent years.

Utility televising further revealed that there is a high level overflow between the sanitary sewer and storm sewer at the intersection of Union and Mill Streets. It is at the highest point in the sanitary line, so it is unlikely that wastewater would overflow, but it could if the sanitary becomes surcharged.

Figure 1: Harvey Street Investigation Area


D62A-2
9-9-2019
DRY
9-9-2019
>1500
9-19-2019
NA
9-9-2019
45
12-12-2019
40
12-19-2019
20
9-9-2019
NA
9-9-2019
>1500
9-19-2019
17,000
12-12-2019
540
H8
9-9-2019
INLET 1067
120
12-19-2019
2100
LW1
9-9-2019
1200
9-9-2019
DRY
9-9-2019
10
9-9-2019
100
D62C-3
HBW1
D62C-2
9-9-2019
NA
HCW1
H6
8-13-2019
DRY
HSW1
H5
8-13-2019
DRY
INLETS
9-9-2019
55
9-9-2019
NA
HPW1
8-13-2019
90
8-13-2019
NA
8-13-2019
NA
8-13-2019
NA
8-13-2019
NA
HHW1
H3
HHE1
HHE2
8-13-2019
DRY
8-13-2019
NA
8-13-2019
DRY
8-13-2019
DRY
8-13-2019
15
H2
8-13-2019
45
8-13-2019
NA
8-13-2019
35
HSW1
H1
8-13-2019
5
8-13-2019
NA
HSE1
HSE2
HSE3
HSE4
8-13-2019
1308 MAIN
NA
8-13-2019
NA
8-13-2019
818 SIMPSON
NA
D62C-1
D62C
8-12-2019
5500
12-12-2019
2700
12-19-2019
1200
CITY OF PLYMOUTH
Harvey St Investigation
Wayne County
N
200
0
600
Feet
Roads
Stormwater Gravity Mains
Stormwater Catch Basins
Stormwater Manholes

During December 2019, ESD investigated the Mill Street west storm sewer, the Mill Street east storm sewer upstream of 188 N. Mill Street (upstream of the illicit connection), and the storm sewer that drains Mill Street south of Union Street (upstream of the illicit connection at 485 S. Mill Street). The goal of investigating these storm sewer segments was to determine if additional illicit connections were present. Seven sites were surveyed, and four were sampled twice. None of the *E. coli* concentrations in the ten samples collected exceeded 500 CFU/100mL. Therefore, illicit connections are not suspected in this section of the storm sewer.

Figure 2 details the investigations performed in the Mill Street investigation area. ESD recommends the following to address the Park/Mill Street investigation area:

- Correction of the illicit connections found at 195 S. Mill Street and 485 S. Mill Street,
- Dye testing of 315 N. Mill Street;
- CCTV of the line under 100 Rose Street; and
- Correction of the high-level sewer overflow at Union and Mill streets.

Amelia Street

The utility lines were televised on Amelia Street, as the stormwater drainage of this street is tributary to the Mill Street/Park Street storm sewer. The televising discovered a residence (175 Amelia Street) that has its laundry sink and basement floor drains connected into a 10- inch clay storm sewer line. The rest of the house is connected to the sanitary sewer. There is also another active clay line that is tied into the Amelia Street storm, but the pipe was partially blocked and the camera could not survey it any farther.

ESD staff investigated the 10-inch clay line upstream of the house in August 2019 and could not find any structures upstream. No dry weather flow was present at the time of the investigation. There is a building at Plymouth Crossing (342 N. Main Street) that was not dye tested during past IDEP investigations. The City believes this building may be on an on-site sewage disposal system (OSDS).

ESD recommends the following to address the Amelia Street investigation area:

- Correction of the illicit connection at 175 Amelia Street; and
- Placing a note in the City's files to ensure that 342 N. Main Street is inspected by a dye test or an OSDS inspection prior to sale.

Hartsough Street Investigation Area Outfall 11/24

ESD continued to coordinate with the City of Plymouth to delineate and sample the drainage area of outfall #11/24. The City of Plymouth identified one residence with an illicit connection on the Maple Street storm sewer line and this residence was connected to the sanitary sewer in September 2018.

During 2019, ESD surveyed the outfall twice, and surveyed eleven upstream locations in September 2019. A total of ten *E. coli* samples were collected. Discussions with ARC and City of Plymouth staff, and review of the sampling data for this drainage area determined that no further action is needed at this time. *Figure 3* details the investigations performed in the Hartsough Street investigation area.

Figure 2 Mill Street Investigation Area Investigation Area Map

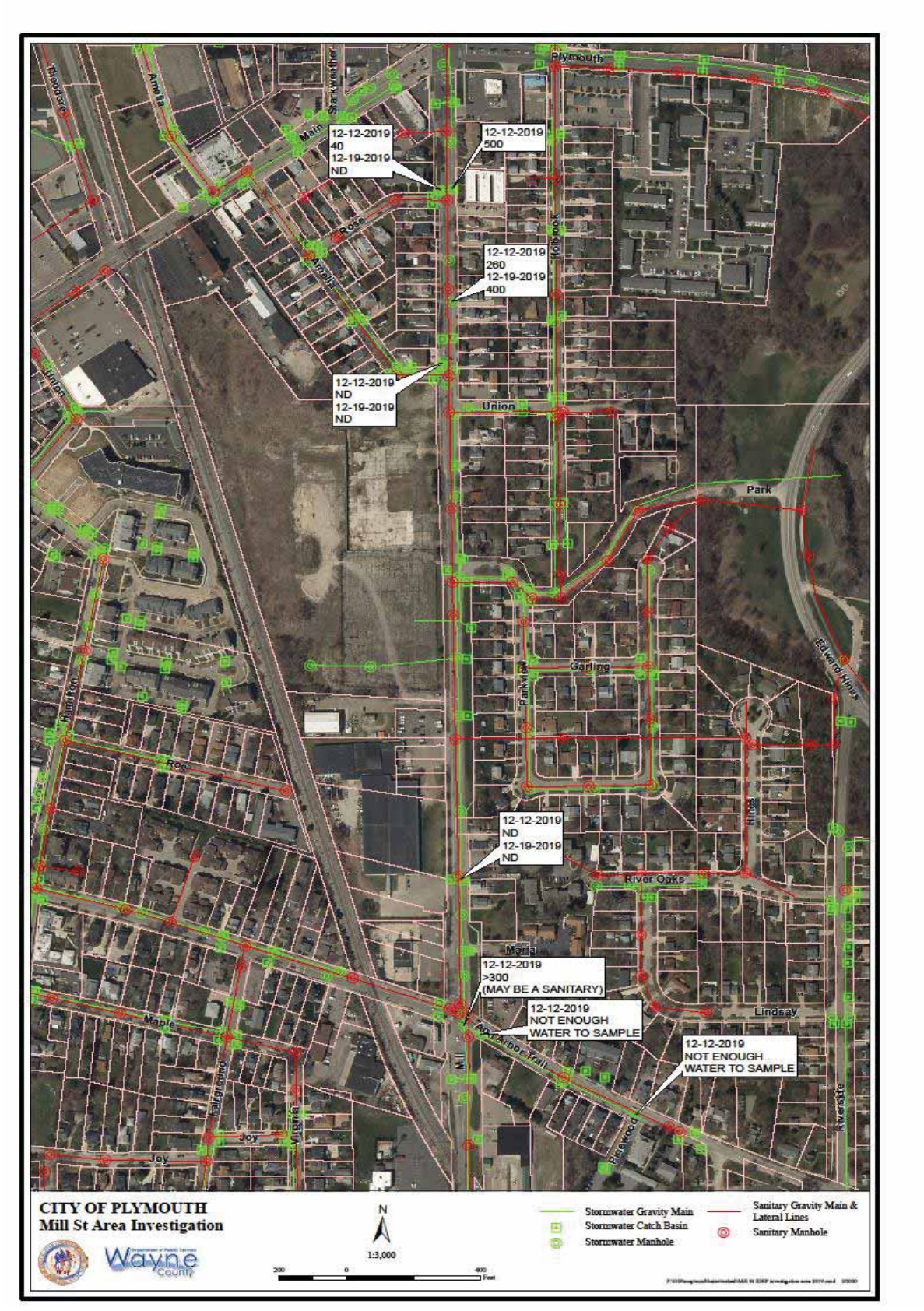


Figure 3 Outfall 11/24 Investigation Area Investigation Area Map



Outfall PY8 Investigation Area

ESD performed follow up monitoring of outfall PY8, investigating manholes and storm sewer laterals upstream of the outfall on September 10, 2019. Two manholes and the outfall were sampled during dry weather. The outfall had visual evidence of an active illicit discharge and elevated *E. coli* concentrations. A photograph of PY8 is below. The City of Plymouth is planning to televise this storm sewer in December 2019. Further investigation upstream of outfall PY8 may be needed depending on the storm sewer line televising findings. The investigation area and dry weather screening is shown in *Figure 4*.

Outfall PY8 Photograph September 10, 2019



Figure 4: Outfall PY8 Investigation Area Map



The field data from each of the City of Plymouth's investigation areas discussed above is included in Appendix A.

City of Livonia

ESD performed dry weather screening of the City of Livonia four priority outfalls from the ARC's 2018 outfall screening effort (U2008220B, U2008221, U2008223, and 411). In addition, two other outfalls were investigated because they were found discharging during dry weather at the time of investigation. These outfalls discharge to the Upper Rouge, or the Bakewell Drain, an Upper Rouge tributary. Below is a summary of each of the outfalls/investigation areas.

Outfall 411 Fargo Street (Upper Rouge)

ESD investigated the Outfall 411 drainage area on August 12, 2019. The outfall and six manholes were sampled, including manhole inlets with dry weather flow, for a total of eight samples. None of the samples collected exceeded 500 CFU/100mL *E. coli* and no visual evidence of illicit discharge were observed. *Figure 5* details the investigations performed in the Outfall 411 investigation area. No further investigation is recommended at this time.

Figure 5: Livonia Outfall 411 Investigation Area Map



Outfall U2008223 (Bakewell Drain- St. Mary's Mercy Hospital)
This outfall was surveyed three times during 2019; once in August and twice in December. The outfall is downstream of a stormwater pond. There was no dry weather flow present at the outfall at the times it was surveyed. No further investigations are recommended at this outfall at this time.

Outfall U2008220B (Bakewell Drain)
This outfall was surveyed two times during 2019; once in August and twice in December. There was not enough flow from the outfall for sampling. Calcium and iron deposits were noted at the outfall outlet. An upstream manhole was noted and it appears to be in the Levan Road right of way. No further investigations are recommended at this outfall at this time.

Outfall U2008221 (Bakewell Drain)
This outfall was surveyed three times during 2019; twice in December. Iron deposits were noted at the outfall outlet, and the water discolored when a sample was collected on December 19, 2019. One sample was non-detect and the second exceeded 6,000 CFU/100mL *E. coli*. A sample to identify *Bacteroides* was collected at this outfall and the laboratory results were 1,010,000 gene copies/100mL, which indicates that may be an active human source of *E. coli* upstream. It is recommended that this outfall/storm sewer line receive further investigation in 2020.
42-inch Outfall Levan Road South (Bakewell Drain)
In August 2019, ten manholes upstream of this outfall were surveyed, and six *E. coli* samples collected. The outfall was not sampled, as it was partially submerged. One manhole had an *E. coli* concentration of 4000 CFU/100mL on August 1, 2019. This manhole was resampled in December 2019, and the *E. coli* concentration was 1500 CFU/100mL.

This outfall was sampled two times during December 2019. The first sample was 5000 CFU/100mL (December 12, 2019) and the second was 19,000 CFU/100mL *E. coli* (December 19, 2019), respectively. A sample to identify *Bacteroides* was collected at this outfall on December 19, 2019. The laboratory results were 14,200 *Bacteroides* gene copies/100mL, which indicates there may be an active human source of *E. coli* upstream. It is recommended that this outfall/storm sewer line receive further investigation in 2020.

Outfall Levan Road South (Bakewell Drain)
This outfall had dry weather flow in December 2019 and a sample was collected, with an *E. coli* concentration of >300 CFU/100mL. No further investigations are recommended at this outfall at this time.

The field data from each of the City of Livonia's investigation areas discussed above is included in Appendix B.

Figure 6 Levan Road Investigation illustrates the investigations of Outfalls *U2008223, U2008220B, U2008221, 42-inch Outfall Levan Road South,* and *Outfall Levan Road South.*

Figure *6* Levan Road Investigation Area Map



City of Westland
ESD conducted a follow up investigation of an outfall with a suspicious discharge, SWOF-00278. The City of Westland staff conducted some follow up of the outfall and it drainage area, and with the facility that is in that drainage area. The facilities manager of the property in question informed the City of Westland that they had a plumber perform a dye test on the building's sanitary sewer system and found no evidence of an illicit discharge. The ESD investigation occurred in December 2019. The outfall had some clear dry weather flow and the chalky-white discharge was evident on the streambank, similar to that found in concrete washout/road fines. The *E. coli* concentration in the sample was 140 CFU/100mL.The outfall will be revisited in 2020 to test for pH and remove the debris/material from the end of the outfall and to perform a follow up to see if the material reforms.

The investigation area and dry weather screening is shown in *Figure 7* SWOF-00278. The field data is included in Appendix C.

Task 2 IDEP Training
Two IDEP Investigator training workshops were presented in 2019. The Investigator training workshop is a half-day session that includes a group problem solving exercise. The Alliance of Rouge Communities (ARC) partnered with the Southeast Michigan Partners for Clean Water to present the IDEP Investigator training. The two workshops were hosted by the City of Lathrup Village, who arranged for the training venue at the City of Lathrup Village Community Center. The training workshops were held on October 23 and 24, 2019 with a total of 110 persons attending both sessions; 61 on October 23, and 49 on October 24. The workshop received positive reviews with the majority of attendees stating that the workshop was worthwhile and informative. Thirty-two of the 110 (29 percent) of the attendees were representatives of (or consultants representing) ARC member communities.

Appendix D contains the attendance lists for both workshops. Attendees representing ARC communities are highlighted.

Task 3 Reporting
Written progress summaries of IDEP activities were provided with each quarterly invoice. The 2018 IDEP Activities Summary was completed and the 2019 activities summary drafted.

Figure *7* SWOF-00278 Investigation Map



Appendix A
2019 ARC IDEP Field Investigations
City of Plymouth

Table A1: Harvey Street Investigation Area
Table A2: Mill Street Investigation Area
Table A3: Hartsough Street Outfall 11/24 Investigation Area
Table A4: Outfall PY8 Investigation Area

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	8/12/2019	12:50	Harvey Street Outfall	Harvey Street Outfall	5500	NA	NA	NA	Dry weather flow	No	None
2	12/12/2019	12:30	Harvey Street Outfall	Harvey Street Outfall	2700	NA	NA	NA	water clear, dry weather flow. Lots of minnows present in stream	No	None
3	12/19/2019	13:10	Harvey Street Outfall	Harvey Street Outfall	1200	692	ND	NA	Stream partially frozen over; steady clear flow from outfall. Minnows present	No	None
4	8/13/2019	12:50	Harvey Street Outfall	818 Simpson	NA	NA	NA	NA	Trickle flow in storm; not enough to sample. Looks like an old sanitary line	No	None
5	8/13/2019	12:55	Harvey Street Outfall	844 Simpson	NA	NA	NA	NA	No flow in storm; some water on bottom. Some foam and debris (could be tannin). Some leaf debris in CB inlet. Does look suspicious	No	None
6	8/13/2019	12:40	Harvey Street Outfall	Simpson East Manhole 1	5	NA	NA	NA	Sample taken at outlet. Water in sump. Slow flow through storm. Some grass clippings.	No	None
7	8/13/2019	12:45	Harvey Street Outfall	Simpson East Manhole 2	NA	NA	NA	NA	Some water in trough and no flow from inlets. No sample taken	No	None
8	8/13/2019	13:00	Harvey Street Outfall	1308 Main St	NA	NA	NA	NA	Terminal storm sewer. Manhole dry	No	None
9	8/13/2019	13:05	Harvey Street Outfall	Simpson West 1	35	NA	NA	NA	Flow from upstream. Standing water and debris in both CB. Other storms covered by parked vehicles	No	None
10	8/13/2019	13:20	Harvey Street Outfall	Ross West #1	15	NA	NA	NA		No	None
11	8/13/2019	13:31	Harvey Street Outfall	Ross West 1052	NA	NA	NA	NA	Manhole dry	No	None
12	8/13/2019	13:35	Harvey Street Outfall	Ross West 1127	NA	NA	NA	NA	Manhole dry	No	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*	*Bacteriodes* human specific marker Arithmetic Average Gene Copies/100mL	*Bacteriodes* bovine specific marker Arithmetic Average Gene Copies/100mL	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
13	8/13/2019	13:40	Harvey Street Outfall	Ross/Harvey East 1	45	NA	NA	NA	Some flow in storm; clear water	No	None
14	8/13/2019	13:45	Harvey Street Outfall	936 Ross	NA	NA	NA	NA	Clear water bubbling up in storm. No flow from inlets	No	None
15	8/13/2019	13:55	Harvey Street Outfall	Hartsough/Harvey West	NA	NA	NA	NA	No inlets, some low, slow flow	No	None
16	8/13/2019	14:05	Harvey Street Outfall	1097 Hartsough West	NA	NA	NA	NA	No flow from inlets; not enough flow to collect sample	No	None
17	8/13/2019	14:10	Harvey Street Outfall	1191 Hartsough West	NA	NA	NA	NA	Some clear water in sump. No flow and not enough water to take sample	No	None
18	8/13/2019	14:15	Harvey Street Outfall	Hartsough/Harvey East	NA	NA	NA	NA	Some standing water in storm/no flow	No	None
19	8/13/2019	14:20	Harvey Street Outfall	918 Hartsough East	NA	NA	NA	NA	Some water in sump; no flow from inlets	No	None
20	8/13/2019	14:25	Harvey Street Outfall	Hartsough/Main	NA	NA	NA	NA	Manhole dry	No	None
21	8/13/2019	14:30	Harvey Street Outfall	884 Palmer East	90	NA	NA	NA	Clear water in storm; no inlets	No	None
22	9/9/2019	10:50	Harvey Street Outfall	Harvey/Palmer West	NA	NA	NA	NA	No flow out of Palmer inlet; water clear in Harvey Street storm	No	None
23	9/9/2019	11:00	Harvey Street Outfall	1096 Palmer	55	NA	NA	NA	No flow from west inlet. Clear flow from CB inlet. Sample collected from the inlet. Some septic like odor	No	Yes
24	8/13/2019	14:45	Harvey Street Outfall	Sutherland/Forest	NA	NA	NA	NA	Standing clear water in sump. Catch basins and inlets are dry	No	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
25	8/13/2019	14:50	Harvey Street Outfall	1104 Sutherland West	NA	NA	NA	NA	Manhole dry	No	None
26	9/9/2019	11:20	Harvey Street Outfall	1124 Carol Ave West	NA	NA	NA	NA	Some trickle flow from inlets from storm CB. Not enough to sample. Water from north inlet is from sprinkler runoff. Cutout in cement made to CB at 1105	No	None
27	9/9/2019	11:30	Harvey Street Outfall	Beech/Harvey	100	NA	NA	NA	Trickle flow from west inlet (sampled) clear water in sump	No	None
28	9/9/2019	11:35	Harvey Street Outfall	1108 Beech	10	NA	NA	NA	Trickle flow from south inlet.Water is warm	No	None
29	9/9/2019	11:40	Harvey Street Outfall	McKinley/Beech	NA	NA	NA	NA	Bulkheaded at McKinley. No flow in manhole. Some clear water on bottom. Not enough water to sample		
30	9/9/2019	11:50	Harvey Street Outfall	Linden/Harvey	1200	NA	NA	NA	Clear water in sump; flow from west inlet	No	None
31	9/9/2019	12:00	Harvey Street Outfall	1067 Linden Inlet	120	NA	NA	NA	Clear flow from CB and 4 inch sump line. No flow from west inlet	No	None
32	9/9/2019	11:56	Harvey Street Outfall	Jener/Linden North Inlet	>1500	NA	NA	NA	Clear flow some debris	No	None
33	9/19/2019	12:20	Harvey Street Outfall	Jener/Linden North Inlet	17000	NA	NA	NA	Clear flow	No	None
34	12/12/2019	11:50	Harvey Street Outfall	Jener/Linden North Inlet	540	NA	NA	NA	Clear flow from north inlet. Sampled sump at north inlet. Some flow from west inlet. Sump discharge from southwest inlet. Some tissue paper/baby wipe material discharging from north inlet	Yes	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
35	12/19/2019	12:25	Harvey Street Outfall	Jener/Linden North Inlet	2100	30,700	456	NA	Clear water in sump. Clear flow from north inlet and west inlet. Sampled north inlet. Some tissue debris present. Sump discharge from southwast inlet clear.	Yes	None
36	9/9/2019	12:15	Harvey Street Outfall	650 Jener	NA	NA	NA	NA	Flow down the street from a pool draining (in ground pool)	No	None
37	12/12/2019	12:15	Harvey Street Outfall	650 Jener	40	NA	NA	NA	Clear flow in storm from north inlet. Catch basin inlets dry	No	None
38	12/19/2019	13:00	Harvey Street Outfall	650 Jener	20	NA	NA	NA	Clear flow from north inlet. No flow from catch basin inlets	No	None
39	9/9/2019	12:40	Harvey Street Outfall	560 Jener	>1500	NA	NA	NA	Sump in manhole discharged during survey. Sampled trickle flow from north side. Water clear	No	None
40	9/19/2019	12:40	Harvey Street Outfall	560 Jener	NA	NA	NA	NA	not enough flow for a sample	No	None
41	9/9/2019	12:45	Harvey Street Outfall	Jener/Maple	NA	NA	NA	NA	Manhole and inlets dry	No	None
42	9/9/2019	12:20	Harvey Street Outfall	Jener/Wing West Inlet	45	NA	NA	NA	Clear flow from inlets, sampled west inlet. Flow from north not deep enough to sample	No	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* human specific marker Arithmetic Average Gene Copies/100mL	*Bacteriodes* bovine specific marker Arithmetic Average Gene Copies/100mL	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	12/12/2019	11:35	Mill Street	Amelia/N. Mill West Storm	ND	NA	NA	NA	water clear in sump; slow flow. East inlet dry. Sample collected at outlet	None	None
2	12/19/2019	12:10	Mill Street	Amelia/N. Mill West Storm	ND	NA	NA	NA	water clear in sump; slow flow. East inlet dry. Sample collected at outlet	None	None
3	12/12/2019	11:25	Mill Street	Rose/N. Mill West Storm	40	NA	NA	NA	trickle flow from north and east, clear. Sample collected at sump outlet	None	None
5	12/19/2019	11:55	Mill Street	Rose/N. Mill West Storm	ND	NA	NA	NA	some frozen water in storm. Trickle flow at north inlet. No flow from inlets	None	None
4	12/12/2019	11:20	Mill Street	300 N. Mill/West Storm	NA	NA	NA	NA	did not open older style manhole	None	None
6	12/12/2019	11:05	Mill Street	300 N. Mill/East Storm	500	NA	NA	NA	flow from north inlet clear	NA	NA
7	12/12/2019	11:00	Mill Street	188 N. Mill	260	NA	NA	NA	clear from north inlet. Sample collected there	NA	NA
8	12/19/2019	11:45	Mill Street	188 N. Mill	400	NA	NA	NA	water clear, some sediment. Flow from north inlet	NA	NA
9	12/12/2019	10:50	Mill Street	188 Ann Arbor Trail	NA	NA	NA	NA	some standing water, clear, no flow in storm. Not enough water to sample	NA	NA
10	12/12/2019	10:30	Mill Street	Maria Drive/Mill Street	ND	NA	NA	NA	water clear, slow flow	NA	NA
11	12/19/2019	11:40	Mill Street	Maria Drive/Mill Street	ND	NA	NA	NA	water clear in sump; clear flow from south inlet	NA	NA
12	12/12/2019	10:20	Mill Street	Mill/Ann Arbor Trail	>300	NA	NA	NA	water very discolored, water appears gray. No odor. This manhole may be a sanitary sewer	Yes	None
13	12/12/2019	10:05	Mill Street	639 S. Mill	NA	NA	NA	NA	some water in sump. No flow (stagnant). No inlets. No sample collected	None	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* human specific marker Arithmetic Average Gene Copies/100mL	*Bacteriodes* bovine specific marker Arithmetic Average Gene Copies/100mL	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	9/9/2019	13:15	Outfall #24 Hartsough North Branch Tonquish Creek	Outfall #24	>1500	NA	NA	NA	Clear flow no odor at outfall	No	None
2	9/19/2019	11:30	Outfall #24 Hartsough North Branch Tonquish Creek	Outfall #24	100	NA	NA	NA	Clear flow no odor at outfall	No	None
3	9/9/2019	13:25	Outfall #24 Hartsough North Branch Tonquish Creek	748 Coolidge	NA	NA	NA	NA	Manhole dry	No	None
4	9/9/2019	13:30	Outfall #24 Hartsough North Branch Tonquish Creek	Joy/Fairground	330	NA	NA	NA	water clear, flow from north	No	None
5	9/19/2019	11:40	Outfall #24 Hartsough North Branch Tonquish Creek	Joy/Fairground	200	NA	NA	NA	manhole located in sidewalk along Joy St. No odor	No	None
6	9/9/2019	13:35	Outfall #24 Hartsough North Branch Tonquish Creek	Fairground Park/Joy	>1500	NA	NA	NA	sampled from north side of manhole. Flow from east inlet already sampled. In middle of Joy between Coolidge and Harding.	No	None
7	9/19/2019	11:55	Outfall #24 Hartsough North Branch Tonquish Creek	Fairground Park on Joy	740	NA	NA	NA	manhole in Joy St. at fire hydrant. No odor. Sprinklers on at a residence on north side and runoff to Joy St.	No	None
8	9/9/2019	13:45	Outfall #24 Hartsough North Branch Tonquish Creek	Harding/Wing	NA	NA	NA	NA	manhole dry	No	None
9	9/9/2019	14:00	Outfall #24 Hartsough North Branch Tonquish Creek	Maple/Hamilton	NA	NA	NA	NA	manhole dry	No	None
10	9/9/2019	14:30	Outfall #24 Hartsough North Branch Tonquish Creek	Harding/Maple	>1500	NA	NA	NA	Very slight flow in storm. Some whitish materialon portion of storm	No	None
11	9/19/2019	12:05	Outfall #24 Hartsough North Branch Tonquish Creek	Harding/Maple	1600	NA	NA	NA	Two 12" inlets are above the bottom of manhole. Main flow runs west to east. Some sediment in sample. No whitish material in manhole	No	None
12	9/9/2019	14:50	Outfall #24 Hartsough North Branch Tonquish Creek	480 Maple	2300	NA	NA	NA	sampled from north inlet. Clear flow	No	None
13	9/10/2019	14:45	Outfall #24 Hartsough North Branch Tonquish Creek	Maple/Kellogg	NA	NA	NA	NA	some foam in storm; very low flow; could not sample	No	None
14	9/10/2019	10:05	Outfall #24 Hartsough North Branch Tonquish Creek	Roose Vet Hospital	180	NA	NA	NA	Water clear in sump; sample taken from flow from North inlet	No	None

Number	**Date**	**Time (military)**	**Investigation Location**	**Site Location**	*E. coli (colony-forming units (CFU)/100mL)* **)**	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	**Conductivity (mS/cm)**	**Observations**	**Sanitary Flow Evidence**	**Odor**
15	9/10/2019	10:15	Outfall #24 Hartsough North Branch Tonquish Creek	Penniman/Union	NA	NA	NA	NA	Manhole dry-no flow in inlets	No	None
16	9/10/2019	10:20	Outfall #24 Hartsough North Branch Tonquish Creek	Union/Plymouth District Library	NA	NA	NA	NA	Manhole dry-no flow in inlets	No	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	9/10/2019	10:35	PY8 Outfall	PY8 Outfall	26000	NA	NA	NA	Outfall w/ dry weather flow; white material like sewage fungus on bottom of outfall pipe	yes	None
2	9/10/2019	11:04	PY8 Outfall	990 Penniman	NA	NA	NA	NA	Tried to sample CB; not enough flow to sample. Flow from north inlet. Clear flow	No	None
3	9/10/2019	11:10	PY8 Outfall	Blunk/Church	NA	NA	NA	NA	Some water, but no flow in manhole or inlets. Not enough water to sample	No	None
4	9/10/2019	11:20	PY8 Outfall	Blunk/William	20	NA	NA	NA		No	None
5	9/10/2019	11:25	PY8 Outfall	Blunk/Blanche	NA	NA	NA	NA	Trickle flow in manhole, not enough to sample. Inlets dry. Some grass clippings present	No	None
6	9/10/2019	11:30	PY8 Outfall	Blunk/Farmer	NA	NA	NA	NA	Manhole dry	No	None
7	9/10/2019	11:36	PY8 Outfall	Junction/Blunk	NA	NA	NA	NA	Manhole dry	No	None

Appendix B
2019 ARC IDEP Field Investigations
City of Livonia

Table B1: Outfall U2008223
Table B2: Outfall U2008220B
Table B3: Outfall U2008221
Table B4: Levan Road South 42” Outfall Investigation Area
Table B5: Outfall Levan Road South
Table B6: Outfall 411 Fargo Street

2019 ARC IDEP INVESTIGATION
OUTFALL U2008223
BAKEWELL DRAIN/ST. MARY'S HOSPITAL WEST
CITY OF LIVONIA

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* human specific marker Arithmetic Average Gene Copies/100mL	*Bacteriodes* bovine specific marker Arithmetic Average Gene Copies/100mL	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	8/1/2019	12:00	U2008223 outfall Bakewell Drain/St. Mary's West	U2008223 outfall Bakewell Drain/St. Mary's West	NA	NA	NA	NA	outfall dry. Outfall drains a small stormwater pond	None	None
2	12/12/2019	13:00	U2008223 outfall Bakewell Drain/St. Mary's West	U2008223 outfall Bakewell Drain/St. Mary's West	NA	NA	NA	NA	frozen clear water in outlet. No dry weather flow. Pond is ice-covered	None	None
3	12/19/2019	14:00	U2008223 outfall Bakewell Drain/St. Mary's West	U2008223 outfall Bakewell Drain/St. Mary's West	NA	NA	NA	NA	pond upstream is ice covered. No flow in outfall	None	None

Key:
NA-Not applicable
ND: Non-detect

2019 ARC IDEP INVESTIGATION
OUTFALL U2008220B
BAKEWELL DRAIN
CITY OF LIVONIA

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* human specific marker Arithmetic Average Gene Copies/100mL	*Bacteriodes* bovine specific marker Arithmetic Average Gene Copies/100mL	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	12/12/2019	13:05	U2008220B outfall	U2008220B outfall	NA	NA	NA	NA	Trickle flow from outfall. Not enough to sample. Some calcium deposits present. Manhole upstream noted	None	None
2	12/19/2019	13:40	U2008220B outfall	U2008220B outfall	NA	NA	NA	NA	Trickle flow from outfall. Not enough to sample. Some calcium deposits present. Manhole upstream noted	None	None

Key:
NA-Not applicable
ND: Non-detect

2019 ARC IDEP INVESTIGATION
OUTFALL U2008221
BAKEWELL DRAIN/LEVAN RD
CITY OF LIVONIA

Number	**Date**	**Time (military)**	**Investigation Location**	**Site Location**	*E. coli (colony-forming units (CFU)/100mL)* **)**	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	**Conductivity (mS/cm)**	**Observations**	**Sanitary Flow Evidence**	**Odor**
1	12/12/2019	13:30	U2208221 outfall	U2208221 outfall	ND	NA	NA	NA	Iron deposits on pipe, clear flow	None	None
2	12/19/2019	13:50	U2208221 outfall	U2208221 outfall	>6000	1,010,000	456	NA	Clear flow from outfall. Some discoloration to water collected, ice chunks in water. Iron staining on outfall	None	None

Key:
NA-Not applicable
ND: Non-detect

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	8/1/2019	13:25	Levan Medical Center South side/Levan	Levan Road Southeast storm	NA	NA	NA	NA	Outlet submerged. Water in storm sump. No flow from inlets.No sample collected due to submerged outlet	None	None
2	8/1/2019	13:30	In front of Levan Medical Center/Levan	Levan Road Southeast storm	NA	NA	NA	NA	Slow flow in storm; inlets dry. Not enough flow to sample	None	None
3	8/1/2019	13:35	near fence north side of Levan Medical Center/Levan	Levan Road Southeast storm	ND	NA	NA	NA	Some slow flow from south; pipe with deposits on northeast sampled	None	None
4	8/1/2019	13:45	Meadowbrook/Levan	Levan Road Southeast storm	NA	NA	NA	NA	No inlets. Water clear. Slow shallow flow in manhole. No sample collected due to not enough flow to sample	None	None
5	8/1/2019	13:50	South of Jamison/Levan	Levan Road Southeast storm	NA	NA	NA	NA	Trickle flow from catch basin in Levan	None	None
6	8/1/2019	14:00	Barkley/Levan	Levan Road Southeast storm	NA	NA	NA	NA	Sample taken from clear flow in north inlet. Some trickle flow from Catch basin-clear.	None	None
7	8/1/2019	14:05	Barkley/Levan east inlet	Levan Road Southeast storm	ND	NA	NA	NA	Clear flow from 24 inch inlet. Not enough flow to sample	None	None
8	8/1/2919	14:10	36263 Barkley manhole	Levan Road Southeast storm	4000	NA	NA	NA	First manhole upstream from Levan storm. Sample collected in sump. Very slow flow in sump.Slow trickle flow from catch basin. Not enough to sample. Water clear.	None	None
9	12/12/2019	12:50	36263 Barkley manhole	Levan Road Southeast storm	1500	NA	NA	NA	clear slow flow, trickle flow from north inlet.Sample collected in sump	None	None
9	8/1/2019	14:38	Lyndon/Levan	Levan Road Southeast storm	NA	NA	NA	NA	No sample. Very low flow in sump and low flow from south. Catch basin and other inlets dry	None	None

Key:
NA-Not applicable
ND: Non-detect

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)* **)**	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
10	8/1/2019	14:55	Allen Ct/Levan	Levan Road Southeast storm	1300	NA	NA	NA	Iron deposits in storm. Sample collected at west inlet. Clear flow in sump. Three other inlets had dry weather flow, but not enough to collect sample	None	None
11	8/1/2019	14:50	Allen Ct/Levan	Levan Road Southeast storm	NA	NA	NA	NA	Iron deposits in storm. Sample collected at west inlet. Clear flow in sump. Three other inlets had dry weather flow, but not enough to collect sample	None	None
12	8/1/2019	15:05	Martin Street/Storm sewer terminus	Levan Road Southeast storm	ND	NA	NA	NA	Trickle flow from 1 inlet. Slow flow in sump	None	None
13	12/12/2019	13:10	Levan Road Southeast storm outfall	Levan Road Southeast storm	5000	NA	NA	NA	Water clear. Some slow flow equal to water level in stream	None	None
14	12/19/2019	13:45	Levan Road Southeast storm outfall	Levan Road Southeast storm	19000	14,200	456	NA	Water flow very slow. Water level in outfall equal to stream level. BST and *E. coli* samples collected	None	None

Key:
NA-Not applicable
ND: Non-detect

Number	**Date**	**Time (military)**	**Investigation Location**	**Site Location**	*E. coli (colony-forming units (CFU)/100mL)* **)**	*Bacteriodes* **human specific marker Arithmetic Average Gene Copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average Gene Copies/100mL**	**Conductivity (mS/cm)**	**Observations**	**Sanitary Flow Evidence**	**Odor**
1	12/12/2019	13:40	Outfall Levan Rd South	Outfall Levan Rd South	>300	NA	NA	NA	Outfall flowing clear water. Some manholes in line with the Bakewell Drain enclosure	None	None

Key:
NA-Not applicable
ND: Non-detect

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* human specific marker Arithmetic Average Gene Copies/100mL	*Bacteriodes* bovine specific marker Arithmetic Average Gene Copies/100mL	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	8/12/2019	14:10	411 outfall Angling/Fargo	411 Outfall	40	NA	NA	NA	Quarter inch flow from outfall; water clear, some algal growth present on pipe. Deer present in woods	None	None
2	8/12/2019	14:15	Angling/Fargo	411 Outfall	NA	NA	NA	NA	No inlets flowing. Some slow flow from upstream. Not enough flow to take sample from sump.	None	None
3	8/12/2019	14:20	Floral/Fargo	411 Outfall	NA	NA	NA	NA	Not enough flow in sump to sample. Clear water in sump. Clear water trickling from east inlet. Not enough flow to sample.	None	None
4	8/12/2019	14:25	Deering/Fargo	411 Outfall	225	NA	NA	NA	Sample collected from sump. Trickle flow from Catch Basin inlet; not enough flow to take sample	None	None
5	8/12/2019	14:30	St. Francis/Fargo North inlet	411 Outfall	120	NA	NA	NA	Water clear; trickle flow from south inlet	None	None
6	8/12/2019	14:35	St. Francis/Fargo South inlet	411 Outfall	ND	NA	NA	NA	Water clear; sample from north inlet	None	None
7	8/12/2019	14:40	Antago/Fargo North inlet	411 Outfall	140	NA	NA	NA	flow and north and south inlet clear. Clear flow from east	None	None
8	8/12/2019	14:45	Antago/Fargo South inlet	411 Outfall	60	NA	NA	NA	flow and north and south inlet clear. Clear flow from east. Southwest catch basin dry	None	None
9	8/12/2019	14:50	Rensellor/Fargo North Inlet	411 Outfall	20	NA	NA	NA	Water clear in sump, inlets	None	None
10	8/12/2019	14:55	Rensellor/Fargo East Inlet	411 Outfall	100	NA	NA	NA	Water clear in sump, inlets	None	None
11	8/12/2019	15:00	Rensellor/Fargo South Inlet	411 Outfall	80	NA	NA	NA	Water clear in sump, inlets	None	None

Key:
NA: Not applicable
ND:Non-detect

Appendix C
2019 ARC IDEP Field Investigations
City of Westland
SWOF-00278

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)* **)**	*Bacteriodes* **human specific marker Arithmetic Average gene copies/100mL**	*Bacteriodes* **bovine specific marker Arithmetic Average gene copies/100mL**	**Conductivity (mS/cm)**	**Observations**	**Sanitary Flow Evidence**	**Odor**
1	12/19/2019	14:35	SWOF-00278 Outfall	SWOF-00278 Outfall	140	NA	NA	NA	outfall discharging clear water. Some heavy calcium deposits at outfall outlet and on bank of stream	None	None

Key:
NA-Not applicable
ND: Non-detect

Appendix D
2019 Partners for Clean Water Regional IDEP Training Workshop
Attendees List
October 23, 2019
October 24, 2019

SEMCOG University
IDEP Training Workshop Attendance
Lathrup Village, MI
October 23, 2019

Last Name	First Name	Affilitation	E-mail	Community	State
Carmonia	Doug	City of Bay City	dcarmunia@baycitymi.org	Bay City	MI
Hausback	Kurt	City of Bay City	khausbeck@baycitymi.org	Bay City	MI
Velasavez	Steve	City of Bay City	svelasevez@baycitymi.org	Bay City	MI
Jurek	Michael	City of Birmingham	mjurek@bhamgov.org	Birmingham	MI
Petrieilo	Stephanie	Hubbell, Roth, and Clark	spetrieilo@hrcengr.com	Bloomfield Hills	MI
Cooper	Cortez	City of Detroit	Cortez.Cooper@detroitmi.gov	Detroit	MI
Dotson	Thomas	City of Detroit	Thomas.Dotson@detroitmi.gov	Detroit	MI
Drake	Mason	City of Detroit	Mason.Drake@detroitmi.com	Detroit	MI
King	Cory	City of Detroit	cory.king@detroitmi.gov	Detroit	MI
Lawson	Desean	City of Detroit	Desean.Lawson@detroitmi.gov	Detroit	MI
Murphy	Belinda	City of Detroit	Belinda.Murphy@detroitmi.gov	Detroit	MI
Weber	Michael	City of Detroit	Michael.Weber@detroitmi.gov	Detroit	MI
Grant	Bradford	City of Detroit	Bradford.grant@detroitmi.gov	Detroit	MI
Devers	Sean	City of Farmington Hills	sdevers@fhgov.com	Farmington Hills	MI
Parent	Jeff	Charter Township of Fort Gratiot	slynch@fortgratiot.us	Fort Gratiot	MI
Castleman	Rick	City of Hazel Park	tyoung@hazelpark.org	Hazel Park	MI
Rostkowych	Mike	City of Hazel Park	tyoung@hazelpark.org	Hazel Park	MI
Henard	David	Livingston County	Dhenard@livgov.com	Livingston County	MI
Runkel	Rebecca	City of Novi	rrunkel@cityofnovi.org	Novi	MI
Gibbs	Colin	Oakland County	gibbsc@oakgov.com	Oakland County	MI
Moyet, Jr.	Carmelo	Oakland County	moyetc@oakgov.com	Oakland County	MI
Whatley	Aaron	Charter Township of Orion	awhatley@oriontownship.org	Orion Township	MI
Gerlach	Adam	City of Plymouth	agerlach@plymouthmi.gov	Plymouth-City	MI
Helsinki	Chris	City of Plymouth	chelinski@plymouthmi.gov	Plymouth-City	MI
Kitchen	Spencer	Charter Township of Plymouth	dhamann@plymouthtwp.org	Plymouth-Township	MI
Pumphrey	Zachary	Charter Township of Plymouth	dhamann@plymouthtwp.org	Plymouth-Township	MI
Ammons	Chris	City of Riverview	rtabor@cityofriverview.com	Riverview	MI
Couch	Jonathan	City of Riverview	rtabor@cityofriverview.com	Riverview	MI
Martin	Corey	City of Riverview	rtabor@cityofriverview.com	Riverview	MI
Martin	Corey	City of Riverview	rtabor@cityofriverview.com	Riverview	MI
Webb	Jeff	City of Riverview	jwebb@cityofriverview.com	Riverview	MI
Witz	Derrick	City of Riverview	rtabor@cityofriverview.com	Riverview	MI
Bucholz	Seth	City of Rochester Hills	bucholzs@rochesterhills,org	Rochester Hills	MI
Boron	Robert	City of Rockwood	robert@rockwoodmi.org	Rockwood	MI
Post	Austin	City of Rockwood	dps@rockwoodmi.org	Rockwood	MI
Ruby	Kevin	City of Rockwood	dps@rockwoodmi.org	Rockwood	MI
Farthing	Devin	City of Roseville	watergarage@roseville-mi.gov	Roseville	MI
Lopez	James	City of Roseville	watergarage@roseville-mi.gov	Roseville	MI
Maas	Tom	City of Roseville	watergarage@roseville-mi.gov	Roseville	MI
Schulte	Brian	City of Roseville	bschulte@roseville-mi.gov	Roseville	MI
Allen	Mike	City of St. Clair Shores	kleina@scsmi.net	St. Clair Shores	MI
Demsky	Ron	City of St. Clair Shores	demskir@scsmi.net	St. Clair Shores	MI

SEMCOG University
IDEP Training Workshop Attendance
Lathrup Village, MI
October 23, 2019

Last Name	First Name	Affilitation	E-mail	Community	State
Frazho	Jon	City of St. Clair Shores	kleina@scsmi.net	St. Clair Shores	MI
Kosiara	Paul	City of St. Clair Shores	kleine@scsmi.net	St. Clair Shores	MI
Carruthers	Scott	City of Troy	scott.carruthers@troymi.gov	Troy	MI
Amormino	Rich	Charter Township of Washington	amorminor@washingtontwpmi.org	Washington Township	MI
Krauss	Bonnie	Charter Township of Washington	kraussb@washingtontwpmi.org	Washington Township	MI
Prainito	Frank	Charter Township of Washington		Washington Township	MI
Kaiikow	Sarah	Washtenaw County	kalikows@washtenaw.org	Washtenaw County	MI
Peters	Jeff	Washtenaw County	petersj@washtenaw.org	Washtenaw County	MI
Rice	Heather	Washtenaw County	riceh@washtenaw.org	Washtenaw County	MI
Wilcox	Grayson	Washtenaw County	wilcoxg@washtenaw.org	Washtenaw County	MI
Cook Maylen	Sarah	Waterford	maylens@oakgov.com	Waterford	MI
Merinsky	Robert	Charter Township of Waterford	rmerinsky@waterfrodmi.gov	Waterford	MI
Curley	Steve	City of Wayne	dpw@ci.wayne.mi.us	Wayne	MI
Smith	Brian	City of Wayne	dpw@ci.wayne.mi.us	Wayne	MI
Hodges	Richard	Wayne County	Rhodges@waynecounty.com	Wayne County	MI
Rosell	Jason	Charter Township of West Bloomfield	jrosell@wbtownship.org	West Bloomfield Township	MI
Green	Derek	City of Westland	mdittmar@cityofwestland.com	Westland	MI
Reddy	John	City of Westland	psypniewski@cityofwestland.com	Westland	MI
Plasencia	Jesus	City of Wyandotte	jplasencia@wyandottemi.gov	Wyandotte	MI

Alliance of Rouge Community

SEMCOG University
IDEP Training Workshop Attendance
Lathrup Village, MI
October 24, 2019

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Alliance of Rouge Community

Appendix D
2019 Partners for Clean Water Regional IDEP Training Workshop
Attendees List
October 23, 2019
October 24, 2019

Appendix B3

2018 Oakland County IDEP Investigation Report

2018 Illicit Discharge Investigations in Oakland County's Portion of the Rouge River Watershed

Final Report

Prepared for:
Alliance of Rouge Communities



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Prepared by:
Oakland County Water Resources Commissioner



One Public Works Drive
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January 31, 2019

EXECUTIVE SUMMARY

Illicit discharge investigations were conducted in 2018 on multiple Oakland County storm drains within the Rouge River Watershed. Investigations were conducted by the Oakland County Water Resources Commissioner's Office (WRC) as follow up to ongoing potential illicit discharge source investigations work conducted in 2014 through 2017. IDEP investigations to date have identified 3 illicit sanitary connections and 2 septic systems as illicit discharge sources and have identified numerous other potential illicit discharges sources which remain under investigation. Identified illicit sanitary connections were corrected and eliminated in 2017. Follow up sampling and investigations were conducted in 2018 on the following five (5) County Drains: US 16 Drain in Farmington, the Fracassi and 8 Mile Road Drains in Southfield and the Claude H. Stevens No. 3 and No. 4 Drains in Bloomfield Twp.

Follow up sampling on the US 16 drain in Farmington Hills confirmed the correction of previous illicit connections and eliminated the drain as being a suspected source of additional upstream illicit discharges.

Additional sampling and investigations on the Fracassi Drain in Southfield identified an additional five (5) suspected illicit connections with seven (7) additional suspect properties as potential sources of illicit discharges in need of further investigation. Dye testing of suspect properties has yet to confirm a source of sanitary discharge to the drain.

Sampling of the 8 Mile Drain indicates that Drain has a high potential for containing upstream sanitary discharges. An inspection and sampling of inlets to the drain has identified two (2) connected drain systems as possible sources in need of further investigation.

Follow up sampling and investigations on the Claude H. Stevens No. 3 and No. 4 drains in Bloomfield Twp. continues to indicate that both drains have a high probability of having additional upstream illicit discharges. Additional Investigations have narrowed down the potential sources to local storm drain systems but have not yet identified an illicit connection or specific source of contamination to the drains.

A summary of the illicit discharges corrected and additional suspect illicit discharge sources along with follow up recommendations appears table below. A "suspect illicit connection" is indicated in the table when *E. coli* counts exceeded 10,000 CFU /100 ML, but a specific source has not been identified. A "potential illicit discharge" is indicated when *E. coli* counts were below the 10,000 CFU/100 ML and no physical signs of sanitary sewage is observed. Additional follow up investigations of the suspect and potential sources will be conducted on these drains in 2019.

Table 1. Summary of 2018 identified potential illicit connections and suspect discharge sources and recommended follow up actions.

Drain Community	Identified potential and suspect Illicit connections and discharge sources	Recommended Follow-up Actions
US-16 Farmington	(3) Illicit Discharges from residential homes connected to the drain were eliminated in 2017 by the City of Farmington. No other illicit connections suspected.	Additional upstream investigation of the drain is not recommended at this time. Scheduled Dry Weather Screening of the drain under Oakland County's IDEP program will continue. Animal feces in the drain system may be a potential source of contamination. Additional sampling under Oakland County's TMDL Monitoring Plan is being considered
Fracassi Southfield	<u>Indian Street:</u> Suspected illicit connection from John Grace Community Center. Wildlife is likely another E. coli source <u>Negaunee Street:</u> Suspected illicit connection from unknown source(s). Wildlife is likely another E. coli source. <u>Poinciana Street</u> Suspected illicit connection from unknown source(s). Wildlife is likely another E. coli source. <u>Seminole Street</u> Suspected illicit connection from unknown source(s). Wildlife is likely another E. coli source.	<u>Indian Street:</u> Consult with the City on completing a plumbing inspection of the Community Center. <u>Negaunee Street:</u> Review sanitary sewer inspection records and conduct MST sampling to confirm a sewage source. <u>Poinciana Street</u> Dye test 6 remaining suspect homes. Review sanitary sewer inspection records and conduct MST sampling to confirm a sewage source. <u>Seminole Street</u> Dye test 2 remaining suspect homes. Review sanitary sewer inspection records and conduct MST sampling to confirm a sewage source.
8 Mile Drain Southfield	Suspected illicit connection upstream of manhole 11. Source unknown. Potential illicit connection upstream of manhole 5.	Segment the storm drains tributary to manholes 5 and 11 with manhole inspections and sampling.
Claude H Stevens 3 Bloomfield Twp.	One (1) failed Septic System on Charing Cross identified 2016 was eliminated by Bloomfield Twp. in 2017. Additional suspected illicit connection from unknown source(s). Wildlife is likely another E. coli source.	Drain cleaning and resampling to eliminate wildlife fecal matter as a source. Conduct additional investigations MST and E. coli sampling to verify sewage sources. Dye testing of suspect homes as needed
Claude H Stevens 4 Bloomfield Twp.	Suspected illicit connection from unknown source(s)	CCTV the Dover St. drain. Dye test suspect homes.

BACKGROUND

Five (5) County Drains were identified by WRC within the Rouge River Watershed as needing illicit discharge investigations to identifying and eliminating potential sources of sewage contamination to the drains and to the Main and Upper Branches of the Rouge River in Oakland County. Drains selected for further investigation during this project period include:

- US-16 Drain in Farmington;
- Fracassi and 8 Mile Drains in Southfield;
- Claude H. Stevens No. 3 and 4 Drain sections in Bloomfield Township;

Drain locations are depicted in Figure 1. These drains were selected for investigation based upon historical elevated *E. coli*, dry weather screening data collected by WRC under their Illicit Discharge Elimination Program (IDEP) for Oakland County and follow up sampling and IDEP investigations conducted in 2013 thorough 2017. Drains with elevated counts of *E. coli* bacteria can indicate that upstream illicit discharge sources are present. Therefore, additional sampling and investigations were deemed necessary to determine if illicit discharges are occurring and to locate potential sources of those discharges within the drains.

These efforts support the activities required under Oakland County's municipal stormwater permit and the Alliance of Rouge Communities (ARC) Rouge River Collaborative Illicit Discharge Elimination Plan. This work is being funded by the ARC and carried out by the WRC.

INTRODUCTION

The following work was performed on five (5) County Drains during the project period in 2018:

- Follow up sampling was conducted to confirmed elimination of (3) illicit connections from residential homes to the US 16 Drain;
- Additional sampling, investigation, Closed Circuit Televised (CCTV) inspections and dye testing was conducted on the Fracassi Drain;
- An inspection of the 8 Mile Drain and sampling of inlets to the drain was completed; and
- Additional sampling and investigations of upstream local drain systems were conducted on the Claude H. Stevens No 3. and No. 4 Drains

Maps of local connecting storm drain systems were obtained from the communities. The drains have been segmented based on manhole locations. Surveys were conducted at select manholes for evidence of sewage contamination (toilet paper, grey water, soap suds, staining, etc.). Water samples were collected at locations exhibiting dry weather flow. Samples were analyzed for *E. coli* bacteria at the Walled Lake–Novi Waste Water Treatment Facility (WWTF). Samples from select locations were also taken to the Department of Fisheries and Wildlife Laboratory at Michigan State University for MST analysis for DNA associated with human specific strains of *E. coli*. Physical observation and sampling data were reviewed and used to identify segments of each drain with suspected sanitary discharges.

Additional samples were collected and observations were made to isolate specific segments of the drains, where possible, to identify specific inlet(s) with evidence of sanitary sewage. Closed Circuit Televised (CCTV) inspections were further used to identify specific possible sanitary illicit connections to the drain. Dye testing was used to confirm the presence of an illicit connection to the drain and or verify connections of internal plumbing fixtures to the sanitary sewer at suspect properties.

A summary of sampling results and investigations conducted on each drain is provided herein. Maps of drain locations and locations of investigations and sampling with results are included as attached figures for each drain. Notes, observations and photos from drain surveys and manhole inspections are included in Appendix A. Copies of CCTV inspections and dye testing inspections and reports are included in Appendix B. A complete list of *E. coli* sampling results is included in Appendix C

US-16 DRAIN INVESTIGATION

Background

The US-16 Drain is a large enclosed storm drain located along the northern border of Farmington and Farmington Hills. The drain parallels Grand River Ave and Shiawassee Road and discharges to the Upper Rouge River in Shiawassee Park near Farmington Road. The Drain services local storm water road drain laterals in residential subdivisions on both the north and south side of Shiawassee Road and from businesses along Grand River Ave. west of Shiawassee. Historically the US 16 Drain was a combined sewer system with sanitary sewer overflow connections to the drain. The local storm drains were separated and overflows eliminated with the construction of a new sanitary system in the 1990s.

Previous Investigation Summary

Segmenting and sampling of the drain for *E. coli* in 2013 and 2014 isolated a segment of the drain along Shiawassee with potential illicit discharges of sanitary sewage. Smoke testing of the drain in this area indicated multiple potential illicit connections from residences along Shiawassee, along with possible potential issues with sanitary bulkheads and possible connections between the sanitary and storm laterals on Hillcrest and Glenview Streets.

In 2015, the City of Farmington completed a CCTV inspection of the US 16 Drain and the sanitary sewer system along Shiawassee Road. Results identified three illicit connections to the drain with evidence of sanitary sewage from 3 houses, 33550 and 33431 Shiawassee Road and 33840 Grand River Avenue to the US 16 Drain. Dye testing of the residences by WRC and the City of Farmington was conducted to confirm sanitary connections to the drain. A follow up survey and sampling of the storm drain laterals by WRC on Hillcrest and Glenview Streets did not identify any additional issues.

In 2016, staff from WRC met with the City of Farmington to discuss the status of the illicit connections to the drain on Shiawassee Road. The homeowners were notified of the illicit connections. The City Farmington indicated that because house lateral connections should have been eliminated and connected to the Farmington sanitary system during upgrades to the system in the 1990s, that they would agree to make corrections. Due to location of the drain in Shiawassee Road and the complexity of

going under the US 16 Drain to connect to the sanitary sewer, the City put out bids and hired an engineering firm to complete construction, design plans and a budget for a project to eliminate the illicit connections. The project was submitted to the City Council for approval and funding in 2017. The project was completed and the connections were eliminated in September of 2017. Costs for eliminating the Illicit connections include; $15,000 for the project preparation of the bid proposal and funding securement and $86,000 for the illicit connection elimination and connection to the sanitary sewer by the City of Farmington and contractors.

Current 2018 Follow up sampling

Follow up sampling for *E. coli* during dry weather was conducted in 2018 to confirm elimination of the (3) illicit connections to the US 16 Drain on Shiawassee from residential homes by The City of Farmington and to evaluate the drain for the potential of containing any additional upstream illicit discharge sources. Samples were collected at the outlet of the drain to the Rouge River at the Shiawassee Rd crossing and at three (3) manhole locations downstream and upstream of the residential sanitary connections to the drain on Shiawassee that were eliminated. A map of showing sampling locations and locations of the corrected properties is included as Figure 2.

Results

Sampling results for *E. coli* indicates elevated counts above 1,000 CFU / 100 ML at the outlet and at manhole locations downstream of the eliminated sanitary connections. Counts ranged from 2,814 CFU / 100 ML at the outlet to 5,310 CFU / 100 ML at manhole 4406 at Shiawassee and Varner St (Figure 2). The upstream manhole location at Grand River and Shiawassee, manhole 4415, was 100 CFU / 100 ML, which is below the State Water Quality Standard of 300 CFU /100 ML. This indicates that the portion of the enclosed drain west of Shiawassee Road on Grand River Avenue is no longer a concern. Although counts along Shiawassee Road are above the State Water Quality Standard, the highest being manhole 4406 at 5,310 CFU / 100 ML, they are not high enough to be considered indicative a sanitary sewage source which is typically greater than 10,000 CFU / 100 ML. Considering no physical sign of sanitary sewage was evident in the drain it is not believed that these conditions are related to a continual sanitary sewage source and no additional IDEP investigations are planned. It should also be noted that the drain experiences continual dry weather flow from upstream connected drainage ponds and the outlet of the drain is at river level at its confluence under the bridge on Shiawassee. This provides direct access to the drain system for animals to migrate along and or live in the drain system between the River and upstream ponds. Muskrats and animal fecal matter have been seen in the drain system during past inspections and drain cleanings which could contribute to the elevated *E. coli* counts in the drain.

Recommendation

No additional IDEP investigations are recommended at this time. The Drain will remain on the list for periodic Dry Weather Screening under Oakland County's IDEP Program. The drain outlet is also being considered as a sampling point under Oakland County's TMDL Monitoring Plan and a possible candidate for additional MST sampling.

FRACASSI DRAIN INVESTIGATIONS

Background

The Fracassi Drain is a series of interconnected enclosed drains located in the southwest corner of Southfield at Inkster Rd. and 8 Mile Rd. The drains services residential neighborhoods and extends four blocks east of Inkster Rd. and from 8 Mile Rd north to Adeline St. Historically, the Fracassi Drain was part of the Hazel Drain, which is an older Chapter 4 Drain built in the 1920s servicing sub divisions west of Inkster Road. and south of Shiawassee Road. The Hazel Drain connects to the Clareville Drain which discharges to Upper Branch of the Rouge River south of 8 Mile Rd in Farmington Hills. In the early 1970s, the Drain was improved by the City of Southfield and disconnected at Emmet St. and Inkster Rd. which is the community border between Southfield and Farmington Hills. Portions of the drain running east to west on Emmet Street were abandoned and storm laterals on the side streets east of Inkster were connected to a new line constructed on Byron St running west to east. The Fracassi Drain currently connects to the Emily Drain on Indian Street south of Byron Street. The Emily Drain discharges to Middle Branch of the Rouge River at Beech Daly Road just north of Shiawassee Road.

Previous Investigation Summary

In 2013 and 2014 elevated *E. coli* levels were detected in the storm drain laterals connecting to the Fracassi Drain on Byron Street. Additional samples were taken to locate segments of the drain with suspected illicit connections. Samples revealed elevated *E. coli* counts between 20,000 CFU /100 ML and 592,000 CFU /100 ML within the main trunk line along Byron Street and in the drain laterals located along Seminole, Poinciana, Negaunee, and Indian Streets. See the "2014 Illicit Discharge Investigation in Oakland County's Portion of the Rouge River Watershed Final Report" for further details.

In 2016, staff from WRC met with the City of Southfield to obtain plans for local drain and sanitary systems and develop a plan for additional IDEP investigations to locate illicit discharges to the drain. Dry weather screening inspections and sampling for *E. coli* were conducted at forty-eight (48) manhole locations on storm laterals connecting to Byron Street from Indian, Negaunee, Poinciana and Seminole Streets and on Inkster Road at Byron, Emmett, Sedalia, Shiawassee Road and Adeline Streets.

Based on *E. coli* results and manhole inspections, it was decided to conduct CCTV inspections of the laterals on Seminole, Negaunee, Poinciana, and Indian from Byron Street north to Adeline Street and on lateral storm drain connections from Inkster Road to Seminole Street, at Emmet, Sedalia, and Adeline Streets. In 2016, CCTV inspections of storm drain segments located four (4) 6-inch clay tile pipe connections to the drain from residential properties at 21705, 21351, 21317 and 21159 Seminole Street. No flow or sanitary debris was indicated at these connections. In addition, an examination of connections to catch basin 13703 and manhole 6193 on Seminole St. were conducted. These are both 12- inch reinforced concrete pipe (RCP) connections from the west running under the driveway at 21823 Seminole St. and through the yard at 21681 Seminole St. No dry weather flow or visual evidence of sanitary flow was seen at these connections.

In 2017, additional observations were conducted on the drain and connecting street laterals at twenty-nine (29) manhole locations and *E. coli* samples were collected from twenty-four (24) manholes exhibiting dry weather flow. Sampling results continued to show high *E. coli* levels on the storm laterals on Seminole, Poinciana, Negaunee and Indian St. Sampling data was used to further evaluate the project area for potential illicit discharge sources and prioritize areas in need of additional CCTV work. Additional sample results and results of CCTV Inspections in these areas were used also to help evaluate, identify and prioritize suspect properties with potential illicit connections for dye testing. Six (6) residential properties on Seminole were identified as suspect, and the property owners were sent Dye Testing Notification Letters. Additional CCTV inspections were competed on storm drain laterals on Indian Street and a portion of Negaunee Street. CCTV Inspections identified one (1) additional unknown 6-inch clay tile connection to the Drain in front of the John Grace Community Center on Indian Street and arrangements were made with the City of Southfield to dye test the Community Center. Dye testing of one (1) residential property on Seminole and the John Grace Community Center on Indian was conducted in 2017. No illicit connections were found. Testing of the Community Center was inconclusive as dye from fixtures in the kitchen area, bathrooms, and maintenance room utility sink and floor drains on the eastern side of the building did not show up in either the sanitary sewer or storm drain systems. The only plans showing storm and sanitary drains for the property that the City of Southfield could locate is the 1971 diagram of sanitary sewer improvements which shows abandonment and connection of 3 septic systems for the building in the front of the property along Indian St. Dye testing confirmed the sanitary connections for fixtures in the west half of the building to the sanitary sewer on Indian Street, but did not confirm connections for fixtures in the east half of the building. The City has checked with the School District but no additional plans for the building or property have been located.

Current 2018 Investigations

Follow up sampling for E. coli was conducted at sixteen (16) manhole locations on the Fracassi Drain and connected laterals on Indian, Negaunee, Poinciana, and Seminole Streets in 2018. Samples were also collected at five (5) select manhole locations and taken to the Department of Fisheries and Wildlife Laboratory at Michigan State University for MST analysis for DNA associated with human strains of *E. coli.* A map of sampling locations with sampling results is included as Figure 3. A complete table of sampling results is included in Appendix C. Further discussion of sampling results appears below.

Additional CCTV Inspections were conducted on the remaining laterals on Negaunee, Poinciana and Bryon Streets in 2018. An additional five (5) unknown 6-inch clay tile connections to the drain were located on Poinciana Street. An additional seven (7) properties associated with these connections were identified as suspect and added to the list of properties for dye testing. Dye Testing Notices were re-sent to the reaming five (5) suspect residential properties on Seminole Street and the additional seven (7) properties identified on Poinciana Street. Dye testing was completed three (3) houses on Seminole and one (1) house on Poinciana during the project period. An attempt was also made to inspect the unknown six-inch clay tile pipe connected to drain on Indian Street in front of the John Grace Community Center, but was unsuccessful.

No illicit discharges have been confirmed. A map of CCTV inspection locations and along with results and locations of suspect properties are included as Figure 4. A summary table of suspect properties

identified to date, along with the results of dye testing and status of each property appears as Table 2. Copies of CCTV inspections dye testing Inspections records are included in Appendix B.

Table 2. Results and Status of Dye Testing

Address	Dye Test Date	Results	Status
20130 Indian St. (John Grace Community Center)	12/4/2017	Fixtures on W. side of building are properly connected to the sanitary sewer. A connection for fixtures on E. side of building (kitchen, Gym Bathrooms, Utility Room) could not be confirmed by dye testing. A CCTV inspection of unidentified connection to the storm drain was attempted but failed.	Connections of fixtures on E. side of building remain unconfirmed. Building is currently vacant and property is for sale. No additional inspections are planned. Referred to City of Southfield
21159 Seminole St.	12/11/2017	All fixtures properly connected to the sanitary sewer	Completed- No issues found
21317 Seminole St.	9/27/2018	Dye Test Incomplete. Connection of kitchen fixtures could not be verified	Referred to City of Southfield Building Dept.
21337 Seminole St.	Pending	Pending	Owner has not responded to Notifications
21351 Seminole St.	Pending	Pending	Occupant Reused Entry- Referred to City of Southfield
21341 Seminole St.	9/13/2018	All fixtures properly connected to the sanitary sewer	Completed- No issues found
21705 Seminole St.	9/27/2018	All fixtures properly connected the sanitary sewer. Sump pump is also connected to the sanitary sewer	Sump pump issue referred to the City of Southfield
21365 Poinciana St.	Pending	Pending	Owner has not responded to Notification
21216 Poinciana St.	Pending	Pending	Owner has not responded to Notification
21208 Poinciana St.	Pending	Pending	Owner has not responded to Notification
21207 Poinciana St.	Pending	Pending	Owner has not responded to Notification
21185 Poinciana St.	Pending	Pending	Owner has not responded to Notification
21120 Poinciana St.	12/17/2018	All fixtures properly connected to the sanitary sewer	Completed- No Issues found
21130 Poinciana St.	Pending	Pending	Owner contacted, dye test to be scheduled

Results

Indian Street

Additional samples for *E. coli* were collected on the Indian Street drain lateral from Byron Street to Emmett Street. All counts were below 1,000 CFU/100 ML (Figure 3). These concentrations do not indicate that a continued source of sanitary sewage is present. Additionally, results of an MST sample taken at the outlet at manhole 6217 was non-detectable (ND) for human DNA markers. However, in 2017 manhole 6210 (located directly across from the John Grace Community Center and just downstream of the unknown six-inch clay tile inlet) showed *E. coli* concentrations greater that 1,002,500

CFU / 100 ML and what appeared to be evidence of dissolved toilet paper. The 2017 observations were made when the Community Center was occupied. The Community Center was vacant in 2018.

A diagram of the sanitary improvements at the Community Center in 1971 shows that three (3) septic systems located in the front lawn on the west side of the building were abandoned and the sanitary leads were re-routed and connected to the sanitary sewer on Indian.

Dye testing of the building in 2017 confirmed that the bathroom and break room plumbing fixtures on the west side of the building located at the north, center and south end are properly connected to the sanitary system. However, dye testing of the plumbing fixtures on the east side of the building in the kitchen, gym bathrooms and a utility room mop sink and floor drains was inconclusive. Tracing dyes from these fixtures did not show up in either the sanitary sewer or the storm drain system for the property.

The City has been unsuccessful in locating additional building or plumbing plans for the property. An attempted was made in to 2018 to do a CCTV inspection of the unknown six-inch clay tile connection at the street storm drain into the facility was but unsuccessful. The property is in the process of being sold and the building is currently vacant. The City was contacted and additional investigations have been put on hold until future ownership and use of the building and property is known. It should be noted that the *E. coli* concertation in manhole 6211 at the corner of Indian and Emmett was 927 CFU / 100 ML which is above the State Water Quality Standard. This manhole is located upstream of the Community Center. It is believed that elevated *E. coli* counts may be related to animal sources. A survey of manholes on the system in 2016 indicated that upstream manholes near Grand River Ave, although dry, showed evidence of animal fecal matter on the floor of the manholes. MST testing of the drain lateral in 2018 did not indicate the presence of human DNA the drain. The drainage system for the area is open ditch with inlets to the enclosed drain which gives easy access for animals living in the area.

Based on the extremely high E. coli when the Community Center was active in 2017, the inconclusive tracer dye test, and the low E. coli and DNA results in 2018 when the Center was vacant, it is believed that the fixtures on the east end of the Community Center are illicitly connected to storm sewer. Furthermore, it is suspected that wildlife is responsible for the elevated E. coli upstream of the Community Center. No other issues are suspected along Indian Street upstream of Byron Street.

Negaunee Street

Additional samples were collected on the Negaunee Street storm drain lateral in 2018 (Figure 3). Elevated E. coli concentrations in the drain, the highest being manhole 6220 at 69,767 CFU / 100 ML, continue to indicate the likelihood of an illicit discharge of sanitary sewage upstream of Emmett Street. . *E. coli* concentrations from pervious samplings have been as high as 649,000 CFU / 100 ML in 2017 at MH 6219. A CCTV inspection of the drain was completed in 2017 and 2018. The inspection did not locate any unidentified connections to the drain. Inspections of upstream drainage manholes and connected drainage ditch inlets have not identified any directly connected sources of contamination to the drain. MST sampling at manhole 6216 indicated a low human Bacteroides concentration (503.47 gene pairs / 100 ML). The corresponding E. coli concentration was relatively low (3,615 CFU/100 ML) as well. These concentrations are less than what would be expected from a direct discharge of sanitary sewage.

Additional upstream MST sampling of the drain could be beneficial in determining if elevated E. coli concentrations are sewage related and in narrowing down a section of the drain where concentrations are highest. Additionally, CCTV inspections of the storm drain found cracks in the pipe at ten (10) locations, seven (7) of which showed signs of infiltration. A CCTV inspection of the Evergreen Farmington sanitary sewer was conducted in this area in 2010. A review of the Evergreen Farmington inspection records and any more current inspection and maintenance records may help determine if the sanitary sewer is impacting E. coli levels in the storm drain.

Poinciana Street

Manhole inspections and sampling of dry weather flow on Poinciana Street drain lateral in 2018 continued to show high *E. coli* concentrations in the drain south of Shiawassee Rd. to Byron St. indicative of a sanitary source of contamination. The highest concertation of 69,767CFU / 100 ML was at manhole 6228 at Emmet Street. Sampling from previous years at this location have shown concentrations as high as 214,500 CFU/100 ML.

A CCTV inspection of drain was conducted in 2018 which located (5) unknown 6-inch clay pipe connections to the drain. Two (2) connections showed active flow but no signs of sanitary debris and another two (2) connections showed some evidence of deposits and staining. Based on the locations of the connections to the drain, seven (7) properties were identified as "suspect" and in need of dye testing.

Dye Testing Notices were sent to the owners of suspect properties. Dye testing of one (1) residence at 21120 Poinciana was completed during the project period. Dye testing results found all internal plumbing fixtures to be properly connected to the sanitary sewer. The property owner at 21130 responded to the notice and a dye test was scheduled but was cancelled and will need to be rescheduled. Owners of the other five (5) properties have not responded to the notice. The remaining six (6) properties still need to be scheduled for dye testing in 2019. No illicit connections on Poinciana Street have been found to date.

MST sampling of the drain at is connection to the Byron Street lateral at manhole 6227 indicates the presence of human DNA, but the human Bacteroides concentration was relatively low at 428.8. gene copies / 100 ML. Minimal flow levels in drain prevented the collection of MST samples at upstream manhole locations. The corresponding E. coli concentration was relatively low as well (3,865 CFU/100 ML). Additional MST sampling could be useful in confirming if elevated *E. coli* concentrations are due to human or animal sources and in further isolating sections of the drain with potential sanitary discharges.

The CCTV inspection of the drain also found nineteen (19) locations with cracks in the pipe, seven (7) of which showed signs of infiltration. Infiltration of sewage to the drain from the sanitary system is also a possibility. A review sanitary sewer CCTV and maintenance inspection records should be conducted to identify any potential issues with the sanitary system in this area.

Seminole Street

Additional sampling conducted in 2018 indicates that Seminole Street drain lateral is continuing to experience high concentrations of *E. coli* from dry weather flow sources. Results indicate that potential sanitary sources may exist over the entire length of the drain from its upper terminus at Adeline Street south to the drain outlet on Byron St. Sampling at the outlet of drain to connecting manhole 3426 on

Bryon Street showed a relatively low E. coli concentration of 3,865 CFU / 100 ML with corresponding low human Bacteroides concentration at 385.47 gene copies / 100 ML. Sampling at upstream manholes 6237, 6239, and 6190 at the intersections of Emmet Street, Sedalia Street and Shiawassee Rd. showed *E. coli* concentrations of 18,234 CFU / 100 ML, 42,094 CFU / 100 ML and 89,583 CFU, 100 ML. Previous sampling at manholes on Seminole Street have been found to be greater than 1,002,500 CFU / 100 ML at manhole 6240 in 2016. Additionally, sampling of flow from a connected local storm drain to the north of manhole 6195 at Adeline and Inkster showed E. coli concentrations of 26,199 CFU / 100ML indicating an upstream discharge may be present. An upstream investigation of the local drain has not yet been conducted.

Additional MST sampling could be useful in confirming if elevated *E. coli* concentrations are due to human or animal sources and in further isolating sections of the drain with potential sanitary discharges.

CCTV inspection of the drain on Seminole was completed in 2016. Four (4) 6-inch clay tile connections to the drain were found on Seminole. Based on locations of the connections to the drain, six (6) properties were identified as "suspect". Homeowners were sent dye testing notification letters and one home, 21159 Seminole, was dye tested in 2017. Dye testing confirmed that all sanitary fixtures in the home are properly connected to the sanitary sewer on Seminole Street. In 2018, second Dye Test Notices were mailed to the remaining five (5) suspect properties. An additional (3) houses, 21705, 21341, and 21317 on Seminole Street were dye tested in 2018. All the plumbing fixtures at 21705 Seminole Street were found to be properly connected to the sanitary sewer, however, the basement sump pump was also found to be connected to the sanitary sewer. The sanitary fixtures do not run through the sump pump. This issue has been forwarded to City of Southfield for review. All the plumbing fixtures at 21341 Seminole Street were found to be properly connected to the sewer. No further action is necessary. Dye testing of 21731, found fixtures in the bathroom and utility room to be properly connected to the sanitary, however, tracing dye from kitchen fixtures did not show up in the either the sanitary sewer or storm drain system. This issue has been referred to the City of Southfield Building Department for follow up. The occupant at 21337 Seminole refused entry to the property. It is believed the occupant is a tenant and not the property owner. The property owner has not responded to Dye Testing Notice Letters. This issue has been referred to the City of Southfield. The property owner at 21351 Seminole Street has not responded to notices. Occupants have not been home during several attempts to contact them in the field.

Additionally, CCTV inspections of the storm drain found cracks in the pipe at three (3) locations and one (1) defective joint with signs of infiltration at twelve points. Infiltration of sewage to the drain from the sanitary system is also a possibility. A review sanitary sewer CCTV and maintenance inspection records should be conducted to identify any potential issues with the sanitary system in this area.

Recommendations

The following activities are recommended

- Coordinate with City of Southfield to complete dye testing of the remaining eight (8) properties identified as "suspect" on Seminole and Poinciana Streets to confirm or eliminate them as illicit discharge sources. Follow up with the City of Southfield with corrections of any identified illicit connections identified as needed.
- Follow up with City of Southfield to verify connectivity of unconfirmed fixtures at 21317 Seminole Street.

- City of Southfield should insure that plumbing fixtures at the Community Center at 20130 Indian Street be verified upon sale of the property before issuing a Certificate of Occupancy.
- Conduct a review of sanitary sewer CCTV and maintenance inspection records to identify any areas with potential for sanitary infiltration to the storm drain.
- Coordinate conducting additional sampling and investigations with the City of Southfield as needed to confirm or eliminate the connected local drain to MH 6195 on Inkster Rd. as an illicit discharge source.
- Grating should be installed on road drain ditch inlets to the drain to limit access of animals to the enclosed drain system

8 MILE DRAIN INVESTIGATION

Background

The 8 Mile Drain is large 12-foot diameter storm water tunnel that was constructed during the early to mid-1960s. The drain is located in the Cities of Southfield and Oak Park in Oakland County and borders the City of Detroit in Wayne County. The drain begins in Oak Park at just east of Greenfield Road and travels west along the median for 8 Mile Road (M 102) for approximately 3.5 miles where it outlets to the Rouge River at the 8 Mile Road bridge crossing just west of Berg Road in Southfield. The drain services an area of approximately 3.33 square miles and includes a small commercial district along 8 Mile Road in Oak Park and commercial and industrial properties along 8 Mile Road from Greenfield Road west to Berg Road and along Northwestern Hwy. and Southfield Road from 8-mile Rd to just north of 9 Mile Rd in Southfield. The drain also services residential sub divisions in Southfield west of Northwestern Hwy to Lahser Road and north of 8 Mile Road to 9 Mile Road along with a small residential sub division along Southfield Road south of 10 Mile Road. The drain receives flow from connected State Highway, County road drain and local road drain systems and receives flow from seven (7) other County drains and numerous local subdivision drain systems in the area. A map of the 8 Mile drain location and drainage area is included as Figure 5.

Historical Sampling Summary

Historically the 8 Mile Drain outlet has been found to have continual flow and has been screened and sampled on numerous occasions by WRC under their IDEP Program. It was surveyed and sampled under the Rouge Program outfall surveys in 1999 and found to have an *E. coli* counts of 1,139 CFU / 100 ML. Sampling occurred again in preparation for the 2018 Storm Water Permit re-application and was found to have an *E.* coli count of 4,237 CFU / 100 ML. The bridge over the Rouge River at the 8 Mile Road was reconstructed in 2010 and the outlet of drain was replaced with a concrete flow channel connecting drain's first upstream manhole to west side of the bridge embankment at the River. The channel was sampled and had an E. coli concentration of 493 CFU /100 ML. In 2016, a complaint was received of a sewage smell on the Rouge River at the 8 Mile Bridge Crossing. E. coli sampling conducted at the outlet channel showed concentrations of 26,922 CFU / 100 ML. A sample was also taken from the Rouge River just upstream of the 8 Mile Drain outlet and was found to have an *E. coli* concentration of 18,737 CFU / 100 ML. An additional upstream survey and sampling was conducted at connecting manholes for the Owens, Morgan, and Flannery Drains. One (1) branch of the Owens Drain showed an *E. coli* concentration of 7,095 CFU /100 ML and two (2) branches of the Flannery Drain showed *E. coli* concentrations of 8,855 CFU / 100 ML and 5,075 CFU / 100 ML. The Drain was placed on WRC's prioritized list of Drains in need of further investigation in the Rouge Watershed.

Current 2018 Sampling and Investigation

The outlet of the 8 Mile Drain and the Rouge River upstream of the 8 Mile drain outlet were both re-sampled for *E. coli* in 2018. Additional samples were also collected for MST and taken to the lab at Michigan State University for DNA analysis. Additionally, an inspection of the 8 Mile drain was scheduled and conducted by WRC. Due to the size and depth of the drain, a consultant was hired to walk the length of the drain and perform the inspection. As part of the inspection consulting staff located and examined inlets to the drain for evidence of illicit discharges and samples of inlets with dry weather flow were collected and taken to the Walled Lake / Novi for *E. coli* analysis. A total of 13 inlets with dry weather flow were sampled during the inspection. A map of sampling locations and results is included as Figure 6. A table of sampling results appears as Table 3 below. Results are also included in Appendix C. Further discussion on the results of *E. coli* sampling occurs below. A detailed report of the 8 Mile drain inspection is still in the process of being compiled by the consultant and was unavailable for review and discussion.

Table 3. 8 Mile Drain Sampling Results

WRC Dry Weather Screening Sample Results					
Sample Date	**Sample ID**	**Sample Location**	**Parameter**	**Results**	**Units**
8/29/18	8 Mile Drain Outlet	In E. side of 8 Mile Bridge Crossing	E. coli	866	CFU/100 ML
8/29/18	Rouge @ 8 Mile	Rouge @ N. side of 8 Mile Rd Bridge Crossing	E. coli	1,246	CFU/100 ML
8/29/18	8 Mile Drain Outlet	In E. side of 8 Mile Bridge Crossing	MST	1,486.80	Gene Copies/100 ML
8/29/18	Rouge @ 8 Mile	Rouge @ N. side of 8 Mile Rd Bridge Crossing	MST	3,697.33	Gene Copies/100 ML

8 Mile Drain Inspection Sample Results				
10/18 /2018 Samples				
Sample	**Sta.**	**Location Description**	**Sample Point Description**	***E. coli* Results**
A	77+27	633 Feet West of MH 7	30" Drop Inlet	<50
B	48+00	MH 5	Inlet Pipe in Manhole	1,035
C	36+77	MH 4	Inlet Pipe in Manhole	50
D	31+10	MH 3	Inlet Pipe in Manhole	<50
E	22+17	657 Feet East of MH 2	12" Inlet @ 11:00 (S)	555
F	15+60	MH 2	Inlet Pipe in Manhole	100
10/30/2018 Samples				
Sample	**Sta.**	**Location Description**	**Sample Point Description**	*E. coli Results*
A	174+20	MH 14	Inlet Pipe in Manhole	50
B	182+55	410 Feet East of MH 15	48" Brick Eye	<50
C	171+37	283 Feet West of MH 14	48" RCP Eye	50
D	145+01	1042 Feet East of MH 12	Inlet Pipe	<50
E	143+39	880 Feet East of MH 12	24" Inlet (S)	<50
F	128+91	MH 11	Inlet Pipe in Manhole	11640
G	99+50	MH 8	Inlet Pipe in Manhole	<50

Results

E. coli concentrations from dry weather screening samples taken at both the outlet of the 8 Mile Drain and upstream on the Rouge River at 8 bridge crossing, although elevated, were not as high levels seen in the 2016 sampling. However, MST samples taken in 2018 do show the presence of human DNA, at levels that would seem to indicate that a source of sewage contamination is occurring, both upstream on the 8 Mile Drain and to the Rouge River north of 8 Mile Road. Samples collected it inlets exhibiting dry weather flow during the Inspection of the 8 Mile Drain show two (2) inlets as possible sources of illicit discharges to the drain. An inlet pipe to manhole 5 showed an E. coli concentration of 1,035 CFU / 100 ML. and an Inlet pipe to manhole 11 showed a concentration of 11,600. Additional sampling and upstream investigations of these connections will need to be scheduled.

Samples were taken to the Walled Lake / Novi Laboratory and results were readily available. A report from the consulting firm that performed the 8 Mile Drain inspection is still in the process of being compiled. Notes and observations for the inlets that were sampled and additional inlets inspected will be reviewed when the report is available.

Recommendations

The following activities are recommended

- WRC will follow up with additional sampling and investigations as needed to confirm and identify any illicit discharge sources from suspect inlets to manholes 5 and 11.
- WRC will review the 8 Mile Drain inspection report when available and address any additional issues found.
- Additional upstream sampling on the Rouge River north of 8 Mile Road should be conducted to confirm and isolate any discharge sources.

CLAUDE H. STEVENS DRAINS NO. 3 & 4 INVESTIGATIONS

Background

The Claude H. Stevens Drain is a conglomeration of 10 separate sections of enclosed storm drains located throughout Bloomfield Township. Outlets for the separate drain sections have been dry weather screened and sampled for *E. coli* by WRC under their IDEP Program. Four (4) sections of the drain, Claude H. Stevens 3, Claude H. Stevens 4 and Claude H. Stevens 10, showed evidence of possible illicit discharges and were placed on the list for additional investigations. Additional sampling and investigations of these four (4) sections of the drain were conducted in 2014 through 2017. During this period, the Claude H. Sevens No. 1 and No. 10 drains were eliminated as suspected sources and one (1) illicit discharge source on the Claude H. Stevens. No 3. was isolated and removed. The Claude H. Stevens. No 3. and No. 4 Drains both remain suspected of containing additional upstream illicit discharge sources and were continued to be investigated in 2018. A summary of sampling and investigations conducted on Claude H. Stevens No. 3 and 4 Drains drain follows.

Claude H. Stevens No. 3 Drain

Background

The Claude H. Stevens No. 3 Drain is located east of Squirrel Road and North of Wattles Road and services residential subdivisions in this area. The drain runs east from Squirrel Road and discharges to a branch of the Rouge River just east of Farhill Street.

Previous Investigation Summary

In 2013, sampling of the outlet of the drain showed an *E. coli* concentration of 7,194 CFU/100 ML. In 2014, the Claude H. Stevens 3 Drain was investigated and sampled for *E. coli* at select upstream manhole locations in order to identify potential illicit discharge sources. Segmenting and sampling of the drain at upstream road crossings indicated elevated *E. coli* counts at all manholes the highest being manhole 408 on Charing Cross with concentration of 226,500 CFU/100 ML. High *E. coli* and physical evidence of sewage at this location (floatable, soap suds, solids) indicated a likely illicit discharge of sanitary sewage.

In 2016. local drainage and septic system information was obtained. Additional sampling and investigations were conducted by WRC which identified the septic system drain field at 4158 Charring Cross located adjacent to MH 408 as a possible source of contamination. The property was referred to Health Department for follow up investigation.

In 2017 the property was investigated by the Health Department and found to have a failed septic field leaching into the storm drainage ditch on Charring Cross. Illicit Discharge and Violation Notices were sent to the homeowner and septic the system was eliminated by Bloomfield Township by connecting the home to sanitary system. Follow up sampling in the fall of 2017, after corrections if the illicit discharge had been completed, continued to show elevated E. coli concentrations at MH 408 greater than 1,002,500 CFU / 100 ML. Low flow levels in the upstream potions of the drain prevented additional sampling from being conducted at that time. See the "2017 Illicit Discharge Investigation in Oakland County's Portion of the Rouge River Watershed Final Report" for further details.

2018 Sampling and Investigations

In 2018 additional sampling and investigations were conducted on the CH Stevens No. 3 Drain at manhole 408 and upstream manhole locations and on the local drain systems for subdivisions on Whipple Lane, Steeple Chase and Hunt Master. A map of sampling locations and results are included as Figure 6. Upstream inspections were conducted at seven (7) manhole and catch basin structures on the CH Stevens No. 3 drain and (5) manhole and catch basin structures from the local connected drain systems. During the survey, manhole, catch basin and inlets structures were located, photographed and examined for dry weather flow and any evidence of pollutants associated with illicit discharges. Samples were collected at thirteen (13) locations and taken to the Walled Lake / Novi Waste Water Treatment Facility (WWTF) for *E. coli* analysis. A map of locations with results of E. coli sampling is included as Figure 7. Copies of manhole, catch basin, and inlet inspections, notes and photographs are included in

Appendix A. Sampling results are included in Appendix C. The results of sampling and inspections and are further discussed below.

Results

Results of *E. coli* sampling indicates that the drain is still experiencing elevated *E. coli* concentrations indicative of an upstream source of sewage contamination. *E. coli* concentrations at manhole 408 were at 27,837 CFU / 100 ML. An examination of the manhole showed light flow from the north and pooling of a brown material with suds. The manhole also has brown staining on the manhole floor, inlet pipe, walls and outlet. The manhole is an elbow for a north to east transition of flow in the drain and flow tends to pool at the outlet pipe for the manhole.

Light flow was seen in the ditch line just north of manhole 408 on the west side of Charring Cross Sampling of the flow in the ditch line showed an *E. coli* concentration of 2,263 CFU / 100 ML but did not show any evidence of sewage contamination. The ditch line does not connect to manhole 408, but has an inlet which connects to manhole 410 on the east side of Charring Cross. Manhole 410 is the connector manhole for flow from manhole 408 going east. Sampling of this manhole showed *E. coli* concentrations of 15,387 CFU / 100 ML. The manhole also has inlets for local road drainage for Charring Cross from the north and south which were dry.

A survey of upstream areas revealed that manholes 407, 7318 and 7317 are pass through manholes and all had light flow and some signs of staining on the flow channels. All of the manholes also had piles of animal fecal material on the manhole floors. Sampling results of flow in these manholes were, 8,200 CFU / 100 ML. 10,932 CFU / 100 ML and 42,259 CFU /100 ML, respectively. Manhole 407 has an inlet for the road drain system on the east side of Charring Cross which was dry. Manhole 7317is the connecting manhole for the drain from the west. It also has a connected catch basin 13369 to the south west which picks up flow from a natural drainage ditch in backyards for subdivision west on Steeple Chase, and Whippers Lane. Flow in the ditch the inlet was clean. Sample results for *E. coli* from this flow was 50 CFU/ 100 ML and it does not seem to be a source of contamination to the Drain.

Upstream manhole 7316 is the upper terminus of the drain for the Claude H. Steven No. 3 drain. The manhole is located in the backyard of 493 Whippers Lane. It picks up flow from a connected beehive catch basin to the west for sub divisions on Whippers Lane and Hunt Master and has an inlet for a connected beehive catch basin from the south for the subdivision on Steeple Chase. Sampling for *E. coli* showed concentrations of 826,000 CFU / 100 ML. Examination of light flow coming in from the west and a trickle flow coming from the south inlets showed some physical signs of sewage contamination and piles of animal feces were present on the manhole floor.

An examination of the upstream connected local storm drain catch basins for Whippers Lane, Steeple Chase and Hunt Master was performed. A beehive catch basin west of manhole 7216 located in the backyard between 482 and 493 Whippers Lane located and inspected. The catch basin has inlets from storm catch basins north on Whippers Lane and west on Hunt Master. Examination of the catch basin manhole showed that inlets the from the north and west were both dry there was no active flow in the manhole. There was, however, water ponded at the outlet of the manhole to the east connecting to

manhole 3716 on the Claude H Stevens Drain. Sampling of ponded water showed *E. coli* concentrations of 31,554 CFU / 100 ML. There was some black staining on the manhole floor but no presence of sanitary debris or fecal material. There is also a four-inch diameter black plastic corrugated PVC drain that is connected to the top of the beehive cover. The connected drain had no flow and is partially buried. It looks like the drain comes from 482 Whippers Lane and is probably for footing or roof drainage for the residence. An examination of the connected catch basins on Whippers Lane, and Hunt Master found that both are connecting manholes with inlets for open ditch drains for the cul-de-sacs and streets in each subdivision. Inlets from the drainage diches were dry but there was water in both catch basin sumps. Sampling of the catch basin sumps for *E. coli* showed concentrations of 9,406 CFU / 100 ML in catch basin for Whipper's Lane and 3,456 CFU / 100 ML in the catch basin for Hunt Master. There was no physical evidence of sanitary debris in either catch basin. A survey of connected drainage ditches around the cull-des-sacs and along the street in each sub division found no flow or evidence of an illicit discharge. A catch basin at the end of the cul-de-sac for Steeple Chase connects to manhole 7316 south on the Claude H. Stevens drain. This catch basin is a connecting manhole for drainage ditch inlets around the cull-de-sac and along Steeple Chase. There was flow coming into the catch basin from the drainage ditch to the east. Sampling of flow for *E. coli* showed a concentration of 960 CFU / 100 ML. Flow in the ditch line was clear and there was no evidence of sanitary sewage in the dich line or catch basin sump. Tracking flow in the ditch line east, showed that it did not go beyond the first driveway culvert for 475 Steeple Chase. It is suspected that the home has footing drains with groundwater flow connected to the driveway culvert. A survey of drainage ditches around the cul-de-sac and along the street did not find any additional flow or evidence of an illicit discharge occurring.

High *E. coli* concentrations manhole 7316 are indicative of an upstream illicit discharge, however, sanitary flow, debris and *E. coli* concentrations in upstream subdivision catch basins and surveys of sub division drainage ditches have not located a potential source of contamination. Furthermore, evidence of large amounts animal fecal matter in the drain suggests at least some of elevated *E. coli* counts are animal related. A direct connection from properties adjacent to the drain on Whipple Lane and Steeple Chase is possible, but consultation with Bloomfield Township indicates that the three (3) subdivisions have sanitary sewer and none of the properties in this area are on septic systems.

Recommendations

The following activities are recommended:

- Cleaning and resampling of the drain upstream of manhole 408 should be done to determine if an illicit discharge is still occurring. MST sampling to determine if human DNA is present may also be beneficial.
- Additional monitoring and possibly MST sampling of the connected subdivision drains is needed to eliminate them as potential sources of sanitary discharges.
- A CCTV inspection of the system west of manhole 7316 may be needed to locate any illicit connections to the drain if cleaning and resampling indicates that an illicit discharge is still occurring.
- Dye testing of homes starting with 493 Whippers Lane.

- Grating should be installed on road drain and backyard inlets to the drain to limit access of animals to the drain system

Claude H. Stevens No. 4 Drain

Background

The Claude H. Stevens No. 4 Drain is located south of Wattles Road east of Kensington Road and services residential subdivisions south of Wattles Road between Kensington and Adams Road. The drain runs east of Kensington Road and discharges to a branch of the Rouge River just east of Burnley Street.

Previous Sampling and Investigation Summary

In 2013, sampling of the outlet of the drain showed an *E. coli* concentration of 10,909 CFU/100 ML.

In 2014, the drain was segmented and sampled for *E. coli* at the first upstream manhole location and MH locations at Tullamore and Haddington streets. All manholes had elevated *E. coli* counts ranging from 876 CFU/100 ML to 4,802 CFU/100 ML. Inspections of manholes did not find any other physical evidence of sanitary sewage in the drain. Upstream manhole locations in Kensington Road were not sampled due to concerns of working in the road right of way. No additional sampling of the drain was conducted in 2016. In 2017 the drain was sampled for *E. coli* at four (4) locations including; MH 3375 near the outlet of the Drain on Burnley Street, at MH 420 on Haddington Street and at MH 417 in Kensington Rd. A connected MH from a local drain system on Dover Street was also sampled. The MH exhibited dry weather flow was found to be from a 15-inch clay tile crock drain under the center of the street. Sampling of flow in the connected drain showed *E. coli* concentrations of 14,308 CFU/100 ML. The route and location of the of the upstream drain system was unknown. See the "2017 Illicit Discharge Investigation in Oakland County's Portion of the Rouge River Watershed Final Report" for further details.

2018 Sampling and Investigations

Additional upstream investigations and sampling of the drain were conducted in 2018 in response to an illicit discharge seen at the outlet of the drain located at 4851 Burnley Street. Upstream manholes at the road / drain crossings at Burnley Street (7315), Tullamore Street (7312), Haddington Street, (420) and the connected local storm drain on Dover Street at Kensington Road (417 A) were examined and sampled. Maps of the local storm drain system on Dover Street were obtained and a survey of manhole and catch basin structures was completed by WRC with assistance from Bloomfield Township. During this survey five (5) upstream manhole structures between Dover and Charring Cross were located. Four (4) of the structures were able to be opened and examined and sampled for *E. coli.* A map of manhole and sampling locations with results is included as Figure 8. Notes, observations and photos of drain surveys and investigations are included in Appendix A. Sampling results are included in Appendix C

Results

E. coli concentrations were elevated at all manhole locations on the Claude H. Stevens Drain and at the outlet of the local drain at Dover Street and Kensington Road. The highest concentration was 252,000

CFU / 100 ML at the connected local drain manhole, 417A. Observations at this manhole showed a connected 15" clay tile pipe with the top cut off as it passes through the manhole. There was heavy flow with a sanitary odor at this location but no sign sanitary solids or debris. A map of the location of the storm drain system and manhole structures on Dover Street was obtained from Bloomfield Twp. A survey of the drain and inspection of the manhole structures and catch basin inlets was performed by WRC and Bloomfield Twp. staff.

Dover Street is a dirt road with an enclosed storm drain that is located in the property easements along Dover Street. The drain follows the road going northeast toward Charing Cross. It is located along properties on the north side of Dover at Kensington Road and traverses to the south side of road where the road bends to the north to intersect with Charing Cross. There is a manhole in the intersection of Dover Street and Charing Cross which has inlets for road drainage from the north and south on Charing Cross. The manhole also connects a beehive manhole structure across the street. The beehive structure receives upstream flow from a drainage ditch and connected retention pond south of Wattles Road.

During the survey total of five (5) structures were located. All the manholes were able to be opened and examined except Dover 3 which has a beehive cover that is encased by tree roots growing around manhole. All of the examined manhole structures along Dover Street have inlets for the property ditch lines along the roadside. All the inlets, including the road drain inlets to the manhole in Charing Cross were dry. There was flow in the pass though channels of all the manholes which is emanating from the upstream connected retention pond. Flow in the manholes and connected channel for the retention pond was clean and clear with no physical evidence of an upstream illicit discharge occurring.

E. coli samples were collected at the (4) manhole locations and taken to the Walled Lake / Novi WWTF Laboratory for analysis. Results of the *E. coli* sampling indicates that a discharge upstream of Dover manhole 1 is highly unlikely. E. coli concentrations at all upstream manhole locations were all relatively low, with the highest concentration being 980 CFU / 100 ML at Dover 2. Based on this information it is suspected that a discharge may be occurring from one of the properties located on Kensington Road or Dover Street between manholes 417A and Dover 1.

The Road Commission for Oakland County (RCOC) was contacted. RCOC and Bloomfield Township are in the process of making arrangements to have the section of drain between manhole 417A and Dover 1 cleaned and CCTV inspected to locate any illicit connections to the drain. It should be noted that Bloomfield Township has indicated that all the properties in this area are on septic systems and sanitary sewer is not available.

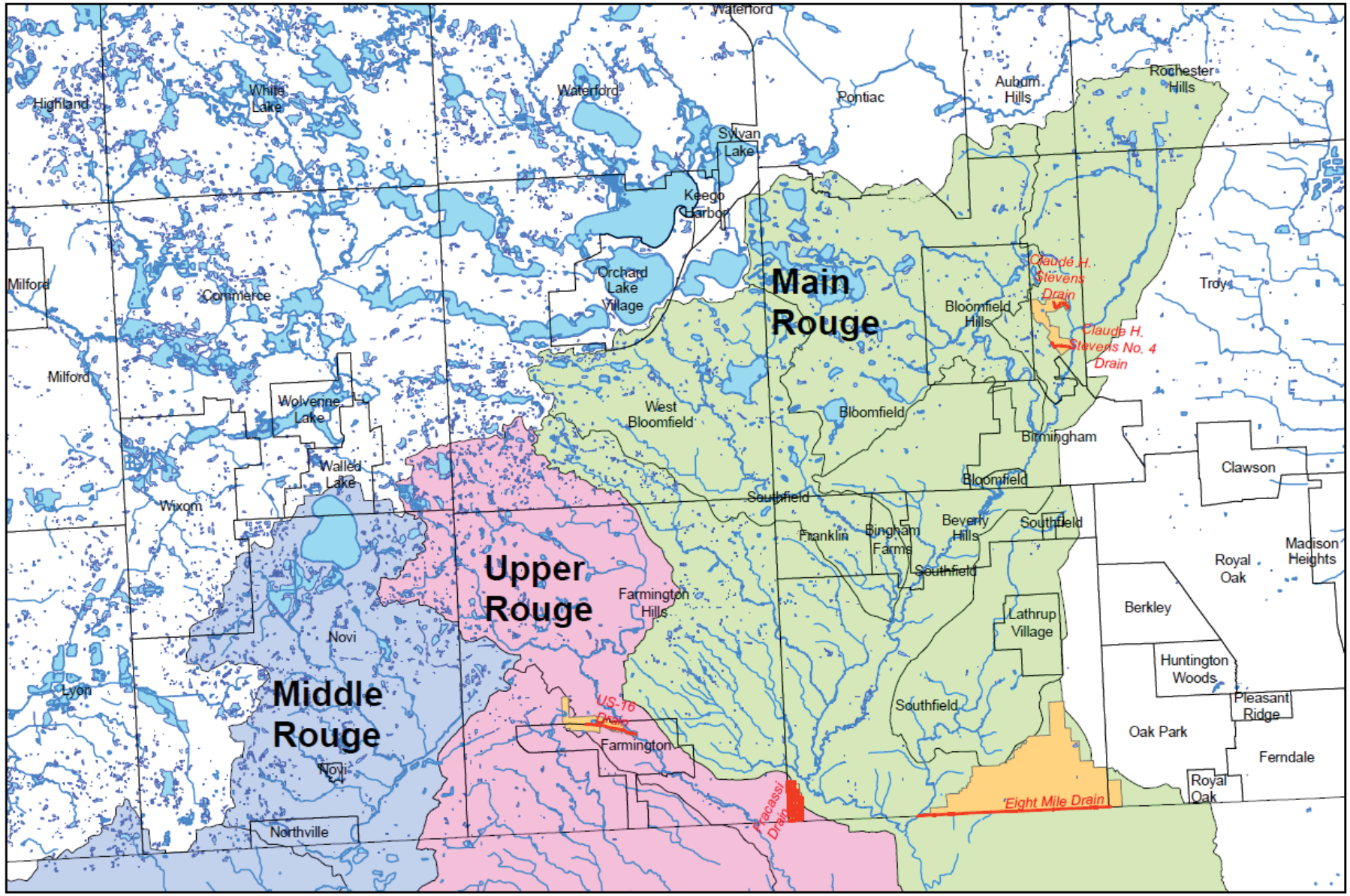
Recommendations

The following follow up activities are recommended:

- Ensure completion of CCTV inspection of the local storm drain on Dover St. by Bloomfield Township or RCOC.
- Ensure dye testing is completed by the Health Department on suspect residences.
- Once corrections are complete, perform follow up sampling of the drain to verify and identified illicit discharges have been eliminated and no additional illicit discharges are occurring.

FIGURES

Figure 1: Location of 2018 Rouge IDEP Project Drains



2018 IDEP Project Area Locations

Legend

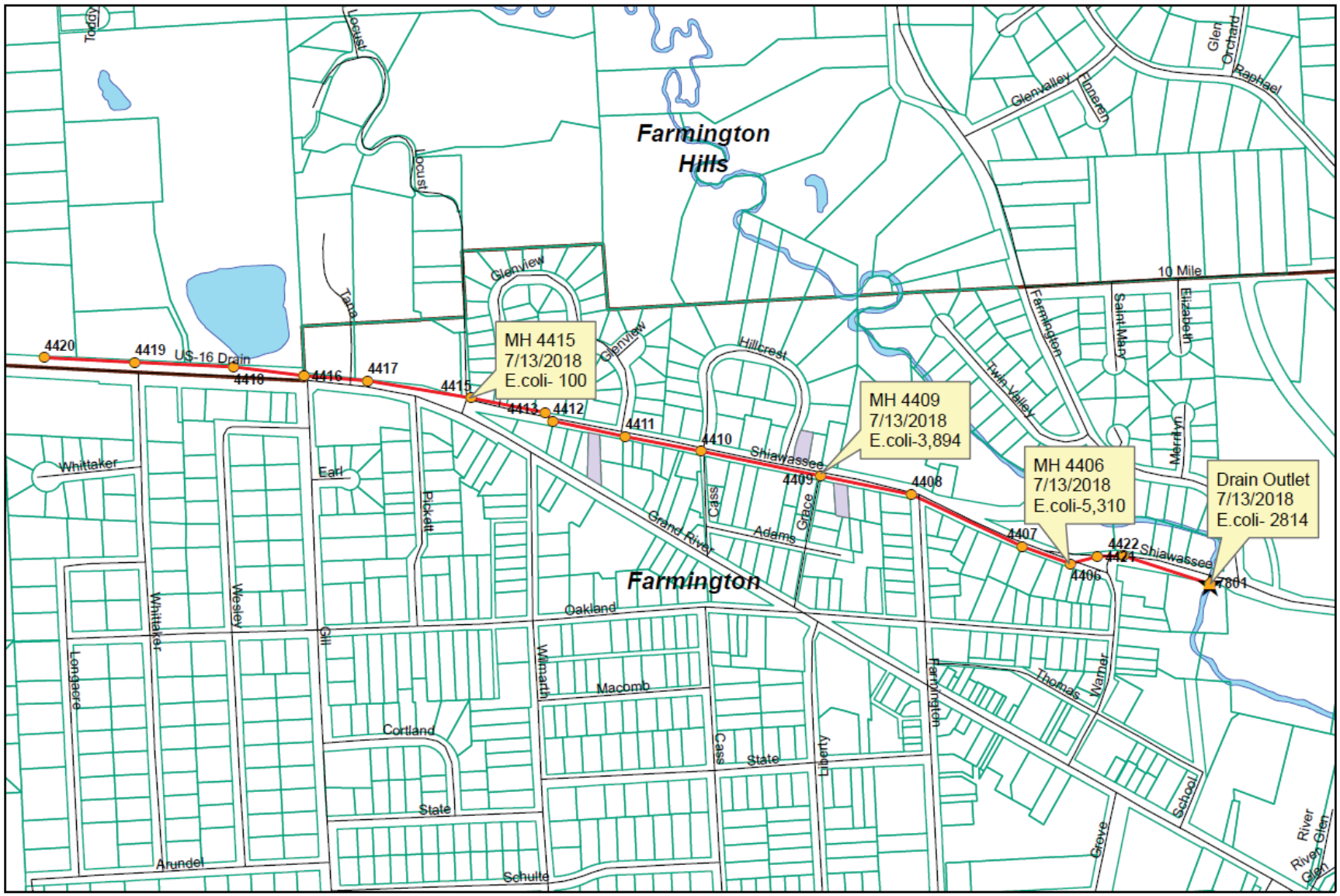
- Main Rouge
- Middle Rouge
- Upper Rouge
- County Drains
- Watercourse
- Water Body
- Drain District Area
- Municipal Boundaries

N

Oakalnd County
Illicit Discharge
Elimination Program

WRC
WATER RESOURCES COMMISSIONER

Figure 2: US 16 Drain, 2018 E. coli Sampling Results



Legend

- Drain Outlet
- Manhole Structures
- US16 Drain
- Corected Properties
- Lake / Pond
- Municipal Boundary
- Rouge River

US 16 Drain, 2018 IDEP Investigation
E.coli Sampling Results, Farmington

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Oakland County
Illicit Discharge
Elimination Program

WRC
WATER RESOURCES COMMISSIONER
Jim Nash

Figure 3: Fracassi Drain, 2018 Sampling Results.



Fracassi Drain, 2018 IDEP Project E.coli Sampling, Southfield

Legend

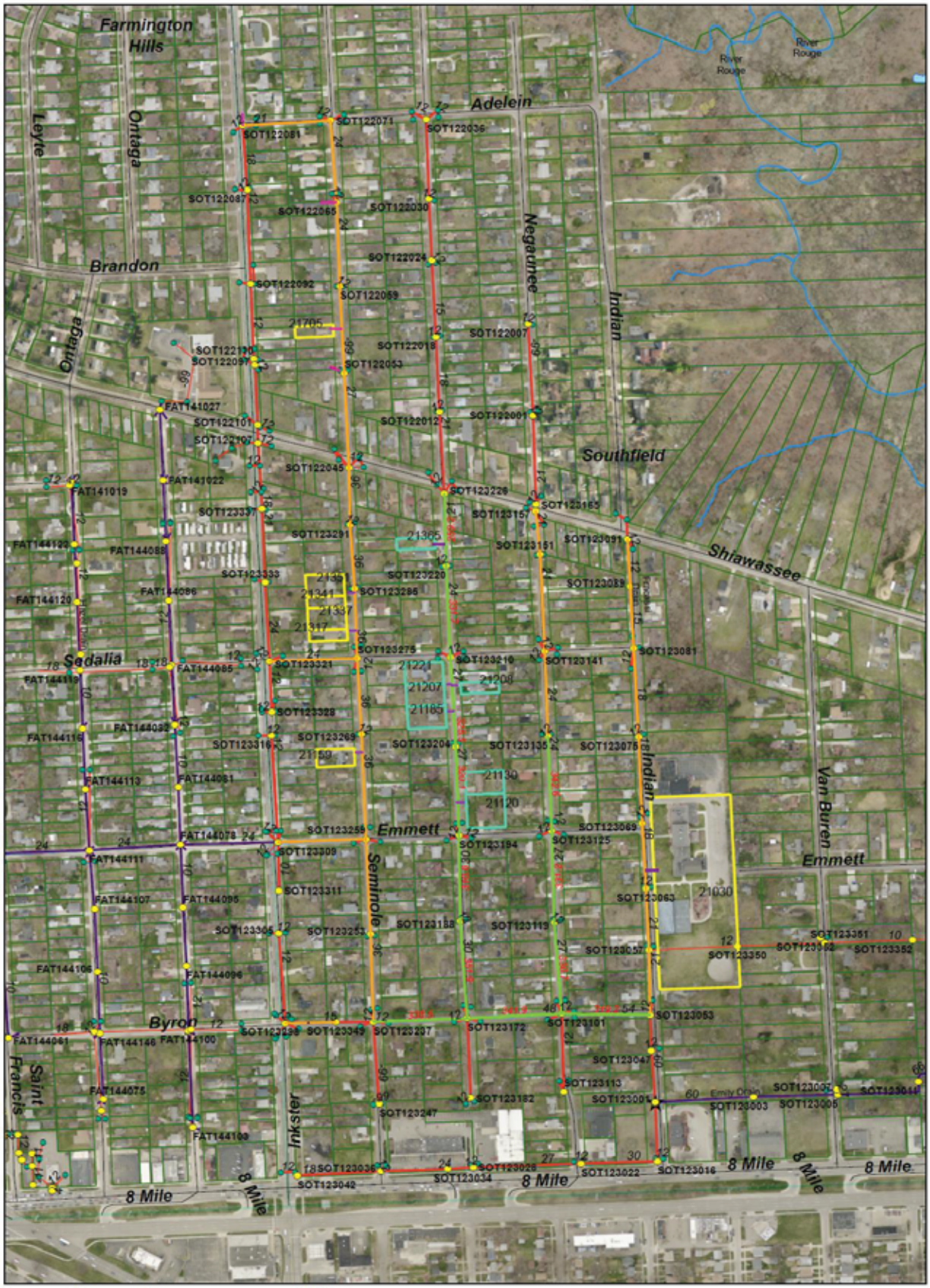
- ★ Drain Outlet
- Sampling Locations
- MH Locations
- Fracassi Drain
- Emily Drain
- Open Water Course
- Municipal Boundary

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Oakland County
Illicit Discharge
Elimination Program

WRC
WATER RESOURCES COMMISSIONER

Figure 4: Fracassi Drain CCTV & Suspect Property Locations



Fracassi Drain, 2018 IDEP Project, CCTV & Suspect Property locations, Southfield

Legend

MH Locations
Road / Drainage Ditch CB Inlet Structures
Fracassi Drain
Emily Drain
2016/2017 CCTV Sections
Completed 2018 CCTV Sections
Suspect Properties (2016/2017)
Suspect Properties (2018)

2018 Compited CCTV
12 Segments
Total Linear Feet=3,912.6
(Includes cleaning & CCTV)

N

Oakland County Illicit Discharge Elimination Program

WRC

Figure 5: Eight Mile Drain Location

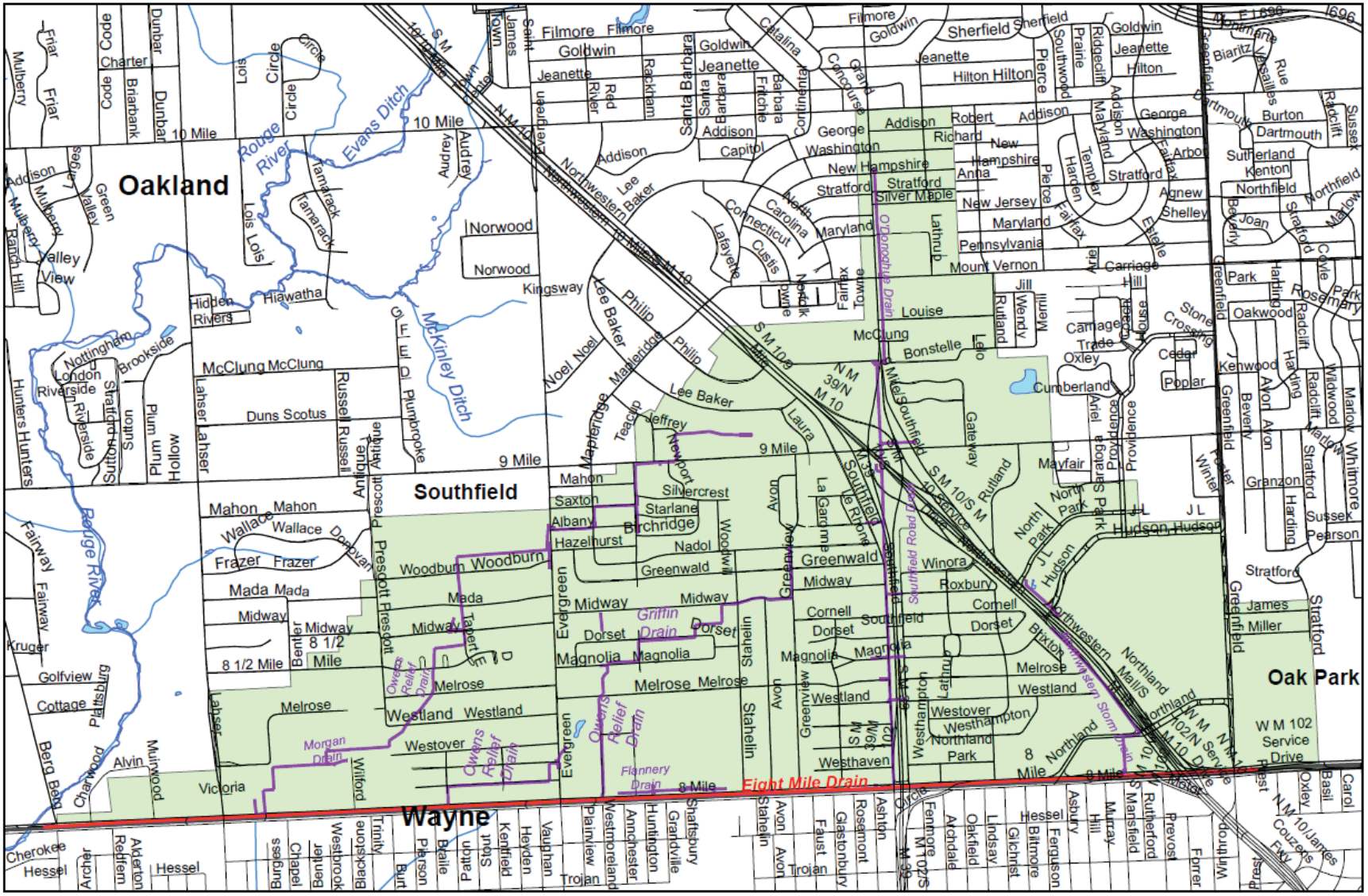
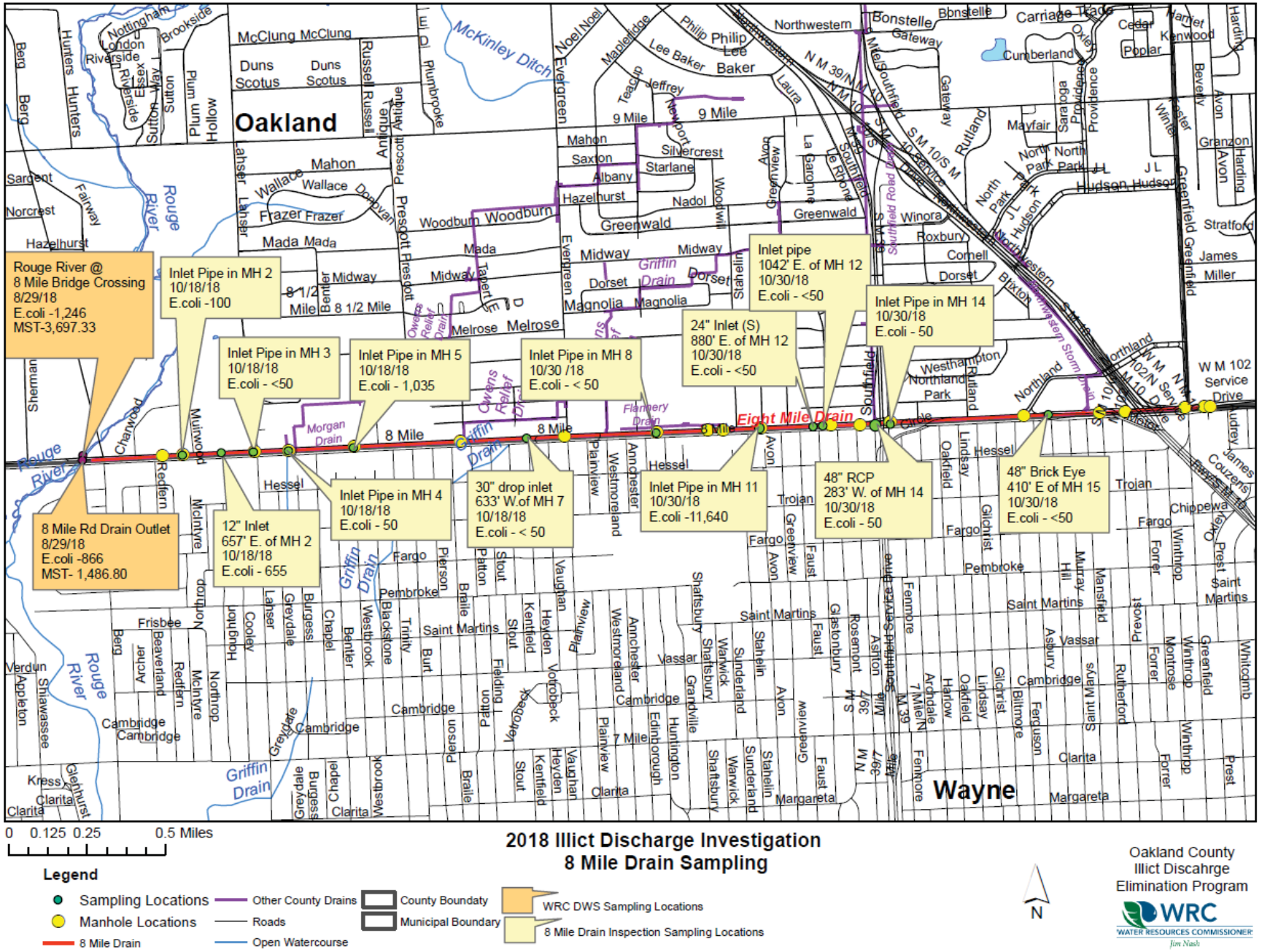


Figure 6: 8 Mile Drain 2018 Sampling Results

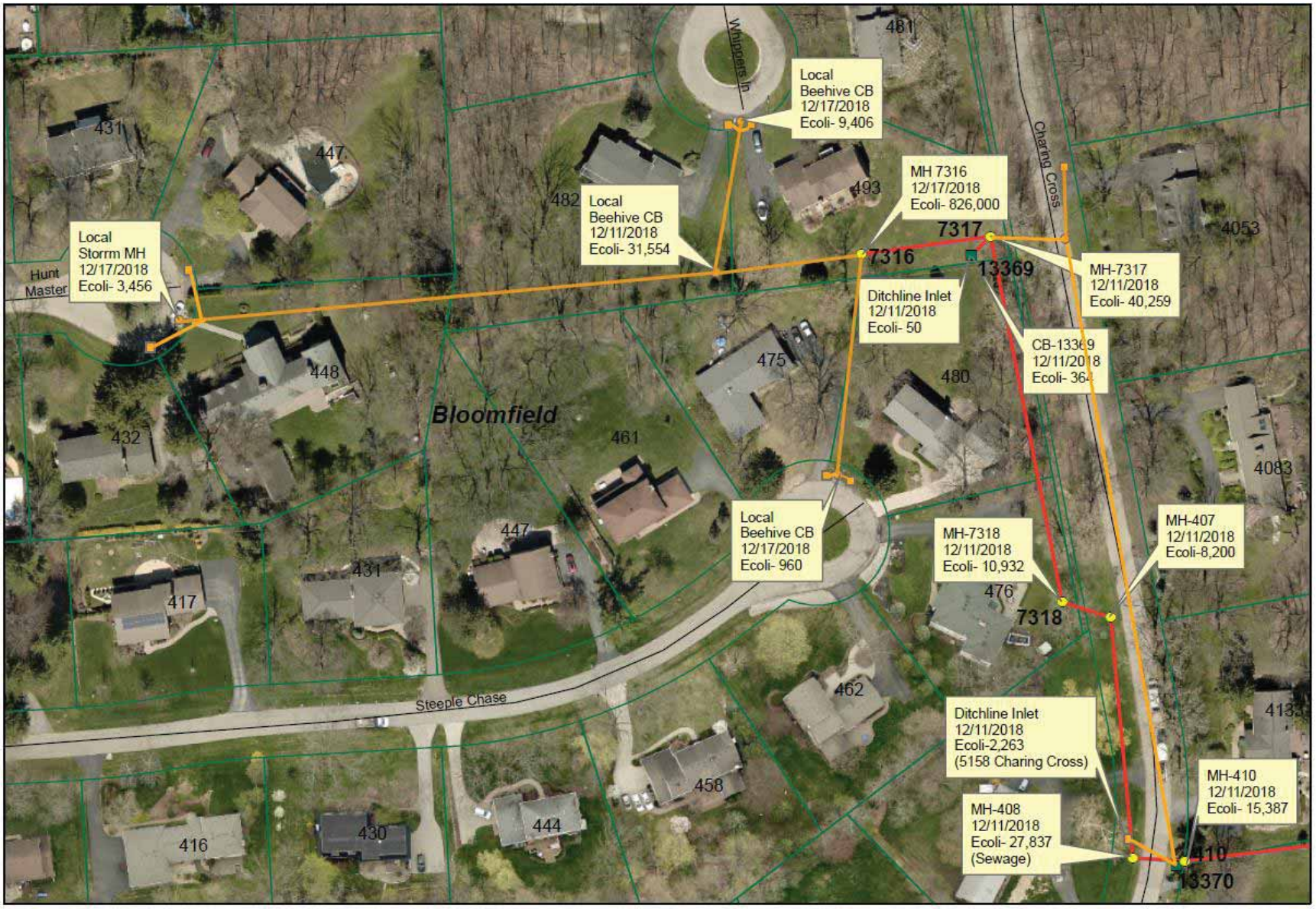


2018 Illict Discharge Investigation
8 Mile Drain Sampling

Oakland County
Illict Discahrge
Elimination Program

WRC
WATER RESOURCES COMMISSIONER
Jim Nash

Figure 7: Claude H. Stevens No. 3 Drain, 2018 Sampling and Investigation Map



Claude H. Stevens No. 3 Drain Investigation
E.coli Sampling 12/11 & 12/17/2018
Bloomfield Twp.

Legend

- County Manhole Structures
- local MH Structure
- County Inlet Structures
- Local Ilnet Structures
- Claude H Stevens Drain
- Local Storm Drains
- Open Water Course
- Municipal Boundary

N

Oakland County
Illicit Discharge
Elimination Program

WRC

Figure 8: Claude H. Stevens No. 4 Sampling and Investigation Map.



APPENDIX A: DRAIN SURVEY AND MANHOLE INSPECTION, NOTES, OBSERVATIONS & PHOTOS



Claude H. Stevens No. 3 Drain Investigation
E.coli Sampling 12/11 & 12/17/2018
Bloomfield Twp.

Legend

- County Manhole Structures
- local MH Structure
- County Inlet Structures
- Local Ilnet Structures
- Claude H Stevens Drain
- Local Storm Drains
- Open Water Course
- Municipal Boundary

Oakland County
Illicit Discharge
Elimination Program

WRC

Claude H. Stevens No. 3 Manhole Inspections



MH 408 . Flow from N. is pooled at elbow going E. Brown with suds, staining on MH wall



Drainage Ditch N. of MH 408. Flow is clear. Inlet pipe in ditch connected to MH 410.



CB 13378- Flow from MH 408 to MH 410. Road dain Inlets N. & S. Low flow. No sample



MH 410 – Connecting MH CB B 13378 to drain going E. Animal feces in MH. Sampled



MH 407 flow from N. Rd drain inlet E. is dry w/ animal feces in MH. Sampled



local storm MH for connected Rd drains on E. side of Charring Cross. Dry w animal feces



MH 7318 Connected to MH 407. Animal Feces on MH floor and channel. Sampled



MH 7317. Elbow from W. to S. Possible sewage in MH. Sampled. Connected CB to the S.



CB 13369 connected to MH 7317. Inlet flow from ditch line W. Looks clean. Sampled



Inlet to CB 13369 w flow from drainage ditch to the W. Flow is clean



MH 7316. Terminus MH. Connects local drains W.& S. Sewage and animal Feces in MH



CB connects inlets for Whippers LN. & Hunt Master to MH 7316. Ponding at E outlet



Plastic PVC drain from 482 Whippers LN connected to Back Yard CB Beehive. No flow.



MH on Whippers Lane. Connects Rd drain ditches to drain. Water in sump. Sampled



MH on Hunt Master. Connects Rd drain ditches to drain. Water in CB sump. Sampled



Beehive CB on Steeplechase. Connects Rd drain ditches. Flow in E. ditch line. Sampled

Rouge River Collaborative Illicit Discharge Elimination Plan
2020-2021 Progress Report



Alliance of Rouge Communities
OURS TO PROTECT
Working together, restoring the river

Prepared by:

46036 Michigan Ave., Suite 126
Canton, Michigan 48188

March 19, 2022

A. Purpose

This report summarizes the activities undertaken to implement the Rouge River Collaborative Illicit Discharge Elimination Program (IDEP) plan (Plan) which was approved by the Michigan Department of Environment, Great Lakes and Energy (EGLE) in September 2017 and revised in January 2020. The Plan is part of the municipal separate storm sewer system (MS4) permits for several communities in the Rouge River watershed. The report includes activities implemented by or on behalf of members of the Alliance of Rouge Communities (ARC) from January 1, 2020 through December 31, 2021. The permittees participating in the Plan during the reporting period are listed below.

Participating Permittees	
Beverly Hills, Village of	Northville, City of
Bingham Farms, Village of	Northville Township
Birmingham, City of	Novi, City of
Bloomfield Hills, City of	Oak Park, City of
Bloomfield Township	Plymouth, City of
Canton Township	Plymouth Township
Dearborn Heights, City of	Redford Township
Farmington, City of	Southfield, City of
Farmington Hills, City of	Troy, City of
Franklin, Village of	Walled Lake, City of
Garden City, City of	Wayne, City of
Inkster, City of	Westland, City of
Lathrup Village, City of	West Bloomfield Township
Livonia, City of	
Melvindale, City of	Henry Ford College
Oakland County*	Wayne County Airport Authority
	Wayne County*

**Participating in the Plan but will provide a separate report of county activities per their approved progress report schedule.*

B. Action Strategy Status

The status of each action strategy includes a description of each activity, progress made during the reporting period and status of each metric.

IDEP #1: Mapping of Storm Sewer Systems

Description: The permittees have their storm sewer maps available which include the location of outfalls, enclosed and open storm drains, roads and waters of the state. In addition, the ARC has developed a GIS database of the storm sewer system maps. For Wayne and Oakland counties, this requirement will be dealt with under their individual stormwater management plans.

Goal:

- 100% of outfalls mapped in GIS
- 100% of storm sewers mapped in GIS

Status:

Metric	Status
Portion of watershed (area) where known outfalls are mapped in GIS	100% (based on permittee land area)
Portion of watershed with storm sewers in GIS	98% (based on permittee land area)

Description of Progress:

Most permittees provided the ARC with their outfall and storm sewer GIS data. Only Melvindale still needs to provide their storm sewer system in GIS format.

IDEP #2: Outfall Prioritization and Dry Weather Screening

Description: The ARC screened all priority outfalls in 2018 in each city or village. The ARC has determined outfalls with suspicious discharges and conducted follow-up investigations for those outfalls. Cities/Townships/Villages will perform dry weather screening of new outfalls within 6 months of construction, taking ownership or discovery. For Wayne and Oakland counties, this requirement will be dealt with under their individual stormwater management plans.

Goal: Screen 100% of priority outfalls

Status:

Metric	Status
Number priority outfalls identified	471
Percent of priority outfalls screened	100%
Number of new outfalls identified	12
Percent of new outfalls screened	0%
Number of suspicious discharges identified (based on screening results)	29 (Category A and B outfalls)

Bloomfield townships identified 11 additional outfalls and Plymouth identified 1 additional outfall that fall under the MS4 permit. They were identified in the fall of 2021 and screening is planned for the spring of 2022.

IDEP #3: Advanced Investigations

Description: The goal of this activity is to 1) locate source(s) of suspected illicit discharge(s) in the initial priority areas and upstream of the priority outfalls, and 2) oversee the correction of any identified illicit discharges.

Goals:

- Follow the advanced investigation protocol for initial priority areas and priority outfalls.
- 100% of illicit connections/discharges resolved or a plan in place for elimination.

Status:

Metric	Status
Total number of illicit discharge investigations (outfalls)	31
From previous priority areas	5
From priority outfall screening	21
From other efforts	5
Number of investigations closed	20 (65%)
Number of investigations remaining (in progress)	11 (35%)
Number of illicit discharges identified	10
Number corrected	7
Number unresolved	3

Description of Progress:
Below is a list of the 31 outfalls that required investigations during the reporting cycle. A summary by community is provided in Table 1.

- Beverly Hills: BV66, BV51
- Bloomfield Twp: CH Stevens No. 4 Drain
- Farmington Hills: FH01
- Inkster: Perrin Drain, OF47A
- Livonia: U2008221, 6038, 13002, U2008231, M2008117, U2008238, 2680, L1619, L3582, Levan Rd South 42”,
- Northville: NV03, NV22, NV23, NV57
- Novi: NO23
- Plymouth: PY8, PY27, PY5, Holbrook St, Harvey St, Park St.
- Southfield: Fracassi Drain, 8 Mile Drain
- Wayne: WN21A
- Westland: SWOF-00278

Table 1 - Outfalls that Required Investigations

Permittee	Investigations Originating from				Total No. of Outfalls	Lead Agency
	Previous Priority Areas	Outfall Screening		Other Efforts		
		Cat A	Cat B			
Beverly Hills		2			2	ARC
Bloomfield Twp.	1				1	OCWRC
Farmington Hills		1			1	ARC
Inkster				2	2	WCESD
Livonia		2	6	2	10	WCESD
Northville		2	2		4	ARC
Novi		1			1	ARC
Plymouth	2	1	2	1	6	WCESD
Southfield	2				2	OCWRC
Wayne		1			1	WCESD
Westland		1			1	WCESD
Total	**5**	**11**	**10**	**5**	**31**	

In partnership with the local communities, the ARC, Wayne County Environmental Services Department (WCESD) and Oakland County Water Resource Commissioner's Office (OCWRC) investigated drains that displayed suspicious discharges. Investigations were conducted on 30 of the 31 outfalls, and investigations were closed out on 20 of the outfalls. The status of these investigations is provided in Table 2 and detailed investigation reports can be found in Appendix B.

Table 2 - Status of Investigations by Outfall

Permittee	Outfall ID	Status	Result
Beverly Hills	BV66	Completed	Illicit sewage connection identified and corrected
	BV51	Ongoing	Sewage source suspected
Bloomfield Twp.	CH Stevens No. 4 Drain	Completed	1 failed septic system on Dover St. (corrected)
Farmington Hills	FH01	Completed	No sources found
Inkster	Perrin Drain	Ongoing	Sewage sources suspected
	OF47A	Ongoing	Sewage sources suspected
Livonia	U2008221	Ongoing	Sewage sources suspected
	6038	Ongoing	Sewage sources suspected
	13002	Completed	No sources found
	U2008231	Completed	No sources found
	M2008117	Completed	No sources found
	U2008238	Completed	No sources found
	2680	Completed	No sources found
	L1619	Ongoing	Sewage sources suspected
	L3582	Ongoing	Sewage sources suspected
	Levan Rd South 42"	Completed	No sources found

Permittee	Outfall ID	Status	Result
Northville	NV03	Completed	Illicit sewage connection identified and corrected
	NV22	Completed	No sources found
	NV23	Completed	No sources found
	NV57	Completed	No sources found
Novi	NO23	Completed	Animal source identified (addressed)
Plymouth	PY8	Ongoing	Sewage sources suspected
	PY27	Completed	No sources found
	PY5	Ongoing	Sources suspected
	Holbrook Street	Ongoing	Sources suspected
	Harvey St (with Beech/Palmer St.)	Completed	3 illicit sewage connections (corrected)
	Mill/Park St.	Pending correction	3 illicit sewage connections
	Jener St.	Pending correction	1 illicit sewage connection
	Amelia St.	Pending correction	1 illicit sewage connection
Southfield	Fracassi Drain	Completed	No sources found
	8 Mile Drain	Ongoing	Sources suspected
Wayne	WN21A	Completed	No sources found
Westland	SWOF-00278	Completed	No sources found

A total of 11 illicit discharges containing sewage from residential homes were identified. All but 5 of the illicit connections in Plymouth have been corrected as shown in Table 3. These corrections result in the elimination of 372,300 gallons of untreated wastewater and 4,120 lbs of pollutants on an annual basis (Tables 4 and 5).

Table 3 – Number and Type of Illicit Discharges (IDs) Discovered and Resolved

	A	B	C	A+B-C
County	**No. of Known IDs at beginning of Reporting Period**	**No. IDs Discovered During Reporting Period**	**No. of IDs Resolved During Reporting Period**	**No. of Unresolved IDs at the end of Reporting Period**
Sanitary Sewage from Illicit Connections from Residences				
Beverly Hills	0	1	1	0
Northville	0	1	1	0
Plymouth	0	8	3	5
Sanitary Sewage from Failed Residential Septic Systems				
Bloomfield Twp	1	0	1	0
Total	**1**	**10**	**6**	**5**

Table 4 - Volume of Sewage Eliminated from Surface Waters

Community Name	Household Size	Number of households with failed septics or illicit connections	Annual Wastewater Volume (gallons/year)
Data sources	[a]	[b]	
Beverly Hills	2.48	1	**67,890**
Plymouth	2.07	3	**169,999**
Bloomfield Twp	2.55	1	**69,806**
Northville	2.36	1	**64,605**
Total			**372,300**

Table 5 - Amount of Pollutants Eliminated from Surface Waters

Parameter	Average Concentration (mg/L)[i]	[i]Data Source	Pollutant Load (lbs/year)				
			Beverly Hills	Plymouth	Bloomfield Twp	Northville	Totals
Total Solids	690	[d]	391	979	402	372	**2144**
Total Suspended Solids	243	[d]	138	345	142	131	**756**
BOD	221	[d]	125	314	129	119	**687**
Ammonia	8.5	[d]	4.8	12.1	4.9	4.6	**26.4**
Total Phosphorus	9	[d]	5.0	12.75	5.2	4.8	**27.75**
Surfactant	13.5	[d]	7.6	19.1	7.8	7.2	**41.7**
Potassium	6	[e]	3.4	8.5	3.5	3.2	**18.6**
Total Organic Carbon	47	[f]	27	67	27	25	**146**
Fats, Oil & Grease	88	[d]	50	125	51	47	**273**
Total Pollutant Load (lb/year)			752	1,882	772	714	**4,120**

Data Sources:

[a] SEMCOG (Household size estimates for Southeast Michigan).

[b] County Database (from WCDPH-EHD for Wayne County).

[c] *Environmental Health Ready Reference*. Michigan Environmental Health Association. March 2004.

[d] *Onsite Wastewater Treatment Systems Manual.* U.S. EPA EPA/625/R-00/008. February 2002. Table 3-7 .

[e] Pitt, Robert, et al. *Investigations of Inappropriate Pollutant Entries into Storm Sewer Systems, A Users Guide*. U.S EPA. EPA/600/R-92/238. January 1993.

[f] *Onsite Wastewater Treatment Systems Manual.* U.S. EPA EPA/625/R-00/008. February 2002. Table 3-18 .

In addition to the efforts described above, Bloomfield Township, the City of Farmington, Farmington Hills, Livonia, and Novi conducted investigations in their jurisdictions to identified illicit discharges. These efforts are detailed in Appendix B.

IDEP #4: Staff Training

Description: The permittees will have at least one person who is competent at the IDEP Investigator Level. Permittees will have 50% of their field staff trained at the Alert Observer Level by March 31, 2022. In addition, permittees will remind staff of *E. coli* problems in Priority Areas and encourage reporting, annually.

Goals:

- 1 person per permittee trained at Investigator Level
- 50% of field staff trained at the Alert Observer Level.

Status:

Metric	Status
Portion of permittees with 1 or more staff trained at the Investigator level (of the 29 participating permittees)	79%
Number of field staff employed by the permittees (FTEs)	458
Portion of field staff trained at the Alert Observer level (or higher)	56%

Description of Progress:
The ARC offered or partnered in one IDEP Investigator and two Alert Observer training sessions during the permit period. They were held on November 12, 2020 and October 27, 2021. Due to the pandemic, IDEP Investigator training was not offered in 2020, but was available as a virtual course in 2021. See Appendix C for recent staff training records.

There are 458 field staff employed by the permittees as shown in Appendix C. Of these, 258 staff (56%) are trained at the awareness level or greater: 125 at the investigator level and 258 at the alert observer level. Most permittees have more than 1 person trained at the investigator level and more than 50% trained at the alert observer level, while others fall short of these targets. The permittees that need more staff training (Table 6) will be targeted by the ARC in 2022.

Note: Oakland County and Wayne County personnel are not included in these totals, as they will be reporting on their staff training separately.

Table 6 - Permittees needing IDEP Training

Community	Number of Staff Needing Investigator Level Training	Number of Staff Needing Alert Observer Level Training*
Beverly Hills		3
Bingham Farms	1	
Bloomfield Hills	1	
Dearborn Heights		10
Garden City	1	
Melvindale	1	4
Livonia		6
Oak Park	1	
Southfield		5
Westland	1	12

*To achieve the 50% training goal.

IDEP #5: Pollution Complaint Response

Description: Permittees will have a method for recording and tracking pollution complaints from staff and the public. Permittees will follow-up on the complaints. The ARC will maintain a list of community contacts who are responsible for complaint response.

Goal: 100% of complaints addressed

Status:

Metric	Status
Number of complaints received and referred or investigated	100
Number of issues resolved	95
Portion of issues resolved	95%

Description of Progress:
The permittees received 100 pollution complaints. Of those 100 complaints, 95 issues were investigated and resolved. Corrections are pending or repairs are ongoing for 5 of the complaints. One of the unresolved issues is the illicit connection at Lathrup Village DPS which is discussed in on the next page. The other 4 unresolved issues are as follows:

- Bloomfield Twp: Illicit connection for wastewater at 1904 Pine Ridge Court
- Farmington: Illicit connection for wash water at 31930 Grand River
- OCWRC in West Bloomfield: Failed septic system at 2038 S. Hammond Lake
- OCWRC in Farmington Hills: Illegal dumping of concrete washout suspected. Source is suspected, but not verified by the City. The investigation remains open.

Documentation of the complaints is provided in Appendix D.

IDEP #6: Inspection of ARC Member-Owned Facilities

Description: Dye-test permittee owned or operated facilities (within the watershed) to ensure they are properly draining to the sanitary sewer.

Goals:

- 100% of ARC Member existing facilities dye tested.
- 100% of issues addressed.

Status:

Metric	Status
Number of facilities owned by permittees	222
Number of facilities owned by permittees with major renovations during reporting period	6
Portion of facilities dye tested, including renovations	99%
Number of issues found	2
Portion of issues addressed	0%

Description of Progress:

There are 222 municipal owned facilities in the watershed. Of these, 219 were dye tested to ensure that they were properly connected to the sanitary sewer (Appendix E). The remaining facilities are in Novi and are scheduled to have dye testing done in the spring of 2022. Six of the 222 municipal owned facilities had major renovations completed during the reporting period. Three of those renovated facilities have had dye testing done since the renovations were complete. The dye testing revealed illicit connections at 2 facilities (Appendix E2 and E3).

- An illicit connection was identified in part of the DPS building in Lathrup Village in December of 2020. The part of the building that has an illicit connections was part of an addition several years ago. Signs have been posted to prevent water use in that area of the building. DPS staff plan to trace the sanitary line to properly reroute the connections. The issue will be corrected no later than June 17, 2022.
- An illicit connection was identified in Bloomfield Hills at the City Hall/Police/Fire building in September of 2021. The part of the building that has cross-connections was part of an addition several years ago. The City will be investigating further to televise the sanitary line to trace were the connection can be routed. The issue is scheduled to be corrected in 2022.

IDEP #7: IDEP Work Group

Description: Permittees will meet twice a year to discuss IDEP-related topics including the annual advanced investigations work plan, progress of advanced investigations, lessons learned, any road blocks encountered with implementing the plan, and recommendations for improving the plan.

Goals:

- Hold at least 2 work group meetings per year.
- 80% member participation.
- 2 meeting summaries per year.

Status:

Metric	Status
Number of meetings per year	1 in 2020 and 2 in 2021
Number of meeting summaries per year	1 in 2020 and 2 in 2021
Portion of members in attendance at meetings	90% over both years

Description of Progress:
Three Technical Committee meetings were held during the reporting period. In 2020, 26 of 30 permittees were represented, while in 2021, 28 of 30 permittees were represented at the first meeting and 90 participants were signed on for the second meeting (Appendix F). The meeting in 2020 took place in person in early March, prior to the pandemic. Subsequent meetings have been conducted virtually.

C. Other Efforts

Each permittee included in this report has its own IDEP ordinance or policy and procedures in place. Copies of these ordinances and policies have been submitted to EGLE.

Appendix A

Dry Weather Outfall Screening Supporting Documentation

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Canton Administration Building

Section #: 21 Photograph #: _____ Date: 1-10-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-7 storm sewer

1. Creek Name: Mott Drain
2. Size: 26"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____

Color: None X Yellow ____ Brown ____ Gree

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____

Deposits/stains: None X Sediment ____ Oily ____

Vegetation conditions: Normal X Inhibited gr

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalli

Other damage: _____ Extent _____

2021 INSPECTIONS Were Done EARLY 2022

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Links at Pheasant Run Condos

Section #: 28 Photograph #: _____ Date: 1-10-22 Crew Initials: _____

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-6

1. Creek Name: Mott Drain
2. Size: 16"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Rodin Park

Section #: 14 Photograph #: _____ Date: 1-10-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-5A

1. Creek Name: Fellows Creek
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Flodin Park

Section #: 14 Photograph #: _____ Date: 1-10-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-5B

1. Creek Name: Fellows Creek
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Sheldon Road Wetland

Section #: 3 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 30 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 1-1

1. Creek Name: Willow Creek
2. Size: 24"
3. Material: Metal
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Canton Public Library

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-5A

1. Creek Name: Mill Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Public Library

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CJ

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-5 B

1. Creek Name: Mott Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Public Library

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-5C

1. Creek Name: Mott Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Heritage Park

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-4A

1. Creek Name: Mott Drain
2. Size: 10"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Heritage Park

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-4B

1. Creek Name: Mott Drain
2. Size: 10"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Heritage Park

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-4C

1. Creek Name: Mott Drain
2. Size: 10"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Grounds Maintenance Building

Section #: 21 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: _____

1. Creek Name: Mott Drain
2. Size: 36"
3. Material: Metal
4. Flow/Depth on Flow in Pipe: 4" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Griffin Park

Section #: 15 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-6A

1. Creek Name: Green Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Griffin Park

Section #: 15 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-6B

1. Creek Name: Green Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 6" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Griffin Park

Section #: 15 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-6C

1. Creek Name: Green Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Independence Park

Section #: 19 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 10° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-2

1. Creek Name: Lower Rouge River
2. Size: 24"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Softball Center

Section #: 33 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 30° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-8A

1. Creek Name: Rich Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Softball Center

Section #: 33 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 30° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-8B

1. Creek Name: Rich Draw
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Old Human Resources Building

Section #: 34 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-4

1. Creek Name: Rich Drain
2. Size: _____
3. Material: ~~Concrete~~ Under Road Storm Sewer
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Old Township Hall

Section #: 34 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 28° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-3

1. Creek Name: Rich Drain
2. Size: 36"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Canton HR Resources Building

Section #: 18 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 25° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 2-1

1. Creek Name: Lower Rouge River
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton DPW

Section #: 34 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 28° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-5

1. Creek Name: Fisher & Leng Drain & McKinstry Drain
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 29 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-10

1. Creek Name: Lower Rouge River
2. Size: 6
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 29 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-11

1. Creek Name: Lower Rouge River
2. Size: 24"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CF

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-13

1. Creek Name: Lower Rouge
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find.

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO ____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: _____ Crew Initials: _____

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-14

1. Creek Name: Lower Rouge River
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO ____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-15

1. Creek Name: _____
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO ____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: ~~Lower Rouge~~ 3-16

1. Creek Name: Lower Rouge River
2. Size: @ 36"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 4" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-17

1. Creek Name: Lower Rouge River
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 4" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: ____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: ____ Extent ____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: ____

Stream conditions: ____

Additional Observations: ____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-18

1. Creek Name: Lower Rouge
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20-29 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-19

1. Creek Name: Lower Rouge
2. Size: 32"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20-29 Photograph #: _____ Date: 1-6-22 Crew Initials: _____

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-20

1. Creek Name: Lower Rouge River
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find.

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO ____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 20-29 Photograph #:_____ Date: 1-6-22 Crew Initials:_____

Weather: Air temp.: 20 Rain: Yes____ No X Sunny X Cloudy____

OUTFALL #: 3-21

1. Creek Name: Lower Rouge River
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

_____

Stream conditions: _____

_____

Additional Observations: _____

_____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Barchester Park

Section #: II Photograph #: _____ Date: 1-6-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-2

1. Creek Name: Willow Creek
2. Size: 48"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Fire Station #2

Section #: 11 Photograph #: _____ Date: 1-6-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-3

1. Creek Name: Tonquish Creek
2. Size: 3"-4"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Koppernick Pond

Section #: 12 Photograph #: _____ Date: 1-6-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 1-4

1. Creek Name: Tonquish Creek
2. Size: ~~24~~ 24"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Freedom Park

Section #: 22 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-2

1. Creek Name: MTT Drain
2. Size: Storm Sewer M.H.
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellows Creek . Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-6

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellows Creek, Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: 4-7

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____ Sewage____ Sufide____ Oil____ Gas____ Rancid-sour____ Other____

Color: None____ Yellow____ Brown____ Green____ Red____ Gray____ Other____

Turbidity: None____ Cloudy____ Opaque____

Floatables: None____ Petroleum____ Sheen____ Sewage____ Other____ (collect samples)

Deposits/stains: None____ Sediment____ Oily____ Describe:____ (collect samples)

Vegetation conditions: Normal____ Inhibited growth____ Excessive growth____

Extent: _____

Damage to outfall structures:

None____ Concrete cracking____ Concrete Spalling____ Peeling paint____ Metal corrosion____

Other damage:_____ Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-8 Can't Find

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-9

1. Creek Name: Fellows Creek
2. Size: 8"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ✓ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: 4-10

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____ Sewage____ Sufide____ Oil____ Gas____ Rancid-sour____ Other____

Color: None____ Yellow____ Brown____ Green____ Red____ Gray____ Other____

Turbidity: None____ Cloudy____ Opaque____

Floatables: None____ Petroleum____ Sheen____ Sewage____ Other____ (collect samples)

Deposits/stains: None____ Sediment____ Oily____ Describe:____ (collect samples)

Vegetation conditions: Normal____ Inhibited growth____ Excessive growth____

Extent: _____

Damage to outfall structures:

None____ Concrete cracking____ Concrete Spalling____ Peeling paint____ Metal corrosion____

Other damage:_____ Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-11

1. Creek Name: Fellow Creek
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: ~~#~~ 4-12

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-13

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-14

1. Creek Name: Fellows Creek
2. Size: 4
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CF

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-15

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-16

1. Creek Name: Fellow Creek
2. Size: 4"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-17

1. Creek Name: Fellow Creek
2. Size: 6"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-18

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: 4-19

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find.

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____ Sewage____ Sufide____ Oil____ Gas____ Rancid-sour____ Other____

Color: None____ Yellow____ Brown____ Green____ Red____ Gray____ Other____

Turbidity: None____ Cloudy____ Opaque____

Floatables: None____ Petroleum____ Sheen____ Sewage____ Other____ (collect samples)

Deposits/stains: None____ Sediment____ Oily____ Describe:____ (collect samples)

Vegetation conditions: Normal____ Inhibited growth____ Excessive growth____

Extent: _____

Damage to outfall structures:

None____ Concrete cracking____ Concrete Spalling____ Peeling paint____ Metal corrosion____

Other damage:_____ Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	01-02
Date of Observation:	9 / 21 / 2020
Time:	12:50 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention Basin at south end of Shaker Heights Dr.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _Holding water from downstream._____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	03-01
Date of Observation:	9 / 21 / 2020 — Time: 1:15 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): In front of 43034 Woodward (Moose Preserve)

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☑ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☑	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☑ Other: _leaves_____	☑ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	4 MPN/100ml		
pH / Temperature	☑	pH Level 7.93	Temperature (F) 71.8	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	04-01
Date of Observation:	9 / 17 / 2020
Time:	2:00 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☑ Institutional
- ☐ Open Space
- ☐ Woods

Other: Fire Statioin No. 4

Known Industries: _____

Notes (e.g. origin of outfall, if known): North side of fire station at 2389 Franklin Rd.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other: _____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 6 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _Only fire station downspouts and surface drainage discharge to it._____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	04-02		
Date of Observation:	9 / 21 / 2020	Time:	1:35 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): North of entrance to 43902 Woodward

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 30 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Stagnant water in invert. No flow.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	06-01
Date of Observation:	9 / 17 / 2020 — Time: 2:25 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention Basin outlet on Kemp Road

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 8 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☑ Yes ☐ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☑	☑ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Outfall holding water due to level of lake. Upstream structures into basin have no flow.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Manhole upstream of detention basin



Outlet of storm sewer downstream of basin



Outfall submerged

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	06-02
Date of Observation:	9 / 17 / 2020 — Time: 2:45 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: Retention Pond

Known Industries: _____

Notes (e.g. origin of outfall, if known): Retention pond for Meadowlands of Bloomfield

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 36 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☐ Partially ☑ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _Outfall submerged. Upstream strucures holding water._____

Section 8: General Comments

Comments: _Retention Basin may need to be dredged._____

Section 9: Reporting Information

Comments:	_____	Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Submerged Outfall



Retention Pond

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	08-01
Date of Observation:	9 / 21 / 2020 — Time: 3:07 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): South of house at 1471 Franklin Road

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☐ Partially ☑ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☐ Trickle ☑ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	58 MPN/100ml		
pH / Temperature	☑	pH Level: 8.08	Temperature (F): 69.3	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Surface runoff sewer from Forest Lake Golf Club and Club Road.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments:

Section 8: General Comments

Comments: Water sample taken for E. Coli, and temperature and pH taken.

Section 9: Reporting Information

Comments:		Date Observed:	__/___/ ___
		Time Observed:	
Investigated By:		Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	11-01
Date of Observation:	9 / 22 / 2020
Time:	1:15 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention Basin access off Bridlepath Court

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: _____ in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☐ Trickle ☑ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☐ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	162 MPN/100ml		
pH / Temperature	☑	pH Level: 7.79	Temperature (F): 66.5	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: No smell, color, or floatables.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Basin inlet on North side



Basin inlet on west side



Basin outlet on south side



Basin Overflow Structure on south side



Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	11-02
Date of Observation:	9 / 21 / 2020
Time:	4:30 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Crofton Court detention basin

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 15 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Located 15" inlet pipe into basin, but not 6" outlet pipe.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	12-01
Date of Observation:	9 / 22 / 2020 — Time: 2:15 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention basin for Hidden Pines sub

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 42 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details:

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Detention pond holding water. Not up to outlet.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	12-02
Date of Observation:	9 / 22 / 2020
Time:	2:25 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Retention area off Westview Rd and west of Westman Ct

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 18 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: No flow from outlet. No water in retention pond.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	13-02		
Date of Observation:	9 / 22 / 2020	Time:	2:45 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known):

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☐ Circular ☐ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: _____ in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☑ Open Drainage (Channel)	☐ Concrete ☑ Earthen ☐ Rip-Rap ☐ Other: _____	☑ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: 2 ft. Top Width: 4 ft. Bottom Width: 1 ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☐ Trickle ☑ Moderate ☐ Substantial

Description Details: Flowing stream

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	83 MPN/100ml		
pH / Temperature	☑	pH Level: 8.05	Temperature (F): 68.1	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Flowing stream. Nothing Unusual.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	16-04
Date of Observation:	9 / 23 / 2020 — Time: 3:05 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☑ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): CB in Township campus entrance south of Police.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☑ Other: Clay	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 8 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present): ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	18-01
Date of Observation:	9 / 21 / 2020
Time:	2:40 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Storm sewer under tennis court.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Only surface drainage. No buildings to tie in.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments:

Section 8: General Comments

Comments: Trickle from private storm sewer. Not from Twp. Sewer.

Section 9: Reporting Information

Comments:		Date Observed:	__/___/ ___
		Time Observed:	
Investigated By:		Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	18-02		
Date of Observation:	9 / 21 / 2020	Time:	2:15 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Storm sewer along north side of condos

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☑ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☑	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☑ Other: soap	☑ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	>2420 MPN/100ml		
pH / Temperature	☑	pH Level: 8.18	Temperature (F): 70.7	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- ☐ Unlikely
- ☐ Potential (Presence of two or more indicators)
- ☑ Suspect (One or more indicators with a severity of 3)
- ☐ Obvious

Comments: _Smelled soap in manhole._____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: East inlet in manhole has trickle. West inlet does not._____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments:	E.coli sample came back with high results. Further investigation will be done to determine source.	Date Observed:	9/23/2020
		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	19-01
Date of Observation:	__9__ / __17___ / _2020___ Time: __4:05 pm__
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Enclosed ditch on east side of 1671 Keller Lane

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: _30___ in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: No flow and upstream ditch is dry.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Upstream end of enclosed ditch/sewer



Downstream end of enclosed ditch/sewer

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	20-01
Date of Observation:	9 / 17 / 2020
Time:	4:25 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Outfall on east side of safety path on Franklin Road

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 18 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Outlet for dry detention area.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: Broken off animal grate

Section 8: General Comments

Comments:

Section 9: Reporting Information

Comments:		Date Observed:	__/___/ ___
		Time Observed:	
Investigated By:		Date Reported:	__/___/ ___



Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	20-02
Date of Observation:	9 / 17 / 2020
Time:	4:35 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known):

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: 165' of pipe enclosing ditch

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	21-01		
Date of Observation:	9 / 17 / 2020	Time:	9:30 am
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Outfall for Overlea Court storm sewer

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☑ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 15 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☐ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☑	☐ Excessive ☑ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Storm sewer on Overlea Court.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	25-01		
Date of Observation:	9 / 22 / 2020	Time:	3:30 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Inspected manhole in parking lot.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Parking lot storm sewer manhole. Could not locate catch basin in green space.__

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	25-02
Date of Observation:	9 / 22 / 2020 — Time: 3:18pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Inspected catch basin SE of dumpsters.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 15 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☑ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Parking lot storm sewer.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	29-01		
Date of Observation:	9 / 23 / 2020	Time:	3:18 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Outfall on north side of driveway for 5575 Forman

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Drains Forman Road and overflow for wetland area.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Appendix B

Advanced Investigations Documentation

Appendix B1. 2020 Wayne County IDEP Investigation Report

Appendix B2. 2021 Wayne County IDEP Investigation Report

Appendix B3. 2020 Oakland County IDEP Investigation Report

Appendix B4. 2021 Oakland County IDEP Investigation Report

Appendix B5. Bloomfield Township Investigation Records

Appendix B6. Canton Township Investigation Records

Appendix B1

2020 Wayne County IDEP Investigation Report

Wayne County Illicit Discharge Elimination Program
ARC IDEP Services 2020 Report

Executive Summary

Wayne County Department of Public Services Environmental Services Division (ESD) performed source identification advanced investigations in the Cities of Plymouth, Wayne, Westland, and Livonia (Table 1). The ARC 2020 workplan was amended in September of 2020 to include advanced investigations along the Lower Rouge in the City of Inkster. The addition of the Lower Rouge investigations was in response to elevated *E. coli* concentrations identified during routine monitoring performed by ESD and the City of Dearborn. Other tasks completed in 2020 included IDEP Training and activity reporting.

Table 1: Findings and recommended actions for illicit discharge investigations

Community	**Outfall/ target area**	**Findings**	**Recommendations**
Plymouth	PY8	Elevated *E. coli* and *Bacteriodes*	Continued investigations including dye testing and televising in 2021
Plymouth	PY5	Elevated *E. coli*	Continued investigations including sampling for *E. coli* and *Bacteroides*, as well as televising in 2021
Plymouth	PY27	Low *E. coli*, no evidence of illicit discharge	No further follow-up
Plymouth	Harvey Street	Two illicit connections identified via televising and during construction in 2020 have been corrected	Follow-up *E. coli* monitoring to confirm no additional illicit connections
Plymouth	Mill/Park Street	Four illicit connections identified (3 discharge to Wayne County Mill Street MS4, and one discharges to the City of Plymouth MS4 tributary). Compliance actions ongoing	Follow-up *E. coli* monitoring to confirm no additional illicit connections once corrections are made.
Livonia	Bakewell Drain/Levan Road	Investigations were limited in 2020 by the COVID-19 pandemic and changes in investigative priorities that occurred in the workplan.	Continued investigations including sampling for *Bacteroides* in 2021
Livonia	Outfall L-1619	Elevated *E. coli* was detected in one storm sewer near a food service facility.	Continued investigations including sampling for *Bacteroides* and televising in 2021
Livonia	6038	Investigations limited in 2020 by the COVID-19 pandemic and changes in investigative priorities that occurred in the workplan.	Continued investigations including sampling for *E. coli* and *Bacteroides* in 2021
Livonia	13002	Investigations limited in 2020 by the COVID-19 pandemic and	Continued investigations including sampling for *E. coli* and *Bacteroides*

		changes in investigative priorities that occurred in the workplan.	in 2021
Livonia	U2008231	Investigations limited in 2020 by the COVID-19 pandemic and changes in investigative priorities that occurred in the workplan.	Continued investigations including sampling for *E. coli* and *Bacteroides* in 2021
Livonia	M2008117	Investigations limited in 2020 by the COVID-19 pandemic and changes in investigative priorities that occurred in the workplan.	Continued investigations including sampling for *E. coli* and *Bacteroides* in 2021
Livonia	U2008238	Investigations limited in 2020 by the COVID-19 pandemic and changes in investigative priorities that occurred in the workplan.	Continued investigations including sampling for *E. coli* and *Bacteroides* in 2021
Livonia	2680	Investigations limited in 2020 by the COVID-19 pandemic and changes in investigative priorities that occurred in the workplan.	Continued investigations including sampling for *E. coli* and *Bacteroides* in 2021
Livonia	L3582	Investigations limited in 2020 by the COVID-19 pandemic and changes in investigative priorities that occurred in the workplan.	Continued investigations including sampling for *E. coli* and *Bacteroides* in 2021
Wayne	WN-21	*E. coli* concentrations during two sampling events were very low.	Completed. No further follow-up
Westland	SWOF-00278	Low *E. coli* concentrations. Elevated pH and chalky-white discharge observed.	Referred to the City of Westland for further follow-up
Dearborn and Inkster	Lower Rouge	Elevated *E. coli*	Additional investigations on the Lower Rouge upstream of John Daly Road will involve screening outfalls. Sampling for *E. coli*, *Bacteroides*, and surfactants, as well as televising planned for the Perrin Drain

Task 1: Field Investigations

ESD conducted IDEP investigations at various outfalls and upstream manholes. Water samples were tested for *E. coli* and observations were recorded regarding water clarity, color, odor, and debris. In addition to ESD's typical IDEP investigation methods, select samples were analyzed for the Human *Bacteroides* marker. The presence of the marker above 1,000 gene copies/100 mL is used as a threshold to indicate potential human source of bacteria present when correlated with elevated *E. coli*.

City of Plymouth

ESD coordinated with ARC staff and the City of Plymouth to continue investigations of outfalls PY8, PY5, PY27, and the Harvey Street and the Park Street municipal separate storm sewer systems (MS4). The PY8, PY5, and PY27 outfalls discharge to the North branch Tonquish Creek. The Harvey Street MS4 is a tributary to Byron Creek and the South Branch of Tonquish Creek. The Park Street MS4 captures the Mill Street drainage and discharges to the Rouge River Middle Branch.

Outfall PY8

ESD performed follow up monitoring of outfall PY8, investigating manholes and storm sewer laterals upstream of the outfall on July 14, September 15, and 23, 2020. Nine manholes and the outfall were sampled during dry weather. The City of Plymouth televised this storm sewer in December 2019 with no definitive findings. The investigation area and dry weather screening data is shown in *Figure 1* and the investigation data is located in Appendix A, Table A1.

Elevated *E. coli* was detected at the outfall and several manholes in the upstream storm sewer system on Penniman and Blunk Streets. The *Bacteriodes* marker was found in all the Bacteria Source Tracking (BST) samples collected in the storm sewer line during September 2020. Further investigations are needed to identify the *E. coli* source (s) in the outfall PY8 investigation area. Review of storm sewer televising footage, additional manhole sampling (*E. coli* and *Bacteriodes*), televising the sanitary sewer to locate residential leads, and dye testing of selected residences in the investigation area are planned for 2021.

Outfall PY5

ESD performed follow up monitoring of outfall PY5, investigating manholes and storm sewer laterals upstream of the outfall on September 21, 2020. Twelve manholes and the outfall were investigated during dry weather. The investigation area and dry weather screening data is shown in *Figure 2* and the investigation data is located in Appendix A, Table A2.

Elevated *E. coli* was detected at the outfall and several manholes in the upstream storm sewer system on Arthur, William, and Pacific Streets. Further investigations are needed to identify the *E. coli* source (s) in the Outfall PY5 investigation area. The storm sewer sampling locations are going to be verified, the drainage area confirmed, and additional manhole sampling (*E. coli* and *Bacteriodes*) to determine if there are illicit discharges present.

Outfall PY27

The City of Plymouth Outfall PY27 was investigated during August and September 2020. The outfall was investigated three times and during one of those events, no dry weather flow was present. During the two times the outfall was sampled, the *E. coli* concentrations were less than 100 CFU/100mL. When storm sewer manholes upstream of the outfall were investigated, the dry weather flow was limited, or the *E. coli* concentrations were less than 20 CFU/100mL. Based on the *E. coli* data and observations, it is recommended that no further investigative effort is needed at this time. The investigation area and dry weather screening data is shown in *Figure 3* and the investigation data is located in Appendix A, Table A3.

Figure 1: Outfall PY8 Investigation Area Map



Figure 2: Outfall PY5 Investigation Area Map



Harvey Street Investigation Area
During 2019, ESD resampled the Harvey Street outfall and reinvestigated the laterals on the Harvey street storm sewer. The Harvey Street outfall was resampled three times in 2019. Although the *E. coli* concentrations were reduced from 2018, they were still elevated. In addition, low levels of *Bacteroides* were found in the outlet.

A storm sewer lateral of the Harvey Street line located on Jener Street, was found to have elevated *E. coli* concentrations. Physical signs (tissues and baby wipes) of illicit discharge were observed in December 2019. The *Bacteroides level* in the Jener/Linden Street storm sewer was fairly high indicating a human source of *E. coli*. The *Bacteroides* level was much higher than the *E. coli* concentration, which may be an indication of past contamination.

During 2020, the City of Plymouth televised the Jener Street storm sewer, which is upstream of a manhole where elevated *E. coli* concentrations and the physical evidence of illicit discharge were detected. An illicit connection at a single family residence (663 Jener Street) was discovered during the televising effort.

The City of Plymouth also discovered an illicit connection at a residential property on Harvey Street during construction (566 N. Harvey Street). Both illicit connections have been corrected. Follow up *E. coli* monitoring at the Harvey Street outfall and storm sewer laterals will be performed to confirm that no further illicit connections are present in the storm sewer.

Park Street/Mill Street Investigation Area
There are a total of four residences with unresolved illicit connections identified in the Mill/Park Street investigation area, including a duplex located at 150/152 S. Mill Street identified during residential dye testing performed in 2018.Three residences with illicit connections were identified during utility televising performed in the area by Consumer's Energy during 2019. Two of these connections were identified along Mill Street and discharge into the Wayne County Mill Street MS4 (195 S. Mill and 485 S. Mill). The third originated from a residence on Amelia Street (175 Amelia Street), and this one discharges into the City of Plymouth MS4 tributary to the Mill Street storm sewer. The property owners of the three Mill Street residences were mailed compliance letters in January 2021 providing notice of the illicit connections, indicating that their elimination from the Mill Street MS4 is required by April 1, 2021.

Once the active illicit connections are eliminated from the Mill Street and Ameila Street storm sewers, the Mill Street storm sewer laterals and the Park Street storm sewer outfall will be resampled.

The field data from each of the City of Plymouth's investigation areas discussed above is included in Appendix A.

Figure 3: Outfall PY27 Investigation Area Map



City of Livonia

Outfall L-1619
ESD performed dry weather screening of the City of Livonia Outfall L-1619 on December 9 and 16, 2020. Outfall L-1619 and ten upstream manholes were surveyed. Animal tracks and droppings in and on the stream banks near the L-1619 outlet were observed, and the *E. coli* concentration at the outfall was 620 CFU/100mL Additional sampling for *E. coli* and *Bacteriodes* is planned for the outfall/storm sewer lines upstream of Outfall L-1619 in 2021.

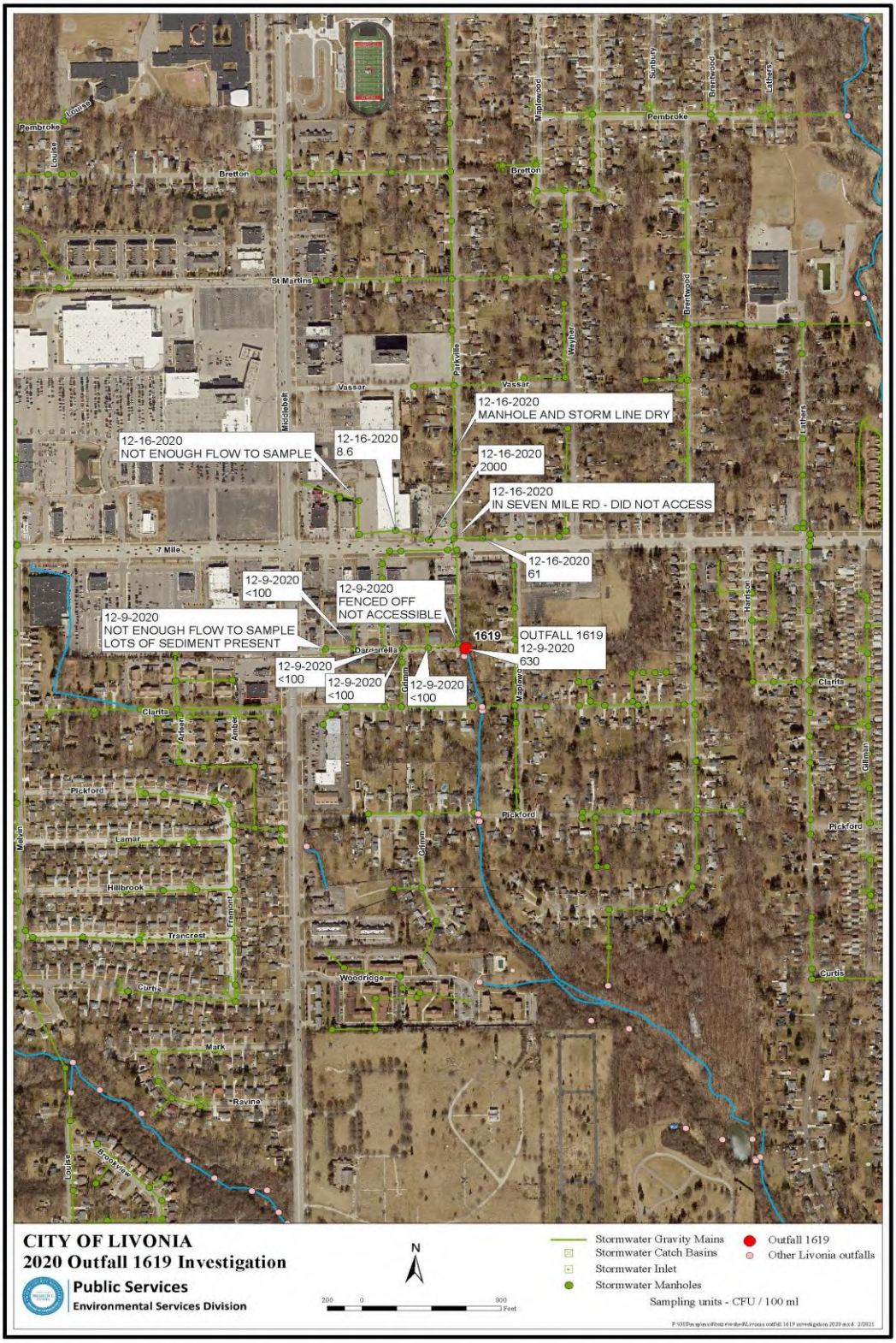
Figure 4 illustrates the data collected during the investigations of Outfall L-1619.

Outfall U2008221 (Bakewell Drain) and the 42-inch Outfall Levan Road South (Bakewell Drain)
ESD met with the City of Livonia to review the findings of the investigations performed on the Outfall U2008221 and the 42 inch Levan Road outfall in 2019 and developed a follow-up plan to delineate the storm sewers draining to these outfalls, where elevated *E. coli* and BST markers were detected. The City of Livonia televised a storm sewer line located on the west side of Levan Road and discovered it did not have an outlet to the Bakewell Drain. ESD and the City of Livonia were not able to perform further investigation on the Bakewell Drain outfalls due to the staffing shortages caused by the COVID-19 pandemic and the changes in investigative priorities that occurred in the workplan. Further televising, and additional sampling is planned for the outfalls/storm sewer lines upstream of Outfall U2008221and the 42-inch Outfall Levan Road South in 2021.

Outfalls 6038, 13002, U2008231, M2008117, U2008238, 2680, and L3582
ESD and the City of Livonia were not able to perform further investigation on these outfalls due to the staffing shortages caused by the COVID-19 pandemic and the changes in investigative priorities that occurred in the workplan. It is recommended that the further investigations of these outfalls continue in 2021.

The field data from each of the City of Livonia's investigation areas discussed above is included in Appendix B.

Figure 4: City of Livonia L-1619 Investigation Map



City of Wayne

One outfall in the City of Wayne, WA-21, was investigated in 2020. ESD investigated the outfall's drainage area on two separate occasions, July 28 and August 6, 2020. One sample was collected at the outfall and eleven samples were collected in manholes where dry weather flow was present. The *E. coli* concentrations during both sampling events were very low. No further investigation of the outfall is recommended at this time based on the data obtained during the 2020 investigation.

Figure 5 illustrates the data collected during the investigations of the outfall.

The field data from the City of Wayne's investigation areas discussed above is included in Appendix C.

City of Westland

ESD conducted a follow up investigation of the SWOF-00278 outfall, located in the City of Westland, had a suspicious discharge discovered during the ARC's outfall survey. The outfall had a clear dry weather flow and a chalky-white discharge was evident on the streambank. ESD investigated this outfall in 2019 and 2020. *E. coli* concentrations in the sample collected in 2019 were below 150 CFU/100mL; and the water discharging from the outfall had elevated pH in addition to the chalky-white discharge. In December 2020, the outfall also had elevated pH (10), the discharge was clear and a chalky-white substance was present on the vegetation and outfall outlet leading to the Wilson Drain. Since this outfall is privately owned, it was referred to the City of Westland for further follow up and assistance with determining if the discharge source is groundwater or other origin.

The investigation area is shown in *Figure* 6 SWOF-00278. A photograph of the outfall is shown in *Figure 7*. The field data for the investigation is included in Appendix D.

Lower Rouge Investigations

The ARC approved continued monitoring of sampling sites on the Lower Rouge water trail. The six sites are the routine monitoring sites sampled by Wayne County on a weekly basis from April-September. The continuing of the Lower Rouge and outfall investigations was in response to elevated *E. coli* concentrations identified during monitoring performed by ESD and the City of Dearborn. The six routine monitoring sites and four additional instream sites were sampled on four occasions in October and November 2020. In addition to the instream monitoring, ESD sampled outfalls adjacent to road crossings if dry weather discharge was present, with a total of three outfalls sampled. ARC staff performed an investigation on the Perrin Drain and identified a section of the drain in the City of Inkster with elevated *E. coli*.

ARC and ESD staff met to review monitoring results, gather historical data and information, met with community representatives, and developed an investigative approach to focus on the river segments located in between sampling locations with elevated *E. coli*. Performing a stream walk and outfall survey of the section of the Lower Rouge upstream of John Daly Road is one of the activities, in addition to continued investigations on the Perrin Drain that are recommended for 2021.

The investigation area is shown in *Figure* 8 Lower Rouge Investigation Area. The field data for the investigation is included in Appendix E.

Figure 5 City of WA-21 Investigation Area Map



Figure 6 SWOF-00278 Investigation Map

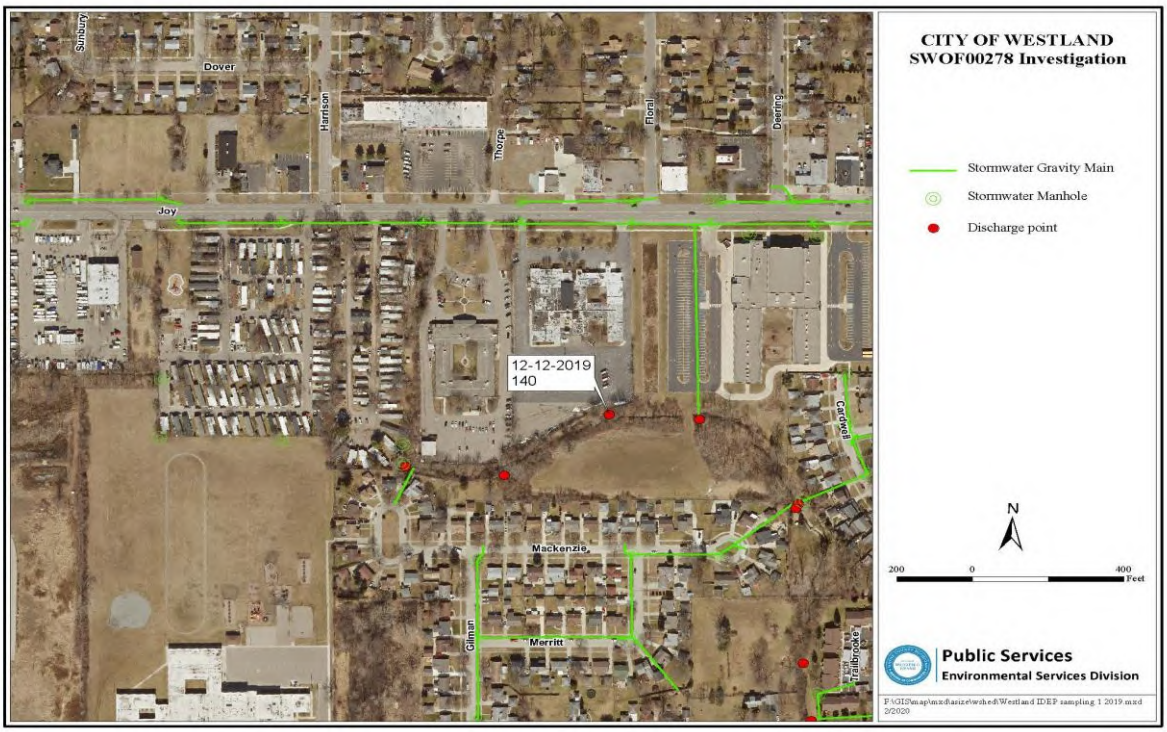
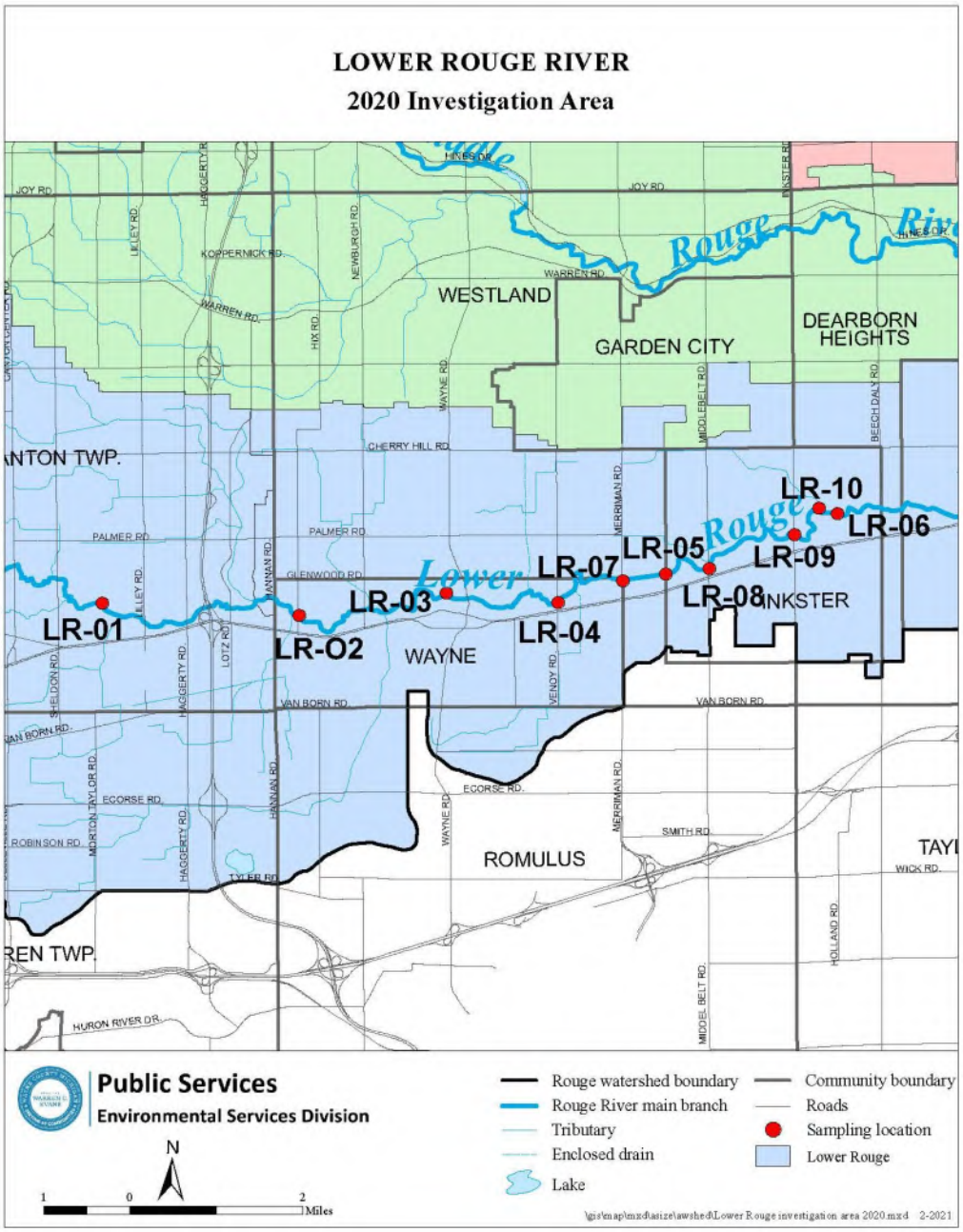


Figure 7 SWOF-00278 Outfall Photograph



Figure 8 Lower Rouge Investigation Area Map



Task 2 IDEP Training

One IDEP Alert Observer training workshop was presented in 2020 in partnership with the Southeast Michigan Council of Governments (SEMCOG) Partners for Clean Water. Due to the COVID-19 pandemic, the in-person Advanced Investigator training workshop was not offered, and a virtual Alert Observer training was developed and offered instead.

The Alert Observer training workshop is a one-hour session that included a question and answer session and panel discussion. The Alliance of Rouge Communities (ARC) partnered with the Southeast Michigan Partners for Clean Water to present the IDEP Alert Observer training, which introduces illicit dicharges, why it is important to identify and report them, and also where to report them to. The online training workshop was held on November 10, 2020 with a total of 180 persons from 48 public entities attending the session. One-hundred-twelve of the 180 attendees (62 percent) were representatives of (or consultants representing) ARC member communities.

Appendix F contains the attendance lists for the Alert Observer workshop. Attendees representing ARC communities are highlighted.

Task 3 Reporting

Written progress summaries of IDEP activities were provided. The 2019 IDEP Activities Summary was completed and the 2020 activities summary drafted.

Appendix A
2020 ARC IDEP Field Investigations
City of Plymouth

Table A1: Outfall PY8 Investigation Area
Table A2: Outfall PY5 Investigation Area
Table A3: Outfall PY27 Investigation Area

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Bacteriodes human specific markerArithmetic Average Gene Copies/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees celcius)	Observations	Sanitary Flow Evidence	Odor
1	7/14/2020	12:10	PY8 Outfall	PY8 Outfall	35000	NA	1.5	0.25	1.255	16.9	Outfall w/ dry weather flow; some white material like sewage fungus on bottom of outfall pipe, flow is clear; lot of dark organic debris on bank below outfall outlet	Yes	None
2	9/15/2020	10:10	PY8 Outfall	PY8 Outfall	>48392	NA	NA	NA	NA	NA	Outfall with dry weather flow, water slightly turbid	No	None
3	9/23/2020	10:10	PY8 Outfall	PY8 Outfall	>241960	$1.54x10^{7}$	NA	NA	NA	NA	Slightly turbid water at outfall; steady flow present	No	None
4	7/14/2020	13:00	PY8 Outfall	990 Penniman	3900	NA	0.75	>3.0	1.201	17.1	Flow from north inlet. Clear flow, laundry like odor, suspicious inlet on southwest side of manhole. Dried debris present on that inlet	No	None
5	9/15/2020	10:55	PY8 Outfall	990 Penniman	1300	NA	NA	NA	NA	NA	Flow in manhole from north. No flow from inlets, but suspicious debris on inlet from the west. Strong odor in manhole like decaying material	No	Yes
6	9/23/2020	9:15	PY8 Outfall	990 Penniman	1300	$6.61x10^{5}$	NA	NA	NA	NA	Water clear in storm from upstea. No flow from inlets or sign of recent activity. No odor	No	
7	7/14/2020	13:30	PY8 Outfall	Blunk/Church	>48392	NA	0.5	<0.25	1.17	17.5	Clear flow from upstream, with some intermittent sud-like foam	No	None
8	9/15/2020	10:40	PY8 Outfall	Blunk/Church	2500	NA	NA	NA	NA	NA	Clear flow in storm. No flow from inlets	No	None
9	9/23/2020	10:50	PY8 Outfall	Blunk/Church	3800	$4.48x10^{5}$	NA	NA	NA	NA	Clear water in storm. No flow from inlets	No	
10	7/14/2020	13:50	PY8 Outfall	Blunk/William	>48392	NA	NA	NA	1.153	21.4	Water clear, flow from upstream and none from inlets	No	None
11	9/15/2020	11:45	PY8 Outfall	Blunk/William	8700	NA	NA	NA	NA	NA	No flow from inlets. Slow clear flow from upstream.	No	None
12	9/23/2020	11:15	PY8 Outfall	Blunk/William	2300	$1.31x10^{6}$	NA	NA	NA	NA	Clear flow in storm. No flow from inlets	No	
13	7/14/2020	14:05	PY8 Outfall	334 Blunk	220	NA	NA	NA	1.147	20.3	Trickle flow in manhole, calcium deposits on east inlet. No flow from inlet	No	None
14	9/15/2020	12:05	PY8 Outfall	334 Blunk	1100	NA	NA	NA	NA	NA	Trickle flow from east inlet and from north. Both clear. Sampled downstream of inlet. Calcium deposit on east inlet	No	None
15	9/23/2020	11:35	PY8 Outfall	334 Blunk	4000	$6.61x10^{5}$	NA	NA	NA	NA	Water clear in sump, steady trickle from upstream. No flow from east inlet. Some sediment on bottom of pipe	No	None
16	9/23/2020	12:10	PY8 Outfall	242 Blunk	8700	NA	NA	NA	NA	NA	Water clear. Slow flow from east inlet. West inlet bulkheaded	No	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Bacteriodes human specific markerArithmetic Average Gene Copies/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees celcius)	Observations	Sanitary Flow Evidence	Odor
17	7/14//2020	14:10	PY8 Outfall	Blunk/Blanche	430	NA	NA	NA	NA	NA	Slow steady flow in manhole, Inlets dry. Water not deep enough for conductivity/temperature reading	No	None
18	9/15/2020	12:45	PY8 Outfall	Blunk/Blanche	3300	$6.25x10^4$	NA	NA	NA	NA	Clear flow in storm. Some trickle flow from inlet- white PVC. East inlet damp from previous flow.	No	None
19	9/23/2020	12:25	PY8 Outfall	Blunk/Blanche	1400	NA	NA	NA	NA	NA	Slow flow in storm. Very little water. No flow from inlets. Some leaves in flow	No	None
20	7/14/2020	14:30	PY8 Outfall	Blunk/Farmer	NA	NA	NA	NA	NA	NA	Manhole dry. Clear water dripping from two catch basin inlets. Not enough flow to sample inlets	No	None
21	9/15/2020	12:55	PY8 Outfall	Blunk/Farmer	NA	NA	NA	NA	NA	NA	Manhole is buried under gravel due to road construction. Catch basins on each curb are being set. There is standing water in catch basins on the northeast, northwest, and southwest	No	None
22	7/14/2020	14:35	PY8 Outfall	Junction/Blunk	NA	NA	NA	NA	NA	NA	Manhole and inlets dry	No	None
23	9/15/2020	13:05	PY8 Outfall	Junction/Blunk	NA	NA	NA	NA	NA	NA	Manhole and inlets dry. Manhole is cracked. Condition reported to the City staff	No	None
24	9/23/2020	12:15	PY8 Outfall	Junction/Blunk	NA	NA	NA	NA	NA	NA	No dry weather flow in manhole	No	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	9/21/2020	10:35	PY5 Outfall	PY5 Outfall	1100	NA	NA	NA	NA	Slow flow, pipe has low gradient. Water clear	None	None
2	9/21/2020	10:55	PY5 Outfall	1214 Penniman	N/A	NA	NA	NA	NA	No dry weather flow in manhole. Manhole shallow	None	None
3	9/21/2020	11:15	PY5 Outfall	Arthur/Penniman	18000	NA	NA	NA	NA	Dry weather flow. Manhole is deep. No inlets. Is not appear to be at the same elevation as Penniman manhole	None	None
4	9/21/2020	11:30	PY5 Outfall	Arthur 197	<20	NA	NA	NA	NA	Water clear, slow flow in storm. Shallow manhole	None	None
5	9/21/2020	11:50	PY5 Outfall	Arthur/William East	40	NA	NA	NA	NA	Clear water in storm. Some leaf litter and grass clippings present. No flow from inlets	None	None
6	9/21/2020	12:10	PY5 Outfall	Arthur/William West	1700	NA	NA	NA	NA	Clear flow in storm. Some bulk headed pipes. Sample in sump	None	None
7	9/21/2020	12:20	PY5 Outfall	1251 William	2700	NA	NA	NA	NA	Clear flow in storm sump	None	None
8	9/21/2020	12:45	PY5 Outfall	William/Pacific	14000	NA	NA	NA	NA	Slow flow in storm. Water clear, some leaves and grass clippings. Inlets dry	None	None
9	9/21/2020	12:55	PY5 Outfall	295 Pacific	1800	NA	NA	NA	NA	Water clear in sump and from upstream inlet. Some leaves in storm. Catch basin Inlet dry	None	None
10	9/21/2020	13:05	PY5 Outfall	333 Pacific	170	NA	NA	NA	NA	Flow from upstream, trickle flow from storm inlets. Water clear. Leaves and lawn clippings	None	None
11	9/21/2020	13:15	PY5 Outfall	Blanche/Pacific	<20	NA	NA	NA	NA	Clear water in sump, and from upstream. No flow from catch basin inlets.	None	None
12	9/21/2020	13:30	PY5 Outfall	650 Pacific	NA	NA	NA	NA	NA	Manhole dry	None	None
13	9/21/2020	13:35	PY5 Outfall	775 Pacific	NA	NA	NA	NA	NA	Manhole dry. Leaf and lawn clippings present	None	None

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees celcius)	Observations	Sanitary Flow Evidence	Odor
1	8/13/2020	13:20	PY27 Outfall	PY27 Outfall	NA	NA	NA	NA	NA	No dry weather flow in outfall, upstream catch basin. Some standing water in outfall pipe	None	None
2	8/20/2020	14:07	PY27 Outfall	PY27 Outfall	20	NA	NA	NA	NA	Trickle flow from outfall. Roots growing out of pipe	None	None
3	9/21/2020	14:00	PY27 Outfall	PY27 Outfall	<100	NA	NA	NA	NA	Clear flow from outfall	None	None
4	8/20/2020	14:05	PY27 Outfall	Willowbrook storm #1	NA	NA	NA	NA	NA	Trickle flow in storm. No enough flow to sample	None	None
5	9/21/2020	14:10	PY27 Outfall	Willowbrook storm #1	<20	NA	NA	NA	NA	Clear flow, no inlets	None	None
6	8/20/2020	14:25	PY27 Outfall	Willowbrook storm #2	NA	NA	NA	NA	NA	Some trickle flow from PVC pipe draining into manhole. Clear water. Not enough flow to sample. Car parked on manhole	None	None
7	9/21/2020	14:20	PY27 Outfall	Willowbrook storm #2	<20	NA	NA	NA	NA	Clear flow from large east pipe. Dripping from PVC pipe from the parking area catch basin	None	None
8	9/21/2020	14:35	PY27 Outfall	Plymouth Service Center	<20	NA	NA	NA	NA	Clear dry weather flow from south and east inlets	None	None

Appendix B
2020 ARC IDEP Field Investigations
City of Livonia

Table B: Outfall L-1619

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	12/9/2020	14:20	Outfall 1619	Outfall 1619	620	NA	NA	NA	NA	Cloudy water at drain enclosure outlet. Lots of animal tracks, droppings in the drain and on banks (deer raccoon and other large mammal tracks present)	No	No
2	12/9/2020	14:55	29050 Dardanella	Outfall 1619	<100	NA	NA	NA	NA	Iron bacteria in storm. Solid lid, water clear. Catch basins at the dead end of Dardanella have standing water. Sampled from sump	No	No
3	12/9/2020	15:15	Dardanella/Grimm	Outfall 1619	<100	NA	NA	NA	NA	No flow from south inlet. Clear slow flow from west. Water clear	No	No
4	12/9/2020	15:30	29130 Dardanella	Outfall 1619	<100	NA	NA	NA	NA	Water clear, trickle flow from inlets west and north	No	No
5	12/9/2020	15:40	29200 Dardanella	Outfall 1619	<100	NA	NA	NA	NA	Water clear in storm; flow from west	No	No
5	12/9/2020	15:45	29200 1-8 Dardanella	Outfall 1619	NA	NA	NA	NA	NA	Some clear flow. Iron bacteria present. Flow from west inlet (Dunkin' Donuts). Terminal manhole- no sample collected. Not enough flow. Sediment present, brick and debris	No	No
6	12/16/2020	13:00	29155 Seven Mile	Outfall 1619	8.6	NA	NA	NA	NA	Clear water in storm. Trickle flow from south inlet	No	No
7	12/16/2020	14:35	Chicken Shack	Outfall 1619	2000	NA	NA	NA	NA	Water clear in storm. Flow from west toward enclosed drain	No	No
8	12/16/2020	14:45	Toys R Us Lot	Outfall 1619	NA	NA	NA	NA	NA	Trickle flow; not enough to sample. On large line	No	No
9	12/16/2020	15:10	Seven Mile WC MS4 East	Outfall 1619	61	NA	NA	NA	NA	Water clear, flow from east inlet; beehive structure	No	No
10	12/16/2020	15:20	19127 Parkville	Outfall 1619	NA	NA	NA	NA	NA	Manhole dry	No	No

Appendix C
2020 ARC IDEP Field Investigations
City of Wayne

Table C: Outfall WA-21

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/6/2020	9:15	WA-21A Outfall	WA21A	420	NA	NA	NA	NA	Outfall pipe cracked and broken with the headwall and part of the pipe in the river. Clear dry weather flow present. There is some river infiltration through pipe joints.	No	No
2	7/28/2020	13:52	36765 Thinbark	WA21A	NA	NA	NA	NA	NA	Manhole located in driveway on south side of Thinbark St. No inlets in storm except for northeast from manhole #1	No	No
3	8/6/2020	9:30	36765 Thinbark	WA21A	220	NA	NA	NA	NA	First accessible manhole upstream of outfall. Clear water in sump and clear water in inlet which is from the manhole at Thinbark/Thinbark Ct. Sampled below inlet	No	No
4	7/28/2020	13:40	Thinbark/Thinbark Court	WA21A	6.2	NA	NA	NA	NA	Dry weather flow in manhole from the north. Water clear.	No	No
5	8/6/2020	9:40	Thinbark/Thinbark Court	WA21A	60	NA	NA	NA	NA	Clear flow from north inlet. No flow from catch basins. Clear water in sump.	No	No
6	7/28/2020	14:10	Thinbark/Center Court	WA21A	8.6	NA	NA	NA	NA	Trickle flow from north inlet at bottom of manhole and some trickle flow from west. Not enough flow from the west to sample. Sample collected from manhole sump. Water clear	No	No
7	8/6/2020	10:20	Thinbark/Center Court	WA21A	220	NA	NA	NA	NA	Clear water in sump. Trickle flow from north inlet and also 24 inch west inlet. Not enough flow to sample the 24 inch inlet. Sample collected in center of sump.	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
8	7/28/2020	14:13	Greenbush/Center	WA21A	NA	NA	NA	NA	NA	All inlets dry. Water stagnant in sump, not flowing out through outlet. Manhole is full of grass clippings. Water clear.	No	No
9	8/6/2020	10:30	Greenbush/Center	WA21A	20	NA	NA	NA	NA	Grass clippings in sump. Clear water in sump up to outlet; trickle flow out. No flow from catch basin inlets. Sample collected at outlet	No	No
10	7/28/2020	14:25	Thinbark/Upland Ct	WA21A	6.3	NA	NA	NA	NA	Manhole is located just south of Upland Court. All catch basin inlets dry. Clear dry weather flow from north inlet.	No	No
11	8/6/2020	10:45	Thinbark/Upland Ct	WA21A	220	NA	NA	NA	NA	No flow from catch basin inlets. Trickle flow from north inlet	No	No
12	7/28/2020	14:35	Thinbark/Glenwood	WA21A	13	NA	NA	NA	NA	Clear water in manhole. Trickle flow from east inlet from Glenwood. Water in sump sampled. No flow from a PVC or two catch basin inlets.	No	No
13	8/6/2020	10:55	Thinbark/Glenwood	WA21A	150	NA	NA	NA	NA	Clear water in sump. Clear flow from east inlet. Sample collected in sump near east inlet discharge.	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
14	8/6/2020	11:05	36429 Glenwood	WA21A	<1	NA	NA	NA	NA	Turbid appearing water in sump. Trickle flow from east inlet. Trickle through outlet to west. No flow from catch basins. Sample collected at outlet. Water appears clear in sample bottle.	No	No
15	8/6/2020	11:15	36417 Glenwood	WA21A	NA	NA	NA	NA	NA	Slightly turbid water in sump. No flow from inlet to the north. No flow out of manhole. Some grass clippings present. Terminal manhole for the line. Manhole is brick. Did not sample due to absence of dry weather flow.	No	No

Appendix D
2020 ARC IDEP Field Investigations
City of Westland

Table D: Outfall SWOF-00278

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	*Bacteriodes* human specific marker Arithmetic Average gene copies/100mL	*Bacteriodes* bovine specific marker Arithmetic Average gene copies/100mL	Conductivity (mS/cm)	Observations	Sanitary Flow Evidence	Odor
1	1/16/2020	14:30	SWOF-00278 Outfall	SWOF-00278 Outfall	NA	NA	NA	NA	outfall discharging clear water. Some heavy calcium deposits at outfall outlet and on bank of stream.	None	None
2	12/7/2020	10:00	SWOF-00278 Outfall	SWOF-00278 Outfall	NA	NA	NA	NA	outfall discharging clear water. Some heavy calcium deposits at outfall outlet and on bank of stream. pH of outfall discharge is 10	None	None

Appendix E
2020 ARC IDEP Field Investigations
Lower Rouge

Table E: Lower Rouge water quality and outfall data

Site ID	Site Location	Date	Time	*E.coli* (CFU/100 mL)	Watershed	Community	Water Clarity	Water Color	Odor	Visible Debris/Pollution	Weather Conditions	Comments	Rain on Sampling Day	Rain day before sampling	Rain two days before sampling
LR-01	Lower Rouge/Morton Taylor Rd	9/28/2020	12:30	480	Lower	Canton Township	Clear	Medium brown	Musty/faint	Natural	Cloudy 61 degrees	trickle flow from outfall left bank	No	No	No
LR-01	Lower Rouge/Morton Taylor Rd	10/21/2020	13:10	627	Lower	Canton Township	Clear	Light brown	None/natural	Natural	Cloudy 55 degrees	Outfall discharge left bank clear	No	Yes- 0.05"	Yes-0.24"
LR-01	Lower Rouge/Morton Taylor Rd	10/29/2020	9:45	200	Lower	Canton Township	Clear	Light brown	None/natural	Natural	Cloudy 42 degrees	trickle flow from outfall left bank. Cladophora and leaf litter present	No	No	No
LR-01	Lower Rouge/Morton Taylor Rd	11/5/2020	12:45	36.4	Lower	Canton Township	Clear	Light brown	None/Natural	Natural	Cloudy 63 degrees	Trickle flow from outfall on left bank	No	No	No
LR-01	Lower Rouge/Morton Taylor Rd	11/11/2020	14:05	630	Lower	Canton Township	Clear	Clear	None/Natural	Natural	Clear 50 degrees		No	Yes-0.21"	No
LR-02	Lower Rouge/Hix Rd	9/28/2020	12:05	710	Lower	Wayne	Slightly Turbid	Medium brown	Musty/faint	Natural	Cloudy 61 degrees	20 turkeys crossing the road near site	No	No	No
LR-02	Lower Rouge/Hix Rd	10/21/2020	12:55	836	Lower	Wayne	Slightly Turbid	Medium brown	None/natural	Natural	Cloudy 55 degrees		No	Yes- 0.05"	Yes-0.24"
LR-02	Lower Rouge/Hix Rd	10/29/2020	10:10	100	Lower	Wayne	Clear	Light brown	None/natural	Natural	Cloudy 42 degrees	Leaf litter present at site	No	No	No
LR-02	Lower Rouge/Hix Rd	11/5/2020	13:15	15.8	Lower	Wayne	Clear	Light brown	None/Natural	Natural	Cloudy 63 degrees		No	No	No
LR-02	Lower Rouge/Hix Rd	11/11/2020	13:55	520	Lower	Wayne	Slightly Turbid	Light brown	None/Natural	Natural	Clear 50 degrees		No	Yes-0.21"	No
LR-03	Lower Rouge/Elizabeth St	9/28/2020	11:45	760	Lower	Wayne	Slightly Turbid	Light brown	None/Natural	Natural	Cloudy 61 degrees		No	No	No
LR-03	Lower Rouge/Elizabeth St	10/21/2020	12:40	712	Lower	Wayne	Slightly Turbid	Medium brown	None/natural	Natural	Cloudy 55 degrees		No	Yes- 0.05"	Yes-0.24"
LR-03	Lower Rouge/Elizabeth St	10/29/2020	10:20	310	Lower	Wayne	Slightly Turbid	Medium brown	Musty/faint	Natural	Cloudy 42 degrees	Leaf litter present at site	No	No	No
LR-03	Lower Rouge/Elizabeth St	11/5/2020	12:20	13.2	Lower	Wayne	Clear	Medium brown	None/Natural	Natural	Cloudy 63 degrees	Lots of floating leaves at site	No	No	No
LR-03	Lower Rouge/Elizabeth St	11/11/2020	13:45	2490	Lower	Wayne	Slightly Turbid	Medium brown	None/Natural	Natural	Clear 50 degrees		No	Yes-0.21"	No

Site ID	Site Location	Date	Time	*E.coli* (CFU/100 mL)	Watershed	Community	Water Clarity	Water Color	Odor	Visible Debris/Pollution	Weather Conditions	Comments	Rain on Sampling Day	Rain day before sampling	Rain two days before sampling
LR-04	Lower Rouge/Venoy Rd	9/28/2020	11:25	950	Lower	Wayne	Slightly Turbid	Medium brown	None/Natural	Natural	Cloudy 61 degrees	Left bank outfall discharging clear water	No	No	No
LR-04	Lower Rouge/Venoy Rd	10/21/2020	12:25	1012	Lower	Wayne	Moderately Turbid	Medium brown	None/natural	Natural	Cloudy 55 degrees		No	Yes- 0.05"	Yes-0.24"
LR-04	Lower Rouge/Venoy Rd	10/29/2020	10:35	200	Lower	Wayne	Slightly Turbid	Medium brown	Musty/faint	Natural	Cloudy 42 degrees	Leaf litter present at site	No	No	No
LR-04	Lower Rouge/Venoy Rd	11/5/2020	11:55	18.5	Lower	Wayne	Clear	Medium brown	None/Natural	Natural	Cloudy 63 degrees	No flow from outfalls at crossing	No	No	No
LR-04	Lower Rouge/Venoy Rd	11/11/2020	13:30	860	Lower	Wayne	Slightly Turbid	Medium brown	None/Natural	Musty/faint	Clear 50 degrees		No	Yes-0.21"	No
LR-04 NW outfall	Lower Rouge/Venoy Rd outfall northwest bank	10/29/2020	10:45	<100	Lower	Wayne	Clear			Natural	Cloudy 42 degrees	Flow from outfall clear	No	No	No
LR-04 SE outfall	Lower Rouge/Venoy Rd outfall southeast bank	10/29/2020	10:55	100	Lower	Wayne	Clear			Natural	Cloudy 42 degrees	Flow from outfall clear	No	No	No
LR-07	Lower Rouge/Merriman Rd	9/28/2020	11:00	880	Lower	Wayne	Slightly Turbid	Light brown	None/Natural	Natural	Cloudy 61 degrees	Carts, flow from an outfall on SE bank (sampled). Other outfalls dry. Some work on both sides of the crossing	No	No	No
LR-07	Lower Rouge/Merriman Rd	10/21/2020	NA	NA	Lower	Wayne	NA	NA	NA	NA	Cloudy 55 degrees	Site not accessible due to ongoing construction	No	Yes- 0.05"	Yes-0.24"
LR-07	Lower Rouge/Merriman Rd	10/29/2020	11:15	100	Lower	Wayne	Slightly Turbid	Medium brown	None/natural	Natural	Cloudy 42 degrees		No	No	No
LR-07	Lower Rouge/Merriman Rd	11/5/2020	11:45	25.6	Lower	Wayne	Clear	Medium brown	None/Natural	Natural	Cloudy 63 degrees	No dry weather flow from outfalls at crossing	No	No	No
LR-07	Lower Rouge/Merriman Rd	11/11/2020	13:15	1730	Lower	Wayne	Moderately Turbid	Medium brown	None/Natural	Natural	Clear 50 degrees	Some dewatering on south side of bridge due to construction work near Michigan Avenue intersection	No	Yes-0.21"	No
Merriman SE Outfall	Lower Rouge/Merriman Road Oufall SE side	9/28/2020	11:10	750	Lower	Westland	Clear				Cloudy 61 degrees	Outffall discharge clear; some sudsing present	No	No	No

Site ID	Site Location	Date	Time	*E.coli* (CFU/100 mL)	Watershed	Community	Water Clarity	Water Color	Odor	Visible Debris/Pollution	Weather Conditions	Comments	Rain on Sampling Day	Rain day before sampling	Rain two days before sampling
LR-05	Lower Rouge/Henry Ruff Rd	9/28/2020	10:45	650	Lower	Westland	Slightly Turbid	Light brown	Musty/faint	Natural/fixed trash	Cloudy 61 degrees	Large logjam at bridge with duckweed and fixed trash present; no DO taken at center and left bank stream due to jam. Two outfalls upstream and one downstream	No	No	No
LR-05	Lower Rouge/Henry Ruff Rd	10/21/2020	12:10	1374	Lower	Westland	Moderately Turbid	Medium brown	None/natural	Natural	Cloudy 55 degrees		No	Yes- 0.05"	Yes-0.24"
LR-05	Lower Rouge/Henry Ruff Rd	10/29/2020	11:30	100	Lower	Westland	Slightly Turbid	Medium brown	None/natural	Natural	Cloudy 42 degrees	No flow from outfalls at crossing	No	No	No
LR-05	Lower Rouge/Henry Ruff Rd	11/5/2020	11:35	11	Lower	Westland	Clear	Dark brown	None/Natural	Natural	Cloudy 63 degrees	no flow from outfalls at crossing. Large logjam and duckweed present	No	No	No
LR-05	Lower Rouge/Henry Ruff Rd	11/11/2020	13:05	2590	Lower	Westland	Slightly Turbid	Medium brown	None/Natural	Musty/faint	Clear 50 degrees		No	Yes-0.21"	No
LR-08	Lower Rouge/Middlebelt Rd	9/28/2020	10:35	770	Lower	Inkster	Slightly Turbid	Light brown	None/Natural	Natural	Cloudy 61 degrees	Large logjam upstream of bridge; outfall SE bank dry	No	No	No
LR-08	Lower Rouge/Middlebelt Rd	10/21/2020	12:05	660	Lower	Inkster	Moderately Turbid	Dark brown	None/natural	Natural	Cloudy 55 degrees	Logjam, leaves	No	Yes- 0.05"	Yes-0.24"
LR-08	Lower Rouge/Middlebelt Rd	10/29/2020	13:40	>100	Lower	Inkster	Slightly Turbid	Medium brown	None/natural	Natural	Cloudy 42 degrees	Large logjam upstream of bridge	No	No	No
LR-08	Lower Rouge/Middlebelt Rd	11/5/2020	11:25	13.1	Lower	Inkster	Clear	Dark brown	None/Natural	Natural	Cloudy 63 degrees	Large logjam at site; no flow from outfalls at crossing	No	No	No
LR-08	Lower Rouge/Middlebelt Rd	11/11/2020	12:30	2920	Lower	Inkster	Moderately Turbid	Dark brown	None/Natural	Natural	Clear 50 degrees	Large logjam with foaming at bridge	No	Yes-0.21"	No
LR-09	Lower Rouge/Inkster Rd	9/28/2020	10:15	400	Lower	Inkster	Slightly Turbid	Light brown	None/Natural	Natural	Cloudy 61 degrees	Logjam at bridge upstream side; dry outfall NW side of crossing	No	No	No
LR-09	Lower Rouge/Inkster Rd	10/21/2020	11:50	708	Lower	Inkster	Moderately Turbid	Dark brown	None/natural	Natural	Cloud 55 degrees	Logjam at bridge	No	Yes- 0.05"	Yes-0.24"
LR-09	Lower Rouge/Inkster Rd	10/29/2020	12:05	100	Lower	Inkster	Slightly Turbid	Medium brown	None/natural	Natural	Cloudy 42 degrees	Logjam at bridge	No	No	No
LR-09	Lower Rouge/Inkster Rd	11/5/2020	11:10	18.9	Lower	Inkster	Clear	Dark brown	None/Natural	Natural	Cloudy 63 degrees	Large logjam at site; floating leaves; no flow at outfalls at crossing	No	No	No

Site ID	Site Location	Date	Time	*E.coli* (CFU/100 mL)	Watershed	Community	Water Clarity	Water Color	Odor	Visible Debris/Pollution	Weather Conditions	Comments	Rain on Sampling Day	Rain day before sampling	Rain two days before sampling
LR-09	Lower Rouge/Inkster Rd	11/11/2020	12:10	1080	Lower	Inkster	Moderately Turbid	Dark brown	None/Natural	Natural	Clear 50 degrees	Some trickle flow from outfalls at crossing; lots of leaves and foaming at large logjam	No	Yes-0.21"	No
LR-10	Perrin Drain outlet	10/21/2020	11:40	3076	Lower	Inkster	Clear	Dark brown	None/natural	Natural	Cloudy 55 degrees	some trash and leaves present	No	Yes- 0.05"	Yes-0.24"
LR-10	Perrin Drain outlet	11/5/2020	11:00	27.9	Lower	Inkster	Clear	Light brown	None/Natural	Some fixed trash	Cloudy 63 degrees	Slow flow from outlet; some leaves	No	No	No
LR-10	Perrin Drain outlet	11/11/2020	12:00	11120	Lower	Inkster	Slightly Turbid	Dark brown	None/Natural	Floating trash. leaves	Clear 50 degrees	Some foam, leaves, flow from outfall; floating trash			
LR-06	Lower Rouge/John Daly Rd	9/28/2020	9:50	560	Lower	Inkster	Slightly Turbid	Dark brown	None/Natural	Natural/Fixed Trash	Cloudy 61 degrees	Bike on left bank, leaf debris flowing, no flow at outfalls at crossing	No	No	No
LR-06	Lower Rouge/John Daly Rd	10/21/2020	11:30	1017	Lower	Inkster	Moderately Turbid	Medium brown	None/natural	Natural	Cloudy 55 degrees	Leaves in water	No	Yes- 0.05"	Yes-0.24"
LR-06	Lower Rouge/John Daly Rd	10/29/2020	12:30	630	Lower	Inkster	Slightly Turbid	Medium brown	None/natural	Natural	Cloudy 42 degrees		No	No	No
LR-06	Lower Rouge/John Daly Rd	11/5/2020	10:50	11	Lower	Inkster	Clear	Dark brown	None/Natural	Natural	Cloudy 63 degrees	Lots of floating leaves at site	No	No	No
LR-06	Lower Rouge/John Daly Rd	11/11/2020	11:50	1340	Lower	Inkster	Highly Turbid	Dark brown	None/Natural	Natural	Clear 50 degrees		No	Yes-0.21"	No
	E. coli values above 1000 CFU/100mL														

Appendix F
2020 Partners for Clean Water Regional IDEP Training Workshop
Alert Observer Training
Attendees List
November 10, 2020

SEMCOG UNIVERSITY ALERT OBSERVER TRAINING ATTENDANCE LIST
NOVEMBER 10, 2020

ARC Member Community

Number	First Name	Last Name	Community/Organization
1	Cory	Borton	Bloomfield Township
2	Don	Coddington	Chesterfield Township
3	Mike	Oloughlin	City of Allen Park
4	Roger	Bouck	City of Ann Arbor
5	Jason	Derwoed	City of Ann Arbor
6	John	Kimberly	City of Ann Arbor
7	Kevin	Schneider	City of Ann Arbor
8	Mark	Sirls	City of Ann Arbor
9	Ben	Stapish	City of Ann Arbor
10	Peter	Stephens	City of Ann Arbor
11	Ken	Marten	City of Bingham Farms
12	Bryan	Grill	City of Birmingham
13	Michael	Jurek	City of Birmingham
14	Brendan	McGaughey	City of Birmingham
15	John	Selmi	City of Dearborn Heights
16	Kenneth	Kucel	City of Detroit
17	Jacob	Donner	City of Dexter
18	Joshua	Leach	City of Farmington
19	Mirandi	Alexander	City of Farmington Hills
20	Joe	Bledsoe	City of Farmington Hills
21	Jim	Cubera	City of Farmington Hills
22	ShonQuase	Dawkins	City of Farmington Hills
23	Mike	Hoffmeyer	City of Farmington Hills
24	Natasha	Sonck	City of Farmington Hills
25	Dan	Striks	City of Farmington Hills
26	Alex	Teraglia	City of Farmington Hills
27	Joe	Thornburg	City of Farmington Hills
28	Gregory	Young	City of Farmington Hills
29	Neil	Johnston	City of Grosse Pointe
30	Steve	Vitale	City of Grosse Pointe
31	Nicholas	Rudd	City of Grosse Pointe Shores

SEMCOG UNIVERSITY ALERT OBSERVER TRAINING ATTENDANCE LIST
NOVEMBER 10, 2020

ARC Member Community

Number	First Name	Last Name	Community/Organization
32	Michael	Way	City of Grosse Pointe Shores
33	Steve	Dubay	City of Hazel Park
34	George	Hutton	City of Livonia
35	Doug	Moore	City of Livonia
36	John	Klimaszewski	City of New Baltimore
37	Giordano	Bartoletri	City of Novi
38	Victor	Boron	City of Novi
39	Thomas	Constantine	City of Novi
40	Casey	Fox	City of Novi
41	Charles	Fritz	City of Novi
42	Jacy	Headley	City of Novi
43	James	Matties	City of Novi
44	James	Paulk	City of Novi
45	Frederick	Pettey	City of Novi
46	Dean	Reid	City of Novi
47	Kate	Richardson	City of Novi
48	Keith	Salowich	City of Novi
49	Drew	Snyder	City of Novi
50	Christopher	Stanley	City of Novi
51	Aaron	Staup	City of Novi
52	John	Talbot	City of Novi
53	Mike	Tate	City of Novi
54	Gerald	Tremblay	City of Novi
55	Jeffrey	Vancurler	City of Novi
56	Matt	Wiktorowski	City of Novi
57	Roger	Gardner	City of Orchard Lake
58	mike	lee	City of Orchard Lake
59	Greta	Bolhius	City of Plymouth
60	Mike	Brindley	City of Plymouth
61	Dave	Cirilli	City of Plymouth
62	Jennifer	Coykendall	City of Plymouth
63	Steve	Faiman	City of Plymouth
64	Nancy	Griwicki	City of Plymouth

SEMCOG UNIVERSITY ALERT OBSERVER TRAINING ATTENDANCE LIST
NOVEMBER 10, 2020

ARC Member Community

Number	First Name	Last Name	Community/Organization
65	Brandon	Haarala	City of Plymouth
66	Lisa	Hominga	City of Plymouth
67	Nick	Johns	City of Plymouth
68	Trent	Kalis	City of Plymouth
69	Ray	Kraft	City of Plymouth
70	Aaron	Micek	City of Plymouth
71	Colin	Murphy	City of Plymouth
72	Chris	Porman	City of Plymouth
73	Brian	Ronayne	City of Plymouth
74	John	Segura	City of Plymouth
75	Jacob	Chafins	City of Port Huron
76	Sherman	Potter	City of Portage
77	Tim	Pollizzi	City of Rochester Hills
78	Austin	Laskaska	City of Romulus
79	John	McKinney	City of Romulus
80	Nicholas	Pace	City of Romulus
81	Richard	Taylor	City of Romulus
82	Brandy	Siedlaczek	City of Southfield
83	Larry	Sirls	City of Southfield
84	Mike	Allen	City of St. Clair Shores
85	David	Conklin	City of St. Clair Shores
86	Ron	Demski	City of St. Clair Shores
87	Zach	Erne	City of St. Clair Shores
88	Erik	Skurda	City of Sterling Heights
89	Matthew	Bonza	City of Taylor
90	Jason	Mach	City of Taylor
91	Randy	Smith	City of Taylor
92	Scott	Carruthers	City of Troy
93	George	Hawes	City of Troy
94	Chad	Fisher	City of Wayne
95	Mary	Bednar	Clinton Township
96	Gordon	Bush	Clinton Township
97	Jason	Mills	Clinton Township

SEMCOG UNIVERSITY ALERT OBSERVER TRAINING ATTENDANCE LIST
NOVEMBER 10, 2020

ARC Member Community

Number	First Name	Last Name	Community/Organization
98	Robert	Turner	Clinton Township
99	Nick	Kammer	East China Township
100	Donald	Liniarski	East China Township
101	Kenneth	Schindler	East China Township
102	Blayn	Szyska	East China Township
103	Janelle	Hohm	EGLE
104	Jen	Klang	EGLE
105	Felicia	Venable	Farmington Public Schools
106	Jay	Stogiera	Henry Ford Community College
107	Rebekkah	Ausbury	Kalamazoo County Road Commission
108	Rod	Soos	Livingston County
109	Bryan	Varacalle	Livingston County
110	John	Griffor	Macomb County
111	Carol	Koehn	Macomb County
112	Jeff	Bednar	Macomb County
113	Jenay	Chartier	Macomb County
114	Karen	Czernel	Macomb County
115	Sam	DiCaro	Macomb County
116	Jessica	Hicks	Macomb County
117	Carol	Koehn	Macomb County
118	Anthony	Lemire	Macomb County
119	Greg	Martinez	Macomb County
120	Lara	Sucharski	Macomb County
121	Terry	Baumgarten	No affiliation provided
122	Jennifer	Carpenter	No affiliation provided
123	Matt	Collins	No affiliation provided
124	Troy	Farnum	No affiliation provided
125	Edward	LaGarde	No affiliation provided
126	Mark	Baldwin	Oakland County
127	Ron	Fadoir	Oakland County
128	Michael	Mausolf	Oakland County
129	Megan	Schildberg	Oakland County
130	Stephen	Whaley	Oakland County

SEMCOG UNIVERSITY ALERT OBSERVER TRAINING ATTENDANCE LIST
NOVEMBER 10, 2020

ARC Member Community

Number	First Name	Last Name	Community/Organization
131	Michael	Chiasson	Oakland County
132	Jacy	Garrison	Oakland County
133	Joel	Kohn	Oakland County
134	Jeff	Monette	Oakland County
135	Jim	Schafer	Oakland County
136	Sean	Zera	Oakland County
137	Levi	Brindley	Oakland County Parks and Recreation
138	Laura	Hassold Prevot	Oakland County Road Commission
139	Cora	Hanson	Oakland University
140	Cora	Hanson	Oakland University-Environmental Health & Safety
141	Conner	Reiter	Orion Township
142	Joe	Pace	Riverview Schools
143	Trevor	Layton	SEMCOG-Partner
144	Glenda	Marks	SEMCOG-Partner
145	Stephanie	Taylor	SEMCOG-Partner
146	John	Taylor	Village of Beverly Hills
147	Franklin	Wenzel	Village of South Rockwood
148	Kelly	McRobb-Ackland	Wade Trim-No community affiliation provided
149	April	Avigne	Washtenaw County
150	Kevin	Butler	Washtenaw County
151	Michael	Fry	Washtenaw County
152	William	Fults	Washtenaw County
153	Dakota	Spain	Washtenaw County
154	Bryan	Bloomensaat	Washtenaw County
155	Robert	Dancer	Washtenaw County
156	Marc	Decker	Washtenaw County
157	Bob	Griffin	Washtenaw County
158	Heather	Rice	Washtenaw County
159	Julie	Sigda	Washtenaw County
160	Kathy	Squiers	Washtenaw County
161	David	Streeter	Washtenaw County
162	Edward	Wojtan	Washtenaw County
163	Scott	Burby	Washtenaw County Road Commission

SEMCOG UNIVERSITY ALERT OBSERVER TRAINING ATTENDANCE LIST
NOVEMBER 10, 2020

ARC Member Community

Number	First Name	Last Name	Community/Organization
164	Mark	Fenelon	Washtenaw County Road Commission
165	Jaclyn	Henderson	Washtenaw County Road Commission
166	Becky	Houle	Washtenaw County Road Commission
167	Larry	Plesiewicz	Washtenaw County Road Commission
168	Jared	Powers	Washtenaw County Road Commission
169	Lauren	Purdy	Washtenaw County Road Commission
170	Kristin	Goetze	Waterford Township
171	Robert	Merinsky	Waterford Township
172	David	Cartwright	Wayne County
173	Frederick	Greene	Wayne County
174	John	Gundry	Wayne County
175	Richard	Hodges	Wayne County
176	Elizabeth	Iszler	Wayne County
177	Sami	Khaldi	Wayne County
178	LeDonn	Majors	Wayne County
179	Noel	Mullett	Wayne County
180	Joseph	Tomocik	Wayne County

Appendix B2

2021 Wayne County IDEP Investigation Report

Wayne County Illicit Discharge Elimination Program
ARC IDEP Services 2021 Report

Executive Summary

Wayne County Department of Public Services Environmental Services Division (ESD) performed source identification advanced investigations in the Cities of Plymouth, Inkster, and Livonia (Table 1). The ARC 2021 workplan was amended in September of 2020 to include advanced investigations along the Lower Rouge in the City of Inkster. The addition of the Lower Rouge investigations was in response to elevated *E. coli* concentrations identified during routine water quality monitoring performed by ESD and the City of Dearborn. Other tasks completed in 2021 included IDEP Training and activity reporting.

Table 1: Findings and recommended actions for illicit discharge investigations

Community	**Outfall/ target area**	**Findings**	**Recommendations**
Plymouth	PY8	Elevated *E. coli, Bacteriodes and HF183 marker*	Continued investigations in 2022 including dye testing and televising storm sewer segments isolated by sampling
Plymouth	PY5	Elevated *E. coli* and HF183 marker	Continued investigations in 2022 including sampling for *E. coli* and HF183 marker, dye testing and televising storm sewer segments isolated by sampling
Plymouth	Holbrook Street	Low *E. coli*, no evidence of illicit discharge other than sewage odor	Investigation plans for 2022 TBD pending recommendations from the City of Plymouth
Plymouth	PY27	Low *E. coli;* no evidence of illicit discharge	No further follow-up necessary. No further investigation is needed in 2022
Plymouth	Harvey Street	Two illicit connections identified via televising and during construction in 2020 were corrected	Follow-up *E. coli* monitoring performed in 2021 confirmed no additional illicit connections suspected. No further investigation is needed in 2022
Plymouth	Mill/Park Street	Four illicit connections identified (3 discharge to Wayne County Mill Street MS4, and one discharges to the City of Plymouth MS4 tributary). Compliance actions ongoing	Follow-up *E. coli* monitoring to confirm no additional illicit connections once corrections are made.
Livonia	Bakewell Drain/Levan Road 42" storm sewer	Low *E. coli* and HF183 marker; no evidence of illicit discharge	Continued investigations including sampling for *E. coli* and HF183 marker is needed in 2022

Livonia	Outfall L-1619	Elevated *E. coli* and HF183 marker was detected in a storm sewer near a food service facility. Sewage source (s) suspected	Continued investigations including additional sampling for *E. coli,* HF183 marker, dye testing and televising in 2022
Livonia	6038	2021 investigation inconclusive	Continued investigations including sampling for *E. coli* and HF183 marker in 2022
Livonia	13002	Low *E. coli*; no evidence of illicit discharge	No further investigation is needed in 2022
Livonia	U2008231	Low *E. coli,* outfall dry; no evidence of illicit discharge	No further investigation is needed in 2022
Livonia	M2008117	Low *E. coli*; no evidence of illicit discharge	No further investigation is needed in 2022
Livonia	U2008238	Low *E. coli*; no evidence of illicit discharge	No further investigation is needed in 2022
Livonia	2680	Low *E. coli*/HF183*;* no evidence of illicit discharge	No further investigation is needed in 2022
Livonia	L3582	2021 investigation inconclusive	Continued investigations including sampling for *E. coli* and HF183 marker in 2022
Livonia	U2008221	Sewage sources suspected. No investigation on this line in 2021	ARC staff taking over investigation of this outfall in 2022
Dearborn and Inkster	Lower Rouge	Elevated *E. coli*	Additional investigations on the Lower Rouge upstream of John Daly Road will involve screening outfalls, sampling for *E. coli, HF183 marker* and surfactants, as well as televising planned for the Perrin Drain, and sanitary sewer crossings

Task 1: Field Investigations

ESD conducted IDEP investigations at various outfalls and upstream storm sewer manholes. Water samples were tested for *E. coli* and observations were recorded regarding water clarity, color, odor, and debris. In addition to ESD's typical IDEP investigation methods, select samples were analyzed for the Human Source (HF183) marker. The presence of the marker above 1,000 gene copies/100 mL is used as a threshold to indicate potential human source of bacteria present when correlated with elevated *E. coli* levels.

City of Plymouth

ESD coordinated with ARC staff and the City of Plymouth to continue investigations of outfalls PY8, PY5, Holbrook Street, and the Harvey Street and the Park Street municipal separate storm sewer systems (MS4). The PY8 and PY5 outfalls discharge to the North Branch Tonquish Creek. The Harvey Street MS4 is a tributary to Byron Creek and the South Branch of Tonquish Creek. The Park Street MS4 captures the Mill Street drainage and discharges to the Rouge River Middle Branch, as does the outfall discharging the drainage from the Holbrook Street investigation area.

Outfall PY8

ESD performed follow up monitoring of outfall PY8, investigating manholes and storm sewer laterals upstream of the outfall on August 23, September 21, and November 10, 2021. Three manholes were investigated during dry weather. The investigation area and dry weather screening data is shown in *Figure 1* and the investigation data is in Appendix A, Table A1.

Elevated *E. coli* was detected at two manholes in the upstream storm sewer system on Blunk Street. Elevated levels of HF183 marker were detected in a sample taken on November 10, 2021. Further investigations are needed to identify the source (s) in the outfall PY8 investigation area. Review of storm sewer televising footage, additional manhole sampling (*E. coli* and *HF183*), televising the sanitary sewer to locate residential leads, and dye testing of selected residences in the investigation area are planned for 2022.

Outfall PY5

ESD performed follow up sampling in manholes and storm sewer laterals upstream of the outfall on August 23, and November 10, 2021. Two manholes and the outfall were investigated during dry weather. The investigation area and dry weather screening data is shown in *Figure 2* and the investigation data is in Appendix A, Table A2.

The outfall was not sampled due to stagnant water/no dry weather flow present in the pipe. Elevated *E. coli* was detected in one manhole in the upstream storm sewer system at the intersection of Arthur and William Streets. *E. coli* and HF 183 marker concentrations were low in a sample taken on Pacific Street November 10, 2021. Further investigations are needed to isolate the *E. coli/HF183* source (s) in the Outfall PY5 investigation area. Televising of the storm sewer, verification of sampling locations, additional manhole sampling (*E. coli* and *HF183*), and dye testing of selected residences are planned for 2022.

Holbrook Street

The City of Plymouth Holbrook Street storm sewer segment between Plymouth Road and its terminal manhole south of the railroad tracks (north of Liberty Street) was investigated on August 23 and September 2, 2021. The manholes along this segment were investigated twice and during one of those events, no dry weather flow was present, except for in the manhole at furthest downstream point in investigation area. During the two times this manhole was sampled, the *E. coli* concentrations were less than 100 CFU/100mL. A sewage odor was detected in the storm sewer at Holbrook and Spring Street intersection, and complaints received about this odor is what initiated the investigation in this specific section of the drainage area. The odor does not appear to be originating from an active illicit discharge source. Based on the *E. coli* data and observations, no further investigation is recommended at this time, unless the reviewing the CCTV footage of the sewers in the drainage area indicates otherwise. The investigation area is shown in Figure 3 and dry weather screening data is shown in *Figure 3* and the investigation data is in Appendix A, Table A3.

Harvey Street Investigation Area
Two residences with illicit connections were discovered during 2020. One was found when the City of Plymouth televised the Jener Street storm sewer, which is upstream of a manhole where elevated *E. coli* concentrations and physical evidence of illicit discharge were detected during storm sewer manhole sampling investigations. The illicit connection discovered during the televising effort was at a single-family residence (663 Jener Street). The City of Plymouth also discovered an illicit connection at a residential property (566 N. Harvey Street) on Harvey Street during road construction. Both illicit connections were corrected.

Follow up *E. coli* monitoring at the Harvey Street outfall and its storm sewer laterals was performed during 2021 to confirm that no further illicit connections are present in the storm sewer system that discharges to Byron Creek (Tonquish Creek South Branch). A total of six residences with illicit connections were identified in the Harvey Street storm sewer drainage area investigation. This investigation is completed. The investigation area is shown in Figure 4 and the dry weather screening data is in Appendix A, Table A4.

Park Street/Mill Street Investigation Area
There are a total of four residences with unresolved illicit connections identified in the Mill/Park Street investigation area, including a duplex located at 150/152 S. Mill Street identified during residential dye testing performed in 2018. Three residences with illicit connections were identified during utility televising performed in the area by Consumer's Energy during 2019. Two of these connections were identified along Mill Street and discharge into the Wayne County Mill Street MS4 (195 S. Mill and 485 S. Mill). The third originated from a residence on Amelia Street (175 Amelia Street), and this one discharges into the City of Plymouth MS4 tributary to the Mill Street storm sewer. The property owners of the three Mill Street residences were mailed Notice of Ordinance Violation letters ordering disconnection of the plumbing fixtures from the Mill Street MS4 and that the fixtures be properly connected to the City of Plymouth sanitary sewer. The correction of the illicit connections is required by May 1, 2022.

Once the active illicit connections are eliminated from the Mill Street and Ameila Street storm sewers, the Mill Street storm sewer laterals and the Park Street storm sewer outfall will be resampled.

City of Livonia
ESD continued investigations of outfall L-1619, the 42-inch Levan Road outfall, and initiated investigations on outfalls 6038, 13002, U2008231, M2008117, U2008238, 2680, and L3582. No additional investigation was performed on outfall U2008221 during 2021. Outfall M2008117 discharges to the Middle Rouge River, and the others discharge to the Upper Rouge or one of its tributaries.

42-inch Outfall Levan Road South (Bakewell Drain)
This outfall and several laterals were investigated in 2019 and elevated *E. coli* and BST markers were detected. Due to staffing shortages caused by the COVID-19 pandemic and investigative priority changes in the ARC IDEP workplan, no investigations occurred on this outfall in 2020. ESD performed a follow up investigation on this storm sewer line on November 10, 2021. The outfall, and storm sewer manholes on upstream laterals where elevated *E. coli* and/or BST markers were previously detected, were investigated and resampled. The *E. coli* samples were 10 CFU/100mL in the laterals and less than 1000 CFU/100mL at the outfall. Due to the low *E. coli* concentrations, it is one more sampling at the outfall and laterals occur in 2022 prior to closing out the investigations. The investigation area is shown in Figure 5 and the dry weather screening data is in Appendix B, Table B1.

Outfall L-1619

ESD began its investigation L-1619 in December 2020 and continued that investigation in 2021. The outfall, and storm sewer manholes on upstream laterals where elevated *E. coli* were previously detected were investigated and resampled on November 10, 2021. The HF183 marker was very high in a sample collected from a storm sewer on Seven Mile Road near a food service establishment. Further investigations are needed to isolate the *E. coli/HF183* source (s) in the investigation area. Additional manhole sampling (*E. coli* and *HF183*), delineating of the drainage area, televising of the storm sewer, and dye testing of selected facilities are planned for 2022. The investigation area is shown in Figure 6 and the dry weather screening data is in Appendix B, Table B2.

Outfall 6038

ESD investigated Outfall 6038 on July 28, 2021. One of the samples collected in the storm sewer upstream of the outfall was 1600 CFU/100mL and there was low flow, or stagnant water present in other manholes in the system, so the investigation was inconclusive. Additional investigation of this area is recommended for 2022. The investigation area is shown in Figure 7 and the dry weather screening data is in Appendix B, Table B3.

Outfall 13002

ESD investigated Outfall 13002 on August 3 and September 30, 2021. *E. coli* concentrations in the manhole samples was less than 200 CFU/100mL. No further investigation is recommended for this area. The investigation area is shown in Figure 8 and the dry weather screening data is in Appendix B, Table B4.

Outfall U2008231

ESD investigated Outfall U2008231 on August 2 and September 30, 2021. No dry weather discharge was present at the outfall, and *E. coli* concentrations in storm sewer manhole samples were less than 900 CFU/100mL. Recommend no further investigation for this area. The investigation area is shown in Figure 9 and the dry weather screening data is in Appendix B, Table B5.

Outfall M2008117

ESD investigated Outfall M2008117 on July 28 and September 30, 2021. Dry weather discharge was present at the outfall, and *E. coli* concentrations in the manhole samples were less than 1600 CFU/100mL. Recommend no further investigation for this area. The investigation area is shown in Figure 10 and the dry weather screening data is in Appendix B, Table B6.

Outfall U2008238

ESD investigated Outfall U2008238 on August 2 and September 30, 2021. *E. coli* concentrations in the manhole samples were less than 100 CFU/100mL. Recommend no further investigation for this area. The investigation area is shown in Figure 11 and the dry weather screening data is in Appendix B, Table B7.

Outfall 2680

ESD investigated Outfall 2680 on August 4, 5 and November 10, 2021. *E. coli* concentrations in the manhole samples were less than 100 CFU/100mL. HF183 marker levels were very low in two laterals the *E. coli* concentrations were below 5000 CFU/100mL during both investigations. Recommend no further investigation. The investigation area is shown in Figure 12 and the dry weather screening data is in Appendix B, Table B8.

Outfall L3582
ESD investigated Outfall 2680 on August 5, 2021. *E. coli* concentrations in the manhole samples were less than 500 CFU/100mL. Recommend one additional round of sampling to ensure no illicit discharges are present. The investigation area is shown in Figure 13 and the dry weather screening data is in Appendix B, Table B9.

Outfall U2008221 (Bakewell Drain)
ESD met with the City of Livonia to review the findings of the investigations performed on the Outfall U2008221 in 2019 and developed a follow-up plan to delineate the storm sewers draining to these outfalls, where elevated *E. coli* and BST markers were detected. The City of Livonia televised a storm sewer line located on the west side of Levan Road and discovered it did not have an outlet to the Bakewell Drain. ESD and the City of Livonia were not able to perform further investigation on the Bakewell Drain outfalls due to the staffing shortages caused by the COVID-19 pandemic and the changes in investigative priorities. Further investigation on this outfall is planned for 2022 and is detailed in the workplan for ARC staff.

Lower Rouge Investigation-Inkster
ESD supported ARC staff by providing staff to assist with performing an outfall survey on the Lower Rouge between Inkster and Beech Daly Roads on April 8, 2021. ESD also supported ARC staff in dry weather advanced investigations on the Perrin Drain collecting samples from storm sewer manholes in the investigation area on March 10 and May 12, 2021. ARC staff prepared reports detailing the investigations, results and follow up recommendations.

Task 2 IDEP Training
Two IDEP training workshops were presented in 2021 in partnership with the Southeast Michigan Council of Governments (SEMCOG) Partners for Clean Water and the ARC. ESD provides support to ARC and SEMCOG in these training efforts. Due to the ongoing COVID-19 pandemic, the workshops were held virtually. The Alert Observer training, that was redesigned for the virtual platform in 2020, was offered on October . The Advanced Investigator training workshop was modified to the virtual platform and that workshop also held on October.

The IDEP Alert Observer training workshop is a one-hour session that included a question and answer session at its conclusion. This training introduces illicit dicharges, why it is important to identify and report, and reporting procedures. The virtual training workshop was held on October 27, 2021 with a total of 239 persons from 48 public entities attending the session. One-hundrd thirty-seven of the 239 attendees (57percent) were representatives of (or consultants representing) ARC member communities.

The IDEP Advanced Investigator training workshop is a two-hour session that included a question and answer session at its conclusion. This training details the various techniques used to investigate, identify and eliminate illicit discharge sources. The Advanced Investigator training virtual training workshop was held on October 27, 2021 with a total of 173 persons from 48 public entities attending the session. One-hundred-fifteen of the 173 attendees (66 percent) were representatives of (or consultants representing) ARC member communities.

Appendix C contains the attendance lists for the Alert Observer and Advanced Investigator workshops. Attendees representing ARC communities are highlighted.

Task 3 Reporting

Written progress summaries of IDEP activities were provided. The 2020 IDEP Activities Summary was completed and the 2021 activities summary drafted.

Figures
2021 ARC IDEP Field Investigation Maps

Figure 1: Outfall PY8 Investigation Area

Figure 2: Outfall PY5 Investigation Area

Figure 3: Holbrook Street Investigation Area

Figure 4: Harvey Street Investigation Area

Figure 5: Outfall Levan Road South (Bakewell Drain) Investigation Area

Figure 6: City of Livonia L-1619 Investigation Area

Figure 7: Outfall 6038 Investigation Area

Figure 8: Outfall 13002 Investigation Area

Figure 9: Outfall U2008231 Investigation Area

Figure 10: Outfall M2008117 Investigation Area

Figure 11: Outfall U2008238 Investigation Area

Figure 12: Outfall 2680 Investigation Area

Figure 13: Outfall L3582 Investigation Area



CITY OF PLYMOUTH
2021 IDEP Investigation
Outfall PY8

Stormwater Gravity Mains
Stormwater Manholes
Sanitary Gravity Main & Lateral Lines
Sanitary Manhole

Sampling units - *E. coli* - CFU / 100 ml
HF 183 - GC / 100 ml

200 0 600 Feet

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CITY OF PLYMOUTH
2021 IDEP Investigation
Outfall PY5

Stormwater Gravity Mains
Sanitary Gravity Main & Lateral Lines
R Stormwater Manholes
R Sanitary Manhole
Sampling units - CFU / 100 ml

200 0 600 Feet

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CITY OF PLYMOUTH
2021 IDEP Investigation
Holbrook Street

1:3,000
1 inch = 250 feet

250 125 0 250 500 Feet

Stormwater Gravity Main
Stormwater Manhole
Sanitary Gravity Main & Lateral Lines
Sanitary Manhole

Sampling units - CFU / 100 ml

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CITY OF PLYMOUTH
2021 IDEP Investigation
Harvey Street

Stormwater Gravity Mains
Sanitary Gravity Main & Lateral Lines
Stormwater Manholes
Sanitary Manhole

200 0 600 Feet

Sampling units - CFU / 100 ml

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CITY OF LIVONIA
2021 IDEP Investigation
Levan Road 42" Outfall

Category B outfall
Stormwater Gravity Main
R Stormwater Manhole
Livonia boundary
Sanitary Gravity Main
R Sanitary Manhole

250 0 500 Feet

Sampling units - CFU / 100 ml

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CITY OF LIVONIA
2021 Outfall 1619 Investigation

Category B outfall
Stormwater Gravity Main
Stormwater Manhole
Livonia boundary
Sanitary Gravity Main
Sanitary Manhole

200 0 200 Feet

Sampling units - *E. coli* - CFU / 100 ml
HF 183 - GC / 100 ml

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CITY OF LIVONIA
2021 IDEP Investigation
Outfall 6038

- Category B outfall
- Stormwater Gravity Main
- R Stormwater Manhole
- Sanitary Gravity Main
- R Sanitary Manhole
- Livonia boundary

Sampling units - CFU / 100 ml

100 0 400 Feet

WAYNE COUNTY MICHIGAN
WARREN C. EVANS

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CITY OF LIVONIA
2021 IDEP Investigation
Outfall 13002

200 0 800 Feet

Category B outfall
Stormwater Gravity Main
Stormwater Manhole
Livonia boundary
Sanitary Gravity Main
Sanitary Manhole

Sampling units - CFU / 100 ml

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CITY OF LIVONIA
2021 IDEP Investigation
Outfall U2008231

Category B outfall
Stormwater Gravity Main
R Stormwater Manhole
S Stormwater Catch Basin
Livonia boundary
Sanitary Gravity Main
R Sanitary Manhole

100 0 400 Feet

Sampling units - CFU / 100 ml

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CITY OF LIVONIA
2021 IDEP Investigation
Outfall M2008117

Category B outfall
Stormwater Gravity Main
R Stormwater Manhole
Livonia boundary
Sanitary Gravity Main
R Sanitary Manhole

250 0 500 Feet

Sampling units - CFU / 100 ml

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CITY OF LIVONIA
2021 IDEP Investigation
Outfall U2008238

±

250 0 500 Feet

Category B outfall
Stormwater Gravity Main
R Stormwater Manhole
Sanitary Gravity Main
R Sanitary Manhole
Livonia boundary

Sampling units - CFU / 100 ml

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CITY OF LIVONIA
2021 IDEP Investigation
Outfall 2680

200 0 800 Feet

Category B outfall
Stormwater Gravity Main
Stormwater Manhole
Livonia boundary
Sanitary Gravity Main
Sanitary Manhole

Sampling units - CFU / 100 ml

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CITY OF LIVONIA
2021 IDEP Investigation
Outfall L3582

Category B outfall
Stormwater Gravity Main
Stormwater Manhole
Livonia boundary
Sanitary Gravity Main
Sanitary Manhole

250 0 500 Feet

Sampling units - CFU / 100 ml

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Appendix A
2021 ARC IDEP Field Investigation Data
City of Plymouth

Table A1: Outfall PY8 Investigation Area
Table A2: Outfall PY5 Investigation Area
Table A3: Holbrook Street Investigation Area
Table A4: Harvey Street Investigation Area

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/23/2021	14:25	Outfall PY8	Blunk St/Church St	<2419.6	NA	NA	NA	NA	NA	Water flow in storm from north inlet. Some sediment in sample	No	No
2	9/21/2021	13:20	Outfall PY8	Blunk St/Farmer St	1300	NA	NA	NA	NA	NA	Sampled north inlet. Clear trickle flow from west inlet-not enough to sample.	No	No
3	11/10/2021	9:40	Outfall PY8	Blunk St/Farmer St	464	45031.6	NA	NA	NA	NA	Clear flow in storm from north inlet. Trickle flow from west inlet, not enough to collect a sample	No	No
4	9/21/2021	12:45	Outfall PY8	Blunk St/Junction St	NA	NA	NA	NA	NA	NA	Manhole dry. Lid cracked. No storm sewer catch basins in between Junction and Farmer on Blunk St	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/23/2021	13:45	Outfall PY5	Outfall PY5	NA	NA	NA	NA	NA	NA	Standing water in outfall pipe. No dry weather flow. Tonquish Creek water levels very low	No	No
2	8/23/2021	13:50	Outfall PY5	William St/Arthur St	5700	NA	NA	NA	NA	NA	Slow flow in storm; water clear, steady flow from William Street inlet	No	No
3	11/10/2021	10:05	Outfall PY5	295 Pacific St	275	94.7	NA	NA	NA	NA	Musty odor, flow from north inlet	No	Yes

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/23/2021	11:55	Holbrook St Storm Sewer	Holbrook St/Plymouth Rd	39	NA	NA	NA	NA	Trickle flow from north inlet; water clear. Iron deposits present on inlet pipe. Sample collected at 13:30. Only manhole in storm sewer line with consistent dry weather flow	No	No
2	9/2/2021	11:00	Holbrook St Storm Sewer	Holbrook St/Plymouth Rd	11	NA	NA	NA	NA	Clear flow from north inlet on Holbrook St. Iron deposits present on inlet pipe	No	No
3	8/23/2021	12:00	Holbrook St Storm Sewer	472 Holbrook St	NA	NA	NA	NA	NA	Manhole dry, musty odor, inlets dry. Some standing water in catch basins (Holbrook east side). West side inlet dry	No	No
4	9/2/2021	11:25	Holbrook St Storm Sewer	472 Holbrook St	NA	NA	NA	NA	NA	Manhole and storm inlets dry	No	No
5	8/23/2021	12:10	Holbrook St Storm Sewer	Holbrook St/Caster St	NA	NA	NA	NA	NA	Strong decaying debris odor in manhole. Some water in sump-not enough to sample. Drip from catch basin inlet- not enough to sample. No flow from north inlet	No	Yes
6	9/2/2021	11:35	Holbrook St Storm Sewer	Holbrook St/Caster St	NA	NA	NA	NA	NA	Some standing water in manhole; not enough to sample. Inlets dry	No	No
7	8/23/2021	12:20	Holbrook St Storm Sewer	Holbrook St/Spring St	NA	NA	NA	NA	NA	Storm with "Dump No Waste" grate cover. Sewage odor present in sump. Manhole dry. Some leaf litter at bottom of sump. Slight sewage odor in west catch basin	No	Yes
8	9/2/2021	11:50	Holbrook St Storm Sewer	Holbrook St/Spring St	NA	NA	NA	NA	NA	Manhole dry. Sewage odor present. East and west catch basins on Holbrook St dry	No	Yes
9	8/23/2021	12:50	Holbrook St Storm Sewer	Holbrook St/Liberty St	NA	NA	NA	NA	NA	Manhole and storm inlets dry	No	No
10	9/2/2021	12:10	Holbrook St Storm Sewer	Holbrook St/Liberty St	NA	NA	NA	NA	NA	Manhole damp on the bottom. Drip on Liberty Street inlet. Not enough flow to sample. Slight musty odor present	No	Yes
11	9/2/2021	12:15	Holbrook St Storm Sewer	818 Holbrook St	NA	NA	NA	NA	NA	Manhole and storm inlets dry. Some standing water in catch basins	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
12	8/23/2021	13:15	Holbrook St Storm Sewer	882 Holbrook St terminal manhole	NA	NA	NA	NA	NA	Terminal manhole south of railroad tracks. Sump and inlets dry	No	No
13	9/2/2021	12:20	Holbrook St Storm Sewer	882 Holbrook St terminal manhole	NA	NA	NA	NA	NA	Terminal manhole south of railroad tracks. Sump and inlets dry	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	9/2/2021	13:10	Harvey St Outfall	Harvey St Outfall	20	NA	NA	NA	NA	Clear discharge from outfall	No	No
2	9/21/2021	12:20	Harvey St Outfall	Harvey St Outfall	350	NA	NA	NA	NA	Clear discharge from outfall	No	No
3	9/2/2021	12:55	Harvey St Outfall	Beech St/Harvey St	100	NA	NA	NA	NA	Water clear in storm. Trickle flow from west inlet. Sample collected at west inlet	No	No
4	9/21/2021	12:00	Harvey St Outfall	Beech St/Harvey St	<1	NA	NA	NA	NA	Trickle flow in sump; water clear	No	No
5	9/2/2021	12:40	Harvey St Outfall	Linden St/Jener St	62	NA	NA	NA	NA	Clear flow from north inlet (from Jener). Other inlets dry. Sample collected from sump	No	No
6	9/21/2021	11:50	Harvey St Outfall	Linden St/Jener St	40	NA	NA	NA	NA	Clear flow from McKinley Street inlet; sample collected by north inlet. Some intermittent discharge from sump drain	No	No
7	9/2/2021	13:00	Harvey St Outfall	Palmer St/Harvey St	NA	NA	NA	NA	NA	Did not sample- dry weather flow in storm from active lawn sprinklers on Palmer St	No	No
8	9/21/2021	12:10	Harvey St Outfall	Palmer St/Harvey St	190	NA	NA	NA	NA	Clear slow flow from west and north inlets. Steady flow from east inlet	No	No

Appendix B
2021 ARC IDEP Field Investigation Data
City of Livonia

Table B1: Outfall Levan Road South (Bakewell Drain)
Table B2: Outfall L-1619
Table B3: Outfall 6038
Table B4: Outfall 13002
Table B5: Outfall U2008231
Table B6: Outfall M2008117
Table B7: Outfall U2008238
Table B8: Outfall 2680
Table B8: Outfall L3582

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	11/10/2021	10:30	Levan Road Southeast storm outfall	Levan Road Southeast storm	609	NA	NA	NA	NA	NA	Dry weather flow at outfall, clear	None	None
2	11/10/2021	11:00	Allen Ct/Levan	Levan Road Southeast storm	<10	NA	NA	NA	NA	NA	Clear flow from south and west inlets. Sample collected in sump	None	None
3	11/10/2021	10:35	36263 Barkley manhole	Levan Road Southeast storm	10	NA	NA	NA	NA	NA	Clear slow flow in storm from north and west inlets. Sample collected in sump	None	None

Key:
NA-Not applicable
ND: Non-detect

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	11/10/2021	13:35	Outfall 1619	Outfall 1619	3076	94.7	NA	NA	NA	NA	Water clear; could not sample directly from outfall due to fencing	None	None
2	11/10/2021	13:15	Outfall 1619	Chicken Shack	1616	1541052.6	NA	NA	NA	NA	Water clear in storm, flow from west	None	None

Key:
NA-Not applicable
ND: Non-detect

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	7/28/2021	15:30	Outfall 6038	Outfall 6038	NA	NA	NA	NA	NA	Outfall not sampled/accessed due to deep water and recessed under road. Flow from outlet on north side of Six Mile.	No	No
2	7/28/2021	15:00	Outfall 6038	15130 Golfview	NA	NA	NA	NA	NA	Standing water in storm; grass clippings. Did not sample due to stagnant water in sump	No	No
3	7/28/2021	15:10	Outfall 6038	15194 Golfview	1600	NA	NA	NA	NA	Clear water in sump, very slow flow toward outlet. Inlets dry. First manhole upstream of outfall/receiving water. Sampled from sump near outlet.	No	No
4	7/28/2021	15:20	Outfall 6038	Golfview/Parkhurst	440	NA	NA	NA	NA	Sample collected in sump. Steady flow from two inlets to west. Water is clear in sump and from inlets.	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/3/2021	12:25	Outfall 13002	Newburgh/Jamison	120	NA	NA	NA	NA	Turbid, slow flow in storm. No linlets observed. Sample collected in sump	No	No
2	9/30/2021	12:25	Outfall 13002	Newburgh/Jamison	84	NA	NA	NA	NA	Water clear in sump. Some grass clippings present	No	No
3	8/3/2021	12:40	Outfall 13002	Lyndon/Newburgh Inlet #1 (South)	19	NA	NA	NA	NA	Water clear in sump. Clear water flowing from two inlets. Inlet #1 is from the southeast.	No	No
4	8/3/2021	12:50	Outfall 13002	Lyndon/Newburgh Inlet #2 (West)	65	NA	NA	NA	NA	Water clear in sump. Clear water flowing from two inlets. Inlet #2 is from the west.	No	No
5	9/30/2021	12:15	Outfall 13002	Lyndon/Newburgh	20	NA	NA	NA	NA	Clear flow from west and southwest inlets. Sample collected at outlet in sump	No	No
6	8/3/2021	13:10	Outfall 13002	Stonehouse/Lyndon Inlet #1 (Northwest)	130	NA	NA	NA	NA	Water flowing from two inlets. Cloudy water from inlet #1 Inlet #1 is from the northwest. Construction activity upstream	No	No
7	8/3/2021	13:15	Outfall 13002	Stonehouse/Lyndon Inlet #2 (Southwest)	32	NA	NA	NA	NA	Water flowing from two inlets. Cloudy water in sump from inlet #1. Inlet #2 is from the southwest and flow is clear.	No	No
8	8/3/2021	13:25	Outfall 13002	Blue Skies (South)/Lyndon	140	NA	NA	NA	NA	Cloudy water in storm; some clear trickle flow from catch basin inlets due to lawn sprinkler runoff	No	No
9	8/3/2021	13:40	Outfall 13002	Lyndon/Susanna Inlet #1	220	NA	NA	NA	NA	Flow from storm from large south inlet from new development. Flow is clear. Storm line not on Livonia storm paper map	No	No
10	8/3/2021	13:50	Outfall 13002	Lyndon/Susanna Inlet #2	160	NA	NA	NA	NA	Cloudy flow from catch basin inlet. Active construction dewatering occurring in front of 37598 Lyndon	No	No
11	8/3/2021	14:10	Outfall 13002	Lyndon/Nola	NA	NA	NA	NA	NA	Some standing water in sump. No flow. No sample collected	No	No
12	8/3/2021	14:15	Outfall 13002	Lyndon/Hix	NA	NA	NA	NA	NA	Some standing water in sump. No dry weather flow at outlet, some trickle flow at west inlet. Not enough water to collect sample. Terminal manhole	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
13	8/3/2021	14:25	Outfall 13002	Lyndon/Houghton	5.1	NA	NA	NA	NA	Clear trickle flow from west inlet. Sample collected in sump.	No	No
14	8/3/2021	14:45	Outfall 13002	14580 Richfield	11	NA	NA	NA	NA	Trickle flow in storm from west and southwest inlets. Clear flow from lawn sprinklers on Huff Street. Sample collected in sump	No	No
15	8/3/2021	15:00	Outfall 13002	14570 Newburgh	NA	NA	NA	NA	NA	Steady flow in storm. Inlet offset and not visible. No sample collected	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/2/2021	13:40	U2008231 Outfall	U2008231 Outfall	NA	NA	NA	NA	NA	Corrugated 12" pipe set in culvert to the east of the Blue Skies road crossing. Outfall is dry. Some sand/sediment on bottom of pipe.	No	No
2	9/30/2021	13:40	U2008231 Outfall	U2008231 Outfall	NA	NA	NA	NA	NA	Corrugated 12" pipe set in culvert to the east of the Blue Skies road crossing. Outfall is dry. Some sand/sediment on bottom of pipe.	No	No
3	8/2/2021	14:10	U2008231 Outfall	Stonehouse/Blue Skies Storm Manhole	NA	NA	NA	NA	NA	Storm manhole and inlets are dry	No	No
4	8/2/2021	14:05	U2008231 Outfall	15523 Stonehouse Catch Basin	NA	NA	NA	NA	NA	Not enough water in catch basin to sample	No	No
5	8/2/2021	14:00	U2008231 Outfall	15516 Stonehouse Catch Basin	870	0	0.25	NA	NA	Clear water in catch basin; trickle flow from 8 inch inlet.	No	Yes
6	8/2/2021	14:14	U2008231 Outfall	Blue Skies #3	84	NA	NA	NA	NA	Stagnant odor in catch basin, water clear. Greenish color on inlet pipe. Trickle flow from inlet	No	No
7	9/30/2021	12:55	U2008231 Outfall	Huff St	NA	NA	NA	NA	NA	Trickle flow in storm. Not enough water to sample	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	7/28/2021	14:35	M2008117/LD-33 Outfall	M2008117/LD-33 Outfall	130	NA	NA	NA	NA	Outfall is partially submerged. Slow flow. Water slightly turbid.	No	No
2	9/30/2021	13:15	M2008117/LD-33 Outfall	M2008117/LD-33 Outfall	41	NA	NA	NA	NA	Slow flow out of outfall. Water clear, Middle Rouge slightly turbid	No	No
3	7/28/2021	11:25	M2008117/LD-33 Outfall	11019 Levan	340	NA	NA	NA	NA	Clear flow in storm from north. Two inches of water in storm. Clear flow from catch basin	No	No
4	9/30/2021	13:30	M2008117/LD-33 Outfall	11019 Levan	310	NA	NA	NA	NA	Clear trickle flow from north inlet	No	No
5	7/28/2021	11:50	M2008117/LD-33 Outfall	Elmira/Levan	110	NA	NA	NA	NA	Old manhole on east side of the street. Sample collected from east inlet. Water clear. A sample could not be collected in the sump due to interference from east inlet flow.	No	No
6	9/30/2021	15:30	M2008117/LD-33 Outfall	Elmira/Levan	1530	NA	NA	NA	NA	Old manhole on east side of the street. Sample collected from east inlet. Water clear. A sample could not be collected in the sump due to interference from east inlet flow.	No	No
7	7/28/2021	12:30	M2008117/LD-33 Outfall	Exxon Gas Station/Levan (Northwest corner Plymouth/Levan)	NA	NA	NA	NA	NA	Manhole is near Exxon near decorative berm. Muddy sludge in manhole does not appear to be directly part of the M2008117 (LD-33) line. No sample collected	No	No
8	7/28/2021	12:40	M2008117/LD-33 Outfall	11731 Levan	84	NA	NA	NA	NA	Clear, sluggish flow in storm. Dry catch basin inlet	No	No
9	7/28/2021	14:00	M2008117/LD-33 Outfall	12017 Levan	83	NA	NA	NA	NA	Very slow flow, clear flow in storm. Inlet from CB dry	No	No
10	7/28/2021	14:15	M2008117/LD-33 Outfall	Commerce/Levan	52	NA	NA	NA	NA	Clear flow in storm from north. Trickle flow from white PVC (dripping). 18" inlet dry	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
11	7/28/2021	14:25	M2008117/LD-33 Outfall	Amrhein/Levan	NA	NA	NA	NA	NA	Terminal manhole. Manhole and inlets are dry	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/2/2021	11:05	U2008238	Quakertown/Upper	53	NA	NA	NA	NA	Inlets partially submerged. Trickle flow at outlet, clear, some grass clippings in sump	No	No
2	9/30/2021	11:25	U2008238	Quakertown/Upper	97	NA	NA	NA	NA	Clear water in sump. Some leaves/grass present. Sample collected at outlet	No	No
3	8/2/2021	11:25	U2008238	Quakertown/Stacey	8.5	NA	NA	NA	NA	Grass clippings in sump and sample collected from sump	No	No
4	9/30/2021	11:40	U2008238	Quakertown/Stacey	75	NA	NA	NA	NA	Steady clear flow from north inlet. No flow from east. Clear water, grass clippings in sump. Sampled at outlet	No	No
5	8/2/2021	11:30	U2008238	Quakertown/Aldrich	14	NA	NA	NA	NA	Slow flow in storm and clear flow from inlets	No	No
6	9/30/2021	11:50	U2008238	Quakertown/Aldrich	10	NA	NA	NA	NA	Slow flow in storm and clear flow from northwest inlet. Sample collected at outlet	No	No
7	8/2/2021	11:45	U2008238	15969 Swarthmore	8.6	NA	NA	NA	NA	Water clear in sump, trickle flow at outlet	No	No
8	8/2/2021	12:05	U2008238	15625 Swarthmore	15	NA	NA	NA	NA	Water clear, trickle flow from inlets. Grass clippings in storm. Sample collected in sump	No	No
9	8/2/2021	12:20	U2008238	15731 Penn	81	NA	NA	NA	NA	Clear flow of water in storm. Trickle flow from both inlets	No	No
10	8/2/2021	12:30	U2008238	15569 Penn	42	NA	NA	NA	NA	Iron buildup in storm. Steady clear flow from west inlet. Catch basin inlet dry. Manhole sampled at inlet	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/4/2021	12:05	Outfall 2680	Outfall 2680	2100	NA	NA	NA	NA	NA	Sample collected at outfall. Steady clear dry weather flow	No	No
2	11/10/2021	12:15	Outfall 2680	Outfall 2680	428	NA	NA	NA	NA	NA	Sample collected at outfall. Steady clear dry weather flow	No	No
3	8/4/2021	12:30	Outfall 2680	Pickford/Beverly Park Inlet #1 (North)	2100	NA	NA	NA	NA	NA	Water slightly cloudy in storm. Some sand in sump. Slightly cloudy flow from north inlet	No	No
4	8/4/2021	12:40	Outfall 2680	Pickford/Beverly Park Inlet #2 (East)	240	NA	NA	NA	NA	NA	Water slightly cloudy in storm. Some sand in sump. Clear flow from east inlet	No	No
5	8/4/2021	12:50	Outfall 2680	Pickford/Beverly Park West	NA	NA	NA	NA	NA	NA	Storm manhole? Sump full of clear water. May be collecting catch basins from street? No flow from sump. Did not sample. Standing water in street catch basins	No	No
6	8/4/2021	12:55	Outfall 2680	Beverly Park/Pickford North Inlet #1 (West)	280	NA	NA	NA	NA	NA	Clear steady flow from west inlet. Clear water in sump	No	No
7	8/4/2021	13:00	Outfall 2680	Beverly Park/Pickford North Inlet #2 (East)	NA	NA	NA	NA	NA	NA	Trickle flow from east inlet. Clear water in sump. Not enough flow to sample	No	No
8	11/10/2021	12:30	Outfall 2680	Beverly Park/Pickford	341	94.7	NA	NA	NA	NA	Sample collected in sump downstream of east inlet. Water clear	No	No
9	8/4/2021	13:10	Outfall 2680	Pickford/Purling-brook	220	NA	NA	NA	NA	NA	Manhole near school sidewalk entryway. Water is stagnant in sump, with a slow flow to west. Grass clippings present. Sample collected in sump at west outlet	No	No
10	8/4/2021	13:20	Outfall 2680	11618 Purlingbrook	NA	NA	NA	NA	NA	NA	Some water in sump; not enough to sample. No flow from inlets	No	No
11	8/4/2021	13:30	Outfall 2680	18684 Purlingbrook	NA	NA	NA	NA	NA	NA	Some evidence of concrete wash/debris in storm. Buildup of tree debris at bottom of east inlet. No flow in storm; some water on manhole bottom,; not enough to sample	No	No
12	8/4/2021	13:40	Outfall 2680	18816 Purlingbrook	1500	NA	NA	NA	NA	NA	Grass clipping/standing water in sump. Trickle flow from north inlet. West inlet from catch basin. Standing water in catch basin.	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
13	8/4/2021	14:00	Outfall 2680	18882 Purlingbrook	NA	NA	NA	NA	NA	NA	Some debris (tree debris, grass clippings on shelf in sump. Trickle flow from north. Not enough to sample. Sand on bottom of manhole, rebar. East inlet dry. Some animal droppings (unknown type-raccoon?) on sump shelf	Yes	No
14	8/4/2021	14:05	Outfall 2680	Seven Mile/Purlingbrook	NA	NA	NA	NA	NA	NA	Manhole dry. Some brick debris in sump. Inlet from Seven Mile dry	No	No
15	8/4/2021	14:10	Outfall 2680	Hillcrest/Pickford	560	NA	NA	NA	NA	NA	Clear water in sump, grass clippings. Slow flow from north inlet	No	No
16	8/4/2021	14:20	Outfall 2680	Clarita/Hillcrest	NA	NA	NA	NA	NA	NA	Trickle flow from north. Standing water in sump. Not enough flow to sample. Inlets dry.	No	No
17	8/4/2021	14:30	Outfall 2680	Hillcrest/Seven Mile	NA	NA	NA	NA	NA	NA	Terminal manhole on the line. Manhole dry	No	No
18	8/4/2021	14:35	Outfall 2680	19030 Hillcrest	NA	NA	NA	NA	NA	NA	Inlet and manhole dry	No	No
19	8/4/2021	14:40	Outfall 2680	18901 Hillcrest	NA	NA	NA	NA	NA	NA	No inlets, some clear water on bottom of pipe. No dry weather flow. Not enough water to collect sample	No	No
20	8/4/2021	14:45	Outfall 2680	18689 Hillcrest	NA	NA	NA	NA	NA	NA	Slow flow from north inlet. Not enough water present to sample. Some rocks/sand on manhole bottom	No	No
21	8/4/2021	14:50	Outfall 2680	18571 Hillcrest	NA	NA	NA	NA	NA	NA	Some standing water in manhole bottom, not enough to sample. No flow.	No	No
22	8/4/2021	14:55	Outfall 2680	Flamingo/Pickford	2700	NA	NA	NA	NA	NA	Trickle flow from north inlet. Steady flow from west inlet. Some sediment on bottom of north inlet	No	No
23	11/10/2021	12:37	Outfall 2680	Flamingo/Pickford	256	NA	NA	NA	NA	NA	Clear flow in storm from west and north inlets. Sample collected in sump	No	No
24	8/4/2021	15:10	Outfall 2680	Milburn/Pickford Inlet #1 (West)	340	NA	NA	NA	NA	NA	Clear flow from west inlet. Active lawn irrigation on northeast corner of Milburn/Pickford	No	No
25	8/4/2021	15:15	Outfall 2680	Milburn/Pickford Inlet #2 (North)	30	NA	NA	NA	NA	NA	Clear flow from north inlet. Active lawn irrigation on northeast corner of Milburn/Pickford	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
26	8/5/2021	11:30	Outfall 2680	Milburn/Pickford Inlet #3 (Southwest)	1130	NA	NA	NA	NA	NA	Clear flow from north inlet and west inlets, and southwest. Clear flow from catch basin inlet from catch basin south side of Pickford	No	No
27	8/5/2021	11:45	Outfall 2680	Sunset/Pickford Inlet #1 (West)	39	NA	NA	NA	NA	NA	Trickle clear flow from three inlets. Two catch basin inlets (northwest and northeast) dry	No	No
28	8/5/2021	11:55	Outfall 2680	Sunset/Pickford Inlet #2 (North)	3900	NA	NA	NA	NA	NA	Trickle clear flow from three inlets. Two catch basin inlets (northwest and northeast) dry	No	No
29	8/5/2021	12:00	Outfall 2680	Sunset/Pickford Inlet #2 (South)	27	NA	NA	NA	NA	NA	Trickle clear flow from three inlets. Two catch basin inlets (northwest and northeast) dry	No	No
30	11/10/2021	13:00	Outfall 2680	Pickford/Sunset	556	NA	NA	NA	NA	NA	Clear flow from west and north inlets. Sample collected from sump	No	No
31	8/5/2021	12:05	Outfall 2680	Bainbridge/Pickford	80	NA	NA	NA	NA	NA	Clear trickle flow in storm from west and south inlets. Trickle flow from catch basin inlet on south side of Pickford. Sample collected in sump upstream of flow from south	No	No
32	8/5/2021	12:15	Outfall 2680	Bainbridge/Pickford Court	NA	NA	NA	NA	NA	NA	Clear trickle flow from all inlets. Not enough flow in manhole to sample	No	No
33	8/5/2021	12:20	Outfall 2680	18536 Bainbridge	130	NA	NA	NA	NA	NA	Clear flow from north inlet	No	No
34	8/5/2021	12:30	Outfall 2680	18360 Bainbridge	21	NA	NA	NA	NA	NA	Water clear in sump. Trickle flow from west inlet. Not enough to sample. Trickle flow from south inlet clear. Sample collected from sump.	No	No

Number	Date	Time (military)	Investigation Location	Site Location	*E. coli (colony-forming units (CFU)/100mL)*)	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	8/5/2021	13:00	Outfall L3582	17251 Lathers	NA	NA	NA	NA	NA	Clear flow in storm from north. No flow from east inlet. No sample collected	No	No
2	8/5/2021	13:20	Outfall L3582	Lathers/Floral	NA	NA	NA	NA	NA	Road ditches in area are all dry. Manholes have manhole covers with Wayne County sewerage logo. No sample collected	No	No
3	8/5/2021	13:25	Outfall L3582	7424 Floral	39	NA	NA	NA	NA	Clear water in storm sewer, some debris. Sample collected in sump. Beehive north of manhole has clear standing water, and outlet from beehive is dry. Trickle flow from 12 inch inlet from west.	No	No
4	8/5/2021	13:30	Outfall L3582	Curtis/ South Floral Inlet #1 (West)	450	NA	NA	NA	NA	All road ditches on Floral between Curtis and Lathers are dry. Clear dry weather flow from west inlet, and east inlet. Both sampled. Two 12 inch concrete inlets, and a 4 inch white PVC inlet are dry	No	No
5	8/5/2021	13:35	Outfall L3582	Curtis/ South Floral Inlet #1 (East)	92	NA	NA	NA	NA	All road ditches on Floral between Curtis and Lathers are dry. Clear dry weather flow from west inlet, and east inlet. Both sampled. Two 12 inch concrete inlets, and a 4 inch white PVC inlet are dry	No	No
6	8/5/2021	15:10	Outfall L3582	Curtis/North Floral	75	NA	NA	NA	NA	Road ditches on Curtis and North Floral are dry. Clear flow from north inlet and east inlet(trickle). Concrete washout present at east inlet. Sample collected in manhole sump.	No	No
7	8/5/2021	15:30	Outfall L3582	Curtis/Lathers	250	NA	NA	NA	NA	Clear water in storm sewer. Mosquitoes present. Sample collected in manhole sump. Very slow flow from manhole. North inlet partially submerged. 4 inch PVC and catch basin inlet dry.	No	No

Appendix C
2021 Partners for Clean Water Regional IDEP Training Workshop
Alert Observer Training
Advanced Investigator Training
Attendees List
October 27, 2021

SEMCOG UNIVERSITY
ALERT OBSERVER TRAINING
ATTENDANCE LIST
OCTOBER 27, 2021

	Alliance of Rouge Community member	
Number	**Name**	**Community**
1	Emily Levine	Alliance of Rouge Communities
2	Ken Marten	Bingham Farms
3	Yevgeniy Malkin	Bingham Farms
4	Colleen Wayland	Bingham Farms
5	Scott Zielinski	Birmingham
6	Brad McNab	Birmingham
7	Anthony Evangelista	Canton Township
8	Brad Bird	Canton Township
9	Brent Sprague	Canton Township
10	Chris Hanner	Canton Township
11	Christian Manley	Canton Township
12	Clint Hallman	Canton Township
13	Curt Foster	Canton Township
14	Daniel Bayush	Canton Township
15	David Lanch Arnold	Canton Township
16	Greg Pyle	Canton Township
17	Jacob Saunders	Canton Township
18	James West	Canton Township
19	Jason Conner	Canton Township
20	Jay Heroon	Canton Township
21	Jeffery Albert Michael	Canton Township
22	John Selmi	Canton Township
23	Josh Smith	Canton Township
24	Josh Worth	Canton Township
25	Kevin Clark	Canton Township
26	Mike Britton	Canton Township
27	Rob Moyers	Canton Township
28	Roy Hamilton	Canton Township
29	Scott Kahanec	Canton Township
30	Jason Mills	Clinton Township
31	Mary Bednar	Clinton Township
32	Tom Klapp	Clinton Township
33	Eric Streu	Clinton Township
34	Jason D Mills	Clinton Township
35	Tim Braekevelt	Clinton Township
36	Mark Gaworecki	Dearborn
37	Robert Conrad	Dearborn Heights
38	Aaron Brunson	Detroit
39	Alizah Mooman	Detroit
40	Anna Timmis	Detroit
41	Barry Brown	Detroit
42	Bryant Barber	Detroit
43	Devyn McNaughton	Detroit
44	Hannah Slabaugh	Detroit

SEMCOG UNIVERSITY
ALERT OBSERVER TRAINING
ATTENDANCE LIST
OCTOBER 27, 2021

Number	Name	Community
45	Howard Sokoni	Detroit
46	Ian Tamm	Detroit
47	Lisa Wallick	Detroit
48	Mackenzy Shega-Fox	Detroit
49	Mohamed Boudali	Detroit
50	Mohammed Siddique	Detroit
51	Sarah Stoolmiller	Detroit
52	Syed Ali	Detroit
53	E. Anderson	Ecorse
54	Joshua Leach	Farmington
55	Tara Pieron	Farmington
56	Chris Guibord	Farmington
57	Chris Jacob	Farmington
58	Dave Popp	Farmington
59	Greg Young	Farmington
60	James Cubera	Farmington Hills
61	Kristina Crimmins	Farmington Hills
62	Mirandi Alexander	Farmington Hills
63	Natasha Sonck	Farmington Hills
64	Scott Campbell	Farmington Hills
65	Sean Devers	Farmington Hills
66	ShonQuase Dawkins	Farmington Hills
67	Tyler Sonoga	Farmington Hills
68	Unnamed attendee	Farmington Hills
69	Gerald Harrison	Gibraltar
70	Robert Tomasik	Gibraltar
71	William Cain	Gibraltar
72	Michael Landis	Gibraltar
73	Mike Grima	Grosse Ile Schools
74	Derek Thiel	Grosse Ile Township
75	Nicholas Rudd	Grosse Pointe Shores
76	Michael Way	Grosse Pointe Shores
77	Jerome Bivins	Inkster
78	Chad Burke	Kalamazoo City
79	Jessica Slagter-Enaohwo	Kalamazoo City
80	Anyah Preston	Kalamazoo County
81	Selena Rider	Kalamazoo County Road Commission
82	David Chung	Lathrup Village
83	Rami Sweidan	Lathrup Village
84	Mark Benson	Livingston County
85	Kim Hiller	Livingston County Road Commission
86	Trish Gabriel	Livonia
87	Danielle Devlin	Macomb County
88	Patrick Lewis	Monroe
89	Laura Hassold Prevot	New Baltimore

SEMCOG UNIVERSITY
ALERT OBSERVER TRAINING
ATTENDANCE LIST
OCTOBER 27, 2021

Number	Name	Community
90	John Klimaszewski	New Baltimore
91	Joshua Hedge	New Baltimore
92	William Gouine	New Baltimore
93	Brad Lear	Northville Township
94	Brenden Villalobos	Northville Township
95	Brian Thomson	Northville Township
96	Corey Nicoloff	Northville Township
97	Mitchell Berendt	Northville Township
98	Tim Swailes	Northville Township
99	Kate Purpura	Novi
100	David Vicini	Oakland County
101	Jacy Garrison	Oakland County
102	Jim Schafer	Oakland County
103	Robert Malek	Oakland County
104	Stephanie Petriello	Oakland County
105	Laura Hassold Prevot	Oakland County Road Commission
106	Mike Lee	Orchard Lake
107	Cameron Bump	Plymouth Township
108	Daniel Hamann	Plymouth Township
109	David Nelson	Plymouth Township
110	Jim Thomas	Plymouth Township
111	Jimmy Scholten	Plymouth Township
112	Joe Overaitis	Plymouth Township
113	Randy Krueger	Plymouth Township
114	Spencer Kitchen	Plymouth Township
115	Steve Melow	Plymouth Township
116	Zachary Pumphrey	Plymouth Township
117	Jamie Harmon	Portage
118	Sherman Potter	Portage
119	Adam Bauman	Rochester Hills
120	Adam Kemmer	Rochester Hills
121	Andrew Burdett	Rochester Hills
122	Anthony Rocco	Rochester Hills
123	Brandon Grund	Rochester Hills
124	Brian Vermander	Rochester Hills
125	Carl Hager	Rochester Hills
126	Chris Shepard	Rochester Hills
127	Cody Devoe	Rochester Hills
128	George Rice	Rochester Hills
129	Henry Ceniceros	Rochester Hills
130	Ian Casey	Rochester Hills
131	Jared Bauman	Rochester Hills
132	Jason Berlingier	Rochester Hills
133	Jason Dickinson	Rochester Hills
134	Jason Rozell	Rochester Hills

SEMCOG UNIVERSITY
ALERT OBSERVER TRAINING
ATTENDANCE LIST
OCTOBER 27, 2021

Number	Name	Community
135	Jeff Fox	Rochester Hills
136	Jenny McGuckin	Rochester Hills
137	Jim Owens	Rochester Hills
138	Ken Deleeuw	Rochester Hills
139	Kyle Mayhew	Rochester Hills
140	Leon Luedeman	Rochester Hills
141	Mike Greenwood	Rochester Hills
142	Mike Phillips	Rochester Hills
143	Nick Costanzo	Rochester Hills
144	Niko Tzantzarov	Rochester Hills
145	Russ George	Rochester Hills
146	Rusty Kostsuca	Rochester Hills
147	Sean Hadley	Rochester Hills
148	Seth Bucholz	Rochester Hills
149	Shane Rudolphs	Rochester Hills
150	Shawn Vanbuskirk	Rochester Hills
151	Stacey Maresh	Rochester Hills
152	Steve Bott	Rochester Hills
153	Timothy Pollizzi	Rochester Hills
154	Todd Gehrke	Rochester Hills
155	Tony Edwards	Rochester Hills
156	Tracey Kelm	Rochester Hills
157	Tyler Goschnick	Rochester Hills
158	Vince Jesue	Rochester Hills
159	Wayne Rybak	Rochester Hills
160	Zach Weninger	Rochester Hills
161	Alec Staten	Romulus
162	Elizabeth Jenkins	Romulus
163	Kassim Mc Neil	Romulus
164	Paul Banks	Romulus
165	John Wright	Schoolcraft College
166	Brandy Siedlaczek	Southfield
167	Bryan Babcock	St. Clair Shores
168	Dave Conklin	St. Clair Shores
169	Jon Frazho	St. Clair Shores
170	Mike Allen	St. Clair Shores
171	Paul Kosiara	St. Clair Shores
172	Ron Demksi	St. Clair Shores
173	Sheldon Wood	St. Clair Shores
174	Trevor Smalley	St. Clair Shores
175	Zach Erne	St. Clair Shores
176	Jessica DiMilia	State of Michigan
177	Doug Varney	South Lyon
178	Brett Goecke	University of Michigan
179	Brian Welch	University of Michigan

SEMCOG UNIVERSITY
ALERT OBSERVER TRAINING
ATTENDANCE LIST
OCTOBER 27, 2021

Number	Name	Community
180	Brian Zybura	University of Michigan
181	Chris Onsted	University of Michigan
182	Dana Wilkinson	University of Michigan
183	Daniel Knight	University of Michigan
184	Dharmesh Joshi	University of Michigan
185	Hannah Smith	University of Michigan
186	Jared Evers	University of Michigan
187	Jason	University of Michigan
188	Jay Brummel	University of Michigan
189	Jeffrey Pipkin	University of Michigan
190	Jenny Scherer	University of Michigan
191	Jeremy Gonzales	University of Michigan
192	Joe Stark	University of Michigan
193	John Kosco	University of Michigan
194	Jonathan Hanak	University of Michigan
195	Josh Fryd	University of Michigan
196	Konnor Seyfried	University of Michigan
197	Kris Barnes	University of Michigan
198	Kyle DeKeyser	University of Michigan
199	Matt Kettmann	University of Michigan
200	Matthew Repka	University of Michigan
201	Michael Lollo	University of Michigan
202	Pamela Rutter	University of Michigan
203	Paul Clark	University of Michigan
204	Paul Doepfer	University of Michigan
205	Paul Dunlop	University of Michigan
206	Robert Woodruff	University of Michigan
207	Ryan Silva	University of Michigan
208	Stephen O'Rielly	University of Michigan
209	Steve Fisher	University of Michigan
210	Steven Stawkey	University of Michigan
211	Ty Patton	University of Michigan
212	Adam Kulinski	Unlisted Affiliation
213	Carrie Loya-Smalley	Unlisted Affiliation
214	Evan Falkner	Unlisted Affiliation
215	Karl Woodard	Unlisted Affiliation
216	Sermed Saif	Unlisted Affiliation
217	Zachary Harrison	Unlisted Affiliation
218	DPW	Utica
219	Eric Menzies	Walled Lake
220	Chelsea Pesta	Walled Lake
221	Autumn House	Washtenaw County
222	Scott Miller	Washtenaw County
223	Kristin Weisgerber	Washtenaw County
224	Gary Streight	Washtenaw County Road Commission

SEMCOG UNIVERSITY
ALERT OBSERVER TRAINING
ATTENDANCE LIST
OCTOBER 27, 2021

Number	Name	Community
225	John Miller	Washtenaw County Road Commission
226	Mark McCulloch	Washtenaw County Road Commission
227	Michael Buiten	Wayne City
228	Jennifer DePaulis	Wayne County
229	Matthew Fiems	Wayne County
230	Sami Khaldi	Wayne County
231	Susan Thompson	Wayne County
232	Bryant Houfek	West Bloomfield Township
233	Gary Hernandez	West Bloomfield Township
234	Philip LaLone	West Bloomfield Township
235	Jon Allen	Wyandotte
236	Brian Martin	Wyandotte
237	Dave Rothermal	Wyandotte
238	Gregory Mayhew	Wyandotte
239	Joseph Mayhew	Wyandotte

SEMCOG UNIVERSITY
IDEP INVESTIGATOR
WORKSHOP
ATTENDANCE LIST
OCTOBER 27, 2021

ARC Member Community

Number	Name	Community/Organization
1	Emily Levine	Alliance of Rouge Communities
2	Scott Zielinski	Birmingham
3	Cory Borton	Bloomfield Township
4	Mark Hendricks	Bloomfield Township
5	Anthony Evangelista	Canton Township
6	Brad Bird	Canton Township
7	Brent Sprague	Canton Township
8	Chris Hanner	Canton Township
9	Christian Manley	Canton Township
10	Clint Hallman	Canton Township
11	Curt Foster	Canton Township
12	Daniel Bayush	Canton Township
13	David Lanch Arnold	Canton Township
14	Greg Pyle	Canton Township
15	Jacob Saunders	Canton Township
16	James West	Canton Township
17	Jason Conner	Canton Township
18	Jay Heroon	Canton Township
19	Jeffery Albert Michael	Canton Township
20	John Selmi	Canton Township
21	Josh Smith	Canton Township
22	Josh Worth	Canton Township
23	Kevin Clark	Canton Township
24	Mike Britton	Canton Township
25	Rob Moyers	Canton Township
26	Roy Hamilton	Canton Township
27	Scott Kahanec	Canton Township
28	Jason Mills	Clinton Township
29	Mary Bednar	Clinton Township
30	Mitchell Verellen	Clinton Township
31	Jason D Mills	Clinton Township
32	Steve Elliot	Clinton Township
33	Michael Scott	Clintondale School District
34	Al Loebach	Dearborn
35	Mark Gaworecki	Dearborn
36	Ryan Ferrell	Dearborn
37	Robert Conrad	Dearborn Heights
38	Aaron Brunson	Detroit
39	Alizah Mooman	Detroit
40	Anna Timmis	Detroit
41	Barry Brown	Detroit

SEMCOG UNIVERSITY
IDEP INVESTIGATOR
WORKSHOP
ATTENDANCE LIST
OCTOBER 27, 2021

ARC Member Community

Number	Name	Community/Organization
42	Bryant Barber	Detroit
43	Hannah Slabaugh	Detroit
44	Ian Tamm	Detroit
45	Mackenzy Shega-Fox	Detroit
46	Mohammad Siddique	Detroit
47	Sokoni Howard	Detroit
48	Syed Ali	Detroit
49	E. Anderson	Ecorse
50	Chris Guibord	Farmington
51	Chris Jacob	Farmington
52	Dave Popp	Farmington
53	Greg Young	Farmington
54	Josh Leach	Farmington
55	James Cubera	Farmington Hills
56	Kristina Crimmins	Farmington Hills
57	Mirandi Alexander	Farmington Hills
58	Natasha Sonck	Farmington Hills
59	Scott Campbell	Farmington Hills
60	Sean Devers	Farmington Hills
61	ShonQuase Dawkins	Farmington Hills
62	Tyler Sonoga	Farmington Hills
63	Gerald Harrison	Gibraltar
64	Landis Michael	Gibraltar
65	Michael Landis	Gibraltar
66	Robert Tomasik	Gibraltar
67	William Cain	Gibraltar
68	Mike Grima	Grosse Ile Schools
69	Derek Thiel	Grosse Ile Township
70	Michael Way	Grosse Pointe Shores
71	Nicholas Rudd	Grosse Pointe Shores
72	Daryl Davis Jr.	Inkster
73	Fidell Morris	Inkster
74	Jerome Bivens	Inkster
75	LaToria Joyce	Inkster
76	Chad Burke	Kalamazoo City
77	Jessica Slagter-Enaohwo	Kalamazoo City
78	Scott Managhan	Kalamazoo City
79	Tara Hendricks	Kalamazoo County Road Commission
80	David Chung	Lathrup Village
81	Rami Sweidan	Lathrup Village
82	Mark Benson	Livonia

SEMCOG UNIVERSITY
IDEP INVESTIGATOR
WORKSHOP
ATTENDANCE LIST
OCTOBER 27, 2021

ARC Member Community

Number	Name	Community/Organization
83	Trish Gabriel	Livonia
84	Danielle Devlin	Macomb County
85	Kraig Hohf	Marysville
86	Patrick Lewis	Monroe
87	John Klimaszewski	New Baltimore
88	Joshua Hedge	New Baltimore
89	William Gouine	New Baltimore
90	Anthony Manzo	Northville
91	Brad Lear	Northville Township
92	Brenden Villalobos	Northville Township
93	Brian Tack	Northville Township
94	Brian Thomson	Northville Township
95	Chris Putman	Northville Township
96	Corey Nicoloff	Northville Township
97	Mitchell Berendt	Northville Township
98	Steve Smeal	Northville Township
99	Tim Swailes	Northville Township
100	Brad Lear	Northville Township
101	Kate Purpura	Novi
102	Jennifer Wilson	Oak Park
103	Darlene Rowley	Oakland County
104	DJ Coffey	Oakland County
105	Jeremy Brown	Oakland County
106	Jim Schafer	Oakland County
107	Joshua Leach	Oakland County
108	Mark Adams	Oakland County
109	Matt Pardy	Oakland County
110	Mike Boyd	Oakland County
111	Randy Krueger	Oakland County
112	Rebecca Eggert	Oakland County
113	Sean Zera	Oakland County
114	Shayne Skolnik	Oakland County
115	Stephanie Petriello	Oakland County
116	Thomas Rymsza	Oakland County
117	Zachary Crane	Oakland County
118	Jacy Garrison	Oakland County
119	Joel Kohn	Oakland County
120	Ron Fadoir	Oakland County
121	Laura Hassold Prevot	Oakland County Road Commission
122	Mike Lee	Orchard Lake
123	Cameron Bump	Plymouth Township

SEMCOG UNIVERSITY
IDEP INVESTIGATOR
WORKSHOP
ATTENDANCE LIST
OCTOBER 27, 2021

ARC Member Community

Number	Name	Community/Organization
124	Daniel Hamann	Plymouth Township
125	David Nelson	Plymouth Township
126	James Scholten	Plymouth Township
127	Jim Thomas	Plymouth Township
128	Joseph Overaitis	Plymouth Township
129	Randy Krueger	Plymouth Township
130	Spencer Kitchen	Plymouth Township
131	Steve Melow	Plymouth Township
132	Zachary Pumphrey	Plymouth Township
133	Jamie Harmon	Portage
134	Sherman Potter	Portage
135	Jason Dickinson	Rochester
136	Jeff Fox	Rochester Hills
137	Chris Shepard	Rochester Hills
138	Seth Bucholz	Rochester Hills
139	Shane Rudolph	Rochester Hills
140	Timothy Pollizzi	Rochester Hills
141	Alec Staten	Romulus
142	Elizabeth Jenkins	Romulus
143	Kassim Mc Neil	Romulus
144	Paul Banks	Romulus
145	Ryan Stamper	Romulus
146	Kelly Karll	SEMCOG
147	Doug Varney	South Lyon
148	Anthony Shourds	University of Michigan
149	Dana Wilkinson	University of Michigan
150	Jody Lynn Mathias	University of Michigan
151	John Kosco	University of Michigan
152	Kathleen McDonald	University of Michigan
153	Stephen O'Rielly	University of Michigan
154	Carrie Loya-Smalley	Unlisted Affiliation
155	Evan Falkner	Unlisted Affiliation
156	Zachary Harrison	Unlisted Affiliation
157	Adam Kulinski	Village of Milford
158	Chelsea Pesta	Walled Lake
159	Eric Menzies	Walled Lake
160	Gary Streight	Washtenaw County Road Commission
161	John Miller	Washtenaw County Road Commission
162	Mark McCulloch	Washtenaw County Road Commission
163	Michael Buiten	Wayne City
164	Derick Coley	Wayne County

SEMCOG UNIVERSITY
IDEP INVESTIGATOR
WORKSHOP
ATTENDANCE LIST
OCTOBER 27, 2021

ARC Member Community

Number	Name	Community/Organization
165	Jennifer DePaulis	Wayne County
166	Bryant Houfek	West Bloomfield Township
167	Gary Hernandez	West Bloomfield Township
168	Jennifer DePailis	West Bloomfield Township
169	Philip LaLone	West Bloomfield Township
170	Michael Belcher	Woodhaven-Brownstown School District
171	Jon Allen	Wyandotte
172	Gregory Mayhew	Wyandotte
173	Jesus Plasencia	Wyandotte

Appendix B3

2020 Oakland County IDEP Investigation Report

Annette DeMaria, P.E., PMP
Executive Director

Auburn Hills
Beverly Hills
Bingham Farms
Birmingham
Bloomfield Hills
Bloomfield Twp.
Canton Twp.
Commerce Twp.
Dearborn Heights
Farmington
Farmington Hills
Franklin
Garden City
Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
Northville
Northville Twp.
Novi
Oak Park
Oakland County
Orchard Lake
Plymouth
Plymouth Twp.
Redford Twp.
Rochester Hills
Romulus
Schoolcraft College
Southfield
Troy
University of Michigan-Dearborn
Van Buren Twp.
Walled Lake
Washtenaw County
Wayne
Wayne County
Wayne County Airport Authority
West Bloomfield Twp.
Westland
Wixom

Cooperating Partners:
Cranbrook Institute of Science
Friends of the Rouge
Great Lakes Water Authority
Rouge River Advisory Council
SEMCOG
Southeastern Oakland County Water Authority

TO: **Karen Mondora, ARC Technical Committee Chair**

FROM: **Annette DeMaria, Executive Director**

DATE: **January 29, 2021**

SUBJECT: **2020 IDEP Investigation Summary**

In 2020, ARC staff investigated eight suspicious outfall discharges primarily in the Oakland County portion of the Rouge River Watershed. These outfalls were designated in the Category A and B priority levels for illicit discharge investigations. Of the eight outfalls, two illicit connections were discovered and corrected, three outfalls were determined to be likely impacted by animal feces, and three outfalls will require additional source investigations in 2021.

In 2020, ARC staff worked in five communities to conduct illicit discharge investigations in accordance with the Rouge River Collaborative Illicit Discharge Elimination Plan. These investigations were prompted by the outfall screening efforts conducted in 2018 and 2019, and were conducted in Beverly Hills, Farmington Hills, Northville, and Novi.

The results of the investigations are summarized in Table 1. More detail can be found in the investigation reports which were sent to the communities (Attachment A).

Table 1. Status and Results of Illicit Discharge Investigations

Permittee	Outfall ID	Status	Result
Beverly Hills	BV66	Completed	Residential illicit connection identified and corrected
Beverly Hills	BV51	Ongoing	Further investigation required
Farmington Hills	FH01	Completed	Animal sources suspected
Northville	NV03	Completed	Residential illicit connection identified and corrected
Northville	NV23	Completed	Animal source suspected
Northville	NV22	Ongoing	Further investigation required
Northville	NV57	Ongoing	Further investigation required
Novi	NO23	Completed	Animal sources identified

Both Beverly Hills and Northville have indicated that the illicit connections identified within their jurisdictions (BV66 and NV03) have been corrected. These corrections were both completed by the end of November, 2020.

In addition, ARC staff partnered with Wayne County to conduct investigations in Inkster because of elevated instream E. coli levels results found in the Lower Rouge in 2020. This involved gathering and graphing existing water quality data to determine the areas of impact, meetings with the City and County and initial IDEP investigations on the Perrin

Drain. These investigations revealed high E. coli that may be the result of an illicit connection.

In 2021, the ARC will continue source investigations on the outstanding issues in accordance with the Plan and as directed by the Technical Committee. This includes resampling outfalls BV66 and NV03 to confirm no other illicit discharges are present in the tributary drains.

X:\Alliance of Rouge Communities\2021 Alliance of Rouge Communities\Tech Com\2020 OC IDEP Summary.docx

Attachment A
Community-specific Investigation Reports

Annette DeMaria, P.E., PMP
Executive Director

Auburn Hills
Beverly Hills
Bingham Farms
Birmingham
Bloomfield Hills
Bloomfield Twp.
Canton Twp.
Commerce Twp.
Dearborn Heights
Farmington
Farmington Hills
Franklin
Garden City
Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
Northville
Northville Twp.
Novi
Oak Park
Oakland County
Orchard Lake
Plymouth
Plymouth Twp.
Redford Twp.
Rochester Hills
Romulus
Schoolcraft College
Southfield
Troy
University of Michigan-Dearborn
Van Buren Twp.
Walled Lake
Washtenaw County
Wayne
Wayne County
Wayne County Airport Authority
West Bloomfield Twp.
Westland
Wixom

Cooperating Partners:
Cranbrook Institute of Science
Friends of the Rouge
Great Lakes Water Authority
Rouge River Advisory Council
SEMCOG
Southeastern Oakland County Water Authority

Alliance of Rouge Communities
OURS TO PROTECT
Working together, restoring the river

TO: **Tom Meszler, Village of Beverly Hills Director of Public Services**

FROM: **Annette DeMaria, Executive Director**

DATE: **December 22, 2020**

SUBJECT: **IDEP Investigation Results: Outfall BV51 (Sleepy Hollow Lane)**

ARC staff continued illicit discharge investigation on storm sewer outfall BV51 in response to findings from the 2018 outfall screening and 2019 investigations. The September 2020 results indicate that sewage is likely impacting the drain. However, we were unable to narrow down where sewage is entering the drain. Therefore, further investigations are recommended in 2021.

Background

Outfall BV51 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was 3,076 MPN/100 ml which can be indicative of an illicit discharge containing sanitary sewage. ARC staff reinspected the outfall in 2019 and found *E. coli* concentrations at 201 and >24,196 MPN/100 ml respectively.

The outfall drains a portion of Sleepy Hollow Lane, Fiddlers Cove Road, and Metamora Lane. The receiving water is an unnamed tributary of the Rouge River (Figure 1). The drain crosses the sanitary sewer at 31403 Sleepy Hollow Lane (Figure 2).

Results

ARC staff reinspected the outfall on August 19, September 15, and November 17, 2020. As was the case in 2019, the results varied greatly in 2020, with *E. coli* concentrations of 573, >24,196, and 1,081 MPN/100 ml respectively (See Table 1). The results from the September and November sampling events showed Human Bacteroides concentrations of 72,000 and <354 gene copies/100 ml respectively. There were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain in the outfall or any of the manholes. Likewise, there were no obvious signs of animal fecal impacts to the drain.

Samples were analyzed by Paragon Laboratories for *E. coli* concentration. Additionally, samples were analyzed by Michigan State University's Department of Fisheries & Wildlife for a microbial source tracking (MST) marker to determine whether contamination was human in origin. The marker being used is *Bacteroides thetaiotaomicron* (*B. theta*) which identifies if the bacteria are from the human intestinal track.

Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

	E. coli	***E. coli***	***E. coli***	***E. coli***	***E. coli***	**Human *Bacteroides***	***E. coli***	**Human *Bacteroides***
	7/9/18	**8/15/19**	**9/19/19**	**8/19/20**	**9/15/20**	**9/15/20**	**11/17/20**	**11/17/20**
BV51-0	3,076	201	>24,196	573	>24,196	72,000	1,081	<354

Conclusions and Recommendations

The high *E. coli* and *Bacteroides* results from September 2020 indicate that sewage is likely impacting the drain. However, the sewage source appears to be inconsistent, so we were not able to narrow it down within the drain. The recommended next steps are for the drain to be televised to determine the potential source of sewage. ARC staff will follow up with the Village to request this work be completed by the Village in 2021.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the Village's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 248-765-4085 or ademaria@ectinc.com.

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Figure 1. Storm Drain Location



Figure 2. Sanitary Sewer Location



Annette DeMaria, P.E., PMP
Executive Director

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TO: **Tom Meszler, Village of Beverly Hills Director of Public Services**

FROM: **Annette DeMaria, Executive Director**

DATE: **August 20, 2020**

SUBJECT: **IDEP Investigation Results: Outfall BV66 (Village Pines Drive)**

ARC staff continued illicit discharge investigation on storm sewer outfall BV66 in response to findings from the 2018 outfall screening and 2019 investigations. We have determined that there is an illicit connection from the residence at 22045 Village Pines Drive that needs to be corrected.

Background

Outfall BV66 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was 12,033 MPN/100 ml which can be indicative of an illicit discharge containing sanitary sewage.

ARC staff inspected the outfall and the tributary storm sewer several times in 2019 and 2020. *E. coli*, surfactants and Human *Bacteroides* were sampled along the storm line. The *E. coli* samples were analyzed by Paragon Laboratories, the *Bacteroides* sample was analyzed by Michigan State University's Department of Fisheries & Wildlife, and surfactants were analyzed using a Chemetrics field kit (K-9400).

The outfall and tributary storm sewer primarily receive runoff from Village Pines Drive, west of Lahser Road and south of 14 Mile Road. It also picks up drainage from E. Valley Woods Drive. The receiving water is an unnamed tributary of the Main Branch of the Rouge River. The storm sewer generally runs along the south side of Village Pines Drive, while the sanitary sewer generally runs along the north side (See Figures 1 and 2). The sanitary sewer crosses above the storm sewer at more than one location.

Results

As in 2019, there were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain in any of the manholes/catch basins. However, high levels of *E. coli* continued and very high levels of Human *Bacteroides* were found in the outlet (See Table 1). This prompted a CCTV inspection of the sanitary sewer and storm drains to locate the source of the illicit discharge.

The CCTV inspection was conducted by Oakland County Water Resources Commissioners Office in August 2020. The extent of the inspection was as follows (See Figures 1 and 2):

- On the sanitary sewer from MH 23471 downstream to MH 23467
- On the storm drain from BV66-0 upstream to 106' east of BV66-5
- On the storm drain from BV66-4 upstream to BV66-4A

A suspicious connection to the storm was located at 73.5' west of BV66-5 from the south (See Figures 3A and 3B). The residence of 22045 Village Pines Dr. was subsequently dye tested and the CCTV camera recorded the results (See Figure 3C). While the CCTV operator monitored the storm drain, ARC staff monitored the sanitary sewer. The testing revealed that all bathrooms were draining to the storm drain. Dye testing was completed at the sinks of each bathroom (basement, master, hallway, and garage entrance). No dye showed up in the sanitary sewer.

In addition, we suspect that the footing drain for 22045 Village Pines Dr. is connected to the sanitary sewer and not the storm drain. This is based on the following:

- There was no calcium build-up in the (illicit) connection to the storm drain, while the footing drains for the other homes in the neighborhood showed substantial calcium build-up.
- There is a connection to the sanitary at 63.6' west of MH 23464, which is where the sanitary map shows the sanitary tap from 22045. The flow out of this tap was continuous and clear and there was minor calcium build-up present (Figures 4A – 4C).

After a desktop review of the CCTV footage, no other illicit connections are suspected to be tributary to outfall BV66-0, at this time. In addition, there were no obvious signs of exfiltration from the sanitary sewer which could have impacted the water quality in the storm drain, since the sanitary is at a higher elevation than the storm drain.

Conclusions and Recommendations

We have determined that there is an illicit connection to the storm drain from the residence at 22045 Village Pines Dr. The connection is a violation of Chapter 30 (Surface Water Drainage), Section 30.06 of the City's Code of Ordinances, and needs to be eliminated. In accordance with the City's Municipal Separate Storm Sewer System (MS4) permit, the City is required to request the property owner to eliminate the discharge, so it no longer impacts waters of the State. The property owner has 120 days to eliminate the discharge as outlined in Section 30.12 of Chapter 30.

Once the correction is made, we suggest that the Village jet and vacuum the storm sewer to remove residual sanitary waste. Then notify the ARC and we will resample the outfall to confirm no other issues are present.

Although not the subject of this investigation, we also suspect that the footing drain from the same home is improperly connected to the sanitary sewer, but this should be confirmed with a dye test. If confirmed, this connection may be a violation of the State's Plumbing Code and should be addressed accordingly.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the Village's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 248-765-4085 or ademaria@ectinc.com.

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Table 1. Sampling Results (*E. coli* in MPN/100 ml; Surfactants in mg/l; Bacteroides in gene copies/100 ml)

Structure	Location	*E. coli*		*E. coli*	Surfactants	*E. coli*	Human *Bacteroides*	*E. coli*	Human *Bacteroides*	*E. coli*	*E. coli*
		6/26/2018	8/6/2019	12/12/2019		12/19/2019		7/2/2020		8/5/2020	8/6/2020
BV66-0	Outlet to unnamed tributary	12,033	>24,196	292	0.75	9,804	527,000	2,755	1,120,000		
BV66-1	Manhole in the lawn south of the house							17,239			
BV66-2	Manhole on south side of street		>24,196					15,531			
BV66-3	Buried manhole in the lawn on south side of street			4,106	0.75	8,164	<354				
BV66-4	Manhole on south side of street		>24,196					4,611			
BV66-4A	Beehive catch basin on north side of street under pine trees			10	0.25	<10	<354	10	<10		
BV66-4-18"	18" inlet to BV66-4 (coming from BV66-4A)									1,830*	
BV66-4-24"	24" inlet to BV66-5 (coming from BV66-5)									36,540	
BV66-5	Manhole in the island		10	20				185			
BV66-5 SE	SE inlet to BV66-5								<10		
BV66-5 CB-EE	Road inlet on east side of cul-de-sac										20
BV66-5 CB-N	Road inlet on north side of Village Pines Dr.										359
BV66-5 E	East inlet to BV66-5										63

*rust colored sample contaminated by material stirred up by the CCTV camera

Figure 1. Storm Sewer Location

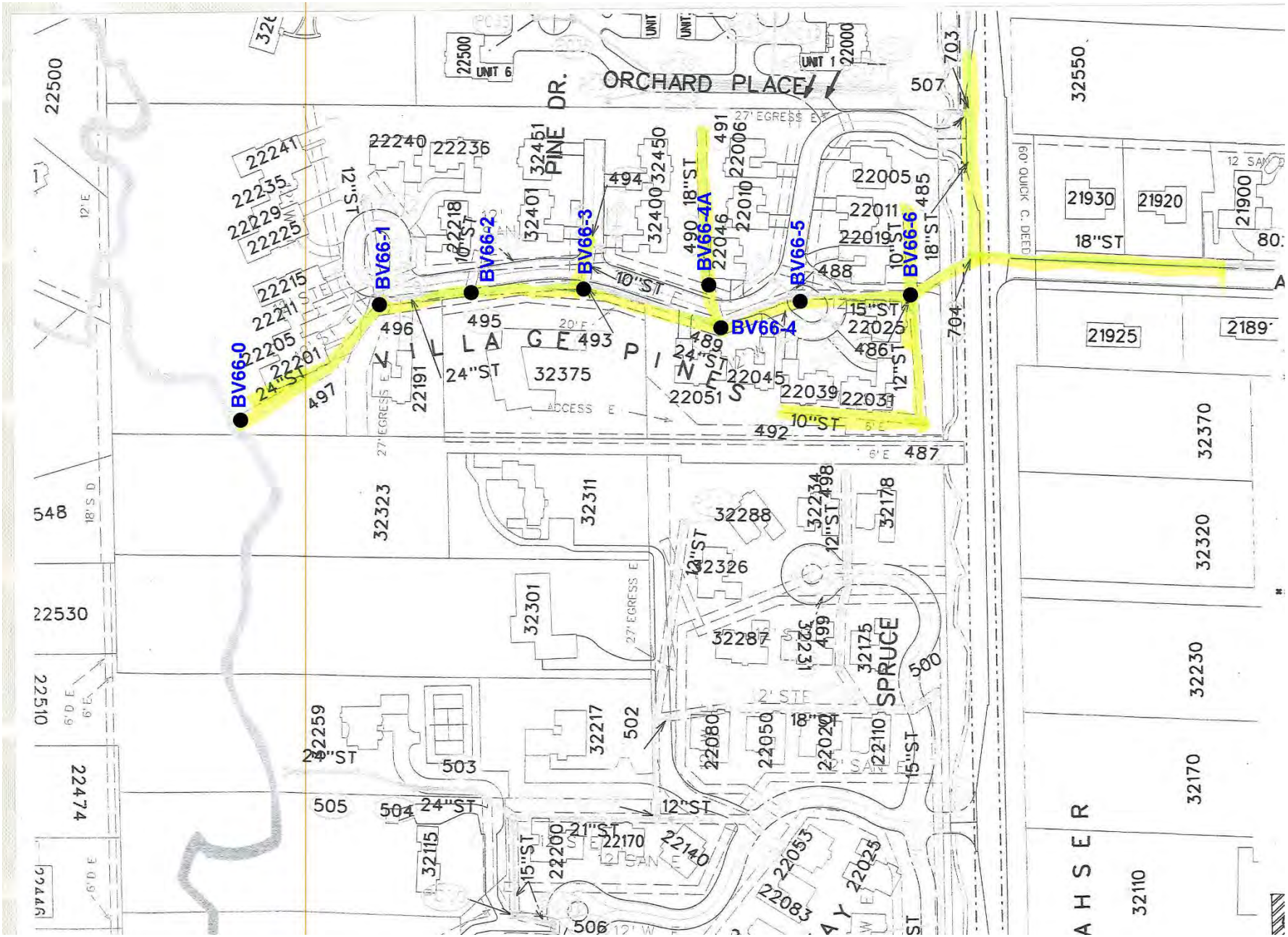


Figure 2. Sanitary Sewer Location

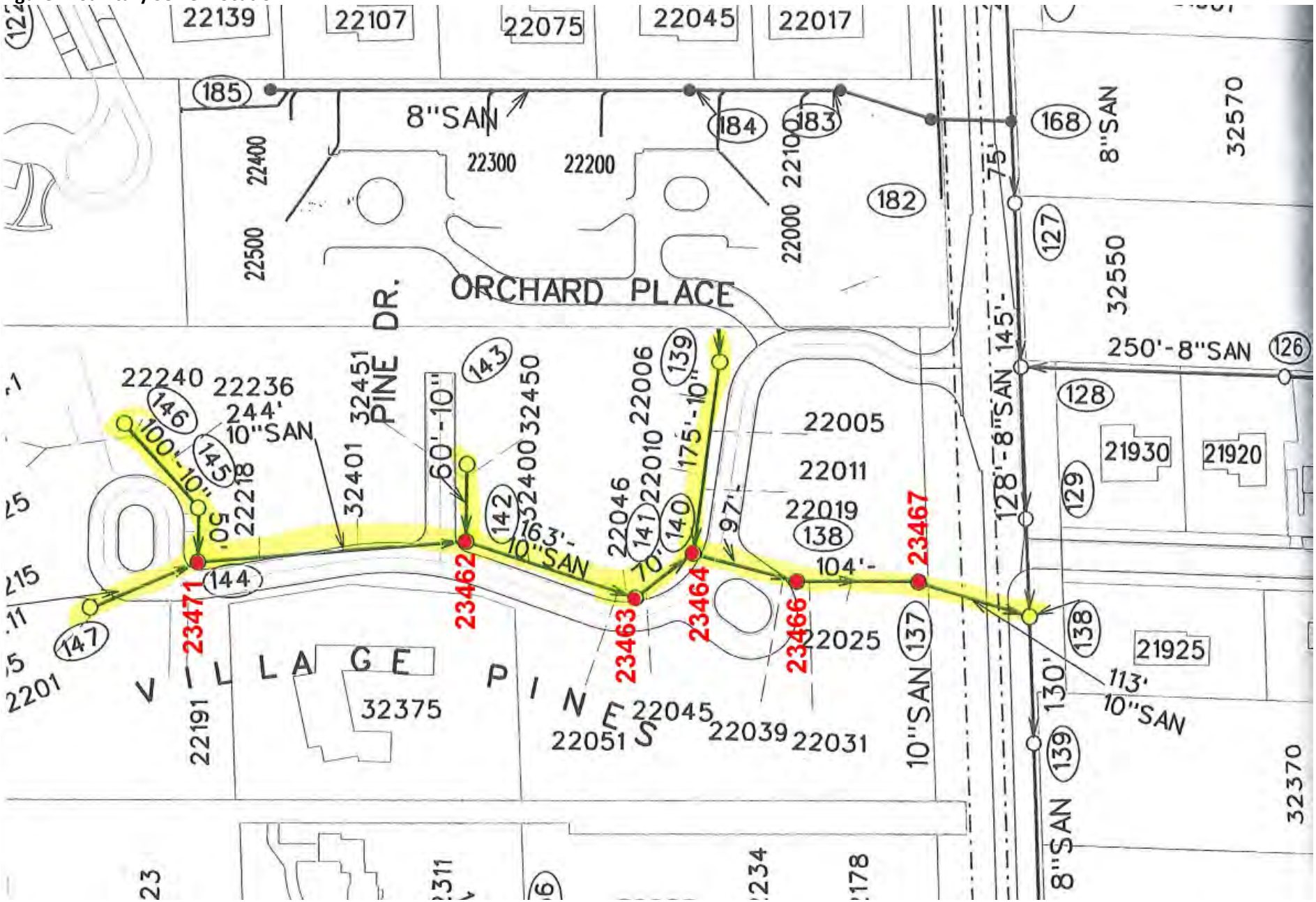


Figure 3A. Illicit connection to storm drain at 11:00 at 73.5’ west of BV66-5 (or 33.5’ east of BV66-4) – note sanitary debris in the drain

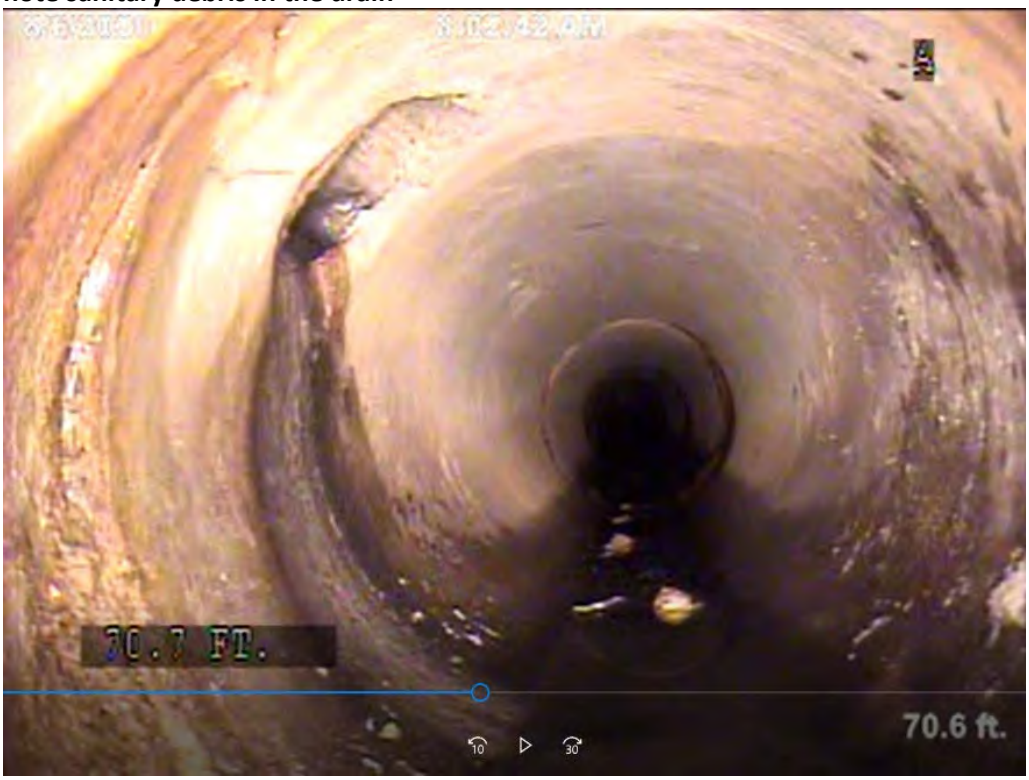


Figure 3B. Close up of illicit connection – note gray staining at the outlet



Figure 3C: Dye testing results from basement bathroom



Figure 4A: Possible footing drain tap at 9:00 at 63.6' west of MH 23464 (or 6.5' east of MH 23463) – note minor calcium build-up under the tap



Figure 4B: Close up of possible footing drain connection



Figure 4C: Close up of possible footing drain connection – note calcium build-up in tap



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TO: **Karen Mondora, City of Farmington Hills Director of Public Services**

FROM: **Annette DeMaria, Executive Director**

DATE: **November 30, 2020**

SUBJECT: **IDEP Investigation Results: Outfall FH01 (Tulane Avenue)**

ARC staff have conducted an illicit discharge investigation on storm sewer outfall FH01[1] in response to findings from the ARC's 2018 outfall screening and follow-up sampling conducted in 2019. We suspect that animal feces are likely responsible for the high *E. coli* readings. No further action is necessary at this time.

Background

Outfall FH01 was originally investigated due to very high *E. coli* concentration (>24,196 MPN/100 mL) found during an outfall screening conducted April 27, 2018. There was no observed color, odor, turbidity, or other unusual characteristics noted during the initial screening.

ARC staff reinspected the outfall on December 13 and 19, 2019 and found similar conditions as seen in the original inspection. Water samples were taken from the outfall, along with water samples from four upstream manholes in an effort to narrow down possible sources of *E. coli* contamination.

The outfall drains a portion of Tulane Avenue north of Nine Mile Road and receives runoff from the residential properties along portions of Astor Street, Colgate Street, and Albion Avenue. The receiving water is an unnamed tributary of the Main Branch of the Rouge River (See Figure 1).

Results

ARC staff reinspected the outfall on July 2, and August 18, 2020 and found similar *E. coli* conditions as seen in the original inspection. Water samples were taken from the outfall and from one upstream manhole in an effort to narrow down possible sources of *E. coli* contamination. Additional samples were not collected from more locations due to a lack of flow in upstream manholes.

Samples were analyzed by Paragon Laboratories for *E. coli* concentration. Additionally, samples were analyzed by Michigan State University's Department of Fisheries & Wildlife for a microbial source tracking (MST) marker to determine whether contamination was human in origin. Human Bacteroides is a microbial source tracking method used for identifying if bacteria are from the human intestinal track.

[1] Also identified as fhc.01.

The outfall and upstream manhole had high *E. coli* levels, but the Human Bacteroides analysis did not show a sewage signature for three of the four water samples and the sewage signature on the fourth sample was only moderately high (See Table 1). There were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain in the outfall or any of the manholes. Likewise, there were no obvious signs of animal fecal impacts to the drain.

Table 1. Sampling Results

Structure	Location	*E. coli* result (MPN/100 ml)	*E. coli* result (MPN/100 ml)	*E. coli* result (MPN/100 ml)	Human *Bacteroides* (gene copies/ 100 ml)	*E. coli* result (MPN/100 ml)	Human *Bacteroides* (gene copies/ 100 ml)	*E. coli* result (MPN/100 ml)	Human *Bacteroides* (gene copies/ 100 ml)
		4/27/2018	**12/13/2019**	**12/19/2019**	**12/19/2019**	**7/2/2020**	**7/2/2020**	**8/18/2020**	**8/18/2020**
FH01-0	Outfall to unnamed tributary	> 24,192	1,246	9,208	< 354	>24,196	3,630	8,664	<354
FH01-1W	West inlet to first upstream manhole at Tulane & Astor		1,314			>24,196	< 354		
FH01-2N	Trough of manhole north of FH01-1W at Tulane & Astor		<10						
FH01-2W	North inlet to second upstream manhole at Albion & Astor		<10						
FH01-3W	Trough of third upstream manhole at Colgate & Astor		197						

Conclusions and Recommendations

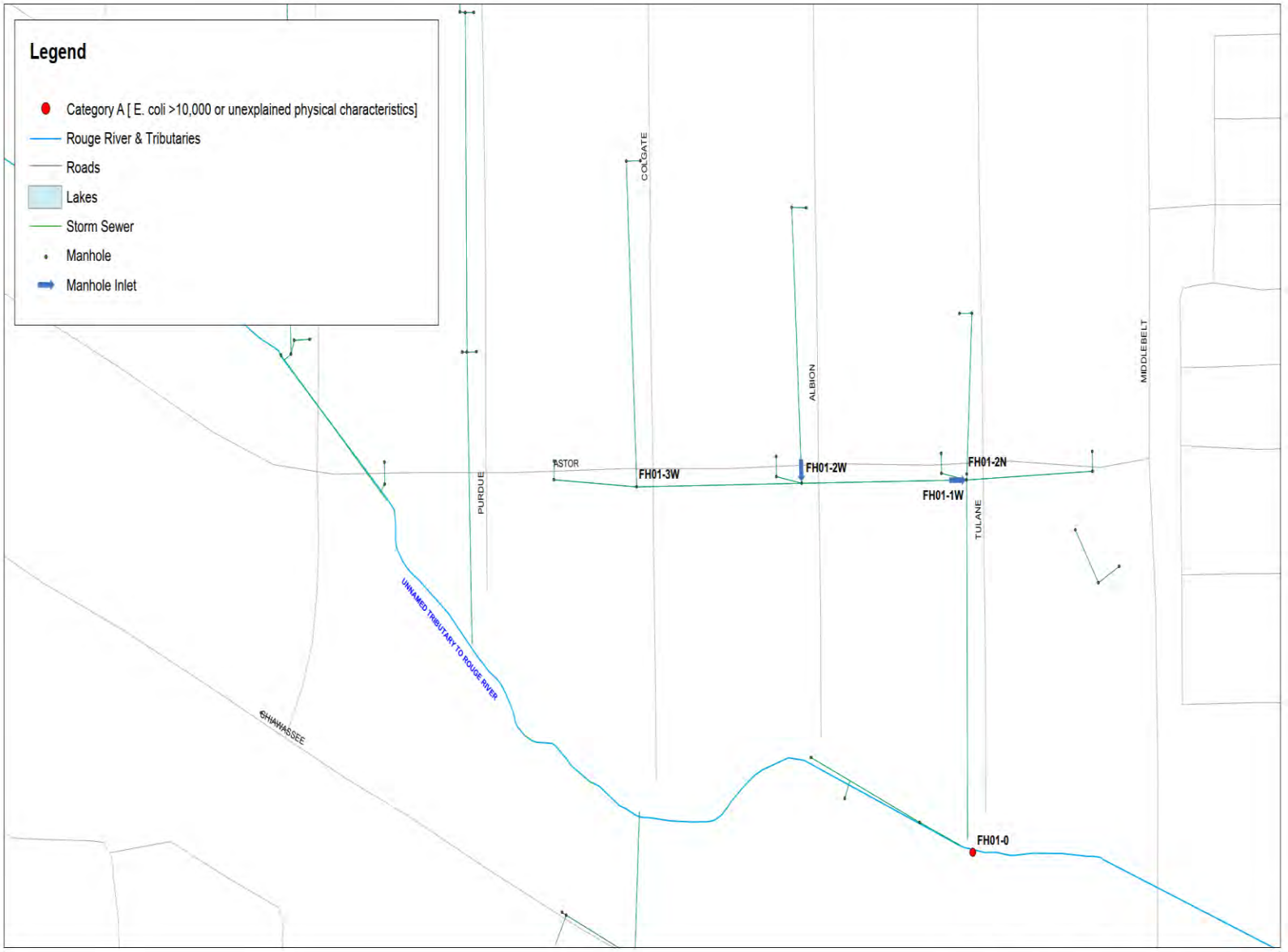
Based on the data collected to date, we suspect that the source of the high *E. coli* is from animal feces, rather than from sewage. This determination is made because the high *E. coli* levels coincide with low Human Bacteroides levels which indicates that the *E. coli* is not from a human source. Given that there were no obvious signs of animal sources to the drain, no further action is recommended at this time.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or ademaria@ectinc.com.

cc: John Beisel, City of Farmington Hills

Attachment: Figure 1. Storm Sewer and Sampling Location

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Figure 1. Storm Sewer Location

ECT Environmental Consulting & Technology, Inc.

2/13/2019

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TO: **Loyd Cureton, Director, Northville Department of Public Works**

FROM: **Annette DeMaria, Executive Director**

DATE: **September 1, 2020**

SUBJECT: **IDEP Investigation Results: Outfall NV03 (Glenhill Drive)**

In 2020, ARC staff continued illicit discharge investigation on storm sewer outfall NV03 in response to findings from the 2018 outfall screening and 2019 investigations. We have determined that there is an illicit connection from the residence at 1009 Glenhill Drive that needs to be corrected.

Background

Storm sewers connected to outfall NV03 were investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. Because the outfall was partially submerged, water samples from two upstream manholes were taken for *E. coli* analysis. One of these manholes (NV03-2S) had an *E. coli* concentration of >24,196 MPN/100 mL.

Manhole NV03-2S is located in Shannon Court and receives runoff from residential properties along portions of Glenhill Drive, Whitegate Drive, Andover Drive, Portsmere Court, and Abbey Court (See Figure 1). The receiving water is an unnamed tributary of the Middle Branch of the Rouge River.

ARC staff revisited the area several times in 2019 and 2020 to take water samples from various manholes across the drainage area in order to narrow down possible sources of *E. coli* contamination. *E. coli* and Human *Bacteroides* were sampled along the storm line. The *E. coli* samples were analyzed by Paragon Laboratories, and the *Bacteroides* sample was analyzed by Michigan State University's Department of Fisheries & Wildlife.

Results

High levels of *E. coli* and very high levels of Human *Bacteroides* were found in manhole NV03-6W, however other manholes did not have high levels of *E. coli* (See Table 1). In addition, a sewage odor and sanitary debris were observed in the catch basins along Glenhill Drive that are connected to NV03-6W.

This prompted a CCTV inspection of the storm drain connected to NV03-6W to locate the source of the illicit discharge. The CCTV inspection was conducted by the City of Northville in August 2020. The extent of the inspection included the storm drain on the west side of Glenhill Drive, extending west approximately 180' from NV03-6W-1, and south 300' to the next manhole. The south pipe was not shown on the City's maps but extends past 1003 Glenhill west of the sanitary sewer (See Figure 1).

The residences of 1003, 1009, 1015, and 1021 Glenhill Drive were subsequently dye tested. City staff monitored the storm drain and the sanitary sewer while ARC staff dye tested all bathrooms in each house. The testing revealed that all bathrooms at 1009 Glenhill Drive were draining to the storm drain. Dye testing was completed at the sinks of each bathroom (first floor, upstairs, and master). No dye showed up in the sanitary sewer. The connection to the storm was located 150' south of NV03-6W-1 (See Figures 2A and 2B).

The dye testing of the other houses indicated that they were properly connected to the sanitary sewer.

Conclusions and Recommendations

We have determined that there is an illicit connection to the storm drain from the residence at 1009 Glenhill Dr. The connection is a violation of Chapter 86 (Utilities), Division 2 (Illicit Discharge Elimination Program) of the City's Code of Ordinances, and needs to be eliminated. In accordance with the City's Municipal Separate Storm Sewer System (MS4) permit, the City is required to request the property owner to eliminate the discharge, so it no longer impacts Waters of the State. The property owner Is required to achieve compliance within the time period set forth within the notice given by the City, as outlined in Section 86-119.

Once the correction is made, we suggest that the City jet and vacuum the storm sewer to remove residual sanitary waste. Then notify the ARC and we will resample the storm drain to confirm no other issues are present.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 248-765-4085 or ademaria@ectinc.com.

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Table 1. Sampling Results (*E. coli* in MPN/100 ml; Surfactants in mg/l; Bacteroides in gene copies/100 ml)

Structure	Location	*E. coli*	*E. coli* (MPN/100 ml)	Human *Bacteroides* marker (gene copies/100 ml)	*E. coli* result	Human *Bacteroides* marker (gene copies/100 ml)	*E. coli* (MPN/100ml)	Human *Bacteroides* marker (gene copies/100 ml)
		6/8/2018	12/13/2019		12/19/2019		7/2/2020	7/2/2020
NV03-2S	Manhole in Shannon Ct.	>24,192						
NV03-2S-W	South inlet to manhole on Shannon Ct		<10	<354	<10		31	ND
NV03-2S-S	West inlet to manhole on Shannon Ct		573	928	2,489	1,510		
NV03-6W	West inlet to manhole on Glenhill Dr		1,658		3,076	543	17,329	347,000
NV03-6S	South inlet to manhole on Glenhill Dr		<10				20	
NV03-11	Trough of the manhole at Glenhill Dr and Whitegate		30				63	

Figure 1. Storm Sewer Location Map

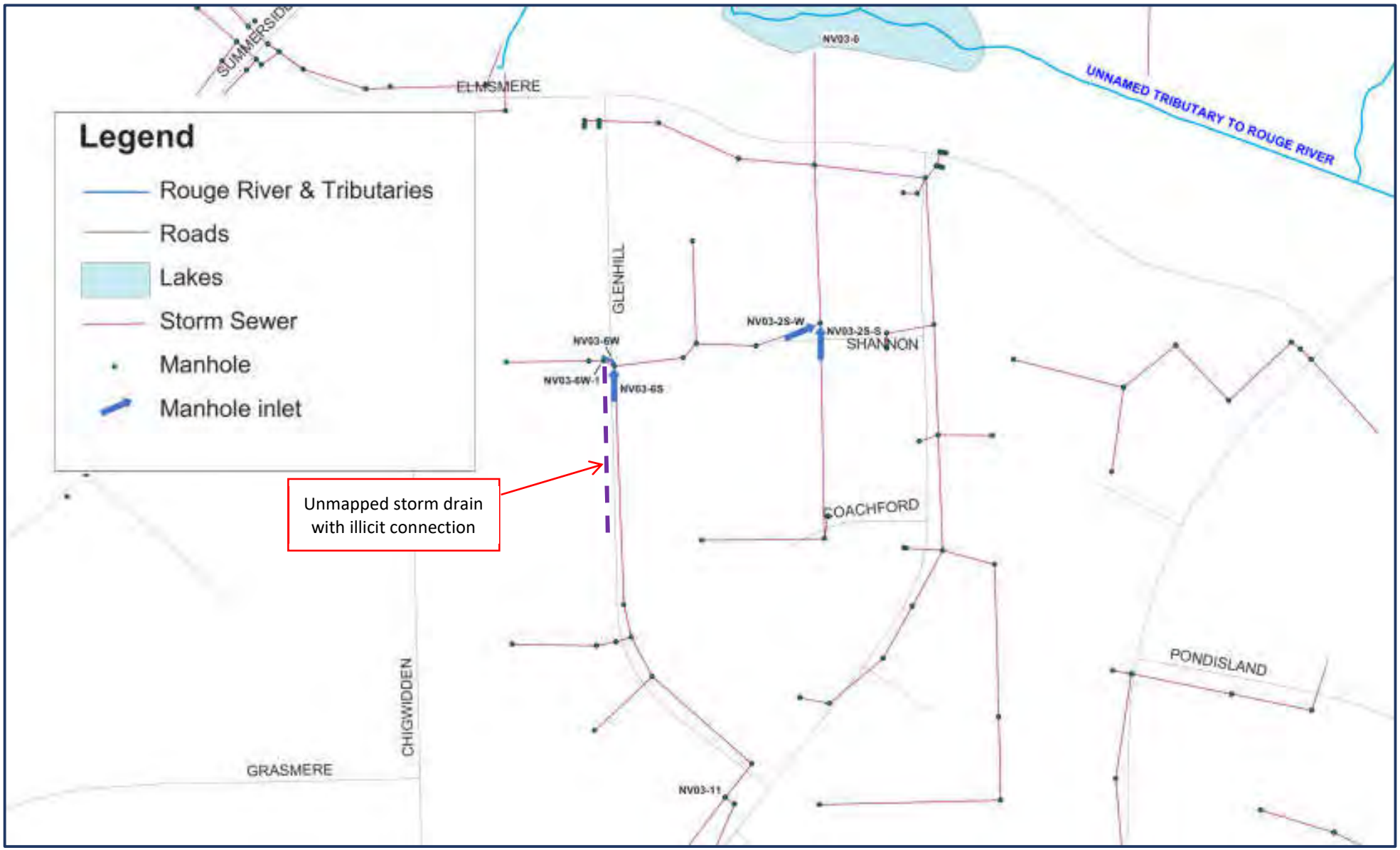


Figure 2A. Illicit connection to storm drain at 150’ south of manhole NV03-6W-1 located on the west side of Glenhill Drive. Green dye exiting the sewer lead to the storm drain from testing of the first floor bathroom of 1009 Glenhill Dr.



Figure 2B. Red dye exiting the sewer lead to the storm drain from testing of the upstairs bathroom of 1009 Glenhill Dr.



Annette DeMaria, P.E., PMP
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TO: **Loyd Cureton, City of Northville**

FROM: **Annette DeMaria, Executive Director**

DATE: **January 4, 2021**

SUBJECT: **IDEP Investigation Results: Outfall NV22**

ARC staff have conducted an illicit discharge investigation on storm sewer outfall NV22 in response to findings from the ARC's 2018 outfall screening and follow-up sampling conducted in 2019. We have determined that additional investigations are needed in order to determine if an illicit discharge is impacting the storm drain.

Background

Outfall NV22 was investigated due to high *E. coli* concentration (2,755 MPN/100 mL) found during an outfall screening conducted June 7, 2018. There was no observed color, odor, turbidity, or other unusual characteristics noted during the initial screening.

ARC staff reinspected the outfall on August 15, 2019 and found higher *E. coli* concentrations (>24,196 MPN/100 mL) and similar conditions as seen in the original inspection, with low flow noted.

The outfall drains a portion of Allen Drive, Novi Street, and other adjoining streets north of Eight Mile Road. Based on the available GIS information, it is unclear which storm drains at the intersection of Hill and Novi Streets discharge to NV22. The receiving water is the Walled Lake Branch of the Middle Rouge River (See Figure 1).

Results

ARC staff reinspected the outfall on July 1, and August 18, 2020 and found lower *E. coli* levels compared to the original inspection. Water samples were taken from the outfall and from two pipes in an upstream manhole in an effort to narrow down possible sources of *E. coli* contamination. These samples were also tested for Human Bacteroides, which were found at low levels as well.

Samples were analyzed by Paragon Laboratories for *E. coli* concentration. Additionally, samples were analyzed by Michigan State University's Department of Fisheries & Wildlife for a microbial source tracking (MST) marker to determine whether contamination was human in origin. Human Bacteroides is a microbial source tracking method that uses the B. theta biomarker to determine if bacteria are from the human intestinal track.

Table 1. Sampling Results

Structure	*E. coli* (MPN/ *100mL)*	*E. coli* (MPN/ *100mL)*	*E. coli* (MPN/ *100mL)*	Human *Bacteroides* (gene copies/100 ml)	*E. coli* (MPN/ *100mL)*	Human *Bacteroides* (gene copies/100 ml)
	6/7/2018	**8/15/2019**	**7/1/2020**	**7/1/2020**	**8/18/2020**	**8/18/2020**
NV22-0	2,755	>24,196	108	582	<10	<354
NV22-2W-N			404	747		
NV22-2W-W			201			

Conclusions and Recommendations

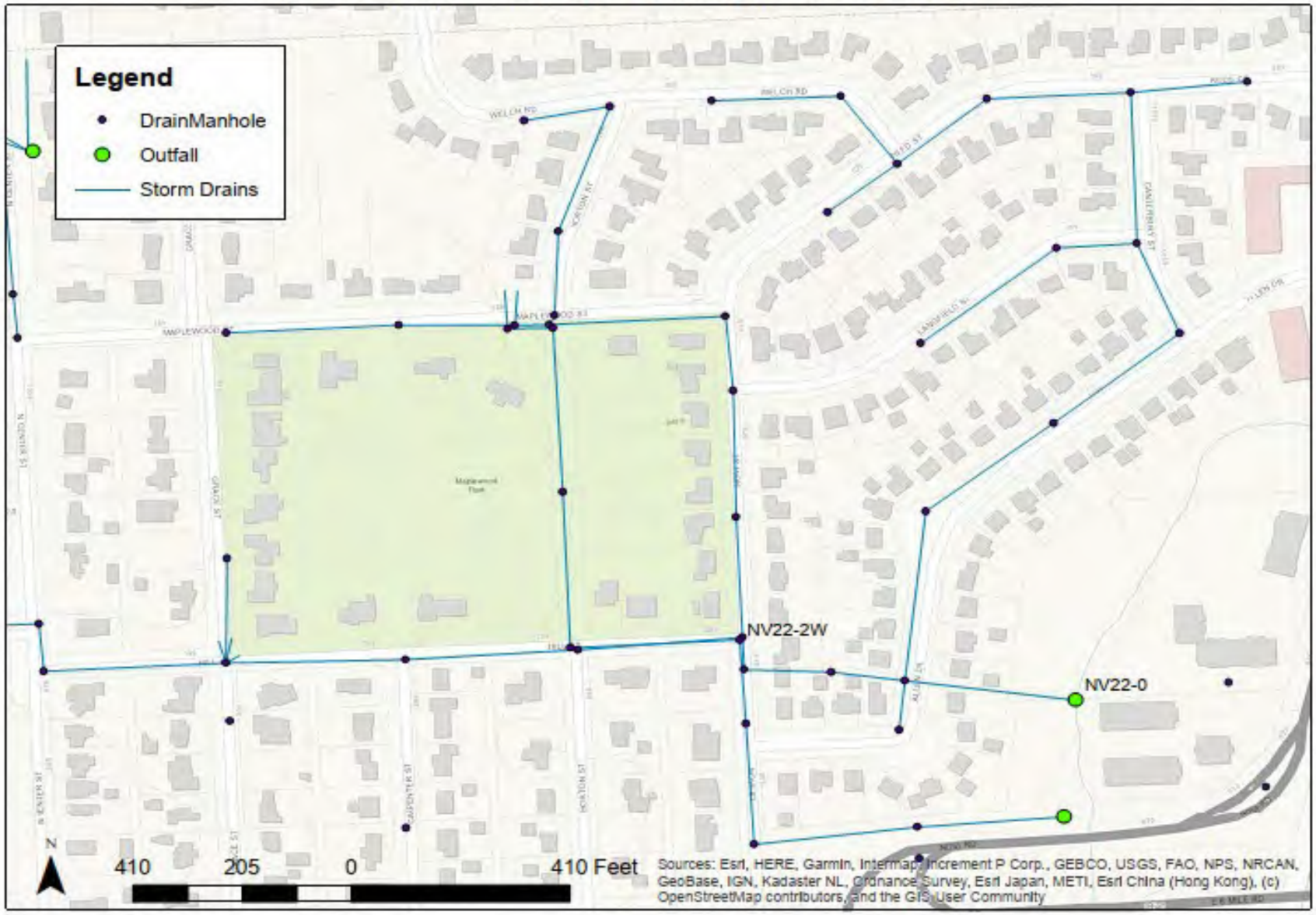
Given that both the E. coli and Bacteroides were low in the samples, the results of the testing are inconclusive in identifying the source of the E. coli. Therefore, additional investigations are needed. ARC staff will continue these investigations in 2021 following a meeting with DPW staff to better understand the extent of the drainage network.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or ademaria@ectinc.com.

Attachment: Figure 1. Storm Sewer and Sampling Location

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Figure 1: Storm Sewer and Sampling Locations for NV22



Annette DeMaria, P.E., PMP
Executive Director

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TO: **Loyd Cureton, City of Northville**

FROM: **Annette DeMaria, Executive Director**

DATE: **December 16, 2020**

SUBJECT: **IDEP Investigation Results: Outfall NV57 (First Street)**

ARC staff have conducted an illicit discharge investigation on storm sewer outfall NV57 in response to findings from the ARC's 2018 outfall screening and follow-up sampling conducted in 2019. The August 2020 results indicate that sewage may be impacting the drain. However, we were unable to narrow down where sewage is entering the drain. Therefore, further investigations are recommended in 2021.

Background

Manhole NV57-1 was investigated due to high *E. coli* concentration (3,876 MPN/100 ml) found during an outfall screening conducted June 8, 2018. There was no observed color, odor, turbidity, or other unusual characteristics noted during the initial screening. ARC staff reinspected manhole NV57-1 on August 15, 2019 and found an *E. coli* concentration of 6,131 MPN/100 ml.

The outfall drains First Street and a portion of West Cady Street, north of Seven Mile Road. The receiving water is Johnson Drain, which feeds into the Walled Lake Branch of the Middle Rouge River (See Figure 1).

Results

ARC staff reinspected manholes and collected samples from three upstream manholes to narrow down possible sources of *E. coli* contamination. Although these efforts yielded inconsistent results, the August data did show a strong sewage signal at manhole NV57-1 as demonstrated by the very high Bacteroides results. Another high Bacteroides concentration was found at manhole NV-573E. All other Bacteroides results were below detection limits (See Table 1).

In terms of *E. coli*, manhole NV57-1 had moderately high levels in July, August, September, and November but it was not detectable at other manholes. There were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain in any of the manholes. Likewise, there were no obvious signs of animal fecal impacts to the drain.

Samples were analyzed by Paragon Laboratories for *E. coli* concentration. Additionally, samples were analyzed by Michigan State University's Department of Fisheries & Wildlife for a microbial source tracking (MST) marker to determine whether contamination was human in origin. The marker being used is *Bacteroides thetaiotaomicron* (*B. theta*) which identifies if the bacteria are from the human intestinal track.

Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

Structure		NV57-1	NV57-2	NV57-3E	NV57-3N
Location		Manhole at corner where Fairbrook St meets 7 Mile Rd	Manhole located in front of 320 and 310 1st St	Manhole at intersection of W Cady St and 1st St	Manhole at intersection of W Cady St and 1st St
E. coli	**6/8/18**	3,876			
E. coli	**8/15/19**	6,131			
E. coli	**7/2/20**	1,012			<10
Human *Bacteroides*	**7/2/20**	<354			<354
E. coli	**8/18/20**	1,137			
Human *Bacteroides*		433,000			
E. coli	**9/15/20**	6,867	<10	<10	<10
Human *Bacteroides*		<354	<354	47,200	<354
E. coli	**11/19/20**	1,789	41	41	41
Human *Bacteroides*		<354	<354	<354	<354

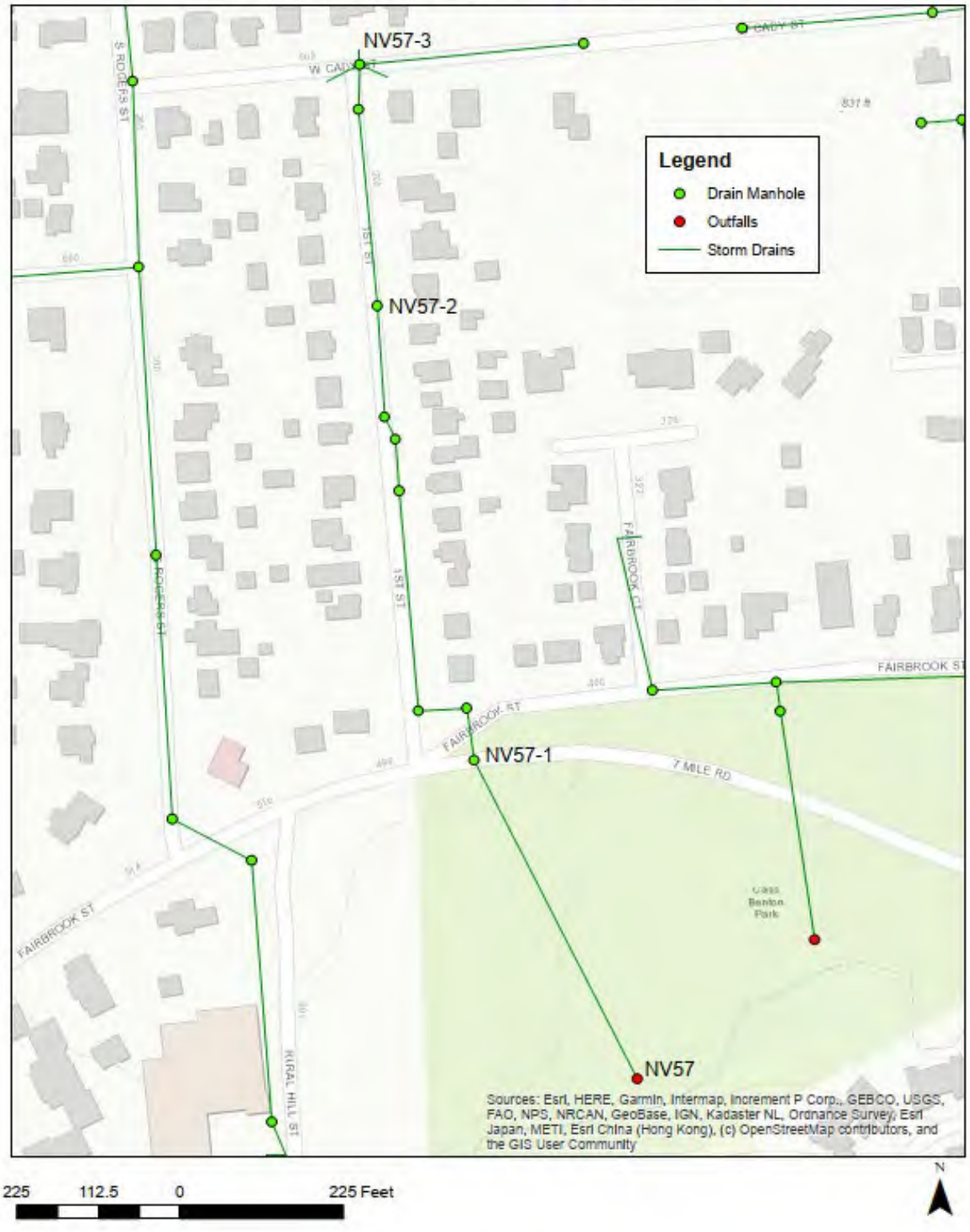
Conclusions and Recommendations

The high *Bacteroides* results from August and September 2020 indicate that sewage may be impacting the drain. However, the sewage source appears to be inconsistent, and we were not able to narrow it down within the drain. The recommended next steps are for the drain to be televised to determine the potential source of sewage. ARC staff will follow up with the City to request this work be completed in 2021.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or ademaria@ectinc.com.

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Figure 1: Storm Sewer and Sampling Locations for NV57



Annette DeMaria, P.E., PMP
Executive Director

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Commerce Twp.
Dearborn Heights
Farmington
Farmington Hills
Franklin
Garden City
Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
Northville
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Orchard Lake
Plymouth
Plymouth Twp.
Redford Twp.
Rochester Hills
Romulus
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Southfield
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TO: **Kate Richardson, City of Novi Plan Review Engineer**

FROM: **Annette DeMaria, Executive Director**

DATE: **September 4, 2020**

SUBJECT: **IDEP Investigation Results: Outfall NO23 (Park Ridge Court)**

Following cleaning of the storm drain on Park Ridge Court, the *E. coli* counts in the storm drain were no longer elevated. This indicates that the source of the high *E. coli* was the wildlife feces that had accumulated in manhole NO23-2.

Background

Outfall NO23 was investigated in 2019 by Alliance of Rouge Communities (ARC) staff due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. The 2019 investigations revealed wildlife feces accumulated in manhole NO23-2 and low concentrations of human *Bacteroides* (table 1).

The outfall drains a portion of Park Ridge Court which is a residential area north of 10 Mile Road and west of Meadowbrook Road (Figure 1). The receiving water is Walled Lake Branch which drains to the Middle Branch of the Rouge River.



Wildlife scat in Manhole NO23-2 in 2019

2020 Effort

On March 4, 2020, the City cleaned the storm drain along Park Ridge Court. ARC staff re-inspected the system the following day. Feces were no longer present in manhole NV23-2 and the *E. coli* concentration at the downstream manhole was much lower (Table 1).

Conclusions and Recommendations

Based on the information collected to date, the wildlife feces appear to be responsible for the elevated *E. coli* found in 2018 and 2019. We recommend that the City re-inspect and clean this manhole periodically if feces accumulate again. A suggested inspection frequency is monthly, but this should be modified based on the inspection findings. This will reduce water quality impacts to the river.

Table 1. Sampling Results for Park Ridge Court Storm Sewer

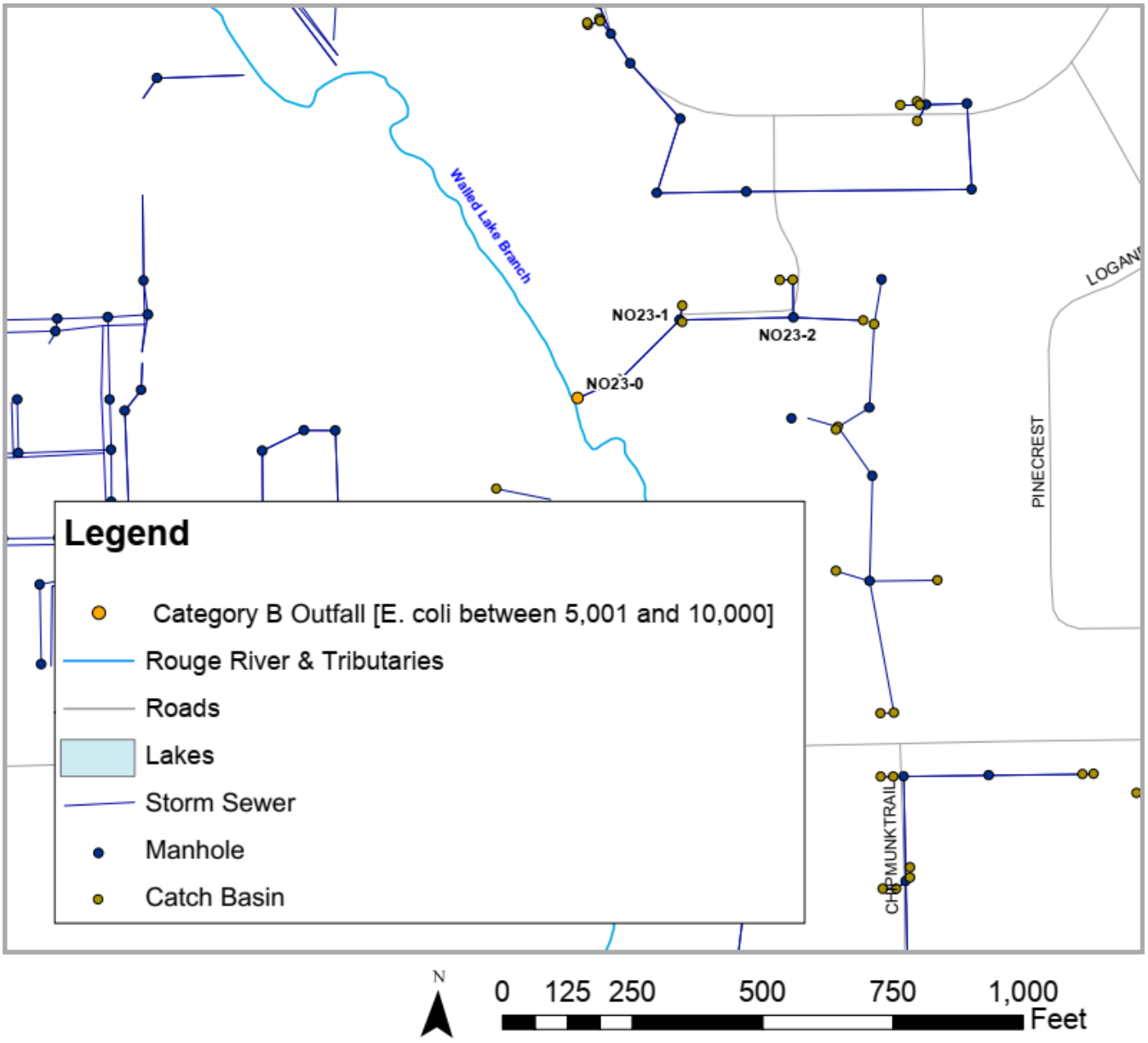
Structure	Location	*E. coli* (MPN/100 ml)		Surfactants (mg/l)	Human *Bacteroides* (gene copies/100 ml)	*E. coli* (MPN/100 ml)
		2018	12/13/19			3/5/20
NO23-0	Outlet to Walled Lake Branch	Submerged, not sampled				
NO23-1	Manhole 1 at west end of island	7,701	10,462	1.0	1,890	1,616
NO23-2	Manhole 2 east of manhole 1		Too little flow to sample			

This work was completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or ademaria@ectinc.com.

Attachment: Figure 1. Storm Sewer and Sampling Locations

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Figure 1. Storm Sewer Location



Appendix B4

2021 Oakland County IDEP Investigation Cat A and B Results Summary

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Executive Director

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Farmington Hills
Franklin
Garden City
Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
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Orchard Lake
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Redford Twp.
Rochester Hills
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Schoolcraft College
Southfield
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TO: **Karen Mondora, ARC Technical Committee Chair**

FROM: **Emily Levine, Technical Committee Coordinator**

DATE: **February 15, 2022**

SUBJECT: **2021 IDEP Investigation Summary**

In 2021, ARC staff investigated three suspicious outfall discharges in the Oakland County portion of the Rouge River Watershed. These outfalls were designated in the Category A and B priority levels for illicit discharge investigations. Of the three outfalls, two outfalls were determined to be likely impacted by animal feces, and one outfall will require additional source investigations in 2022. In addition, ARC staff completed follow-up sampling at two outfall locations to confirm that corrections made to illicit connections in 2020 had resolved the issues.

In 2021, ARC staff worked in two communities to conduct illicit discharge investigations in accordance with the Rouge River Collaborative Illicit Discharge Elimination Plan. These investigations were prompted by the outfall screening efforts conducted in 2018 and 2019 and were conducted in Beverly Hills and Northville.

The results of the investigations are summarized in Table 1. More detail can be found in the investigation reports which were sent to the communities (Attachment A).

Table 1. Status and Results of Illicit Discharge Investigations

Permittee	Outfall ID	Status	Result
Beverly Hills	BV66	Completed	Resampling confirmed effective correction to illicit connection
Beverly Hills	BV51	Ongoing	Further investigation required
Northville	NV03	Completed	Resampling confirmed effective correction to illicit connection
Northville	NV22	Completed	Animal source suspected
Northville	NV57	Completed	Animal source suspected

In addition, ARC staff partnered with Wayne County to conduct investigations in Inkster because of elevated instream E. coli results found in the Lower Rouge in 2020. This involved sampling in the Perrin Drain and walking the Lower Rouge between Inkster Road and Beech Daly to investigate outfalls. These investigations revealed high *E. coli* that may be the result of an illicit connection.

In 2022, ARC staff will continue source investigations on the outstanding issues in accordance with the Plan and as directed by the Technical Committee. This will also include assisting Wayne County with investigations in Livonia.

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Attachment A
Community-specific Investigation Reports

Annette DeMaria, P.E., PMP
Executive Director

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Beverly Hills
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Birmingham
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Commerce Twp.
Dearborn Heights
Farmington
Farmington Hills
Franklin
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TO: **Mike Domine, City of Northville**

FROM: **Emily Levine, ARC Staff**

DATE: **August 5, 2021**

SUBJECT: **IDEP Investigation Results: Outfall NV57**

ARC staff conducted an illicit discharge investigation on storm drain outfall NV57 in response to findings from the ARC's 2018 outfall screening and follow-up sampling conducted in 2019, and 2020. We suspect that *E. coli* from non-sewage sources were likely contained in the sediment built up in the storm drain near West Cady Street and First Street because removal of that sediment appears to have corrected the issue. If construction continues in the area, ARC Staff recommends monitoring the storm drain for additional sediment build up and cleaning it out when observed.

Background

Manhole NV57-1 was investigated due to high *E. coli* concentration (3,876 MPN/100 ml) found during an outfall screening conducted June 8, 2018. ARC staff reinspected manhole NV57-1 on August 15, 2019 and found an *E. coli* concentration of 6,131 MPN/100 ml. ARC staff reinspected manholes and collected samples from three upstream manholes to narrow down possible sources of *E. coli* contamination in 2020 (Table 1). Although these efforts yielded inconsistent results, the August data did show a strong sewage signal at manhole NV57-1 as demonstrated by the very high Bacteroides results. There were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain during any of these sampling events. Likewise, there were no obvious signs of animal fecal impacts to the drain.

The outfall drains First Street and a portion of West Cady Street, north of Seven Mile Road. The receiving water is Johnson Drain, which feeds into the Walled Lake Branch of the Middle Rouge River (See Figure 1).

Results

ARC staff coordinated with the City of Northville to televise the storm drain line along First Street on April 21, 2021. Except for a section near West Cady Street and a section in the middle of the block which were blocked by sediment, the storm drain line along First Street from 7 Mile Road to West Cady Street was televised. A tap that appeared to be from a downspout on a house and a connection that appeared to be from a sump pump were identified. No other connections were identified.

The storm drain along West Cady Street to the east of First Street had too much sediment for televising. Manhole NV57-1 was sampled that day and high *E. coli* concentrations were found. Additional samples collected on April 29, 2021 found high *E. coli* concentrations and low Bacteroides results, except for NV57-2, which had high Bacteroides results. The City of Northville cleaned out the storm drain near West Cady Street in June of 2021. ARC staff resampled NV57-1 and sampled NV57-4 after the drain was cleaned out and found low *E. coli* levels.

Until April of 2021, samples were analyzed by Michigan State University's Department of Fisheries & Wildlife for the *B. theta* marker to determine whether contamination was human in origin. Starting in April of 2021, samples were analyzed by Oakland University's laboratory for the HF183 biomarker to determine whether contamination was human in origin. Both *B. theta* and HF183 are microbial source tracking methods used for identifying if bacteria are from the human intestinal track.

Table 1. Sampling Results

Structure		**NV57-1**	**NV57-2**	**NV57-3E**	**NV57-3N**	**NV57-3**	**NV57-1A**	**NV57-4**
Location		Manhole at corner where Fairbrook St meets 7 Mile Rd	Manhole located in front of 320 and 310 1st St	East inlet to NV57-3	North inlet to NV57-3	Manhole at W Cady St and 1st St	Manhole at the south end of 1st St	Manhole in driveway of 487 W Cady St
E. coli	**6/8/18**	3,876						
E. coli	**8/15/19**	6,131						
E. coli	**7/1/20**	1,012			<10			
Human Biomarker		<354			<354			
E. coli	**8/18/20**	1,137						
Human Biomarker		433,000						
E. coli	**9/15/20**	6,867	<10	<10	<10			
Human Biomarker		<354	<354	47,200	<354			
E. coli	**11/17/20**	1,789	41	41	41			
Human Biomarker		<354	<354	<354	<354			
E. coli	**4/21/21**	14,210						
E. coli	**4/29/21**	6,131	>24,196			143	10,112	
Human Biomarker		113	36,695				<95	
E. coli	**7/28/21**	410						<1

Conclusions and Recommendations

Since *E. coli* can thrive in dark and wet conditions, the excessive amount of sediment in the storm drain along West Cady Street was likely harboring *E. coli* and contributing to the high *E. coli* in the stormwater. Given the inconsistent sample results, buildup of sediment in the storm drain, lack of suspicious connections to the storm drain and lack of sanitary debris, we suspect that the most likely source of the *E. coli* in the sediment was animals and not sewage. Given that there were no obvious signs of animal sources to the drain, ARC Staff recommends monitoring the storm drain for

excessive sediment build up and cleaning it out when build up appears to prevent water quality issues in the stormwater.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or elevine@ectinc.com.

Attachment: Figure 1. Storm Drain and Sampling Location

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Figure 1. Storm Drain and Sampling Locations



Annette DeMaria, P.E., PMP
Executive Director

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TO: **Mike Domine, City of Northville**

FROM: **Emily Levine, ARC Staff**

DATE: **August 5, 2021**

SUBJECT: **IDEP Investigation Results: Outfall NV22**

ARC staff conducted an illicit discharge investigation on storm drain outfall NV22 in response to findings from the ARC's 2018 outfall screening and follow-up sampling conducted in 2019 and 2020. Although our investigations did not reveal the source of *E. coli* entering the drain, we do not believe that the source is sewage. Therefore, no further actions are recommended at this time.

Background

Outfall NV22 was investigated due to high *E. coli* concentration (2,755 MPN/100 mL) found during an outfall screening conducted June 7, 2018. There was no observed color, odor, turbidity, or other unusual characteristics noted during the initial screening.

ARC staff reinspected the outfall on August 15, 2019 and found higher *E. coli* concentrations (>24,196 MPN/100 mL) and similar conditions as seen in the original inspection, with low flow noted (Table 1). The outfall was reinspected on July 1 and August 18, 2020 and lower *E. coli* levels were found compared to the original inspection. Water samples were taken from the outfall and from two pipes in an upstream manhole in an effort to narrow down possible sources of *E. coli* contamination. These samples were also tested for Human *Bacteroides*, which were only found at low levels.

The outfall drains a portion of Allen Drive, Novi Street, and other adjoining streets north of Eight Mile Road. The receiving water is the Walled Lake Branch of the Middle Rouge River (See Figure 1).

Results

ARC staff inspected upstream manholes on April 29, 2021 and found elevated concentrations of *E. coli* and the HF183 human biomarker at manhole NV22-1. Low *E. coli* concentrations were found at manhole NV22-2N, and elevated *E. coli* with low HF183 concentrations (typically indicative of animal sources) were found at manhole NV-22-2.

On May 11, 2021, ARC staff coordinated with the City of Northville to televise all inlet connections to manhole NV22-1. This included televising north from NV22-1 to NV22-1N, east to outfall NV22-0, south to where Allen Drive bends and the storm drain stops, and west to NV22-2. No suspicious connections were identified. Follow-up sampling on June 1, 2021 found low *E. coli* levels. No odors or visual indicators of sewage have been observed during these investigations.

Until April of 2021, human biomarker samples were analyzed by Michigan State University's Department of Fisheries & Wildlife for the *B. theta* marker to determine whether contamination was human in origin. Starting in April of 2021, samples were analyzed by Oakland University's laboratory for the HF183 biomarker to determine whether contamination was human in origin. Both *B. theta* and HF183 are microbial source tracking methods used for identifying if bacteria are from the human intestinal track.

Table 1. Sampling Results

Structure		**NV22-0**	**NV22-1**	**NV22-2**	**NV22-2N**	**NV22-2W-N**	**NV22-2W-W**
Location		Outfall	Manhole in the grass in front of 883 Allen Dr	Manhole in Novi St, south of Hill St	Manhole in the street near 985 Allen Dr	North inlet to NV22-2W	West inlet to NV22-2W
E. coli	**6/7/18**	2,755					
E. coli	**8/15/19**	>24,196					
E. coli	**7/1/20**	108				404	201
Human Biomarker		582				747	
E. coli	**8/18/20**	<10					
Human Biomarker		<354					
E. coli	**4/29/21**		>24,196	10,112	256		
Human Biomarker			24,800	109			
E. coli	**6/1/21**		52			41	

Conclusions and Recommendations

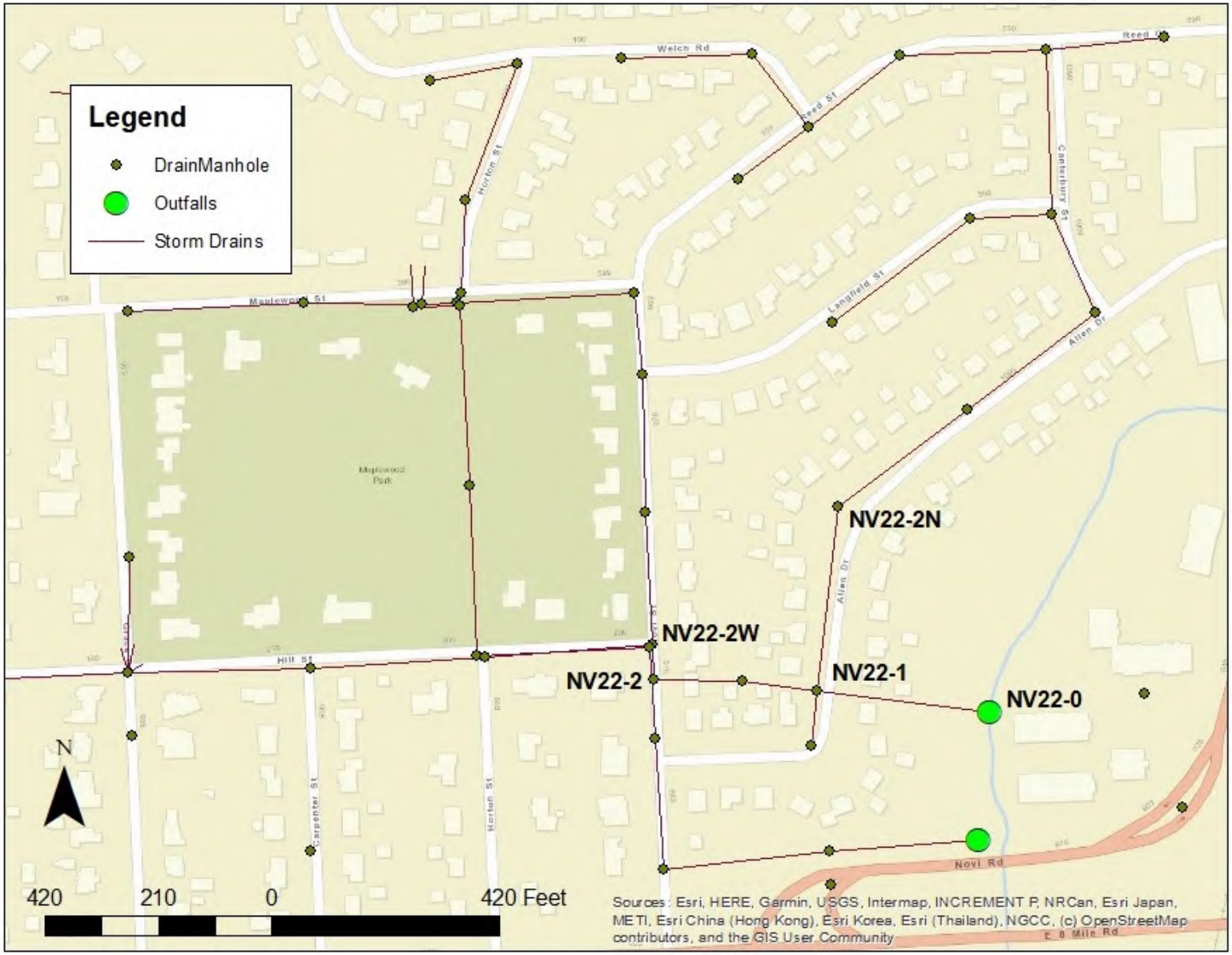
Based on the data collected and investigations conducted to date, we suspect that the source of the high *E. coli* was from animal feces, rather than from sewage. This determination is made because the high *E. coli* levels generally coincided with low Human Bacteroides levels which indicates that the *E. coli* is not from a human source. In addition, no identifiable illicit connections have been found after a thorough investigation of this storm drain system and no signs of sanitary debris were found in the storm drain. Given that there were no obvious signs of animal sources to the drain or identifiable illicit connections, no further action is recommended at this time.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or elevine@ect.com.

Attachment: Figure 1. Storm Drain and Sampling Locations

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Figure 1. Storm Drain and Sampling Locations



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Executive Director

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TO: **Kevin Lawrence, Village of Beverly Hills Director of Public Services**

FROM: **Emily Levine, ARC Staff**

DATE: **August 5, 2021**

SUBJECT: **IDEP Investigation Results: Outfall BV51 (Sleepy Hollow Lane)**

ARC staff continued illicit discharge investigation on storm drain outfall BV51 in response to findings from the 2018 outfall screening and 2019 and 2020 investigations. Our investigations did not reveal the source of *E. coli* entering the drain; therefore, we will continue investigations in 2022.

Background

Outfall BV51 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was 3,076 MPN/100 ml which can be indicative of an illicit discharge containing sanitary sewage. ARC staff reinspected the outfall in 2019 and found *E. coli* concentrations at 201 and >24,196 MPN/100 ml respectively.

ARC staff reinspected the outfall on August 19, September 15, and November 17, 2020. As was the case in 2019, the results varied greatly in 2020, with *E. coli* concentrations of 573, >24,196, and 1,081 MPN/100 ml respectively (See Table 1). The results from the September and November sampling events showed Human *Bacteroides* concentrations of 72,000 and <354 gene copies/100 ml respectively. There were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain in the outfall or any of the manholes. Likewise, there were no obvious signs of animal fecal impacts to the drain.

The outfall drains a portion of Sleepy Hollow Lane, Fiddlers Cove Road, and Metamora Lane. The receiving water is an unnamed tributary of the Rouge River (Figure 1).

Results

Based on sampling results from previous inspections, ARC staff coordinated with the Oakland County Water Resource Commissioner (OCWRC) to televise the drain west of Outfall BV51 on May 19, 2021. Only the west line was televised because flow had not been observed coming from the north and south during dry weather. A tap was identified in the storm drain that was believed to be a possible illicit connection, although no staining or evidence of sewage was observed (Figure 2). Based on the pipe's location and direction, it appeared to be coming from the house at 31349 Sleepy Hollow Lane. On July 23, 2021, ARC staff coordinated with the Village of Beverly Hills to dye test 31349 Sleepy Hollow Lane. The dye testing revealed that all three bathrooms in the house were correctly connected to the sanitary drain and no dye was observed entering the storm drain.

Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

	E. coli	***E. coli***	***E. coli***	***E. coli***	***E. coli***	**Human *Bacteroides***	***E. coli***	**Human *Bacteroides***
	7/9/18	**8/15/19**	**9/19/19**	**8/19/20**	**9/15/20**	**9/15/20**	**11/17/20**	**11/17/20**
BV51-0	3,076	201	>24,196	573	>24,196	72,000	1,081	<354

Conclusions and Recommendations

Work to date indicates that there is not an illicit connection downstream of BV51-1. However, the data suggests that upstream illicit connections may exist. Therefore, ARC staff recommends resampling the outlet up to two more times in 2022 for both *E. coli* and *Bacteroides* (only if the E. coli is elevated). If another set of high *E. coli* and *Bacteroides* results are found, we suggest televising the drain upstream of BV51-1 to determine if any suspicious connections are found. If so, dye testing should be performed to determine the nature of the connection. If another set of high *E. coli* and *Bacteroides* results are not found, we recommend closing out the investigation.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the Village's MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or elevine@ectinc.com.

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Figure 1. Storm Drain and Sampling Locations

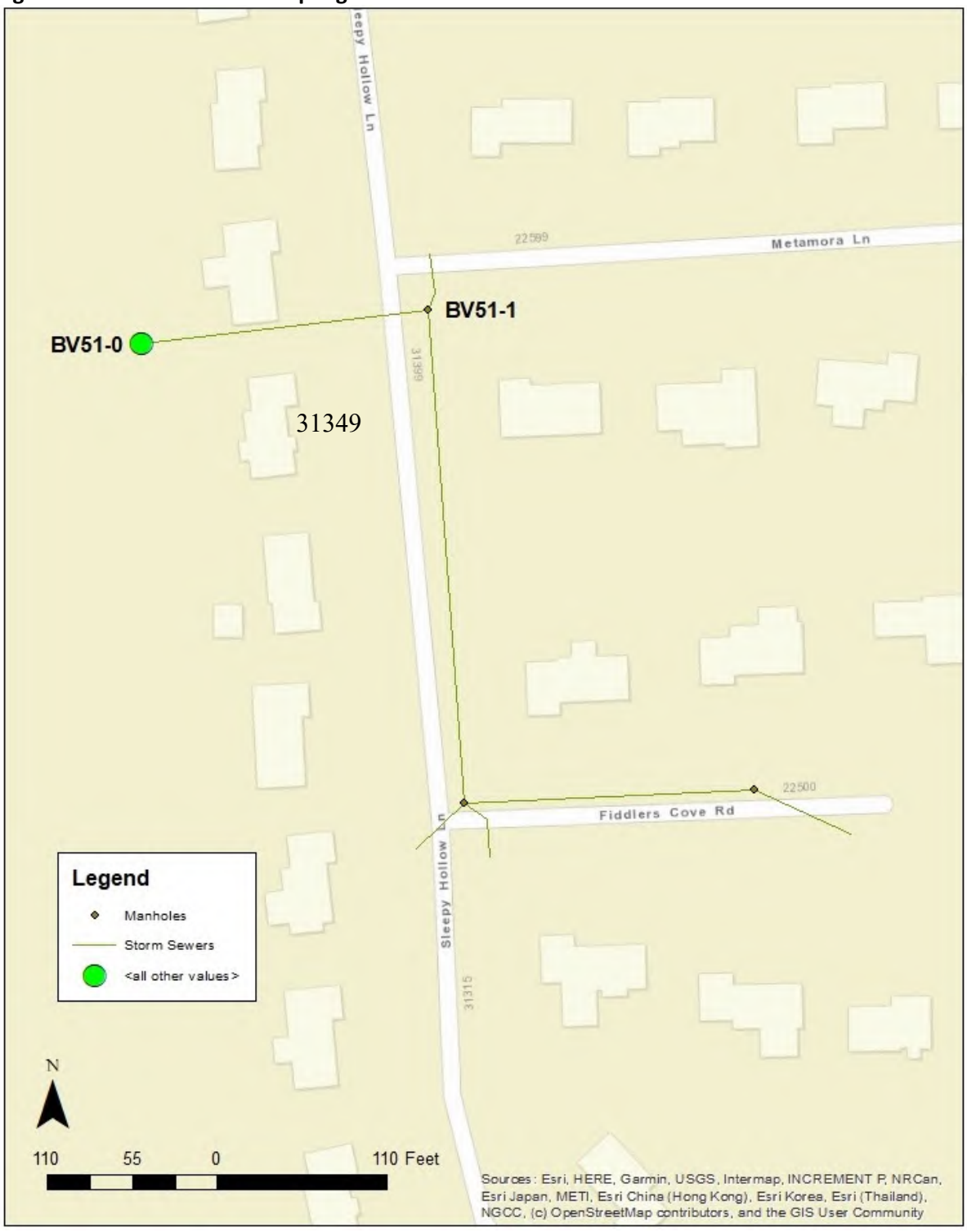


Figure 2. Tap to Storm Drain at 14.2 ft east of BV51-0



Appendix B5

Bloomfield Township Investigation Records

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	01-02		
Date of Observation:	9 / 21 / 2020	Time:	12:50 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention Basin at south end of Shaker Heights Dr.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: Holding water from downstream.

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	03-01		
Date of Observation:	9 / 21 / 2020	Time:	1:15 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): In front of 43034 Woodward (Moose Preserve)

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present) ☑ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☑	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☑ Other: leaves	☑ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	4 MPN/100ml		
pH / Temperature	☑	pH Level: 7.93	Temperature (F): 71.8	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	04-01
Date of Observation:	9 / 17 / 2020 — Time: 2:00 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☑ Institutional
- ☐ Open Space
- ☐ Woods

Other: Fire Statioin No. 4

Known Industries: _____

Notes (e.g. origin of outfall, if known): North side of fire station at 2389 Franklin Rd.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 6 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Only fire station downspouts and surface drainage discharge to it.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	04-02		
Date of Observation:	9 / 21 / 2020	Time:	1:35 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): North of entrance to 43902 Woodward

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 30 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Stagnant water in invert. No flow.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	06-01
Date of Observation:	9 / 17 / 2020 — Time: 2:25 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention Basin outlet on Kemp Road

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 8 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☑ Yes ☐ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☑	☑ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

☑	Unlikely
☐	Potential (Presence of two or more indicators)
☐	Suspect (One or more indicators with a severity of 3)
☐	Obvious
Comments:	Outfall holding water due to level of lake. Upstream structures into basin have no flow.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments:	_____	Date Observed:	__/___/ ___
	_____	Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Manhole upstream of detention basin



Outlet of storm sewer downstream of basin



Outfall submerged

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	06-02
Date of Observation:	9 / 17 / 2020 — Time: 2:45 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: Retention Pond

Known Industries: _____

Notes (e.g. origin of outfall, if known): Retention pond for Meadowlands of Bloomfield

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 36 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☐ Partially ☑ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: Outfall submerged. Upstream strucures holding water.

Section 8: General Comments

Comments: Retention Basin may need to be dredged.

Section 9: Reporting Information

Comments:	_____	Date Observed:	__/___/ ___
	_____	Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Submerged Outfall



Retention Pond

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	08-01		
Date of Observation:	9 / 21 / 2020	Time:	3:07 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): South of house at 1471 Franklin Road

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☐ Partially ☑ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☐ Trickle ☑ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	58 MPN/100ml		
pH / Temperature	☑	pH Level: 8.08	Temperature (F): 69.3	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

☑	Unlikely
☐	Potential (Presence of two or more indicators)
☐	Suspect (One or more indicators with a severity of 3)
☐	Obvious
Comments:	Surface runoff sewer from Forest Lake Golf Club and Club Road.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments:	

Section 8: General Comments

Comments:	Water sample taken for E. Coli, and temperature and pH taken.

Section 9: Reporting Information

Comments:		Date Observed:	__/___/ ___
		Time Observed:	
Investigated By:		Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	11-01		
Date of Observation:	9 / 22 / 2020	Time:	1:15 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention Basin access off Bridlepath Court

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: _____ in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☐ Trickle ☑ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☐ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	162 MPN/100ml		
pH / Temperature	☑	pH Level: 7.79	Temperature (F): 66.5	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: No smell, color, or floatables.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments:	_____	Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Basin inlet on North side



Basin inlet on west side



Basin outlet on south side



Basin Overflow Structure on south side



Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	11-02		
Date of Observation:	9 / 21 / 2020	Time:	4:30 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	
Land Use in Drainage Area (Check all that apply):	☐ Industrial ☐ Ultra-Urban Residential ☑ Suburban Residential ☐ Commercial	☐ Institutional ☐ Open Space ☐ Woods Other: _____ Known Industries: _____	
Notes (e.g. origin of outfall, if known):	Crofton Court detention basin		

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 15 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	
Is Flow Present?	☐ Yes	☑ No	**(If No, Skip to Section 5)**	
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial	
	Description Details: _____			

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Located 15" inlet pipe into basin, but not 6" outlet pipe.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	12-01		
Date of Observation:	9 / 22 / 2020	Time:	2:15 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Detention basin for Hidden Pines sub

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 42 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details:

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Detention pond holding water. Not up to outlet.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	12-02
Date of Observation:	9 / 22 / 2020
Time:	2:25 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Retention area off Westview Rd and west of Westman Ct

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 18 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: No flow from outlet. No water in retention pond.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	13-02		
Date of Observation:	9 / 22 / 2020	Time:	2:45 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known):

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☐ Circular ☐ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: _____ in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☑ Open Drainage (Channel)	☐ Concrete ☑ Earthen ☐ Rip-Rap ☐ Other: _____	☑ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: 2 ft. Top Width: 4 ft. Bottom Width: 1 ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present): ☐ Trickle ☑ Moderate ☐ Substantial

Description Details: Flowing stream

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	83 MPN/100ml		
pH / Temperature	☑	pH Level: 8.05	Temperature (F): 68.1	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Flowing stream. Nothing Unusual.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	16-04
Date of Observation:	9 / 23 / 2020 — Time: 3:05 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☑ Institutional
- ☐ Open Space
- ☐ Woods
- Other: _____
- Known Industries: _____

Notes (e.g. origin of outfall, if known): CB in Township campus entrance south of Police.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☑ Other: Clay	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 8 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: _____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	18-01		
Date of Observation:	9 / 21 / 2020	Time:	2:40 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Storm sewer under tennis court.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Only surface drainage. No buildings to tie in.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: Trickle from private storm sewer. Not from Twp. Sewer.

Section 9: Reporting Information

Comments:	_____	Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	18-02		
Date of Observation:	9 / 21 / 2020	Time:	2:15 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Storm sewer along north side of condos

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☑ Yes ☐ No **(If No, Skip to Section 5)**

Flow Description (If present) ☑ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☑	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☑ Other: soap	☑ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☑ Yes ☐ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☑	>2420 MPN/100ml		
pH / Temperature	☑	pH Level: 8.18	Temperature (F): 70.7	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

☐	Unlikely
☐	Potential (Presence of two or more indicators)
☑	Suspect (One or more indicators with a severity of 3)
☐	Obvious
Comments:	_Smelled soap in manhole._____

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments:	East inlet in manhole has trickle. West inlet does not._____

Section 8: General Comments

Comments:	_____

Section 9: Reporting Information

Comments:	E.coli sample came back with high results. Further investigation will be done to determine source.	Date Observed:	9/23/2020
		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	19-01		
Date of Observation:	9 / 17 / 2020	Time:	4:05 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Enclosed ditch on east side of 1671 Keller Lane

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 30 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: No flow and upstream ditch is dry.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Upstream end of enclosed ditch/sewer



Downstream end of enclosed ditch/sewer

Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	20-01		
Date of Observation:	9 / 17 / 2020	Time:	4:25 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Outfall on east side of safety path on Franklin Road

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 18 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Outlet for dry detention area.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: Broken off animal grate

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___



Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	20-02		
Date of Observation:	9 / 17 / 2020	Time:	4:35 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known):

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: 165' of pipe enclosing ditch

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	21-01
Date of Observation:	9 / 17 / 2020 — Time: 9:30 am
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Outfall for Overlea Court storm sewer

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☐ CMP ☑ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 15 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☐ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☑	☐ Excessive ☑ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Storm sewer on Overlea Court.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	25-01		
Date of Observation:	9 / 22 / 2020	Time:	3:30 pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Inspected manhole in parking lot.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 12 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Parking lot storm sewer manhole. Could not locate catch basin in green space.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	25-02		
Date of Observation:	9 / 22 / 2020	Time:	3:18pm
Name(s) of Investigator(s):	Cory Borton		
Has it rained over 0.10 in. in last 72 hours?	☐ Yes	☑ No	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods
- Other: _____
- Known Industries: _____

Notes (e.g. origin of outfall, if known): Inspected catch basin SE of dumpsters.

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ PVC ☐ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 15 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☑ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Parking lot storm sewer.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Dry - Weather Screening Field Observation Form

Section 1: Background Data

Outfall ID / Location:	29-01
Date of Observation:	9 / 23 / 2020 — Time: 3:18 pm
Name(s) of Investigator(s):	Cory Borton
Has it rained over 0.10 in. in last 72 hours?	☐ Yes ☑ No

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Open Space
- ☐ Woods

Other: _____

Known Industries: _____

Notes (e.g. origin of outfall, if known): Outfall on north side of driveway for 5575 Forman

Section 2: Discharge Structure Description

LOCATION	MATERIAL	SHAPE	DIMENSION	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ CMP ☐ HDPE ☐ Steel ☐ Other:_____	☑ Circular ☑ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other: ____ Other: _____	Circular Pipe Dimensions: Dia: 24 in. Elliptical Pipe Dimensions: Width: _____ in. Height: _____ in.	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open Drainage (Channel)	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other:_____	Depth: _____ ft. Top Width: ____ft. Bottom Width: _____ft.	

Is Flow Present? ☐ Yes ☑ No **(If No, Skip to Section 5)**

Flow Description (If present) ☐ Trickle ☐ Moderate ☐ Substantial

Description Details: _____

Section 3: Physical Indicators for Flowing Outfalls Only

Are any physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 4)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	RELATIVE SEVERITY INDEX
Odor	☐	☐ Sewage ☐ Rancid/Sour ☐ Sulfide ☐ Petroleum/Gas ☐ Other: _____	☐ 1 - Faint ☐ 2 - Easily Detected ☐ 3 - Noticeable from a Distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other: _____	☐ 1 - Faint Colors ☐ 2 - Somewhat Visible ☐ 3 - Clearly Visible

Water Clarity	☐		☐ 1 - Slight Cloudiness ☐ 2 - Cloudy ☐ 3 - Opaque
Floatables (Does not include trash)	☐	☐ Sewage (toilet paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other: _____	☐ 1- Few or slight; origin not obvious ☐ 2 - Some; indication of origin (possible suds or oil sheen) ☐ 3 - some; origin clear (obvious oil sheen, suds, or floating sanitary material)

Section 4: Non-Physical Indicators for Flowing Outfalls Only

Are any non - physical indicators present in the flow? ☐ Yes ☑ No **(If No, Skip to Section 5)**

INDICATOR	CHECK IF PRESENT	METER READING		RELATIVE SEVERITY INDEX
Ammonia	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Conductivity	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Fluoride	☐			☐ 1 - Low ☐ 2 - Medium ☐ 3 - High
Salinity	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
Surfactants	☐			☐ 1- Low ☐ 2 - Medium ☐ 3 - High
E. Coli	☐			
pH / Temperature	☐	pH Level	Temperature (F)	☐ 7 to 0 Increasingly Acidic ☐ 7 to 14 Increasingly Alkaline

Section 5: Physical Indicators for Both Flowing and Non-Flowing Discharge Structures

Are any physical indicators that are not related to flow present? ☐ Yes ☑ No **(If No, Skip to Section 6)**

INDICATOR	CHECK IF PRESENT	DESCRIPTION	COMMENTS
Discharge Structure Damage	☐	☐ Spalling, Cracking, or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits / Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other: _____	
Vegitative Condition	☐	☐ Excessive ☐ Inhibited	
Biology	☐	☐ Bacterial Sheen ☐ Algae ☐ Slimes ☐ Other: _____	

Section 6: Overall Discharge Characterization

- [x] Unlikely
- [ ] Potential (Presence of two or more indicators)
- [ ] Suspect (One or more indicators with a severity of 3)
- [ ] Obvious

Comments: Drains Forman Road and overflow for wetland area.

Section 7: Non-Illicit Discharge Concern (e.g. illegal dumping, spills, trash or needed repairs)

Comments: _____

Section 8: General Comments

Comments: _____

Section 9: Reporting Information

Comments: _____		Date Observed:	__/___/ ___
_____		Time Observed:	_____
Investigated By:	_____	Date Reported:	__/___/ ___





Appendix B6

Canton Township Investigation Records

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Administration Building

Section #: 21 Photograph #: _____ Date: 1-10-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-7 Storm Sewer

1. Creek Name: Mott Drain
2. Size: 26"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil_

Color: None X Yellow ____ Brown ____ Gre

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____

Deposits/stains: None X Sediment ____ Oily_

Vegetation conditions: Normal X Inhibited gr

Extent: _____

2021 INSPECTIONS Were Done EARLY 2022

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalli

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Links at Pheasant Run Condos

Section #: 28 Photograph #: _____ Date: 1-10-22 Crew Initials: _____

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-6

1. Creek Name: Mott Drain
2. Size: 18"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Hodin Park

Section #: 14 Photograph #: _____ Date: 1-10-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-5A

1. Creek Name: Fellows Creek
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Flodin Park

Section #: 14 Photograph #: _____ Date: 1-10-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: I-5B

1. Creek Name: Fellows Creek
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Sheldon Road Wetland

Section #: 3 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 30 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 1-1

1. Creek Name: Willow Creek
2. Size: 24"
3. Material: Metal
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Canton Public Library

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-5A

1. Creek Name: Mill Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Public Library

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-5B

1. Creek Name: Mott Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Public Library

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-5C

1. Creek Name: Mott Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Heritage Park

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-4A

1. Creek Name: Mott Drain
2. Size: 10"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Heritage Park

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-4B

1. Creek Name: Mott Drain
2. Size: 10"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Heritage Park

Section #: 21 Photograph #: _____ Date: 1-13-22 Crew Initials: CH

Weather: Air temp.: 32° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-4C

1. Creek Name: Mott Drain
2. Size: 10"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Grounds Maintenance Building

Section #: 21 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: _____

1. Creek Name: Mott Drain
2. Size: 36"
3. Material: Metal
4. Flow/Depth on Flow in Pipe: 4" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Griffin Park

Section #: 15 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-6A

1. Creek Name: Green Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Griffin Park

Section #: 15 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-6B

1. Creek Name: Green Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 6" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Griffin Park

Section #: 15 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 8° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-6C

1. Creek Name: Green Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Independence Park

Section #: 19 Photograph #: _____ Date: 1-11-22 Crew Initials: CH

Weather: Air temp.: 10° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-2

1. Creek Name: Lower Rouge River
2. Size: 24"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Softball Center

Section #: 33 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 30° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-8A

1. Creek Name: Rich Draw
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Canton Softball Center

Section #: 33 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 30° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 3-8B

1. Creek Name: Rich Drain
2. Size: 12"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Old Human Resources Building

Section #: 34 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-4

1. Creek Name: Rich Drain
2. Size: _____
3. Material: ~~Concrete~~ Under Road Storm Sewer
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Old Township Hall

Section #: 34 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 28° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-3

1. Creek Name: Rich Drain
2. Size: 36"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Canton HR Resources Building

Section #: 18 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 25° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 2-1

1. Creek Name: Lower Rouge River
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: ~~1~~" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Canton DPW

Section #: 34 Photograph #: _____ Date: 1-14-22 Crew Initials: CH

Weather: Air temp.: 28° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-5

1. Creek Name: Fisher & Leng Drain & McKinstry Drain
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 29 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-10

1. Creek Name: Lower Rouge River
2. Size: 6
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 29 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-11

1. Creek Name: Lower Rouge River
2. Size: 24"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 2" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CF

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-13

1. Creek Name: Lower Rouge
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find.

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO ____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #:_____ Date:_____ Crew Initials:_____

Weather: Air temp.: 18 Rain: Yes____ No X Sunny X Cloudy____

OUTFALL #: 3-14

1. Creek Name: Lower Rouge River
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:_____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-15

1. Creek Name: _____
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO ____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: ~~Lower Rouge~~ 3-16

1. Creek Name: Lower Rouge River
2. Size: @ 36"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 4" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-17

1. Creek Name: Lower Range River
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 4" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-18

1. Creek Name: Lower Rouge
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20-29 Photograph #: _____ Date: 1-5-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-19

1. Creek Name: Lower Rouge
2. Size: 32"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Pheasant Run Golf Course

Section #: 20-29 Photograph #: _____ Date: 1-6-22 Crew Initials: _____

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 3-20

1. Creek Name: Lower Rouge River
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find.

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None ____ Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None ____ Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None ____ Cloudy ____ Opaque ____

Floatables: None ____ Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None ____ Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None ____ Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO ____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Pheasant Run Golf Course

Section #: 20-29 Photograph #:_____ Date: 1-6-22 Crew Initials:_____

Weather: Air temp.: 20 Rain: Yes____ No X Sunny X Cloudy____

OUTFALL #: 3-21

1. Creek Name: Lower Rouge River
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

_____

Stream conditions: _____

_____

Additional Observations: _____

_____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Barchester Park

Section #: 11 Photograph #: _____ Date: 1-6-22 Crew Initials: CH

Weather: Air temp.: 20° Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-2

1. Creek Name: Willow Creek
2. Size: 48"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: — (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

Location: Fire Station #2

Section #: 11 Photograph #: _____ Date: 1-6-22 Crew Initials: CH

Weather: Air temp.: 18 Rain: Yes ____ No X Sunny X Cloudy ____

OUTFALL #: 1-3

1. Creek Name: Tonquish Creek
2. Size: 3"-4"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Koppernick Pond

Section #: 12 Photograph #: _____ Date: 1-6-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 1-4

1. Creek Name: Tonquish Creek
2. Size: ~~12"~~ 24"
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 3" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal ____ Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Freedom Park

Section #: 22 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28° Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-2

1. Creek Name: MTT Drain
2. Size: Storm Sewer M.H.
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek . Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-6

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellows Creek, Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: 4-7

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____ Sewage____ Sufide____ Oil____ Gas____ Rancid-sour____ Other____

Color: None____ Yellow____ Brown____ Green____ Red____ Gray____ Other____

Turbidity: None____ Cloudy____ Opaque____

Floatables: None____ Petroleum____ Sheen____ Sewage____ Other____ (collect samples)

Deposits/stains: None____ Sediment____ Oily____ Describe:____ (collect samples)

Vegetation conditions: Normal____ Inhibited growth____ Excessive growth____

Extent: _____

Damage to outfall structures:

None____ Concrete cracking____ Concrete Spalling____ Peeling paint____ Metal corrosion____

Other damage:_____ Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-8 Can't Find

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-9

1. Creek Name: Fellows Creek
2. Size: 8"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-12-22 Crew Initials: CH

Weather: Air temp.: 20 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: 4-10

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____ Sewage____ Sufide____ Oil____ Gas____ Rancid-sour____ Other____

Color: None____ Yellow____ Brown____ Green____ Red____ Gray____ Other____

Turbidity: None____ Cloudy____ Opaque____

Floatables: None____ Petroleum____ Sheen____ Sewage____ Other____ (collect samples)

Deposits/stains: None____ Sediment____ Oily____ Describe:____ (collect samples)

Vegetation conditions: Normal____ Inhibited growth____ Excessive growth____

Extent: _____

Damage to outfall structures:

None____ Concrete cracking____ Concrete Spalling____ Peeling paint____ Metal corrosion____

Other damage:_____ Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-11

1. Creek Name: Fellow Creek
2. Size: 24
3. Material: Concrete
4. Flow/Depth on Flow in Pipe: 1" (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #:_____ Date:_____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: ~~1~~ 4-12

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-13

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CH

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-14

1. Creek Name: Fellows Creek
2. Size: 4
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: _____ Crew Initials: CF

Weather: Air temp.: 25 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-15

1. Creek Name: Fellows Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

OUTFALL INVESTIGATION REPORT

CANTON Community

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-16

1. Creek Name: Fellow Creek
2. Size: 4"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage ____ Sufide ____ Oil ____ Gas ____ Rancid-sour ____ Other ____

Color: None X Yellow ____ Brown ____ Green ____ Red ____ Gray ____ Other ____

Turbidity: None X Cloudy ____ Opaque ____

Floatables: None X Petroleum ____ Sheen ____ Sewage ____ Other ____ (collect samples)

Deposits/stains: None X Sediment ____ Oily ____ Describe: ____ (collect samples)

Vegetation conditions: Normal X Inhibited growth ____ Excessive growth ____

Extent: _____

Damage to outfall structures:

None X Concrete cracking ____ Concrete Spalling ____ Peeling paint ____ Metal corrosion ____

Other damage: _____ Extent _____

ANALYSES

Known industrial or commercial uses in drainage area? Yes ____ No ____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES ____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: 4-17

1. Creek Name: Fellow Creek
2. Size: 6"
3. Material: Plastic
4. Flow/Depth on Flow in Pipe: _____ (inches)

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None X Sewage____ Sufide____ Oil____ Gas____ Rancid-sour____ Other____

Color: None X Yellow____ Brown____ Green____ Red____ Gray____ Other____

Turbidity: None X Cloudy____ Opaque____

Floatables: None X Petroleum____ Sheen____ Sewage____ Other____ (collect samples)

Deposits/stains: None X Sediment____ Oily____ Describe:_____ (collect samples)

Vegetation conditions: Normal X Inhibited growth____ Excessive growth____

Extent: _____

Damage to outfall structures:

None X Concrete cracking____ Concrete Spalling____ Peeling paint____ Metal corrosion____

Other damage:_____ Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO X

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellows Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes ____ No X Sunny ____ Cloudy X

OUTFALL #: 4-18

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____Sewage____Sufide____Oil____Gas____Rancid-sour____Other____

Color: None____Yellow____Brown____Green____Red____Gray____Other____

Turbidity: None____Cloudy____Opaque____

Floatables: None____Petroleum____Sheen____Sewage____Other____(collect samples)

Deposits/stains: None____Sediment____Oily____Describe:____(collect samples)

Vegetation conditions: Normal____Inhibited growth____Excessive growth____

Extent: _____

Damage to outfall structures:

None____Concrete cracking____Concrete Spalling____Peeling paint____Metal corrosion____

Other damage:_____Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____No____Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____NO____

_____

CANTON Community

OUTFALL INVESTIGATION REPORT

Location: Fellow Creek Golf Course

Section #: 25 Photograph #: _____ Date: 1-18-22 Crew Initials: CH

Weather: Air temp.: 28 Rain: Yes____ No X Sunny____ Cloudy X

OUTFALL #: 4-19

1. Creek Name: Fellow Creek
2. Size: _____
3. Material: _____
4. Flow/Depth on Flow in Pipe: _____ (inches)

Can't Find.

PHYSICAL DISCHARGE OBSERVATIONS

Odor: None____ Sewage____ Sufide____ Oil____ Gas____ Rancid-sour____ Other____

Color: None____ Yellow____ Brown____ Green____ Red____ Gray____ Other____

Turbidity: None____ Cloudy____ Opaque____

Floatables: None____ Petroleum____ Sheen____ Sewage____ Other____ (collect samples)

Deposits/stains: None____ Sediment____ Oily____ Describe:____ (collect samples)

Vegetation conditions: Normal____ Inhibited growth____ Excessive growth____

Extent: _____

Damage to outfall structures:

None____ Concrete cracking____ Concrete Spalling____ Peeling paint____ Metal corrosion____

Other damage:_____ Extent_____

ANALYSES

Known industrial or commercial uses in drainage area? Yes____ No____ Describe: _____

Stream conditions: _____

Additional Observations: _____

Need to follow up: YES____ NO____

_____

Appendix C

IDEP Training Records

Appendix C1. Number of Field Staff by Permittee

Appendix C2. Sign-in Sheets for ARC-Sponsor Training

Appendix C3. Individual Community Training Records

Appendix C1

Number of Field Staff by Permittee

Community	Number of field staff	Number of staff trained at the investigator level	Number of staff trained at observer level
Beverly Hills	10	5	2
Bingham Farms	1	0	1
Birmingham	13	1	10
Bloomfield Hills	5	0	5
Bloomfield Township	27	8	25
Canton Township	22	22	22
Dearborn Heights	30	1	5
Farmington	10	4	5
Farmington Hills	21	8	21
Garden City	23	0	23
Inkster	7	7	7
Lathrup Village	1	1	1
Livonia	65	4	26
Melvindale	8	0	1
Northville	6	2	6
Northville Township	11	11	11
Novi	26	1	17
Oak Park	2	0	2
Plymouth	13	11	11
Plymouth Township	11	10	5
Redford Township	16	8	2
Southfield	40	1	15
Troy	18	4	10
Village of Franklin	0	0	0
Walled Lake	3.5	2	2
Wayne	1	1	1
West Bloomfield Township	28	7	14
Westland	40	6	8
Total	**458.5**	**125**	**258**

Appendix C2

Sign-in Sheets for ARC-Sponsor Training

Attendee Report: **SEMCOG University: Alert Observer Training**

Report Generated: 11/12/2020 04:06 PM EST

Webinar ID	Actual Start Date/Time	Duration	# Registered
988-245-499	11/10/2020 09:32 AM EST	1 hour 30 minutes	195

Atendees

Interest Rating	Last Name	First Name	Email Address
87	Alexander	Mirandi	malexander2@fhgov.com
91	Ausbury	Rebekkah	mazoocountyroads.com
27	Avigne	April	Avignea@washtenaw.org
88	Bartlett	James	jbartlett@plymouthtwp.org
88	Bartoletri	Giordano	Jbartoletti@cityofnovi.org
56	Baumgarten	Terry	baumgartentery@yahoo.com
85	Bednar	Mary	tontownship-mi.gov
88	Bledsoe	Joe	awaker@fhgov.com
34	Boron	Victor	vboron@cityofnovi.org
76	Borton	Cory	cborton@bloomfieldtwp.org
85	Boyd	Mike	boydm@oakgov.com
80	Brindley	Mike	mbrindley@plymouthmi.gov
98	Brindley	Levi	brindleyl@oakgov.com
60	Burby	Scott	burbys@wcroads.org
88	Butler	Kevin	butlerk@washtenaw.org
84	Carpenter	Jennifer	jd.carp@yahoo.com
86	Carruthers	Scott	scott.carruthers@troymi.gov

44	Cartwright	David	aynecounty.com
77	Chafins	Jacob	chafinsj@porthuron.org
87	Chartier	Jenay	@macombgov.org
86	Chiasson	Michael	chiassonm@oakgov.com
87	Cirilli	Dave	dcirilli@plymouthmi.gov
65	Constantine	Thomas	tconstantine@cityofnovi.org
26	Coykendall	Jennifer	jcoykendall@plymouthmi.gov
73	Cubera	Jim	jcubera@fhgov.com
81	Czernel	Karen	@macombgov.org
87	Dancer	Robert	dancerr@washtenaw.org
88	Dawkins	ShonQuase	sdawkins@fhgov.com
86	Decker	Marc	deckerma@washtenaw.org
75	DiCaro	Sam	sam.dicaro@macombgov.org
89	Donner	Jacob	jdonner@dextermi.gov
79	Dubay	Steve	Sdubay@Hazelpark.org
87	Fadoir	Ron	fadoirr@oakgov.com
67	Fenelon	Mark	fenelonm@wcroads.org
89	Fisher	Chad	dschmidt@cityofwayne.com
88	Fox	Casey	cfox@cityofnovi.org
31	Fritz	Charles	cfritz@cityofnovi.org
86	Fry	Michael	frym@washtenaw.org
84	Fults	William	fultsw@washtenaw.org
86	Garrison	Jacy	garrisonj@oakgov.com
43	Goetze	Kristin	kgoetze@waterfordmi.gov

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56	Griffin	Bob	griffinr@washtenaw.org
86	Griffor	John	john.griffor@macombgov.org
86	Grill	Bryan	bgrill@bhamgov.org
87	Gundry	John	jgundry@waynecounty.com
87	Haarala	Brandon	bhaarala@plymouthmi.gov
96	Hanson	Cora	cora_ann@yahoo.com
89	Headley	Jacy	jheadley@cityofnovi.org
61	Henderson	Jaclyn	hendersonj@wcroads.org
85	Hicks	Jessica	macombgov.org
61	Hodges	Richard	Rhodges@waynecounty.com
69	Hohm	Janelle	HOHMJ@MICHIGAN.GOV
27	Hominga	Lisa	lhominga@plymouthmi.gov
44	Houle	Becky	houleb@wcroads.org
88	Iszler	Elizabeth	eiszler@waynecounty.com
81	Johns	Nick	njohns@plymouthmi.gov
61	Johnston	Neil	ssepointecity.org
96	Jones	Constance	jones236@oakland.edu
54	Jurek	Michael	mjurek@bhamgov.org
73	KLIMASZEWSKI	JOHN	OFNEWBALTIMORE.ORG
75	Khaldi	Sami	skhaldi@waynecounty.com
63	Klang	Jen	klangj@michigan.gov
87	Koehn	Carol	macombgov.org
44	Kohn	Joel	kohnj@oakgov.com

96	Kosiara	Paul	Kosiarap@scsmi.net
82	Kraft	Ray	rkraft@plymouthmi.gov
84	Kucel	Kenneth	kucelk@detroitmi.gov
88	Laskaska	Austin	alaskaska@romulusgov.com
65	Lawson	Jennifer	jlawson@a2gov.org
72	Layton	Trevor	layton@semcog.org
86	Leach	Joshua	jleach@farmgov.com
75	MITCHELL	SHERYL	smitchell@lathrupvillage.org
76	Mackey	Stephanie	mackeys@oakgov.com
84	Majors	LeDonn	lmajors@waynecounty.com
82	Marten	Ken	kmarten@binghamfarms.org
53	Martinez	Greg	@macombgov.org
88	Matties	James	jmatties@cityofnovi.org
83	Mausolf	Michael	mausolfm@oakgov.com
87	McGaughey	Brendan	bmcgaughey@bhamgov.org
89	McKinney	John	JMcKinney@romulusgov.com
27	McRobb-Ackland	Kelly	kackland@wadetrim.com
34	Merinsky	Robert	rmerinsky@waterfordmi.gov
87	Micek	Aaron	amicek@plymouthmi.gov
96	Miller	Barry	b.miller@clintontownship.com
68	Mills	Jason	ownship-mi.gov
71	Monette	Jeff	monettej@oakgov.com
58	Moore	Doug	dmoore@ci.livonia.mi.us
80	Murphy	Colin	cmurphy@plymouthmi.gov

87	Oloughlin	Mike	bminer@cityofallenpark.org
83	Overaitis	Joseph	joveraitis@plymouthtwp.org
80	Pace	Nicholas	npace@romulusgov.com
87	Pace	Joe	jpace@riverviewschools.com
89	Paulk	James	jpaulk@cityofnovi.org
80	Pettey	Frederick	fpettey@cityofnovi.org
87	Plesiewicz	Larry	plesiewiczl@wcroads.org
84	Pollizzi	Tim	pollizzit@rochesterhills.org
88	Powers	Jared	powersj@wcroads.org
86	Purdy	Lauren	purdyl@wcroads.org
65	Reid	Dean	dreid@cityofnovi.org
83	Rice	Heather	riceh@washtenaw.org
86	Richardson	Kate	krichardson@cityofnovi.org
89	Rudd	Nicholas	nrudd@gpshoresmi.gov
68	Salowich	Keith	ksalowich@cityofnovi.org
50	Schafer	Jim	schaferj@oakgov.com
86	Schildberg	Megan	schildbergm@oakgov.com
88	Schneider	Kevin	kschneider@a2gov.org
39	Selmi	John	born-heights.mi.us
83	Siedlaczek	Brandy	ityofsouthfield.com
88	Sigda	Julie	sigdaj@washtenaw.org
89	Skurda	Erik	eskurda@sterling-heights.net
88	Snyder	Drew	Dsnyder@cityofnovi.org
87	Sonck	Natasha	nsonck@fhgov.com

99	Spain	Dakota	spaind@washtenaw.org
86	Squiers	Kathy	squiersk@washtenaw.org
88	Stanley	Christopher	cstanley@cityofnovi.org
87	Staup	Aaron	astaup@cityofnovi.org
76	Stephens	Peter	PStephens@a2gov.org
96	Stephison	Justin	coolblue221@gmail.com
46	Stogiera	Jay	jdstogiera@hfcc.edu
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88	Talbot	John	jtalbot@cityofnovi.org
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89	Taylor	Richard	rtaylor@romulusgov.com
90	Taylor	John	lagebeverlyhills.com
83	Teraglia	Alex	atartaglia@fhgov.com
86	Thornburg	Joe	jthornburg@fhgov.com
74	Tomocik	Joseph	jtomocik@waynecounty.com
87	Tremblay	Gerald	gtremblay@cityofnovi.org
83	Turner	Robert	ntownship-mi.gov
77	Vancurler	Jeffrey	jvancurler@cityofnovi.org
86	Varacalle	Bryan	bvaracalle@livgov.com
57	Venable	Felicia	felicia.venable@fpsk12.net
86	Vitale	Steve	ssepointecity.org
51	WOLSCHLEGER	DAWN	@cityofnewbaltimore.org

89	Way	Michael	mway@gpshoresmi.gov
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88	Whaley	Stephen	whaleys@oakgov.com
88	Wicker	Micheal	mikewick01@yahoo.com
83	Wiktorowski	Matt	@cityofnovi.org
80	hutton III	george	georgehutton3@gmail.com
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City of Birmingha	Jones	Ray	
City of Birmingha	Jones	Stan	
City of Birmingha	Bartley	David	
City of Birmingha	Kowaleski	Pat	
City of Birmingha	DeRoeck	Devin	
City of Birmingha	Leme Sr.	Dominic	
City of Birmingha	DeMaggio	Larry	
City of Birmingha	Aldrich	Derek	
City of Birmingha	Brionchette	Dave	
City of Birmingha	Foloy	Greg	
City of Birmingha	McNab	Brad	
City of Birmingha	Dix	Ron	
	Cirilli	Dave	dcirilli@plymouth
	Kraft	Ray	rkraft@plymouth
	Porman	Christopher	cporman@plymo
	Brindley	Mike	mbrindley@plym
	Haraala	Brandon	bharaala@plymo

	Micek	Aaron	amicek@plymout
	Kalis	Trent	tkalis@plymouth
	Johns	Nick	njohns@plymout
	Murphy	Colin	cmurphy@plymo
	Ronayne	Brian	bronayne@plymo
	Heimstra	Jon	jheimstra@plymo
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City of Livonia	Gabriel	Trisha	tgabriel@ci.livoni
City of Livonia	Moore	Doug	dmoore@ci.livon
Dearborn Heights	Zain	Wesley	
Dearborn Heights	Push-Haggins	Keir	
Dearborn Heights	Bunker	Floyd	
Dearborn Heights	DeFazio	Joe	
Dearborn Heights	Huynh	Vien	
Dearborn Heights	Leslo	John	
Dearborn Heights	Dombrowski	Jesse	
Dearborn Heights	Winnie	Matt	
Dearborn Heights	Harris	Lerry	
Dearborn Heights	Russ	Mark	
Dearborn Heights	Jackson	David	
Dearborn Heights	Spehar	Paul	
Dearborn Heights	Whitmore	Curtis	
Dearborn Heights	Selmi	John	
Dearborn Heights	Polsinelli	Frank	

Dearborn Heights	Dishon	Christopher	
Dearborn Heights	Piestrah	Eugene	
Dearborn Heights	Watt	Daniel	
Dearborn Heights	Kupchick	Ken	
Dearborn Heights	Craft	Ben	
Dearborn Heights	Bonowski	David	
Dearborn Heights	Balckburn	Michael	
Dearborn Heights	Sabatini	Joeseph	
Dearborn Heights	Roberts	Gerald	
Dearborn Heights	Foley	Richard	
	McKinney	Jonathan	
	Laskaska	Austin	
	Pace	Nicolas	
	Taylor	Richard	khood@romulus
	Marcell	Bobbie	bmarcell@romu
	Kulesza	Mathew	krutkowski@villa
	Taylor	John	
	Kulesza	Timothy	

Meeting ID	Topic
87200137056	SEMU Webinar: Alert Observer Training

Name (Original Name)	User Email
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Steven Melow	smelow@plymouthtwp.org
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Blayn	Szyska
Jeff	Fox
Chris	Shepard
Nick	Watterson
Randy	Raska
John	Laughhunn
Sean	Zera
Jeff	Monette
Levi	Brindley
Richard	Taylor
Nicholas	Pace
Austin	Laskaska
John	Talbot
John	McKinney
Casey	Fox
Kathryn	Hood
Giordano	Bartoletri
Thomas	Constantine
Robert	Turner
James	Matties
Jeffrey	Vancurler
Charles	Fritz
Dean	Reid
Jacy	Headley
James	Paulk
Gerald	Tremblay

Mike	Tate
Christopher	Stanley
Frederick	Pettey
Drew	Snyder
Doug	Moore
Victor	Boron
Lisa	Voelker
Jen	Klang
Cory	Borton
Emily	Campbell
Bonnie	Krauss
Janelle	Hohm
Jeff	Peters
Kelly	McRobb-Ackland
Joe	Pace
Brent	Florek
Aaron	Staup
Mike	Rhatigan
Matt	Wiktorowski
Steve	Dubay
Kate	Richardson
Nicholas	Rudd
Cora	Hanson
Larry	Sirls
Erik	Skurda
Michael	Way
Carl	Maki
Jonathan	Smith
Ashley	Allen
Conner	Reiter
Michael	Lee
Laura	Hassold Prevot
Bryan	Varacalle
Rod	Soos
Jeff	Bednar
Rudy	Reyes
Roger	Gardner
Lara	Sucharski
Michael	Chiasson
Kathy	Squiers
Kirk	Miller
Paul	Kosiara
Bryan	Babcock
Tim	Pollizzi
Jacy	Garrison
Heather	Rice
Mary	Bednar

Edward	Holley
Jacob	Chafins
April	Avigne
Katherine	Grantham
Kristin	Goetze
JOHN	KLIMASZEWSKI
Rickelle	Winton
Stephanie	Taylor

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kackland@wadetrim.com
jpace@riverviewschools.com
bflorek@charlesraines.com
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mrhatigan@cityofnovi.org
mwiktorowski@cityofnovi.org
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taylor@semcog.org

Appendix C3

Individual Community Training Records

CANTON
Community

Alert Observer Training

Wednesday, October 27, 2021

PW Training Room

10:30a-11:30a

Name- please print	Signature
Kevin Clark	
Scott Kahanec	
MIKE BRITTON	
Josh Wardt	
Jay Herdon	
[illegible]	
Daniel Bayush	
JAMES WEST	
SEAN Conner	
Rob Moyers	
Christian Manley	
Brent Sprague	
Chris Hanner	
Anthony Evangelista	
CURT FOSTER	
Jeffrey Albert Michael (JAM)	
CLINT Hallman	
JACOB SAUNDERS	
David Lance Arnold	
BRAD BIRD	
Ray Hamilton	
Greg Pyle	

CANTON
Community

IDEP Investigator Training

Wednesday, October 27, 2021

PW Training Room

1:00p-3:00p

Name- please print	Signature
Brad Byrd	
Kevin Clark	
James West	
Jeff McInnes	
Josh Worth	
Jay Herdon	
Dave Arnold	
Josh Smith	
Scott Kahanec	
Christian Manley	
Rob Myers	
Brayton Sprague	
Chad Hallman	
Daniel Benyush	
Curt Foster	
Jason Conner	
Chris Hanner	
Jacob Saunders	
John Selvi	
Casey Pyle	
Roy Hamilton	

CANTON
Community

Pollution Prevention & Good Housekeeping Training

Thursday, October 28, 2021

PW Training Room

10:30a-11:30a

Name- please print	Signature
Kevin Clark	Ke Clark
Roy Hamilton	
GREG Pyle	
	Brent Sprague
Josh Wertz	
JACOB SAUNDERS	
ROB MOYERS	
Hhony Evangelista	
JAMES WEST	
CURT FOSTER	
Christian Manley	
Chris Hanner	
Daniel Bayush	
Josh Smith	
Scott Kihanec	
Jeff Michael	
Jason Conner	
Dave Arnold	
Mike Britton	
Clint Hallman	

Alex Kozlowski

From: Alex Kozlowski
Sent: Friday, October 22, 2021 12:25 PM
To: 'Laura Gruzwalski'
Subject: RE: SEMCOG IDEP/P2 Virtual Training Opportunities

Hi Laura,

Our Engineering Inspector, Bryant Houfek, is going to attend the Alert Observer and IDEP Investigator training on the 27th.

Have a great weekend!

Alex

From: Laura Gruzwalski <lgruzwalski@dlz.com>
Sent: Friday, October 22, 2021 10:04 AM
To: Corey Almas <coreyalmas@madison-heights.org>; Sean Ballantine <seanballantine@madison-heights.org>; Chris Woodward <cwoodward@madison-heights.org>; Justin Kowalski <JustinKowalski@Madison-Heights.org>; Blaine Wing <bwing@rochestermi.org>; Jason Dickinson <JDickinson@rochestermi.org>; Cory Bendick <CBendick@rochestermi.org>; Joe Raona <raonaj@lamphereschools.org>; Patti Wisniewski <wisniewskip@lamphereschools.org>; Ed Haapala <EHaapala@wbtownship.org>; Gary Simpson <GSimpson@wbtownship.org>; Mike Karll <mkarll@villageofmilford.org>; Angie Hiney <ahiney@villageofmilford.org>; cwuerth@villageofmilford.org; David McKee <dmckee@indtwp.com>; David Ziegler <dziegler@indtwp.com>; Jeff Cooper <JCooper@indtwp.com>; Tom Graham <TGraham@indtwp.com>; Kevin Daniels <kdaniels@indetwp.com>; Derek Smith <dosmith@indtwp.com>; Pat Lewis <patrick.lewis@monroemi.gov>; Christopher Schaffer <christopher.schaffer@monroemi.gov>; Bob Dion <rdion@baycitymi.org>; KHausbeck <KHausbeck@baycitymi.org>; rphillips@baycitymi.org; Tim Botzau <tbotzau@baycitymi.org>; rlewandowski <rlewandowski@porthurontownship.org>; Dan Duman <dduman@porthurontownship.org>; Adam Wallace <awallace@porthurontownship.org>
Cc: Alex Kozlowski <AKozlowski@wbtownship.org>
Subject: FW: SEMCOG IDEP/P2 Virtual Training Opportunities
Importance: High

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning all –
I just wanted to send a friendly reminder regarding SEMCOG good housekeeping, pollution prevention, and IDEP training opportunities NEXT WEEK. If you and/or your staff are registered, please let me know, so we can track it for progress reporting to EGLE.

Thanks so much and have a great weekend!!
Laura Gruzwalski | Project Manager
(248) 836-4053 (office) | (248) 207-1797 (cell)
lgruzwalski@dlz.com | www.dlz.com

From: Laura Gruzwalski
Sent: Thursday, September 30, 2021 1:24 PM

To: Corey Almas <coreyalmas@madison-heights.org>; Sean Ballantine <seanballantine@madison-heights.org>; Chris Woodward <cwoodward@madison-heights.org>; Justin Kowalski <JustinKowalski@Madison-Heights.org>; Blaine Wing <bwing@rochestermi.org>; Jason Dickinson <JDickinson@rochestermi.org>; Cory Bendick <CBendick@rochestermi.org>; Joe Raona <raonaj@lamphereschools.org>; Patti Wisniewski <wisniewskip@lamphereschools.org>; Ed Haapala <ehaapala@wbtownship.org>; Gary Simpson <GSimpson@wbtownship.org>; Mike Karll <mkarll@villageofmilford.org>; Angie Hiney <ahiney@villageofmilford.org>; cwuerth@villageofmilford.org; David McKee <dmckee@indtwp.com>; David Ziegler <dziegler@indtwp.com>; Jeff Cooper <JCooper@indtwp.com>; Tom Graham <TGraham@indtwp.com>; Kevin Daniels <kdaniels@indetwp.com>; Derek Smith <dosmith@indtwp.com>; Pat Lewis <patrick.lewis@monroemi.gov>; Christopher Schaffer <christopher.schaffer@monroemi.gov>; Bob Dion <rdion@baycitymi.org>; KHausbeck <KHausbeck@baycitymi.org>; rphillips@baycitymi.org; Tim Botzau <tbotzau@baycitymi.org>; rlewandowski <rlewandowski@porthurontownship.org>; Dan Duman <dduman@porthurontownship.org>; Adam Wallace <awallace@porthurontownship.org>
Cc: Alex Kozlowski <akozlowski@wbtownship.org>
Subject: SEMCOG IDEP/P2 Virtual Training Opportunities
Importance: High

Good afternoon all –
I just wanted to pass along some virtual stormwater/pollution prevention/IDEP training opportunities coming up in October. You should be able to click on the blue text below to register for one, two, or three trainings. If you do participate, please let me know, so I can add it to your progress report.

Feel free to reach out if you have any
questions.

Register today for the Virtual Municipal Stormwater Trainings



It is a great time of year to be thinking about how to be an alert observer of illicit discharges. SEMCOG, in partnership with the Partners for Clean Water, will hold a virtual Illicit Discharge Elimination Program and Pollution Prevention training. The virtual trainings will be held October 27 and 28. During these trainings, attendees will learn about signs of illicit discharges, tools for reporting these problems, and how to engage in public outreach on this subject. Attendees will also learn about procedures for municipal facilities,for proper stormwater management and permit compliance. Registration for the three training session can be found below. We hope to see you there!

- Alert Observer Training: October 27, 10:30 – 11:30 AM
- IDEP Investigator Training: October 27, 1:00 – 3:00 PM
- Pollution Prevention & Good Housekeeping Training: October 28, 10:30 – 11:30 AM

SEMCOG Calendar of Events

Laura Gruzwalski | Project Manager
(248) 836-4053 (office) | (248) 207-1797 (cell)
lgruzwalski@dlz.com | www.dlz.com

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ARCHITECTURE - ENGINEERING - PLANNING
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Investigator

IDEP TRAINING WORKSHOP

ARC Members.

NO.	NAME	Affiliation	PHONE	EMAIL	Address
01	Allen, Ashley	Hubbell, Roth & Clark, Inc	248-454-6300	aallen@hrcengr.com	555 Hulet Dr Bloomfield Hills MI 48303
02	Allen, Danielle	Charter Township of Shelby	(586) 731-5990	ALLEND@SHELBYTWP.COM	6333 23 MILE RD Shelby Twp MI 48316
03	Apley, Carol	City of Eastpointe	586 615-3830	capley@eastpointecity.org	17750 Ten Mile Eastpointe MI 48021
04	Barne, Bob	City of Livonia	(734) 466-2705	bdotson@livonia.mi.us	12973 Farmington Rd Livonia MI 48150
05	Bartel, Kevin	Redford Township	313-387-2641	abardonski@redfordtwp.com	12200 Beech Daly Redford MI 48239
06	Bednar Jeff	Macomb County Public Works Office	(586) 746 9118	j.bednar@macombgov.org	21777 Dunham Rd Clinton Twp MI 48036
07	Campbell, Scott	City of Farmington Hills	248-302-4658	s_campbell@fhgov.com	31555 West Eleven Mile Farmington Hills MI 48336
08	Comey, Gerald	City of Romulus	734-955-8754	gtowler@romulusgov.com	12600 Wayne Road Romulus MI 48174
09	Carpenter, Jennifer	KER Engineering/Commerce	(248) 330 6004	jcarpenter@commercetwp.com	380 coyote run Holly MI 48442
10	Collins, Rebecca	Hubbell, Roth & Clark, Inc.	248-454-6300	rcollins@hrcengr.com	555 Hulet Dr Bloomfield Hills MI 48303
11	Cross, Ron	City of Roseville	586 344 9529	rcross@roseville.mi.gov	29411 Calahan Roseville MI 48066
12	DeCaussin, Joe	Macomb County Health Department	586) 469 5236	jd_decaussin_dr@macombgov.org	4525 Elizabeth Road, Mount Clemens MI 48043
13	Diesing, Eric	Clinton River Watershed Council	248 601 0606	ediesing@crwc.org	1115 W. Avon Rd Rochester Hills MI 48309
14	Dionne, Gerald	Grosse Ile Township	734 676 4422	jdionne@grosseile.com	9601 Groh Grosse Ile MI 48138
15	Enheuser, Matt	Clinton River Watershed Council	248 601 0606	menheuser@crwc.org	1115 W. Avon Rd Rochester Hills MI 48309
16	Gioia, Ryan	Oakland University	(248) 370-4383	rmgioia@oakland.edu	411 pioneer dr Rochester MI 48309
17	Glinski, Paul	Huron Charter Township DPW	734 753 9376	pl anton@huronlownship-mi.gov	22950 Huron River Drive New Boston MI 48164
18	Harden, Yvette	VA Ann Arbor Healthcare System	(734) 845-3803	Yvette.Harden@va.gov	2215 Fuller Road (001G) Ann Arbor MI 48105
19	Hendricks, Mark	Bloomfield Township	248-594-2806	mhendricks@bloomfieldtwp.org	4200 Telegraph P.O. Box 489 Bloomfield Township MI 48303-0489
20	Hinojosa, Jeff	Huron Charter Township DPW	734 753-9673	JHINOJOSA@HURONTOWNSHIP-MI.GOV	22950 Huron River Drive New Boston MI 48164
21	Hoffman, Edwin	City of Livonia	(734) 466-2627	ehoffman@livonia.mi.us	12973 Farmington Rd Livonia MI 48150
22	Jabbway, Drew	City of Eastpointe	586 615-3830	cpley@eastpointecity.org	17750 Ten Mile Eastpointe MI 48021
23	Jacobs, Bob	Ira Township	(586) 725-7231	rjacobs@iratownship.org	7085 Meldrum Fair Haven MI 48023
24	Jarvi, Eric	Ira Township	(586) 725-7231	ejarvi@iratownship.org	7085 Meldrum Fair Haven MI 48023
25	Knillen, Robert	Redford Township	313-387-2641	abardonski@redfordtwp.com	12200 Beech Daly Redford MI 48239
26	Koester, David	Port Huron Schools Facilities	810 300-1711	dkoester@phschools.us	4035 Dove Rd Port Huron MI 48060
27	Lane Abby	Clinton River Watershed Council	248-601-0606	alane@crwc.org	1115 W. Avon Rd. Rochester Hills MI 48309
28	LaPeer, Allen	Village of Romeo	586 752 9321	romeowwtp@gmail.com	121 W. St. Clair Romeo MI 48065
29	Lolfredi, Nick	City of Eastpointe	586 615-3830	cpley@eastpointecity.org	17750 Ten Mile Eastpointe MI 48021
30	Low, John	City of Rochester	586-536-7384	Bubbyu@gmail.com	400 Sixth Street, Rochester MI 48307
31	Maas, Tom	City of Roseville	586 914-4576	waterpeg@roseville.mi.gov	29411 Calahan Roseville MI 48066
32	Marx, George	Grosse Ile Township	734 676-4422	GeorgeM@grosseile.com	9601 Groh Grosse Ile MI 48138
33	Matthews, Barb	Macomb County Public Works Office	586 466-4016	barbara.matthews@macombgov.org	21777 Dunham Rd Clinton Twp MI 48036
34	Mayhew, Greg	City of Taylor	734-374-1473	gmayhew@ci.taylor.mi.us	25605 Northline Road Taylor MI 48180
35	Miller, Dave	Charter Township of Shelby DPW	(586) 731 5990	millerd@shelbytwp.org	6333 23 MILE RD Shelby Twp MI 48316
36	Morton, Shaun	Redford Township	313 387-2641	abardonski@redfordtwp.com	12200 Beech Daly Redford MI 48239
37	Nastasy, Frank	Charter Township of Shelby DPW	(586) 731-5970	fnastasy@shelbytwp.org	6333 23 MILE RD Shelby Twp MI 48316
38	Oswald, Sean	City of Farmington Hills DPW	248 871-2850	soswald@fhgov.com	27245 Halsted Farmington Hills MI 48331
39	Paolucci, Darin	City of Eastpointe	586 615 3830	cpley@eastpointecity.org	17750 Ten Mile Eastpointe MI 48021
40	Parrish, Pete	City of Farmington Hills DPW	248 871-2850	pparrish@fhgov.com	27245 Halsted Farmington Hills MI 48331
41	Perry, Austin	City of Rochester	586-604-2602	aperry10@yahoo.com	400 Sixth Street Rochester MI 48307
42	Plank, Craig	City of Romulus	734-955 8754	cplank@romulusgov.com	12600 Wayne Road Romulus MI 48174
43	Puronen, Dave	Macomb Intermediate School District	586-228 3347	dpuronen@misd.net	44001 Garfield Clinton Twp MI 48038
44	Richert, Jeremy	Village of Lake Orion	248 520-7597	Richert@lakeorion.org	21 E. Church St. Lake Orion MI 48362
45	Rochon, Karen	Algonac Community Schools	810-794-9366	krochon@acps.k12.us	5200 Taft Rd Algonac MI 48001
46	Sall, Semed	Tri-County Engineering / City of Orchard Lake	810 394 7887	sall@tri-countyeng.com	48701 Hayes Road Shelby Township MI 48315
47	Schulte, Brian	City of Roseville	586 909 0396	bschulte@roseville.mi.gov	29411 Calahan Roseville MI 48066
48	Shaddock, Rob	Charter Township of Shelby DPW	(586) 731-5990	rshaddock@shelbytwp.org	6333 23 MILE RD Shelby Twp MI 48316
49	Siegel, Kim	Road Commission for Oakland County	248-982-3739	ksiegel@rcoc.org	31001 Lasher Road, Beverly Hills, MI 48025
50	Smith, Chris	City of Livonia	(734) 466-2705	bdotson@livonia.mi.us	12973 Farmington Rd Livonia MI 48150
51	Smith, Devin	Redford Township	313 387-2641	abardonski@redfordtwp.com	12200 Beech Daly Redford MI 48239
52	Smith, Shun	Huron Valley Schools	810 964 2597	shunts@hvsd.com	2390 S. Milford Rd. Highland MI 48357
53	Suchaski, Lora	Macomb County Public Works	586-307-8271	lora.suchaski@macombgov.org	21777 Dunham Rd Clinton Twp MI 48036
54	Theobald, Brian	City of Eastpointe	586 615 3830	cpley@eastpointecity.org	17750 Ten Mile Eastpointe MI 48021
55	Unsworth, Justin	City of Livonia	(734) 466-2705	bdotson@livonia.mi.us	12973 Farmington Rd Livonia MI 48150
56	Verellen, Mitch	Charter Township of Clinton		mverellen@clintontownship.mi.gov	Clinton Twp
57	Watts, Kyle	Redford Township	313-387-2641	abardonski@redfordtwp.com	12200 Beech Daly Redford MI 48239
58	Webb, Jerry	Wayne County - Land Resource Management	734-326-3936	webbj@waynecounty.com	3600 Commerce Ct., Bldg E. Wayne, MI 48184
59	Wenzel, Arthur	Village of South Rockwood		wwtp@villageofsouthrockwood.com	P.O. Box 85 South Rockwood MI 48179
60	Wenzel, Franklin	Village of South Rockwood		wwtp@villageofsouthrockwood.com	P.O. Box 85 South Rockwood MI 48179
61	Whillen, Tim	City of Walled Lake	248 624 4847	dpw@cityofwalledlake.com	1499 E West Maple Rd City of Walled Lake MI 48390
62	Wieler, Jeff	City of Livonia	(734) 466-2705	bdotson@livonia.mi.us	12973 Farmington Rd Livonia MI 48150
63	Wizniuk, Claudette	Macomb County Public Works Office	586 307-8269	claudette.wizniuk@macombgov.org	21777 Dunham Rd Clinton Twp MI 48036
64	Wolgast, Shaun	City of Eastpointe	586 615 3830	cpley@eastpointecity.org	17750 Ten Mile Eastpointe MI 48021
65	Woolston, John	Farmington Public Schools	248-533-7312	john.wool ton@farmington.k12.mi.us	29350 W 10 Mile Road Farmington Hills MI 48336

CITY OF FARMINGTON HILLS
PUBLIC SERVICES
TRAINING REPORT

		Code	DESCRIPTION	START_DAT	END_DATE
PS.DPW					
COSTEW	JORDAN	idep	Illicit Discharge Elimination Program	09/24/13	09/24/13
DROELLE	DONALD	idep	Illicit Discharge Elimination Program		05/11/10
		idep	Illicit Discharge Elimination Program		03/01/04
EUDY	JOSEPH	idep	Illicit Discharge Elimination Program		04/15/15
		idep	Illicit Discharge Elimination Program		
HARVEY	VINCENT	idep	Illicit Discharge Elimination Program		03/01/04
MCCARTHY	KEVIN	idep	Illicit Discharge Elimination Program		05/11/10
MCDANNEL	CHAD	idep	Illicit Discharge Elimination Program		03/01/07
		idep	Illicit Discharge Elimination Program		04/01/06
PALLOZZI	MICHAEL	idep	Illicit Discharge Elimination Program		03/01/07
PARRISH	PETER	idep	Illicit Discharge Elimination Program		10/18/17
PATTERSON	CHRISTOPHER	idep	Illicit Discharge Elimination Program		04/23/08
		idep	Illicit Discharge Elimination Program		
PICKWORTH	BRYAN	idep	Illicit Discharge Elimination Program		04/23/08
		idep	Illicit Discharge Elimination Program		
RANKIN	JENESSA	idep	Illicit Discharge Elimination Program		03/14/16
RICHEY	DAVID	idep	Illicit Discharge Elimination Program		05/11/10
		idep	Illicit Discharge Elimination Program		03/01/04
SAKSEWSKI	ROBERT	idep	Illicit Discharge Elimination Program		05/11/10
		idep	Illicit Discharge Elimination Program		03/01/04
SWOPE	ANDREW	idep	Illicit Discharge Elimination Program	09/24/13	09/24/13
TAYLOR	JONATHAN	idep	Illicit Discharge Elimination Program		04/23/08
VANVLIET	JOSEPH	idep	Illicit Discharge Elimination Program		04/23/08

CITY OF FARMINGTON HILLS
PUBLIC SERVICES
TRAINING REPORT

		Code	DESCRIPTION	START_DAT	END_DATE
PS.ADM					
GUSHARD	TAMMY	idep	Illicit Discharge Elimination Program		10/13/16
		idep	Illicit Discharge Elimination Program		03/13/06
SONOGA	TYLER	idep	Illicit Discharge Elimination Program	10/27/21	10/27/21
		idep	Illicit Discharge Elimination Program		

CITY OF FARMINGTON HILLS
PUBLIC SERVICES
TRAINING REPORT

		Code	DESCRIPTION	START_DAT	END_DATE
PS.ENG					
ALEXANDER	MIRANDI	idep	Illicit Discharge Elimination Program	10/27/21	10/27/21
AMOLSCH	ETHAN	idep	Illicit Discharge Elimination Program		03/28/06
CAMPBELL	SCOTT	idep	Illicit Discharge Elimination Program		04/12/18
CUBERA	JAMES	idep	Illicit Discharge Elimination Program		03/28/06
DAWKINS	SHONQUASE	idep	Illicit Discharge Elimination Program	10/27/21	10/27/21
DEVERS	SEAN	idep	Illicit Discharge Elimination Program		10/23/19
		idep	Illicit Discharge Elimination Program		10/13/16
GEELHOOD	KRISTINA	idep	Illicit Discharge Elimination Program	10/27/21	10/27/21
SONCK	NATASHA	idep	Illicit Discharge Elimination Program	10/27/21	10/27/21
TARTAGLIA	ALEXANDER	idep	Illicit Discharge Elimination Program	10/27/20	10/27/20
THORNBURG	JOSEPH	idep	Illicit Discharge Elimination Program	10/27/20	10/27/20
WAKER	TIMOTHY	idep	Illicit Discharge Elimination Program		03/13/06

From: Emily Levine
To: Lisa McGill
Subject: RE: IDEP Training Question
Date: Monday, January 31, 2022 12:18:07 PM
Attachments: image001.png
image003.png
image005.png
image007.png
image009.png
image011.png
image012.png
image013.png
image014.png
image015.png

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Hi Lisa,
The attendance records should have been attached to the questionnaire, so I am sorry that that seems to not have worked out. According to the records that I have, in 2020 only one person is on the attendance list with a “farmgov” email address. That was Joshua Leach.
Let me know if you have any other questions.

Emily Levine
Senior Associate Scientist II | Water Resources
C: 248.763.1407

https://www.ectinc.com/" style='position:absolute;margin-left:3pt;margin-top:0;width:91.4pt;height:36pt;z-index:251659264;visibility:visible;mso-wrap-style:square;mso-width-percent:0;mso-height-percent:0;mso-wrap-distance-left:0;mso-wrap-distance-top:14.4pt;mso-wrap-distance-right:0;mso-wrap-distance-bottom:0;mso-position-horizontal:absolute;mso-position-horizontal-relative:text;mso-position-vertical:absolute;mso-position-vertical-relative:page;mso-width-percent:0;mso-height-percent:0;mso-width-relative:margin;mso-height-relative:page' o:allowoverlap="f" o:button="t">

Follow us:

From: Annette DeMaria <ademaria@allianceofrougecommunities.com>
Sent: Monday, January 31, 2022 8:21 AM
To: Emily Levine <elevine@ectinc.com>; Annette DeMaria <ademaria@ectinc.com>
Subject: Fwd: IDEP Training Question

See below.

Chris

-------- Forwarded Message --------
Subject:IDEP Training Question
Date: Fri, 28 Jan 2022 17:24:49 +0000
From: Lisa McGill <lmcgill@farmgov.com>
To:ademaria@allianceofrougecommunities.com
<ademaria@allianceofrougecommunities.com>

Hi Annette!

Hope you are well!

We are working on the IDEP portion of the collaborative plan, and are having a difficult time finding anything showing anyone attended the 2020 IDEP training. There is an e-mail where Chuck said three of the field staff would be able to attend, but nothing proving they actually did. Is there a roster showing who registered as I assume it was virtual?

Any information will be appreciated.

Thank you!

Lisa McGill
Administrative Assistant
Department of Public Works
City of Farmington

Joshua Leach

From: Joshua Leach
Sent: Thursday, October 28, 2021 11:30 AM
To: Grantham, Katherine; Osborne, Rebecca
Subject: RE: IDEP Training

Katie,

The following Personnel have viewed the SEMCOG IDEP Training...

10/27 Alert Observer Training

Josh Leach
Tara Pieron
Chris Jacob
Greg Young
Dave Popp
Chris Guibord

10/27 IDEP Investigator Training

Josh Leach
Chris Jacob
Greg Young
Dave Popp
Chris Guibord

10/28

Josh Leach
Chris Jacob
Greg Young
Dave Popp
Chris Guibord
Jim Englen
Marcus Schweisthal
John Wilson
Mike Pesavento

Thank you,

Joshua Leach
Assistant Superintendent of Public Works
City of Farmington
33720 West 9 Mile Road
Farmington, MI 48335
248-473-7250

Date _____10-27-21_____

Topic _Alert Observer Training_____

Name	Phone	Email
Ken Marten, Bingham Farms administrator	248-644-0044	kmarten@binghamfarms.org
Colleen Wayland, Bingham Farms treasurer	248-644-0044	cwayland@binghamfarms.org
Yevgeniy Malkin, Bingham Farms administrative assistant	248-644-0044	admin@binghamfarms.org
Karl Woodard, Bingham Farms code enforcement officer	248-644-0044	kwoodard@gmail.com

R

register@semcog.org | Mike Domine

Registration Confirmation for SEMU Webinar: Pollution Prevention and Good Housekeeping

Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

EventRegistration.ics
1 KB

Thanks for registering for SEMU Webinar: Pollution Prevention and Good Housekeeping!

The details of your registration are listed below.

Registrant:	Mike Domine (mdomine@ci.northville.mi.us)
Confirmation Number:	41597
Date/Time:	10/28/2021 10:30 AM - 11:30 AM
Location:	Zoom
URL:	https://semcog-org.zoom.us/j/86890466628

Meeting Registration

1001 Woodward Avenue, Suite 1400
Detroit, MI 48226
Main: 313-961-4266
Visit: www.semcog.org



FIELD STAFF					
FIRST NAME	LAST NAME	DEPT	Status	Last In-House Awareness Training	Investigator Training
Robert	Dragoo	Building Maintenance	Full	6/25/2019	-
Gerald	Keller	Building Maintenance	Full	6/25/2019	-
Patrick	Quinn	Building Maintenance	Full	6/25/2019	
Dean	Begley	Grounds Maintenance	Full	7/24/2018	2014
Hillary	Drotoz	Grounds Maintenance	Full	6/25/2019	2014
Chris	Baroli	Road	Full	6/25/2019	-
Bruce	Carnahan	Road	Full	6/25/2019	-
Sean	Caverly	Road	Full	6/25/2019	-
James	Davis	Road	Full	6/25/2019	2013
Trevor	Fox	Road	Full	7/24/2018	-
Jon	Grigsby	Road	Full	6/25/2019	-
Jeff	Krauskopf	Road	Full	6/25/2019	-
Marco	Nervo	Road	Full	6/25/2019	2014
Duane	Poole	Road	Full	8/1/2018	-
Adam	Roose	Road	Full	6/25/2019	-
Jason	Simpson	Road	Full	6/25/2019	2014
Glenn	Wood II	Road	Full	6/25/2019	2013
Shane	Beslock	Water	Full	6/25/2019	-
Josh	Eubanks	Water	Full	6/25/2019	2014
Rick	Jenkinson	Water	Full	6/25/2019	-
David	Keller	Water	Full	6/25/2019	-
Craig	Lewis	Water	Full	6/25/2019	-
Patrick	McNamara	Water	Full	6/25/2019	2014
Paul	Palace	Water	Full	6/25/2019	-
Steve	Sierota	Water	Full	6/25/2019	-
Conner	McGray	Grounds Maintenance	Part	-	-
Emma	Simpson	Grounds Maintenance	Part		-

TRAINED OFFICE STAFF					
FIRST NAME	LAST NAME	DEPT	Status	Last In-House Awareness Training	Investigator Training
Cory	Borton	EESD	Full	7/24/2018	2020
Mark	Hendricks	EESD	Full	7/24/2018	2017
Angela	Hysinger	EESD	Full	7/24/2018	2018
Charles	Markus	EESD	Full	7/24/2018	2014
Olivia	Olsztyn-Budry	EESD	Full	-	2014
George	Kilpatrick	Building	Full	-	2015
Lance	Scram	Motor Pool	Full	7/24/2018	2015

SEMCOG IDEP ALERT OBSERVOR TRAINING
10/27/2021

Meeting ID	Topic	Dept.	Start Time	End Time
87200137056	SEMU Webinar: Alert Observer Training		10/27/2021 10:16	10/27/2021 11:22

Name (Original Name)	User Email	Dept.	Total Duration (Minutes)	Guest
Virtual Meeting	virtualmeeting2@semcog.org		66	No
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17348916478			53	Yes
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Tara Pieron	tpieron@farmgov.com		53	Yes
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Jon Allen	jallen@wyandottemi.gov		105	Yes
Matt Kettmann	mkett@umich.edu		53	Yes
robert malek	malekb@oakgov.com	WRC	53	Yes
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SEMCOG IDEP ALERT OBSERVOR TRAINING
10/27/2021

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SEMCOG IDEP INVESTIGATOR TRAINING
10/27/2021

Meeting ID	Topic	Dept.	Start Time	End Time
84416846507	SEMU Webinar: IDEP Investigator Training		10/27/2021 12:45	10/27/2021 14:48

Name (Original Name)	User Email		Total Duration (Minutes)	Guest
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Annette and Sue (Annette DeMaria)	ademaria@ectinc.com		123	Yes
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12483436224			109	Yes
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Zachary Crane	cranez@oakgov.com	OC Parks	109	Yes
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Syed Ali		syed.ali@detroitmi.gov		109	Yes
Chad Burke		burkec@kalamazoocity.org		109	Yes
Jon Allen		jallen@wyandottemi.gov		90	Yes
Mark McCulloch		mccullochm@wcroads.org		106	Yes
Thomas Rymsza		rymszat@oakgov.com	OC Parks	108	Yes
Mark Gaworecki		mgaworecki@ci.dearborn.mi.us		108	Yes
Stephanie Petriello		petriellos@oakgov.com	WRC	108	Yes
Emily Levine		elevine@ectinc.com		108	Yes
Barry Brown		barry.brown@detroitmi.gov		107	Yes
Michael Belcher		belchem@wbsdweb.com		108	Yes
Chris Shepard		shepardc@rochesterhills.org		108	Yes
Kelly Karll		karll@semcog.org		40	Yes
Mackenzy Shega-Fox		mackenzy.shega-fox@detroitmi.gov		108	Yes
Jeremy Brown		brownjd@oakgov.com	OC Parks	108	Yes
Sean Devers		sdevers@fhgov.com		108	Yes
Michael Way		mway@gpshoresmi.gov		108	Yes
Gary Streight		streightg@wcroads.org		108	Yes
Jody Lynn Mathias		jlschaub@umich.edu		107	Yes
Kristina Crimmins		kcrimmins@fhgov.com		110	Yes
Gregory Mayhew		gmayhew@wyandottemi.gov		107	Yes
Jessica Slagter-Enaohwo		enaohwoj@kalamazoocity.org		107	Yes
Laura Hassold Prevot		lhassoldprevot@rcoc.org		107	Yes
Robert Conrad		rconrad@ci.dearborn-heights.mi.us		107	Yes
Al Loebach		aloebach@ci.dearborn.mi.us		107	Yes
Spencer Kitchen		spencerkitchen@gmail.com		107	Yes
Aaron Brunson		aaron.thomas@detroitmi.gov		107	Yes
Jerome Bivins		jbivins@cityofinkster.com		96	Yes
Jesus Plasencia		jplasencia@wyandottemi.gov		107	Yes
Michael Buiten		mbuiten@ci.wayne.mi.us		107	Yes
Scott Campbell		scampbell@fhgov.com		107	Yes
Stephen O'Rielly		sorielly@umich.edu		106	Yes
john klimaszewski		nbdps@cityofnewbaltimore.org		106	Yes
Kate Purpura		kpurpura@cityofnovi.org		106	Yes
sokoni Howard		sokoni.howard@detroitmi.gov		106	Yes
Bryant Barber		bryant.barber@detroitmi.gov		102	Yes
Ian		ian.tamm@detroitmi.gov		105	Yes
	18104597736			104	Yes
Scott Zielinski		szielinski@bhamgov.org		103	Yes
Hannah Slabaugh		hannah.slabaugh@detroitmi.gov		100	Yes
David Chung		dps1@lathrupvillage.org		100	Yes
Ryan Stamper		rstamper@romulusgov.com		94	Yes
Darlene Rowley		rowleyd@oakgov.com	OC Parks	93	Yes
Kassim Mc Neil		kmcneil@romulusgov.com		80	Yes
Mark Adams		adamsmaj@oakgov.com	OC Parks	85	Yes
LaToria Joyce		ljoyce@cityofinkster.com		65	Yes
jason dickinson		jdickinson@rochestermi.org		74	Yes
Derick Coley		dcoley@waynecounty.com		63	Yes
RAMI SWEIDAN		rsweidan@lathrupvillage.org		39	Yes
Mohammad Siddique		mohammad.siddique@detroitmi.gov		3	Yes
Sarah Stoolmiller		sarah.stoolmiller@detroitmi.gov			
Devyn McNaughton		Devyn.McNaughton@detroitmi.gov			
Mackenzy Shega-Fox		ackenzy.shega-fox@detroitmi.gov			
Hannah Slabaugh		Hannah.slabaugh@detroitmi.gov			
Mohamed Boudali		Mohamed.boudali@detroitmi.gov			
		shepardc@rochesterhills.org			

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Giordano Bartoletti

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Giordano Bartoletti

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: **Tom Constantine**

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG / Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: **Tom Constantine**

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for attendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Casey Fox

Who is awarded credit for completing 1 **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Casey fox

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Charles A. Fritz

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Charles A. Fritz

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Jacy Headley

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Jacy Headley

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karll

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: James Matties

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: James Matties

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karll

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program. panel. or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture. in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Jim Paulk

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karll

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG / Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Jim Paulk

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: Southeast Michigan Council of Governments

Was completed by: Fred pettey

Who is awarded credit for completing 1 **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: Southeast Michigan Council of Governments

Was completed by: Fred pettey

Who is awarded credit for completing 1 **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: **Dean Reid**

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for attendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: **Dean Reid**

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Drew Snyder

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Drew Snyder

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karll

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Chris Stanley

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Chris Stanley

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Mike Tate

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karll

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: Mike Tate

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karll

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: **Gerald Tremblay**

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
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SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: **Southeast Michigan Council of Governments**

Was completed by: **Gerald Tremblay**

Who is awarded credit for completing **1** **hours of professional development activity.**

I certify that the above Participant has completed
the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

IDEP Alert Observer Training

November 10, 2020

Provided by: Southeast Michigan Council of Governments

Was completed by: Jeff Van Curler

Who is awarded credit for completing 1 **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

SEMCOG Southeast Michigan Council of Governments

Developing Regional Solutions

Continuing Professional Development Activity Certificate of Completion

In recognition of successful completion of the following Professional Development Activity:

Pollution Prevention and Good Housekeeping Training

November 10, 2020

Provided by: Southeast Michigan Council of Governments

Was completed by: Jeff Van Curler

Who is awarded credit for completing 1 **hours of professional development activity.**

I certify that the above Participant has completed the course and is entitled to PDHs as indicated

Kelly C. Karel

Notes:

1. This certificate must be accompanied by a description or outline of the activity supplied by the Provider.
2. This form is to be used to claim Professional Development Hours (PDHs) for atttendance at an educational program, panel, or tutorial session.
3. It is the responsibility of the attendee to select PDH activities that are relevant to the attendee's professional licenture, in accordance with their licensing agency's rules.
4. It is the responsibility of the attendee to retain this record for their use in proving their attendance at the above noted activity. The provider does not plan to keep records of who attended what activity.

Date 10/26/21

Topic Pollution Prevention and Good Housekeeping

Name	Phone	Email
David Chung	248-720-9806	dps1@lathrupvillage.org

Date 10/27/21

Topic SEMU Webinar: Alert Observe Training

Name	Phone	Email
David Chung	248-720-9806	dps1@athrupvillage.org

Date 10/27/21

Topic Illicit Discharge Elimination Program Investigator Training

Name	Phone	Email
David Chung	248-720-9806	dps1@lathrupvillage.org

City of Birmingham
A Walkable Community

Department of Public Services

IDEP/ Stormwater Illict Discharge Alert/Observer

10/27/2021

PRINT NAME	SIGNATURE	DIVISION (CIRCLE)
MICHAEL HUOT		PARKS (SSW) ARENA GOLF
Adam Bouse		PARKS (SSW) ARENA GOLF
Brenden Meredith		PARKS (SSW) ARENA GOLF
Timothy Davis		PARKS (SSW) ARENA GOLF
Bryan Gulke		PARKS (SSW) ARENA GOLF
Dan Hohn		(PARKS) SSW ARENA GOLF
Colin Quackenbush		(PARKS) SSW ARENA GOLF
Brent Jackson		(PARKS) SSW ARENA GOLF
		PARKS SSW ARENA GOLF
		PARKS SSW ARENA GOLF

Date _____10/27/21_- 10/28/21_____

Topic ____Alert Observer,_ IDEP Investigator, _Pollution Pervention & Good Housekeeping_____

Name	Phone	Email
Scott Zielinski (all)	248-530-1838	szielinski@bhamgov.org
Chris Morton (alert Obs only)	248-530-1835	cmorton@bhamgov.org

Appendix D

Pollution Complaint Documentation

Appendix D1. Bloomfield Township Pollution Complaint Documentation

Appendix D2. Canton Township Pollution Complaint Documentation

Appendix D3. Farmington Pollution Complaint Documentation

Appendix D4. Novi Pollution Complaint Documentation

Appendix D5. Oakland County Pollution Complaint Documentation

Appendix D6. Plymouth Township Pollution Complaint Documentation

Appendix D7. Wayne County Pollution Complaint Documentation

Appendix D8. City of Wayne Pollution Complaint Documentation

Appendix D1

Bloomfield Township Pollution Complaint Documentation

BLOOMFIELD TOWNSHIP - IDEP CONCERN LOG & SUMMARY, January 2020 thru December 2021

Sidwell Number	Address	Date	Description of Concern	Date referred to OCHD	Sewer Available	EESD Investigation Notes/Comments	Type
19-18-279-002	3821 Lakeland Lane	6/17/2020	Homeowner called in about a blue/green coloring to the lake.	NA	NA	O. Olsztyn-Budry went out and documented conditions. Fire Department responded also. Documentation was completed and included in project file. PEAS hotline notified. Neighb property owner indicated that Inland Waters had treated the lake a day or two before. OCWRC was notified. **Status: No further action required.**	Lake Treatment
1912477011	3371 Westchester Road	7/12/2020	Old underground fuel tank on property spilled across property and neighboring properties during property redevelopment.		Yes	An unknown fuel oil tank on property overflowed during rain storm (rain water entered tank) and flowed across several properties. Property under redevelopment. Fire Department called to property and EGLE notified. Builder hired PM Environmental to determne extent of spill, remove the contaiminated soil, and restore the propeties. EGLE verified submittal of final report. **Status: No further action required.**	Spill
19-24-302-005	5050 Brookdale Road	9/21/2020	Resident observed paint in nearby creek	NA	Yes	EGLE forwarded PEAS complaint of paint in a nearby creek. House under construction and the wash tub was incorrectly outleting to the sump pump and outlets to neighboring creek. Ordinance Department visited property and winessed disconnection from sump and connection to sanitary. **Status: No further action required.**	Illicit Connection
19-18-303-071	1904 Pine Ridge Coiurt	12/22/2020	2020 IDEP sampling revealed elevated E. coli in storm sewer	NA	Yes	Dye Tested condo units and discovered that 1904 Pine Ridge Court was incorrectly tied into the storm sewer and not the sanitary sewer. Issued Township letter requiring the correction. **Status: Repair ongoing.**	Illicit Connection
-	Beverly Hills	12/22/2020	Notification from OCWRC that green dye was seen in a stream southeast of the Township.	NA	NA	Worked with Joel Kohn of OCWRC and Annette DeMaria of ARC to locate source of green dye in stream. Came from dye testing of house on Long Bow Court in Beverly Hills. **Status: No further action required**	Dye in Stream
-	Upper Long Lake Estates	1/4/2021	OCWRC contacted by resident regarding use of road salt within development.	NA	Yes	Ron Cousineau of the Upper Long Lake-Lake Board called OCWRC regarding the use of road salt within Upper Long Lake Estates. He wanted to be sure too much is not being used. Bloomfield Township uses brine to reduce the amount of salt used, and only uses the amount necessary. **Status: No further action required.**	Road Salt
19-09-400-041	228 Orange Lake Road	4/27/2021	Property owner at the neighboring property at 3035 Croft way reported sludge oozing out of ground.	4/28/2021	Yes	Contacted OCHD and met them onsite. Talked to renters of property and added dye to kitchen sink. Dye appeared the next day where the sludge was coming from the ground. OCHD issued violation letter and property owner connected to sanitary sewer. **Status: No further action required.**	Failing septic

Sidwell Number	Address	Date	Description of Concern	Date referred to OCHD	Sewer Available	EESD Investigation Notes/Comments	Type
19-09-301-051	3325 Franklin Road	4/27/2021	Visiter to EL Johnson Nature Center reported oil sheen in stream.	NA	Yes	Resident contacted both Bloomfield Township and OCWRC regarding what appeared to be stagnant water and sheen in stream that flows through the EL Johnson Nature Preserve. Township staff visited site and walked along stream. The water level in the stream was much lower than usual and any shees observed seemed to be from iron bacteria from ground water seeps. **Status: No further action required.**	Natural sheen on water
19-11-276-013	2901 Woodcreek Way	6/30/2021	Resident contacted OCHD regarding Dan Devine Drain behind house is clogged and neighbor blows leaves into drain and pumps water from it. Also saw foam in stream.	6/30/2021	Yes	Complaint to OCHD was forwarded to the Bloomfield Township Ordinance Department and Ron Fadoir at OCWRC since the Dan Devine Drain is an Oakland County Drain. Ordinance Officer and OCHD visited site did not observe any foam in water or signs of illicit discharges or yard waste dumping. Some tree branches within drain. Ordinance Department sent letter to property owner to clean out debris. **Status: No further action required**	Yard waste in County Drain.
19-11-226-010	893 Foxhall Road	9/20/2021	Resident contacted OCWRC over the weekend regarding a dead deer within the stream behind their house.	NA	Yes	Ron Fadoir of OCWRC forwarded a a complaint to the Township regarding the dead deer in the yard. Township informed Ron that they can call the Bloomfield Township Animal Welfard Department for removal of the deer. This was forwarded to the resident. **Status: No further action required.**	Dead Deer

Updated 9/21/2021

Number of Complaints	Illicit Discharges	Illicit Discharges Corrected
10	4	3

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: June 17, 2020 Time: 12:20

Reported By: Homeowner Telephone:

Location of Complaint: 3821 Lakeland Lane Sidwell: 19-18-279-002

Homeowner Information: Vijay and Sara Goburdhun

Description of Complaint: Blue/Green Discoloration of water along shoreline

EES Department Investigation Notes	Date
O. Olsztyn-Budry visited site. Upon arrival, Fire Department was on site. Captain Allen Van Heck spoke with homeowner and left a voice mail with Ned Greenberg, the Lake Board Representative and Lake Association President, to determine if there was any treatment on the lake recently. Captain Van Heck to follow up with O. Olsztyn-Budry once he responds. Captain Van Heck also spoke with Pete Filpansick with Lake Pro. Pete was not aware of any chemical treatment to the lake in recent days. He indicated that some algae treatment use copper which would result in the blue/green discoloration. O. Olsztyn-Budry called and registered the complaint with the EGLE Pollution Emergency Alert System (PEAS). The homeowner was also advised to report the concern as well. While on site, the homeowner from 3800 Lakeland Lane came out and informed O. Olsztyn-Budry & Captain Van Heck that there was a company on the lake on Friday June 12, 2020 performing some sort of treatment. She thought the company name was Inland Waters. O. Olsztyn-Budry called and left a message with Jacy Garrison, the Oakland County Water Resource Commissioner's office Lake Board Representative. Photos documented and included in the project file here: S:\Engineering\NPDES Stormwater Permit\IDEP\Illicit Discharge Investigations\3821 Lakeland Lane\Photos 6-17-20	6/17/20

Actions Taken	Date
Photo documentation – O. Olsztyn-Budry S:\Engineering\NPDES Stormwater Permit\IDEP\Illicit Discharge Investigations\3821 Lakeland Lane\Photos 6-17-20	6-17-20

Agencies Contacted	Name	Phone/Email	Date
OCWRC	Jacy Garrison	248-858-5264	6/17/20
EGLE	PEAS	800-292-4706	6/17/20

Administrative Use Only		Date
Report Prepared By:	Olivia Olsztyn-Budry	6/17/20

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: July 12, 2020 Time: _____

Reported By: Ryan Husch, Bloomfield Township Fire Dept. Telephone: 433-7745

Location of Complaint: 3371 Westchester Road Sidwell: 19-12-477-011

Homeowner Information: Property Owner: Sibin Zacharias; Builder: Randy Najjar, Sapphire Luxury Homes

Description of Complaint: Fuel Oil Spill across this property and neighboring properties.

EES Department Investigation Notes	Date
An unknown fuel oil tank on property was ruptured during construction of new house and overflowed during rain storm. The oil flowed across the property and 2 neighboring properties. The Fire Department was called onsite on Sunday, July 12, 2020 and contained the spill. The Fire Department contacted DEQ and the PEAS Hotline.	7/12/20
The Summary Cleanup report was issued by PM Environmental on 9/29/20. Emailed with both Lishba Varughese and Joshua Scheels of DEQ. They received the report and consider this incident closed.	11/30/20

Actions Taken	Date
Office staff contacted Lishba Varughese at DEQ Water Division and Joshua Scheels of DEQ Incident Management. Builder for site, Sapphire Luxury Homes, has a contractor onsite pumping out remaining fuel oil from tank. Contractor is scheduled to remove contaminated soil.	7/13/20
Received complaint from property owner of 1036 Long Lake Road regarding smell of oil in the ditch line of Eastover Drive on the other side of Long Lake Road from the spill location. The spill plume must have traveled to a culvert that discharged it to the other side of Long Lake Road. Informed Kelley Junco of RCOC of this.	7/20/20
Met builder and representatives of PM Environmental onsite. PM Environmental will be managing cleanup effort of area impacted by spill. Through testing they will determine extent of contaminated soil. Contaminated soil will be removed and areas restored.	7/21/20

Agencies Contacted	Name	Phone/Email	Date
OCHD			
MDEQ	Lishba Verughese	varughesel@Michigan.gov	7/13/20
OCDC			
RCOC	Kelley Junco	kjunco@rcoc.org	7/20/20
OTHER			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	11/30/20

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: September 20, 2020 Time: _____

Reported By: 5090 Brookdale owner Telephone: _____

Location of Complaint: 5050 Brookdale Road Sidwell: 19-24-302-005

Homeowner Information: General Contractor of site is Thomas Sebold & Associates

Description of Complaint: Paint wash water entering nearby creek from 5050 Brookdale Road

EES Department Investigation Notes	Date
Resident of 5090 Brookdale Road contacted the PEAS hotline on Sunday, 9/20/20 regarding a painting contractor wash water entering nearby creek. Complaint was forwarded to Township on 9/21/20 by Lishba Varughese of DEQ.	9/21/20

Actions Taken	Date
Jodi Welch of Ordinance Department visited site. The house is currently under construction and the wash tub was incorrectly tied into the basement sump. The sump pump discharged the discharge water into the yard and creek area. Township staff witnessed the disconnection of the wash tub from the sump and reconnection to correct waste line.	9/21/20

Agencies Contacted	Name	Phone/Email	Date
OCHD			
MDEQ	Lishba Varughese	VARUGHESEL@michigan.gov	9/21/20
OCDC			
RCOC			
OTHER			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	9/21/20

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: December 22, 2020 Time: 10:30 AM

Reported By: Bloomfield Township Telephone:

Location of Complaint: 1904 Pine Ridge Court Sidwell: 19-18-303-071

Homeowner Information: Yellow H. Gandhi

Description of Complaint: E.Coli detected in storm sewer outfall

EES Department Investigation Notes	Date
Storm sewer outfall IDEP inspection during the summer/fall of 2020 revealed an elevated E.Coli count in one of the outfalls. Subsequent sampling and sewer televising limited the search to one run of sewer that 4 condo units discharge into.	12/22/20

Actions Taken	Date
Dye tested the condominium at 1904 Pine Ridge Court. Tested toilets on both the main and lower levels. Dye showed up in the downstream storm sewer manhole.	12/21/20
Issued a letter to the property owner, HOA President, and Condo management company indicating that the unit is illicitly connected to the storm sewer.	12/22/20
Met plumbing contractor and the plumbing inspector, Steve Fink, onsite to discuss cross connection and how it can be corrected.	1/25/21
Conducted several emails and phone calls with the plumbing contractor over past few months. Contractor was going to complete work in the spring, but then backed out of project. Sent certified letter today to the property owner, HOA President, and Condo management company indicating that the work must be completed within 30 days.	5/3/21
Management Company has been calling numerous contractors and they are either not interested in the work or their schedule is already booked. Ordinance Department took over project and will stay on top of Management Company to find contractor and get the work done.	7/26/21
Management Company has indicated that they have hired a contractor, the HOA approved the estimate, and the work will be scheduled.	1/26/22
Contractor, Milford Contracting, has indicated that they will begin on project as soon as the frost laws are lifted likely in early April	3/17/22

Agencies Contacted	Name	Phone/Email	Date
OCWRC	Ron Fadoir	fadoirr@oakgov.com	12/22/20

Administrative Use Only		Date
Report Prepared By:	Cory Borton	5/3/21

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: December 22, 2000 Time: _____

Reported By: _____ Telephone: _____

Location of Complaint: Beverly Hills Sidwell: _____

Homeowner Information: _____

Description of Complaint: Green Dye in stream in area of Lahser Road and 13 Mile

EES Department Investigation Notes	Date
Received emails and phone calls from OCWRC regarding green dye in stream south of Bloomfield Township. OCWRC wanted to know if Township knew anything about it. We did not.	12/22/20

Actions Taken	Date
Cory Borton met Joel Kohn of OCWRC in the field to determine location of dye release. It was discovered that it was coming from a house on Long Bow Court in Beverly Hills. Apparently, a plumber was looking for sump pump outlet and used too much dye.	12/22/20

Agencies Contacted	Name	Phone/Email	Date
OCHD			
MDEQ			
OCWRC	Joel Kohn and Ron Fadoir		
RCOC			
OTHER			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	12/22/20

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: January 4, 2021 Time: 10:00 am

Reported By: Ron Cousineau Telephone: _____

Location of Complaint: Upper Long Lake Estates Sidwell: _____

Homeowner Information: _____

Description of Complaint: Ron Cousineau of the Upper Long Lake – Lake Board called OCWRC regarding the use of road salt.

EES Department Investigation Notes	Date
Ron Fadoir of OCWRC called regarding the concern of the use of road salt in the Upper Long Lake Estates development. The streets in this area drain to Upper Long Lake and the development swim area.	1/4/21

Actions Taken	Date
No actions required. The Bloomfield Township Road Department receives training on the use of road salt and the trucks are calibrated annually. The use of brine reduces the amount of road salt necessary. Only the necessary amount of road salt is used on the roads and the Road Department is aware of limiting use in areas along lakes	1/4/21

Agencies Contacted	Name	Phone/Email	Date
OCHD	Ron Fadoir	fadoirr@oakgov.com	1/4/21
MDEQ			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	1/4/21

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: April 28, 2021 Time: 9:15 AM

Reported By: Mary Porrazzo Telephone:

Location of Complaint: 3035 Croft Way / 228 Orange Lake Rd Sidwell: 19-09-400-041

Homeowner Information: Mary Porrazzo

Description of Complaint: E.Coli sludge coming from hillside. Possible failing septic system.

EES Department Investigation Notes	Date
Complaint from property owner at 3035 Croft Way of smelly sludge oozing from the hillside behind home. Suspected failing septic system for 228 Orange Lake Road at the top of the hill.	4/28/21

Actions Taken	Date
Property owner of 3035 Croft Way issued complaint to the Township DPW of smelly sludge in her rear yard coming out of hillside. DPW investigated and thinks it is a failing septic system from 228 Orange Lake Road up the hill.	4/27/21
Notified OCHD of the possible failing septic system at 228 Orange lake Road. Met Teresa Brooks onsite to investigate. Teresa and I knocked on the door of 228 Orange Lake Road and asked if we could add dye to their septic system. They allowed us to pour dye in the kitchen sink and run the water.	4/28/21
Teresa Brooks of OCHD is not able to visit site today to look for dye. I stopped by and observed dye coming out of the side of the hill where the sludge is located at 3035 Croft Way. I emailed pictures of it to Teresa.	4/29/21
OCHD issued a violation letter dated 4/30/21. The Townshjp issued a letter dated 5/4/21.	5/4/121
The plumbing inspector, Steve Fink, indicated today that the final connection of 228 Orange Lake Road to the public sanitary sewer was completed on 6/1/21. The septic tank for the property was abandoned and crushed onsite.	6/3/21

Agencies Contacted	Name	Phone/Email	Date
OCHD	Teresa Brooks	brookste@oakgov.com	4/28/21
MDEQ			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	6/3/21

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: April 27, 2021 Time: 1:00 pm

Reported By: Katie Sontag Telephone: 248-541-7245

Location of Complaint: 3325 Franklin Road E.L. Johnson Nature Center Sidwell: 19-09-301-051

Homeowner Information:

Description of Complaint: Stagnant water and sheen observed within stream that flows through E.L. Johnson Nature Center.

EES Department Investigation Notes	Date
The resident left a voicemail with DPW and called OCWRC. The complaint was forwarded to EESD by DPW and Joel Kohn of OCWRC.	

Actions Taken	Date
Cory Borton and Angela Hysinger visited the site and walked the stream. The water level in the stream was much lower than usual. Much of the pools along the stream were stagnant and it appeared that an iron bacteria sheet was observed in some locations from ground water seepage. No indications of any dumping or illicit discharges. Joel Kohn of OCWRC indicated that he has received numerous calls over the county lately regarding the same thing do to the lack of rain recently. No further action needed.	4/27/21

Agencies Contacted	Name	Phone/Email	Date
OCWRC	Joel Kohn	kohnj@oakgov.com	4/27/21
OCHD			
EGLE			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	4/27/21

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: June 30, 2021 Time: _____

Reported By: Property Owner Telephone: _____

Location of Complaint: 2903 Woodcreek Way Sidwell: _____

Homeowner Information: _____

Description of Complaint: Property Owner at 2903 Woodcreek Way contacted OCHD regarding Dan Devine Drain behind house is clogged and neighbor blows leaves into drain and pumps water from it. Also saw foam in stream. Name and phone number of property owner not provided.

EES Department Investigation Notes	Date
Teresa Brooks of OCHD forwarded complaint to Bloomfield Township. Teresa Brooks of OCHD visited the site on 6/30/21 and did not did not observe and foam on water or evidence of an illicit discharge or dumping. The complaint was forwarded to the Township Ordinance Department and the OCWRC. The Dan Devine Drain is an Oakland County Drain.	6/30/21

Actions Taken	Date
Ordinance Officer Bob Thibeault visited the site and did not observe any foam in water or signs of illicit discharges or yard waste dumping. Some tree branches within drain. Ordinance Department sent letter to property owner to clean out debris. No further action is required.	7/1/21

Agencies Contacted	Name	Phone/Email	Date
OCHD	Teresa Brooks	brookste@oakgov.com	
OCWRC	Ron Fadoir	fadoirr@oakgov.com	
EGLE			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	7/7/21

BLOOMFIELD TOWNSHIP

Storm Water Discharge Response & Investigation Report

Date of Incidence: September 20, 2021 Time: _____

Reported By: Maboob Khan Telephone: 248-760-8874

Location of Complaint: 893 Foxhall Road Sidwell: 19-11-226-010

Homeowner Information: _____

Description of Complaint: Dead deer in stream in rear yard.

EES Department Investigation Notes	Date
Ron Fadoir of OCWRC forwarded complaint to Bloomfield Township	9/20/21

Actions Taken	Date
Bloomfield Township staff informed Ron that the resident can contact the Bloomfield Township Animal Welfare Department for removal of the carcass. This was passed to the resident. **Status: No further action required.**	9/20/21

Agencies Contacted	Name	Phone/Email	Date
OCHD	Ron Fadoir	fadoirr@oakgov.com	9/20/20
MDEQ			

Administrative Use Only		Date
Report Prepared By:	Cory Borton	9/21/21

Appendix D2

Canton Township Pollution Complaint Documentation

'cit Discharge Report Complaint Form

CANTON Community

Date: 7-9-21 Time: 11:00 AM Employee Initials: G. PYLE

Caller Information

Name: MICHELLE TREMAINE
Address: 44744 MICH. AVE.
Telephone: 313-690-4264

Location of Suspicious Discharge:
PARKING LOT STORM CATCH BASIN/POND

Description: (Circle all that apply)

Odor:	None	Sewage	Sulfide	(Oil)	Gas	Rancid-Sour	Other:
Color:	None	Yellow	Brown	Green	Red	Gray	Other: RAINBOW COLOR/POND
Turbidity:	(None)	Cloudy	Opaque				

Any other Information:

Investigation of Suspicious Discharge

Date: 7-9-21
Crew Initials: G. PYLE

Location: 44744 MICH. AVE

Temp.: 75° Rain: Yes ___ No: X Sunny Cloudy

General Description: (Circle all that apply)

Odor:	None	Sewage	Sulfide	(Oil)	Gas	Rancid-Sour	Other:
Color:	None	Yellow	Brown	Green	Red	Gray	Other: RAINBOW COLOR/POND
Turbidity:	(None)	Cloudy	Opaque				
Floatables:	None	(Petroleum)	(Sheen)	Sewage	Other:		(collect sample)
Deposits/Stains:	None	Sediment	(Oily)	Describe:			(collect sample)

➤Known industrial or commercial uses in drainage area? *Yes* *No*

➤Stream Conditions:

➤Additional observations:

Analysis:

➤Does this appear to be an illicit discharge? (*Yes*) *No* PARKING LOT

If so, can you identify the source? (*Yes*) *No* If yes, identify the Source: STORM CATCH BASIN

➤Is this within Canton Jurisdiction? (*Yes*) *No*

➤This discharge will be reported to: WC DOE WC Health Dept. (MDEQ)
(Circle appropriate jurisdiction)

* EMAIL AND PICTURES SENT TO SUE THOMPSON 7-9-21 YP

Appendix D3

Farmington Pollution Complaint Documentation

WATER & SEWER WORK ORDERS

MAINTENANCE, SEWER LINES

Customer Information

SHLAFER, ROMANDR
31930 GRAND RIVER
FARMINGTON,MI 48336
(248) 474-0224

Work Order #: 01950
Date Filed: 01/29/2020
Scheduled Date:
Scheduled By: LMCGILL

Work Description:

WASHER DRAINS INTO STORM LINE; OWNER WILL BE GETTING IT DISCONNECTED.

Work Results:

Labor

Performed By	NAME	Hours	Description

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description

Results / Comments:

Completed By: _____ Date: / /

The City of FARMINGTON Founded 1824

DPW WORK ORDERS

DRAINAGE / CATCH BASIN

Customer Information

SAINI, VIJAY
34821 ARUNDEL
FARMINGTON,MI 48335
(614) 537-0602

Work Order #: 02106
Date Filed: 05/29/2020
Scheduled Date:
Scheduled By: JLEACH

Work Description:

REMOVE STICKS AND DEBRIS FROM STORM DRAINS.

Work Results:

VACTORED BASIN IN ROAD AND BEEHIVE IN YARD; FLUSHED OUT STORM LINE CONNECTING THE TWO; BOTH WERE FULL TO INVERTS OF SMALL STICKS AND BRANCHES; TOOK PICTURES AND E-MAILED TO JOSH; AMOUNT OF STICKS PLUGGED VACTOR TUBE SEVERALTIMES.

MARCUS & JACK 5/29/2020

Labor

Performed By	NAME		Hours	Description
00351	JACK	WEST	2.50	
00681	MARCUS	SCHWEISTHAL	2.50	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
13	Van 2005 G.M.C. Savana 10,184#
20	VACTOR TRUCK 2020 FREIGHTLINER FL114SD
20.1	VACTOR JET RODDER 2020 FEDERAL SIGNAL 2100I
20.2	VACUUM PUMP - FEDERAL SIGNAL 2100I

Results / Comments:

Completed By: _____ Date: / /

DPW WORK ORDERS

DRAINAGE / CATCH BASIN

Customer Information

ENGELSMAN II, THOMAS R
36612 SAXONY
FARMINGTON,MI 48335

Work Order #: 02119
Date Filed: 06/05/2020
Scheduled Date:
Scheduled By: LMCGILL

Work Description:

PLEASE REPAIR EDGE DRAIN; CONTRACTOR FOR RESIDENT SAYS IT IS FULL OF ROOTS

Work Results:

36652 SAXONY HAS STREET BASIN AND STORM DRAIN; FOUND BLACK CORRUGATED PIPE IN STREET BASIN; WHEELED FROM BASIN TO CLEANOUT 157'; RAN LINE WITH VACTOR MULTIPLE TIMES; OPENED CLEANOUT TO VERIFY LOCATION; RAN 4' PAST TAP/CLEANOUT; BELIEVE TO BE BULKHEADED ~4' PAST CLEANOUT; PULLED BACK ROOTS AND SANDY WATER; WILL HAVE TO RETURN TO SUCK OUT THE SAND; RAN OUT OF TIME

JACK, MARCUS, & SEAN 6/5/2020

CLEANED OUT CATCH BASIN OF SAND AND DEBRIS

JACK, MARCUS, & SEAN 6/8/2020

Labor

Performed By	NAME		Hours	Description
00351	JACK	WEST	5.00	
00681	MARCUS	SCHWEISTHAL	5.00	
00323	SEAN	MILLER	2.00	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
13	Van 2005 G.M.C. Savana 10,184#
20	VACTOR TRUCK 2020 FREIGHTLINER FL114SD
20.1	VACTOR JET RODDER 2020 FEDERAL SIGNAL 2100I
20.2	VACUUM PUMP - FEDERAL SIGNAL 2100I
15	VAN 2015 CHEVROLET EXPRESS

Results / Comments:

Completed By: _____ Date: / /

DPW WORK ORDERS

DRAINAGE / CATCH BASIN

Customer Information

JIANG, HUAHUI
36652 SAXONY
FARMINGTON,MI 48335
(248) 854-9067

Work Order #: 02122
Date Filed: 06/08/2020
Scheduled Date:
Scheduled By: LMCGILL

Work Description:
CALLER STATED DRAIN FOR SUMP PUMP DISCHARGE IS CLOGGED; SIMILAR TO 36612 SAXONY (W/O #2119); PLEASE CHECK/REPAIR EDGE DRAIN; MAY BE CLOGGED WITH ROOTS

Work Results:
JET 6" CORRUGATED AT BRITTANY HILL AND SAXONY; MADE ONLY TO FIRST HOUSE'S CONNECTION

MARCUS & JACK 6/8/2020

JETTED/TV'D STORM MAIN TO FIND POSSIBLE TAP; UNABLE TO FIND; HYDROEXCAVATED; FOUND BLACK CORRUGATED AND TAP; RAN LINE ~165'

MARCUS & JACK 6/9/2020

JETTED LINE BOTH WAYS; IT IS CLEAR; FIXED "T"; DID HAVE ROOT INTRUSIONS

MARCUS & JACK 6/10/2020

RESTORED

JACK & SEAN 6/11/2020

Labor

Performed By	NAME		Hours	Description
00681	MARCUS	SCHWEISTHAL	13.50	
00351	JACK	WEST	14.50	
00323	SEAN	MILLER	1.00	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
13	Van 2005 G.M.C. Savana 10,184#
20.1	VACTOR JET RODDER 2020 FEDERAL SIGNAL 2100I

Results / Comments:

Completed By: _____ Date: / /

20.2	VACUUM PUMP - FEDERAL SIGNAL 2100I
20	VACTOR TRUCK 2020 FREIGHTLINER FL114SD
26	TRACTOR CAT 2019 420F2IT
26.2	FRONT END LOADER 2019 CAT
M235	Stone
M230	Sand
M241	Bags Mortar

Results / Comments:

Completed By: _____ Date: / /

DPW WORK ORDERS

DRAINAGE / CATCH BASIN

Customer Information

THOMPSON, JAMES
33111 KIRBY
FARMINGTON,MI 48336
(248) 573-9094

Work Order #: 02566
Date Filed: 05/03/2021
Scheduled Date:
Scheduled By: LMCGILL

Work Description:
RESIDENT CALLED TO REPORT CATCH BASIN NOT DRAINING; HE CLEARED OFF THE DEBRIS, AND IT IS JUST HOLDING WATER

Work Results:
RAN THE MAIN LINE; NEED TO CLEAN ROOTS OUT OF CATCH BASIN

MIKE & MARCUS 5/3/2021

VACTORED CATCH BASIN 2; ROOTS EVERYWHERE; RAN LINES TO 1 AND 3; DEBRIS AND ROOTS?; VACTORED 3; FULL OF ROOTS IN CATCH BASIN

MIKE & MARCUS 5/4/2021

Labor

Performed By	NAME		Hours	Description
00681	MARCUS	SCHWEISTHAL	3.50	
00408	MICHAEL	PESAVENTO	1.00	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
20	VACTOR TRUCK 2020 FREIGHTLINER FL114SD
20.1	VACTOR JET RODDER 2020 FEDERAL SIGNAL 2100I
20.2	VACUUM PUMP - FEDERAL SIGNAL 2100I
15	VAN 2015 CHEVROLET EXPRESS
13	Van 2005 G.M.C. Savana 10,184#

Results / Comments:

Completed By: _____ Date: / /

DPW WORK ORDERS

DRAINAGE / CATCH BASIN

Customer Information

IHM, MARK
36522 VICARY LN
FARMINGTON,MI 48335

Work Order #: 02666
Date Filed: 07/19/2021
Scheduled Date:
Scheduled By: CEUDY

Work Description:
RESIDENT STATES SUMP PUMP DISCHARGING OUT OF OVERFLOW
CHRISTIE IHM 248/444-8245

Work Results:
WE NEED TO CLEAN THE LINE OUT BY CURB
--MIKE 7/20/21

VACTORED DOWN ON CURB DRAIN. INSTALLED 6" WYE, 45, AND SCREW-ON CAP FOR A NEW CLEANOUT TO RUN WEST TO EAST. MATERIALS ON 9/9/21 TIMESHEET. RAN LINE WITH BULLDOG.
--MARCUS 9/9/21

Labor

Performed By	NAME		Hours	Description
00408	MICHAEL	PESAVENTO	2.00	
00351	JACK	WEST	6.00	
00319	CHRISTOPHER	GUIBORD	6.00	
00681	MARCUS	SCHWEISTHAL	4.50	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
15	VAN 2015 CHEVROLET EXPRESS
13	Van 2005 G.M.C. Savana 10,184#
26	TRACTOR CAT 2019 420F2IT
26.2	FRONT END LOADER 2019 CAT
26.1	BACKHOE ATTACHMENT 2019 CAT
20	VACTOR TRUCK 2020 FREIGHTLINER FL114SD
20.1	VACTOR JET RODDER 2020 FEDERAL SIGNAL 2100I
20.2	VACUUM PUMP - FEDERAL SIGNAL 2100I

Results / Comments:

Completed By: _____ Date: / /

DPW WORK ORDERS

DRAINAGE / CATCH BASIN

Customer Information

GIBBENS, LYNNE
36640 BRITTANY HILL
FARMINGTON,MI 48335
() -

Work Order #: 02739
Date Filed: 09/10/2021
Scheduled Date:
Scheduled By: JLEACH

Work Description:
CALLER STATES THAT THEIR SUMP PUMP IS DRAINING OUT OF THE OVER FLOW, CHECK EDGE DRAIN FOR ROOTS. ROB GIBBENS 248/425-2786

Work Results:
EXPOSED SUMP LINE AT STREET, JETTED LINE 60' TO THE EAST UNDER THE ROAD. VACTORED DOWN ON EAST SIDE OF ROAD AND JETTED LINE GOING TO THE EAST, FOUND SOME ROOTS, NOTHING FURTHER TO DO AT THIS TIME. BACKFILLED 9/16/21

Labor

Performed By	NAME		Hours	Description
00351	JACK	WEST	6.00	
00408	MICHAEL	PESAVENTO	2.00	
00319	CHRISTOPHER	GUIBORD	10.00	
00681	MARCUS	SCHWEISTHAL	11.50	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
15	VAN 2015 CHEVROLET EXPRESS
13	Van 2005 G.M.C. Savana 10,184#
20	VACTOR TRUCK 2020 FREIGHTLINER FL114SD
20.1	VACTOR JET RODDER 2020 FEDERAL SIGNAL 2100I
20.2	VACUUM PUMP - FEDERAL SIGNAL 2100I

Results / Comments:

Completed By: _____ Date: / /

WATER & SEWER WORK ORDERS

MAINTENANCE, SEWER LINES

Customer Information

WHEATON, ERNEST
22618 BROOKDALE
FARMINGTON,MI 48336
(781) 894-4027

Work Order #: 02745
Date Filed: 09/14/2021
Scheduled Date:
Scheduled By: JLEACH

Work Description:

THERE IS A TAP IN THE STORM SEWER ON THE NORTH SIDE OF THIS HOME, DYE TEST PRIVATE SEWER.

Work Results:

ERNEST WHEATON PASSED AWAY; NIECE ROSEMARY IS IN TOWN CLEANING OUT HOUSE. WE PUT CAMERA IN STORM SEWER AT TAP IN QUESTION, POURED 1 GALLON OF MILK DOWN LAUNDRY TUB SINK IN BASEMENT; MILK MADE ITS WAY TO THE TAP IN THE STORM. TURNED WATER OFF AT CURB STOP. INFORMED ROSEMARY. SHE IS THE EXECUTOR OF THE ESTATE. CONTACT INFO FOR CORRESPONDENCE: ROSEMARY MILLER, 58 COLLEGE FARM ROAD, WALTHAM MA 02451, PH: 617-763-3457

Labor

Performed By	NAME		Hours	Description
00681	MARCUS	SCHWEISTHA	2.00	
00351	JACK	WEST	2.00	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
13	Van 2005 G.M.C. Savana 10,184#
72	Enclosed Van Trailer 1987 Tote Wagon TW 101 3,000#
72.1	TV Sewer Inspection Unit 1986 Cues TV Qube P

Results / Comments:

Completed By: _____ Date: / /

The City of FARMINGTON Founded 1824

WATER & SEWER WORK ORDERS

MAINTENANCE, SEWER LINES

Customer Information

EIB, MARY
23130 ORCHARD LAKE
FARMINGTON,MI 48336
(248) 474-0741

Work Order #: 02784
Date Filed: 10/08/2021
Scheduled Date:
Scheduled By: CEUDY

Work Description:
APPOINTMENT 8:00 AM MONDAY OCTOBETR 11, 2021
FLOOR DRAIN NEAR FURNACE IS BACKING UP. PLUMBER ADVISED RESIDENT SEWERS FLOW TO ORCHARD LAKE ROAD.
IF FLOOR DRAIN NEAR FURNACE WILL TAKE WATER DYE TEST IT. IF NOT DYE TEST BASEMENT LAUNDRY TUB.

Work Results:
MAIN FLOOR OF HOME HAS HUNG PLUMBING EXITING TO BYPASSED SEPTIC TANK. BASEMENT FIXTURES DRAIN TO CLEANOUT IN BASEMENT. DYE TESTED AT BASEMENT LAUNDRY TUB. DYE CAME TO SANITARY SEWER IN REAR YARD. ADVISED RESIDENT TO CONTACT A DRAIN CLEANING CONTRACTOR TO CLEAN FLOOR DRAIN LINE NEAR TH FURNACE AND THE SEWER MAIN LINE ENTERING HOME.
--CHUCK 10/11/21

Labor

Performed By	NAME	Hours	Description
00408	MICHAEL PESAVENTO	0.75	

Inventory

Inventory Code	Description	Quantity	Units

Equipment

Equipment Code	Description
15	VAN 2015 CHEVROLET EXPRESS

Results / Comments:

Completed By: _____ Date: / /

Appendix D4

Novi Pollution Complaint Documentation

ARC Member Permit Responsibilities - Collective IDEP, TMDL and PEP Plans

Item	Date	Description
Repair/correct illicit connections/discharges revealed during the site inspection. If the discharge is significant, take immediate steps to stop the illicit discharge	2/26/2021	Illicit discharge at 43100 Nine Mile Road was discovered and corrected on 2/25/2021. The Water and Sewer Department discovered a sanitary sewer lead for a bathroom added to the north end of the building was connected to storm sewer. Residents in the area had complained about a smell, which trigered this discovery. A private contractor hired by the property owner capped the santiary sewer lead and will be connecting the lead to nearby sanitary sewer in the future. No plans will be submitted to the City for review since this is a private lead, but Kate Richardson will follow-up when the work is completed.
	4/28/2021	Possible illicit discharge at storm drain outlet from Beachwalk Apartments to Walled Lake. Resident Harvey Markkowitz (248-705-4822) contacted Novi Police about a frothy, milky layer with sediment on the surface of the water discharging into Walled Lake. Deputy Smith took a sample of it and noted that it was yellowish in color and looked like pollen. Rebecca Runkel will investigate (field visit confirmed that it appears to be naturally-occuring pollen - RR).
	11/18/21	Anonmyous call to Water & Sewer Dept stating a restaurant employee at 41563 10 Mile Rd was witnessed pouring grease into storm drain behind building. Site visit confirmed grease smell and substance in and around catch basin. Debbie Martinez, Code Enforcement Officer, spoke with restaurant employee and property manager. She will send a Notice of Violation to the property owner. The Water & Sewer dept will also be sending a letter to the restuarant regarding proper grease disposal. (Update, 12/7/21 - Violation letters sent, Field Ops checked public storm sewer on Meadowbrook and there was no visible grease accumulation in public sewer, property manager is instructed to clean out/vac private sewer where grease was dumped and report back to Field Ops).

Appendix D5

Oakland County Pollution Complaint Documentation

FY 2020 IDEP-Related Complaints
Rouge River Watershed

Source	Date	Complainant	Organization	Complaint Address / Location	City	Complaint	Investigating Agency	Enforcing Agency	Result	Status	Type / Source	Pollutant	Watershed	Estimated Amount	Notes
OC Safety	11/1/2019	Melissa Accord	Salvation Army	730 N. Pontiac Trail, Salvation Army Store	Walled Lake	Vehicle Spill, gasoline running into parking lot storm CB	WRC / Walled Lake	Walled Lake FD	Store Manager contacted Walled Lake FD, Truck was gone. Small amount of fuel on Parking lot cleaned up by FD. Walled Lake DPW followed up, no fuel in Parking lot CB or connected detention pond.	Closed	Fuel / Vehicle spill	Fuel	Rouge	1 gallon	Fuel cleaned up no impact to local storm
Phone Call	1/3/2020	Tom McNalley	Resident	Contour Contracting, 40960 Woodward Ave	Pontiac	Contractor dumping paint and construction debris in down storm drain	WRC / Bloomfield Twp.	NA	Site Investigated. No issues found.	Closed	Illegal Dumping / Commercial Facility	NA	Rouge	NA	
Email	2/6/2020	Maureen Diverno	Resident	2038 S. Hammond Lake	W. Bloomfield	Failed Septic System at residence on Hammond Lake	FOTR, W. Bloomfield, OCHD	OCHD	Violation Notices. Pump and Order Issued by OCHD, Homeowner has applied for Permit to replace Failed Septic System .	Permit Pending	Sewage- Residential Failed Septic System	Sewage	Rouge	65,700 gal. / yr.	
Letter	2/20/2020	John Biesell	Farmington Hills	La Marsa Restaraunt, 23273 Middlebelt Rd.	Farmington Hills	Restaurant illegal Dumping grease into property CBs going to local storm	Farmington Hills, OCHD	OCHD, FHC	Violation Notice Issued. Owner had property CBs and local storm cleaned out. OCHD followed up with restaurant inspection, grease trap cleaning and grease dumpster requirements	Closed	Restaurant Grease- Illegal Dumping ping	Grease	Rouge	200 gallons	Ongoing Issue with IDEP DWS / Investigations going back to 2010. Facility was dye tested, no illicit discharges were found.
CDM Inspection	3/21/2020	CDM	WRC / Northville FD	810 8 Mile Rd, Local Storm from Gas Station at 8 Mile & Taft	Northville	CDM reported oil sheen from a local drain an inlet to Randolph St Drain coming from the Gas Station at 810 Eight Mile Rd. Booming install at local drain outlet	WRC, EGLE, Station Owner	EGLE	Sheen is from Non Aqueous phase liquids from LUST diesel remediation at the Gas Station in Ground water migrating into the ga station the storm drain. PM Environmental & Oscar Larson, cleaned out and disposed of Fuel / water mix in storm system and disposed of Booms. Local drain was remediated per EGLE requirements. No product impacted the Randolph St Drain	Closed	Diesel Fuel- Gas Station LUST remediation site	Diesel Fuel / Ground water mix	Rouge	200 gallons	product was Light Non Aqueous Paste like diesel fuel components mixed w/ ground water. PM Environmental and Oscar Larson Managed Site cleanup and remediation of the storm sewer and groundwater contamination as part of an ongoing LUST remediation with EGLE.
OC Safety	4/2/2020	Joan Rayford	Resident	28899 Millbrook Rd	Farmington Hills	Neighbor discharging Pool Water into Pebble Creek	WRC / Farmington Hills	NA	Informed caller res pool water is not regulated. Referred to Farming Hills DPW for follow up	Closed	pool water / Residential swimming pool	NA	Rouge	NA	
OC Safety	5/12/2020	Anonymous		528 Randolph St	Northville	Residential home construction site, No silt fence, Excavator parked next to Randolph St Drain	Wayne County DPS / Northville	Northville	Reported to Wayne County, City Northville did SESC Site inspection. No issues were found	Closed	Soil Erosion / Residential Construction Site	NA	Rouge	NA	
OC Safety	7/11/2020		Bloomfield Twp FD	N. Ramp from Square Lk. To Opdyke Rd.	Bloomfield Twp	Gasoline Tanker Truck fire and fuel spill off N. Square Lk. Exit Ramp to Opdyke Rd.	WBT FD, MDOT, RCOC	MDOT	Spill contained by FD to grass detention area off exit ramp. MDOT /RCOC responded . Site cleaned up by contractor	Closed	Accident / Spill	Gasoline	Rouge	500 gallons	Spill was contained in detention area, no impact storm drains or Rouge
OC Safety	8/10/2020	Anonymous	OC Safety Dispatch	22330 Rougemont Dr.	Southfield	Illegal Dumping	WRC	NA	No issues found	Closed	NA	NA	Rouge		
OC Safety	8/18/2020	Judith McGrath	Resident	4469 W. Maple Rd	Bloomfield Hills	Neighbor has pipe from pond draining on to her property	WBC	NA	Referred to Bloomfield Hills not and IDEP issue	Closed					

FY 2021 IDEP-Related Complaints
Rouge River Watershed

Source	Date	Organization	Complainant	Address	City	State	Zip	Phone	Email	Complaint Address / Location	CVT	Complaint / Description	Referral / Inv Agencies	Enforcing Agency	Results	Status	Illict Discharge	Source	Type	Quantity	Drain / Waterbody	Watershed	Notes / Comments
Referral- FOTR	11/17/2020	Resident	David Levitt	25741 River Drive	Franklin	MI	48025	(248) 330.5888	dmlevitt@mindspring.com	25733 River Dr, drainage ditch to Rouge River	Franklin Village	Neighbor installed drainage ditch discharging road runoff to Rouge River	Franklin Village, WRC, EGLE	Franklin Village, WRC, EGLE	Referred to WRC for SESC Permit, Franklin Village Construction Permit and EGLE for Discharge Permit	Closed	Sediment	Residential Construction Site	SESC	Not Estimated	Franklin Branch of Rouge River	Rouge	WRC SESC issued stop work odor which was corrected. Ongoing dispute with neighbor, Franklin Village and EGLE over road drainage pipe instillation and permitting. See SESC file for more details
Lathrup Village -HRC	2/5/2021	HRC	Stephanie Petriello	555 Hulet Dr.	Bloomfield Hills,	MI	48303-0824	(248) 454-6318	spetriello@hrcengr.com	Lathrup Village DPS, 24000 Southfield, 48036	Lathrup Village	Dye Testing verified Illicit Connections in the DPS garage facility	Lathrup Village	Lathrup Village	Bathroom, shower and garage utility sink and floor drain connected to local storm MH. Verified by HRC	Corrective Action Pending by Lathrup Village	Sewage	DPW Garage	Illicit Connection	Not Estimated	Local Storm	Rouge	Received Dye Test Results Letter from HRC Corrective actions by Lathrup Village Pending
Referral -Farmington Hills	3/17/2021	Farmington Engineering	Karen Mondora	31555 W.11 Mile Rd	Farmington Hills	MI	48336	(248) 444-0311	kmondora@fhgov.com	Green Pond Sub Div. Valley Forge and Tulipwood	Farmington Hills	Dead Fish on Pond	FH, WRC, ARC	Reported to DNR	Determined to be Winter Fish Kill caused by freezing temps / low DO	Closed	NA	NA	NA	NA	Green Pond	Rouge	Dead fish attributed to frozen pond and low DO. Water Quality readings do not show an ongoing issue. Pond is sediment basin. Pond has only storm drain inlets and no outlets. Cleanout of pond is recommended.
OC Safety Dispatch	3/29/2021	Resident	Jim Williams	19800 Riverside Dr	Beverly Hills	MI		248-930-0435	mojohaiku@earthlink.net	Rouge River at 19800 Riverside Dr.	Beverly Hills	Possible sewage on River behind house	WRC, ODHD, Beverly Hills DPW	NA	No issue found, algae, plant material, debris from spring rain washout.	Closed	NA	NA	NA	NA	Rouge River	Rouge	No issues were seen. E.coli counts were minimal. Reported to results to Beverly Hills and homeowner
OC Safety Dispatch	4/2/2021	NA	Anonymous	NA	NA	NA	NA	NA	NA	14 Mile Rd at M 5, Construction site	Commerce Twp	Construction site pumping discharge with orange color to Seely Creek	Commerce Twp	Commerce Twp	Referred to Commerce Twp. No issues found at site.	Closed	NA	NA	NA	NA	Seely Drain	Rouge	Per Jay James, Commerce TWP, dewatering pond pump was in place but not operating at time of inspection. No issues with the creek were seen
Referral -Email to Rfadoir	4/19/2021	Wayne County DPS	Sue Thompson	3500 Commerce Ct	Wayne	MI		(313) 999-6266	sthompson@waynecounty.com	Sump Drain, 8 Mile W. of Napier	Novi	Heavy turbid flow to Sump Drain W. of Napier Rd	WRC Permitting / SESC	WRC	SESC Enforcement action at upstream Sub Division Construction site	Closed	Sediment	Residential Construction Site	SESC	Not Estimated	Sump Drain	Rouge	Referred to Joe Gardner with SESC
OC Safety Dispatch	4/27/2021		KATIE SONTAG					248-541-7245		EL L Johnson Nature Center 3325 Franklin Rd.	Bloomfield Twp	Oily Sheen on River at EL Johnson Nature Center	WRC / Bloomfield Twp	NA	No Issues Found	NA	NA	NA	NA	NA	NA	Rouge	No Information
OC Safety Dispatch	4/28/2021		HARVEY MARKOWITZ		Novi	MI		248 705 4822		1153 East Lake Dr	Novi	Yellow colored Discharge coming from Apt Complex Storm Drain at 1153 East Lake Dr	WRC /City of Novi, DPS	NA	Discharge is Pollen from Property Storm Runoff	Closed	NA	NA	NA	NA	NA	Rouge	Reported by Deputy, Smith Novi PD
OC Safety Dispatch	5/19/2021	Resident	Dale		Novi	MI		248-255-9076		1585 Paramount St	Novi	Caller thinks illegal Building at 1858 Paramount St is on wetlands	WRC SESC, Novi, EGLE	Novi / EGLE	Not WRC issue referred to City of Novi and EGLE	Closed	NA	NA	NA	NA	Na	Rouge	No Information
OC Safety Dispatch	6/12/2021	Square Lake HOA, President	Kirt Brannock	1642 Hamilton Dr.	Bloomfield Twp	MI		(360) 306-3300		1750 Hamilton Dr.	Bloomfield Twp	Homeowner at 1750 Hamilton on Square Lake is having issues with construction contactor and silt fencing	WRC SESC, Bloomfield DPS	WRC SESC	Contractor notified, Corrected SESC Controls	Closed	Sediment	Construction Site	SESC	Not Estimated	Square Lake	Rouge	Contact is Joe Gardner, WRC SESC 248-858-5389
OC Safety Dispatch	7/9/2021	Resident	Althea Brown	22387 Nearbrook Ct.	Farmington Hills	MI		(248) 974-1888		22387 Nearbrook Ct	Farmington Hills	Cement Contractor dumping concrete washout to local storm drain	Farmington Hills, DPS	Farmington Hills	Pending Investigation	Open							No Information
OC Safety Dispatch	9/18/2021	Resident	Mahboob Kahn	893 Foxhall Rd	Bloomfield Twp	MI		(248) 760-8874		893 Foxhall Rd	Bloomfield Twp	Dead deer in stream behind house	MDNR / OCHD	MDNR	Deer removed by Animal Welfare	Closed	NA	NA	NA	NA		Rouge	
OC Safety Dispatch	9/20/2021	Resident	Ryan Chevillet	21123 Halstead Rd	Farmington Hills	MI		734-926-6042		21123 Halstead Rd	Farmington Hills	Contactor spraying roundup near his property	FH, EGLE	EGLE	Contractor is treating Invasives as part od Minnow Pond Restoration Project. FH is handling	Closed	NA	NA	NA	NA	Minnow Pond Drain	Rouge	Contact Tyler Songas with Farmington Hills Engineering 248-871-2533
OC Safety Dispatch	12/21/2021	EGLE	Tracy Keskemeti							32801 Long Bow Ct	Beverly Hills	Green Dye in Rouge	EGLE/WRC/Beverly Hills Bldg Dept	Beverly Hills Bldg Dept	Plumber turned River green dye testing Residential Home for sale. Illicit connection corrected by property owner / Beverly Hills	Closed	Tracing Dye	Residential Property	Illicit Connection	0.5 gal	Rouge River	Rouge	House was for sale. Presumed vacant. Illicit connection was corrected by realtor.

Appendix D6

Plymouth Township Pollution Complaint Documentation

Charter Township of Plymouth

Pollution Complaint Tracking Form

Illicit Discharge Elimination Program

Complaint made by: Reported by GFL - Green for Life - Matt, Supervisor

Phone #: 586-447-8910

Date: 11/19/20 Time: 8:00 am

Location of Problem: Mystic Forest Offending Party (if known) GFL

Nature of Problem (i.e. paper waste, odor, color, etc.):

Trash truck had an oil leak/spill

Is this an Emergency? ☒ No
☐ Yes (then call 911)
Nature of Emergency: _____

Initial Contact made to:
- ☐ 911
- ☐ City Dept. _____
- ☐ Wayne County (888) 223-2363
- ☐ Oakland County (248) 858-0931
- ☐ PEAS Hotline (State) 1-800-292-4706
- ☒ Other Twp Office

Additional Comments:

GFL reported they had an oil leak/spill from one of the trash collection trucks on Wednesday 11/18/20 - no leak/spill entered a storm drain - GFL responded immediately.

Investigation Summary
- ☐ Initial Investigation
- ☐ Follow-up Investigation

Date of Investigation: _____
Investigating Agency: _____
Location of Discharge: _____

Crew Members: _____

Investigation Location: _____

Observations (odor, color, volume, etc.): _____

Actions Taken (dye testing, notification letter, etc.):

GFL addressed the spill immediately - placed down absorbent material - street sweeper will return to clean up on 11/20/20

Were photos taken: ☐ Yes ☒ No

Agency Referred to: _____
Agency Contact: _____
Method of Communication:
☐ E-mail* ☐ Letter/memo* ☐ Phone
*Attached copies
Content of Communication: _____

Date Corrected or Resolved: 11/20/20 - Completed

Charter Township of Plymouth

Pollution Complaint Tracking Form **Illicit Discharge Elimination Program**

Complaint made by: Environmental Consulting & Technology - Survey Crew Phone #: 734-769-3004 x23308

Date: 02/26/2021 Time: _____

Location of Problem: Plymouth Hills Mobile Home park Offending Party (if known) _____

Nature of Problem (i.e. paper waste, odor, color, etc.): _____

Reported black sheen in vicinity of trailer park. Surveying subcontractor observed a black water discharge coming from a tributary.

Is this an Emergency? ☒ No
☐ Yes (then call 911)
Nature of Emergency: _____

Initial Contact made to:
- ☐ 911
- ☐ City Dept. _____
- ☒ Wayne County (888) 223-2363
- ☐ Oakland County (248) 858-0931
- ☐ PEAS Hotline (State) 1-800-292-4706
- ☐ Other _____

Additional Comments:
Wayne County forwarded concern - DPW staff
investigated the area from the detention pond up to
Johnson's Creek.

Investigation Summary
- ☒ Initial Investigation
- ☒ Follow-up Investigation

Date of Investigation: 02/26/21 and 03/02/21
Investigating Agency: DPW
Location of Discharge: _____

Crew Members:
Jimmy Scholten

Investigation Location:
Johnson Creek tributaries and outfalls - qtr section 19sw
from pond at west side of Plymouth Hills north towards 5 Mile.

Observations (odor, color, volume, etc.):
No black oily sheen was discovered

Actions Taken (dye testing, notification letter, etc.):
Follow-up in one year recommended

Were photos taken: ☒ Yes ☐ No

Agency Referred to: _____
Agency Contact: _____
Method of Communication:
☐ E-mail* ☐ Letter/memo* ☐ Phone
*Attached copies
Content of Communication: _____

Date Corrected or Resolved: 03/02/2021

WORK ORDER NOTIFICATION

Plymouth Township – Public Works

Illicit Discharge Complaint Investigation

Work Order #14524

Priority: Red (High)

ADDRESS: Johnson Creek 48170 Q sect. 19SW

LOCATION: Johnson creek tributaries and outfalls-quarter section 19sw from pond at west side of Plymouth Hills Mobile Home Park north towards Five Mile

MAP PAGE:

SECTION:

INITIATED DATE: 3/2/2021 7:30:00 AM

INITIATED BY: Hamann, Dan

SUBMIT TO: Hamann, Dan

COMMENTS:

By Hamann, Dan : 1/25/2022 1:27:31 PM
Please look for reported black sheen in vicinity of trailer park. Please take photos. Please make a deposition of what you find and place in comments

By Hamann, Dan : 1/25/2022 1:32:34 PM
This work order replaces lost or damaged original w.o.

By Scholten, Jimmy : 1/26/2022 9:23:10 AM
Followed from the detention pond up to Johnson's creek. In that path I didn't identify any black oily sheen. However I did notice in the trailer park property where there is storage and maintenance activities possibly happening.

By Scholten, Jimmy : 1/26/2022 9:23:11 AM
Recommend visiting the site again in one year.

By Hamann, Dan : 1/26/2022 12:22:47 PM

"NOTE: THIS WORK ORDER WAS PREPARED EX POST FACTO DUE TO SOFTWARE ISSUE. COMPLAINT WAS RECEIVED ON 2-26-2021;INITIAL INSPECTION INSPECTION OCCURRED ON 2-26-2021; AND FOLLOW UP ON 3-2-2021: ATTACHED PHOTOS WERE TAKEN ON 3-2-2021
--

INSTRUCTIONS: Please look for reported black sheen in vicinity of trailer park. Please take photos. Please make a deposition of what you find and place in comments

SERVICE REQUEST / CALLER DETAILS

RequestID	Date/Time	Priority	Description	Problem Address

WORK ORDER TASKS

Sequence	Name	Proj Start	Entity ID	Duration

ADDITIONAL DETAILS

Sequence	Name

COSTS

Total Work Order Labor Costs	**$179.40**
Total Work Order Material Costs	$0.00
Total Work Order Equipment Costs	$9.39
Total Work Order Cost	**$188.79**

Work Order

WO Number: 14524

WO Type: Illicit Discharge Complaint Investigation

Asset Type: PLYMOUTH_OPENWATERWA Change

Category: Emergency Maintenance

Initiated By: Hamann, Dan — Date Created: 03/2/2021 7:30 AM

Status: Complete — Priority: Red (High)

Supervisor: Hamann, Dan

Submit To: Hamann, Dan — Date Submitted: 01/26/2022 9:24 AM

Projected Start: 03/2/2021 7:30 AM — Projected Finish: 03/2/2021 4:00 PM

Completed By: Scholten, Jimmy

Closed By: — Date Closed:

Appointment Time: — Finish Date: 01/26/2022 9:22 AM

Comments: Add Comment — Sort ▲

Hamann, Dan 01/25/2022 1:27 PM
Please look for reported black sheen in vicinity of trailer park. Please ta...

Hamann, Dan 01/25/2022 1:32 PM
This work order replaces lost or damaged original w.o.

Scholten, Jimmy 01/26/2022 9:23 AM
Followed from the detention pond up to Johnson's creek. In that path I ...

Scholten, Jimmy 01/26/2022 9:23 AM
Recommend visiting the site again in one year.

Hamann, Dan 01/26/2022 12:22 PM
*NOTE: THIS WORK ORDER WAS PREPARED EX POST FACTO DUE TO...

Instructions: Please look for reported black sheen in vicinity of trailer park. Please take photos. Please make a deposition of what you find and place in comments

Resolution:

Assets

Total Entities: 1

Asset	Asset Id	Asset Uid	Location	Warranty Date
PLYMOUTH_OPENWATERWAY	0	0		

- Pink rows indicate inventory still under warranty

Update Work Order XY when adding/removing assets? ☑

Details

Project: — Account:

Project Tree

Location Information

WO Address: Johnson Creek 48170 Q sect. 19SW

Location Details: Johnson creek tributaries and outfalls-quarter section 19sw from pond at west side of Plymouth Hills Mobile Home Park north towards Five Mile

Facility Id: — Level Id:

X Location: — Y Location:

Attachments

Add attachment... — Remove all attachments


IMG_20220126_092230027.jpg — 3.31 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092230558.jpg — 3.39 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092231081.jpg — 2.98 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092231536.jpg — 2.42 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092232016.jpg — 2.70 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092232544.jpg — 3.53 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092233017.jpg — 2.70 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092233513.jpg — 3.09 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM


IMG_20220126_092234049.jpg — 3.80 MB
Attached by Scholten, Jimmy — 01/26/2022 9:23 AM



IMG_20220126_092238465.jpg
Attached by Scholten, Jimmy
2.89 MB
01/26/2022 9:24 AM



IMG_20220126_092238988.jpg
Attached by Scholten, Jimmy
2.38 MB
01/26/2022 9:24 AM



IMG_20220126_092239527.jpg
Attached by Scholten, Jimmy
2.98 MB
01/26/2022 9:24 AM

Reservations

Equipment ID	Employee	Start Date	End Date	Comments

No records to display.

Checked Out Equipment

Equipment ID	Employee	Check Out Date	Due Date	Comments

No records to display.

Work Cycle

Repeat: Never

Interval: 2 Months

From: Projected Start Date

Date Printed:

Next Print Date: 3/1/2021

Related Work Activities

Service Requests

Link Request:

Inspections

Link Inspection:

Work Orders

Link Work Order:

	Id	Description	Link Type	Priority	Status	Sul
☐	14526	Illicit Discharge Complaint Investigation	Child	1	OPEN	Ha

Charter Township of Plymouth

Pollution Complaint Tracking Form

Illicit Discharge Elimination Program

Complaint made by: Stacey Allen - forwarded from PEAS

Phone #: 517-256-9557

Date: 04/08/21 from PEAS Time: _____

Location of Problem: 13270 Graefield Cir - Subdivision pond

Offending Party (if known) Fresh Image - 248-919-0872

Nature of Problem (i.e. paper waste, odor, color, etc.): _____

Painting company is suspected of rinsing painting tools into the storm sewers which flows into the neighborhood pond.

Is this an Emergency? ■ No
☐ Yes (then call 911)
Nature of Emergency: _____

Initial Contact made to:
- ☐ 911
- ☐ City Dept. _____
- ☐ Wayne County (888) 223-2363
- ☐ Oakland County (248) 858-0931
- ▬ PEAS Hotline (State) 1-800-292-4706
- ☐ Other _____

Additional Comments:
Plymouth Township DPW was requested to investigate the above illicit discharge complaint.

Commercial painters had washed equipment in the home's backyard and run off water entered a nearby beehive that flows to pond behind complainant's home.

Investigation Summary
- ▬ Initial Investigation
- ▬ Follow-up Investigation

Date of Investigation: 04/08/21
Investigating Agency: Plymouth Twp - DPW
Location of Discharge:
13270 Graefield Circle

Crew Members:
Jimm Scholten

Investigation Location:
Above address and neighborhood pond

Observations (odor, color, volume, etc.):
DPW staff did not notice any white discharge - the milky appearing water seems to be dispersed.

Actions Taken (dye testing, notification letter, etc.):
Fresh Image was spoken to by Twp employees - it was believed they were not aware of the beehive in the rear yard and the incident was not intentional.

Were photos taken: ▬ Yes ☐ No

Agency Referred to: _____
Agency Contact: _____
Method of Communication:
☐ E-mail* ☐ Letter/memo* ☐ Phone
*Attached copies

Content of Communication:

Date Corrected or Resolved: 04/08/21

Michigan EGLE PEAS Incident Report

		Date & Time of Call:	04/07/2021	19:58	**Dispatch:**	JL-PEAS
PEAS Incident Number:	26090	Incident Occurred:	04/07/2021	19:58	**Shift:**	After Hrs.
Related Incident Number(s):		Incident Observed:			**District:**	Warren (SEMI(e

Description of Incident (incl. cleanup efforts, assistance requested, etc.): Paint disposed of in subdivision pond - Plymouth

Callers states that there appears to be a white, milky substance in a cement culvert where water drains into pond. Caller believes it is caused by painting being performed on the exterior of a house across the street (13225 Graefield Circle); the storm sewers drain into the pond and caller believes the painters dumped paint rinse water into the storm sewer, causing it to flow into the pond area. The pond is in the center of the subdivision and is adjacent to the north of the caller's property. Caller has pictures of the incident. Caller is requesting a follow up call from EGLE staff.

PEAS Caller *Name* :	Stacey Allen		PLP* - *Personal Contact Name:*		
PEAS Caller *Employer Name* :			PLP - *Employer Name:*		
PEAS Caller *Street Address* :	13270 Graefield Circle		PLP - *Street Address:*	13225 Graefield Circle	
PEAS Caller *City or Twp., State:*	Plymouth	MI	PLP - *City or Twp.* *State*	Plymouth	
PEAS Caller *Phone #:*	517-256-9557		PLP - *Phone #:*		
PEAS Caller *Email Address:*	staceyallen1@gmail.com		PLP - *Email Address:*		
PEAS Caller Type:	Private Party		**PLP - Type**:	Private Party	
Incident Street Address:	adjacent (north) to 13270 Graefield Circle		Material Released:	paint	
Incident Cross Streets:	North Territorial and Ridge Rd.		Amount Released to Air:		
Incident City or Twp.:	Plymouth City		Amount Released to Ground:		
Incident County:	Wayne		**Amount Released to Water:**	X	unknown
Incident Lat./Long.:	N	W	Cleanup Contractor:		
Water Body Impacted:	pond		Release/Incident Controlled?:		

Referrals

Special Referral:	Normal Referral	Lead Div. 1:		Lead Div. 2:		Lead Staff Person(s) Assigned:	

Referral Contact / District	Division / Affiliation	E-Mail Date / Time Sent	E-Mail Date / Time Received	Phone Call or Page Date / Time	Filed By	Assigned To	Referral Notes
SEMI DO	District D.L.						

Dispatch	Date / Time Start	Date / Time End	Hours
JL	04/07/2021 19:57		0.00

Sensitive Information in Addition to Above any Private Caller Personal information Above (in italics)

Additional Notes

Time Stamp: 19:58

* PLP - Potentially Liable/Responsible Party

*** Information in this form, except private callers' personal information (italics), is available from PEAS through FOIA*

Inbox | Recent | Requests | Work Orders | Inspections | Event Layers | GIS Search | Calendar | Storeroom

Work Order | Email | Print | Save | Close | Delete

Work Order

WO Number: 7217

WO Type: Illicit Discharge Complaint Investigation

Asset Type: PLYMOUTH_OPENWATERWA Change

Category: Emergency Maintenance

Initiated By: Hamann, Dan — Date Created: 04/8/2021 8:32 AM

Status: Complete — Priority: Red (High)

Supervisor: Hamann, Dan

Submit To: Hamann, Dan — Date Submitted: 04/8/2021 11:41 AM

Projected Start: 04/8/2021 8:32 AM — Projected Finish: 04/8/2021 8:32 AM

Completed By: Scholten, Jimmy

Closed By: — Date Closed:

Appointment Time: — Finish Date: 04/8/2021 11:40 AM

Comments: Add Comment — Sort ▲

Hamann, Dan 04/8/2021 8:34 AM
Please investigate IDEP complaint See PEAS report attached.

Scholten, Jimmy 04/8/2021 11:41 AM
Received pictures from homeowner across the street. The company t...

Scholten, Jimmy 04/8/2021 11:41 AM
When arrived on scene this morning I didn't notice any white discharg...

Instructions: Please investigate IDEP complaint See PEAS report attached. Please obtain info from PEAS caller and obtain any photographs if possible.

Resolution:

Assets

Total Entities: 1

Asset	Asset Id	Asset Uid	Location	Warranty Date
PLYMOUTH_OPENWATERWAY	0	0		

Pink rows indicate inventory still under warranty

Location Information

WO Address: 13270 Graefield Cir, Plymouth, Michigan, 48170

Location Details: 13270 Graefield Circle 48170

Facility Id: — Level Id:

X Location: -9,299,610.783 — Y Location: 5,217,112.009

Category

Attachments

Add attachment... | Remove all attachments


IMG_20210408_113046986.jpg — 3.46 MB
Attached by Scholten, Jimmy — 04/8/2021 11:31 AM


IMG_20210408_113047276.jpg — 2.50 MB
Attached by Scholten, Jimmy — 04/8/2021 11:31 AM


IMG_20210408_113047615.jpg — 3.92 MB
Attached by Scholten, Jimmy — 04/8/2021 11:31 AM


IMG_20210408_113047917.jpg — 3.62 MB
Attached by Scholten, Jimmy — 04/8/2021 11:31 AM


IMG_20210408_113048189.jpg — 3.04 MB
Attached by Scholten, Jimmy — 04/8/2021 11:31 AM


IMG_20210408_113048590.jpg — 3.85 MB
Attached by Scholten, Jimmy — 04/8/2021 11:31 AM







Visel, Sarah

From: Hamann, Dan
Sent: Tuesday, June 29, 2021 8:31 AM
To: Visel, Sarah
Subject: FW: Paint dumping complaint
Attachments: 4-7-21_ homeowner 1.png; 4-7-21_homeowner 2.png; 4-7-21_homeowner 3.png; 4-7-21_homeowner 4.png; 4-7-21_homeowner 5.png; 4-8-21 IDEP work order.png; 4-8-21 outlet from pond on s. side N. Territorial 2.jpg; 4-8-21_DPW 1.png; 4-8-21_DPW 2.png; 4-8-21_DPW 3.png; 4-8-21_DPW 4.png; 4-8-21_DPW 5.png; 4-8-21_DPW 6.png; 4-8-21_GIS_water bodies_water courses.png; 4-8-21_outfall from pond on n. side of N.Territorial.png; 4-8-21_outlet from pond s. side of N. Territorial.png; 4-8-21_outlet from pond s.side of N. Territorial.png; entry point to torm water sys @ rear of 13225 Graefield.png; PEAS - 26090 - Paint disposed of in subdivision pond - Plymouth - Wayne.pdf

From: Hamann, Dan
Sent: Friday, April 9, 2021 9:19 AM
To: Hendges, Martin (EGLE) <HENDGESM@michigan.gov>; Martin, Carol <cmartin@plymouthtwp.org>
Cc: Fellrath, Patrick <pfellrath@plymouthtwp.org>
Subject: RE: Paint dumping complaint

Dear Mr. Hendges,

Please find attached photos from the complainant and a few my staff took yesterday. There is a home across from complainant that is being painted by commercial painters and they washed equipment in that home's backyard. Run off water entered a nearby beehive that flows to pond behind complainant's home. That pond subsequentially flows north to eventually another pond on north side of N. Territorial Rd. and possibly, eventually to Johnson Creek. In the photos my staff took that reflect what complainant took on 4-7-21, the milky (white latex paint) appearing water seems to be nearly entirely dispersed. I include a screen shot of our work order in which our employees deposition contains painting company name and number. Please advise if there will be further follow up. In order to send this I had to resize all of the attachments.

Thank You,

Dan Hamann
DPW Foreman
Charter Township of Plymouth
46555 Port St. Plymouth, Mi. 48170
734-564-2853

From: Hendges, Martin (EGLE) <HENDGESM@michigan.gov>
Sent: Thursday, April 8, 2021 8:14 AM
To: Martin, Carol <cmartin@plymouthtwp.org>

Charter Township of Plymouth

Pollution Complaint Tracking Form — **Illicit Discharge Elimination Program**

Complaint made by: _____ Phone #: _____

Date: 08/18/21 Time: 14:12

Location of Problem: 15119 Robinwood Offending Party (if known) _____

Nature of Problem (i.e. paper waste, odor, color, etc.): _____

Gasoline or other flammable liquid spilled in Roadway

Is this an Emergency? ☒ No
☐ Yes (then call 911)
Nature of Emergency: _____

Initial Contact made to:
- ☐ 911
- ☒ City Dept. _____
- ☐ Wayne County (888) 223-2363
- ☐ Oakland County (248) 858-0931
- ☐ PEAS Hotline (State) 1-800-292-4706
- ☒ Other Fire Department

Additional Comments:
Resident contacted TWP fire dept to wash down fluids from a delivery truck in front of listed address.

Investigation Summary
- ☒ Initial Investigation
- ☐ Follow-up Investigation

Date of Investigation: 08/18/21
Investigating Agency: Twp Fire
Location of Discharge: 15119 Robinwood

Crew Members:

Investigation Location:

Observations (odor, color, volume, etc.):
a small amount of fluid in the street

Actions Taken (dye testing, notification letter, etc.):
PTFD personnel placed absorbent on the spill.

Were photos taken: ☐ Yes ☐ No

Agency Referred to: _____
Agency Contact: _____
Method of Communication:
☐ E-mail* ☐ Letter/memo* ☐ Phone
*Attached copies

Content of Communication:

Date Corrected or Resolved: 08/18/21

Incident Supplement No: 210001988-001 (000)	Report Type:	Report By Personnel:	001
	Incident Report	Loudon, Andrew (283)	

PLYMOUTH TOWNSHIP FIRE DEPARTMENT

9911 N. Haggerty Road
Plymouth, MI 48170
Phone: 734-354-3230

Incident Details

Alarm Date & Time	Arrival Date & Time	Controlled Date & Time	Last Unit Cleared Date & Time
08/18/2021 14:12:11	08/18/2021 14:16:00		08/18/2021 14:40:46

Response Time	Priority Response?
00:03:49	No

Incident Type	Fire Dept. Station	Shift
411 - Gasoline or other flammable liquid spill	ST1	B-SHIFT B

Aid Given or Received: N - None

Action Taken 1	Action Taken 2	Action Taken 3
45 - Remove hazard		

Apparatus - Suppression Count	Apparatus - EMS Count	Apparatus - Other Count
1		

Personnel - Suppression Count	Personnel - EMS Count	Personnel - Other Count
		2

EMS Provided?	Civilian Casualty? (Count)	Personnel Casualty? (Count)
No	No	No

Property Use	Mixed Use
962 - Residential street, road or residential driveway	-

Property Loss	Property Value	Contents Loss	Contents Value
$0.00	$0.00	$0.00	$0.00

Location

Location Type	Address	City, State Zip Code
Address	15119 ROBINWOOD	PLYMOUTH TWP, MI 48170

District	Section No	Census Tract	CAD Mapindex	Directions	Latitude	Longitude
Station #2				15119 ROBINWOOD	42.3940174	-83.4555506

Situation

Initial Dispatch Code	Final Dispatch Code	Incident Delay
411 - Gasoline or other flammable liquid spill	411 - Gasoline or other flammable liquid spill	

Incident Reported By	Response Type	Critical Incident?	Team Mobilized?
		No	No

Narrative:

Narrative Type	Narrative Description	Written By	Approved By
INCIDENT	E1	64LOUDONA	

Incident ID: 1641588 (1426191) Created by: 64FOXD Created Date: 8/18/2021 9:25:58 PM

Incident Supplement No: 210001988-001 (000)	Report Type:	Report By Personnel:	001
	Incident Report	Loudon, Andrew (283)	

E1 responded to a washdown of fluids from a delivery truck in front of the listed address. The call was placed by the homeowner to Twp. hall. The fire chief ordered an engine to go to the location to assist. E1 arrived on scene to find a small amount of fluid in the street. E1 made contact with the home owner and advised that PTFD personnel would lay down absorbent. PTFD personnel placed absorbent to the spill to absorb the fluids. E1 clear.

Charter Township of Plymouth

Pollution Complaint Tracking Form

Illicit Discharge Elimination Program

Complaint made by: Earl Baker - made to FOTR

Phone #: 734-765-5840

Date: 08/19/21 Time: _____

Location of Problem: Ann Arbor Rd. @ Tonquish Creek Offending Party (if known) _____

Nature of Problem (i.e. paper waste, odor, color, etc.): _____

Discharge of raw sewage into the creek

Is this an Emergency? ☒ No
☐ Yes (then call 911)
Nature of Emergency: _____

Initial Contact made to:
- ☐ 911
- ☐ City Dept. _____
- ☐ Wayne County (888) 223-2363
- ☐ Oakland County (248) 858-0931
- ☐ PEAS Hotline (State) 1-800-292-4706
- ☒ Other FOTR forwarded to Ply Twp

Additional Comments:
Specified area was checked for evidence of sewage discharge

Investigation Summary
- ☒ Initial Investigation
- ☒ Follow-up Investigation

Date of Investigation: 08/19/21 and 09/15/21
Investigating Agency: DPW
Location of Discharge:
Ann Arbor Rd @ Tonquish Creek

Crew Members:
Dan Hamann

Investigation Location:
Ann Arbor Rd @ Tonquish Creek

Observations (odor, color, volume, etc.):
Checked 5 outfalls near specified area, found no evidence of sewage discharge

Actions Taken (dye testing, notification letter, etc.):

Were photos taken: ☐ Yes ☐ No

Agency Referred to: _____
Agency Contact: _____
Method of Communication:
☐ E-mail* ☐ Letter/memo* ☐ Phone
*Attached copies
Content of Communication:

Date Corrected or Resolved: 09/15/21

Email Print Save Close Delete

Work Order

11814

Illicit Discharge Complaint Investigation

PLYMOUTH_OPENWATERWA Change

Emergency Maintenance

Hamann, Dan — Date Created: 09/15/2021 9:26 AM

Closed — Priority: Medium Low

Hamann, Dan

Hamann, Dan — Date Submitted: 08/19/2021 11:00 AM

08/19/2021 11:00 AM — Projected Finish: 08/19/2021 12:00 PM

Hamann, Dan

Hamann, Dan — Date Closed: 9/15/2021 9:35:41 AM

Finish Date: 08/19/2021 12:00 PM

Add Comment Sort ▲

Hamann, Dan 09/15/2021 9:26 AM
Please check outfalls for evidence of sewage discharge

Hamann, Dan 09/15/2021 9:28 AM
checked 5 outfalls near specified area, found no evidence of sewage ...

Please check outfalls for evidence of sewage discharge

Assets

1

Asset Id	Asset Uid	Location	Warranty Date
_OPENWATERWAY	0	0	

ate inventory still under warranty

KY when adding/removing assets?

Details

Account:

Contractor:

Location Information

WO Address: Ann Arbor Rd @ Tonquish Creek 48170

Location Details: AA Rd @ Tonquish Creek

Facility Id: Level Id:

X Location: Y Location:

Attachments

Add attachment... Remove all attachments

Drag and drop files here to attach them.

Reservations

Equipment ID	Employee	Start Date	End Date	Comments

No records to display.

Checked Out Equipment

Equipment ID	Employee	Check Out Date	Due Date	Comments

No records to display.

Work Cycle

Repeat: Never

Interval: 2 Months

From: Projected Start Date

Date Printed: 1/24/2022 Next Print Date: 9/13/2021

Related Work Activities

Service Requests

Link Request:

Id	Date Initiated	Description	Link Type	Priority	Category	Submit To	Disp

No records to display.

Open SRs Remove

Inspections

Link Inspection:

Id	Type	Description	Link Type	Entity Id	Entity Type	Date	Inspected By

Custom Fields

Category:

Appendix D7

Wayne County Pollution Complaint Documentation

Rouge River Watershed Complaints January 1, 2020-December 31, 2021

Have you received and investigated any pollution complaints? YES

Summary and details on complaints received in 2020/2021 below:

2020

	Number of complaints	***Number of Confirmed Illicit Discharges***
Year	2020	2020
Water Quality Complaints - DOE-Water Quality Division	23	8
Number of calls into Wayne County Hotline	NA	NA
Types of Complaint Investigations		
Illicit Discharge – oil/fuel	2	2
Illicit Discharge – sewage/grey water	2	1
Illicit Discharge – paint	1	
Illicit Discharge – other Dumping	2	1
Requesting Information/Technical Assistance	1	
Soil Erosion Sedimentation Control	4	1
Foaming/Turbidity	3	
Drainage/flooding	3	
Illicit Discharge-Algicide	1	1
Unauthorized discharge	1	
Dead fish	1	
Concrete Washout		
Discoloration-Surface water		
Unseated Sanitary Sewer manholes		
Suspicious discharge		
Emergency Spill Response		
List type(s) here:		
Subtotal, Emergency Spill Response		
Illicit Discharges Identified during Routine Field Operations Assignment: **ALL**	*Suspicious Illicit Discharge*	***Confirmed Illicit Discharges***
List type and source (LRMD, FMD. Parks etc) here		
ESD Soil Erosion/Sedimentation	2	2

Complaint investigation- Rouge River Watershed Summaries January 1, 2020-December 31, 2020

2020

Rouge River Watershed

1. January 4, 2020 Sediment Discharge
   A Friends of the Rouge (FOTR) staff person reported an active sediment discharge impacting the Middle Rouge River that was occurring on Saturday, January 4, 2020, at 10:49am. The outfall is located on the Middle Rouge in the City of Dearborn Heights near Parr Park. FOTR staff contacted the State of Michigan Pollution Emergency Alerting System to report the discharge and Michigan Environment, Great Lakes, and Energy (EGLE) staff responded and tracked the source to a broken water main/road work being performed on Ann Arbor Trail. There were no sediment controls in place and the agency (or contractor) performing the work was informed of this. EGLE staff was going to contact the Wayne County Environmental Services Division Director Patrick Cullen about the project. On Monday January 7, 2020, the information on this complaint was shared with the Soil Erosion program manager. No further action from is needed on this complaint.

   Illicit discharge confirmed: yes (EGLE)- third party

2. February 4, 2020 Johnson Creek Foaming Northville Township
   Friends of the Rouge (FOTR) received a call from a resident reporting large amounts of foam on the Johnson Creek near Six Mile and Beck Roads, and downstream. EGLE was contacted and their staff could not respond, but a report was filed. The foam was observed January 18, 2020, and it is still present. ESD investigated the foaming on February 5, 2020. Pockets of foam present downstream of the riffle at Beck and Six Mile Roads were verified. There was brownish organic material present in some of the foam pockets. Took a sample of the foam/water and used test kits to analyze for ammonia, surfactants, and tannin/lignin. No concentration of surfactant or ammonia were detected, but there was 2.5ppm of tannin/lignin. This result shows that there were tannin/lignans present in the sample. Tannin/lignin are organic and result from the breakdown of plant materials/wood. The turbulence at the riffle and where fast-moving water is present does help create the foam if the materials are present in the water. No further investigation of the complaint is needed at this time.

   Illicit discharge confirmed: no

3. February 25, 2020: A Canton Township resident is about the maintenance and flooding around the storm water pond and surrounding common area around the pond, located in her subdivision. She did not report any issues with flooding of the roads in the subdivision, which do appear to be under Wayne County jurisdiction according to the County's MS4 system maps

   Illicit discharge confirmed: no

4. March 2, 2020: ESD received a complaint from a Canton Township resident who reports having a lot of water in the yard and recently had to have the living room of the home lifted and repaired. The complaint may be attributable to poor drainage on the property. The property backs up to Lilley Road and Terrell court, which are both Wayne County roads. ESD investigated March 3, 2020, and it appears the yard over time has sunken/receded compared to neighboring properties. All the

adjacent yards appear to be at a slightly higher evaluation than that of the complainant. The flooding is contributing to issues regarding the home's foundation and/or structure as to the flooding in the family room on the west side as well as the basement on the east side of the home. It does appear that some of the water from the yard does flow into the county's MS4 storm sewer along Lilley Road that discharges into Fellows Creek to the south of Terrell Court. During the investigation, it was noted that the yard was supersaturated with water with several spots of pooling water present. The complainant informed ESD that the water had finally receded, but that the flooding is an ongoing issue, especially during the spring and summer. No issues were observed with the storm drains on the street. All the stormwater behind the property pools in the backyard and does not flow south along the cul- de- sac (Terrell Court). Based on the investigation findings it is recommended that the complainant would benefit from either having a storm drain installed in the backyard or have the backyard elevated with additional soil to increase the property elevation so that stormwater from neighboring properties do not flow into her yard. The complainant was provided with the Friends of the Rouge Rain Management brochure and suggested that FOTR be contacted for additional advice. No further investigation is needed at this time.

Illicit discharge confirmed: no

5. February 12, 2020 Reported Sewage Overflow - Romulus GM Plant
   ESD received a call from a Romulus resident regarding a sewage overflow occurring at the Romulus GM facility. The sewage overflow was reported to Romulus DPW. They sent a crew out to investigate. Mike and I went out and surveyed around the perimeter of the plant (that we could observe without accessing the facility). We did not observe an active overflow from that vantage point. ESD did not observe discharges to the McClaugherty Drain, which is located adjacent to the facility. ESD staff called the GM Romulus facility, and the environmental engineer, Michael Kennedy, confirmed that there was a sewage backup at the facility. It is contained and being remediated at this time. Some of the sewage overflow went to a stormwater pond onsite. None of the sewage migrated from the property. This pond does discharge into the McLaugherty Drain. The facility called EHD to report the sewage discharge. The discharge was also reported to EGLE. The engineer stated that when overflows have occurred in the past, EGLE gave permission to discharge water from the pond. Romulus DPW was also informed of this (and they learned about it during their investigations).

   Illicit discharge confirmed: yes (third party)

6. March 31, 2020 Gas spill, Randolph Street Drain, Northville
   Oakland County Water Resources Commission had a crew out on the Randolph Street Drain this morning at about 9:30 that reported gas coming into the open potion of the Randolph from the Mobile Gas station at 701 8 Mile Rd, on the North side of 8 mile. It's a substantial flow of product with lots of flow in the Randolph. It's probably already down in the Rouge. Don't know how long this has been occurring or how much product was released. We have a crew on site, and have contacted the station manager, Oakland County Safety Dispatch, Northville FD, and EGLE. This has been on ongoing issue at this gas station. Fuel is contained onsite. PLM and Oscar Larson are handling cleanup, source Investigation and reporting to EGLE. EGLE RRD will handle any additional remediation and corrective actions required.

   Illicit discharge confirmed: yes (third party)

7. April 18, 2021 Petroleum sheen Lower Rouge- Wayne
   Sheen on the Lower Rouge reported by a water trail volunteer at a location 1/4 mile east of John Hix, and approx. 600' north of Michigan Ave. west. The City of Wayne investigated, and the incident was also reported to EGLE. The sheen and oil odor appeared to be from runoff by recent rains. Wayne DPW staff placed a boom in the river as a precautionary measure. The boom was removed after consultation with EGLE staff and did not appear to have absorbed petroleum product. No investigated performed by ESD.

   Illicit discharge confirmed: yes- addressed by EGLE and Local community (third parties)

8. 5/14/2020 Stormwater Drainage- Canton Township
   Homeowner concerned over inadequate drainage in residential yard and what agency has the responsibility to address. ESD consulted with Wayne County Roads, and Wayne County does not have jurisdiction over personal property drainage, so the resident was referred to contact the subdivision HOA.

   Illicit discharge confirmed: no

9. May 12, 2020 Sedimentation – Northville
   An anonymous caller reported to Oakland County Safety Dispatch a construction site at 528 Randolph Street in the City of Northville. The complainant reports the silt fences are down and excavators are working in the stream along the Randolph Street Drain. It appeared that the site is South of Baseline (8 Mile Road) in Wayne County. The Randolph is an Inter-County Drain. This complaint was referred to Wayne County Soil Erosion for compliance

   Illicit discharge confirmed: no- referred to appropriate SCSC

10. 5/27/2020 Sedimentation Lower Rouge Inkster
    Sediment discharge observed at the John Daly Road crossing by ESD staff performing routine water quality monitoring. Referred to Wayne County soil erosion for referral to the appropriate local enforcement agency for compliance.

    Illicit discharge confirmed: yes

11. 5/28/2020 non-point source pollution and wildlife concerns Mott Drain Canton Township
    ESD received an e-mail from a Canton Township resident concerned about wildlife and the riparian corridor along the Wayne County Drain (Mott Drain) behind the person's home, which is in the Pheasant Run subdivision. The homeowner was provided a public education article to share with the Homeowners Association (HOA) for publishing in the newsletter to inform residents about being good watershed stewards

    Illicit discharge confirmed: no

12. 7/23/2020 Fellows Creek Algicide Canton Township
    A Canton Township resident reported that Fellows Creek had a purple-blue discoloration. This was confirmed and reported to EGLE staff in Lansing and SEMI district. Efforts to track the source of the discoloration, which appeared to be an algicide, such as Aquashade. No source was identified.

    Illicit discharge confirmed: yes

13. 6/4/2020 Illegal dumping City of Detroit Eliza Howell Park
    A City of Detroit resident reported illegal dumping in Eliza Howell Park in the woods behind her home. The dumping was done near the Rouge River. Two males in a late model Jeep dumped bedding boxes, Styrofoam, and other packing material and drove away. She has a video of the dumping and the suspects. She did not see a license number for the vehicle. She called the police and planning to clean the material up herself. Referred to the City of Detroit, and their staff responded to the complaint.

    Was an illicit discharge confirmed: no

14. 6/20/2020 Fish in storm drain Canton Township
    A Canton Township resident reported dead fish in a storm drain in Canton Township residential yard. The storm drain in the yard is not part of the County's drainage network and not the responsibility of Wayne County. Recommended the resident contact the residential homeowner's association (HOA) as to what drainage infrastructure was installed for drainage when the subdivision was built, and if maintenance could be performed to remove the dead fish.

Illicit discharge confirmed: no

15. 7/23/2020 City of Plymouth- concrete track out
    Vehicle track out onto residential streets originating from Messina Concrete, Plymouth was observed. The sediment from the facility track out was observed draining into a storm drain on Junction Street, which eventually drains to Tonquish Creek. Observations were referred to the City of Plymouth and EGLE Air Quality and Surface Water for follow up. Recommendations for BMPs for the facility were discussed with City representatives and EGLE staff

    Illicit discharge confirmed: yes

16. 6/29/2020 Johnson Creek Turbidity Northville
    A Northville resident reported cloudiness in Johnson Creek and that the Creek is more turbid than in the past. The creek was investigated, and no illicit discharges were detected at the time. Cloudiness to the creek may be attributed to low water and increasing development upstream may be generating more runoff and nonpoint source pollution to the Creek than in previous years.

    Illicit discharge confirmed: no

17. August 28, 2020 Johnson Creek Foaming Northville Township
    A Northville resident collected a water sample on Johnson Creek at the confluence of a natural watercourse, that drains a wetland upstream from his house. He also has photos of a brownish white foam present at the riffle on Johnson Creek and the natural watercourse. The metropolitan Detroit area was receiving heavy rainstorms and thundershowers and had received approximately 1.15 inches of rain at the time the caller reported the foaming at 10:07am. ESD investigated the complaint and collected samples at two locations- the natural watercourse/Johnson Creek (same location as the sample the resident collected), and at the outlet of the wetland. The water leaving the wetland does create a watercourse that has a downhill gradient until it meets Johnson Creek

    The samples were tested for tannin/lignin and anionic surfactants. Interference was noted in the surfactant samples as sulfate is likely present in the water. Based on the low levels of surfactant in

the sample, and presence of Tannin/Lignin, it is suspected that the foaming is due to natural phenomena.

Illicit discharge confirmed: no

18. July 21, 2020 Arbor Hills unauthorized discharge Northville Township
    ESD notified of an unauthorized discharge from Arbor Hills that occurred on July 7, 2020. The discharge impacted the drainage ditch that discharges to Johnson Creek in Northville Township. Given the length of time that has passed since the event occurred, it was determined that no follow up investigation was needed at this time.

    Illicit discharge confirmed: no

19. Sep 2, 2020 Soil Erosion Canton Township
    A Canton Township resident reports soil erosion occurring at a construction site. on Fellows Creek. water is blocked in the creek and a pump is set up to transfer water from one side of the crossing to the other side while the construction is ongoing at the crossing. The complaint was referred to Wayne County Soil Erosion, who did not find soil erosion compliance issues at the site. The site construction plan includes stabilizing and revegetating the streambanks once the work is completed.

    Illicit discharge confirmed: no

20. 9/15/2020 Paint Dumping Canton Township
    A Canton Township resident reported observing a neighbor dumping paint down a storm drain in the subdivision. This complaint was investigated, and some paint residue was observed on the storm drain grate, and none was observed in the catch basin. There was no response at the suspect residence.

    Illicit discharge confirmed: no

21. October 2, 2020 Sewage odor Livonia
    A complaint received from a Livonia resident regarding sewage odor in the Upper Rouge was forwarded to ESD and investigated. The Upper Rouge at the complaint location was clear, and no evidence of illicit discharge was noted. Some tires were observed in the river at the site. There is a sanitary sewer system siphon near the crossing and the sewage odor appears to be originating from there. The results of the complaint investigation were shared with the complainant and EGLE.

    Illicit discharge confirmed: no

22. October 9 2020 stormwater runoff/illegal dumping- Dearborn Heights
    FOTR staff referred a complaint about construction adjacent to the Rouge River from a Dearborn Heights citizen The complainant is concerned about the condition of the site and the impact of the stormwater runoff on the Rouge River. ESD investigated the site Wayne County Parks staff. Some illegal dumping was observed on the property. This condition was referred to Dearborn Heights compliance, Wayne County Soil Erosion and Wayne County Parks

    Illicit discharge confirmed: yes

23. 12/14/2020 Soil Erosion Northville Township

    Northville Township staff received a call from a resident regarding a homeowner that cleared land and is building a deck (with no permit) adjacent to the Johnson Creek. Northville Township notified the homeowner that a building permit was required. This complaint was referred to Wayne County Soil Erosion for further follow up if needed.

    Illicit discharge confirmed: no

2021

	Number of complaints	***Number of Confirmed Illicit Discharges***
Year	2021	2021
Water Quality Complaints - DOE-Water Quality Division	19	
Number of calls into Wayne County Hotline	NA	
Types of Complaint Investigations		
Illicit Discharge – oil/fuel	4	1
Illicit Discharge – sewage/grey water	4	1
Illicit Discharge – paint	1	
Illicit Discharge – other Dumping		
Requesting Information/Technical Assistance		
Soil Erosion Sedimentation Control	4	3
Foaming/Turbidity		
Drainage/flooding		
Illicit Discharge-Algicide		
Unauthorized discharge		
Dead fish		
Concrete Washout	1	
Discoloration-Surface water	3	
Unseated Sanitary Sewer manholes	1	
Suspicious discharge	1	
Emergency Spill Response		
List type(s) here:		
Subtotal, Emergency Spill Response		
Illicit Discharges Identified during Routine Field Operations Assignment: **ALL**	*Suspicious Illicit Discharge*	***Confirmed Illicit Discharges***
List type and source (LRMD, FMD. Parks etc) here		
ESD Soil Erosion/Sedimentation		

Complaint investigation- Rouge River Watershed Summaries January 1, 2021-December 31, 2021

1. January 21, 2021 Paint discharge Tonquish Creek Plymouth City
   A Plymouth City resident reported a whitish colored discharge originating from the large outfall between Coolidge and Harding Streets near Lions Park. The complainant observed a company called Paint in Manning working on a job at the corner of Coolidge and Joy Streets. The observations were reported to City staff. City staff followed up on the complaint, and the discharge was not active at the time of investigation, and they plan to do further investigation

   Illicit discharge confirmed: no

2. February 26, 2021 Blackish discharge-Johnson Creek Plymouth Township
   A contractor performing survey work on the Johnson Creek Intercounty Drain observed a black water discharge originating from a tributary. It appears to be discharging from a small tributary from the Plymouth Hills Estates. There is a stormwater pond and wetland areas upstream of that tributary according to Google Maps. It appears that the blackish material was organic material and does not appear to be an illicit discharge.

   Illicit discharge confirmed: no

3. April 19, 2021 Sedimentation- Sump Intercounty Drain Northville Township
   A FOTR volunteer reported a heavy turbid discharge into the Sump Intercounty Drain. The discoloration originated from the enclosed portion of the Sump Drain from Oakland County. The Oakland County Water Resources Commission was made aware of the condition. Oakland County Soil Erosion inspectors found an unpermitted single family construction site upstream of where the discharge was reported. The property owner was issued a compliance letter ordering them to get a permit and to protect the catch basin in the yard and to install silt fence.

   Illicit discharge confirmed: yes (third party)

4. April 27, 2021 concrete washout-Northville Township
   A Northville Township resident reported concrete washout occurring at a residence where construction was taking place. Northville Township staff investigated and inspected the catch basins on the street and the construction area. No evidence of concrete washout was evident on the catch basins, and it appeared the concrete contractor was following washout BMPs.

   Illicit discharge confirmed: no

5. May 6, 2021 Lower Rouge discoloration- Canton Township
   ESD staff observed a reddish discoloration on the Lower Rouge in Wayne while performing routine monitoring. FOTR staff also observed the discoloration further downstream. The discoloration was attributed to a substance in the YCUA effluent. YCUA staff was notified of the discoloration, and they were performing inspections inhouse, analyzing the effluent, and investigating the collection system for potential sources. A specific source of the discoloration was not identified but appears to be a tracing dye.

   Illicit discharge confirmed: no

6. May 7, 2021 Fellows Creek discoloration Canton Township
   A Canton Township resident contacted FOTR about a greenish discoloration observed on Fellows Creek. The resident contacted the EGLE PEAS hotline to report the incident and EGLE was investigating.

   Illicit discharge confirmed: no

7. June 10, 2021 Oiled birds- Rouge River Dearborn
   EGLE staff provided ESD an FYI as to oiled birds discovered in the Rouge River by the Ford Rouge plant. EGLE RRD and WRD are notified of the issue and were investigating the source of the oil that affected the birds.

   Illicit discharge confirmed: yes (third party)

8. July 2, 2021 Sewage discharge- Hines Park Dearborn Heights
   ESD received an email from FOTR staff regarding strong sewage odors/sewage discharge evidence at two locations along Hines Drive in Dearborn Heights in the Parr Recreation area (Hines West of Telegraph) and Wallaceville Recreation Area (near Beech Daly/Hines). Wayne County Drains and ESD staff investigated and found large areas in the floodplain that were impacted by an unidentified sewage source (gray/black water, sewage odor, and debris).

   The sewage source (s) may be from CSOs/SSOs that occurred during the historic rain events, and from water ponding in the low points of the floodplain after the waters receded. One of the manhole covers on the Rouge Valley Interceptor sewer was found dislodged, so that system may have overflowed/mixed with the flood water during the recent rain events.

   Wayne County Parks was notified as the standing water/sewage posed a potential public health risk to those who may walk in the impacted area or come in contact with the water. Parks staff cordoned off the areas to limit access and the Drains office was in the process of contacting a contractor to spread lime in contaminated areas.

   Illicit discharge confirmed: yes

9. July 6, 2021 Unseated manholes-Hines Drive Dearborn Heights
   FOTR staff reported to ESD that unseated manholes were also discovered in the area between Hines Drive/Beech Daly in an area that was underwater previously. Drains staff was deployed to reseat the manholes.

   Illicit discharge confirmed: no

10. July 6, 2021 Sewage Discharge- Rouge Park City of Detroit
    FOTR staff reported a pool of black sewage water in a field in Rouge Park where Lahser dead ends at the river just north of Joy by the Lahser Marsh. FOTR staff was advised to report these observations to the City of Detroit Parks and Recreation/Department of Public Works for investigation.

    Illicit discharge confirmed: no

11. July 9. 2021 Oil release Canton Township auto facility
    ESD received a voice mail and e-mail from Canton Township staff regarding an oil release that was occurring at Canton Auto Service. According to Canton Township, the complainant reported that the facility is discharging oil into storm drains and to a stormwater pond. Canton Township responded to the complaint and placed booms in the pond to collect the oil. In addition to contacting the Township, the complainant also called EGLE and the EPA. She claims the Auto Service company is discharging oil into the storm drain. She stated someone from the EPA (State of Michigan EGLE?) was onsite yesterday but did not have a name or number of the person who investigated.

    ESD staff called to talk to the complainant, and she said the dumping at the facility has been going on for a long time and she does observe oil in the pond after a rain. She observed inlets into the storm sewer where oil was entering the storm sewer system. She alleges the facility dumps other fluids such as antifreeze and the employees say if it because the owner orders them to do so. ESD confirmed that EGLE staff was at Canton Auto Service, and it was confirmed there was a discharge of oil that occurred into the pond, but it appears the petroleum product has not migrated from the pond at this time. According to EGLE, there are multiple issues going on at the facility, including a history of dumping, and the possibility of an illicit connection in the building. There are over 300 tires stored on the site as well. The complainant reported observing some dead ducks in the pond. The EGLE staff did not observe any but referred the matter to MDNR. According to EGLE, the owner is not being very responsive and cooperative. It does not appear that the Wayne County MS4 or Wayne County Drainage system are being affected by the oil discharge at this time.

    Illicit discharge confirmed: yes (third party)

12. July 23, 2021 Soil Erosion Northville Township
    Northville Township forwarded ESD a complaint regarding a recurring soil erosion issue. The complaint was referred to Wayne County ESD Soil Erosion.

    Illicit discharge confirmed: no

13. August 3, 2021 Soil Erosion-Livonia
    ESD staff, while performing IDEP investigations in the City of Livonia, observed some mild track out and a catch basin needing maintenance at a development site. Also, there is an excavation going on in the front of 37598 Lyndon (residence). The contractor performing the work is dewatering the excavation site and the water is very cloudy and entering the City's MS4 via a

street catch basin. The cloudiness is visible throughout the storm system. This complaint was forwarded to Livonia's SESC enforcement personnel, who investigated.

Illicit discharge confirmed: yes

14. August 14, 2021 Discoloration- YCUA Effluent Canton Township
    YCUA staff provided an update that this morning YCUA staff noticed discoloration in the influent and effluent from YCUA Plant. Upon investigation, the discoloration was traced back to the WTUA construction site where red colored water came into an excavation for pipe repair. It is unclear if it is related to some sort of dye testing by the repair crew or came in through the wastewater. YCUA staff was able to track the source of discoloration. It occurred at facility in Canton Township, which process pigments and dyes.

    Illicit discharge confirmed: no

15. August 19, 2021 Sewage Odor Byron Creek City of Plymouth
    FOTR staff reported that a City of Plymouth resident reported a strong sewage odor near a play area adjacent to Byron Creek. FOTR advised the complainant to contact PEAS. The complaint was investigated by ESD staff and City of Plymouth. Neither the City of Plymouth or ESD investigators detected a sewage odor in the catch basins in the street or near Byron Creek when the area was investigated.

    Illicit discharge confirmed: no

16. September 22, 2021 Sedimentation City of Westland
    FOTR staff reported that a development in the City of Westland, near Hines Drive, has a retention pond that was full of milky sediment. ESD provided the contact information for the City of Westland Code Compliance for follow up on the sedimentation occurring at the site.

    Illicit discharge confirmed: no

17. October 8, 2021 Petroleum discharge Lower Rouge City of Wayne
    A FOTR volunteer was on the Lower Rouge and stopped in the ESD office to report a fuel odor and rainbow sheen discharging from an outfall located on the north bank of the Lower Rouge. The approximate location is behind the Wayne Moose Lodge, 38050 Michigan Avenue in Wayne. He said the outfall was located just downstream of the DTE transmission tower/lines that crosses the Lower Rouge in that area. The incident was reported to PEAS and the City of Wayne. EGLE investigated on October 8, 2021 and not observe any fuel odor or sheen coming from the outfall. EGLE also checked upstream and downstream and didn't observe any sheen or odor, nor were obvious sources of pollutants. Observed along the bank of both sides of the river.

    Illicit discharge confirmed: no

18. November 1, 2021 WB M-14 /Beck Fuel Spill Plymouth Township
    ESD was provided an FYI from Wayne County Roads regarding a fuel spill that was reported occurring in the right lane, right shoulder of M-14 Westbound near Beck Road. The driver placed oil dry on the spilled material but stated it might not be enough containment. Recommended that the incident be reported to PEAS. EGLE was aware of the incident.

    Illicit discharge confirmed: no

19. Suspicious discharge Levan Road Livonia
    ESD investigated a report of a suspicious pipe and discharge that is occurring on Levan Road in the City of Livonia near a mountain bike trailhead. The pipe is black PVC, and it appears to be draining from a residence on Levan. The water discharging from the pipe is clear. The pipe drains into a ditch that drains into a gully leading towards Hines Drive, located on the west side of Levan. The discharge from this pipe is ending up on Wayne County Parks property. It does not appear to be an illicit discharge. The findings of the investigation were reported to Wayne County Parks.

    Illicit discharge confirmed: no

Appendix D8

City of Wayne Pollution Complaint Documentation

Pollution Complaints

Date Reported	Complaint	Date Investigated	Findings	Date Resolved	Resolution
10/8/2021	Fuel smell and rainbow sheen coming from an outfall located on the north bank of the Lower Rouge				
		10/11/2018	No fuel smell nor sheen observed		
		10/18/2021	No fuel smell nor sheen observed - video taken		
		10/18/2021	Original report changed to south bank		
				10/18/2021	EGLE staff visited site and found no fuel smell nor sheen - City will continue to monitor

Mike Buiten

From: Noel Mullett <Nmullett@waynecounty.com>
Sent: Friday, October 8, 2021 1:19 PM
To: mbuiten@ci.wayne.mi.us
Subject: FW: Bill Craig Complaint

Hi Mike –

Please see below. We have contacted PEAS (confirmation #27865). Operator indicated that someone from District Office in Warren will likely be investigating. I don't believe it to be a County MS4 given the location. Do you know if it is a City outfall or private? Seem like we've had previous issues in the area before although thought it would be south bank?

Hope you doing well!

Noel Mullett Jr.
Department Administrator
Environmental Services Division
Wayne County Department of Public Services
3600 Commerce Court, Building E
Wayne, Michigan 48184

email: nmullett@waynecounty.com
Phone: 734-326-4486
Cell: 313-405-5634
Fax: 734-326-4421
Wayne County Environmental Hotline: 1-888-223-2363

I maybe working remotely, if you need to contact me immediately please call or text me at the above cell phone number. Hope you are well. Please stay safe.

From: Patrick Cullen <PCULLEN@waynecounty.com>
Sent: Friday, October 8, 2021 12:43 PM
To: Noel Mullett <Nmullett@waynecounty.com>
Cc: Susan Thompson <Sthompso@waynecounty.com>
Subject: Bill Craig Complaint

Hi Noel – Bill Craig was on the Lower Rouge today and stopped in the office to report a fuel smell and rainbow sheen coming from an outfall located on the north bank of the Lower Rouge. The approximate location is behind the Wayne Moose Lodge, 38050 Michigan Avenue in Wayne. He said the outfall was located just downstream of the DTE transmission tower/lines that crosses the Lower Rouge in that area.

Could you please call this into PEAS?

Bill's phone # for more info is 248-479-5127. Thanks.

Patrick Cullen, Division Director

Deputy Drain Commissioner
Wayne County Department of Public Services
Environmental Services Division

3600 Commerce Court
Wayne, MI 48184
O: 734-326-4437
pcullen@waynecounty.com



Mike Buiten

From: Susan Thompson <Sthompso@waynecounty.com>
Sent: Monday, October 18, 2021 9:34 AM
To: mbuiten@cityofwayne.com
Subject: Update Lower Rouge complaint

Good Morning Mike:

Hope that you had a great weekend.
Wanted to share with you an update on the Lower Rouge petroleum sheen and fuel odor.
I contacted EGLE and they did investigate the complaint on the afternoon of October 8, 2021, at approximately 2:15 PM. The outfall was located based on photos and instructions from the complainant. At the time of the inspection, EGLE staff did not observe any fuel odor or sheen coming from the outfall. EGLE also checked upstream and downstream and didn't observe any sheen or odor, and no obvious sources of pollutants were observed along the bank of both sides of the river. I also contacted the complainant to get details as to what outfall the sheen was observed at and haven't heard back as of this morning.
Keep me posted on how your investigation goes, and I will likewise if I receive additional information that may be of assistance.
Take care,
Sue

Susan Thompson MS
Wayne County Department of Public Services
Environmental Services Division
3600 Commerce Court
Wayne, MI 48184
Phone: 734-326-5515
Cell: 313-999-6266
E-mail: sthompso@waynecounty.com

Appendix E

Municipal Facility Dye Testing Documentation

Appendix E1. Number of Municipal Facilities by Permittee

Appendix E2. Documentation of Dye Testing Results Bloomfield Hills

Appendix E3. Documentation of Dye Testing Results Lathrup Village

Appendix E4. Documentation of Dye Testing Results Novi

Appendix E5. Documentation of Dye Testing Results West Bloomfield Township

Appendix E1

Number of Municipal Facilities by Permittee

Community	Number of permittee-owned facilities located in the Rouge River Watershed
Beverly Hills	3
Bingham Farms	0
Birmingham	24
Bloomfield Hills	2
Bloomfield Township	10
Canton Township	8
Dearborn Heights	6
Farmington	5
Farmington Hills	12
Franklin	4
Garden City	0
Henry Ford College	20
Inkster	2
Lathrup Village	2
Livonia	18
Melvindale	5
Northville	6
Northville Township	0
Novi	11
Oak Park	0
Plymouth	4
Plymouth Township	7
Redford Township	8
Southfield	20
Troy	2
Walled Lake	0
Wayne	7
West Bloomfield	12
Westland	24

Appendix E2

Documentation of Dye Testing Results Bloomfield Hills

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

MAILING: PO Box 824
Bloomfield Hills, MI 48303-0824
SHIPPING: 555 Hulet Drive
Bloomfield Hills, MI 48302-0360
PHONE: 248-454-6300
WEBSITE: hrcengr.com

Memorandum

To: Michigan Department of Environment, Great Lakes, and Energy

From: Hubbell, Roth & Clark, Inc.

Date: October 11, 2021

Subject: Bloomfield Hills Dye Testing Summary HRC Job No. 20180002

Bloomfield Hills is part of the Alliance of Rouge Communities (ARC) which assists with some of the City's Municipal Separate Storm System (MS4) permit tasks. Under the ARC's Collaborative Illicit Discharge Elimination Program (IDEP) there is a requirement to dye test all City owned facilities. This task is a requirement of the MS4 program to help identify and eliminate any illicit discharge into the storm sewer system that is not stormwater or groundwater. Dye testing of this facility has not been performed previously.

On September 28, 2021 Hubbell, Roth & Clark, Inc. (HRC) performed dye testing at the Bloomfield Hills City Hall/Police/Fire building. HRC tested 4 drains at City Hall in both the old and new sections of the building. It was discovered at each of the 4 drains tested, no dye was seen in the sanitary manhole. Upon investigation, dye was spotted in a storm manhole and storm catch basin just south of City Hall/Police and Fire Department. Direction of flow in the storm sewer was from the east to west, so the dye was flowing from the storm catch basin to the storm manhole. Dye was also spotted in the Amy Drain downstream of the culvert crossing at Woodward Avenue south of Long Lake Road.

Dye was also placed in two sanitary manholes just north and east of the main sanitary manhole in order to check connectivity. Dye was spotted in the main sanitary manhole both times in less than 10 minutes. To further address this issue, HRC is currently in discussion with the City regarding a corrective action plan and schedule for implementation. The following was discussed:

- The part of the building that has these cross-connections was part of an addition several years ago
- The City will be investigating further to televise the sanitary line to trace where the connection can properly be routed

45 East Long Lake Road



10/4/2021, 12:08:03 PM

Sanitary Manhole
- City of Bloomfield Hills
- Oakland County Road Commission
- MDOT
- Private

Sanitary Service Leads

Sanitary Pipe
- Bloomfield Hills Sanitary

Storm Pipes
- Bloomfield Hills
- Oakland County Road Commission
- MDOT
- Private

Storm Points
- City of Bloomfield Hills

Water Valve

Water Hydrant

Water Service Leads

Water Main

Tax Parcels

1:1,128

0 0.01 0.01 0.03 mi

0 0.01 0.03 0.06 km

Web AppBuilder for ArcGIS

Contour data created by Axis Geospatial, LLC in Easton, MD. LiDAR and derived DEM source data created by vendors under contract to the State of Michigan. |

Appendix E3

Documentation of Dye Testing Results Lathrup Village

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

MAILING: PO Box 824
Bloomfield Hills, MI 48303-0824

SHIPPING: 555 Hulet Drive
Bloomfield Hills, MI 48302-0360

PHONE: 248-454-6300
WEBSITE: hrcengr.com

Memorandum

To: Dr. Sheryl Mitchell, City Administrator

From: Hubbell, Roth & Clark, Inc.

Date: February 5, 2021

Subject: Lathrup Village Dye Testing Summary HRC Job No. 20070249

Lathrup Village is part of the Alliance of Rouge Communities (ARC) which assists with some of the City's Municipal Separate Storm System (MS4) permit tasks. Under the ARC's Collaborative Illicit Discharge Elimination Program (IDEP) is a requirement to dye test all City owned facilities once every 5 years. This task is a requirement per the MS4 program to help identify and eliminate any illicit discharge into the storm sewer system that is not stormwater or groundwater.

Dye testing is a method used to trace sewer systems to locate any cross-connections between storm and sanitary sewer pipes. In compliance with all state regulations, a small amount of environmentally safe and EGLE-approved tracer dye is put into a sanitary drain and flushed with water. If the inlet is connected to the proper sanitary sewer, the dye will show up and be visible from an open manhole downstream. Water is flushed through the system until the dye disappears from the open manhole and the next test can then be performed. If the inlet is not connected to the proper sanitary sewer, an investigation is launched to identify where the drain outlets. The closest storm sewer is generally the best place to start looking for the tracer dye.

On December 17, 2020 Hubbell, Roth & Clark, Inc. (HRC) dye tested the City Hall and DPS building facilities. HRC tested 9 drains at City Hall and 5 drains at the DPS building. A summary table of the results and corresponding maps of the pertinent locations are attached.

HRC did not find any cross-connections or illicit discharges into the storm sewer at City Hall. However, HRC discovered two cross-connections in the DPS building. The shower drain and the garage utility sink are both connected to the storm sewer. Dye from these tests was observed in a storm drain manhole in the garage and from the trench drain just outside of the garage. To further address this issue, HRC has met with the City to discuss a corrective action plan and schedule for implementation. During this meeting, the following was discussed:

- The part of the building that has these cross-connections was part of an addition several years ago.
- Signs have been posted to prevent use of the shower and garage utility sink.
- DPS staff plan to trace the sanitary line from the kitchen sink and restroom so that the shower and utility sink can be properly rerouted.
- DPS staff will develop a corrective action plan no later than February 28, 2021.
- DPS will correct the cross-connection no later than June 17, 2022 (18 months from the dye testing, per the ARC collaborative IDEP plan).
- DPS staff will discuss the storm sewer system with the City engineer to help determine where the trench drain outlets.

Site Location: DPS Building
Investigators: Taylor Warstler, Stephanie Petriello, Kyle Anderson, Brent Tarpinian

Community: Lathrup Village
Date: 12/17/20
Job No.: 20070249

Test No.	Building	Location	Inlet	Time Administered	Dye Amount (oz)	Time Observed	Outlet Observed	Notes
1	DPS	Bathroom	Sink	9:12 AM	2	9:18 AM	9:18 AM	Bathroom and kitchen sink both ran for the duration of the test.
2	DPS	Kitchen	Sink	9:21 AM	2	9:26 AM	Southeast Sanitary MH	Bathroom and kitchen sink both ran for the duration of the test.
3	DPS	Shower Room	Shower Drain	9:30 AM 9:43 AM	2 2			Bathroom and kitchen sink both ran for the duration of the test. Shower ran for the duration of the test. Added additional dye after no sightings in the SE sanitary manhole (waited double the time it took to see the other tests). Still did not see any dye after the second test. Moved on to test the garage sink.
4	DPS	Garage	Sink	9:54 AM	2	10:01 AM	Storm MH in garage	Sink ran for the duration of the test. Drains to the storm manhole in the south end of the garage. This then goes to a trench drain just outside the south garage door. We could not trace it any further from here.
5	DPS	Shower Room - RETEST	Shower Drain	10:19 AM	1	10:23 AM	Storm MH in garage	Shower ran for the duration of the test. Dye was spotted in the same storm manhole as the garage sink test (south end of garage).


Lathrup Village
DPW Building
Twelve Mile Rd
DPS BUILDING
GARAGE STORM STRUCTURE
TRENCH DRAIN
SOUTHEAST SANITARY STRUCTURE
Harry Pogats Pkwy
Rossland Blvd
James Smyth St
Google Earth
©2020 Google
N
200 ft

Site Location: City Hall
Investigators: Taylor Warstler, Stephanie Petriello, Kyle Anderson, Brent Tarpinian

Community: Lathrup Village
Date: 12/17/20
Job No.: 20070249

Test No.	Building	Location	Inlet	Time Administered	Dye Amount (oz)	Time Observed	Outlet Observed	Notes
1	City Hall	Men's Restroom - 1st Floor	Left Sink	10:45 AM	2	10:56 AM	South Sanitary MH	Both sinks ran for the duration of the test.
2	City Hall	Women's Restroom - 1st Floor	Left Sink	11:08 AM	2	11:18 AM	South Sanitary MH	Both sinks ran for the duration of the test.
3	City Hall	Police Bathroom	Toilet	11:30 AM	1	11:40 AM	South Sanitary MH	Police sink and two women's restroom sinks ran for the duration of the test.
4	City Hall	Kitchen	Small Sink	11:45 AM	1	11:57 AM	South Sanitary MH	One kitchen sink (non-tested) and two women's restroom sinks ran for the duration of the test. Turned off the small kitchen sink (tested) half way through the test because the floor drain backed up.
5	City Hall	Men's Restroom - 2nd Floor	Janitor Closet Basin Sink	12:06 PM	2	12:14 PM	South Sanitary MH	Both restroom sinks and the basin sink ran for the duration of the test.

Site Location: City Hall
Investigators: Taylor Warstler, Stephanie Petriello, Kyle Anderson, Brent Tarpinian

Community: Lathrup Village
Date: 12/17/20
Job No.: 20070249

Test No.	Building	Location	Inlet	Time Administered	Dye Amount (oz)	Time Observed	Outlet Observed	Notes
6	City Hall	Women's Restroom - 2nd Floor	Right Sink	12:24 PM	2	12:33 PM	South Sanitary MH	Both women's restroom sinks and both men's restroom sinks ran for the duration of the test.
7	City Hall	Single Restroom w/ Shower - Basement	Sink	12:37 PM	2	12:46 PM	South Sanitary MH	Sink and shower ran for the duration of the test. Two sinks in the green restroom ran for the duration of the test.
8	City Hall	Green Restroom - Basement	Left Sink	12:50 PM	2	12:57 PM	South Sanitary MH	Both sinks ran for the duration of the test. Sink and shower in the single restroom ran for the duration of the test.
9	City Hall	Utility Closet	Floor Drain	1:00 PM	2	1:07 PM	South Sanitary MH	Two sinks in the green restroom ran for the duration of the test. Sink and shower in the single restroom ran for the duration of the test. Rinsed the drain with two 5-gallon buckets of water.


Lathrup Village
City Hall
Goldengate Dr W
Southfield Rd
CITY HALL
SOUTH SANITARY STRUCTURE
California Dr SW
California Dr SE
Google Earth
© 2020 Google

Appendix E4

Documentation of Dye Testing Results Novi

Dye Testing Log

Total		
17		= passed
3		= not yet completed or failed

Facility Location: DPW **Date: 09/25/2020** **Staff: Kate Richardson, Ben Croy, and Rebecca Runkel**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Unisex bathroom	yellow green	9:10 AM	9:15 AM	N	Y	slow flow, very obviously yellow green

Facility Location: Gun Range **Date: 09/25/2020** **Staff: Kate Richardson and Ben Croy**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Bathroom	yellow green	9:25 AM	9:27 AM	N	Y	fast flow, very obviously yellow green

Facility Location: Parks Building, next to DPW **Date: 09/25/2020** **Staff: Kate Richardson and Ben Croy**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Bathroom	yellow green	9:35 AM	9:38 AM	N	Y	fast flow, very obviously yellow green

Facility Location: ITC Park **Date:** **Staff: Kate Purpura, Rebecca Runkel, Humna Anjum, Alex Mauney**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
SE bathroom, near playground	faint green	10:35 AM	10:37 AM	N	Y	Ultimately discharges to septic field, manhole is pretty blocked up but could see some flow.
Central bathroom, located in maintenance building	no color	10:56 AM	11:04 AM	N	Y	No flow to storm observed. Flow from sanitary lead was heavy, but no dye was visible.
NW bathroom, near soccer fields	very green	10:52am	10:57 AM	N	Y	Obvisously green
NE bathroom, near baseball fields	no color	11:19 AM	-	N	N	No flow seen in storm CB or sanitary lead. Further investigation needed. Reported to Scott.

Facility Location: Pavilion Shore **Date:** **Staff:**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes

Facility Location: Power Park **Date:** **Staff: Water and Sewer Staff**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Bathrooms						Bathroom lead was verified to connect to bolted down grinder pump by W&S staff recently.

Facility Location: Wildlife Woods **Date: 07/27/2021** **Staff: Kate Purpura, Rebecca Runkel, Humna Anjum, Alex Mauney**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's bathroom	no color	11:47 AM + 11:54 AM	11:50 AM	N	Y	Manhole has tall interior drop for lead and deep 21" pipe flowing fast. Hard to see any color, but flow from lead was noticable after a few minutes.

Facility Location: Rotary Park **Date: August 6, 2021** **Staff: Rebecca Runkel, Victor Boron**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's bathroom	yellow green	9:38	9:40	N	Y	Tall interior drop, color showed up within a couple of minutes.

Facility Location: Fuerst Park **Date:** **Staff:**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
						Unable to locate sanitary manhole

Facility Location: Ice Arena **Date: 10/01/2020** **Staff: Rebecca Runkel, Victor Boron, and Kate Richardson**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Rear floor drain	yellow green	2:25 PM	2:27 PM	N	Y	

Bathroom	yellow green	2:39 PM	2:42 PM	N	Y	

Facility Location: Meadowbrook Commons **Date: August 6, 2021** **Staff: Rebecca Runkel, Victor Boron**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's bathroom (main floor)	yellow green	9:21	9:27	N	Y	

Facility Location: Civic Center **Date: June 8, 2021** **Staff: Rebecca Runkel and Kate Richardson**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Unisex Bathroom	Yellow Green	9:45AM	9:50 AM	N	Y	

Facility Location: Fire Station #1 **Date: March 3, 2021** **Staff: Aaron Staup, Kate Richardson, Humna Anjum, and Victor Boron**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's Bathroom	Yellow Green	1:45 PM	1:46 PM	N	Y	Manhole was slightly clogged, but a flow was still very evident.

Facility Location: Fire Station #2 **Date: March 3, 2021** **Staff: Aaron Staup, Kate Richardson, Humna Anjum, and Victor Boron**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's Bathroom		1:25 PM	N/A	N	N	3/3/21 - No flow or dye was visible in the manhole with a lead. Flush was heard, but there is no evidence that waste is currently discharging to this manhole. Upstream manhole could not be lifted because it was bolted down. Further investigation is needed.
						Update - W & S investigated and found the lead in the bolted down manhole.

Facility Location: Fire Station #3 **Date: March 3, 2021** **Staff: Aaron Staup, Kate Richardson, Humna Anjum, and Victor Boron**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Bathroom	-	2:30 PM	-	N	N	Could not find a manhole on the santiary sewer lead. Closest manhole according to as-built plans is over the 21" interceptor, which has an extremly high flow rate. No dye was observed in nearby storm sewer or in the interceptor.

Facility Location: Fire Station #4 **Date: November 17, 2021** **Staff: Rebecca Runkel and Kate Purpura**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's Bathroom	Yellow Green	10:09 AM	10:24 AM	N	Y	Manhole had some blockage before the flow from the dye test was evident.

Facility Location: Fire Station #5 **Date: March 3, 2021** **Staff: Aaron Staup, Kate Richardson, Humna Anjum, and Victor Boron**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Unisex Bathroom	Yellow Green	3:00 PM	3:10 PM	N	Y	Dye took a while to see in the sanitary sewer main along Beck Road since there is a pump for the building lead. It required a lot of flushing/time running the sink to trigger the pump. Dye was obvious in the pump and santiary sewer manhole.

Facility Location: Police Station **Date: June 8, 2021** **Staff: Rebecca Runkel and Kate Richardson**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Unisex Bathroom	Yellow Green	10:03 AM	10:07 AM	N	Y	Utility map incorrect. Deadend sanitary manhole is actually a storm sewer manhole.

Facility Location: Lakeshore Park **Date: November 3, 2021** **Staff: Kate Richardson and Humna Anjum**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's Bathroom	Yellow Green	12:46 PM	1:06 PM	N	Y	

Facility Location: Library **Date: June 8 + 21, 2021** **Staff: Rebecca Runkel and Kate Richardson**

Dye Drop Location	Color	In-Time	Out-Time	Storm (Y or N)	Sanitary (Y or N)	Notes
Women's Bathroom	-	10:19 AM + 10:23 AM	-	N	Y	Need to test again with flashlight. Could not tell what color the sanitary flow was due to depth of manhole and limited flow.
Women's Bathroom	faintly green	1:35 PM	1:46 PM	N	Y	Took a while to see flow and even then the flow was minimal. Faintly green. Lead may have a blockage. Reported to Scott.

Appendix E5

Documentation of Dye Testing Results West Bloomfield Township

WEST BLOOMFIELD TOWNSHIP DYE TESTING FORM

Facility/Location/ID: Lily Pad Springs / 6200 Farmington Rd, West Bloomfield, MI 48322 / FA-5

Inspection Date and Time: October 21, 2021 / 11:40 AM

Inspectors: Alex Kozlowski (WBT), Laura Gruzwalski (DLZ), Tim Sobczak (WBT), John McKeown (WB Parks)

Weather Conditions: 63º F / Sunny

Type of Dye Used: Fluorescein

Area(s) in Facility where dye was flushed/washed	Illicit Connection Observed? (Circle One)	Additional Comments
Main Building Restrooms (4)	Yes / (No)	None

Appendix F

Technical Committee Meeting Attendance

ARC TC Meeting 3/6/2020

Annette DeMarie	ARC
Brad	Canton Twp
Doug Moore	Livonia
Tricia	Livonia
Karen Mondora	Farmington Hills
Emily Levine	ARC
Chelsea Pesta	City of Walled Lake
Adam Gerlach	City of Plymouth
Sermed Saif	City Of Orchard Lake / Tri-County Engineering
Scott Finlay	City of Troy
Cory Bortan	Bloomfield Twp.
Lisa McGill	Farmington
MIKE BOUTEN	CITY OF WAYNE
Laura Grusynski	DLZ Michigan
Alex Kozlowski	West Bloomfield Township
Kate Richardson	City of Novi
Joel Kohn	Oakland Co. Water Resources
Michael Flowers	Wayne County DPS
ANDRA MEALEY	WAYNE CO DPS
Ashley Allen	Hubbell, Roth + Clark
Barb Matthews	HRC - Rep. City of Birmingham
PATRICK FELLRATH	PLYMOUTH TWP.
Kristin Rutkowski	Village of Beverly Hills
GEORGE BEDNARSKI	REDFORD TWP
BOB BELAIR	NORTHVILLE TWP.
MIKE DOMINE	CITY of NORTHVILLE
John Deslippe	WESTLAND, FARMINGTON, OAK PARK

Noel Mullett — Wayne Co DPS

Mike Wieczorek — Henry Ford College

Dean Tuomari

Ron Fabois — WRC

Heather Rice — Washtenaw County Water Resources

TECHNICAL COMMITTEE MEETING NOTES

February 25, 2021, 1:30-3:00 PM
Virtual Meeting

33 Attendees listed below:

Lisa McGill (Farmington)
Alex Kozlowski (West Bloomfield Township)
Adam Gerlach (Plymouth)
Joel Kohn (Oakland County Water Resources Commissioner (OCWRC))
Jerome Bivins (Inkster)
Tim Pollizzi (Rochester Hills)
Doug Moore and Trisha (Livonia)
Rebecca Runkel (Novi)
Mike Buiten (Wayne)
Andra Mealey (Wayne County)
Matthew Best (Van Buren Township)
John Deslippe (OHM for Westland, Oak Park and Northville)
Scott Finlay (Troy)
Chris Wilson (Village of Beverly Hills)
Brandy Siedlaczek (Southfield)
Taylor Warstler (HRC for Lathrup Village)
Paul Horen (Redford Township)
Saif Sermed (for Orchard Lake)
Sue Thompson (Wayne County)
Kathy Hood (Romulus)
Angela Hysinger (Bloomfield Twp)
Ashley Allen (HRC for Bingham Farms)
Laura Gruzwalski (Johnson and Anderson)
Brad Ohman (Garden City)
Tyler Sonoga (Farmington Hills)
Sally Patrella (FOTR)
Katie Grantham (SEMCOG)
Patrick Fellrath (Plymouth Township)
Scott Finlay (Troy)
Bob Belair (Northville Township)
Chelsea Pesta (Walled Lake)
Marie McCormick (FOTR)
Jim Wineka (OCWRC)
Annette DeMaria (ARC)
Emily Levine (ARC)

2020 IDEP findings for Oakland County

Emily Levine (ARC staff) provided the status of the IDEP investigations conducted by ARC staff in OC. Highlights are below and details can be found in Attachment A.

Chris Wilson from Beverly Hills shared about an illicit connection that was found in December, in addition to the one on Village Pine Drive.

- A plumber working on a house that was uninhabited for 5 years used a lot of dye to find an illicit discharge and turned the Rouge green. The plumber was fined by EGLE for using the dye without a permit. The connection was corrected.
- The other connection on Village Pines Drive, which was identified by the ARC was fixed by a private contractor without issue.

Other status updates include the following:

- The City of Northville fixed an illicit connection after collaboration between Northville and the ARC. The illicit connection was made on a portion of storm sewer pipe that had not been mapped and was difficult to access. The City took care of routing the sanitary led to the sanitary sewer which was only a couple feet away.
- Further sampling at 3 locations indicated that animals were the likely sources of the elevated *E. coli* findings. Therefore, these sites have been closed out as possible IDEP sites.
- Ongoing investigations are necessary at 2 sites where illicit connections are likely, but have not yet been located.
- Lower Rouge investigations are ongoing. Elevated *E. coli* levels were detected on the Perrin Drain and in the river, necessitating further investigations.

2020 IDEP findings for Wayne County

Sue Thompson (WC) provided the status of the IDEP investigations conducted by ARC staff in OC. Highlights are below and details can be found in Attachment B.

- Plymouth sites –
  - Harvey Street and Mill/Park Street corrections have been made or are anticipated to be done soon. Resampling is planned.
  - PY8 and PY5 – additional investigations are planned
  - PY27 – No further action needed
- Livonia
  - Additional sampling is needed at the site near the Chicken Shack.
  - Outfall U200822 and Levan Road investigations were limited by Covid. Further investigations are planned.
- Wayne outfall, no further action needed.
- Westland – suspicious discharge with high pH referred to the city for follow-up.
- IDEP Alert Observer Training virtual class was well-attended by ARC members.

2020 Oakland County Water Resources IDEP findings

Joel Kohn (OCWRC) provided the status of the IDEP investigations conducted by ARC staff in OC. Highlights are below and details can be found in Attachment C.

- 8 Mile Drain investigation found some hot spots, as well as landscaping businesses lacking in BMPs. Follow-up with DNA sampling is planned for 2021.
- Corrected illicit connection in Bloomfield Township
- Claude H. Stevens Number 3 found concerning sample results, will need continued sampling follow-up in 2021.

Call for assistance with IDEP Investigations

ARC staff asked attendees if they need any assistance with IDEP investigations (outside the work already being investigated by the ARC). Adam from Plymouth brought up an issue around Holbrook Street in Plymouth. There have been multiple residents complaining about sewage smells in the area and Adam has narrowed it down to a catch basin. WC plans to support efforts to investigate this issue in 2021 and it has been included in their 2021 workplan.

2021 IDEP Investigation workplans for Oakland and Wayne Counties

The workplans for 2021 were included in the meeting handouts and were briefly discussed. They will focus on continuing unfinished investigations from 2020. The workplans were approved – Lisa McGill moved to approve; Doug Moore seconded. The meeting chat box was used to vote to approve, with unanimous consent from 24 'yes' votes.

Permit update

Annette DeMaria (ARC staff) reported that EGLE has set due dates of July 1st for the communities to have draft Post Construction Stormwater Management Ordinances and October 1st to have final ordinances in effect. Livonia has indicated that they will be pushing back on these dates.

The ARC has put together a spreadsheet showing the permit status and ordinance status among member communities. Members provided feedback during the call on the status of their permits. Mike Buiten (Wayne) asked that the spreadsheet be shared. ARC staff will share the spreadsheet along with ordinance language used by other permits who have an ordinance in effect.

Annette asked for feedback from the communities on what assistance was needed for this portion of the permit. No additional feedback was provided. The ARC plans to work with Wayne and Oakland Counties on understanding differences in their processes to determine how the ARC can assist the communities. Southfield volunteered to be a part of this effort.

Stormwater standards update from Counties

Jim Wineka (OCWRC) reported that regional collaboration has been going on amongst Counties to have consistent regional standards. Counties have come to a point of no substantial differences in the standards. However, counties are running behind in submitting final standards to EGLE, but progress is being made. OC anticipates County Board approval by the end of April.

Updates from cooperating partners

- SEMCOG is planning additional IDEP training this year.
- Reminder of March 2nd GLWA watershed meeting to discuss expanding E. coli monitoring for the Rouge and Clinton watersheds