

To:

Grant Trigger, RACER

Copies:

Tony Maffeo, Arcadis

Erin Kozak, Arcadis

Arcadis of Michigan, LLC

28550 Cabot Drive

Suite 500

Novi

Michigan 48377

Tel 248 994 2240

Fax 248 994 2241

From:

Micki Maki

Date:

April 15, 2019

Arcadis Project No.:

B0064410.2019

Subject:

Outfall Drainage Areas 005, 010, and 011 PFAS Investigation Results  
RACER Buick City Site Flint, Michigan

---

This memo summarizes the continued investigation activities to assess the per- and poly-fluoroalkyl substances (PFAS) impacts identified at Outfall Drainage Areas 005, 010, and 011 at the Buick City Site (the Site) located in Flint, Michigan.

## OUTFALL DRAINAGE AREA 005

In February 2019 eight additional samples were collected from the Outfall Drainage Area 005 storm sewer to aid in determining where PFAS impacts were potentially infiltrating the storm sewer as discussed below (**Figure 1**).

- One sample was collected from the discharge point to the Flint River (Outfall 005).
- Three samples were collected along the main (MH 5-3, MH 5-4, and MH 5-5) to aid in characterizing potential off-Site contributions.
- Three samples were collected at the Leith Street underpass to assess potential contributions in this area. Two of these samples (W P-Trap and E P-Trap) were collected to characterize the contributions from the French drain located behind the underpass wall, which drains to the storm sewer. The remaining sample was collected from MH 5-6 to characterize concentrations downgradient of the French drain.
- One sample (MH 5-11) was collected upgradient of the underpass to identify any potential contributions from this portion of the drainage area.

As shown on **Figure 1**, the concentrations of perfluorooctanoic acid (PFOA) range from 8 to 13 nanograms per liter (ng/L) and perfluorooctane sulfonate (PFOS) range from 42 to 50 ng/L in samples collected from manholes along Outfall Drainage Area 005 storm sewer. The two samples collected from the french drain, prior to being discharged to the Outfall Drainage Area 005 storm sewer, detected PFOA at concentrations ranging from 19 to 24 ng/L and PFOS at concentrations ranging from 180 to 230 ng/L.

The sample collected from Outfall 005 at the river detected PFOA at a concentration of 13 ng/L and PFOS at a concentration of 45 ng/L.

Sample results show increased concentrations of PFAS at the French drain; however, concentrations of PFAS along the sewer from upgradient manhole MH 5-11 to the outfall are relatively consistent. Additional investigation is conducted to further assess potential source areas.

## OUTFALL DRAINAGE AREA 010

In February 2019 a sample was collected from Outfall 010 at the river to determine whether PFOA/PFOS was present. As shown on **Figure 2**, PFOA and PFOS were detected at concentrations of 200 ng/L and 2,000 ng/L, respectively.

Additional investigation activities will be conducted to determine the source(s) of PFAS impacts in the Outfall Drainage Area 010 storm sewer.

## OUTFALL DRAINAGE AREA 011

In February 2019 six samples were collected from the Outfall Drainage Area 011 storm sewer to aid in characterizing PFAS contributions to the storm sewer and determining potential source(s). Samples were collected from the following locations (**Figure 2**):

- One sample was collected from the discharge point to the Flint River (Outfall 011).
- One sample was collected (by the City of Flint) from MH 11-2, located on a property downgradient of the Site.
- Two samples (MH 11-6 and MH 11-6-2) were collected from the Outfall Drainage Area 011 storm sewer main downgradient and upgradient, respectively, of the identified impact at the Bldg 44 Assembly Paint Shop Area, where PFAS impacts have been identified.
- Two samples (MH 11-6-A-6 and MW 11-6-A-8) were collected from laterals that drain the Bldg 44 Assembly Paint Shop Area.

As shown on **Figure 2**, PFOA and PFOS were not detected in the sample collected upgradient of the Site (MH 11-6-2). The samples collected from the laterals servicing the Bldg 44 Assembly Paint Shop Area detected PFOA at a concentration of 80 ng/L and PFOS ranging from 670 to 1,660 ng/L. The samples collected from downgradient of the Bldg 44 Assembly Paint Shop Area (MH 11-6, MH 11-2, and Outfall 011) detected PFOA at a concentration of 10 ng/L and PFOS at concentrations ranging from 80 to 110 ng/L.

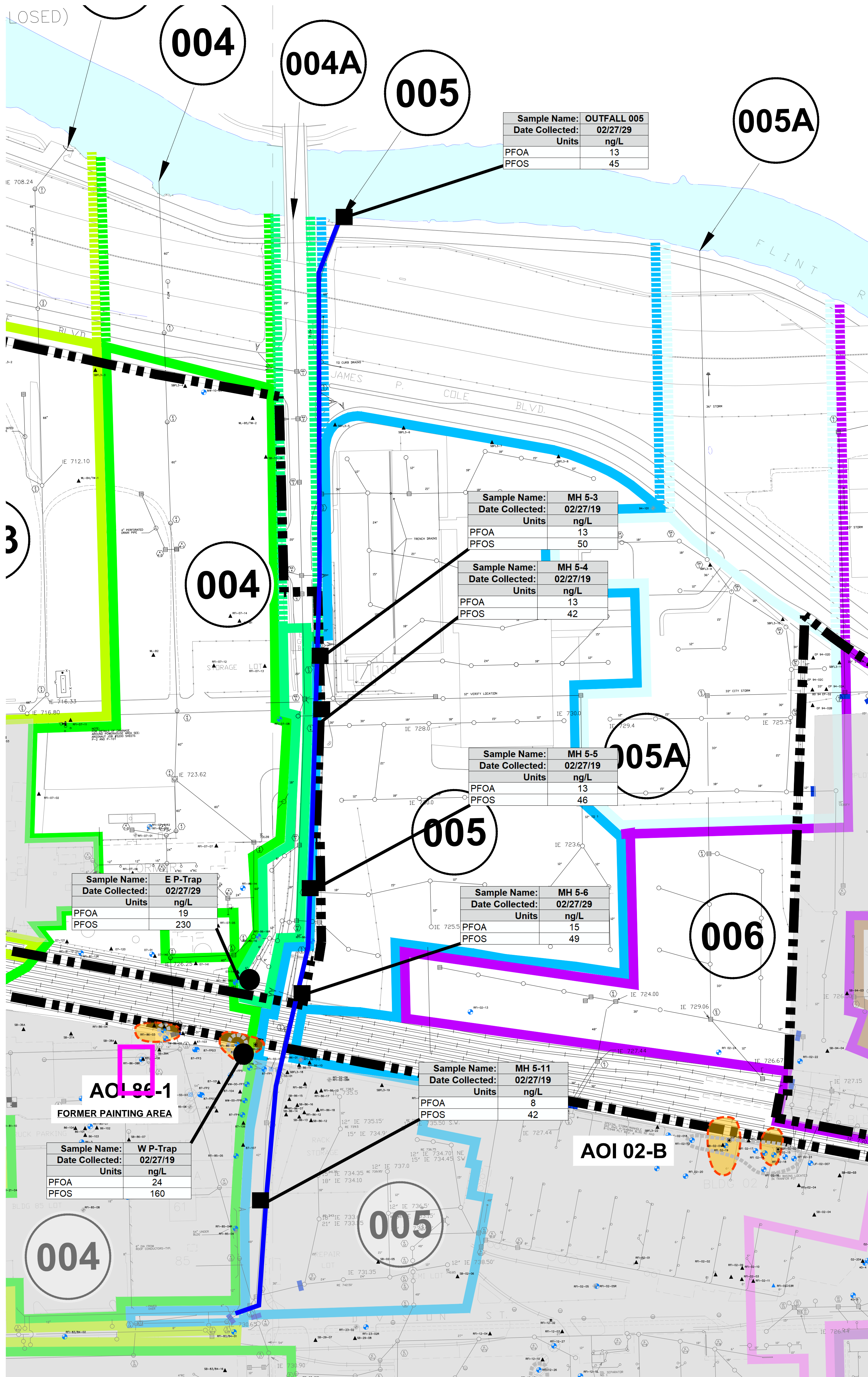
The sample from Outfall 011 at the river detected PFOA at a concentration of 10 ng/L and PFOS at a concentration of 100 ng/L.

Sample results show increased concentrations of PFAS from the laterals servicing the Bldg 44 Assembly Paint Shop Area; however, additional laterals have been identified servicing the area. Additional

MEMO

investigation is proposed to assess contributions from the laterals servicing the Bldg 44 Assembly Paint Shop Area.



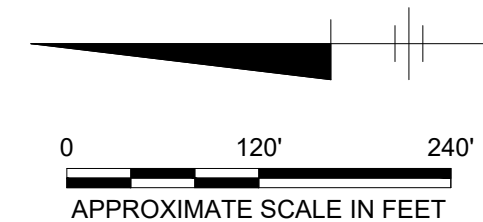


**LEGEND:**

- PROPERTY BOUNDARY
- PROPERTY PREVIOUSLY OWNED BY RACER
- AREA ASSUMED TO BE PART OF OUTFALL DRAINAGE AREA
- AREAS WITH NO DIRECT DRAINAGE TO THE STORM SEWER
- OUTFALL DRAINAGE AREA AND NUMBER
- BULKHEAD LOCATION
- PLUG LOCATION
- ABANDONED WELL LOCATION
- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- PIEZOMETER LOCATION
- STORM SEWER MAIN
- POTENTIAL SOURCE AREA FOR PFAS IMPACTS

**NOTES:**

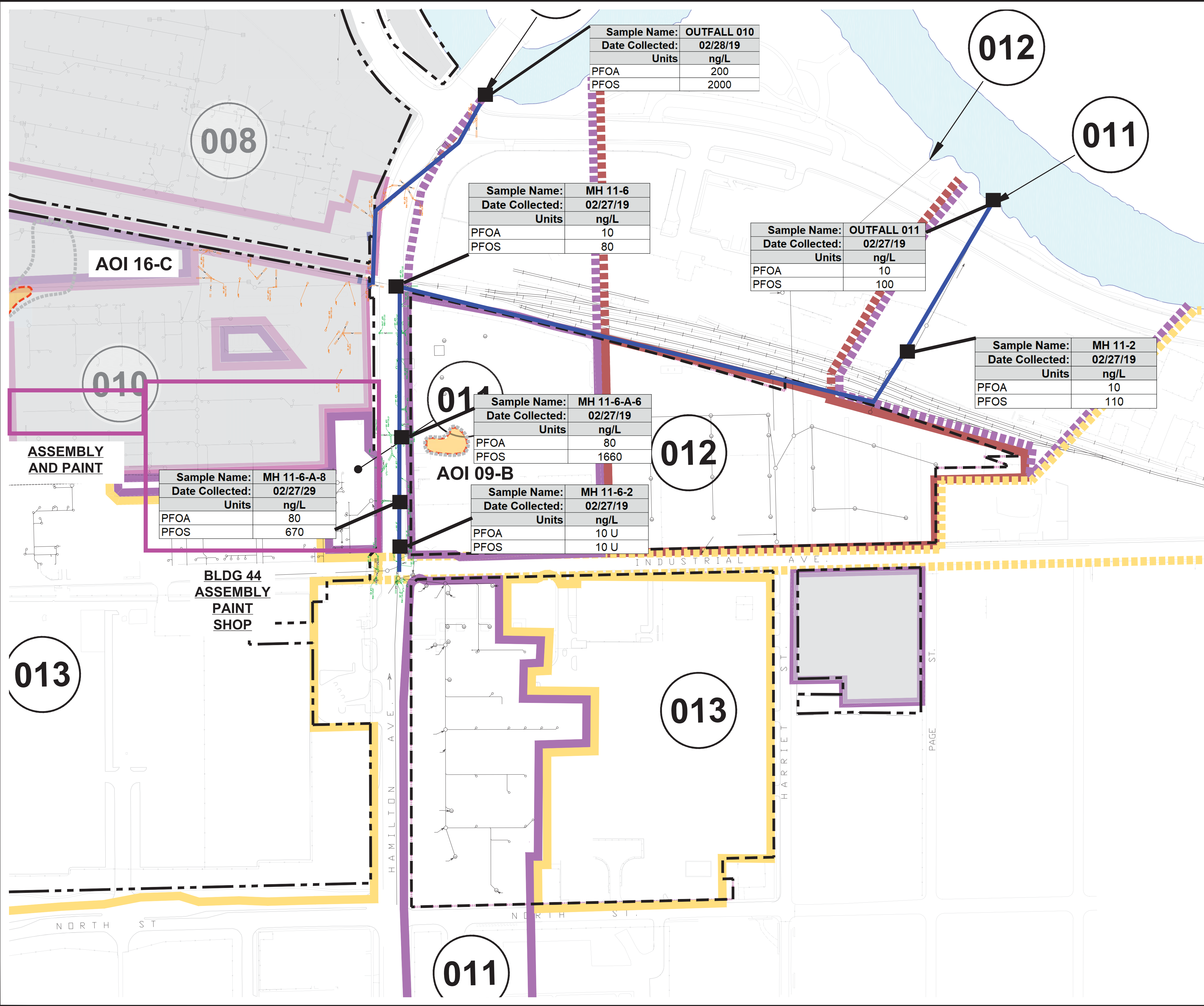
1. BASE MAP INFORMATION FROM A SURVEY BY BMJ, INC. DATED APRIL 2001, AT A SCALE OF 1:100. AERIAL IMAGE FROM ARCGIS 10 ONLINE MAPPING, ACCESSED 6/12/2013.
2. BASED ON INFORMATION AVAILABLE AS OF JUNE 2016.
3. MH4-20-2 DOWN GRADIENT PLUG'S 24-INCH LINE WAS BLOCKED WITH SEDIMENT, YIELDING NO FLOW PRIOR TO PLUG INSTALLATION. PLUG IS MADE UP OF NATURALLY PACKED SEDIMENT IN PIPE.
4. BULKHEADS AND PLUGS INSTALLED DECEMBER 2017.



RACER TRUST BUICK CITY FLINT, MICHIGAN	
<b>OUTFALL 005</b>	
	Design & Consultancy for natural and built assets
FIGURE <b>1</b>	

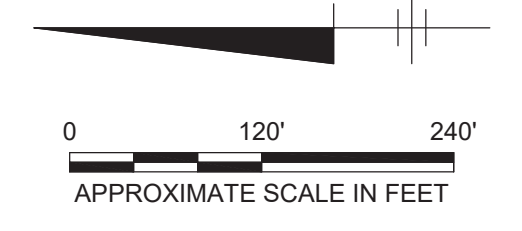


CITY: SYRACUSE DIV: GROUP: ENV DB: A SANCHEZ ID: ALSIGNS PIC: C.S.PETERS PM: C.KIKER TM: C.KIKER LVR: ON=OFF=REF  
 C:\BIM\edrive - ARCADIS\BIM 360\DesaRACER TRUST\BUICK CITY RCRA\2019\1-DWG\RTBC-F-OUTFALL\DRAINAGE.dwg LAYOUT: 6 \_SAVED: 2/18/2019 4:11 PM ACADYER: 233\JLS (LMS TECH) PAGES: 6 PLOTSTYLETABLE: PLOTSTYLETABLE.dwg PAGES: 6 PLOTSETUP: PLOTSETUP.dwg BY: SANCHEZ, ADRIAN



- LEGEND:**
- PROPERTY BOUNDARY
  - - - - PROPERTY PREVIOUSLY OWNED BY RACER
  - ARE ASSUMED TO BE PART OF OUTFALL DRAINAGE AREA
  - AREAS WITH NO DIRECT DRAINAGE TO THE STORM SEWER
  - 001 OUTFALL DRAINAGE AREA AND NUMBER
  - BULKHEAD LOCATION
  - PLUG LOCATION
  - SURVEYED STORM SEWER LINE (OUTFALL 010)
  - SURVEYED STORM SEWER LINE (OUTFALL 011)
  - STORM SEWER SAMPLING LOCATIONS
  - POTENTIAL SOURCE AREA FOR PFAS
  - STORM SEWER MAIN

- NOTES:**
- BASE MAP INFORMATION FROM A SURVEY BY BMJ, INC. DATED APRIL 2001, AT A SCALE OF 1:100. AERIAL IMAGE FROM ARCGIS 10 ONLINE MAPPING, ACCESSED 6/12/2013.
  - BASED ON INFORMATION AVAILABLE AS OF JUNE 2016.
  - MH4-20-2 DOWN GRADIENT PLUG'S 24-INCH LINE WAS BLOCKED WITH SEDIMENT, YIELDING NO FLOW PRIOR TO PLUG INSTALLATION. PLUG IS MADE UP OF NATURALLY PACKED SEDIMENT IN PIPE.
  - BULKHEADS AND PLUGS INSTALLED DECEMBER 2017.



RACER TRUST  
BUICK CITY  
FLINT, MICHIGAN

**OUTFALL 010 AND 011**




FIGURE  
**2**