MEMO

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From:

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Date:

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Arcadis Project No.:

30075935.03200

Subject:

Outfall 003 Post Reroute Evaluation

RACER Buick City Site, Flint, Michigan

Following the completion of the Outfall 003 Storm Sewer Reroute activities at the RACER Buick City Site (the Site) located in Flint, Michigan, water samples were collected from select locations within the Outfall 003 storm sewer in April and June 2021 and submitted for per- and polyfluoroalkyl substances (PFAS) analysis. The objectives of the sampling were 1) to determine whether tivjpysvssgxeri$vypjsrng$egnh$PFOS) continued to exceed criteria at the outfall, 2) to confirm that the reroute eliminated on Site PFOS contributions west of the railroad tracks, and 3) to determine the source(s) of PFOS infiltration along the storm sewer (if present). Sample locations are shown on **Figure 1**.

Objective 1 – Determine Whether PFOS Exceeds Criteria at the Outfall

Samples collected from the outfall after completion of the Outfall 003 reroute detected PFOS at an average concentration of 59 nanograms per liter (ng/L), which exceed the groundwater/surface water interface (GSI) criterion of 12 ng/L for PFOS. However, there was a decrease in concentration from samples collected prior reroute which averaged 133 ng/L.

Objective 2 – Confirm that Reroute Eliminated Onsite PFOS Contribution West of the Railroad Tracks

Two samples were collected from manhole MH 3-38, located west of the railroad tracks and downgradient of the former connection to Oil Interceptor #2. Both samples detected PFOS at a concentration of 2.7 ng/L. In addition, samples were collected from manholes MH 3-51 and MH 3-52 at the west property boundary to measure PFOS concentrations coming from upgradient of the Site. The sample collected from manhole MH 3-51 did not detect PFOS, while the sample collected from MH 3-52 detected PFOS at a concentration of 2.4 ng/L. These results suggest that the PFOS being detected at MH3-38 is coming from off Site (upgradient)

and that the primary source of PFOS impacts remaining in the Outfall 003 storm sewer is located east of the railroad tracks.

Objective 3 – Determine Source of PFOS infiltration Along the Outfall 003 Storm Sewer

In April and June 2021, samples were collected from the manhole MH 3-6 vault, which is located east of the railroad tracks (**Figure 1**). PFOS was detected at 24 and 25 ng/L. Samples collected from manhole MH 3-6 prior to the reroute detected PFOS at concentrations of 47 and 90 ng/L. This indicates that while concentrations of PFOS have decreased following completion of the reroute, there is still a source east of the railroad tracks.

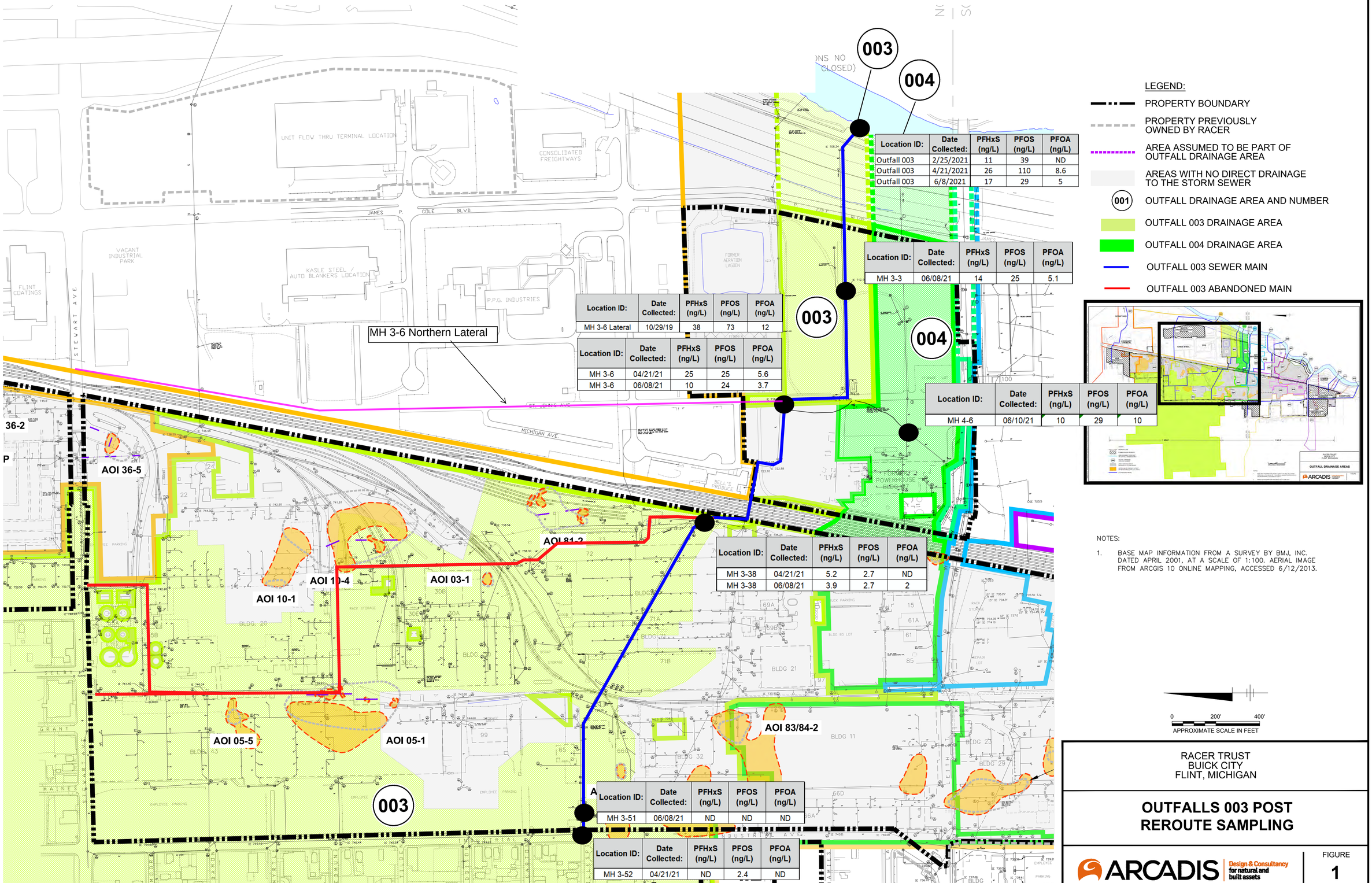
Based on a review of available data, potential sources of PFOS east of the railroad track were assessed:

- The northern lateral discharging into the manhole MH 3-6 vault - Flow previously sampled from this lateral in October 2019 detected PFOS at a concentration of 73 ng/L.
- The flow from the manhole MH 4-6 vault, which is diverted to the Outfall 003/004 stormwater treatment system (Outfall 003/004 system). In June 2021, an inspection of the MH 4-6 vault was completed. A small amount of flow was being diverted to the Outfall 003/004 system; therefore, a sample was collected from the vault. The sample detected PFOS at a concentration of 29 ng/L. However, a sample collected from MH 3-3, which is located downgradient of the Outfall 003/004 system discharge, detected PFOS at a concentration of 25 ng/L, which is the same concentration of PFOS detected upgradient of the system at the manhole MH 3-6 vault. Because the flow from MH 4-6 is very limited and the PFOS concentration is about the same as what is already in the Outfall 003/004 system, MH 4-6 is not materially affecting Outfall 003 (**Figure 1**).

Next Steps

Based on a review of available data, additional investigation of the northern lateral will be completed. These activities will include.

- Conduct a surface inspection along the northern lateral discharging into MH 3-6 to locate manholes/ access points north of the Site.
- Survey manhole/access point ground surface/invert elevations to determine if northern lateral is above or below the water table.
- Complete a video inspection of the above referenced lateral to identify areas of infiltration or discharges.
- Assess whether further sampling is needed based on these inspections



Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
Outfall 003	2/25/2021	11	39	ND
Outfall 003	4/21/2021	26	110	8.6
Outfall 003	6/8/2021	17	29	5

Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
MH 3-3	06/08/21	14	25	5.1

Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
MH 3-6 Lateral	10/29/19	38	73	12

Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
MH 3-6	04/21/21	25	25	5.6
MH 3-6	06/08/21	10	24	3.7

Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
MH 4-6	06/10/21	10	29	10

Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
MH 3-38	04/21/21	5.2	2.7	ND
MH 3-38	06/08/21	3.9	2.7	2

Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
MH 3-51	06/08/21	ND	ND	ND

Location ID:	Date Collected:	PFHxS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
MH 3-52	04/21/21	ND	2.4	ND

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
- 001 OUTFALL DRAINAGE AREA AND NUMBER
- OUTFALL 003 DRAINAGE AREA
- OUTFALL 004 DRAINAGE AREA
- OUTFALL 003 SEWER MAIN
- OUTFALL 003 ABANDONED MAIN

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.

0 200' 400'
APPROXIMATE SCALE IN FEET

RACER TRUST
BUICK CITY
FLINT, MICHIGAN

OUTFALLS 003 POST REROUTE SAMPLING

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1