



**Summary and Update of Site Investigation
Buick City
Report to EGLE
July 15, 2020**

Introduction

The progress of the work on site was temporarily halted in response to the Governor's Executive Order in March. However, after COVID conditions improved and modification of the Executive Order, return to work updates of the applicable health and safety plans were prepared and work has resumed on site. The work along Hamilton Avenue has continued to devise a strategy to reduce the PFAS in Outfalls 010, 011 and 013 and the City of Flint sanitary sewer system as explained further below. This work on the storm and sanitary sewer lines is important because contaminated groundwater can leak into these old lines and eventually end up in the river.

Sanitary Sewer

The City of Flint conducted a dye test (October 2019) and confirmed that the sanitary sewer in Hamilton Avenue does not currently actively serve any properties in the area. Thereafter, in February 2020 RACER performed a field test by inserting an inflatable plug in a section of the sanitary sewer to assess if that was sufficient to reduce the level of PFAS entering the City sanitary sewer system. PFAS concentrations remained elevated. In subsequent discussions with the City (delayed due to COVID stay at home limitations) a second location was identified to install the plug that should temporarily terminate any flow from this sanitary sewer line into the City system. This temporary plug was installed on July 14. (see **Exhibit 1**) In about 2 weeks the City sanitary sewer will be resampled downstream to determine if this plug has successfully reduced PFAS concentrations. If so, final arrangements will be worked out with the City to permanently disconnect/plug the sanitary sewer line in Hamilton Avenue.

Storm Sewer Outfalls

The **003 Reroute** is progressing. The section along Industrial Avenue has been completed except for the connection in Stewart Avenue (see **Exhibit 2**) that is on hold until Consumers Power Company can relocate/terminate an existing 1920s vintage cast iron (bell and spigot) gas supply line that is less than 2 feet from the location of the work area required for the proposed connection. Based on a recent update from Consumers Power Company final connections of the new sewer to the existing storm sewer and switchover to the new system may not occur until sometime in September/October. After some delays

in the required dewatering efforts for the section along Stewart Avenue the new sewer line has been installed almost to the point of connection to the existing storm water line near the intersection of Selby and Stewart Avenue. (see **Exhibit 2**) An existing storm sewer constructed of old blocks partially collapsed before the new sewer could be connected. A revised plan to complete that connection will be implemented when Consumers Power Company completes the relocation/termination of the old gas line in Stewart Avenue near Industrial.

Plugs were installed in select laterals along the **Outfall 010 storm sewer** in Hamilton Avenue (see **Exhibit 3-1**) the week of June 15th. A sample was collected from the Outfall 010 storm sewer the week of July 6th to assess PFAS impacts in the storm sewer following plugging activities. Those results are expected about the first week of August.

A work plan to plug three laterals along the **Outfall 011 storm sewer** designed to mitigate flow from the Site has been prepared and has been approved by the City of Flint. The locations for these plugs are all in City of Flint street right of way within Hamilton Avenue (see **Exhibit 3-2**) and despite the fact that the locations primarily serve the Buick City Site, City approval is needed. This work should begin within the next two weeks. As with the Outfall 010 sewer, within about 1 to 2 weeks after the plugs are installed follow-up samples will be collected to assess if the PFAS levels have been reduced by plugging these locations.

During the week of June 22, a bulkhead was installed at **Outfall 013** to eliminate the contribution from a lateral entering the main sewer at manhole MH 13-11 (see **Exhibit 3-1**). Samples were collected from the Outfall 013 storm sewer the week of July 6th to assess impacts following bulkheading activities. The sample results are expected by the first week of August.

Finally, with respect to **Outfall 002** the Buick City Site's contribution to 002 will be reconnected with the completion of the 003 reroute. To establish baseline conditions before the 003 reroute is reconnected, samples of sediments and stormwater were collected from the outfall 002 stormwater line downgradient of the previously installed bulkhead to assess the condition of 002 before the reroute is completed and activated. Elevated levels of PFAS were found in both water and sediment, but not in adjoining groundwater samples.(see **Exhibits 4-1, 4-2, and 4-3**)

To investigate the possible source of this PFAS, samples were collected in December 2019 and February 2020 from manholes located in the Factory 36 Area north of Stewart Avenue, upgradient of the bulkheads – which did not detect PFOA/PFOS. However, samples collected from between the bulkheads installed at MH 2-20 and MH 2-18 detected PFOS at concentrations ranging from 1,200 ng/L to 22,600 ng/L. Water samples collected downgradient of the Site in the Outfall 002 storm sewer detected PFOS at concentrations ranging from 895 ng/L to 6,760 ng/L. (see **Exhibit 4-1**) While PFAS may be present in the storm sewer it was not infiltrating from groundwater (the sewer is several feet below the groundwater table) and as noted the groundwater samples in the area contained PFAS at levels significantly lower than inside the storm sewer by orders of magnitude. A more complete memo summarizing this work will be submitted in August.

The investigation activities completed to date suggest that a likely on-site source of the PFOA and PFAS impacts in MH 2-20 may be related to unknown underground utility structures connected to and in the vicinity of MH 2-20. Also, the data suggests potential downgradient (of the RACER property) other sources of PFAS may be present and contributing to the discharge at the outfall. Further investigation

after the reroute is completed is planned on site after dewatering activity is completed to avoid dewatering influences on the investigation.

PFAS Investigation Near Hamilton Avenue

As the discussion above illustrates outfalls 010 and 011 and the sanitary sewer in Hamilton Avenue appear to be impacted by PFAS from the area near Hamilton Avenue. A priority for the site work has been to sort out from an array of diverse data across the 400-acre site possible source locations. Locating and dealing with source areas is one of the most important objectives of a site investigation and has become, in discussions with EGLE, an important focus of our work.

Previously the highest groundwater sample on site (38,000 ppt - PFOS) was just north of Hamilton Avenue (see **Exhibit 5**). With the goal of trying to find a source or sources of the PFAS impacting the Hamilton Avenue area, additional soil and groundwater samples had been collected around that location in March 2019. Those results were not conclusive and after the return to work a concentrated effort to more thoroughly investigate this area was conducted in May 2020 by installing soil borings at 20 locations, collecting 153 soil samples, collecting groundwater samples from 36 temporary wells, and from 7 existing monitoring wells. The results of this work were reviewed with EGLE on July 15, 2020 with the implication that a potential source of PFAS contamination has been located.

Five locations contain PFAS in soils over 100,000 ppt (the highest sample was reported at 660,000 ppt at boring SB-04-17.(see **Exhibit 6**) In addition, PFAS was found in groundwater as high as 46,000 ppt in a temporary well screened in a shallow zone (about 8 to 13 feet below surface) and as high as 41,000 ppt in a temporary well screened in a deeper zone (about 19 to 24 feet below surface). Identifying this area is a significant development because as this source is better defined the best strategies to remediate the PFAS improves the prospects that a successful remedy can be designed and implemented. In combination with the storm sewer and sanitary sewer bulkheading/plugging, locating and addressing this source area improves the prospect for successful remediation of this portion of the site.

Additional site work on this targeted area is scheduled to begin on July 27, 2020 with a full sampling crew and two drilling rigs to install more wells and collect more samples in both soils and groundwater. It is likely that additional rounds of sampling will be conducted in August/September and a follow up report reviewing possible treatment/remediation technologies will be prepared for review in late fall. While this level of contamination is significant there is no immediate indication of any health or environmental risks that require more urgent actions.

Also, with hoped for benefits from the implemented and planned bulkheading/plugging of connections to the storm and sanitary sewers discharges to the City of Flint wastewater system and to the storm sewers will be reduced. Work to address this source area over the next year or so is expected to mitigate the future migration of PFAS from the area.

As discussed above, further sampling will be conducted in the vicinity of the outfall 002 line near Stewart Avenue after the 003 reroute is completed which may identify an additional source area. Because a full section of the former 002 storm sewer line was removed to make room for the new 003 reroute there is no longer any connection to the outfall 002 sewer isolating this potential source area.

Given the time it takes for laboratory sample analysis/reporting and review of the results we anticipate the next more detailed report on both the Outfall 002 area and Hamilton Avenue investigation will not be ready until early September.

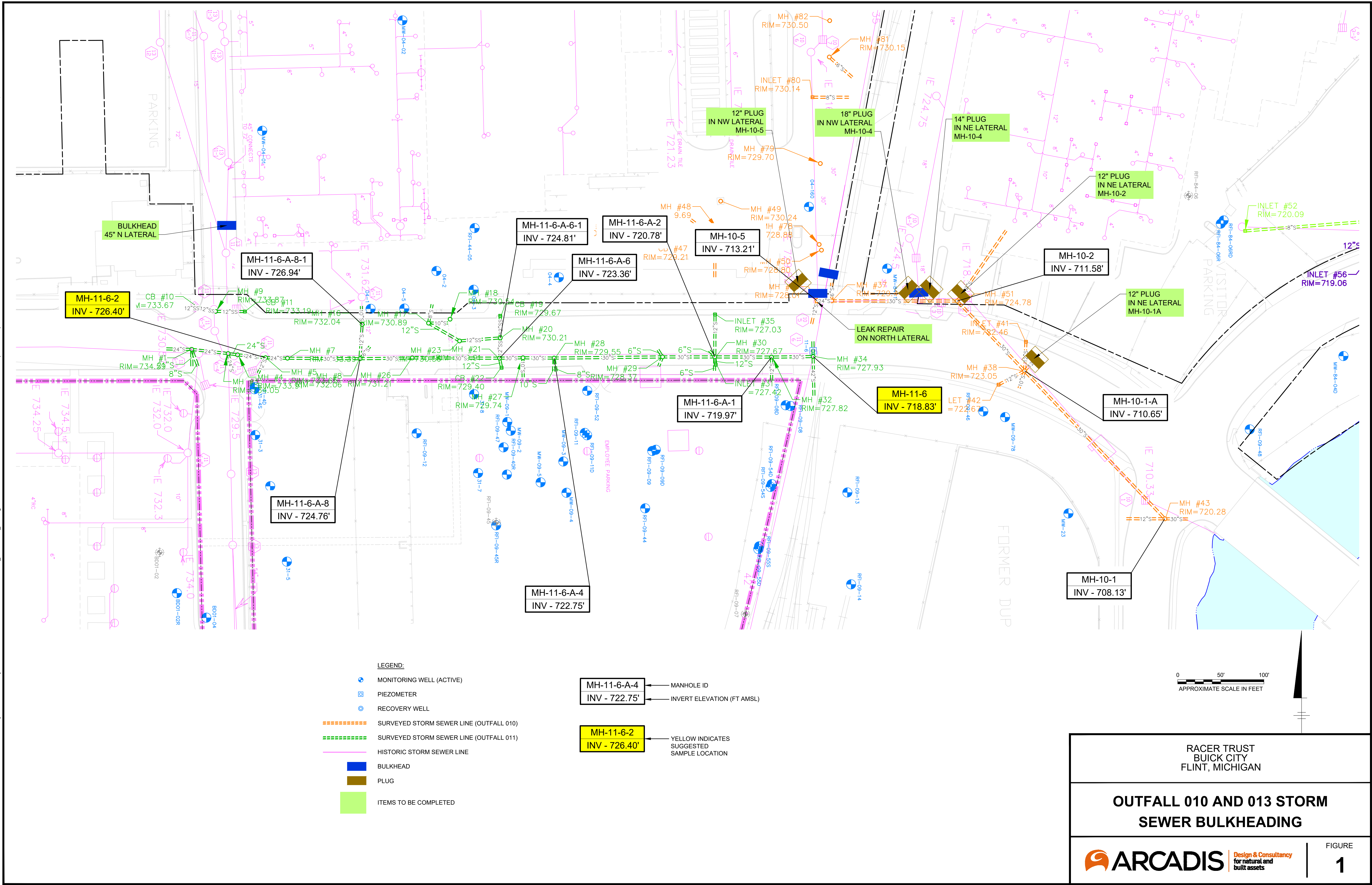
Lead Contamination in Soils

To prepare the site for redevelopment additional testing was done to better define areas where lead contamination has been found in soils. Groundwater samples to date have not indicated any material impact from lead on groundwater on site and no impact to any possible source of drinking from lead is known to exist on the site.

However, elevated levels of lead in soils are present on site and a plan to properly and safely manage those soils during construction and remediation is important to prevent human exposure and assure these materials are safely managed during future construction and remediation activities. The attached maps (see **Exhibits 7-1, 7-2, and 7-3**) show the locations where lead soil concentrations exceed 900 ppm which is the direct contact limit. Sample results in soil vary widely from less than 10ppm to as high as 385,000 ppm at one location. This is most certainly an outlier and likely attributable to a “nugget” particle of lead collected with the soil sample. Additional testing is planned to confirm that the lead present in these soils has not adversely impacted groundwater and can be relocated within designated areas of the site during construction activities under proper regulatory controls.

The majority of the soils sampled for lead are located either at depth or below existing concrete slabs and do not present a health hazard in their present location/condition. Any lead in soils not covered by concrete is covered by soils or aggregate. A “Materials Management Plan (MMP)” is being prepared that will guide future work on the site to ensure safe and proper work is performed and that required measures to address these lead soils will be implemented during construction. The MMP will include conditions that will ensure that lead found in surface soils or from excavations at levels that could present a possible health hazard (e.g. contact, dust, etc.) will be managed to prevent health hazards while remediation and redevelopment are underway.



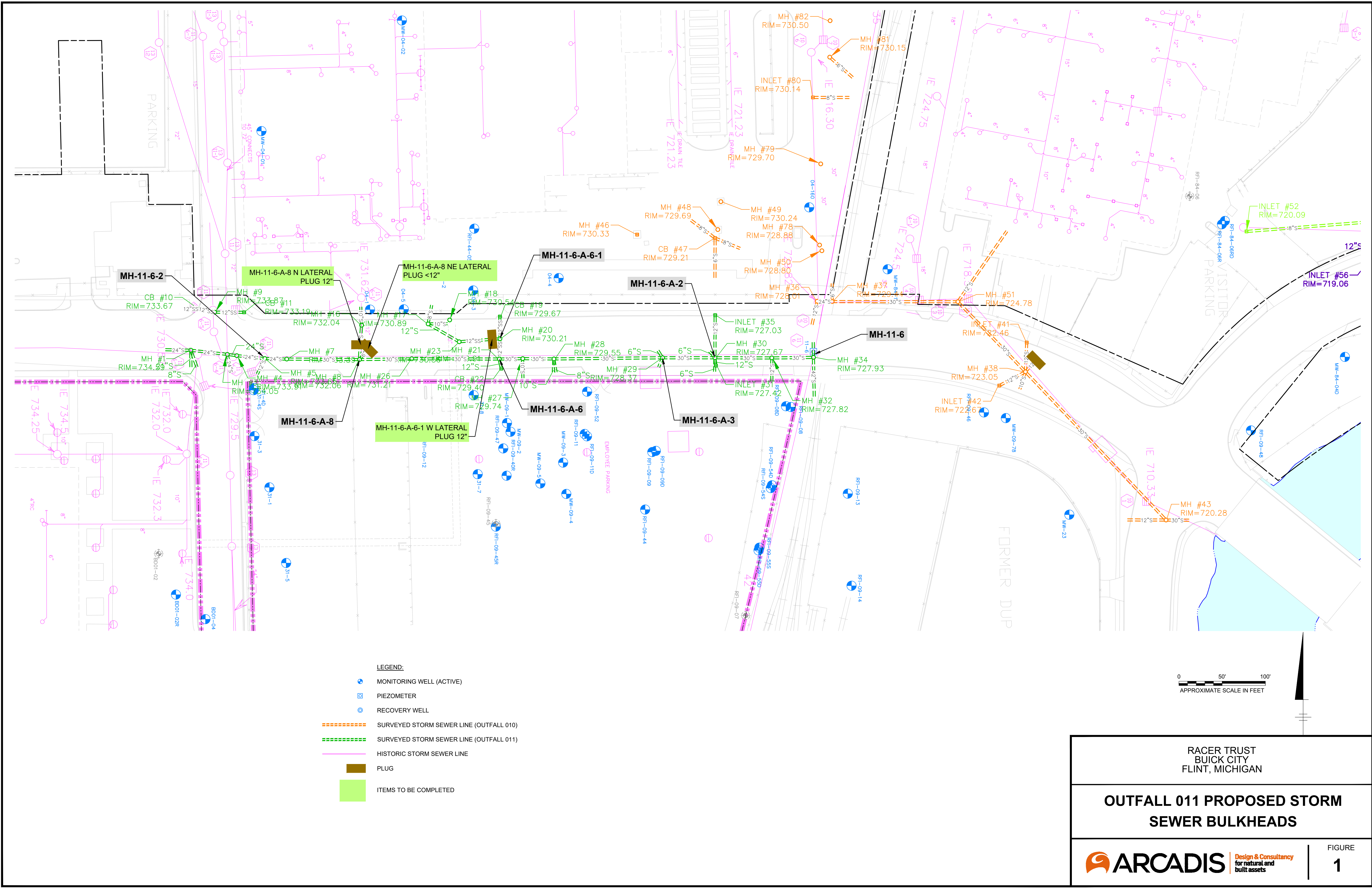


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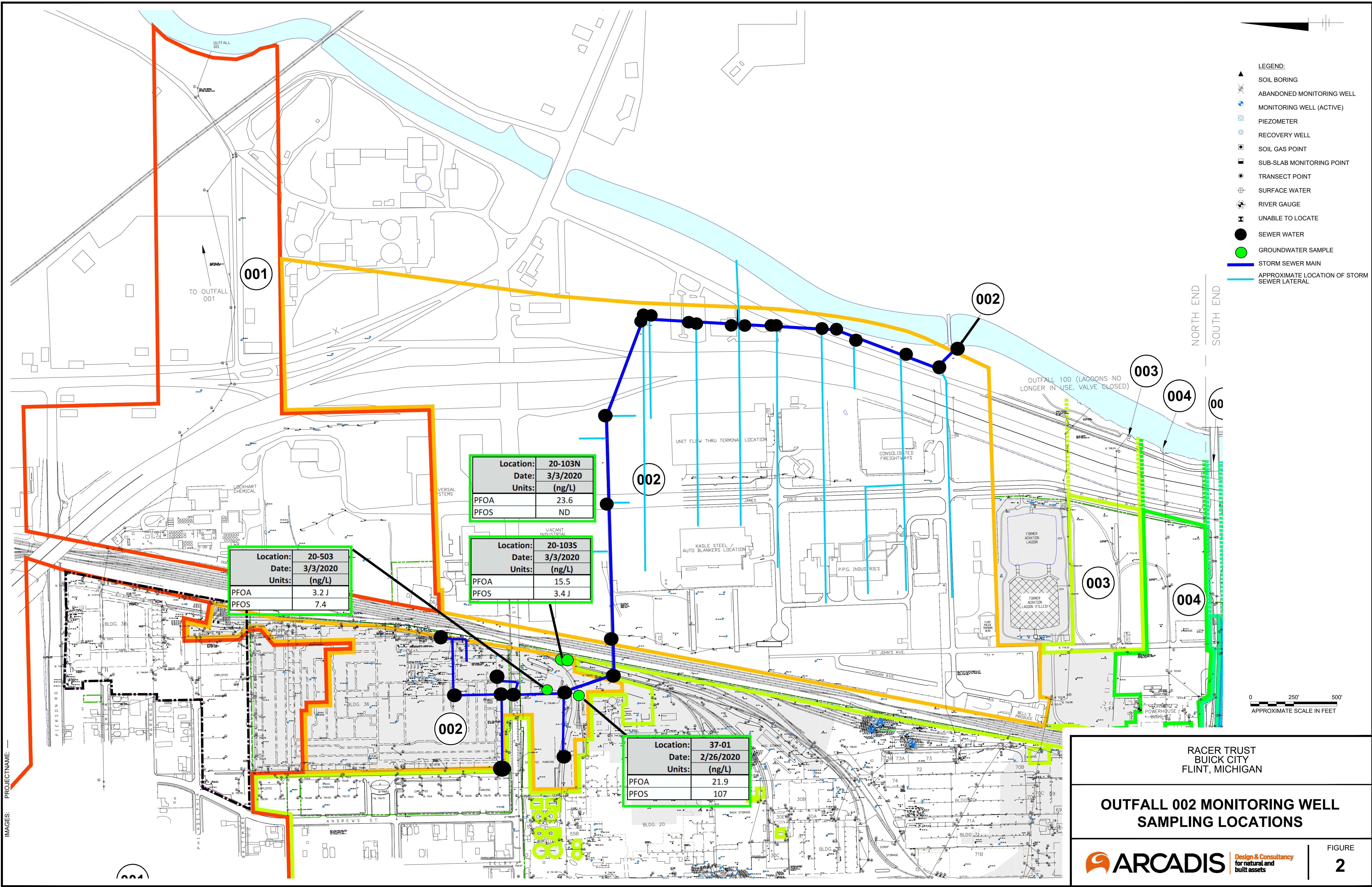
OUTFALL 010 AND 013 STORM
SEWER BULKHEADING

 **ARCADIS** Design & Consultancy
for natural and
built assets

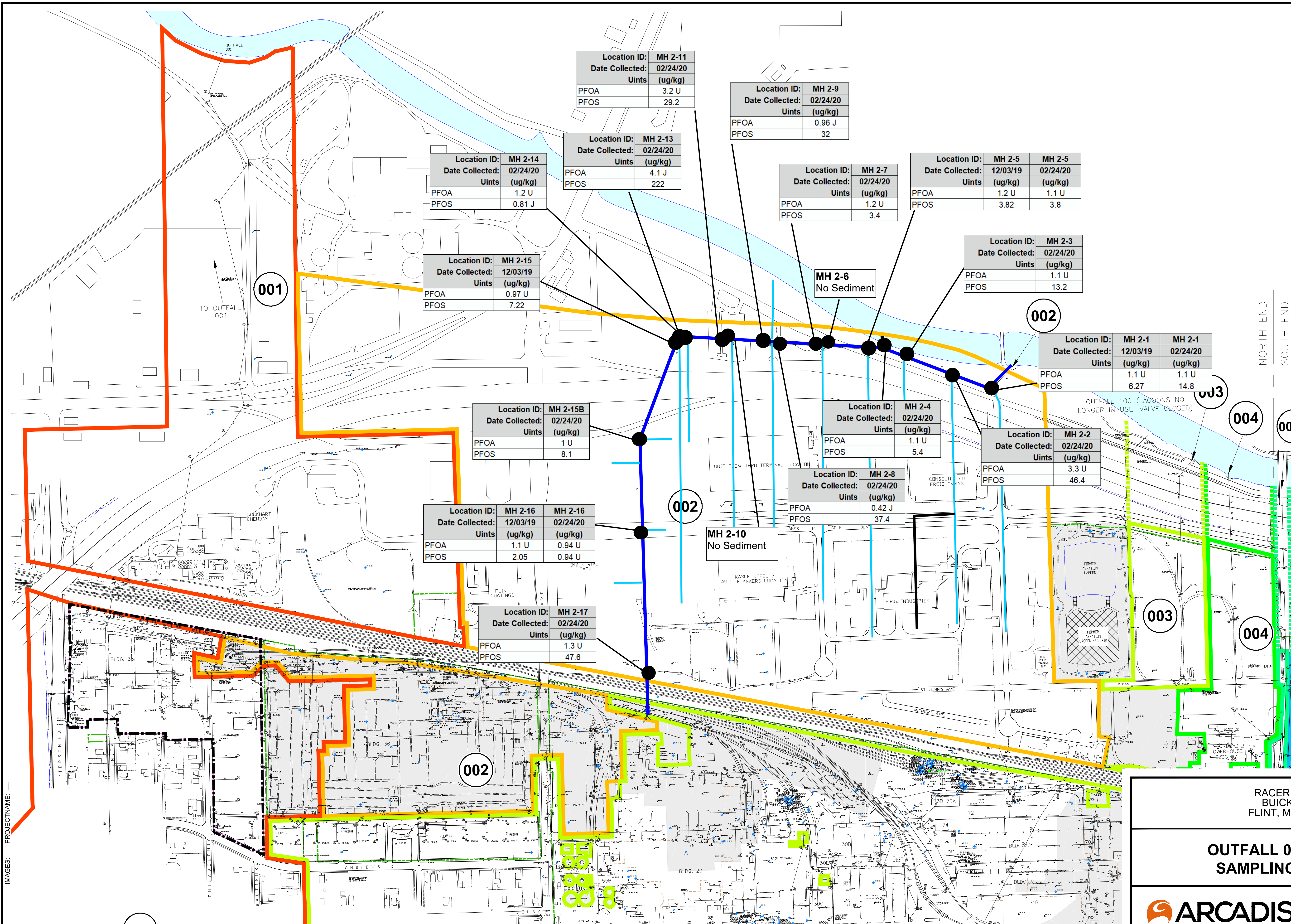
FIGURE
1



IMAGES: PROJECTNAME: _____



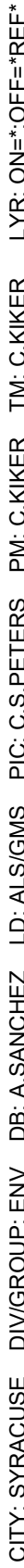
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BUICK CITY
FLINT, MICHIGAN

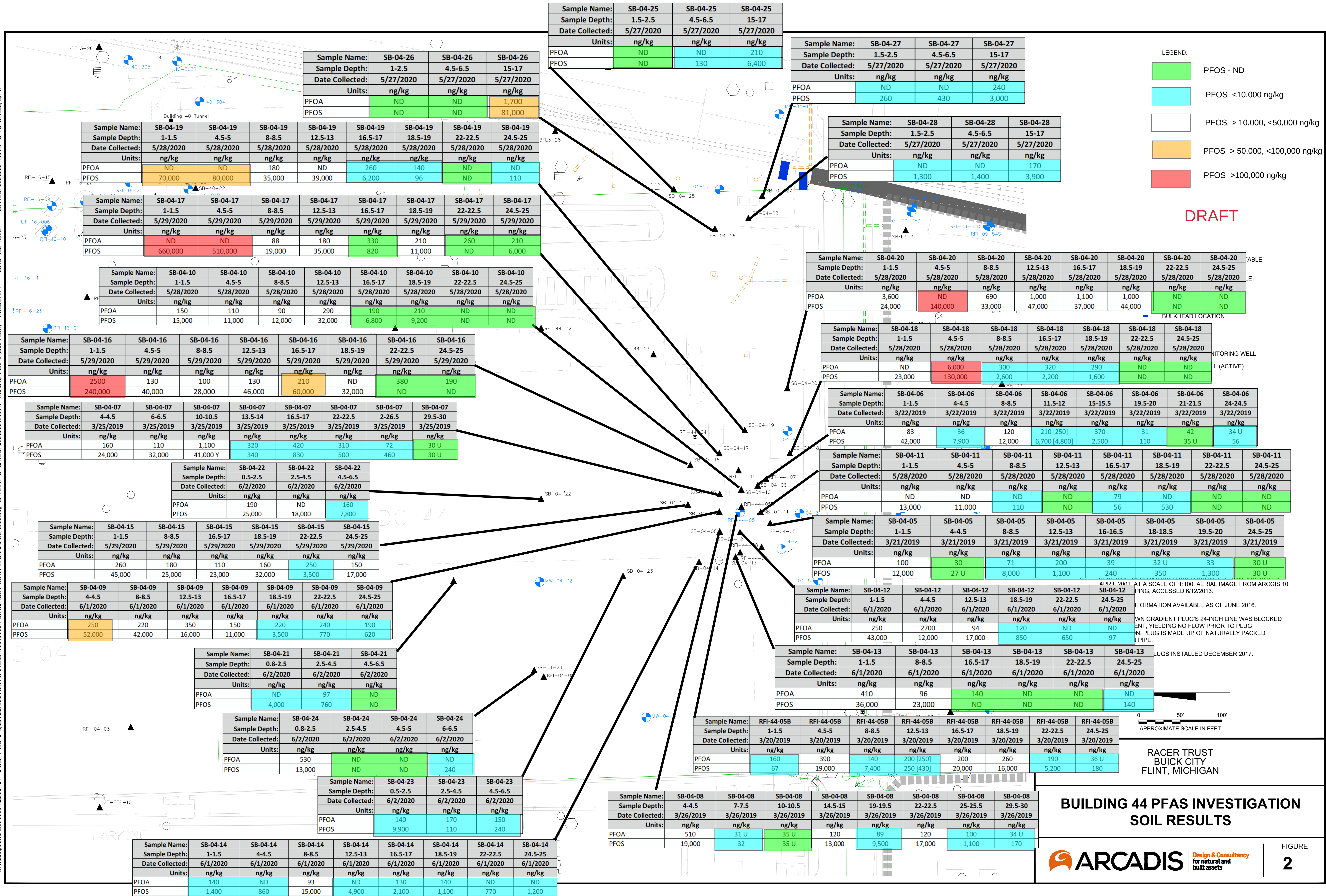


0 250' 500'
APPROXIMATE SCALE IN FEET

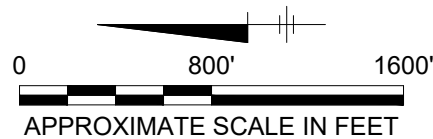
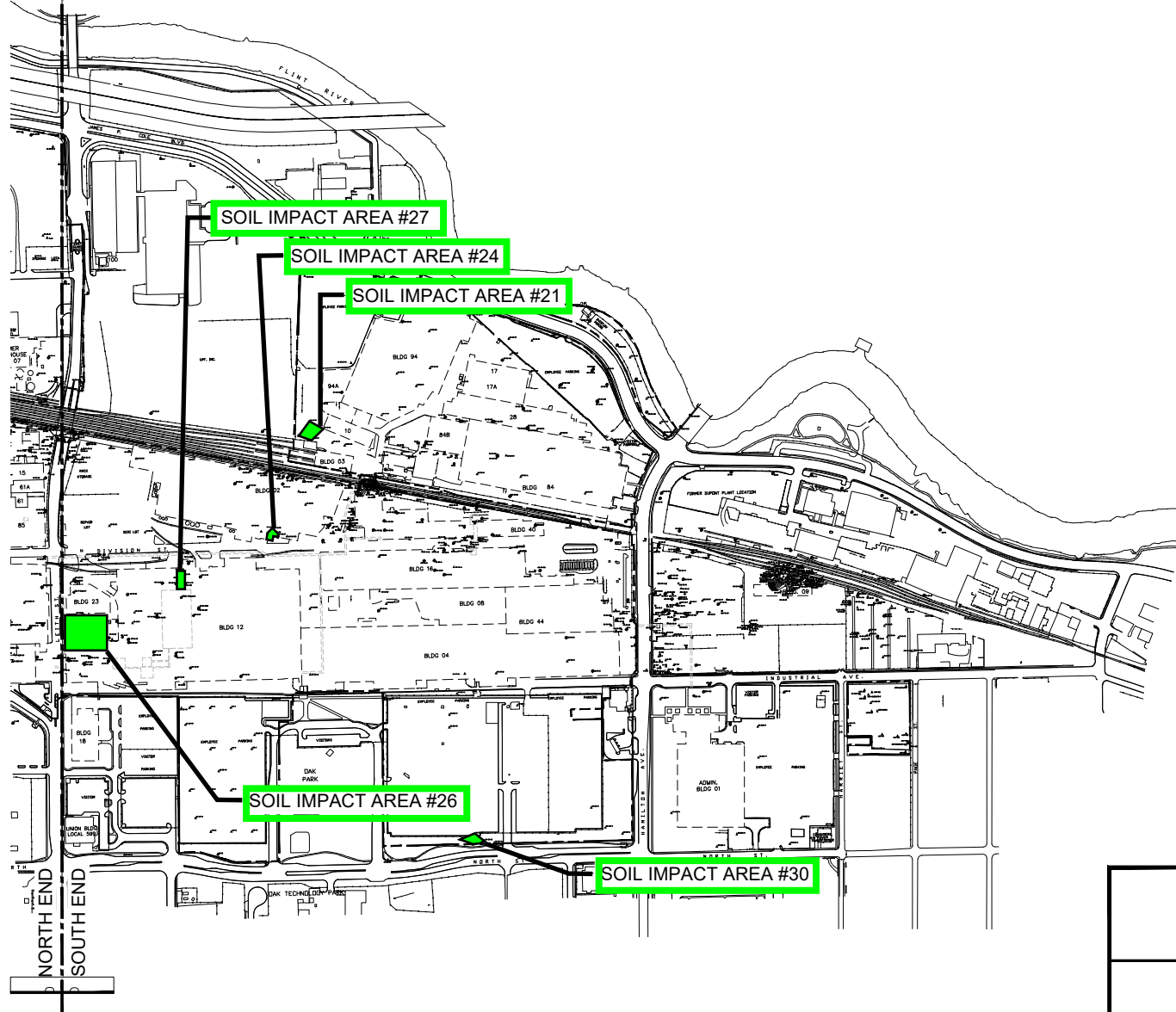
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OUTFALL 002 SEDIMENT SAMPLING LOCATIONS





XREFS: IMAGES: PROJECTNAME: ----
X-SAMPLE NETWORK
x-site base
X-BDR-RC-LA



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RESTRICTIVE COVENANT

**SOUTHEND
LEAD IMPACT SOILS**

