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.
FIGURE 1
APPROXIMATE SCALE IN FEET

0 50' 100'

LEGEND:
MONITORING WELL (ACTIVE)
PIEZOMETER
RECOVERY WELL
SURVEYED STORM SEWER LINE (OUTFALL 010)
SURVEYED STORM SEWER LINE (OUTFALL 011)
HISTORIC STORM SEWER LINE
PLUG

ITEMS TO BE COMPLETED
MH-11-6-A-8
N LATERAL
PLUG 12"
MH-11-6-A-6
MH-11-6-A-8
MH-11-6-A-6-1
MH-11-6-A-2
MH-11-6-A-6-2
MH-11-6-A-6-3
MH-11-6-A-3
MH-11-6-A-2
MH-11-6-A-8
MH-11-6-A-6
MH-11-6-A-3
MH-11-6-A-2
MH-11-6-2
MH-11-6
OUTFALL 002 STORM SEWER SAMPLING LOCATIONS

RACER TRUST
BUICK CITY
FLINT, MICHIGAN

LEGEND:
- SOIL BORING
- ABANDONED MONITORING WELL
- MONITORING WELL (ACTIVE)
- PIEZOMETER
- RECOVERY WELL
- SOIL GAS POINT
- SEWER WATER (UPGRADIENT OF BULKHEAD)
- SEWER WATER (DOWNGRADIENT OF BULKHEAD)
- SUB-SLAB MONITORING POINT
- TRANSECT POINT
- SURFACE WATER
- RIVER GAUGE
- UNABLE TO LOCATE
- APPROXIMATE LOCATION OF STORM SEWER LATERAL

APPROXIMATE SCALE IN FEET
0' 250' 500'
LEGEND:
- SOIL BORING
- ABANDONED MONITORING WELL
- MONITORING WELL (ACTIVE)
- PIEZOMETER
- RECOVERY WELL
- SOIL GAS POINT
- SUB-SLAB MONITORING POINT
- TRANSECT POINT
- SURFACE WATER
- PRIORITAIZED
- UNABLE TO LOCATE
- DRIVER HAYES
- CIRCUMSCRIPTION SAMPLE
- APPROXIMATE LOCATION OF STORM SEWER LATERAL

APPROXIMATE SCALE IN FEET
0 250' 500'
GROUND WATER SAMPLE

OUTFALL 002 MONITORING WELL SAMPLING LOCATIONS

RACER TRUST
BUICK CITY
FLINT, MICHIGAN

FIGURE 2
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.


LEGEND:
- SEWER LINE
- SANITARY SEWER LINE
- BULKHEAD LOCATION
- PLUG LOCATION
- ABANDONED MONITORING WELL
- MONITORING WELL (ACTIVE)
- MONITORING WELL (INACTIVE)
- RECOVERY WELL
- OBSERVATION WELL
- SICS, SUMP PUMP
- SURFACE WATER
- RIVER GAUGE
- FOOTING
- UNABLE TO LOCATE
FIGURE 1

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.

LEGEND:
PROPERTY BOUNDARY
PROPERTY PREVIOUSLY OWNED BY RACER ARE ASSUMED TO BE PART OF OUT-FALL DRAINAGE AREA
AREAS WITH NO DIRECT DRAINAGE TO THE STORM SEWER
OUTFALL DRAINAGE AREA AND NUMBER
OUTFALL 010 DRAINAGE AREA
OUTFALL 011 DRAINAGE AREA
OUTFALL 012 DRAINAGE AREA
SEWER LINE BELOW WATER TABLE
SEWER LINE ABOVE WATER TABLE (LIMITED DATA AVAILABLE)
INSUFFICIENT DATA AVAILABLE
STORM SEWER LINE
SANITARY SEWER LINE
BULKHEAD LOCATION
PLUG LOCATION
SOIL BORING
ABANDONED MONITORING WELL
MONITORING WELL (ACTIVE)
PIEZOMETER
RECOVERY WELL
OBSERVATION WELL
SOIL GAS POINT
SUB-SLAB MONITORING POINT
TRANSECT POINT
SURFACE WATER
RIVER GAUGE
TEST PIT
UNABLE TO LOCATE
APPROXIMATE SCALE IN FEET
0
50'
100'
SOIL IMPACT AREA #2

SOIL IMPACT AREA #1

SOIL IMPACT AREA #6

SOIL IMPACT AREA #7

SOIL IMPACT AREA #10

SOIL IMPACT AREA #13

SOIL IMPACT AREA #11

NORTHEND LEAD IMPACTED SOILS
SOUTHEND LEAD IMPACT SOILS

APPROXIMATE SCALE IN FEET

SOIL IMPACT AREA #21
SOIL IMPACT AREA #24
SOIL IMPACT AREA #26
SOIL IMPACT AREA #27
SOIL IMPACT AREA #30