January 8, 2016

Chad Staniszewski
NYSDEC Region 9 Office
270 Michigan Avenue
Buffalo, NY 14203

Subject Technical Review
Interim Remedial Measure Work Plan to Address Oil Infiltration to the BSA Sewer
Former General Motors and American Axle and Manufacturing Site
Portion of 1001 East Delevan Avenue, 1001 East Delevan Avenue,
General Motors NYSDEC Site Number 915196

Dear Mr. Staniszewski:

In preparation of the Brownfield Cleanup Program Application and the associated RI/AAR/IRM Scope of Work, Energy Solutions Consortium, on behalf of East Delavan Property LLC, has reviewed the Interim Remedial Measure Work Plan to Address Oil Infiltration to the BSA Sewer, prepared by Conestoga-Rovers & Associates (CRA) in November 2006 and the Supplemental Interim Remedial Measure Work Plan to Address Subsurface Oil, prepared by Conestoga-Rovers & Associates (CRA) in August 2008. (collectively the CRA Plan) The purpose of the review was three fold:

1. Understand the basis for the measures proposed in the CRA Plan, both quantified and assumptions;
2. Evaluate the scope in terms of current Site knowledge against the limitations that were available to CRA at the time of development of the CRA Plan; and
3. Utilize that information provided to help identify the appropriate approach to an IRM in 2016.

Basis of the CRA Plan

The basis of the CRA Plan utilized data that are now at least 6 years old, some more than 10 years old. The conditions at the site are dramatically different and the ongoing voluntary actions by EDP and passage of time (natural attenuation and biological decay) have stabilized the subsurface conditions. In particular, the following will be addressed by the Scope of Work proposed by EDP for the RI and IRM.

Subsurface Oil

The estimates of subsurface oil presented in the Supplement are based on assumptions as stated in the report. The volumes presented are noted to be "…subject to significant potential error". Assumptions had to be made concerning the soil characteristics and the models do not predict volumes in clay or bedrock with any accuracy. The stated estimated volumes of recoverable oil where made at a time when active sources existed at the site, with assumed soil properties, and with models known to be inaccurate for these types of media. Rather than rely on the subjective estimates, EDP is proposing to investigate the current conditions with both soil borings and wells and investigate the "recoverable volume" with transmissivity testing.

Subsurface PCB Containing Oil

The extent of subsurface oil and the volume of subsurface oil was extrapolated and interpreted from monitoring well data. CRA acknowledged the limitations of the method used and stated in the RI Report "estimates of oil obtained by these data directly is inappropriate" and the "…thickness of oil in the formation is 10 to 50 percent of the observed thickness in a well". The quantities of oil predicted in the RI and CRA Plan were calculated at a time when there were active sources of oil in pits and sumps throughout the site, as well as constantly recharging groundwater from the same pits and sumps. As a result of the ongoing recharge and limitations of the model, the volume of oil presented in the CRA Plan is believed to be significantly overstated. As a result, the RI and IRM Scope of Work proposed by EDP will:

1. Update the monitoring well data (presence and thickness of LNAPL);
2. Collect direct measurements of the presence of LNAPL and PCBs with analytical testing of continuous soil samples at selected locations in the site; and

3. Evaluate the transmissivity of the LNAPL to provide a basis for predicting the volume of recoverable LNAPL at the Site.

The summary of Nature and Extent of Subsurface PCB Containing Oil (Section 2.2.1.1) cites data on the highest concentrations of PCBs in the subsurface. The data cited are not reflected in the 2009 RI Report as the PCB concentrations in subsequent samples of oil from these same wells were orders of magnitude lower in concentration:

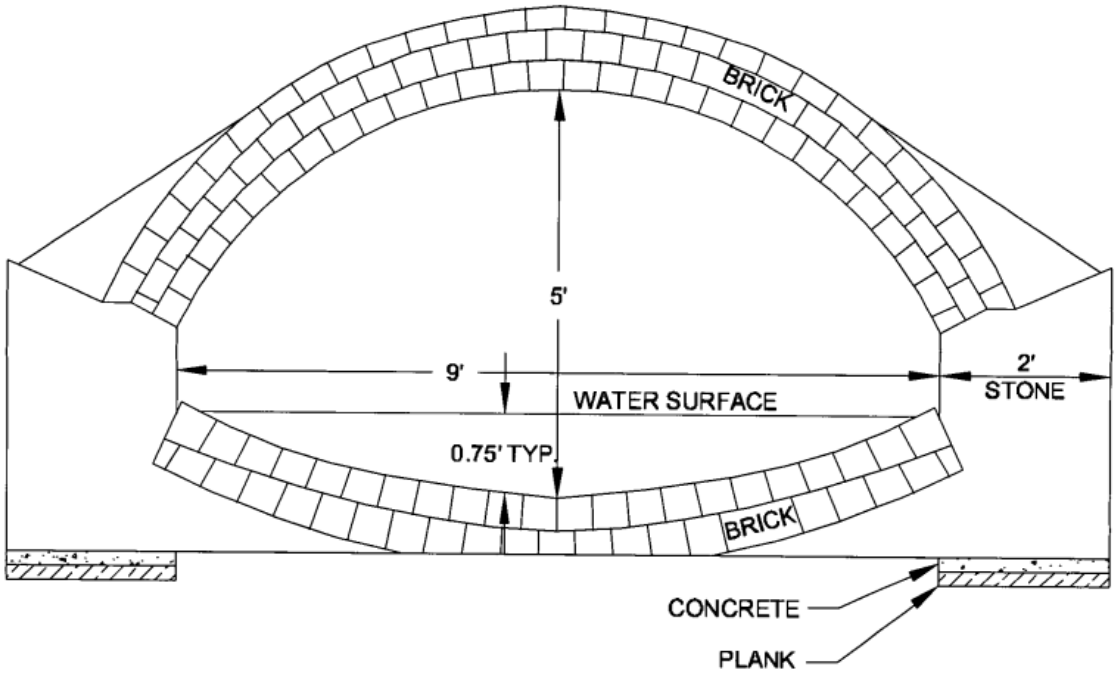
Unit/Well	IRM Report	2006 Sample	2007 Sample
Fill/CP-28	3,850 mg/Kg	59 mg/Kg	69 and 39 mg/Kg
Clay/MW-406	440,000 mg/Kg	700 mg/Kg	27,000 mg/Kg
Bedrock/CP-23	4,350 mg/Kg	NS	0.98 mg/Kg

The data need to be verified given:

1. The dramatic differences in the CRA data set;
2. The fact that the composite samples from the B-26 sump have never exceeded 13 mg/Kg; and
3. The time elapsed from the CRA sampling program to the EDP RI have allowed a more steady state condition to develop.

<u>BSA 5x9 Sewer</u>

The CRA Plan states (Section 2.2.1.2) that the 5x9 Sewer had influent from incoming laterals beneath the facility and stained areas on the wall. The report did not have any means of identifying the relationship of staining on a major sewer (there are more than 50 industrial dischargers to the 5 x 9 sewer upgradient of the Site) and did not suggest that there were seeps through the massive sewer structure:



The sources of oil have been removed and the laterals have been sealed. The RI and CRA Plan were developed while those sources/laterals were active. In addition, subsequent to the CRA Plan, the Buffalo Sewer Authority (BSA) has stated without question, that the walls and interior surfaces of the 5x9 sewer cannot be altered.

As a result, the EDP IRM proposal will use the following as a basis:

1. Confirm that the laterals are sealed;
2. Update the data set concerning groundwater and LNAPL near the 5 x 9 sewer; and
3. Design and install a system of wells in each unit to collect mobile NAPL with the potential to migrate toward the 5 x 9.

<u>Groundwater</u>

The characterization of PCBs in groundwater was qualified with the statement "Detections of PCBs [in groundwater samples] may be elevated due to the presence of oil within the samples." The detections of PCBs in groundwater were limited to an area within the area of LNAPL and the highest concentrations exceeded the solubility of most PCB Arochlors, supporting the concern that the detections were a

result of mixed samples and allowing the proposed IRM to address the potential for PCBs in groundwater with the same array that is proposed for LNAPL control. It is exceedingly difficult to sample groundwater in a zone that contains both LNAPL and groundwater. As a result, the RI and IRM Scope of Work will address groundwater by:

1. Sampling and testing groundwater in several wells outside, and downgradient, of the LNAPL;
2. Designing the recovery wells in the IRM to collect both LNAPL and groundwater to capture/control flow in the vicinity of the 5 x 9 sewer; and
3. Provide treatment through the existing IRM treatment facility for recovered groundwater prior to discharge to the BSA.

Soil

Like groundwater, soil data are affected by the presence of LNAPL as recognized in the CRA Plan; "PCB presence in subsurface soils occurs in the same areas in which oil is observed in the subsurface." It is extremely difficult to determine if a sample contains only soil or if it is a composite of soil and LNAPL (oil). The proposed RI and IRM Scope of Work address the presence of PCBs in soil by collecting several continuous columns of soil samples to test the occurrence and concentration of PCBs in soil, limiting the mobility of PCBs in soil by reducing the recharge of process water throughout the site, and placing Environmental Easement/Institutional Controls on the property.

Interim Remedial Measure

The IRM will consist of several interrelated components:

1. Environmental Easement/Institutional Controls– Prevent use of groundwater, prohibit excavation without proper training and work plans; and requirement to maintain concrete or a minimum of 2 feet of clean soil/gravel cover.
2. Extraction and treatment – Recovery of potentially impacted groundwater and LNAPL in a series of wells along the 5 x 9 sewer
3. Monitoring – Routine monitoring of the rate of recovery, radius of influence and characteristics of both groundwater and LNAPL;
4. Sampling and Analysis – Bench-scale testing of the potential for ongoing or enhanced natural attenuation of the oil/LNAPL mobilizing the PCBs; and

5. Ongoing operation and maintenance of the treatment system and pre-treatment permit with the BSA.

The interim remedial measure will serve 3 purposes:

1. Allow collection of samples that represent the transmissivity of LNAPL and PCBs in groundwater;
2. Test the ability of clustered multi-phase collection systems to control migration of oil and affected groundwater; and
3. Reduce the potential for PCBs from migration toward the 5 x 9 sewer.

The initial phase of the IRM will focus on the 300 foot long length (Columns 25 to 37) of the 5 x 9 sewer that is proximate to the largest accumulation of oil and PCBs as defined by the May 2009 supplemental investigation data. This data will be confirmed with the Spring 2016 sample event.

The IRM will consist of 4 sets of nested recovery wells east of the 5 x 9 sewer (Columns 27, 30, 33, and 36) and a single nested recovery well on the west side of the 5 x 9 at Column 28. A set of nested monitoring wells will be installed 15 west of the array to monitor the response of the groundwater/LNAPL system to the recovery.

The wells will be designed to independently recover both groundwater and LNAPL. Groundwater will be conveyed to the onsite treatment system and be treated and discharged in accordance with the Site's BSA pre-treatment permit. LNAPL will be accumulated onsite, tested and transported offsite for appropriate disposal.

Nested wells will be installed in the Column Bay E27 (east of 5x9) and Bay F28 (west of 5x9) during the well installation for the Spring event. The wells will be located 15 feet (min.) off the centerline of the 5x9 sewer and shall be constructed in separate borings to minimize the potential for communication of groundwater or LNAPL from one media to the next. One additional set of wells will be installed east of the array to allow monitoring of the radius of influence of the system. The recovery wells will be configured to allow testing of alternative recovery systems/pumps.

Testing of the transmissivity of the groundwater and oil into each of the wells will be conducted to select the appropriate recovery technology(ies). Note that a single technology may not work for all media.

The remaining IRM wells will be installed in advance of the Fall sampling event. This will allow EDP to collect a pre-IRM data set to set the baseline for the conditions along the IRM alignment. The well array will be designed to protect the 5 x 9 sewer and to test/validate the remedial technology. The well arrays will allow monitoring of the rate or recovery, radius of influence, and leakage/communication between media (fill, clay and rock).

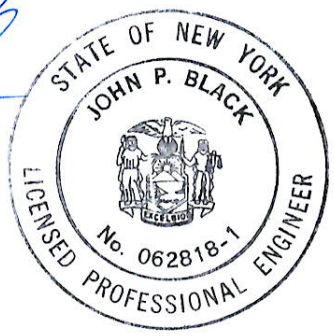
Initially the groundwater and LNAPL flow streams will be sampled as a composite. This will allow the wells to come into equilibrium (the equivalent of a long-term development). Prior to installing the second series of full scale IRM wells; individual samples of groundwater and LNAPL will be collected from each well. The data from the individual sampling will allow EDP to evaluate the mass and constituent recovery rate by media by well.

Summary

The CRA Plan was designed for a period in the Site operational history to address conditions under the ongoing influence of the GM and AAM operations. CRA was limited by conditions that were under the influence of numerous pits, sumps and trenches full of liquids and active laterals discharging to the BSA 5 x 9 Sewer. EDP has addressed those active sources and has continued operation of the IRM installed by CRA. EDP is proposing a RI and an IRM that will provide detailed understanding of the conditions of the Site today and will control migration toward the 5 x 9 Sewer. The analysis of the RI and IRM Data will provide EDP and NYSDEC with current comprehensive data to make long-term decisions for Site management.

Sincerely yours,

John P. Black, P.E.
Vice President



Cc: Jon Williams, EDP
David Flynn, Phillips Lytle
Timothy Kennedy, NYS Senate
Eugene Melnyk, NYSDEC

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