

Dave Favero

From: Kinney, Tom <tkinney@craworld.com>
Sent: Monday, December 12, 2011 2:15 PM
To: Ramanauskas.Peter@epamail.epa.gov
Cc: Dave Favero; Grant Trigger; Coram, Michael J.; Project Email Hold
Subject: FW: PCC-Validation Supplemental CCR ~COR-017322~
Attachments: 017322-RPT-14-PCC-Validation Supplemental CCR.pdf

Peter,

Please consider this e-mail along with attachments to be the Supplemental CCR for PCC Validation. Responses to your prior comments (November 1, 2011 e-mail) are summarized below.

Thanks,

Tom

USEPA Comment #1

1. Note to header: We should also consider the need for inclusion of vapor intrusion barriers at this site as part of the deed restriction

Response #1

1. Agreed. We will add language to the deed restriction to address vapor intrusion and to the header of Table 5.3

USEPA Comment #2

2. For AOIs 1, 2, 5: we should discuss groundwater monitoring plans for the site and the need for any additional wells to address potential off-site migration concerns. Does RACER plan to evaluate exceedances of water solubility criteria at AOIs 2 and 5 as part of the LNAPL investigation?

Response #2

2. Groundwater monitoring plans will be evaluated following the Phase III Investigation.

2a. During the Phase III Investigation, CRA will investigate potential off-site migration concerns, specifically TCE and PCBs in groundwater at MW-2-07 located in the northwestern corner of the property.

2c. During the Phase III Investigation, CRA will assess exceedances of water solubility criteria at AOIs 2 and 5.

USEPA Comment #3

3. AOI 15: It is stated that there is no further information available for these fill pipes which are near Plant 5. Is there anything additional we can do here to investigate whether these are fill pipes for existing USTs?

Response #3

3. Based on MDEQ records, all USTs have been removed or abandoned. However, CRA will conduct a search for the presence of fill pipes or potential USTs using a metal detector and/or ground penetrating radar.

USEPA Comment #4

4. AOI 16: It is stated that bulk loading and unloading areas were not investigated as part of the 2009 Phase II ESA as the exact location of all historical loading activities is unknown. Are there certain known locations at which no previous investigations have been conducted?

Response #4

4. CRA has not been able to identify historic locations of loading and/or unloading areas of concern.

USEPA Comment #5

5. AOI 21: Are the six large underground storage vaults accessible for integrity inspection? We should evaluate whether the process lines may act as an open pathway for potential off-site migration.

CRA Response #5

5. Based on ARCADIS BBL's (ARCADIS) December 19, 2008 Interim Draft Deactivation Report (IDDR), the six large pits at the main lift station were dewatered, pressure washed and filled with inert material. Therefore, the pits are not accessible for integrity inspection.

5a. According to the IDDR, the Observation and Certification Technician observed the draining and pressure testing of the process lines. Although process lines have been drained and pressure tested, the five separate process sewers that run to the Pontiac Assembly Center WWTP may still act as a pathway. As part of the Phase III investigation, the fill material and groundwater associated with the process sewers will be assessed at the property boundary.

USEPA Comment #6

6. AOI 24: The text states that liquids existing in below grade sumps, pits, and trenches were sampled by CRA during the FEA. What were the results of this sampling? Since some of the pits have been closed in place with no decontamination or subsurface activities noted, known areas should be further evaluated.

Response #6

6. According to the FEA, accumulations of waste in several of the existing trenches and sumps were observed. Nine sludge/sediment samples from various trenches and sumps were collected during the FEA. Samples were analyzed for parameters based on the production processes and operations that discharge waste to the sumps, including toxicity characteristic leaching procedure (TCLP) metals, TCLP semi-volatile organic compounds (SVOCs), TCLP volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs). None of the samples collected exceeded the Resource Conservation and Recovery Act (RCRA) and/or Toxic Substances Control Act (TSCA) criteria.

Based on information provided by the IDDR, if standing liquids, debris and/or sediment were observed in the sumps, pits and/or trenches, it was removed using a vacuum truck and pressure washed to remove oil residues. Prior to backfill, the sumps, pits and trenches were inspected for integrity and cleanliness by ARCADIS's Observation and Certification Technician and filled with crushed concrete or clean fill.

If oily residues were present in pits, sumps and/or trenches, ARCADIS collected a liquid sample and analyzed it for TCLP RCRA metals, TCLP VOCs, TCLP SVOCs, PCBs, and RCRA Hazardous Waste Characteristics. Analytical results indicated sample concentrations were non-detect or below TCLP limits and RCRA Hazardous Waste Characteristics were negative.

USEPA Comment #7

7. AOI 25: This text notes the only remaining AST at the site is in Building 30. What is the status of this AST? Empty? Is there containment?

Response #7

7. During the next quarterly product removal activities (December 2011), a field technician will evaluate the status of the AST.

USEPA Comment #8

8. AOI 26: Per my 9/28/11 conference call notes, AOI 26 will be evaluated as potential conduits for off-site migration. What is the current status and monitoring requirements for the NPDES outfalls associated with the site? Are Outfalls 008 and 009 specifically associated with PCC Validation or do they combine flow from other sources?

Response #8

8a. The NPDES permit was last renewed through April 1, 2011 and expired on that date. No current monitoring requirements are in place for the NPDES.

8b. Based on figures from the 1999 SWPPP, outfall #8 has combined flow from an off-Site sewer running along Franklin Road. Outfall #9 is combined with off-Site sewers running along Franklin Road, Bagley Street, Diston Street and Gillespie Avenue. The storm sewer locations are identified on Figure 1.3 of 1999 SWPPP.

8c. To address potential concerns with off-site migration through storm sewer utility corridors, soil boring(s)/monitoring well(s) will be installed at location(s) along the property boundary and within the bedding fill material to assess whether contamination is migrating off-site via utility corridors.

USEPA Comment #9

9. AOI 27: Former hazardous waste management areas may require some additional actions if they have not been sufficiently investigated in the past.

Response #9

9. The main WMA located north of former Plant 5 was investigated and the fluids draining into the sumps were analyzed as part of the FEA. Results indicate no impact. Also, ARCADIS investigated the WMA during the IDDR to determine if evidence of a release of hazardous waste or waste constituents to the WMA or sub-slab soil was present and to determine the need for corrective action. Investigation activities included document review, visual inspection, sample collection and submittal for laboratory analysis and evaluation of laboratory analytical results to document the WMA conditions. No evidence of a release was identified and no further action was recommended for this area.

Satellite WMAs were set up throughout the site; however, CRA was unable to verify locations.

USEPA Comment #10

10. In addition to Figure 1.3, add a figure to the CCR which shows the approximate AOI boundaries at the site.

Response #10

10. CRA has created a new figure (Figure S.1) with approximate AOI boundaries.

USEPA Comment #11

11. USTs: Can we add a table & figure listing & showing all known or suspected USTs, locations, suspected or known contents and their removal/closure status?

Response #11

Please find attached a table (Table S.1) and figure (Figure S.1) listing and showing all known or suspected USTs locations, suspected or known contents and their removal/closure status.

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TABLE 5.3

AOI SUMMARY
PONTIAC VALIDATION CENTER
PONTIAC, MICHIGAN

Note: As property owner, RACER will place a Site-wide deed restriction to prevent use of groundwater, limit future Site use to non-residential uses and require vapor barriers for any new buildings. These restrictions will prevent complete exposure pathways for the SVIIC, GVIIC, DWC and DWPC pathways. Therefore, no further action is required for an AOI with SVIIC, GVIIC, DWC and DWPC pathway exceedances.

AOI Number	AOI	AOI Summary	Further Action recommended?	Pathway Required for Further Action?
AOI 1	Historical Operations - Former Plant	Based on the review of available information, former Plant 1 was initially developed in 1906 by the Rapid Motor Car Company, with subsequent additions to the facility over the years. The Rapid Motor Car Company, and later General Motors Corporation, utilized former Plant 1 for the manufacture and assembly of vehicles. Primary operations conducted at former Plant 1 included metal finishing operations (phosphating, pickling, plating, heat treating, and painting), stamping, grinding, machining, and polishing. Ancillary operations included hazardous and non-hazardous waste accumulation, handling, and storage, as well as the use and storage of raw petroleum products and solvents in both above and belowground storage tanks and drums. Former Plant 1 was razed in sections, with demolition occurring between 1972 and 1974 for Buildings 1A, 1B, 1C, 1D, and 2; between 1974 and 1980 for Buildings 2B, 6, 10, and 13; and the remainder of the Plant circa 1984. According to individuals associated with the Site, demolition debris from former Plant 1 was utilized as backfill for below grade structures associated with former Plant 1. Portions of the former Plant 1 portion of the Site were previously utilized as residential and commercial properties as early as 1909. No information regarding historical use of heating oil USTs or ASTs, septic systems, or property demolition procedures were available for CRA to review. During the Phase II ESA, soil borings BH-1-07, MW-2-07, MW-7-07, MW-4-07, BH-5-07, MW-7-07, MW-11-07, BH-18-07, MW-19-07, MW-20-07, and BH-24-07 were advanced to investigate potential impacts to the Site associated with the historical operations at Plant 1. Monitoring wells were installed at MW-2-07, MW-4-07, MW-7-07, MW-11-07, MW-19-07, and MW-20-07 based on the presence of groundwater during soil boring advancement; however, insufficient groundwater was present in well MW-20-07 at the time of sampling to obtain a groundwater sample. Metals were detected above GSIPC and Residential and Nonresidential DWPC in soil. Cyanide was detected above GSIPC in soil. Metals were detected above GSIC and Residential and Nonresidential DWC in groundwater. PCBs were detected above GSIC and Residential and Nonresidential DWC in groundwater. TCE was detected in groundwater above Residential and Nonresidential DWC in groundwater. Based on the contamination identified above applicable, the historical operations at former Plant 1 are considered an AOI. Additionally, there is a potential for off-Site migration. Further action related to AOI 1 is recommended to mitigate potential off-Site exposures.	YES On-Site and off-Site investigations near MW-2-07 (northern portion of the Site)	NO Note: Pathway restrictions do not apply for off-Site locations.
AOI 2	Historical Operations - Former Plants 3, 4, 5	Based on the review of available information, the area formerly occupied by Plants 3, 4, and 5 was developed as early as 1915 as Flander's Electrical Company Inc. (manufacturers of electric automobiles); Pontiac Drop Forge Company; the Wilson Foundry and Machine Company; and/or Detroit Weather Proof Body Company, with subsequent additions/changes to the facilities over the years. Primary operations conducted on this portion of the Site included degreasing, drop forging, metal finishing operations, casting, incinerating, stamping, grinding, and machining. Ancillary operations included hazardous and non-hazardous waste accumulation, handling, and storage, as well as the use and storage of raw petroleum products and solvents in both above and belowground storage tanks and drums. Portions of the Wilson Foundry were noted on Sanborn Fire Insurance maps to have an earthen floor. Staining was historically observed and excavated west of former Plant 5 and an eight stage phosphate system was investigated in 1997 in former Plant 3. Based on information reviewed during the 2006 Phase II ESA, releases historically had occurred from various operations at the plants. During the 2009 Phase II ESA, soil borings BH-30-07, MW-32-07, BH-41-07, BH-42-07, BH-44-07, MW-48-07, BH-61-08, BH-62-08, MW-63-08, MW-64-08, BH-65-08, BH-67-08, MW-68-08, MW-69-08, MW-69-08, TMW-70-08, MW-74-08, MW-78-08, BH-79-08, TMW-81-08, BH-82-08, BH-83-08, and TMW-87-08 were advanced to investigate potential impacts to the Site associated with the historical operations. Monitoring wells and temporary monitoring wells were installed at MW-32-07, MW-48-07, MW-63-08, MW-64-08, MW-68-08, MW-69-08, TMW-70-08, MW-74-08, MW-78-08, TMW-81-08, and TMW-87-08 based on the presence of groundwater during soil boring advancement; however, insufficient groundwater was present in wells MW-69-08, TMW-70-08, MW-74-08, and TMW-87-08 at the time of sampling to obtain groundwater samples. VOCs were detected above GSIPC, Residential and Nonresidential DWPC, and Residential SVIIC in soil. SVOCs were detected above GSIPC in soil. Metals were detected above GSIPC, Residential and Nonresidential DWPC, and Residential Direct Contact Criteria in soil. VOCs and metals were detected above GSIC and Residential and Nonresidential DWC in groundwater. SVOCs were detected above GSIC, Residential and Nonresidential DWC, GCC, and water solubility in groundwater. Based on the concentrations identified above applicable criteria, the historical operations at former Plants 3, 4, and 5 are considered an AOI. Additionally, there is a potential for off-Site migration. Further action related to AOI 2 is recommended to address GCC and water solubility.	YES On-Site investigation near monitoring well MW-74-08	YES Groundwater: GCC Water Solubility

TABLE 5.3

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AOI Number	AOI	AOI Summary	Further Action recommended?	Pathway Required for Further Action?
AOI 3	Historical Adjacent Properties	Based on the review of available information, the adjacent properties to the Site were historically operated as filling stations, (north, south, and east) a plating company (west), an electric light plant/power plant (north), and various manufacturing facilities (west and east) as early as 1909. These types of operations typically utilize petroleum products and solvents. Additionally, a tunnel was identified on a 1954 Factory Insurance Map between the former Consumers Power Company facility (electric light plant) and former Plant 1. No further information regarding the tunnel was available. During the 2009 Phase II ESA, soil borings BH-6-07, MW-10-07, MW-17-07, MW-21-07, BH-29-07, MW-38-07, BH-49-07, and BH-50-07 were advanced to investigate potential impacts to the Site associated with the historical adjacent properties. Monitoring wells were installed at MW-10-07, MW-17-07, MW-21-07, BH-29-07, MW-38-07 based on the presence of groundwater during soil boring advancement; however, insufficient groundwater was present in the wells MW-21-07 and BH-29-07 at the time of sampling to obtain groundwater samples from these wells. Metals were detected above GSIPC and Residential and Nonresidential DWPC in soil. Cyanide was detected above GSIPC in soil. Metals were detected above Residential and Nonresidential DWC in groundwater. Based on the concentrations identified above criteria, the historical adjacent properties are considered an AOI; however, additional action related to AOI 3 is not recommended.	NO	NO
AOI 4	USTs - Former Plant 1	Based on the review of available information, at least 11 historic USTs were present in the vicinity of former Plant 1. No information regarding closure (i.e., removed, abandoned-in-place, etc.) of the aforementioned USTs at former Plant 1 was available. During the 2009 Phase II ESA, soil borings BH-3-07, BH-9-07, MW-16-07, BH-25-07, and BH-92-08 were advanced and one monitoring well MW-16-07 was installed throughout the former Plant 1 to investigate potential impacts to the Site associated with the historical USTs. Insufficient groundwater was present in MW-16-07 at the time of sampling to collect a groundwater sample. Metals were detected in one or more of the soil samples above GSIPC and Residential and Nonresidential DWPC. Based on the presence of historical USTs, former Plant 1, is considered an AOI however, additional action related to AOI 4 is not recommended	NO	NO
AOI 5	USTs - Former Plant 3	Based on the review of available information, at least 14 historic USTs were present in the vicinity of former Plant 3. No information regarding closure of four of these tanks (i.e., removed, abandoned in place, etc.) of the aforementioned USTs at Plant 3 was available. The remaining 10 USTs were removed and at least five were closed from the MDEQ. During closure of the tanks, samples were collected for analysis for BTEX, PNAs, PCBs, lead, cadmium, and/or arsenic; however, a complete VOC and SVOC analysis was not conducted. Based on a review of historic information, residual impacts are present at the Site in groundwater at concentrations above Residential and Nonresidential DWC, GSIC, and water solubility criteria, and in soil at concentrations above GSIPC, DWPC, Csat, Residential and Nonresidential DWPC, SVIIC, VSIC, DCC, and Residential PSIC. During the 2009 Phase II ESA, soil borings MW-33-07, MW-34-07, BH-36-07, MW-37-07, MW-40-07, MW43-07, BH-89-08, BH-90-08, and BH-94-08 through BH-96-08 were advanced throughout the former Plant 3 to investigate potential impacts associated with historic USTs. Soil samples were not collected from soil borings BH-94-08 and BH-95-08 based on negative jar test results and low PID readings, and given that additional subsurface data in the vicinity had already been collected (e.g., MW-43-07). Monitoring wells were installed at MW-33-07, MW-34-07, MW-37-07, MW-40-07, and MW-43-07 based on the presence of groundwater during soil boring advancement; however, insufficient groundwater was present in the wells MW-33-07 and MW-43-07 at the time of sampling to obtain groundwater samples. VOCs were detected above GSIC and Residential and Nonresidential DWC in groundwater. SVOCs were detected above GSIC and water solubility in groundwater. Metals were detected above GSIC and Residential and Nonresidential DWC in groundwater. Metals were detected in soil above GSIPC, Residential DCC, and Residential and Nonresidential DWPC in soil. SVOCs were detected above GSIPC and Residential DCC in soil. Cyanide was detected above GSIPC in soil. Residual impacts remain at the Site in soil and groundwater above applicable Nonresidential criteria. Further action related to AOI 5 is recommended to address exceedances of the water solubility criteria.	YES On-Site investigation near monitoring well MW-37-07	YES Groundwater: Water Solubility

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AOI Number	AOI	AOI Summary	Further Action recommended?	Pathway Required for Further Action?
AOI 6	USTs - Former Plant 4	At least 15 USTs were formerly located in the vicinity of former Plant 4. No information regarding closure (i.e., removed, abandoned in place, etc.) of the aforementioned USTs at Plant 4 was available. The presence of historical USTs at former Plant 4 is considered an AOI. During the 2009 Phase II ESA, soil borings MW-46-07, BH-47-07, BH-75-08, TMW-80-08, and BH-84-08 through BH-86-08 were advanced throughout the former Plant 4 to investigate potential impacts associated with historic USTs. A monitoring well was installed at MW-46-07 and a temporary monitoring well was installed at TMW-80-08 based on the presence of groundwater during soil boring advancement; however, insufficient groundwater was present in the well at the time of sampling. Metals were detected in soil above Residential and Nonresidential DWPC. Based on the contamination identified, the USTs at former Plant 4 are considered an AOI; however, there were no exceedances of applicable criteria for the Site. Further action related to AOI 6 is not recommended.	NO	NO
AOI 7	USTs - Former Plant 5	At least one UST was formerly located in the vicinity of former Plant 5. No information regarding closure (i.e., removed, abandoned-in-place, etc.) of the aforementioned UST at Plant 5 was available. During the 2009 Phase II ESA, soil boring BH-22-07 was advanced to the north of the former Plant 5 to investigate potential impacts associated with historic UST. One or more metals were detected above GSIPC and Residential and Nonresidential DWPC. The presence of a historical UST at former Plant 5 is considered an AOI; however, further action related to AOI 7 is not recommended.	NO	NO
AOI 8	Former Incinerator	Based on the review of the 1924 Sanborn map, a concrete refuse burner (i.e., incinerator) was present on the southeastern portion of the Site, to the west of the Wilson Foundry Plant 4. No information was available regarding the types of materials incinerated or the historical disposal practices associated with the fly ash generated from incineration. During the 2009 Phase II ESA, soil boring BH-88-08 was advanced to investigate potential impacts associated with the former incinerator. Metals were detected above GSIPC and Residential and Nonresidential DWPC in soil. Based on the historical operations, the former incinerator is considered an AOI; however, further action related to AOI 8 is not recommended.	NO	NO
AOI 9	Tunnels	Based on the review of Sanborn maps, Factory Insurance maps, and discussions with Site personnel during the 2006 and 2009 Phase I ESAs, a brick tunnel exists between Plants 3 and 4, and Plants 3 and 5. This tunnel was reportedly historically used for utility lines; however, it is currently abandoned, and not available for inspection. No further information regarding these tunnels was available. During the 2009 Phase II ESA, soil borings BH-76-08 and BH-77-08 were advanced at the Site to investigate potential impacts associated with tunnels. VOCs were detected above Residential and Nonresidential DWPC and metals were detected above GSIPC and Residential and Nonresidential DWPC in soil. The presence of former tunnels is considered an AOI; however, further action related to AOI 9 is not recommended.	NO	NO
AOI 10	Former Powerhouse	Based on the review of available information and discussions with individuals associated with the Site, a former powerhouse was located in Building 13 (Plant 3). Coal was historically stored outside east of the powerhouse. No information was available regarding if the coal was stored on bare ground or a paved surface. No specific information regarding historical dust control practices was available; and current Site personnel had no knowledge of dust control activities. In addition, fly ash would have been historically generated from the powerhouse. Approximately 350 cubic yards of fly ash (stored in piles) were characterized and removed from the Site in 1995. It is unknown if this material was historically used as fill material on the Site. During the 2009 Phase II ESA, soil borings MW-35-07 and BH-91-08 were advanced at the Site to investigate potential impacts associated with the former powerhouse. A monitoring well was installed at MW-35-07. At least one SVOC was detected above GSIPC in soil and above Residential and Nonresidential DWC in groundwater. Metals were detected above GSIC and Residential and Nonresidential DWC and in the groundwater. The former powerhouse is considered an AOI based on historical operations; however, further action related to AOI 10 is not recommended.	NO	NO
AOI 11	Surficial Scarring	An area of surficial scarring is present on aerial photographs to the south of Buildings 12 and 27 (Plant 1). These buildings historically conducted heat treat and pickling operations. No further information regarding the surficial scarring was available. During the Phase II ESA, soil borings BH-14-07 and MW-15-07 were advanced at the Site to investigate potential impacts associated with the area of surficial scarring. A monitoring well was installed at MW-15-07. Metals were detected above GSIPC, Residential and Nonresidential DWPC in soil and above Residential and Nonresidential DWC in groundwater. Based on the impacts identified, the surficial scarring is considered an AOI; however, further action related to AOI 11 is not recommended.	NO	NO

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AOI Number	AOI	AOI Summary	Further Action recommended?	Pathway Required for Further Action?
AOI 12	Bare Soil Area	Based on the review of the aerial photographs and previous Phase I Site inspections, vegetation in the area north/northwest of Building 30 is sparse. Site personnel interviewed during the 2006 and 2009 Phase I ESAs indicated that this area was historically part of a thermal soil remediation effort. No additional information regarding the remediation was available to CRA. During the 2009 Phase II ESA, soil boring MW-13-07 was advanced to investigate potential impacts associated with the bare soil area. A monitoring well was installed at MW-13-07. Four test pits (TP-1 through TP-4) were excavated in the bare soil area to investigate potential impacts associated with past thermal soil destruction operations (1995) and the general area where a UST tank farm was historically located. Four soil samples were collected from test pit TP-1 (two floor samples, two wall samples), and two samples were collected from each of test pits TP-2 through TP-4 (one floor sample and one wall sample from each). Brick, asphalt, and concrete debris were observed in excavated material from each test pit. Metals were detected above GSIPC, Residential DCC, and Residential and Nonresidential DWPC, in the soil borings and the test pits. In test pit soil samples, SVOCs were detected above GSIPC and Residential and Nonresidential DWPC, SVIIC, VSIC, PSIC, and DCC. Based on the impacts identified, the bare soil area is considered an AOI. Further action related to AOI 12 is recommended to address SVIIC, VSIC, PSIC and DCC.	YES On-Site investigation near TP-1	YES Soil: DCC PSIC VSIC
AOI 13	WMA South Of Former Plant 3	A Tank WMA (SWMU No. 1) and Container WMA (SWMU No. 2) historically located south of Plant 3 were identified as areas of concern during the draft PR/VSİ and PA. Supplemental investigation and closure of the area was completed. MDEQ released GMC from further closure requirements, but not from future corrective action requirements. Additionally, prior to 1978, wastewater was managed in a tank area south of Plant 3. This area was included in the Resource Conservation and Recovery Act (RCRA) Part A Waste Permit Application. It is unknown if this area was properly closed or if there were other areas used for wastewater treatment or disposal prior to 1978. Based on a review of historic information, residual impacts are present at the Site in soil above GSIPC and Residential and Nonresidential DWPC. During the 2009 Phase II ESA, soil borings BH-39-07 and TMW-71-08 were advanced to investigate potential impacts associated with the WMA and former wastewater treatment. A temporary monitoring well was installed at TMW-71-08. Metals were detected above GSIPC and Residential and Nonresidential DWPC in soil. No constituents were detected above Residential or Nonresidential criteria in groundwater. Based on historical information, the WMA south of former Plant 3 is considered an AOI; however, since there were no exceedances of applicable criteria further action related to AOI 13 is not recommended.	NO	NO
AOI 14	AST Farm At Former Plant 1	An AST was historically present at Plant 1, and was removed in 1995. The eastern portion of the bermed area had a soil base. The tanks that were removed contained engine oil, glycol, steering fluid, waste oil, glycol, oil, and waste glycol. Following removal, confirmatory soil samples were collected and analyzed for BTEX, PNAs, PCBs, lead, cadmium and arsenic. Based on a review of historic information, residual contamination impacts are present at the Site in soil above GSIPC, and Residential and Nonresidential DWPC. During the 2009 Phase II ESA, soil borings BH-12-07 and MW-15-07 were advanced to investigate potential impacts associated with historic AST farm at Plant 1. A monitoring well was installed at MW-15-07. Metals were detected in soil above GSIPC, and Residential and Nonresidential DWPC. Metals were detected in groundwater above Residential and Nonresidential DWC. The AST farm at Plant 1 is considered an AOI; however, there were no soil sample exceedances of applicable criteria for the Site further action related to AOI 14 is not recommended.	NO	
AOI 15	Potential Fill Pipes	Potential fill pipes were observed during the Site inspection in Plant 5, near Column G8. No further information regarding these pipes was available. During the 2009 Phase II ESA, soil boring BH-26-07 was advanced to investigate potential impacts associated with potential fill pipes. VOCs, SVOCs, and metals were detected in soil, but were detected below Residential and Nonresidential criteria. The potential fill pipes are considered an AOI; however, further action related to AOI 15 is not recommended.	NO Note: Attempt to locate fill pipes/potential UST via a metal detector and/or ground penetrating radar	NO

TABLE 5.3

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AOI Number	AOI	AOI Summary	Further Action recommended?	Pathway Required for Further Action?
AOI 16	Bulk Loading/ Unloading Areas	Based on the review of available information and discussions with Site personnel during the 2006 and 2009 Phase I ESAs, the Site formerly utilized several areas for bulk unloading and loading of petroleum, solvents, and acid products and waste. These areas included exterior load/unload fill ports and associated concrete pads, as well as former trainwells. Some of these areas have been replaced in the recent past; however, others have been in place since the facility was developed. Potential impacts to Site soil and/or groundwater from potential releases could not be determined. Bulk loading and unloading areas were not specifically investigated during the 2009 Phase II ESA as the exact location of all historical loading activities was unknown and could not be easily targeted. Similar to AOIs 1 through 3, the results from the overall Phase II ESA investigation contribute to the evaluation of bulk loading and unloading areas. The exact location of these areas is not known. The bulk loading/unloading areas are considered an AOI; however, further action related to AOI 16 is not recommended.	NO	NO
AOI 17	Former Foundry Sand	Based on the review of aerial photographs and discussions with individuals associated with the Site during the 2006 and 2009 Phase I ESAs, outdoor storage of foundry sand was historically conducted to the east of Plant 5. No information was available regarding if the foundry sand was stored on bare ground or a paved surface. No specific information regarding historical dust control practices was available; and Site personnel had no knowledge of dust control activities. No information was available regarding the historical use of these materials for fill at the Site and information regarding surface sampling underneath piles was unavailable for review. Soil boring MW-27-07 was advanced to investigate potential impacts associated with the former foundry sand. A monitoring well was installed at MW-27-07 based on the presence of groundwater during soil boring advancement; however, insufficient groundwater was present in the well at the time of sampling. VOCs, SVOCs, and metals were detected in soil, but below Residential and Nonresidential criteria. Magnesium was detected above Residential DWC. The former foundry sand is considered an AOI; however, further action related to AOI 17 is not recommended.	NO	NO
AOI 18	WMA At Former Plant 1	A hazardous waste container storage area was historically identified east of Building 12 at Plant 1 in a 1981 Closure Plan. No follow up information on the closure was provided to CRA for review. During the Phase II ESA, soil boring BH-8-07 was advanced to investigate potential impacts associated with the WMA at Plant 1. SVOCs and metals were detected in soil above laboratory detection limits, but below Residential and Nonresidential criteria. The WMA at former Plant 1 is considered an AOI; however, further action related to AOI 18 is not recommended.	NO	NO
AOI 19	Former Wastewater Treatment Plant	Prior to 1978, wastewater was managed in a tank area south of Plant 3. After 1978, the wastewater lift station and process lines were connected to the off Site PAC WWTP. This area was included in the RCRA Part A Waste Permit Application. It is unknown if this area was properly closed or if there were other areas used for wastewater treatment or disposal prior to 1978. During the Phase II ESA, soil borings BH-39-07 and TMW-71-08 were advanced to investigate potential impacts associated with the former wastewater treatment plant. Metals were detected in soil above GSIPC and Residential and Nonresidential DWPC. Metals were detected in groundwater above Residential and Nonresidential DWC. Based on the historical operations, the former wastewater treatment plant is considered an AOI; however, further action related to AOI 8 is not recommended.	NO	NO
AOI 20	Former Transformers Substations, And Large Capacitors	Numerous transformers and/or substations were historically located throughout the Site and were operated since at least 1909 in some instances. No information was available regarding the historical types of dielectric fluids utilized in the majority of the former transformers at the Site. Historical documentation for the Site indicates that transformers and large capacitors containing Askarel may have been present at the Site. There was evidence of PCBs from a rooftop transformer on Plant 4 in 1978. Former transformers, substations, and large capacitors were not specifically investigated during this Phase II ESA as the exact location of these items could not easily be targeted. The results from the overall 2009 Phase II ESA investigation contributed to the evaluation of historical transformers and/or substations. PCBs were analyzed in all soil samples collected from the Site during the 2009 Phase II ESA. PCBs were detected in the soil sample collected from BH-72-08 (AOI 22) at a concentration exceeding the Residential and Nonresidential DCC and in a groundwater sample collected at MW-2-07 (AOI 1) at a concentration exceeding the GSIC and Residential and Nonresidential DWC. Further action related to AOI 20 is recommended to address DCC.	YES On-Site investigation near BH-72-08	YES Soil: DCC

TABLE 5.3

AOI SUMMARY
PONTIAC VALIDATION CENTER
PONTIAC, MICHIGAN

Note: As property owner, RACER will place a Site-wide deed restriction to prevent use of groundwater, limit future Site use to non-residential uses and require vapor barriers for any new buildings. These restrictions will prevent complete exposure pathways for the SVIIC, GVIIC, DWC and DWPC pathways. Therefore, no further action is required for an AOI with SVIIC, GVIIC, DWC and DWPC pathway exceedances.

AOI Number	AOI	AOI Summary	Further Action recommended?	Pathway Required for Further Action?
AOI 21	Wastewater Lift Station And Process Line	The process wastewater collection system at the Site consisted of a series of gravity and pressure sewers. Process wastewater was pumped from a series of collection sumps located in the former production buildings, overhead to the main industrial wastewater lift station located north of former Plant 5. At the main lift station, wastewater was stored in six large pits, which were used to store general industrial wastewater and acid wastewater in 2006, but historically contained general wastewater, acid wastewater, cleaner wastewater, and ELPO wastewater. According to ARCADIS BBL’s (ARCADIS) December 19, 2008 Interim Draft Deactivation Report (IDDR), the six large pits at the main lift station were dewatered, pressure washed and filled with inert material Also, the Observation and Certification Technician observed the draining and pressure testing of the process lines. Based on the review of available documentation, numerous releases have occurred at the wastewater lift station. From the main lift station, process wastewater is conveyed belowground to the off Site Pontiac Assembly Center WWTP. The underground wastewater lines run approximately 2 to 3 miles along the Grand Trunk Railway. The lines are not secondarily contained, and there was evidence of a historical release from these lines off Site in October 1986 when a contractor accidentally cut lines during the installation of fiber optic lines along the railway. Historical soil samples collected contained metals above GSIPC and Residential and Nonresidential DWPC. Soil borings BH-23-07 and MW-28-07 were advanced to investigate potential impacts associated with the wastewater lift station and process line. A monitoring well was installed at MW-28-07 based on the presence of groundwater during soil boring advancement; however, insufficient groundwater was present in the well at the time of sampling. Metals were detected in soil above GSIPC, Residential and Nonresidential DWPC, and Nonresidential PSIC. Based on the concentrations identified, the wastewater lift station and process line are considered an AOI. Further action related to AOI 21 is recommended to address PSIC at MW-28-07 and the process line at the property boundary.	YES Assess Site specific background concentrations Note: The process line running off Site will be addressed to assess potential off-Site migration	YES Soil: PSIC
AOI 22	Paint Mix Rooms	Based on observations during the 2006 Phase I ESA, a paint mix room was located in the former Plant 3. Historically, paint mixing was conducted in the basement of former Plant 3. Additional information regarding historical paint mixing areas was not available. During the 2009 Phase II ESA, soil borings BH72-08 and BH-73-08 were advanced to investigate potential impacts associated with the paint mix rooms. SVOCs were detected in soil above GSIPC. Metals were detected in soil above GSIPC and Residential and Nonresidential DWPC. PCBs were detected in the soil sample collected from BH72-08 at a concentration exceeding the Residential and Nonresidential DCC. Based on historical operation, the paint mix rooms are considered an AOI. PCBs (also discussed under AOI 20) were detected in soil above DCC. Further action related to AOI 22 is recommended to address DCC.	YES (See AOI 20)	YES Soil: DCC (See AOI 20)
AOI 23	Magnetometer Survey Anomalies In The Southern Parking Lot	During the 2006 Phase I ESA, a magnetometer survey report was reviewed. A magnetometer survey was previously completed on the south parking lot at the Site and several small anomalies were noted throughout the southern portion of the southern parking lot at the Site, which is currently vacant vegetated land and was historically a playground. Surficial scarring was observed in this aerial photographs reviewed during the 2006 Phase I ESA. Surficial soil samples were collected in 1985 and analyzed for lead. Lead was not detected above Residential or Nonresidential criteria. The soil samples were not analyzed for VOCs, SVOCs, or PCBs and were not collected at depth. The magnetometer survey anomalies in the southern parking lot are considered an AOI; however, since no exceedances were detected and no evidence of a release was identified, further action related to AOI 23 is not recommended.	NO	NO
AOI 24	Belowgrade Pits, Trenches, Conveyors, and Sumps	Process wastewater was historically collected and conveyed throughout the Site in numerous below grade sumps, pits, and trenches. The integrity of all of the pits, trenches and sumps present in the existing structures at the Site could not be evaluated during the 2006 and 2009 Site inspections. During the Facility Environmental Assessment (FEA) conducted by CRA, liquids were observed in several of these systems, which were subsequently sampled. According to Site personnel interviewed in 2006 and 2009, and ARCADIS’s IDDR, all pits, trenches, conveyors and sumps have been closed in place. Based on information provided by the IDDR, if standing liquids, debris and/or sediment were observed in the sumps, pits and/or trenches, it was removed using a vacuum truck and pressure washed to remove oil residues. Prior to backfill, the sumps, pits and trenches were inspected for integrity and cleanliness by ARCADIS’s Observation and Certification Technician and filled with crushed concrete or clean fill. Based on a review of available information, no evidence of releases was identified; therefore, further action related to AOI 24 is not recommended.	NO	NO
AOI 25	ASTs	Numerous ASTs were historically located throughout the Site. Based on information reviewed during the 2006 and 2009 Phase I ESAs and the IDDR, the only remaining AST were located in Building 30. Based on a review of available information, no evidence of releases to the subsurface was identified; therefore, further action related to AOI 25 is not recommended.	NO	NO

TABLE 5.3

AOI SUMMARY
PONTIAC VALIDATION CENTER
PONTIAC, MICHIGAN

Note: As property owner, RACER will place a Site-wide deed restriction to prevent use of groundwater, limit future Site use to non-residential uses and require vapor barriers for any new buildings. These restrictions will prevent complete exposure pathways for the SVIIC, GVIIC, DWC and DWPC pathways. Therefore, no further action is required for an AOI with SVIIC, GVIIC, DWC and DWPC pathway exceedances.

AOI Number	AOI	AOI Summary	Further Action recommended?	Pathway Required for Further Action?
AOI 26	Releases To Sewers	Based on the review of available documentation, numerous releases of process wastewater to the storm sewer system have occurred. In addition, there was evidence of industrial waste entering the sanitary sewers when industrial waste backed up in the plant due to valves at the wastewater lift station were closed for a release that occurred in November 1987. Released materials included acids, solvents, and petroleum products. Potential impacts to Site soil and/or groundwater could not be confirmed. Based on a review of available information, no releases directly to the subsurface were identified; however, further action related to AOI 26 is recommended.	YES Note: Storm sewer utility corridors will be addressed to assess potential off-Site migration	NA Note: Pathway restrictions do not apply for off-Site locations.
AOI 27	WMAs	During the 2006 Phase I ESA, a WMA was located north of former Plant 5 and was utilized for the 90-day storage of hazardous waste. Additionally, satellite accumulation areas were present throughout the plants. The main WMA located north of former Plant 5 was investigated and the fluids draining into the sumps were analyzed as part of the FEA. Results indicate no impact. According to the IDDR, ARCADIS investigated the WMA to determine if evidence of a release of hazardous waste or waste constituents to the WMA or sub-slab soil was present and to determine the need for corrective action. Investigation activities included document review, visual inspection, sample collection and submittal for laboratory analysis and evaluation of laboratory analytical results to document the WMA conditions. No evidence of a release was identified and no further action is recommended for this area. With no evidence of a release, further action related to AOI 27 is not recommended.	NO	NO
AOI 28	LNAPL Plume	During the 2009 Phase II ESA, CRA encountered a LNAPL plume on the south parcel of the Site, and an LIF survey was conducted to delineate the vertical and horizontal extent of the plume. Table 4.1 presents a summary of the extent of LNAPL plume. CRA continues to complete quarterly LNAPL monitoring and passive recovery events for monitoring wells MW-33-07 and MW-69-08. According to the memo, monitoring well MW-32-07 is no longer accessible. As of December 2010, no LNAPL has been encountered within monitoring well MW-33-07 and approximately 8.56 gallons of LNAPL has been recovered from monitoring well MW-69-08. Based on the presence of LNAPL, further action related to AOI 28 is recommended to address soil saturation concentration screening levels and water solubility.	YES On-Site and off-Site investigations in the southern portion of the site near MW-33-07 and MW-69-08	YES Soil: Soil Sat Conc. Screening Groundwater: Water Solubility

TABLE S.1

**SUMMARY OF UNDERGROUND STORAGE TANKS
PONTIAC VALIDATION CENTER
PONTIAC, MICHIGAN**

<i>Tank Number</i>	<i>Capacity (gallons)</i>	<i>Contents</i>	<i>Construction Material</i>	<i>Installation Date</i>	<i>Status</i>	<i>Tank Location</i>	<i>Tank Use Description</i>	<i>Date Tank Last Used</i>	<i>Date Tank Closed</i>	<i>Date Removed</i>	<i>Releases</i>
Plant 1											
-	12,000	Fuel oil	Unknown	Pre-1928	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	12,000	Fuel oil	Unknown	Pre-1929	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	12,000	Fuel oil	Unknown	Pre-1930	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	12,000	Fuel oil	Unknown	Pre-1931	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	9,500	Oil	Unknown	Pre-1924	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	9,500	Oil	Unknown	Pre-1925	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	9,500	Oil	Unknown	Pre-1926	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	9,500	Oil	Unknown	Pre-1927	Unknown	Southeast of Building 27 - Tank Farm	Unknown	Unknown	Unknown	Unknown	--
-	12,000	Gasoline	Unknown	Pre-1915	Unknown	Between Buildings 5 and 7	Unknown	Unknown	Unknown	Unknown	--
-	Unknown	Gasoline	Unknown	Pre-1932	Unknown	Southwest of Fire Department	Unknown	Unknown	Unknown	Unknown	--
-	Unknown	Oil	Unknown	Pre-1954	Unknown	South end of Building 5	Multiple buried oil tanks	Unknown	Unknown	Unknown	--
Plant 3											
1	12,000	Gasoline	Fiberglass reinforced plastic	1972	Removed June 1995	South of Building 33	Gasoline island	Aug-95	NA	Aug-95	1/1/1980 & 9/10/1989
-	12,000	Fuel oil	Likely removed prior to	Pre-1924	Unknown	North of Building 34	Unknown	Unknown	--	--	--
-	12,000	Fuel oil	Likely removed prior to	Pre-1924	Unknown	North of Building 34	Unknown	Unknown	--	--	--
2	12,000	Waste oil	Bare steel	1954	Removed Sept 1995	North of Building 34	Tank Farm	Jan-72	1979	Sep-95	8/16/1995
3	12,000	Waste oil	Bare steel	1954	Removed Sept 1995	North of Building 34	Tank Farm	Jan-72	1979	Sep-95	8/16/1995
4	12,000	Waste oil	Bare steel	1954	Removed Sept 1995	North of Building 34	Tank Farm	Jan-72	1979	Sep-95	8/16/1995
5	12,000	Waste oil	Bare steel	1954	Removed Sept 1995	North of Building 34	Tank Farm	Jan-72	1979	Sep-95	8/16/1995
16	15,000	Gasoline	Bare steel	Pre-1954	Removed August 1995	Southwest of Building 34	Unknown	Jan-72	--	Aug-95	8/16/1995
-	1,800	Gasoline	Unknown	Pre-1954	Unknown	Southwest of Building 34	Unknown	Unknown	--	--	--
6	1,500	Water and	Bare steel	1977	Removed July 1995	South of Building 17 paint mix room	Paint mix room dump tank (paint trap tank)	Unknown	--	Jul-95	--
7	3,500	Paint solvent	Bare steel	Pre-1966	Removed January	South of Building 17 paint mix room	Plant 3 solvent tank	Jul-88	Jan-89	Jan-89	1/15/1989
8	9,500	Water and	Bare steel	Pre-1966	Removed July 1995	South of Building 17 paint mix room	Basement mix room dump tank (sludge	Jan-95	--	Jul-95	--
9	8,000	Paint	Bare steel	1967	Removed May 1986	South of Building 17 paint mix room	Prime dip system dump tank	1979	May-86	May-86	--
-	1,000	Gasoline	Unknown	Pre-1937	Unknown	North of Building 12	Unknown	Unknown	--	--	--
-	1,000	Gasoline	Unknown	Pre-1937	Unknown	South of Building 12	Unknown	Unknown	--	--	--
14 ¹	3,100	Water and oils	Concrete	1981	Removed August 1995	Hazardous waste sump, RCRA pad	Hazardous waste drainage sump	Unknown	--	Aug-95	--
Plant 4											
-	500	Gasoline	Unknown	Unknown	Unknown	East portion of Building 25	Unknown	Unknown	--	--	--
-	5,000	Fuel oil	Unknown	Pre-1915	Unknown	Northwest of Michigan Drop Forge	Unknown	Unknown	--	--	--
-	9,500	Fuel oil	Unknown	Pre-1919	Unknown	Southeast of Michigan Drop Forge	Unknown	Unknown	--	--	--
-	9,500	Fuel oil	Unknown	Pre-1919	Unknown	Southeast of Michigan Drop Forge	Unknown	Unknown	--	--	--
-	9,500	Fuel oil	Unknown	Pre-1919	Unknown	Southeast of Michigan Drop Forge	Unknown	Unknown	--	--	--
-	9,500	Fuel oil	Unknown	Pre-1919	Unknown	Southeast of Michigan Drop Forge	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Northwest of Michigan Drop Forge	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Southeast of Michigan Drop Forge	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Southeast of Michigan Drop Forge	Unknown	Unknown	--	--	--

TABLE S.1
SUMMARY OF UNDERGROUND STORAGE TANKS
PONTIAC VALIDATION CENTER
PONTIAC, MICHIGAN

<i>Tank Number</i>	<i>Capacity (gallons)</i>	<i>Contents</i>	<i>Construction Material</i>	<i>Installation Date</i>	<i>Status</i>	<i>Tank Location</i>	<i>Tank Use Description</i>	<i>Date Tank Last Used</i>	<i>Date Tank Closed</i>	<i>Date Removed</i>	<i>Releases</i>
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Southwest of Wilson Foundry Building 20	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Southwest of Wilson Foundry Building 20	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Southwest of Wilson Foundry Building 21	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Southwest of Wilson Foundry Building 22	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Southwest of Wilson Foundry Building 23	Unknown	Unknown	--	--	--
-	Unknown	Gasoline	Unknown	Pre-1924	Unknown	Northeast of Building 25	Unknown	Unknown	--	--	--
Plant 5											
10 ¹	100	Petroleum products	Concrete	1981	Removed August 1995	Brake fill sump - 30-H	Plant 5 brake fill pit 30-H	Unknown	--	Aug-95	--
11 ¹	100	Water and used oils	Concrete	1981	Removed August 1995	Fluid fill sump - 37-G	Plant 5 fluid fill pit 37-G	Unknown	--	Aug-95	--
12 ¹	480	Water and used oils	Concrete	1981	Removed August 1995	Fuel fill sump - 37-D	Plant 5 fuel fill pit 37-D	Unknown	--	Aug-95	--
13 ¹	750	Water and used oils	Concrete	1977	Removed August 1995	Top-off fill sump - 20-D	Plant 5 fluid top-off pit 20-D	Unknown	--	Aug-95	--
15 ¹	8,000	paint	Concrete	1981	Removed August 1995	Paint repair sump-25-C	Plant 5 paint repair 25-C	Unknown	--	Aug-95	--
-	1,000	Gasoline	Unknown	Pre-1973	Unknown	North of Building 1	Unknown	Unknown	--	--	--

Notes:

UST - underground storage tanks

"--" - not applicable or not available

¹ concrete pits and/or sumps originally registered as USTs and decommissioned during building decommissioning activities

