U. S. EPA Final Decision and Response to Comments

for

Soil and Groundwater Cleanup

at

The Southend of the
Former General Motors Corporation
North American Operations
(Otherwise known as Buick City)

902 East Leith Street
Flint, Michigan

MID 005 356 712

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Final Decision Response to Comments
May 2010

The Former General Motors North American Operations Flint Operations Facility (Buick City)
Area South of Leith Street, Southend
902 East Leith Street
Flint, Michigan
EPA ID #: MID 005 356 712

INTRODUCTION

This Final Decision and Response to Comments document is presented by the U. S. Environmental Protection Agency (EPA) for the Southend of the former General Motors North American Operations Facility, also known as Buick City (the Facility) in Flint, Michigan. The Facility is now owned by Motors Liquidation Company (MLC). This document consists of the Final Decision and EPA's Response to Comments, Index to the Administrative Record (Attachment 1) and the previously issued Statement of Basis (Attachment 2) for the Southend of the Facility.

This Final Decision selects the remedy to be implemented at the Southend based on the Administrative Record and public comments. The Statement of Basis provided the proposed remedy and was available for public review and comments, from January 28, 2010 through February 28, 2010. A public meeting was held on February 18, 2010. The Response to Comments addresses public concerns raised at the public meeting and during the thirty (30) day public comment period.

FACILITY CONDITIONS, RISKS POSED, AND INTERIM MEASURES TAKEN

The entire Facility (including both the Southend and the Northend) covers 452 acres, located at 902 Leith Street in Flint, Michigan, Genesee County. It is bounded to the north by Stewart Avenue and Pierson Road, to the south by Harriet Street, to the east by James P. Cole Boulevard and CSX Railroad, and to the west by Industrial Avenue and North Street. The Southend consists of the area south of Leith Street and bounded to the east by James P. Cole Boulevard and the Flint River and to the south by Harriet Street (see Figure 1).

In the late 1800s, the facility was built to produce the "horseless carriage" for the Imperial Wheel Company. In 1889, Billy Durant and J. Dallas Dort purchased the Imperial Wheel Company, making it a subsidiary of the Durant/Dort Carriage Company. In September 1903, Flint Wagon Works purchased the Buick Motor Company from David Buick and relocated the Buick Motor Company to the property now known as Buick City in Flint, Michigan. During World War I, the Buick Motor Company produced the Liberty Aircraft Engine. In 1942, in response to World War II, the production of automobiles stopped and the production of military equipment began. Facility operations have included machining of ferrous and nonferrous metals, V-6 engine manufacturing, torque converter manufacturing, transmission components manufacturing, engine assembly, and industrial wastewater treatment in support of automobile

manufacturing. Operations at the Southend of the property were terminated in 1999. All operations at the Northend will be terminated by the end of 2010.

At the Southend of the facility, operations and processes prior to closing down operations in 1999, included: machining of ferrous and nonferrous metals; plating, painting, plastics injection molding; V-6 engine and engineering testing; and vehicle assembly. These operations in turn included activities that contributed to the environmental issues at the Southend, such as storing, using, and/or recycling liquids such as gasoline, solvents, paints, and degreasing parts; and using sumps, vaults, underground storage tanks, above ground storage tanks, collection trenches, and collection vessels, for storage and recovery of the liquids.

Facility Conditions

Hydrogeological Setting

Groundwater flow within the unconsolidated glacial deposits in the vicinity of the Facility is toward the Flint River and its tributaries to the east and southeast. Regionally, two distinct water-bearing zones are identified: the glacial drift, which is about 30 feet deep, and the bedrock groundwater zones underlying the glacial drift. The glacial drift zone consists of discontinuous sand layers and is not used as a groundwater source due to its limited capacity. The bedrock groundwater zone consists of three different layers: Saginaw Formation, Michigan Formation, and Marshall Formation. The Saginaw Formation is the primary source of groundwater in the Flint area. In the past, several industries in the area have used production wells screened in this formation. These wells were eventually taken out of service due to the poor groundwater quality. The Michigan Formation is not considered an important source of groundwater. The Marshall Formation provides a small percentage of the groundwater used in Genessee County. Surface water drainage patterns at the Facility are generally east and southeast, toward the Flint River, which is the nearest surface water body. The Facility as a whole (both the Northend and the Southend) operates under National Pollutant Discharge Elimination System Permits for six outfalls into the Flint River and the entire facility (both the Northend and the Southend) is drained by 15 storm sewers.

Ecological Setting

The Facility is located in a heavily industrialized area. The Facility (Northend and Southend) consists of buildings, building slabs, asphalt parking lots, and a few unmaintained vegetated areas. While the Northend currently has some buildings standing, the Southend buildings have been razed and only building slabs remain. There are three areas within the Facility that could be considered potential ecological habitat. The first area is a 12 acre vacant lot located at the northwest corner of the intersection of Leith Street and James P. Cole Boulevard (located in the Northend.) The second potential habitat is the former wastewater aeration lagoon that is adjacent to the vacant lot (also in the Northend). Finally, the Flint River runs along the eastern boundary of the facility and spans both the Northend and the Southend and is habitat for aquatic and riparian flora and fauna.

Investigation Results

A RCRA Facility Investigation (RFI) was performed at the Facility in order to determine the nature and extent of contamination, as well as the need for any interim remedial measures to be undertaken. The RFI is the initial investigation in the Corrective Action Process. During the RFI, soil, groundwater, surface water, and any other affected media are sampled and the results are compared against human health and/or ecological screening criteria. If certain chemicals are above the screening criteria, then those chemicals are considered to be contaminants of concern and are assessed further in the risk assessment. At this facility, chemicals in the soil were screened using Michigan Department of Natural Resources and the Environment (MDNRE) Part 201 Industrial Worker Direct Contact and Industrial Worker Particulate Inhalation Criteria. The screening criterion used to screen the groundwater was MDNRE Part 201 Industrial Drinking Water, Industrial Direct Contact Criteria, and for wells 500 feet from the Flint River, the Groundwater/Surface Water Interface (GSI) Criteria. Due to the complexity and size of the GM-Flint Facility, it was split up into Areas of Interest (AOIs). The EPA found that 13 of the Southend AOIs posed a risk to human health and/or the environment and were therefore carried through to the Corrective Measures Proposal (CMP) (see table below).

Risks Identified

Human Health Risk Assessment

During the RFI and after hazardous substance levels were identified in soils and groundwater, a human health risk assessment was performed to determine the health problems that could result if the contamination at the facility was not cleaned up. The first step in the assessment is to make assumptions about future land use. In this case, since the facility is zoned industrial and has a long history of being used as an industrial facility, future use will be restricted to industrial use by a restrictive covenant filed with the local assessor's office. Based on this use scenario, the human health risks were evaluated based on routine exposures to industrial workers.

In order to evaluate the risk posed by the contaminants, EPA has determined that if contaminants pose an unacceptable cancer risk, corrective action will be performed at a site. EPA has determined that an acceptable cancer risk range is $1x10^{-6}$ to $1x10^{-4}$, which means a 1-in-1 million to 1-in-10,000 chance of developing an additional incidence of cancer from the contamination alone. EPA's preference is to select cleanup remedies that are at the more protective end of the acceptable risk range ($1x10^{-5}$-$1x10^{-6}$). The MDNRE has developed a set of risk-based cleanup standards that are at the midpoint of EPA's acceptable risk range ($1x10^{-5}$ or one in 100,000 people developing cancer from the contamination alone). EPA has decided that the MDNRE Part 201 standards should be used as the media cleanup standards for this project. If the contaminants do not present a cancer risk, but could cause other health problems, then a hazard index quotient should be used. To be acceptable to the EPA, the hazard index quotient for all contaminants must be less than one. The hazard index is the ratio of the concentration of a contaminant to its human health screening value. The Southend AOIs are listed in the table below along with the maximum contaminants found and the cumulative excess cancer risk and

the hazard index for each AOI. As noted by the areas in bold listed in the table below, there were five AOIs that were found to be above the MDNRE acceptable risk of $1x10^{-5}$. After proper remedial measures are put in place (as described in the following sections), these areas will no longer pose an unacceptable risk to human health.

Summary of Contaminants and Cumulative Risk associated with each AOI in the Southend

AOI Number and Description	Maximum Contaminant Concentrations	Risk-Based Screening Criteria	Cumulative Excess Cancer Risk	Hazard Index
02-B The releases in this area are related to an elevator pit.	Soil: Results were below screening criteria Groundwater: Manganese- *3.0 mg/L* LNAPL (free product)	Groundwater Manganese- *0.05 mg/L*	$5x10^{-6}$	$2x10^{-2}$
02-C The releases in this area were related to the sump in the Materials Laboratory that managed laboratory wastes.	Soil: Chromium- *390 mg/kg* Lead-*2,000 mg/kg* Groundwater: Results were below screening criteria	Soil Chromium- *240 mg/kg* Lead-*900 mg/kg*	$8x10^{-7}$	$6x10^{-2}$
29-A This area is related to releases from an elevator pit and an observed oil stain in Building 29. The wastes handled in this area were hydraulic and cutting oils.	Soil: Lead-*1,500 mg/kg* Groundwater: Results were below screening criteria	Soil Lead-*900 mg/kg*	$1x10^{-6}$	$5x10^{-2}$

AOI Number and Description	Maximum Contaminant Concentrations	Screening Criteria	Cumulative Excess Cancer Risk	Hazard Index
12-A This area is related to releases from press pits, sumps, trenches, traps, and floor staining and is located within former Building 12. The wastes handled at this AOI are process waste oils and hydraulic oils.	Soil: Lead-*11,000 mg/kg* Chromium-*360 mg/kg* Manganese-*1,500 mg/kg* Groundwater: Tetrachloroethene-*0.0057 mg/L* Vinyl Chloride-*0.040 mg/L* Arsenic-*0.06 mg/L* Beryllium-*0.27 mg/L* Cadmium-*0.007 mg/L* Chromium-0.12 *mg/L* Lead-*0.059 mg/L* Nickel-*0.12 mg/L* Thallium-*0.004 mg/L* Vanadium-*0.14 mg/L* LNAPL (free product)	Soil Lead-*900 mg/kg* Chromium-*240 mg/kg* Manganese-*1,500 mg/kg* Groundwater Tetrachloroethene-*0.005 mg/L* Vinyl Chloride-*0.002 mg/L* Arsenic-*0.05 mg/L* Beryllium-*0.004 mg/L* Cadmium-*0.005 mg/L* Chromium-*0.1 mg/L* Lead-*0.004 mg/L* Nickel-*0.1 mg/L* Thallium-*0.002 mg/L* Vanadium-*0.062 mg/L*	**$2x10^{-5}$**	$6x10^{-1}$
12-B The releases are related to a truck loading dock drain and sump in the Building 12 area.	Soil: Manganese-*1,900 mg/kg* Groundwater: No results were above screening criteria. LNAPL (free product)	Soil Manganese-*1,500 mg/kg*	$1x10^{-6}$	$6x10^{-2}$
12-C The releases are related to a sump in the battery charging area, deep steam pipe, and a utility pit containing oil and water	Soil: No results were above screening criteria Groundwater: Vanadium-*0.076 mg/L* LNAPL (free product)	Groundwater: Vanadium-*0.004 mg/L*	$4x10^{-8}$	$1x10^{-3}$
12-D The releases are related to a flooded, abandoned tunnel that was part of Building 12.	Soil: No results were above screening criteria. Groundwater: No results were above screening criteria.		$1x10^{-6}$	$7x10^{-3}$

AOI Number and Description	Maximum Contaminant Concentrations	Screening Criteria	Cumulative Excess Cancer Risk	Hazard Index
*40-A The releases from this area are thought to have come from a former underground storage tank farm located in the vicinity of Building 40.	Soil: Benzo(a)pyrene- *36 mg/kg* Groundwater: Benzene-*5.5 mg/L* Ethylbenzene-*0.8 mg/L* Arsenic-*0.44 mg/L* Beryllium-*0.19 mg/L* Cyanide-*0.44 mg/L* Lead-*0.0064 mg/L* LNAPL (free product)	Soil Benzo(a)pyrene- *8 mg/kg* Groundwater: Benzene-*0.005 mg/L* Ethylbenzene-*0.7 mg/L* Arsenic-*0.05 mg/L* Beryllium-*0.004 mg/L* Cyanide-*0.2 mg/L* Lead-*0.059 mg/L*	**$2x10^{-4}$**	$2x10^{-1}$
40-B The releases in this area are related to an elevator pit in the former Building 40	Soil: results were below screening criteria Groundwater: cis-1,2- Dichloroethylene- *0.93 mg/L* Trichloroethene *0.10 mg/L* Vinyl Chloride *0.0078 mg/L* LNAPL (free product)	Groundwater cis-1,2- Dichloroethylene- *0.07 mg/L* Trichloroethene *- 0.005 mg/L* Vinyl Chloride- *0.002 mg/L*	$4x10^{-6}$	$1x10^{-2}$
40-D This area was a flooded basement tunnel in Building 40.	Soil: results were below screening criteria. Groundwater: Vinyl Chloride- *0.0058 mg/L* Lead-*0.004 mg/L* LNAPL (free product)	Groundwater Vinyl Chloride- *0.002 mg/L* Lead-*0.004 mg/L*	$2x10^{-6}$	$2x10^{-2}$

**Please note that AOI 40-A was inadvertently left out of Table 3 of the Statement of Basis for the Southend of the Buick City Facility.*

AOI Number and Description	Maximum Contaminant Concentrations Found	Screening Criteria	Cumulative Excess Cancer Risk	Hazard Index
09-A This area is related to releases from underground storage tanks, floor trenches, and above ground storage tanks in Building 09.	Soil: Benzo(a)pyrene-*57 mg/kg* Dibenzo(a,h)anthrace *11 mg/kg* Lead-*120,000 mg/kg* Manganese-*8,300 mg/kg* Groundwater: 1,1,1-Trichloroethane-*0.258 mg/L* Trichloroethene-*0.184 mg/L* Vinyl chloride-*0.0038 mg/L* Antimony-*0.016 mg/L* Lead-*0.026 mg/L* LNAPL (free product)	Soil: Benzo(a)pyrene-*8.0 mg/kg* Dibenzo(a,h)anthracene *8.0 mg/kg* Lead-*900 mg/kg* Manganese-*1,500 mg/kg* Groundwater 1,1,1-Trichloroethane-*0.2 mg/L* Trichloroethene-*0.005 mg/L* Vinyl chloride-*0.002 mg/L* Antimony-*0.006 mg/L* Lead-*0.004 mg/L*	**$3x10^{-4}$**	$8x10^{-1}$
09-B This area is related to releases from the Hamilton Avenue Underground Storage Tank Farm.	Soil: Benzo(a)pyrene-*13 mg/kg* Lead-*1,200 mg/kg* Manganese-*1,800 mg/kg* Groundwater: Benzene-*1.21 mg/L* Ethylbenzene *1.0 mg/L* Methylene chloride-*0.0074 mg/L* Total Xylenes-*0.053 mg/L* Total PCBs-*0.0017 mg/L* Antimony-*0.0068 mg/L* Arsenic-*0.061 mg/L* Barium-*1.5 mg/L* Lead-*0.0058 mg/L* Selenium-*0.052 mg/L* LNAPL (free product)	Soil: Benzo(a)pyrene-*8.0 mg/kg* Lead-*900 mg/kg* Manganese-*1,500 mg/kg* Groundwater: Benzene-*0.005 mg/L* Ethylbenzene-*0.70 mg/L* Methylene chloride- *0.005 mg/L* Total Xylenes-*0.035 mg/L (GSI)* Total PCBs-*0.005 mg/L* Antimony-*0.006 mg/L* Arsenic-*0.050 mg/L* Barium-*0.82 mg/L* Lead-*0.004 mg/L* Selenium-*0.050 mg/L*	**$8x10^{-5}$**	$6x10^{-2}$

AOI Number and Description	Maximum Contaminant Concentrations Found	Screening Criteria	Cumulative Excess Cancer Risk	Hazard Index
16-C The releases in this area from hydraulic oil, a former AST and former USTs around the former Building 16	Soil: results below screening criteria Groundwater: Benzene-*0.21 mg/L* Beryllium-*0.044 mg/L* Selenium-*0.18 mg/L* LNAPL (free product)	Groundwater Benzene-*0.005 mg/L* Beryllium-*0.004 mg/L* Selenium-*0.05 mg/L*	**$3x10^{-5}$**	$2x10^{-1}$

Ecological Risk Assessment

An ecological risk assessment (ERA) was conducted at the Facility. EPA's Ecological Risk Assessment Guidance was followed to determine whether contaminants at the Facility posed an unacceptable risk to the ecological population (termed receptors). An ecological risk assessment is the process through which scientists evaluate the likelihood that adverse ecological effects might occur, or are occurring, due to exposure to one or more stressors, such as contamination. The process begins with a Screening Level Risk Assessment (SLERA), which is a study to determine whether a more comprehensive Baseline ERA is needed.

A facility-wide SLERA was developed beginning with a facility visit in 2001 to determine the types of ecological habitat present at the Facility. The Flint River was the only potential ecological habitat identified in the Southend. The River was evaluated and sampled to determine its habitat quality and its potential for unacceptable exposures to receptors from contaminated media.

At the time of the SLERA, operations at the Southend had ceased two years earlier and it was concluded that past releases into the Flint River would have already migrated downstream with the flow of the River. Because of the industrial setting surrounding the Facility, surface water contamination could not be directly linked to the Facility. In order to assess the effect past operations from the Facility might have had on the Flint River, EPA and GM (now MLC) agreed the best approach was to sample sediment at the outfalls. The outfalls were considered a complete pathway from the site sewer system to the River. Sediment sampled in the Flint River was found to be generally below ecological-risk screening levels. Based on the SLERA, EPA concluded that there were no areas that showed unacceptable ecological effects, and that further ecological risk evaluation was not needed at the Facility.

Interim Measures Taken

LNAPL Recovery Systems

Prior to the Statement of Basis, GM, the MDNRE and the EPA assessed the Southend for environmental issues and determined that conditions existed that required immediate actions. The remedies put in place – referred to as interim measures -- were a light non-aqueous phase liquid (LNAPL) recovery system for AOI 12-B and remediation of a contaminated tunnel that was part of Building 40. The LNAPL recovery system involved pumping hydraulic oil from the ground to a holding tank from where the material was sent to an off-site disposal facility. The system was found to be ineffective due to the viscosity, or thickness, of the material and was shut-down.

AOI 40-D-Interim Measure

The Former Building 40 tunnel conveyed materials, personnel, and equipment between former Building 40 and former Building 06/16 assembly areas. The tunnel was flooded with water, and the water level was approximately 4 feet above the floor of the basement. As part of the interim measures, the basement floor and lower two feet of the walls were cleaned using a foam-applied aqueous-based solvent to extract polychlorinated biphenyls (PCBs) from the concrete. Other activities since then have included removal of small quantities of floating oil from the tunnel and basement. The report, Cleanup and Disposal of PCB Remediation Waste, Building 40 Tunnel and Basement (BBL, January 2004), detailed plans to remove the basement floor of the former Building 40. The removal plan included breaking the basement floor and allowing it to collapse into the underlying tunnel; this was done on June 12, 2006. The initial water level in the former basement was approximately 8 feet below the surrounding grade. Some oil droplets (1 to 4 inches in diameter) were observed floating on the water surface. The oil was sampled and analyzed for PCBs. The analysis indicated that the oil contained PCBs at a concentration of 2.5 parts per million. The oil was recovered using oil absorbent booms and pads prior to the backfilling basement/tunnel with clean fill. The oil-soaked absorbent booms and pads were disposed of at a permitted landfill. For the final remedy for this AOI, an additional deed restriction must be placed on this portion of the property warning future owners of the presence of PCBs.

CORRECTIVE MEASURES ALTERNATIVES CONSIDERED

The following remedies were considered for the various AOIs requiring remediation at the Southend.

Contaminated Soils On-site

Soil in the Southend of the property (on-site soil) is mainly contaminated with lead. The total amount of soil that is contaminated on-site is about 10,000 yd^3 and is located in six distinct areas of the Southend as shown in the attached Figure 4.

Alternative 1: Engineering Controls and Additional Institutional Controls above Baseline

This alternative involves implementing engineering controls and additional institutional controls that would provide protection from direct contact to future Facility users. The engineering control suggested is maintaining the existing surface cover as a cap. The institutional control identified under this alternative is establishing a deed restriction limiting excavations within areas where soil contains lead concentrations above the State of Michigan's criteria for industrial land use, 900 mg/kg. These restrictions would remain with the property in perpetuity, or until soil containing concentrations above 900 mg/kg has been remediated.

Alternative 2: Excavation

This alternative involves excavating soil with lead concentrations exceeding 900 mg/kg, and disposing of this soil offsite at an appropriate facility. The estimated volume of soil to be excavated is 10,470 cubic yards. Sampling of the soil prior to excavation would be performed to both better define the appropriate excavation limits and establish proper disposal requirements.

Contaminated Soil Off-site

This remedy relates to AOI 09-A (Building 09). The releases from this area came from underground storage tank (UST) floor trenches and concrete containment for an above-ground storage tank (AST) which migrated to an adjacent off-site area now owned by the CSX Railroad (see Figure 4).

Alternative 1: Engineering Controls and Additional Institutional Controls above Baseline

This alternative involves implementing engineering controls and additional institutional controls that would provide protection from direct contact to users of the affected area. The engineering controls include maintaining the surface cover consistent with existing conditions. The institutional controls would include establishing a deed restriction limiting excavations at the CSX's property deed. The deed restriction would remain with the property in perpetuity, or until the area has been remediated.

Alternative 2: Excavation

This alternative includes the excavation and offsite disposal of approximately 900 cubic yards of soil. The size of the excavation is based on the removal of soil that contains lead and benzo(a)pyrene at levels exceeding EPA and Michigan's risk limits for unrestricted use. The resulting excavation would be backfilled with appropriate fill imported from an off-site source.

Light Non-Aqueous Phase Liquid (LNAPL)

There are several areas where LNAPL or free product, has been found in the subsurface at the Facility (see Figure 2 and 3). The LNAPL, in some cases, acts as a source of contamination to the groundwater and has the potential to migrate to the Flint River.

Alternative 1: Institutional Controls Above Baseline

This alternative would restrict direct contact with LNAPL in the subsurface by requiring additional institutional controls on the property to prevent excavation in the areas where LNAPL is present in addition to the baseline deed restriction. The baseline deed restriction includes restricting the land use of the entire Southend to Industrial/Commercial II, III, and IV (as defined under Part 201 of the Michigan and Natural Resources Environmental Protection Act. This alternative would not require the removal of any LNAPL that is currently at the Facility.

Alternative 2: LNAPL-Only Extraction and Additional Institutional Controls Above Baseline

This alternative involves collecting as much LNAPL from the subsurface as a standard pumping technology allows and disposing of the collected LNAPL at an appropriate off-site facility. This alternative would consist of installing one to six new LNAPL recovery wells in each area with LNAPL. Submersible pumps designed to collect only LNAPL would also be installed in existing monitoring wells. In addition, oil absorbing socks would be installed in existing monitoring wells in each of the areas. This system would be designed to enhance and maximize the effectiveness of the existing LNAPL extraction system. All collected LNAPL would be stored in drums or other suitable containers near the wellheads until sufficient LNAPL would be collected for off-site disposal. It is expected that there would be a minimum 30-year operation and maintenance period for this system.

Alternative 3: Steam Enhanced LNAPL Extraction

This alternative involves collecting as much LNAPL from the subsurface as is technically practicable and disposing of the collected LNAPL at an appropriate off-site facility. In this alternative, a subsurface network of steam injection and fluid extraction wells would be installed in each of the plumes. Steam would be injected through these wells into the contamination trapped in the geologic material (soil and rock) underground. The steam would "strip" or clean the contamination from the underground geologic material, mobilizing the contamination into the liquid phase. By mobilizing the contaminants in a controlled system, the LNAPL can be removed much more quickly and efficiently than using standard pumping technologies. A high vacuum fluid removal system would remove the liquid and the extracted material would go through oil/water separation, air stripping, and clay/carbon treatment to remove the newly mobilized contamination. All collected LNAPL would be stored in drums or other suitable containers near the wellheads until sufficient LNAPL are collected for offsite disposal. Other extracted and treated liquids (groundwater) would be discharged to the storm sewer as allowed by a state permit. It is anticipated that the operation and maintenance on this system would be approximately two years. If unacceptable levels of LNAPL remain after the system has achieved

its maximum amount of extraction (based on ongoing evaluation of the extraction rate and effectiveness of the system), institutional controls above baseline to limit excavation would be placed on the property to limit excavation and exposure to the remaining contaminants (as described in Alternative 1). This alternative also recognized that other technologies to enhance LNAPL recovery could be tested and evaluated to supplement or improve the effectiveness of the enhanced LNAPL extraction system.

SELECTED REMEDIES

The U. S. EPA selects the following corrective measures as the remedies to address contaminated soil and groundwater at the Southend. Most of comments received requested clarification of various issues. The selected remedy for LNAPL contamination addresses comments by refining the LNAPL remedy to include the testing of a few different technologies in order to select the best possible remedy for site-specific conditions and the different types of products found at the Facility.

Corrective Measures to Address General Contamination at the Southend

In addition to the individual remedies listed below, MLC will implement the following remedies for the Southend of the Facility: 1) creation of enforceable institutional controls to restrict the land use of the entire MLC property to Industrial/Commercial II, III and IV (as defined under Part 201 of the Michigan Natural Resources and Environmental Protection Act) only; 2) creation of enforceable institutional controls to prohibit the use of all Southend groundwater for any purpose beyond sampling and other related investigatory testing; 3) development and implementation of a groundwater monitoring program (explained in more detail below); and 4) providing adequate financial assurance to demonstrate that funding will be available to complete construction, monitoring and operation and maintenance of the selected remedies. The institutional controls in this case will be Restrictive Covenants that would be filed with the Genessee County Assessor's Office so that anyone wishing to purchase the property in the future would be notified of their obligation to comply with the restrictions placed on the property.

Corrective Measures to Address On-Site Soil Contamination

Alternative 1, Engineering Controls and Additional Institutional Controls above the Site-Wide institutional controls mentioned above, is the chosen remedy. All of the on-site soil contamination at levels of concern is located under building slabs or pavement. Given the fact that the property use is anticipated to remain industrial, and there is no current exposure pathway to the contamination, the added benefit from excavating and disturbing significant volumes of soil and shipping it off-site, is small. In addition, the main contaminant of concern in this area is lead, which adheres to soil particles thus making it stable in the environment. In the event the existing surface covers are removed, the use restrictions would require either replacement of the barrier or excavation and disposal of soil with contaminant concentrations above industrial cleanup standards. Therefore, for contaminated soils that remain on the Southend, the remedy will be the following:

1) Engineering controls will be implemented that will include maintenance of the existing slabs remaining from building demolition and former parking lots.
2) Additional institutional controls will be placed on the property that limit excavation in those areas where lead in soil exceeds the MDNRE Part 201 direct exposure criteria for industrial workers. EPA anticipates that the institutional controls will be implemented within 180 days after the Final Decision and Response to Comments is issued.

Corrective Measures to Address Off-site Soil Contamination

Alternative 2, excavating contaminated soil at the CSX Railroad property to unrestricted use standards, is the selected remedy. This approach is feasible and appropriate given the relatively small volume of contaminated soil. Once the excavation has occurred, no additional institutional controls will be required for the property since the lead and benzo(a)pyrene contamination from former General Motors operations will be removed. In addition, since no engineering control would be needed, no additional operation or maintenance will be required. This avoids the difficulty of imposing and maintaining long-term engineering controls and use restrictions on a third party's property.

EPA anticipates MLC will request access to the offsite area within thirty (30) days of the final decision and removal of soils will occur as soon as practical after access is obtained, depending on weather conditions at the time.

Corrective Measures to Address the LNAPL Contamination

The LNAPL (free product) remedy will be a modification of the extraction alternatives mentioned above. There are several different types of free product found at the site (gasoline, hydraulic oils, and diesel fuel) each having their own distinct properties affecting how they can best be extracted. In addition, the LNAPL is present in areas where the geology varies significantly from place to place, which also has an impact on extraction technologies.

As a result, EPA has decided that an LNAPL extraction system remedy is appropriate, but that a "one-size fits all" approach is not the most effective LNAPL extraction approach. In recognition of this situation, the remedy for LNAPL at the Southend will include several complementary extraction approaches rather than just the two described in the Statement of Basis. The extraction remedy will include LNAPL recovery trenches and multi-phase extraction (MPE). LNAPL recovery trenches are trenches excavated to the groundwater table in impacted areas and backfilled with rock. LNAPL present in the surrounding soils drains into the rock backfill. LNAPL that accumulates in the trenches will be periodically collected via sumps that will be installed in the recovery trenches. The collected LNAPL will be taken off site for disposal.

MPE is a process used to remove soil gas, groundwater, and free product from the subsurface. Vertical MPE extraction wells will be installed throughout the area to be treated. A centralized high-vacuum blower will be used to extract soil gas, groundwater, and free product

from the extraction wells via a subsurface piping network. The combined fluids will be separated by the MPE treatment equipment. The extracted soil gas that is rich in petroleum hydrocarbons will be treated on site by activated carbon polishing or thermal treatment. The recovered groundwater will then be treated and discharged to the sanitary sewer. The LNAPL will be taken offsite for disposal. This process is more effective than standard pumping because both product and vapor phase will be extracted and oxygen will also be introduced into the subsurface. (Moreover, as noted above, standard pumping approaches have limited effectiveness in areas where heavier or more viscous oils are present). Introduction of oxygen stimulates LNAPL degradation by native soil bacteria.

It is anticipated that MPE, although a standard and proven technology at removing LNAPL, will still leave significant amounts of LNAPL behind. Therefore, in addition to MPE, EPA is also requiring testing of different technologies to either further enhance the LNAPL extraction system or to use in lieu of MPE. As described below, A CMI Workplan detailing what technologies will be bench-scale tested will be submitted to EPA within ninety (90) days of the issuance of the Final Decision Response to Comments. The requirements of testing different technologies are as follows:

1) EPA requires that bench scale testing be performed with five different technologies.
2) From the five technologies, MLC will pilot test in the field the three technologies that EPA determines have performed best in the bench scale tests.
3) EPA will use the results of the pilot tests to determine which of these technologies will be used to enhance MPE, and/or as a treatment in lieu of MPE. The reason behind this is to maximize the effectiveness of the selected LNAPL extraction remedy for each of the specific types of contaminants found at the site.

Corrective Measures to Address Groundwater Contamination

The groundwater underlying the site is contaminated with volatile organic carbon compounds and metals. Since current data suggests that the contaminant plumes are not expanding, the chosen groundwater remedy is monitoring the groundwater and developing a contingent remedy in the event that the plume is found to be expanding. The specific purpose of groundwater monitoring will be to monitor the long-term stability of contaminants in the groundwater and to ensure continued compliance with Michigan Part 201 groundwater/surface water interface (GSI) criteria for the long-term protection of the Flint River. Details on the groundwater monitoring program and the contingent remedy will be developed in the Corrective Measures Implementation Workplan as described below.

Corrective Measures Implementation

The details of how each remedy will be implemented will be provided in the Corrective Measures Implementation (CMI) Workplan. The CMI Workplan will include a conceptual design for the construction of the remedies and will outline technology-based cleanup objectives for LNAPL as well as details on the groundwater monitoring plan. In addition, the plan will

include contingent remedies for the groundwater when identified conditions develop, such as if the Michigan Part 201 Groundwater/Surface Water Interface criteria are exceeded for a specified period of time in monitoring wells placed to identify contamination before it reaches the River. MLC will submit the CMI Workplan and detailed schedule for implementing the remedies. The schedule will also include a schedule for bench-scale LNAPL remediation technology testing. The Workplan is required to EPA within ninety (90) days after the Final Decision and Response to Comments is issued.

PUBLIC PARTICIPATION ACTIVITIES

For more detailed information on anything in this document, please refer to the Southend Statement of Basis found in Attachment 2 of this document and the Administrative Record located at the Main Branch of the Flint Public Library. EPA held a 30-day public comment period to receive comments on the Statement of Basis, from January 31, 2010 to February 28, 2010. A public meeting was held on February 18, 2010 in Flint, Michigan. The public was notified of this public comment period in the Flint Journal, CPCS Courier and broadcast through Cumulus Radio (WDZZ & WWCK) and Christian Evangelical Broadcasting Association (WFLT -AM 1420). The meeting was attended by a total of 158 people, including 10 EPA employees, and one representative from the MDNRE. In the following section, comments received during the public meeting and the 30-day comment period, accompanied by EPA's responses, are listed.

PUBLIC COMMENTS AND EPA'S RESPONSES

Many comments and questions were received orally and recorded in a transcript of the public hearing on the Statement of Basis for the Southend. Many of the same issues were touched on in the comments and questions that were received by letter, fax and e-mail. EPA has summarized them into 28 separate subject areas with written responses to these questions and comments.

1. What is the relationship between General Motors Corporation and Motors Liquidation Company (MLC) and how is the environmental cleanup being funded?

   EPA's Response: General Motors Corporation filed for bankruptcy June 1, 2009. On July 9, 2010, some of the assets of General Motors Corporation were sold to a new company called General Motors LLC. At the same time, General Motors Corporation was renamed Motors Liquidation Company. At the same time GM LLC was formed, the United States and Canadian Governments provided funding for a wind down budget. Some of these funds may be used to perform clean-up on the properties owned by Motors Liquidation Company.

2. Who chooses the remedy-Motors Liquidation Company (MLC) or EPA?

   EPA's Response: The EPA chooses the remedy that MLC will implement.

3. What jobs will be created from the cleanup effort and will people from Flint and the surrounding county be employed and trained?

   EPA's Response: MLC will choose the contractors who will perform the cleanup. MLC has informed EPA that they anticipate a number of jobs will be created as a result of the cleanup of Buick City and other sites. In addition, they will work to provide opportunities for qualified, competitive local contractors to support the remediation plans at the site.

4. Why is the land being restricted to industrial/commercial use after cleanup?

   EPA's Response: The property is currently zoned industrial and has been for decades. The infrastructure and physical conditions at the property make it better suited for industrial use. There has been no proposal for changing the zoning and therefore, EPA anticipates that the reasonably foreseeable future land use will be industrial with limited commercial activities. A Restrictive Covenant will be filed with the assessor's office to ensure that the land is not used for residential, schools, daycare centers, or other non-commercial/industrial purposes.

5. Where did the contamination in the soil come from?

   EPA's Response: The contaminants were released from past operations that occurred on the site. The site has a long industrial history including the following historical manufacturing processes that have included practices that may have contributed to the environmental issues at the Facility. Those practices include: 1) storing, conveying and recycling numerous liquids such as gasoline, oils, solvent and paints; 2) degreasing parts; 3) using sumps vaults, underground storage tanks, above ground storage tanks and collection trenches, vessels and materials recovery for manufacturing operations.

6. Why not excavate the contaminated soil that is on site rather than leaving it in place and capping it?

   EPA's Response: Considering the current zoning is industrial and the future use of the property is anticipated to be industrial, and the fact that there is currently a concrete cap in place (the building slabs and parking lots), capping the 10,000 yd^3 of contaminated soil is more practical and will protect human health and the environment presently and in the future. If the soil was excavated, the concrete slabs along with the contaminated soil would potentially have to be removed and disposed of as hazardous waste. The soil contamination is mainly from heavy metals which do not generally move in the environment. By leaving the cap in place, the remedy provides an additional barrier to rain water that could "move" the contamination or that might cause the metals to dissolve or leach into the groundwater. The maintenance of the cap will be MLC's responsibility and a fund will be established for the cost of maintenance in the future should the property be sold.

7. How will excavation during redevelopment of the property be performed to prevent workers and surrounding communities from being exposed to the contaminated soil and who is responsible for dealing with the contaminated soil should it become exposed?

   EPA's Response: If excavation is necessary for redevelopment, appropriate measures will be taken to ensure that the soil is not only disposed of properly, but also that dust suppression measures are taken to keep the neighboring residential area safe. These precautions will be part of the institutional control that will be placed on the property.

8. Who will be responsible for the long-term maintenance of the caps and groundwater monitoring?

   EPA's Response: It is currently contemplated that a trust will be formed at the conclusion of the MLC bankruptcy process. This trust will be responsible for and be funded to perform the remedial obligations at the site including long-term maintenance of caps and groundwater monitoring. These specifics are subject to evolution as the planning for this post-confirmation entity continues, but the MLC bankruptcy process is expected to provide for the financial assurances required for the selected remedy.

9. What is the long-term effectiveness of the selected LNAPL remedy?

   EPA's Response: EPA's main goal for the LNAPL remedy is to remove the most amount of mass given the characteristics of the product, the geology of the area and the technology or technologies chosen. EPA plans to accomplish this by implementing an extraction system and testing different supplemental technologies both in the lab and in the field to maximize the effectiveness of the extraction system for each of the LNAPL plume compositions. For instance, a technology that will work well on gasoline may not work as well on heavier hydraulic oils. Therefore, by removing the greatest amount of mass that is technically possible, the long-term effectiveness of the treatment will be increased.

10. Are the storm sewers on site being monitored and what are the future plans to ensure that contamination is not infiltrating these sewers and flowing to the Flint River?

    EPA's Response: MLC currently monitors and maintains the storm sewers at the site. It is planned that as part of the site cleanup efforts, the storm sewers that originate from the Facility will be plugged. The other sewer systems that serve other areas outside of Facility cannot be plugged. Instead they will be monitored for infiltration of contaminated groundwater and liquids from the site soils. This will be part of the groundwater monitoring system since contaminated groundwater and LNAPL has been known to leak into the sewer system through cracks in the pipes. In addition, a comprehensive outfall monitoring system will be implemented as well as a groundwater monitoring program to ensure impacts that are observed in the storm sewers can be properly addressed before the Flint River is impacted.

11. How will the public be kept informed while the cleanup is taking place?

    U.S. EPA's Response: U.S. EPA plans to have frequent communication with the public as the cleanup progresses and as the LNAPL extraction system is further refined. The communication will primarily be in the form of fact sheets that will be made available at the library or through the internet. If the need arises, U.S. EPA will hold meetings with the public as well.

12. When will assessment and cleanup of the Northend occur?

    EPA's Response: The assessment of the entire Facility was completed in 2005. Both areas, the Northend and the Southend, have undergone extensive investigation and U.S. EPA believes that the nature and extent of the contamination of the entire Buick City site is well documented and well understood. The site was divided up into the Southend and Northend in response to the need for redevelopment in the City of Flint. Considering the fact that operations have ceased at the Southend and the contamination is less complicated on the Southend, U.S. EPA decided that this division made sense and was a way to expedite the remedy selection and potential redevelopment. As far as the cleanup of the Northend is concerned, U.S. EPA is working towards issuing a Statement of Basis for that parcel of the Facility site similar to that of the Southend. U.S. EPA anticipates that will occur sometime in 2011. After that occurs, U.S. EPA will solicit public comments and issue a Final Decision. Then, MLC will submit to U.S. EPA for approval a workplan detailing how they plan to implement the remedy.

13. For the Northend, how will the community be informed of future activities such as the selected remedy?

    EPA's Response: The public comment process will be very similar to what was done for the Southend. In addition, EPA would like to have smaller meetings before the Statement of Basis is finalized in order to inform the community as to what remedy EPA is planning to recommend for the Northend.

14. The language of the Statement of Basis should be improved to be easily digestible where the reader does not need a science background to understand the material.

    EPA's Response: The EPA tries to make everything as reader friendly as possible and tries to use plain language. However, the Statement of Basis is a technical document based on an extensive record covering complex topics. Due to this fact, EPA also has public meetings and fact sheets to answer questions and to explain in simple language what is being done at the site.

15. Have tanks been removed and has the soil been tested in all areas of the site?

    EPA's Response: Yes. All tanks on the Southend have been removed and soil has been sampled to ensure compliance with state regulations. In areas where LNAPL or

groundwater contamination is from a past leaking underground storage tank, a remedy and monitoring will be performed to ensure the contamination is not migrating off-site.

16. Why haven't all the tunnels been removed?

EPA's Response: Since part of the Buick City Facility is still operational (the Northend), demolition activities have not began. Therefore, any tunnels/basements that currently exist will be properly demolished and backfilled to minimize impacts to future construction at the Facility once the Northend operations cease.

17. How was sampling performed?

EPA's Response: First, the site was split up into different areas of interest (AOIs) based on similar types of operations. Next, sampling at each of the AOIs were focused based upon historical records of spills, sumps, leaking underground storage tanks, etc. If a contaminant was detected above appropriate risk-based screening levels, then, additional samples were taken around the original point until it was no contamination was found. The same technique was used for both soil and groundwater.

18. Have other off-site areas been investigated besides the CSX Railroad property?

EPA's Response: There was a fence line investigation performed around the entire boundary of the Facility in 1995. The only areas found to be above risk-based criteria were near the CSX property and DuPont property. In response to the exceedances, General Motors investigated the soil and groundwater on those properties and found that soil on the CSX property needed to be remediated. There are still groundwater monitoring wells on the DuPont property, but since results from groundwater monitoring data has shown the plume is stable, groundwater monitoring has ceased on the DuPont property.

19. Can redevelopment of the property and the cleanup occur at the same time?

EPA's Response: Yes, if a potential developer purchased the property, redevelopment could occur in conjunction with the remedy implementation.

20. What happens if a redeveloper does not purchase the property?

EPA's Response: MLC will continue to monitor the groundwater and implement the remedy.

21. Has the Flint River been tested and is it safe?

EPA's Response: As part of the ecological risk assessment performed at the Facility, the sediment in the Flint River was tested for semi-volatile organic carbon compounds, PCBs, and metals. The results showed that these chemicals were not at levels that would

cause adverse health effects to the wildlife in the river. The surface water was not sampled during the ecological risk assessment as there was not evidence to suggest that contamination from the site was impacting the river such as surface run-off. In addition, any contaminated groundwater flowing into the Flint River from the Facility was evaluated through the groundwater/surface water interface pathway.

22. A fish advisory should be placed on the Flint River.

EPA's Response: There is a fish advisory for the entire Saginaw Bay Watershed. See http://www.michigan.gov/documents/mdch/2009-10-22_-_Guide_to_Fishing_in_the_Saginaw_Bay_-_WEB_300815_7.pdf to find out more about what fish is safe to eat and in what quantities.

23. A barrier should be placed between the groundwater and the Flint River.

EPA's Response: There is no evidence to suggest that the groundwater contamination is continuing to migrate. However, if future monitoring should suggest that groundwater contamination is migrating towards the Flint River, additional corrective measures will be implemented such as a barrier wall or other treatment technology.

24. Without any cleanup at all is the public in danger?

EPA's Response: The public is not in any current danger. The current conditions at the Southend are such that the building slabs are providing a barrier between human contact and the contaminated soil. In addition, these slabs provide a barrier to infiltration of rain water thus slowing down the movement of the soil contaminants to the groundwater. In addition, the groundwater is not used for drinking water in the area and the groundwater on site is not used for any purpose other than environmental sampling. The sediment from the Flint River was also sampled and it was found to be within acceptable levels for a river habitat.

25. The Statement of Basis named three potential areas that could be considered potential ecological habitat areas on the site. Yet there is no recommendation that MLC take on any restoration efforts. The Flint Watershed Coalition (FRWC) believes that ecological habitat restoration is integral to bringing the site back into functional use and should be included in the Statement of Basis. The FRWC is interested in exploring partnerships with EPA, MLC or the new site owner to undertake innovative habitat restoration that could add economic value to the site, improve the site's aesthetics, and potentially have a positive impact on water quality. Further, the FWRC is willing to partner with the property owners to identify other ways in which the site can be "softened" to better manage storm water runoff and improve the transition from the industrial site to river corridor and residential areas.

EPA's Response: These areas were not part of the remedy because there was no identified unacceptable adverse ecological impact on them. However, EPA welcomes

any partnership that might be made to advance ecological restoration. U.S. EPA is willing to hold a meeting that might facilitate such discussions between the FRWC, MLC, and the future developer.

26. The EPA should provide guidance about whether or not it is advisable to beautify the edges of the Buick city site with a line of trees or trees/shrubs, etc.

    EPA's Response: Landscaping is generally left up to the future redeveloper, and the landscaping plan will be reviewed by the city. As mentioned in the response to comment #27, EPA welcomes any kind of site beautification and habitat restoration where possible.

27. How can the Office of Sustainable Communities be involved with the redevelopment of the Buick City site?

    EPA's Response: EPA's Office of Brownfields and Land Revitalization, its Regional Brownfields Office, and the Agency's Smart Growth Office can provide Flint and the Buick City redevelopment team with technical assistance and consultations on all aspects of the redevelopment project (e.g., planning, community engagement, assessment, cleanup). In addition, EPA's Brownfields Program funds a community assistance program entitled "Technical Assistance to Brownfields." Any community that has questions regarding or needs assistance with the revitalization of brownfields can make use of this assistance program. Kansas State University can provide Flint community leaders with technical and planning assistance under this program. More information, including contact information, about the program can be found at: http://www.epa.gov/brownfields/tools/index.htm#tab. Please note that EPA's Office of Brownfields and Land Revitalization, within the Office of Solid Waste and Emergency Response is aware of the Buick City Facility and has been in contact with both the City of Flint and MLC. They will continue to coordinate with the EPA Region 5 Office, City of Flint and MLC, concerning future redevelopment at the site.

28. What is the anticipated schedule for the remedy completion at the Southend?

    EPA's Response: Some aspects of the clean-up are easier to implement and will be performed within the next 6 – 12 months. Other aspects require significant design efforts that will extend the start of remedial actions out as much as 18-24 months.

MOTORS LIQUIDATION COMPANY'S COMMENTS AND EPA'S RESPONSES

As part of the public comment process, U. S. EPA received MLC's comments on February 28, 2010. Given the more specific, technical nature of the comments, EPA has decided to address them separately from the public comments above.

1. MLC Comment on EPA requiring financial assurance for the implementation of the remedy-"While MLC understands the basis for the financial assurance requirement, the demonstration of that assurance will be established through the restructuring of MLC and the bankruptcy proceedings."

   EPA's Response: Comment noted.

2. MLC Comment regarding interim measures performed at the Southend of the Buick City Site: "References to LNAPL Interim Measures in the CMP relate to efforts to recover LNAPL facility-wide. Most IMs were implemented in the Northend of the complex. Minor IMs have been completed in the Southend, but the majority of the recoverable LNAPL in the Southend portion of the complex has not been removed."

   EPA's Response: EPA concurs. The text in the Statement of Basis was a remnant from the earlier combined Northend/Southend and was mistakenly left in the document.

3. MLC comment regarding interim measures, specifically the statement, *"Interim Measures performed at the Southend were LNAPL recovery and removing contaminated water and subsequently closing an abandoned tunnel in the basement of Building 40 (AOI 40-D)"*-"The Interim Measure for Building 40 was completed in the Southend as described, but the reference to LNAPL recovery interim measures in the Corrective Measures Plan refers primarily to work performed in the Northend of the complex."

   EPA's Response: Comment noted. According to letter dated April 9, 2009 from then General Motors Corporation, there was one LNAPL recovery system installed at AOI 12-A. However, there was limited recovery due to the viscosity of the material and therefore was taken out of service 2004.

4. MLC comment regarding EPA's preferred remedy for areas with LNAPL (free product): "The statement above suggests steam-enhanced recovery will remove more LNAPL than conventional recovery methods. Although steam enhanced recovery may increase the rate of the LNAPL recovery, due to a reduction in LNAPL viscosity, it will not necessarily improve the overall recoverability of high-boiling point LNAPLs (such as hydraulic oils) that will not volatilize during recoverability and the achievable LNAPL mass removal (and remaining, "residual" LNAPL saturation) should be evaluated through testing before concluding that steam-enhanced extraction would remove significantly more LNAPL than conventional or other forms of enhanced LNAPL recovery. Additionally, volatile LNAPLs such as gasoline that are present at the site are more efficiently and safely removed using remediation technologies that induce subsurface airflow to volatilize and extract the LNAPL. This paragraph of the Statement of Basis should be modified to more accurately reflect the effect and applicability of steam-enhanced recovery."

   EPA's Response: In light of new information and discussions EPA has had with MLC, the approach to a LNAPL remedy has changed slightly. Rather than a wholly

prescriptive approach to LNAPL extraction, EPA believes that MLC should test different technologies in order to help refine the system to produce the most effective remedy for the different types of plumes found at the Buick City Site. As mentioned, gasoline has different properties that might make traditional recovery methods effective, whereas the same approach may not work effectively on the heavier hydraulic oils. In summary, a "one-size fits all" approach is not appropriate for this site, and EPA acknowledges that steam enhanced recovery may not be the optimal technology for use across the site.

5. MLC comment regarding LNAPL and the presence of dissolved groundwater contamination-"The same paragraph suggests to the reader that the LNAPL-impacted areas are also affecting groundwater due to the presence of LNAPL. While this is likely the case with AOI 09-B, which contains gasoline released from an underground storage tank farm, the remaining LNAPL areas have had limited or no measurable impact on groundwater. Two of the AOIs containing LNAPL exhibit groundwater constituents unrelated to the LNAPL. Other than at AOI 09-B, the LNAPL areas are not serving as a source of dissolved constituents to the underlying groundwater. The Statement of Basis should be changed to provide this perspective.

   EPA's Response: The potential for LNAPL to impact groundwater exists across the Facility. It is in part due to this potential that EPA recommends the removal of as much of the LNAPL as possible. EPA doesn't believe it needs to make any changes related to this comment.

6. MLC comment regarding the cost for the cleanup of the Southend-"The cost shown for the groundwater monitoring Table 4 represents facility-wide (Northend and Southend) monitoring costs."

   EPA's Response: EPA concurs.

7. MLC comment regarding the modification of Table 4 in the Statement of Basis-"...the list of AOIs in Table 4 should be modified as follows. First, AOI 29-A should be added to the list of AOIs for "on-site Soil" Media/Area of Concern in the table above; AOI 29-A was included in Table 2 (page 6) of the Statement of Basis, but not included in Table 4. Second, AOI-12 D should be removed from the list of AOIs for the "Southend LNAPL" and from Table 2 of the Statement of Basis; AOI-12D was eliminated in the RFI and not carried forward to the CMP."

   EPA's Response: EPA concurs.

8. MLC comment regarding the purpose of groundwater monitoring-"As noted above, the LNAPL remedies are not expected to have a direct effect on the groundwater conditions, except in the area of AOI 09-B (gasoline), where gasoline constituents will be addressed, and potentially AOI 16-C (hydraulic oil). The Statement of Basis should be modified to reflect this concept and note that groundwater monitoring will determine the stability of

the groundwater conditions, and the contingent plan will be used to address groundwater conditions that are found to not be stable, or improving."

EPA's Response: The purpose of groundwater monitoring is to ensure compliance with cleanup goals such as the Michigan groundwater surface water interaction criteria and to ensure long-term stability of the plume which is what was stated in the Statement of Basis. Regarding monitoring of the LNAPL, EPA agrees that a means of monitoring the effectiveness of the LNAPL remedy is needed. Rather than lumping this into the groundwater monitoring, perhaps it would have been more technically correct to make a separate requirement for LNAPL monitoring where the LNAPL footprint is monitored as well as the thickness in order to test whether the volume of LNAPL is decreasing. If it is not, then a contingent remedy will be implemented. EPA will incorporate this into the Final Decision.

ADMINISTRATIVE RECORD

A copy of the Administrative Record for the selected remedy in this Final Decision Response to Comments is available for review at the Main Branch of the Flint Public Library, located at 1026 E. Kearsley Street in Flint, Michigan and the 7th Floor Records Center at EPA Region 5, 77 West Jackson Boulevard, Chicago, Illinois 60604.

An Index to the Administrative Record is provided in Attachment 1. The Administrative Record for this Final Decision includes: 1) the Statement of Basis, 2) the public comments received on the interim action and EPA's response, 3) the Administrative Order on Consent that required GM to remediate the Facility, 4) all work plans and reports relating to the cleanup of the Facility including the RCRA Facility Investigation and the Corrective Measures Proposal, and 5) all relevant correspondence and reports from or submitted to EPA relating to the contamination at the Facility.

DECLARATION

Based on the information in this Final Decision/Response to Comments and the Administrative Record compiled for this corrective action at the Southend of the Buick City Facility (former General Motors North American Operations Facility) in Flint, Michigan, EPA has determined that the selected remedies for the Southend of the Buick City Facility is appropriate and is protective of human health and the environment.

Margaret M. Guerierro, Director
Land and Chemicals Division
U. S. Environmental Protection Agency

May 13, 2010
Date