UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STATEMENT OF BASIS FOR GM BEDFORD PLANT - EAST PLANT AREA
INTERIM MEASURE
BEDFORD, INDIANA
U.S. EPA ID# IND 006 036 099

Introduction

General Motors Corporation (GM) is undertaking Resource Conservation and Recovery Act (RCRA) Corrective Action at the GM Powertrain - Bedford Plant (site) in Bedford, Lawrence County, Indiana under a Performance Based Agreement with U.S. EPA Region V, signed on March 20, 2001 and amended on October 1, 2002. This Statement of Basis presents information on the Interim Measures work at the East Plant Area of the site (GM property east of GM Drive). The remainder of the site west of GM Drive continues to undergo investigation and will be addressed at a later date.

The U.S. EPA and the Indiana Department of Environmental Management (IDEM) believe that the Interim Measures work performed at the East Plant Area will become the Final Remedy for that portion of the site. The U.S. EPA and IDEM agree that the components of the Interim Measure are necessary and acceptable and wish to provide the community the opportunity to comment on the proposed work. Interim Measures should, to the extent practical, be consistent with anticipated final remedies.

Background

The East Plant Area of the GM Powertrain site is an area where GM historically managed their wastes. There are 10 Areas of Interest (AOIs) within the East Plant Area ranging from large material disposal/landfill areas to small areas where a release of wastewater treatment plant filter cake occurred. The area is approximately 30 acres in size.

GM conducted investigations of soil and groundwater throughout the East Plant Area. Polychlorinated Biphenyls (PCBs) were discovered to be the primary contaminant present in soils and groundwater. The three primary sources of PCB contamination are at the Former North Disposal Area (AOI-4), Former South Lagoons and Outfall 002 Area (AOI-8), and the Former Sludge Disposal and Fire Training Area (AOI-6).

Environmental Problem

Investigations at the East Plant Area have identified PCB contamination of soils and groundwater. Areas where PCB oils/sludges were actively managed such as AOI-6 and AOI-8 show the highest levels of contamination ranging up to 23,800 parts per million (ppm). One part per million can be thought of as one part out of one million parts. For example, if you cut a wooden log into a million pieces, then each piece would represent a millionth of the total log, or one part per million of the original wooden log.

Groundwater contamination exists above the Maximum Contaminant Levels (the highest level of a contaminant that is allowed in drinking water) for PCBs. This groundwater is not used for Bedford's drinking water. PCB oils are trapped in the fractured bedrock and continue to contribute to groundwater contamination. Currently available technology is unable to actively cleanup PCBs trapped in a fractured rock. PCBs are stuck in the rock cracks and will continue to be slowly released from the bedrock into groundwater for many years.

Primary risks to human health and the environment posed by this site are exposure risks to PCB contaminated soil and/or contaminated groundwater/surface water. The degree of risk depends on the frequency and length of exposure to contamination. Exposure risks can be eliminated if there are no complete pathways to human receptors. The groundwater at the site surfaces in nearby springs. The springs feed the Bailey's Branch and Pleasant Run creek systems. Currently, GM has installed a series of spring/seep collection systems at the perimeter of the East Plant Area to collect and treat impacted water. The creek systems are currently undergoing soil and sediment cleanup.

Summary of Interim Measures Alternatives

Because PCB contamination is spread throughout the East Plant Area, it is practical to consider the entire 30 acre area when evaluating remedial alternatives.

Prior to the development of a list of alternatives for the East Plant Area, GM screened potentially applicable PCB soil treatment technologies. Generally, most of the soil treatment technologies (e.g., bioremediation, soil flushing/solvent flushing, vitrification, incineration) were eliminated from consideration because they are either ineffective for PCBs or present implementability issues which would be both time consuming due to construction (including treatability testing, etc.), and/or be cost prohibitive.

GM then evaluated multiple alternatives for the East Plant Area (listed below):

1) No action (continued seep/spring monitoring)
2) Institutional Controls and Monitoring
3) #2 plus a perimeter groundwater collection trench and an East Plant Area cover system
4a) #3 plus excavation of > 50 part per million (ppm) PCB material with off-site disposal; AOI-8 groundwater source removal system
4b) Same as 4a but excavation of > 500 ppm PCB material with off-site disposal
4c) Same as 4a but excavation of >1,500 ppm PCB material with off-site disposal
4d) Same as 4a but excavation of > 50 ppm PCB material to a depth of 10 feet only
4e) Same as 4b but excavation of > 500 ppm PCB material to a depth of 10 feet only
4f) Same as 4c but excavation of > 1,500 ppm PCB material to a depth of 10 feet only
5a) Same as 4a but all > 50 ppm PCB material placed in on-site vault
5b) Same as 4b but all > 500 ppm PCB material placed in on-site vault
5c) Same as 4c but all > 1,500 PCB material placed in on-site vault
6a) Same as 4a but > 50 ppm PCB material solidified in place
6b) Same as 4b but all > 500 ppm PCB material solidified in place
6c) Same as 4c but all > 1,500 ppm PCB material solidified in place
7a) Same as 4a but PCB material > 500 ppm disposed of off-site with in place solidification of material between 50 and 500 ppm
7b) Same as 4b but PCB material > 1,500 ppm disposed of off-site with in place solidification of material between 500 and 1,500 ppm
8a) Same as 7a but > 500 ppm PCB material placed in on-site vault
8b) Same as 7b but > 1,500 ppm PCB material placed in on-site vault
9a) Same as 5a but > 1,500 ppm PCB material disposed of off-site
9b) Same as 5b but > 1,500 ppm PCB material disposed of off-site

The U.S. EPA and IDEM have evaluated the alternatives versus the U.S. EPA Performance Standards and Balancing Criteria. The Performance Standards are: 1) Protection of Human Health and the Environment, 2) Achieving Media Cleanup Objectives, and 3) Remediating the Source of Releases. The Balancing Criteria are: 1) Long-Term Effectiveness, 2) Reduction of Toxicity, Mobility, Volume, 3) Short-Term Effectiveness, 4) Implementability, 5) Cost, 6) Community Acceptance, and 7) State Acceptance. Additional information on these Performance Standards and Balancing Criteria can be found in the enclosed Fact Sheet. Additional detailed information on the evaluated alternatives can be found in the *Interim Measure Alternatives Review Report – East Plant Area GM Powertrain, Bedford, IN* document available at the information repositories noted at the end of this Statement of Basis.

At a minimum for any remedial option at the East Plant Area, the U.S. EPA would require GM institute Institutional Controls, a perimeter groundwater collection trench, a cap system over the entire area, and long term operation, maintenance, and monitoring. These components are included in Alternatives 3 to 9b. Alternatives 1 and 2 are not sufficiently protective and were eliminated from further consideration. Alternative 3 does not provide for contaminated soil removal and was eliminated from further consideration.

Evaluation and Selection of Proposed Interim Measure

The in-situ solidification alternatives (6a, 6b, 6c, 7a, 7b, 8a) were eliminated from consideration due to implementability issues. In-situ solidification would be difficult to implement in the East Plant Area due to the mixed nature of the buried materials. In-situ solidification would require the injection and mixture of large amounts of flowable concrete into the ground via large augers. There are buried metal/construction debris that would make it difficult to get a uniform mixture of concrete and soil throughout the East Plant Area and the debris could complicate this work by damaging the injection equipment. Solidification would also result in a large solid mass of material up to 40 feet thick in places (e.g. solid concrete block) throughout the East Plant Area. This would present difficulty should the plant require access to underground utilities or structures for maintenance purposes. Solidification may be appropriate at certain limited locations within the East Plant Area and may be used in some instances, but it is not feasible for use as a large, standalone remedy in this area.

50 ppm is a U.S. EPA Toxic Substances Control Act (TSCA) level that, in certain situations, is allowed to remain in place at industrial sites with appropriate restrictions (e.g. fencing and signs at minimum). Removal of soils to 50 ppm to the top of bedrock will remove more impacted soils (and PCB mass) than the alternatives which evaluated removal of 500 ppm or 1500 ppm to bedrock or to a 10 ft depth only. This eliminates Alternatives 4b, 4c, 4d, 4e, 4f, 5b, 5c, 8b, and 9b.

Construction of an on-site engineered vault to contain greater than 50 ppm East Plant Area excavated soils (Alternative 5a) provides short-term effectiveness, implementability, and cost advantages over off-site shipment to a landfill of a large volume of material (Alternatives 4a and 9a). These three alternatives achieve the required performance standards and both are long-term effective. While off-site removal would result in volume reduction, on-site vault construction would significantly reduce off-site trucking issues (implementability, short-term effectiveness, cost). This eliminates Alternatives 4a and 9a.

The U.S. EPA and IDEM agree that the Interim Measure that best achieves the performance standards and balancing criteria is Alternative 5a which includes the following components:

- **Institutional Controls**

  Institutional controls will be implemented to ensure that the site remains as industrial use only. These controls will ensure that any future excavations into the area will require proper health and safety precautions and, should future excavation of subsurface soil from the East Plant Area occur, soil will be managed in accordance with applicable waste disposal regulations. The controls will prevent the installation or use of drinking water wells within the East Plant Area.

- **>50 ppm PCB contaminated soil removal and internment in an on-site landfill vault**

  This involves the removal of impacted soils within the East Plant Area which are in excess of 50 ppm. This is approximately 110,000 cubic yards of material (or approximately 6,160 truck loads).

  An engineered landfill vault designed to meet TSCA and RCRA Subtitle C Hazardous Waste Landfill standards will be built at the East Plant Area to accept the > 50 ppm excavated materials. This landfill will contain the materials within a vault that includes a double liner, leachate collection and detection system, and an impermeable cap. This will prevent contact with contaminated materials and prevent continued contribution to groundwater contamination at the site.

- **Installation of a perimeter groundwater trench collection system**

  The perimeter groundwater trench collection system will be installed around the downgradient side (north and east) of the East Plant Area to prevent contaminated groundwater migration away from the area. The PCB containing hydraulic fluid that was used at this site is part of a class of compounds known as Dense Non-Aqueous Phase Liquids (DNAPL). DNAPLs are liquids that are heavier than and do not mix with water. When DNAPLs enter fractured bedrock they take on two forms: residual and free phase. Free phase DNAPL can exist as pools of liquid (e.g. PCB oil) on the surface of solid rock or in a large fracture. Residual DNAPLs are those remaining in the pore spaces of the rock or within small fractures. Residual DNAPLs are held in place by capillary forces in the pores and fractures of the rock and are generally not capable of moving or being pushed by normal groundwater flow. Because currently available technology is unable to actively and effectively remediate PCBs trapped in a fractured rock, a containment system must be installed. This trench system will be installed into the competent bedrock (i.e. the Salem Limestone or “Bedford” Limestone that is used as quarry stone) below the highly fractured and contaminated shallow bedrock aquifer to intercept

groundwater and oil. The trench will be lined with an impermeable heavy duty plastic liner on the bottom and downgradient side to prevent migration beyond the trench. A perforated pipe and gravel will be installed in the trench to convey captured groundwater or oil to a newly constructed on-site water treatment facility prior to discharge.

- **Installation of a groundwater/oil source collection system**

  A groundwater source collection system will be installed in the AOI-8 area. This area was the location of the former wastewater lagoons and is expected to contain the greatest amount of PCB oil trapped in fractured bedrock. Although it is very difficult to remove PCB oils trapped in a rock matrix, the groundwater source collection system will attempt to extract as much free phase oil as possible in this source area. Systems under evaluation include: a gravity collection trench similar to the perimeter collection trench, traditional extraction wells, and multi-phase (groundwater/oil) extraction.

- **Installation of a cover system over the entire East Plant Area**

  A low permeability cover/cap system will be installed over almost the entire East Plant Area. This cap system will control soil erosion, prevent direct contact with remaining contaminated soil materials, and reduce rainwater infiltration into remaining contaminated soil materials. Some active areas within the East Plant Area such as the parking lot and the Zipp Truck Lot will be covered with an asphalt or concrete cap. The cover system will include a contour/drainage layer to control stormwater runoff, a barrier layer to prevent water infiltration/contact with contaminated soils, and a grading layer to provide proper surface contouring to optimize and control runoff.

- **Placement of < 50 ppm PCB contaminated soil from the CERCLA removal action as backfill/grading fill for the site and cover system**

  A significant volume of backfill material will be required for the areas on site where > 50 ppm material will be excavated. Soil material will also be required as grading material beneath the East Plant Area cover/cap to optimize contouring and stormwater runoff control. The removal actions taking place in the nearby creek system, such as within Bailey's Branch and Pleasant Run creek, will generate a large amount of soil impacted with low-levels of PCB (< 50 ppm). Approximately 400,000 cubic yards of this soil may be generated. This soil will be tested to ensure it is below 50 ppm prior to being placed at the site for backfill or grading.

- **Long-term operation, maintenance, and monitoring**

  This would include long-term management of the entire system including periodic inspection of the cover systems and landfill, ongoing maintenance and monitoring of the perimeter groundwater collection trench and groundwater/stormwater collection and treatment system. GM will maintain financial assurance to ensure funds are available to maintain the system. GM will monitor the creek system to ensure PCBs are not recontaminating the off-site area.

The U.S. EPA and IDEM believe that these components meet the performance standards of protection of human health and the environment, achieving media cleanup objectives, and remediating the sources of releases. Exposures to contaminated soils and groundwater will be prevented via capping and containment of impacted materials. Industrial media cleanup objectives and source remediation will be met by removal of soil materials exceeding 50 ppm PCB in direct contact with the environment and the installation of a groundwater/oil collection system in the AOI-8 area.

Public Participation

GM has held quarterly public meetings on the on-site and off-site aspects of the project and will continue to do so. Because the U.S. EPA and IDEM believe these Interim Measures will become the Final Remedy for the East Plant Area, we wish to solicit input from the community on this proposal. A 45-day public comment period will run from May 31st until July 14, 2005. Additional information on the evaluation of alternatives for the East Plant Area can be found in the *Interim Measure Alternatives Review Report - East Plant Area GM Powertrain, Bedford, IN* dated April 2005.

This document and other additional information can be found at:

Bedford Public Library	Information Center
1323 K Street	GM Powertrain Lobby
	105 GM Drive (By appointment only)
	1-(866) 223-0856

The Indiana Department of Environmental Management
100 N. Senate Ave.
Indianapolis, IN
(317) 233-1522

United States Environmental Protection Agency - Region 5
77 West Jackson Boulevard (DW-8J)
Chicago, IL 60604
(312) 886-7890
Between 8:00 a.m. and 4:00 p.m. (Monday - Friday excluding Federal holidays)

Or on the internet at:

www.bedfordpowertraincorrectiveaction.com/docrepository

Written comments received will be summarized and responses provided to all persons on the facility mailing list. Written comments should be directed no later than July 14, 2005 to:

Mr. Peter Ramanauskas
United States Environmental Protection Agency - Region 5
77 West Jackson Boulevard (DW-8J)
Chicago, IL 60604

Or you can submit written comments via the internet at:

www.epa.gov/region5/sites/gmbedford/comments.htm

Written comments concerning this proposal should include the name and address of the writer and the supporting relevant facts upon which the comments are based. Written comments must be postmarked by the end of the comment period.

Any interested person may request a public meeting or hearing. The request must be in writing and state the nature of the issues to be raised. The Administrator shall hold a public meeting or hearing whenever he finds, on the basis of requests, a significant degree of public interest. Written requests should be directed to Peter Ramanauskas of the U.S. EPA at the above address.

FREQUENTLY ASKED QUESTIONS

Q: Doesn't GM need to get permits for this work?

A: GM has been working with a multitude of U.S. EPA and IDEM staff from different programs to secure the necessary reviews and approvals for various stages of work being done on and off-site. This holds true for the work being proposed under Interim Measures (IM) at the East Plant Area. While the U.S. EPA and IDEM agree with the components of the IM, the detailed designs of the individual components will undergo review and approval. The agencies believe that work done under this IM will likely become the Final Remedy for the East Plant Area and thus wish to provide an opportunity for community feedback prior to the Final Remedy decision for the entire GM Powertrain site.

Q: Does U.S. EPA support the construction of a PCB landfill in Bedford?

A: The East Plant Area at the GM site contains many areas where debris and PCB contaminated materials were used as fill and dumped/buried directly on the ground surface. The current situation at the site allows for direct contact of contaminated soil materials with the underlying bedrock and groundwater system. The construction of an on-site engineered landfill vault to contain these materials will separate the most highly contaminated soil materials from contact and continued contamination of the bedrock/groundwater system. The containment of these materials in an on-site landfill vault is protective of human health and the environment in that it prevents direct contact between human receptors and the contaminated materials and provides containment to prevent further infiltration into the bedrock/groundwater system. The landfill vault will meet Resource Conservation and Recovery Act (RCRA) Subtitle C Hazardous Waste Landfill design requirements which meet or exceed the design requirements for PCB landfills under the Toxic Substances Control Act (TSCA). The landfill design will be reviewed and approved by the U.S. EPA and IDEM TSCA programs which specifically regulate PCB waste materials.

Q: Out of the alternatives GM presented, what would U.S. EPA recommend as a solution?

A: The U.S. EPA and IDEM have reviewed the alternatives presented by GM for the East Plant Area and agree that the components of the proposed Interim Measures Alternative 5A are protective of human health and the environment.

Q: If cost were not an issue, what alternative would U.S. EPA recommend?

A: This scenario is not possible as U.S. EPA must consider the cost of various alternatives presented by any facility when evaluating and selecting a remedy. Cost evaluation is one of the balancing criteria that is used when selecting between multiple remedy alternatives. Alternatives range in cost from $11,913,000 (Alternative 1) to $78,783,000 (Alternative 4a). The cost of Alternative 5A is estimated at $40,797,000.

Q: Will the landfill vault be designed to withstand earthquakes?

A: U.S. EPA does not typically evaluate landfill designs for earthquake resistance. Many of the components of this remedy, such as fill soil and clay, can withstand limited amounts of vibration and movement while maintaining their function. Should an earthquake affect the integrity of any of the components, GM will administer appropriate repairs.

Q: How is this project being funded? Who will be responsible for long-term operation and management?

A: General Motors is funding the entire project and will be responsible for providing long-term operation and management (O&M) of the East Plant Area remedy components. The U.S. EPA and GM will sign an order to ensure that GM maintains the systems in perpetuity. GM must maintain financial assurance for the O&M to ensure that funds will be available to maintain and operate the systems.

Q: How will wet soils be managed prior to placement at the East Plant Area?

A: Wet soils will be dewatered, if needed, prior to use at the East Plant Area. Dewatering can be done through the addition of a drying agent such as bed ash (lime/cement) or by letting soils naturally dry prior to use. GM is currently using bed ash to dry soils from the creek removal activities when needed.

Q: How can the less than 50 ppm material be used to construct the cover system and still be safe?

A: The 50 ppm level is a U.S. EPA Toxic Substances Control Act (TSCA) level that, in certain situations, is allowed to remain in place at industrial sites with appropriate restrictions (e.g. fencing and signs at minimum). In this case, the < 50 ppm PCB contaminated soil will be placed under the final cover system for the East Plant Area. The < 50 ppm soils will be composed of excavated soils that range from above 1.8 ppm to 50 ppm. Due to the large volume of these soils, once they become excavated and mixed due to routine handling, the average concentration is expected to be much less than 50 ppm. These soils will be

tested and confirmed to be less than 50 ppm prior to placement at the plant.

Once the cover is in place, there will be no complete route of exposure to people. The cover will consist of multiple layers including a very low permeability geosynthetic clay layer. This layer will eliminate most of the storm water infiltration that now takes place and prevent migration of water and contaminants from the soil to the shallow bedrock aquifer system. There will be dust suppression mechanisms in place, such as water misting, to control dusts while the work proceeds. Real time dust monitoring will also be conducted to ensure airborne dust and PCB levels remain at safe levels.

Q: How does moving the less than 50 ppm soil to the plant resolve local trucking issues?

A: Moving the < 50 ppm material to the plant site will reduce the truck traffic to the general Bedford community by reducing the number of trucks hauling material long distances off-site (approximately 21,000 fewer truck loads). This will also eliminate a large number of truckloads of fill material that would have to be hauled in to the site for backfilling of excavations and grading. It will not immediately reduce trucking impacts to the areas north of the plant where ongoing creek excavation work is taking place.

Q: What was the schedule for completing the project and how will this proposal save time?

A: The U.S. EPA, IDEM, and GM would like to conclude the project as quickly as possible. The schedules for the project sometimes get delayed due to new discoveries or complications as work proceeds. This Interim Measure in the East Plant Area is anticipated to take up to two years to perform, but will allow a variety of related work to proceed concurrently, thus reducing the time to project completion.

Q: If you put the soil in the vault, is there a concern that the soil will consolidate over time as it dewaters and create subsidence of the vault cover?

A: There will be procedures in place to ensure that this concern is minimized. When soil will be placed in the vault, it will also undergo a compaction step to pack the soil tightly and minimize settling potential. The cover system will be routinely inspected to ensure any damage caused by subsidence is repaired.

Q: How are you protecting against animal burrowing and damage to the cover?

A: The cover system is designed to be 2.5 feet thick. This thickness, combined with regular inspection and maintenance, will prevent burrowing animals from penetrating into contaminated materials. In

addition, any damage to the upper layers of the cover system caused by burrowing animals will be repaired.

Q: How will you stop oils or contaminated water from going back into the rock either below or beyond the perimeter trench system?

A: The perimeter groundwater trench system will be constructed so that the bottom is in the bedrock that is most competent (i.e. the Salem Limestone or "Bedford" Limestone that is used as quarry stone). The bottom of the trench and the downgradient wall of the trench (the side farthest away from the plant) will be lined with a layer of chemical resistant plastic so that water cannot continue to migrate into the rock below or beyond the perimeter trench system. In addition, the cover system that will be placed over the entire East Plant Area will significantly reduce stormwater infiltration into the soil and bedrock. It is expected that this will help reduce the amount of water entering the perimeter groundwater collection trench.

Q: Does the perimeter trench system with the perforated pipe at the bottom behave as a French drain?

A: Yes, the perimeter trench system will operate in the same way as a French drain. The system will consist of a gravel filled trench with a perforated pipe in the bottom of the trench. Water entering the perimeter trench system will flow down through the gravel and into the perforated pipe. The pipe allows this water to be drained from the trench more quickly than a trench that is filled only with gravel (French Drain). The pipe will be sloped to drain water by gravity to collection points (wet wells). The collected water will then be pumped from the wet wells to a water treatment plant.

Q: What is the risk of volatilization from PCBs in the soil?

A: PCBs generally prefer remaining in soil versus moving to air or water. PCBs are made up of 209 different compounds or "congeners" formed by the addition of Chlorine (Cl_2) to Biphenyl ($C_{12}H_{10}$), which is a dual-ring structure comprising two 6-carbon Benzene rings linked by a single carbon-carbon bond. The PCBs with fewer chlorine atoms on the biphenyl rings would tend to volatilize more easily than more highly chlorinated PCBs. However, these PCBs have been in the soils for some time and, as a result, volatilization should be low. Air monitoring is currently in place at the excavations and will be in place at the plant property to ensure airborne dust and PCB levels remain at safe levels.

Q: What are the cancer and non-cancer risks?

A: Cancer and non-cancer risks from PCBs are dependent on the type and duration of exposure. Risks to the local residential population from the East Plant Area IM can be separated into long-term and short-term risks. There will be no long-term exposure risks to human health from the East Plant Area IM because the contaminated soils will be capped and contained in the vault system or under the East Plant Area cap system thereby eliminating a complete pathway between contamination and human or environmental receptors. The groundwater perimeter trench system will capture contaminated groundwater at the facility boundary. The risk of short-term exposure to the general public during construction activities would be low as residents and plant workers will not be exposed to the higher levels of contamination on the plant property while the work is ongoing (no access or direct contact with contaminated materials will be allowed). Workers performing the remedy construction who could be exposed to the materials will have proper personal protection. Airborne levels of PCBs will be controlled through dust suppression techniques and an air monitoring program will be in place to ensure PCB levels in air remain at safe levels.

Q: Why remove the < 50 ppm material if you are just relocating it to the plant site?

A: The < 50 ppm PCB contaminated soils must be removed from the impacted off-site areas because they are present at levels that exceed the established off-site cleanup levels for the protection of human health (residential property) and ecological receptors. Leaving the < 50 ppm material in place would allow the soils to remain in an uncontrolled setting that would continue to provide a source of PCB exposure to human and ecological receptors. Moving the material to the plant property and placing it under an engineered cover system will eliminate the exposure route of this material to people and the environment.

Q: Will the cover system have an exposed plastic cap like the one in Bloomington or will it have a natural looking soil/grass cap?

A: The East Plant Area cover system will have a natural grass surface in place. The multiple layers of the cover will include (from bottom to top): the < 50 ppm grading fill layer, 12-inch clean clay layer, geosynthetic clay layer, geosynthetic drainage layer, 12-inch clean common fill, and a 6-inch clean topsoil layer which will be seeded with grass.

Q: How long will it take to bring in the grading soil?

A: It is expected that grading soil will be brought in over a period of approximately 9-12 months. This schedule will depend on the progress of the Removal Action activities proceeding along the creeks.

Q: Will the new water treatment system only treat water from the perimeter collection trench? Will the trench water be treated?

A: GM is constructing a new on-site water treatment system to handle the water collected in the perimeter trench system and the groundwater/oil source collection system at AOI-8. This treatment system will include an oil/water separator and carbon filters to ensure that oils and residual PCBs are removed prior to discharge. This treatment system may also be used for emergency treatment of water from GM's storm water retention pond to prevent overflows of untreated water during high rain events. The water treatment system will be permitted by the IDEM.

Q: Is the area where the new vault will be constructed clean?

A: The proposed location for the vault is the location of the former stormwater lagoon (AOI-7). This lagoon was excavated and backfilled with clean clay in 1987/88. Recent soil borings taken in this area have not revealed PCB contamination. In order to construct the vault, this area will need to be excavated. The clean material may be used to backfill/regrade the site. The groundwater beneath the East Plant Area has been contaminated with PCBs and will be captured by the perimeter groundwater trench.

Q: How did soil in AOI-8 get recontaminated?

A: AOI-8 was the location of the former waste water treatment plant lagoon system. This was a series of five lagoons that managed PCB containing hydraulic fluid from the plant. Three of the lagoons were located west of GM Drive and two were located east of GM Drive. The three lagoons west of GM Drive were excavated and the new wastewater treatment plant primary clarifiers were built in their place. The two lagoons east of GM drive were also excavated to bedrock and backfilled with clean fill. Because the lagoons were unlined and the PCB containing hydraulic fluid was a heavy oil which sank to the bottom of the lagoons, it was able to enter the fractured bedrock and groundwater system. This oil remains in the rock today and as the groundwater levels fluctuate, the free phase PCB oil remaining in the rock can rise up out of the rock and smear the lower portions of the backfilled soil causing recontamination. Because this area is considered one of the main sources of PCB oils, GM will install an oil/groundwater removal system to attempt to remove as much free phase oil and contaminated groundwater from the area as possible. Although it is very difficult to remove PCB oils trapped in a rock matrix, the groundwater source collection system will attempt to extract as much free phase oil as possible in this source area. Systems under evaluation include: a gravity collection trench similar to the perimeter collection trench, traditional extraction wells, and multi-phase (groundwater/oil) extraction.