

**FINAL DECISION AND
RESPONSE TO COMMENTS**

for

**Delphi Corporation
Vandalia, Ohio**

**EPA I.D. Nos. OHD 052 151 701
and OHD 000 048 454**



February 2007

FINAL DECISION

Delphi Corporation

Vandalia, Ohio

OHD 052 151 701 and OHD 000 048 454

Introduction

This Final Decision and Response to Comments is presented by the United States Environmental Protection Agency (EPA) for the Delphi Corporation (Delphi) facility located in Vandalia, Ohio. It consists of the Final Decision, EPA Response to Comments (Attachment I), updated Index to Administrative Record (Attachment II), previously issued Statement of Basis (Attachment III), and Corrective Measures Proposal (CMP) Scope of Work (Attachment IV).

The Final Decision selects the final remedy to be implemented at the Delphi facility based on the Administrative Record and public comments. The Statement of Basis provides EPA's proposed remedy which was available for public review and comment from November 6, 2006 through December 15, 2006. A public meeting was held at the Vandalia Senior Center on November 16, 2006, to present the proposed remedy and take oral comments. EPA Response to Comments addresses substantive comments received during the public comment period.

Assessment of the Facility

The response action documented in this Final Decision is necessary to protect human health and the environment.

Selected Remedy

EPA selects the following remedial components as the remedy to address contaminated groundwater, soil, and indoor air at the Delphi facility. The remedy selected in this Final Decision is generally consistent with the remedy proposed in the Statement of Basis.

- Operate and maintain the installed bedrock groundwater migration control system (GMCS) to capture on-site contaminated groundwater

in the Sugar Rock aquifer exceeding cleanup levels. The bedrock GCMS must be operated in a manner that effectively intercepts and captures all contaminated groundwater in the Sugar Rock aquifer on-site and eliminates off-site migration. Groundwater will be treated using the installed air stripper and treated groundwater will be discharged to East Creek according to Ohio permit requirements.

Submit a draft final O&M plan for the bedrock GMCS to EPA for review and approval within 60 days of the Final Decision. The draft final O&M Plan must consider the historical performance of the GCMS, including problems encountered and the apparent capture zone information provided in the quarterly progress reports. Implement the approved final O&M Plan, incorporating EPA comments.

- Operate and maintain the installed overburden groundwater migration control system (GMCS) to capture on-site contaminated groundwater in the water table and sand units exceeding cleanup levels. The overburden GMCS must be operated in a manner that effectively eliminates migration of contaminated groundwater into North Creek and prevents expansion of the defined area of on-site groundwater contamination in the overburden. Groundwater will be conveyed to the bedrock GMCS treatment plant, treated using the installed air stripper, and treated groundwater will be discharged to East Creek according to Ohio permit requirements.

Submit a draft O&M plan for the overburden GMCS to EPA for review and approval within 60 days of the Final Decision. The draft O&M Plan must consider the historical performance of the GCMS, including problems encountered. Implement the approved final O&M plan, incorporating EPA comments.

- Install a new sand groundwater migration control system (GMCS), consisting of a recovery well in the sand unit in the north-central portion of the facility along Northwoods Boulevard, to capture on-site contaminated groundwater in the sand unit exceeding cleanup levels. The sand GMCS must be operated in a manner that effectively eliminates migration of contaminated groundwater into North Creek. Groundwater will be conveyed to the bedrock GMCS treatment plant, treated using the installed air stripper, and treated groundwater will

be discharged to East Creek according to Ohio permit requirements.

Submit a final construction report and draft O&M plan for the sand GMCS to EPA for review and approval within 60 days of the Final Decision. Implement the approved final O&M plan, incorporating EPA comments.

- Continue to operate the heating, ventilation, and air conditioning (HVAC) system in on-site buildings as necessary to protect workers from unacceptable risks posed by the migration of contaminated soil vapor to indoor air.

Submit a draft O&M plan for the HVAC system to EPA for review and approval within 60 days of the Final Decision. Implement the approved final O&M plan, incorporating EPA comments.

- Submit a work plan to EPA for review and approval within 30 days of the Final Decision to assess the time needed to meet cleanup levels off-site in the Sugar Rock aquifer. The work plan must include the method of modeling to be used to estimate cleanup time frames and schedule for submitting the results. Implement the approved work plan, incorporating EPA comments.
- Submit a long-term groundwater, surface water, and indoor air monitoring program to EPA for review and approval within 45 days of the Final Decision. Implement the approved long-term monitoring program, incorporating EPA comments.
- Conduct periodic technical reviews of data from the long-term monitoring program to evaluate site conditions. Assess any potential unacceptable risk posed to on-site and off-site receptors. Assess whether alternative technologies are necessary to expedite groundwater cleanup in the off-site Sugar Rock aquifer. Submit the periodic technical review as an assessment report to EPA for review and comment every three years, starting from the EPA approval date of the long-term monitoring program.

- Municipal and township ordinances to restrict future groundwater use are necessary to protect human health and the environment. If municipal and township ordinances are not enacted within six months of the Final Decision, Delphi must submit a work plan to EPA for review and approval within eight months of the Final Decision to evaluate and select an alternative remedy to address off-site groundwater contamination in the Sugar Rock aquifer exceeding cleanup levels. The work plan must be consistent with the attached CMP Scope of Work (Attachment IV). Implement the approved work plan, incorporating EPA comments.
- Implement Ohio environmental covenants to restrict on-site groundwater use, limit on-site use to industrial/commercial activities, and impose controls on excavation procedures for construction workers and future redevelopment workers at the Delphi facility. The covenants must be recorded on the facility deed within 60 days of the Final Decision and record documentation provided to EPA.
- Obtain financial assurance for completion of the selected remedy, including operation and maintenance (O&M), within 30 days of the Final Decision. The total estimated cost of the selected remedy is \$5,389,000 over the expected lifetime of 20 years. Financial assurance of \$5,389,000 must be provided in one of the forms permitted under 40 C.F.R. § 264.145 (modified to replace the terms “post-closure” and “closure” with “corrective action” and referencing the Consent Order, as approved by EPA). At each three year period (coinciding with the assessment report), Delphi must provide an updated cost estimate to EPA for review and approval. Upon EPA approval of the updated cost estimate, Delphi may modify the financial assurance if less than \$5,389,000. Delphi must modify and obtain the required financial assurance within 30 days of EPA approval of the cost estimate if greater than \$5,389,000. If Delphi is required to submit a work plan to evaluate and select an alternative remedy to address off-site groundwater contamination in the Sugar Rock aquifer exceeding cleanup levels, the work plan must provide for the development and presentation of costs for the alternative remedy. Within 30 days of EPA approval of the alternative remedy, Delphi must obtain financial assurance for completing, operating, and

maintaining the alternative remedy.

- Submit semi-annual progress reports to EPA detailing work performed to date, data collected, problems encountered, project schedule, and percent project completed. Include updated trend analyses for VOC contamination in the Sugar Rock aquifer. Progress reports are due by the 15th day of the month following each six month period.

The final remedy selected by EPA provides the best balance among the alternatives with respect to the evaluation criteria described in the Statement of Basis, including:

- Overall Protection of Human Health;
- Overall Protection of Environment;
- Attainment of Media Cleanup Standards;
- Source Control;
- Compliance with Applicable Waste Management Standards;
- Long-term Reliability;
- Short-term and Long-term Effectiveness;
- Reduction in Waste Toxicity, Mobility, and Volume;
- Implementability; and
- Cost.

Public Participation Activities and Comments

A public comment period was held from November 6, 2006 through December 15, 2006. Written comments were submitted by two parties, Donald D. Anderson, Esq. of McGuireWoods LLP representing CSX Realty

Development, LLC, and W. John Ridd, Project Manager for Delphi. A total of thirty-two (32) written comments are presented and responded to in Attachment I.

Administrative Record

The Administrative Record for the final remedy is available at the Vandalia Branch Library, 500 S. Dixie Drive, Vandalia, Ohio and the 7th Floor Records Center at EPA Region 5, 77 W. Jackson Blvd., Chicago, IL. Attachment II identifies the documents contained within the Administrative Record.

Future Actions

The Administrative Order on Consent requires Delphi to implement the selected remedy according to the schedule in the Final Decision. EPA will update the Administrative Record with new information (e.g., correspondence, plans, reports) during implementation of the selected remedy.

Declarations

Based on the Administrative Record compiled for this corrective action, EPA has determined that the selected remedy for the Delphi facility is appropriate and protective of human health and the environment.

Margaret M. Guerriero, Director
Waste, Pesticides & Toxics Division
EPA Region 5

Date

Attachments (4)

IN THE MATTER OF:

Delphi Corporation

Vandalia, Ohio

EPA I.D. Nos. OHD 052 151 701 and OHD 000 048 454

ATTACHMENT I

EPA Response to Comments

ATTACHMENT I

EPA RESPONSE TO COMMENTS

Overview

The Statement of Basis, containing the proposed remedy for the Delphi facility, was made available for public review and comment from November 6, 2006, through December 15, 2006.

This Response to Comments documents EPA's response to substantive public comments and their effects, if any, on the selection of the final remedy. All comments received by EPA were reviewed and are found in the Administrative Record. Substantive comments are presented and EPA responses provided below.

Community Involvement and Concerns

The main concerns expressed in the written comments were the impacts of the proposed remedy on an adjacent landowner. The comments contributed to the RCRA Corrective Action process by helping to assure that additional remedial alternatives for the Sugar Rock aquifer were considered. As a result, the proposed remedy was modified by EPA to provide flexibility to achieve expedited cleanup of the Sugar Rock aquifer.

Response to Comments

The following narrative summarizes thirty-two (32) written comments on the proposed remedy and EPA's response to each comment. The written comments are presented in the order they were received during the public comment period. Each written comment is numbered and presented in italicized capital type. Comments were provided by:

- CSX Realty Development, LLC (Donald Anderson, McGuireWoods, LLP)
- Delphi Corporation (W. John Ridd, Project Manager)

CSX Realty Development, LLC Comments

22. THE STATEMENT OF BASIS SETS OUT AN UNPRECEDENTED REMEDY. IT RECOGNIZES A GROUNDWATER CONTAMINANT PLUME WITH HIGH LEVELS OF CHLORINATED SOLVENTS BUT PROPOSES WHAT AMOUNTS TO A NO ACTION ALTERNATIVE

A groundwater remedy at the Delphi facility was evaluated by an independent, third-party and presented in the Remediation Systems Evaluation (RSE) report dated June 10, 2003 (see Delphi-036). The RSE Report acknowledged that off-site contamination in the Sugar Rock aquifer was likely to remain above standards for decades due to the relatively slow flushing rate of clean water through the large contaminated area. Technologies such as reinjection of treated water for flushing were considered, but reinjected water would only disperse the contaminants and due to aeration, might reduce the natural reductive dechlorination taking place. Other alternate technologies would be very expensive (these alternatives such as pump-and-treat and enhanced anaerobic bioremediation were also investigated by Delphi) due to the broad area of impact. The RSE report concludes "that an appropriate approach would be to continue operating the groundwater migration control system and maintain institutional controls through the plume area, potentially reviewing various remediation technologies on regular basis, perhaps every five years, to determine if a technology is developed that can practicably achieve aquifer restoration or other site goals."

EPA selected a remedial alternative consistent with the RSE report and EPA policy. EPA's goal is to return usable groundwater to maximum beneficial use wherever practicable and within a time frame that is reasonable given the particular circumstances of the site. The selected remedy at Delphi requires groundwater standards protective of drinking water to be achieved off-site in the Sugar Rock aquifer within a reasonable time frame (approximately 20 years) using a combination of source controls, groundwater migration controls, and monitoring. A necessary component of this remedy is the implementation of municipal and township ordinances to restrict groundwater use. Without these ordinances, the selected remedy is not protective of human health. Therefore, if local groundwater use ordinances are not enacted (within six months of the Final Decision), the selected remedy requires Delphi to re-evaluate an alternative remedy, subject to EPA approval, to address off-site groundwater contamination in the Sugar Rock aquifer exceeding cleanup levels. Additionally, if a review of site monitoring data and groundwater modeling indicates that off-site groundwater will not be cleaned up in a reasonable time frame, an alternative remedy to expedite groundwater cleanup in the off-site Sugar Rock aquifer may become necessary.

23. THE EXTENT OF THE CONTAMINANT PLUME IS MORE APTLY ILLUSTRATED IN FIGURES 5 AND 6 OF THE ATTACHED GEOSYNTEC REPORT. THE CONCENTRATIONS OF TCE ARE AS HIGH AS 37,500 PPB ON CSXR PROPERTY OR 7500 TIMES GREATER THAN THE MCL

The CSXR property boundary is not depicted in Figures 5 and 6 of the attached Geosyntec Report but based on the comment it appears that the high concentrations of TCE on CSXR property are found at groundwater wells MW-411D and MW-412D. These two well locations correlate with the highest concentration of TCE detected off-site by the groundwater monitoring program conducted by Delphi.

Appendix A of the revised RCRA Corrective Measures Proposal (CMP) provides a Mann-Kendall trend analysis for TCE (see Delphi-074).

Both monitoring wells MW-411D and MW-412D show a decreasing trend in TCE concentrations. For monitoring well MW-411D, the highest concentration of TCE is approximately 2,250 ppb from April 2000 through January 2006. More recent TCE concentrations fluctuate between approximately 500 and 1,250 ppb. For monitoring well MW-412D, the highest concentration of TCE is approximately 2,500 ppb from April 2000 through January 2006. More recent TCE concentrations fluctuate between approximately 500 and 1000 ppb. These concentrations are much lower than those depicted in Figures 5 and 6 of the Geosyntec Report and are at most, only 250 times greater than the MCL. The Geosyntec Report is inconsistent with the Administrative Record and Figures 5 and 6 do not accurately depict concentrations of TCE off-site on CSXR property.

24. THE APPROACH PROPOSED TO ACHIEVE COMPLIANCE OF MCLs IN OFFSITE CONTAMINATED AREAS IS UNWARRANTED AND UNJUSTIFIED

The approach to achieve compliance of MCLs in off-site contaminated areas is based on source controls, groundwater migration controls, and monitoring. There is evidence that the source of off-site groundwater contamination has been cut-off by the bedrock groundwater migration control system operating at the Delphi facility since April 27, 2000, and that concentrations of site-related contaminants are statistically decreasing off-site (see Mann-Kendall trend analyses at Delphi-074 and Delphi-080). The time frame for implementation of the final remedy is estimated to be 20 years. To better clarify the predicted time frame for achieving cleanup levels in the off-site Sugar Rock aquifer, the selected remedy requires Delphi to estimate the time frame for cleanup using an appropriate groundwater model. This information will be used as supplemental information to further evaluate the need for an alternative remedy for the off-site Sugar Rock aquifer, especially if local groundwater use ordinances are not enacted.

25. THE IMPOSITION OF INSTITUTIONAL CONTROLS AS PART OF A REMEDY SHOULD OCCUR AMONG EPA, DELPHI, AND THE PROPERTY OWNER

SUBJECT TO THE RESTRICTION, NOT BY UNILATERAL LOCAL ACTION
SOUGHT BY DELPHI AND SANCTIONED BY EPA

The selected remedy requires on-site institutional controls to be implemented by Delphi, the property owner, using State of Ohio environmental covenants (Ohio Revised Code 5301.80 - 5301.92). The covenants to be placed on the property deed are enforceable by EPA. However, these types of on-site controls at the Delphi facility are not applicable for off-site property.

Because there is no Federal mechanism in RCRA allowing EPA to acquire interest in property, EPA typically relies on state or local governments to establish, maintain, and enforce most types of institutional controls. Governmental controls are a category of institutional controls that are usually implemented and enforced by a state or local government and can include zoning restrictions, ordinances, statutes, and building permits (see *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups*. EPA 540-F-00-005. September 2000).

In the case where institutional controls are necessary off-site to protect human health and the environment, EPA relies on local ordinances. There are many examples in the RCRA Corrective Action program where local groundwater use ordinances are enacted, typically by municipalities, to protect human health. EPA is not a party to these local ordinances but does consider them to be an appropriate method to use as a component of a selected remedy where off-site groundwater contamination exists.

26. EPA HAS MADE NO EFFORT TO JUSTIFY ON TECHNICAL OR REGULATORY
POLICY GROUNDS, THE BASIS FOR SELECTING WHAT AMOUNTS TO A
"NO ACTION" ALTERNATIVE FOR CONTAMINATED OFF-SITE
GROUNDWATER

The selected remedy for the delphi facility is consistent with the approach described in the EPA *Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action* (EPA/530/R-01/015, September 2001). Intermediate performance goals are used as a mechanism to prioritize work and measure progress toward achieving long-term goals. EPA recognizes that a phased approach to achieving final cleanup goals is often appropriate for complex groundwater cleanups, like that found at the Delphi facility. Intermediate performance goals have been established as part of the selected remedy to create milestones of environmental progress. In this case, examples of intermediate performance goals being used at the Delphi facility are source control, groundwater migration controls, the enactment of groundwater use ordinances, monitoring and assessment, and groundwater modeling to predict cleanup time frames. Alternative remedies may be necessary if the selected remedy does not achieve

final cleanup goals (e.g., MCLs) in groundwater within a reasonable time frame.

27. THERE IS NO EVIDENTIARY SUPPORT THAT THE LEVELS OF TCE WOULD FALL BELOW THEIR MCL WITHIN 20 YEARS

EPA has added a component to the selected remedy to address this comment. Delphi is required to estimate the time frame for achieving cleanup levels in the off-site Sugar Rock aquifer using an appropriate groundwater model, subject to EPA approval.

28. GEOSYNTEC'S ANALYSIS SHOWS THAT CONTAMINANT LEVELS IN WELLS ON THE NORTHWOODS PROPERTY SHOW NO DOWNWARD TREND OVER TIME

Figures 7 through 12 of the Geosyntec Report provide TCE concentration trends over time for monitoring wells MW-407D, MW-411D, MW-408D, MW-420M, MW-410D, and MW-412D. The report states that although some initial decrease in TCE concentrations were observed in these wells, TCE concentrations since 2002 appear to have leveled off at concentrations 100 to 200 times greater than the MCL.

Mann-Kendall trend analyses performed on these wells and others (see Delphi-074) show that in most cases, TCE concentrations show a decreasing trend with an 80% significance threshold. The decreasing trend is most pronounced in wells located within the capture zone of the bedrock migration control system (i.e., MW-301D, CSX-18D, MW-413D, MW-414D, MW-416D, MW-417D, MW-418D, and MW-420D). There are also highly significant decreasing trends found at wells located further downgradient on or adjacent to CSXR property (i.e., MW-408D, MW-409D, MW-410D, MW-411D, MW-412D, and MW-421D) and further downgradient to the south (i.e., MW-432D, MW-433D, MW-434D, MW-435D, MW-436D, MW-437D, MW-440D, MW-444D, and MW-448D).

For monitoring well MW-407D discussed in the Geosyntec Report, there is no trend evident and for monitoring well, MW-420M, there is a decreasing trend. It appears that monitoring well MW-407D is less influenced and located furthest away from discharge areas in the Sugar Rock resulting from the bedrock migration control system, private wells, and natural springs/seeps.

The Mann-Kendall trend analysis results support the effectiveness of the bedrock migration control system in preventing off-site migration and show that concentrations of TCE in the Sugar Rock are decreasing. Trends will continue to be monitored along with predictive modeling to estimate the time necessary to achieve final cleanup goals.

29. EPA'S SELECTION OF A MONITORING ONLY APPROACH FOR CONTAMINATED GROUNDWATER IS ARBITRARY AND CAPRICIOUS

The proposed remedy is not a monitoring only approach. Groundwater contamination at and from the facility is being addressed in the selected remedy through source controls, groundwater migration controls, institutional controls, contingent remedies, and monitoring. Various alternatives were thoroughly evaluated and all comments that we received have been carefully considered.

30. VERY LITTLE CHARACTERIZATION OF THE SHALLOW GROUNDWATER HAS BEEN PERFORMED. LIMITED DATA LIKELY CREATES A FALSE SENSE THAT THE SHALLOW PLUME IS RESTRICTED TO THE DELPHI PROPERTY. THE CORRECTIVE MEASURES PROPOSAL PRESENTS CONCLUSIONS BASED ON THE ASSUMPTION THAT CONTAMINATED OVERBURDEN GROUNDWATER IS ONLY FOUND ON THE DELPHI SITE AND CONCLUSIVE DATA SUPPORTING THIS ASSUMPTION IS NOT PROVIDED

EPA disagrees that there is very little characterization of the shallow groundwater. Groundwater data for the water table, first sand zone, and second sand zone is provided in Figures 4-21, 4-22, and 4-23 of the RFI Report (see Delphi-061). Data from monitoring wells installed throughout the Delphi facility is available for 70 water table/first sand zone wells, 36 first sand zone wells, and 48 second sand zone wells. In all three zones, groundwater contamination is confined on-site and is confirmed by clean wells at the perimeter of the defined plume. Groundwater contamination is generally restricted to the water table, first sand zone, and second sand zone in the north-central area of the manufacturing buildings near the Northwoods Boulevard entrance and in south-central area of the plant. No contamination has been identified off-site in the shallow groundwater or in the eastern third of the facility bounding Interstate 75.

The extent of groundwater contamination in the shallow groundwater is further defined in the "RCRA Environmental Indicator Determination - CA750 Report, Migration of Contaminated Groundwater Under Control" (see Delphi-054) and EPA's "Documentation of Environmental Indicator Determination (CA750)" (see Delphi-056). Seven water table wells, 16 water table/first sand zone wells, 3 first sand zone wells, and 9 second sand zone wells are currently monitored to ensure that the contaminant plume is stable. The monitoring program has identified some increases in TCE in the second sand zone in the vicinity of Northwoods Boulevard near North Creek. The selected remedy requires Delphi to install a new sand groundwater migration control system, consisting of a recovery well, in this area to control potential off-site migration.

31. THE FINDINGS PRESENTED IN THE CORRECTIVE MEASURES PROPOSAL DO NOT RULE OUT THE POSSIBILITY THAT SHALLOW GROUNDWATER (OVERBURDEN TO TOP OF ROCK) ON THE NORTHWOODS PROPERTY HAS BEEN IMPACTED BY THE CONTAMINANT PLUME ORIGINATING FROM THE DELPHI PROPERTY

EPA disagrees with this comment. Shallow groundwater contamination has been adequately defined and is being monitored as described in EPA's response to comment #9.

Regarding the Top of Rock (deep groundwater), Figure 5 of the CA750 Report (see Delphi-054) identifies the monitoring wells used to identify the extent of contamination in the Top of Rock Zone. The network consists of 25 monitoring wells. Only four wells have groundwater contamination exceeding an MCL and they are all located in the area of known contamination at the Northwoods Boulevard central entrance. Seven wells are currently monitored on-site, with six being downgradient of the identified contamination and one in the contaminated area. No contaminants have been identified in any of the six downgradient Top of Rock Zone monitoring wells as recently as July 20, 2006 (Third Quarter 2006 Progress Report, Delphi-082). This data confirms that the Top of Rock beneath the Northwoods property has not been impacted by the Delphi contaminant plume.

32. THE INTERMEDIATE GROUNDWATER ZONE LOCATED 40-80 FEET BELOW GROUND SURFACE HAS BEEN INADEQUATELY CHARACTERIZED. DATA FROM MONITORING WELL MW-420M SUGGESTS THAT THE PLUME IS NOT DELINEATED BELOW THE NORTHWOODS PROPERTY

Regarding the Top of Rock Zone, see EPA's response to comment #10. Regarding monitoring well MW-420M, the well is screened 60' to 70' in the Upper Brassfield Formation (see Delphi-068). The Upper Brassfield is identified as a hard, slightly weathered pinkish and greenish gray and tan mottled coarse grained Dolostone, with close to moderately spaced horizontal joints. Well MW-420D is screened slightly deeper in the same location from 77' to 92' in the more permeable Lower Brassfield and Belfast Transition Zone (i.e., Sugar Rock). The Belfast Transition Zone is identified as a moderately hard, slightly weathered greenish gray fine-grained Dolostone, with moderately spaced horizontal fractures.

Contaminants identified in well MW-420M appear to be an extension of contamination found in the Sugar Rock since there is only 7' of rock separating the screened interval of well MW-420M and MW-420D. The RFI Report (Delphi-061) discusses that of 43 borings penetrating the Brassfield Formation, only three encountered localized flow zones that justified monitoring of the middle of the Brassfield Formation. They are wells MW-419M, MW-420M, and MW-432M. Water levels in these wells are consistent with the deeper Sugar Rock wells which is strong evidence that the flow zone in the middle of the Brassfield Formation is directly connected to the deeper Sugar Rock. The preferential pathway for off-site migration of TCE is through the Sugar Rock as evident by a typically greater permeability (see Figure 2-1 of RFI Report, Delphi-061) and use as a regional aquifer. The Sugar Rock Zone

is the appropriate zone to monitor in the bedrock for contaminant migration and delineating the plume.

33. ALTHOUGH AN INITIAL DECREASE IN TCE CONCENTRATIONS WAS OBSERVED IN SUGAR ROCK WELLS ON THE NORTHWOODS PROPERTY SOON AFTER THE INTERIM MEASURES WERE IMPLEMENTED, CONCENTRATIONS OF TCE APPEAR TO HAVE LEVELED OFF

See EPA's response to comment # 7.

34. SOURCE AREAS OF DNAPL AND LNAPL ON DELPHI PROPERTY WILL PERSIST AS CONTINUING SOURCES FOR THE DISSOLVED-PHASE PLUME BENEATH THE NORTHWOODS PROPERTY

The dissolved-phase plume beneath the Northwoods property likely occurred through the migration of TCE in the overburden at the Delphi facility via a man-made conduit (i.e., an abandoned test or industrial well) into the Sugar Rock aquifer. While some residual NAPL remains on-site, we do not believe that NAPL continues to migrate into the Sugar Rock aquifer via this man-made conduit. Additionally, the on-site bedrock groundwater migration control system effectively cuts-off residual contamination in the Sugar Rock aquifer and prevents further off-site migration of high levels of residual on-site contamination.

This system is an important component of the selected remedy. A statistical analysis of decreasing trends of TCE and DCE contamination in the off-site Sugar Rock aquifer further support the belief that there are no continuing sources of contamination migrating off-site (see Delphi-074 and Delphi-080). EPA does acknowledge that residual dissolved contamination off-site in the Sugar Rock aquifer will persist for years and the final remedy includes groundwater modeling and possible contingent remedies to address this issue.

35. THREE SEEPS LOCATED APPROXIMATELY 500 FEET EAST OF THE NORTHWOODS PROPERTY LINE REPRESENT A DIRECT EXPOSURE PATHWAY AND A HUMAN HEALTH AND ECOLOGICAL RISK THAT ARE NOT ADDRESSED BY THE PROPOSED CORRECTIVE MEASURES

The direct exposure pathway at all seeps where contamination was detected was investigated in 2003 as part of the environmental indicator documentation that current human exposures were under control (see Delphi-041 and Delphi-046). Constituents exceeding screening criteria in the seeps were cis-1,2-DCE and TCE. The seep areas are generally inaccessible due to dense vegetation, steep slopes, and railroad tracks. However, potential exposures downstream of the seeps exist for recreators. The cumulative risk for the off-site recreator was 7E-07 and the hazard index was 0.01. Therefore, there are no unacceptable risks to human health posed by the contamination found in the seeps and corrective measures for the seeps are not necessary. The selected remedy does require monitoring of the seeps. If

concentrations were to increase to levels that pose an unacceptable risk (which is not expected), corrective measures would be required.

36. ADDITIONAL ACTIVE REMEDIAL MEASURES ARE AVAILABLE TO REDUCE THE MASS OF SOURCE MATERIALS PRESENT IN THE ONSITE AREA. MASS REDUCTION IN SOURCE AREAS CAN SIGNIFICANTLY REDUCE THE OVERALL TIME FRAME FOR THE REMEDIATION OF DISSOLVED-PHASE PLUMES

The final remedy uses a combination of bedrock, overburden, and sand groundwater migration control systems to reduce the mass of source material present in the on-site area. Historically, DNAPL was also directly removed from the overburden. Approximately 1,200 pounds were recovered before it became no longer technically practicable to remove any residual DNAPL. In addition, EPA estimates that over 2,800 pounds of contaminants have been removed from the groundwater by the bedrock and overburden migration control systems. These remedial measures have been, and will continue to be, very effective in reducing the mass of on-site source materials.

37. NO TIME FRAME IS ESTABLISHED FOR REDUCING THE ELEVATED LEVELS OF VOCs TO MEET MCLs

The estimated lifetime of the selected remedy is 20 years. To determine a more accurate representation of cleanup time frames, EPA has added a component to the selected remedy to address this comment. The Final Decision requires Delphi to estimate the time frame for achieving cleanup levels in the off-site Sugar Rock aquifer using an appropriate groundwater model, subject to EPA approval.

38. NO REASONABLE ATTEMPT HAS BEEN MADE TO DEMONSTRATE THAT NATURAL ATTENUATION IS OCCURRING

Monitored natural attenuation (MNA) is not a specific remedial alternative for the Delphi facility. As discussed in EPA's response to comment #8, groundwater contamination at and from the facility is being addressed in the selected remedy through source controls, groundwater migration controls, institutional controls, contingent remedies, and monitoring. The on-site bedrock groundwater migration control system effectively cuts-off residual contamination in the Sugar Rock aquifer and prevents further off-site migration of high levels of residual on-site contamination. This is supported by a statistical analysis that shows decreasing trends of TCE contamination in the off-site Sugar Rock aquifer. In addition, degradation compounds of TCE, such as cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride are present in the Sugar Rock aquifer. The areal extent of vinyl chloride detections has increased significantly with time (see data presented in the quarterly progress reports) indicating that

residual contaminants in the Sugar Rock aquifer are degrading through a reductive dechlorination process. This process can be enhanced and was evaluated by Delphi (see Delphi-074). Contingencies are built into the selected remedy to consider alternative remedies for the off-site Sugar Rock aquifer if groundwater restrictions are not enacted and/or modeling shows that the time to clean the Sugar Rock aquifer is unreasonable.

39. THE CONTAMINANT PLUME IN THE AREA OF THE NORTHWOODS PROPERTY IS NOT ADEQUATELY DELINEATED HORIZONTALLY OR VERTICALLY

The only contaminant plume present in the area of the Northwoods property is found within the Sugar Rock aquifer. It is monitored and horizontally depicted in the RFI Report (Delphi-061) and numerous quarterly progress reports. The hydraulic properties of the underlying Elkhorn shale limit its vertical extent (see Delphi-053).

40. IF VOC CONTAMINATION IS PRESENT WITHIN THE SHALLOW AND INTERMEDIATE HYDROGEOLOGIC UNITS, ELEVATED RISKS TO HUMAN HEALTH MAY BE PRESENT THROUGH A VAPOR INTRUSION PATHWAY IF THE PROPERTY IS DEVELOPED IN THE FUTURE

We agree with the premise of this statement. On-site where the shallow and intermediate hydrogeologic units (i.e., water table and overburden) are contaminated, indoor air sampling was performed. To address the potential risk posed by vapors from the overburden migrating to indoor air in enclosed on-site buildings, the selected remedy requires a properly operating and maintained heating, ventilation, and air conditioning system along with indoor air monitoring. However, there is no evidence that the shallow and intermediate hydrogeologic units are contaminated off-site. Therefore, the vapor intrusion pathway off-site is incomplete. The use of on-site groundwater migration control systems in the selected remedy is expected to further control the migration of contaminants in these hydrogeologic units. Long-term monitoring will be performed to confirm that the migration of contaminated groundwater is stabilized.

41. GROUNDWATER QUALITY DATA STRONGLY SUGGESTS THAT ONE RECOVERY WELL IN EACH OF THE SHALLOW AND DEEP GROUNDWATER ZONES IS INADEQUATE TO CONTAIN THE OFF-SITE PLUME

Based on results from the groundwater monitoring program, the selected remedy requires an additional recovery well to be installed in shallow groundwater within the sand unit to contain the plume on-site. The groundwater monitoring program shows that shallow groundwater contamination remains on-site. The overburden groundwater migration control system along with the new sand groundwater migration control system should be adequate

to prevent off-site migration of contaminated shallow groundwater.

Data presented in the quarterly progress reports shows that one on-site bedrock recovery well effectively captures contaminants in the Sugar Rock aquifer and prevents their off-site migration.

The eastern limits of the apparent capture zone are presented in the potentiometric surface contour maps for the Sugar Rock aquifer in the quarterly progress reports. The capture zone is consistently located off-site, generally extending to monitoring wells CSX-18D, MW-471D, MW-416D, and MW-418D. The effectiveness of one bedrock recovery well is further supported by the decreasing trend analyses for TCE and DCE in the off-site Sugar Rock wells (see Delphi-074 and Delphi-080). If necessary, pumping rates for the bedrock recovery well can be adjusted to meet changing conditions. The bedrock recovery well currently pumps in the range of 70,000 to 85,000 gallons per day.

42. THE CORRECTIVE MEASURES PROPOSAL DOES NOT ADEQUATELY ADDRESS MEASURES TO DEAL WITH GROUNDWATER SEEPS LOCATED 500 FEET FROM THE NORTHWOODS PROPERTY

The direct exposure pathway at all seeps where contamination was detected was investigated in 2003 as part of the environmental indicator documentation that current human exposures were under control (see Delphi-046). There are no unacceptable risks posed by contamination found in the seeps. Therefore, a remedial component for the seeps is not necessary. The selected remedy does require monitoring of the seeps. If concentrations were to increase to levels that posed an unacceptable risk (which is not likely), a corrective measure would be required.

43. A CRITICAL EVALUATION OF THE PROPOSED CORRECTIVE MEASURES ARE INADEQUATE OR BASED ON SPARSE DATA

EPA disagrees with this comment. The Statement of Basis provides a critical evaluation of potential remedy alternatives based on the Administrative Record and as required by the Administrative Order on Consent. Significant and extensive data has been obtained during site investigations to adequately define the nature and extent of soil, groundwater, surface water, and indoor air contamination, both on-site and off-site of the Delphi facility. Some of this data is discussed here in EPA's Response to Comments. In addition, a third party, independent critical review of investigations and potential remedies for the Delphi facility was conducted and incorporated into the Administrative Record (see Delphi-036).

44. THE CORRECTIVE MEASURES PROPOSAL DOES NOT ADDRESS ACTIVE MEASURES OR A TIME FRAME TO REDUCE OFFSITE GROUNDWATER CONTAMINATION TO LEVELS THAT ARE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT

The final remedy relies on active source control (the bedrock groundwater migration control system) to eliminate the off-site migration of contaminated groundwater, along with groundwater use restrictions. The estimated time frame for the remedy is 20 years. EPA has added components to the selected remedy to address this comment. The Final Decision requires Delphi to estimate the time frame for achieving cleanup levels in the off-site Sugar Rock aquifer using an appropriate groundwater model, subject to EPA approval. This predicted time frame will be compared with the 20 year estimated time frame for the remedy. In addition, if groundwater use restrictions are not enacted within six months of the Final Decision, an alternative remedy for off-site groundwater contamination will need to be determined.

45. IN THE ABSENCE OF ADEQUATE CHARACTERIZATION DATA, CORRECTIVE MEASURES CURRENTLY PROPOSED MAY BE INSUFFICIENT TO ADEQUATELY ADDRESS OFFSITE AREAS AND TO REDUCE PRESENT AND FUTURE HUMAN HEALTH AND ECOLOGICAL RISKS TO ACCEPTABLE LEVELS

As discussed in EPA's response to comment #22, adequate characterization data is provided in the Administrative Record as required by the Administrative Order on Consent.. Groundwater use restrictions, contingent remedies, and monitoring are built-in to the selected remedy to address off-site areas (i.e., Sugar Rock aquifer contamination) and ensure protectiveness of human health and the environment.

Delphi Corporation Comments

1. FIVE RESIDENCES (NOT SIX) ALONG CASSEL ROAD WERE CONNECTED TO THE PUBLIC WATER SUPPLY

EPA agrees and this comment is noted.

2. DELPHI RECOMMENDS CHANGING THE FOLLOWING STATEMENT FOR CLARIFICATION "These contaminants found in groundwater have concentrations that could adversely impact human health for residents using well water. The contaminant concentrations exceed Federal Maximum Contaminant Levels (MCLs) used to protect human health." TO "These contaminants found in groundwater have concentrations that could adversely impact human health for residents using well water for consumption. The contaminant concentrations exceed Federal Maximum Contaminant Levels (MCLs) used to protect human health associated with drinking water."

EPA agrees to the recommended change and the comment is noted.

3. THE TOP OF ROCK CONTAMINATION DOES NOT EXTEND TO OFFSITE AREAS. MONITORING WELLS MW-402S AND MW-426S AT THE DOWNGRADIENT EDGE OF DELPHI PROPERTY ARE AND HAVE BEEN BELOW THE MCL

EPA agrees and this comment is noted. The Top of Rock groundwater is monitored and results are presented in the quarterly progress reports (most currently, see Delphi-082). The extent of contamination is limited on-site as evident by non-detects of site contaminants in downgradient monitoring wells MW-446S, MW-445S, MW-426S, MW-301S, MW-454S, and MW-401S.

4. NO WELLS USED FOR POTABLE PURPOSES CONTAIN LEVELS OF SITE-RELATED CONSTITUENTS ABOVE MCLs. ONLY ONE RESIDENCE ON CASSEL ROAD USES GROUNDWATER FOR POTABLE PURPOSES

EPA agrees and this comment is noted.

5. WITH THE IMPLEMENTATION OF INSTITUTIONAL CONTROLS THAT WILL RESTRICT GROUNDWATER USE, DELPHI DOES NOT AGREE THAT MCLs ARE AN APPROPRIATE CLEANUP OBJECTIVE

Groundwater use restrictions are a necessary component of the final remedy. Without groundwater use restrictions, the remedy is not protective of human health and an alternative remedy will be necessary. Regardless of the use of institutional controls, the Administrative Record identifies numerous well water users within a one-mile radius of the Delphi Corporation facility. It is obvious that groundwater is a valuable resource in the local area and should be protected for that use. It is EPA's goal to

return groundwater to its maximum beneficial use within a reasonable time frame. In this case, the standard required to protect potential drinking water resources are MCLs and they are the appropriate final cleanup goal (see U.S. EPA, OSWER, *Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action*. September 2001. EPA/530/R-01/015).

6. DELPHI HAS COMPLETED THE DNAPL RECOVERY AS AN INTERIM MEASURE. FURTHER DNAPL RECOVERY IS NOT WARRANTED

At this time, we agree that is not technically practicable to collect DNAPL since recoverable DNAPL has not been detected since 2004 (see Delphi-051 and Delphi-052). However, measurements of DNAPL should continue to be taken and DNAPL recovered if technically practicable.

7. DELPHI SUGGESTS THAT EPA NOT PRESCRIBE AN "ACTIVE ENGINEERED REMEDY" TO CLEAN UP GROUNDWATER IF THE PROPOSED REMEDY DOES NOT RESULT IN A TIMELY CLEANUP (APPROXIMATELY 20 YEARS) BUT APPLY AN APPROPRIATE EVALUATION OF A REASONABLE ALTERNATIVE

The selected remedy has a contingency to evaluate an alternative remedy if groundwater use restrictions are not enacted or if monitoring data and an assessment of site conditions suggest the need for an alternative remedy to expedite groundwater cleanup in the off-site Sugar Rock aquifer. If groundwater use restrictions are not enacted within six months of the Final Decision, Delphi must submit a work plan to EPA for review and approval within eight months of the Final Decision to evaluate and select an alternative remedy to address off-site groundwater contamination in the Sugar Rock aquifer exceeding cleanup levels. If an assessment of data and site conditions suggest that alternative technologies are necessary to expedite groundwater cleanup in the off-site Sugar Rock aquifer, an alternative remedy would be proposed in the assessment report. At this time, there is no assumption of a specific alternative remedy but an evaluation of an alternative remedy against EPA threshold and balancing criteria is required (consistent with Attachment IV).

8. DELPHI RECOMMENDS CHANGING THE FOLLOWING STATEMENT FOR CLARIFICATION "Groundwater monitoring will be performed for a minimum of 20 years to assess the attainment of groundwater cleanup goals (MCLs)." TO "Groundwater monitoring will be performed for a minimum of 20 years to assess the progress toward risk-based groundwater cleanup goals."

We do not agree with the recommended change. If final cleanup goals (MCLs) are not met within 20 years (the estimated time for the remedy), groundwater monitoring would continue to be required. If final cleanup goals (MCLs) are eventually determined to be technically impracticable to achieve, a decision

would be made at that time to adopt new final cleanup goals.

ATTACHMENT II

Index to Administrative Record

ATTACHMENT III

Statement of Basis

ATTACHMENT IV
CMP Scope of Work