

THIRD FIVE-YEAR REVIEW REPORT

FOR THE

VERTAC, INC. SUPERFUND SITE
JACKSONVILLE, PULASKI COUNTY, ARKANSAS

November 2008



PREPARED BY:

United States Environmental Protection Agency
Region 6
Dallas, Texas

9526118



THIRD FIVE-YEAR REVIEW REPORT
Vertac, Inc. Superfund Site
EPA ID No. ARD000023440
Jacksonville, Pulaski County, Arkansas

This memorandum documents the United States Environmental Protection Agency's (EPA's) performance, determinations, and approval of the Vertac, Inc. Superfund Site (Vertac) third five-year review under Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC § 9621(c), as provided in the attached Third Five-Year Review Report.

Summary of Third Five-Year Review Findings

This third five-year review focuses on data obtained during groundwater monitoring activities performed from 2003 through 2008. In general, the selected remedy appears to be performing as intended and is currently protective of human health and the environment. However, the issues discussed below, which do not affect the protectiveness of the remedy, are noted.

- Landfill cap issues—At the time of the five-year review site inspection a slope failure was noted on the north slope of the sedimentation vault (Mount Vertac) that was constructed as part of the 1984 court-ordered Resource Conservation and Recovery Act (RCRA) remedy. No exposed waste was observed. The site operator indicated that this had occurred previously in January 2005 and was repaired in August 2005. Due to the recurrence of the slope failure, it was determined that an alternate method to repair the area was required. The area was surveyed on June 25, 2008 and a letter providing the planned repairs for the slope was submitted to EPA and the Arkansas Department of Environmental Quality (ADEQ). The EPA remedial project manager (RPM) approved the plan for repairing the slope and the remediation activities were scheduled to commence during the period of August to October 2008.
- Unpermitted release of wastewater treatment plant (WWTP) influent water—An unpermitted release of untreated water from an equalization (EQ) tank at the WWTP occurred in February 2008 during a thunderstorm event. It was estimated that approximately 20,000 gallons of EQ tank water commingled with storm water runoff flowed off site and into the Rocky Branch Creek. Based on analytical data obtained on February 12, 2008 for the influent concentration of the equalization water, Terracon Consultants, Inc. (Terracon) estimates approximately 3.5 pounds (lbs) of phenols and 14 lbs of herbicides may have been released. The cause of the release was determined to be a control panel dial that did not fully engage in the operating mode, causing the sand filter valve to remain partially open, coupled with a blown fuse which resulted in the EQ tank valve and the sump pump failing to operate.
- Groundwater sample exceedances of Maximum Contaminant Levels (MCLs) and Plume Concentration Levels (PCLs)—The Progress Reports and the analytical groundwater data indicated MCL exceedances for 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) in three wells (MW-9, MW-77, and LW-5) located outside of the Technical Impracticability

(TI) zone and in two of the Rocky Branch Creek samples. The one exceedance noted in MW-77 was also above the PCL for 2,3,7,8-TCDD. In addition, the data indicated two wells (MW-36 and MW-100) were above the MCL for 2,3,7,8-TCDD, and one well (MW-101) was above the MCL for toluene. These three wells are located within the TI zone.

- WWTP discharge limitation exceedances—Low level exceedances in the discharge limitation of 2,3,7,8-TCDD have been identified in six of the discharge monitoring reports examined during this five-year review. The site operator stated that when this occurs, an additional discharge sample is obtained during the month in question. The data indicates that the resamples, with the exception of October and November of 2007, were below the limits of detection.
- Plan and progress report discrepancies—The second five-year review identified the need for the Site-Wide Groundwater Monitoring Plan to be updated to reflect continued monitoring on a semiannual basis and restoration of 2,3,7,8-TCDD to the groundwater monitoring analyte list as required by the OU 3 Record of Decision (ROD). The Site-Wide Groundwater Monitoring Plan has yet to be updated to reflect these changes. In addition, the annual progress reports are being submitted approximately every two years.
- Reevaluation of new technologies to treat and/or remove non-aqueous phase liquid (NAPL) from the contaminated bedrock aquifer—The ROD for OU 3 (groundwater) called for five-year reviews to evaluate the performance of the hydraulic containment system and to determine if any new technologies are available to remediate the contaminated groundwater to confirm the continued applicability of the TI waiver. This has been done for this third five-year review, but remains an issue to be addressed in future five-year reviews.
- Fish flesh monitoring and screening levels and fishing bans or consumption advisories for Rocky Branch Creek and Bayou Meto—In 2001 and 2003, the EPA recommended that the Arkansas Department of Health (ADH) review and assess re-imposition of a fishing ban or advisory on the lower Bayou Meto segment below the Highway 13 bridge, and that ADH consider adoption of an EPA recommended lower screening level for dioxin in fish tissue. ADH acknowledges communications with the EPA on this subject, but has indicated that after review of the matter, including discussions with legislators, community leaders and representatives, and the governor's office, and consideration of the potential for adverse economic impacts, it decided not to make the changes. The ADH has no funds, or plans, for further study of this issue. In addition, the Highway 13 bridge was dropped as a location for fish flesh sampling, and the responsible party site operator has recommended that the frequency of fish flesh sampling under the Off-Site remedy and Unilateral Administrative Order be reduced from every two years to every five years in view of declining concentrations of dioxin in fish tissue sampling events.

The following actions are recommended in response to these issues:

- The sedimentation vault slope failure was repaired in October 2008. The area was surveyed on June 25, 2008 and a letter providing the proposed slope repairs was submitted to the EPA RPM on July 25, 2008. The EPA RPM reviewed the repair plan and directed the site operator to proceed with the plan (EPA 2008b). In mid-October 2008, the repairs to the sedimentation vault slope were initiated. The top of the sedimentation vault and the north slope were cleared and subgrade clay material was graded. A non-woven geotextile was placed on the slope, followed by the placement of rip-rap. Upon completion of the slope repairs, disturbed areas were reseeded for a vegetative support layer. On October 28, 2008, EPA inspected the sedimentation vault slope modifications at the Vertac site and deemed the repairs adequate.
- The reason for the unpermitted release of WWTP influent water was a control panel dial that did not fully engage in the operating mode which caused the sand filter valve to remain partially open, coupled with a blown fuse which resulted in the EQ tank valve and the sump pump failing to operate. In order to prevent future unpermitted releases, the site operator will conduct a system inspection after any significant thunderstorms. This O&M task must be adhered to and documented, in order to prevent future unpermitted releases.
- The recurring low level exceedances of the MCLs and PCLs in groundwater monitoring wells and the Rocky Branch Creek should be evaluated to determine the reason for the observed exceedances.
- The reason for the discharge limitation exceedances of 2,3,7,8-TCDD should be investigated and modifications should be implemented to eliminate this issue. Possible modifications may include additional treatment methods in the WWTP system and increasing quality control of sample collection techniques and/or analytical laboratory services. In addition, the ADEQ is currently monitoring this situation.
- The Site-Wide Groundwater Monitoring Plan should be updated in accordance with the current groundwater monitoring activities. In addition, progress reports should be submitted on an annual basis in order to keep the regulatory agencies up to date on the status of the site.
- The OU 3 ROD requirement for evaluation of the new technologies to treat and/or remove NAPL from the contaminated bedrock aquifer was conducted during this third five-year review. No new technologies for remediation of the NAPL impacted bedrock were identified. This standing requirement should be conducted during the next five-year review.
- Instead of continuing to press the ADH to institute a change in its own fish tissue dioxin screening level to 0.7 parts per trillion, as recommended by EPA guidance, the EPA will require that fish tissue sampling taken for the site remedy be analyzed toward the recommended level, and it will continue to encourage by appropriate means, the ADH to reinstitute the stream fishing ban or advisory in the impacted areas of the Bayou

Meto, where it was suspended. The EPA will continue to require that the fish tissue dioxin sampling be performed every two years, including the sampling location on the Bayou Meto at the Highway 13 bridge, and will require a special sampling event below the bridge. EPA will also review the question of further restrictions on the consumption or taking of fish from the Bayou Meto below the Highway 13 bridge, as well as the appropriateness of the recommended fish flesh screening level as a To Be Considered (TBC) at this site.

Determinations

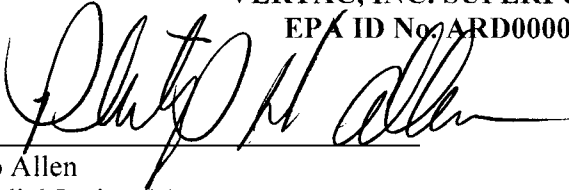
Based on the information available during the Third Five-Year Review, the selected remedy for the Vertac site is currently performing as intended. The recommendations and follow-up actions identified in this five-year review process should be addressed to ensure the long-term remedy will remain protective of human health and the environment. Because the completed remedial actions and O&M program for the Vertac site are considered protective for the short term, the overall remedy for the site is protective of human health and the environment for the short term, and will continue to be protective if the action items identified in this five-year review are addressed.

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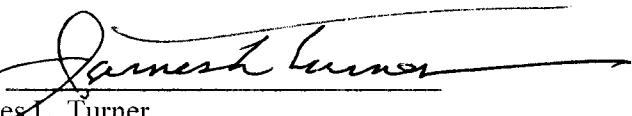
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Date

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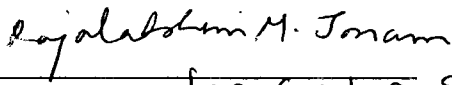
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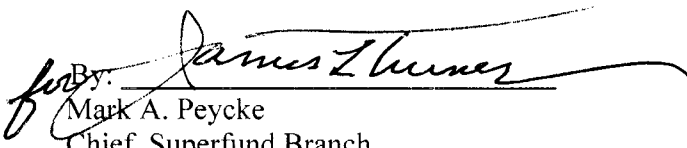
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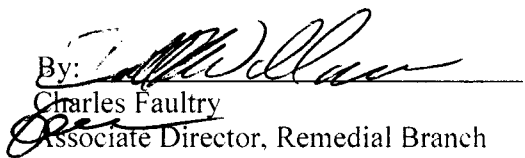
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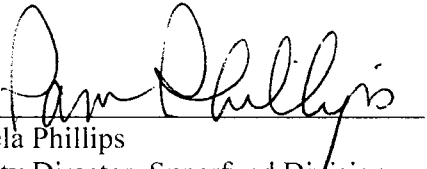
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LIST OF ACRONYMS AND ABBREVIATIONS

2,4-D	2,4-dichlorophenoxyacetic acid
2,4,5-T	2,4,5-trichlorophenoxyacetic acid
ACM	Asbestos containing materials
ADPC&E	Arkansas Department of Pollution Control and Ecology
ADEQ	Arkansas Department of Environmental Quality
ADH	Arkansas Department of Health
AOC	Area of contamination
ARAR	Applicable or relevant and appropriate requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BAT	Best Available Technology
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of concern
CWA	Clean Water Act
DDT	1,1,1-trichloro-2,2- <i>bis</i> -(p-chlorophenyl)ethane
EA	EA Engineering, Science, and Technology, Inc.
EPA	U.S. Environmental Protection Agency
EQ	Equalization
ERM	Environmental Resources Management
ESD	Explanation of Significant Difference
FDA	Federal Drug Administration
FRTR	Federal Remediation Technologies Roundtable
FS	Feasibility study
ft	Feet
GEC	Genesis Environmental Consulting, Inc.
Hercules	Hercules Incorporated
LDR	Land Disposal Restrictions
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
NAPL	Non-aqueous phase liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ng/L	Nanograms per liter
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

O&M	Operation and maintenance
Old STP	City of Jacksonville's sewage treatment plant
OU	Operable unit
PCB	Polychlorinated biphenyl
PCL	Plume Concentration Levels
ppb	Parts per billion
ppm	Parts per million
ppt	Parts per trillion
PRP	Potentially responsible party
RA	Remedial action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial investigation
ROD	Record of Decision
RPM	Remedial project manager
SARA	Superfund Amendments and Reauthorization Act
Silvex	2,4,5-trichlorophenoxypropionic acid
SMCL	Secondary Maximum Contaminant Level
SOW	Statement of Work
STP	Sewage treatment plant
TBC	To Be Considered
TCB	Tetrachlorobenzene
2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TDS	Total dissolved solids
TEQ	Toxicity equivalents
Terracon	Terracon Consultants, Inc.
TI	Technical Impracticability
Transvaal	Transvaal, Inc.
TSD	Treatment, storage, or disposal
UAO	Unilateral Administrative Order
µg/L	Microgram(s) per liter
Vertac	Vertac, Inc., Superfund Site
WWTP	Wastewater treatment plant
yd ³	Cubic yards

EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) Region 6 has conducted the third five-year review of the remedial action (RA) implemented at the Vertac, Inc., Superfund Site (Vertac) in Jacksonville, Pulaski County, Arkansas. The purpose of this third five-year review is to determine whether the selected remedy for the site continues to remain protective of human health and the environment. This statutory review was conducted from June to September 2008 and its findings and conclusions are documented in this report. The Second Five-Year Review Report of the RA was signed on November 20, 2003; this established the third five-year review period of 2003 to 2008.

Due to the complex nature of contamination associated with the Vertac site, remediation was handled through various actions, beginning with the court-ordered Resource Conservation and Recovery Act (RCRA) remedy in 1984. Four Operable Units (OUs) were delineated for the site. The four OUs include: (a) the off-site areas, (b) OU 1 (on-site above-ground media), (c) OU 2 (on-site soil, curbs, foundations, and underground utilities), and (d) OU 3 (groundwater). A removal action including the incineration of about 28,500 drums was conducted (about 25,500 drums were incinerated on-site and nearly 3,000 drums were incinerated off-site), and Records of Decision (ROD) were signed for each of the OUs, as modified by one ROD amendment, and two Explanations of Significant Differences (ESD). Following the incineration removal action, the resultant ash, and non-recyclable structures, debris, and soil were disposed in a RCRA Subtitle C compliant landfill (OU 1 landfill) constructed on-site. Most of the incinerator was decontaminated and sold for future use off-site. Residual incineration salt residue was disposed off-site at a facility near Deer Trail, Colorado.

Through the various response actions defined by the residential areas removal action and the Off-Site, OU 1 and OU 2 remedial actions, off-site contaminated soil in the Rocky Branch Creek flood plain and residential areas was excavated to an action level of 1 part per billion (ppb) for dioxins. In addition, contaminated portions of the City of Jacksonville's Old Sewage Treatment Plant and West Wastewater Treatment Plant were demolished and capped, and sludge and sediments from both plants were removed and disposed of in the on-site OU 1 landfill. Two

sewer interceptor lines were decontaminated, and one was grouted and abandoned. Plant buildings, process vessels, and process equipment were demolished, treated, and either recycled or disposed in the on-site OU 1 landfill. Process vessel contents were removed and treated or disposed off-site. On-site soil in the northern portion of the site was excavated to an action level of 1 ppb for dioxins, while soil in the southern portion of the site was excavated to an action level of between 5 and 50 ppb for dioxins; this area was backfilled with 1 foot (ft) of clean soil cover. All excavated soil was disposed in the on-site OU 1 landfill. Based in part on a technical impracticability (TI) waiver, the ROD for OU 3 determined that given the current level of applicable remedial technology, the groundwater could not be effectively remediated due to the presence of non-aqueous phase liquids (NAPLs) and the nature of the site hydrogeology. A hydraulic containment system, which includes groundwater extraction wells and a French drain constructed as part of the 1984 court-ordered remedy, was implemented as the OU 3 remedy in order to prevent the off-site migration of contaminated groundwater above the National Primary Drinking Water Standards, Maximum Contaminant Levels (MCLs).

Under the statutory requirements of Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the subordinate provisions of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR 300.430(f)(4)(ii), performance of five-year reviews are required for sites where hazardous substances remain on-site above levels that allow for unrestricted use and unrestricted exposure. In November 1993, the Unilateral Administrative Order (UAO) for the off-site areas was initiated which triggered the action date for the first five-year review to be completed by November 1998. Following a citizen suit against the Administrator of the EPA settled in October 2000 in *Shelton v. Browner* (E.D. Ark.), the first CERCLA five-year review was completed for the Vertac site in July 2001. The second five-year review was completed in November 2003 in order to bring the five-year review process back on schedule.

During the third five-year review period, Operations and Maintenance (O&M) activities at the site have continued. O&M activities include pumping affected groundwater from the groundwater extraction system along the eastern portion of the site, collection of affected groundwater from the French drain system that intercepts groundwater flow along the western

and southern boundaries of the burial areas at the site, treatment and discharge of the extracted groundwater, maintenance of the capped burial areas and the OU 1 landfill, groundwater and surface water monitoring, and maintenance of the groundwater extraction system, French drain, and the wastewater treatment plant. Site O&M is implemented by Hercules Incorporated (Hercules), the site operator, as the Respondent under EPA CERCLA UAOs. Hercules has employed a remedial contractor, Terracon Consultants, Inc. (Terracon) (formally Genesis Environmental Consulting, Inc.), to carry out site O&M activities. Terracon staffs the site with two employee operators and the site is generally well-maintained. Approximately 9-12 million gallons of groundwater are extracted and collected each year by the French drain and the groundwater extraction system. This water is then treated and discharged into Rocky Branch Creek, while the filtrate media is containerized and regenerated at an off-site facility. The actual amount of water and leachate collected and treated is primarily dependent upon rainfall amounts for each year.

Documents reviewed for this five-year review included, but were not limited to, the following documents: (1) RODs, (2) ESD, (3) Site-Wide O&M Manual, (4) Site-Wide Groundwater Monitoring Plan, (5) Annual Progress Reports, (6) Fish Flesh Monitoring Reports, and (7) Previous Five-Year Review Reports.

In accordance with the community involvement requirements of the five-year review process, EPA identified eight key individuals to be interviewed. These individuals were interviewed during the Vertac site visit which occurred on June 24 – 25, 2008. The interview records are included in Attachment 5 of this report.

The third five-year review focuses on the data obtained during routine inspections, groundwater monitoring events, and the fish flesh monitoring conducted at the Vertac site during 2003 through 2008. At this time, the selected remedy is performing as intended, with the following issues noted:

- Landfill cap issues—At the time of the five-year review site inspection a slope failure was noted on the north slope of the sedimentation vault (Mount Vertac) that was constructed as part of the court-ordered 1984 RCRA remedy. No exposed waste was

observed. The site operator indicated that this had occurred previously in January 2005 and was repaired in August 2005. Due to the recurrence of the slope failure, it was determined that an alternate method to repair the area was required. The area was surveyed on June 25, 2008 and a letter providing the planned repairs for the slope was submitted to EPA and the Arkansas Department of Environmental Quality (ADEQ). The EPA remedial project manager (RPM) approved the plan for repairing the slope and the remediation activities were scheduled to commence during the period of August to October 2008.

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- The reason for the unpermitted release of WWTP influent water was a control panel dial that did not fully engage in the operating mode which caused the sand filter valve to remain partially open, coupled with a blown fuse which resulted in the EQ tank valve and the sump pump failing to operate. In order to prevent future unpermitted releases, the site operator will conduct a system inspection after any significant thunderstorms. This O&M task must be adhered to and documented, in order to prevent future unpermitted releases.
- The recurring low level exceedances of the MCLs and PCLs in groundwater monitoring wells and the Rocky Branch Creek should be evaluated to determine the reason for the observed exceedances.

- The reason for the discharge limitation exceedances of 2,3,7,8-TCDD should be investigated and modifications should be implemented to eliminate this issue. Possible modifications may include additional treatment methods in the WWTP system and increasing quality control of sample collection techniques and/or analytical laboratory services. In addition, the ADEQ is currently monitoring this situation.
- The Site-Wide Groundwater Monitoring Plan should be updated in accordance with the current groundwater monitoring activities. In addition, progress reports should be submitted on an annual basis in order to keep the regulatory agencies up to date on the status of the site.
- The OU 3 ROD requirement for evaluation of the new technologies to treat and/or remove NAPL from the contaminated bedrock aquifer was conducted during this third five-year review. No new technologies for remediation of the NAPL impacted bedrock were identified. This standing requirement should be conducted during the next five-year review.
- Instead of continuing to press the ADH to institute a change in its own fish tissue dioxin screening level to 0.7 parts per trillion (ppt), as recommended by EPA guidance, the EPA will require that fish tissue sampling taken for the site remedy be analyzed toward the recommended level, and it will continue to encourage by appropriate means, the ADH to reinstitute the stream fishing ban or advisory in the impacted areas of the Bayou Meto, where it was suspended. The EPA will continue to require that the fish tissue dioxin sampling be performed every two years, including the sampling location on the Bayou Meto at the Highway 13 bridge, and will require a special sampling event below the bridge. EPA will also review the question of further restrictions on the consumption or taking of fish from the Bayou Meto below the Highway 13 bridge, as well as the appropriateness of the recommended fish flesh screening level as a To Be Considered (TBC) at this site.

Based on the information available during the Third Five-Year Review, the selected remedy for the Vertac site is currently performing as intended. The recommendations and follow-up actions identified in this five-year review process should be addressed to ensure the long-term remedy will remain protective of human health and the environment.

Five-Year Review Summary Form**SITE IDENTIFICATION****Site Name (from WasteLAN):** Vertac Superfund Site**EPA ID (from WasteLAN):** ARD000023440**Region:** 6**State:** Arkansas**City/County:** Jacksonville/ Pulaski County**SITE STATUS****NPL Status:** ☒ Final ☐ Deleted ☐ Other (specify) _____**Remediation Status (choose all that apply):** ☐ Under Construction ☒ Operating ☐ Complete**Multiple OUs?*** ☒ YES ☐ NO**Construction Completion Date:** June 1998**Has site been put into reuse?**☒ YES ☐ NO (Parcel 2 – Maintenance/recycle facility for the City of Jacksonville)**REVIEW STATUS****Reviewing Agency:** ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____**Author Name:** Philip Allen**Author Title:** Remedial Project Manager**Author Affiliation:** U.S. EPA Region 6**Review Period:**** 2003 to 2008**Date(s) of Site Inspection:** April 16, 2008 and June 24-25, 2008**Type of Review:**☒ Statutory☐ Policy ☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead☐ Regional Discretion**Review Number:** ☐ 1 (first) ☐ 2 (second) ☒ 3 (third) ☐ Other (specify) _____**Triggering Action:**☐ Actual RA On-site Construction at OU☐ Actual RA Start☐ Construction Completion☒ Previous Five-Year Review Report☐ Other (specify) _____**Triggering Action Date (from WasteLAN):** November 20, 2003**Due Date (Five Years After Triggering Action Date):** November 20, 2008

* "OU" refers to operable unit.

** The review period refers to the period during which the five-year review was conducted.

Five-Year Review Summary Form (Continued)

Issues:

- Landfill cap issues—At the time of the five-year review site inspection a slope failure was noted on the north slope of the sedimentation vault. No exposed waste was observed. The site operator indicated that this had occurred previously in January 2005 and was repaired in August 2005. Due to the recurrence of the slope failure, it was determined that an alternate method to repair the area was required. The area was surveyed on June 25, 2008 and a letter providing the planned repairs for the slope was submitted to EPA and the Arkansas Department of Environmental Quality (ADEQ). The EPA remedial project manager (RPM) approved the plan for repairing the slope and the remediation activities commenced in October 2008.
- Unpermitted release of wastewater treatment plant (WWTP) influent water—An unpermitted release of untreated water from an equalization (EQ) tank at the WWTP occurred in February 2008 during a thunderstorm event. It was estimated that approximately 20,000 gallons of EQ tank water commingled with storm water runoff flowed off site and into the Rocky Branch Creek. Based on analytical data obtained on February 12, 2008 for the influent concentration of the equalization water, Terracon Consultants, Inc. (Terracon) estimates approximately 3.5 pounds (lbs) of phenols and 14 lbs of herbicides may have been released. The cause of the release was determined to be a control panel dial that did not fully engage in the operating mode, causing the sand filter valve to remain partially open, coupled with a blown fuse which resulted in the EQ tank valve and the sump pump failing to operate.
- Groundwater sample exceedances of Maximum Contaminant Levels (MCLs) and Plume Concentration Levels (PCLs)—The Progress Reports and the analytical groundwater data indicated MCL exceedances for 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) in three wells (MW-9, MW-77, and LW-5) located outside of the Technical Impracticability (TI) zone and in two of the Rocky Branch Creek samples. The one exceedance noted in MW-77 was also above the PCL for 2,3,7,8-TCDD. In addition, the data indicated two wells (MW-36 and MW-100) were above the MCL for 2,3,7,8-TCDD, and one well (MW-101) was above the MCL for toluene. These three wells are located within the TI zone.
- WWTP discharge limitation exceedances—Low level exceedances in the discharge limitation of 2,3,7,8-TCDD have been identified in six of the discharge monitoring reports examined during this five-year review. The site operator stated that when this occurs, an additional discharge sample is obtained during the month in question. The data indicates that the resamples, with the exception of October and November of 2007, were below the limits of detection.

Five-Year Review Summary Form (Continued)

- Fish flesh monitoring and screening levels and fishing bans or consumption advisories for Rocky Branch Creek and Bayou Meto—In 2001 and 2003, the EPA recommended that the Arkansas Department of Health (ADH) review and assess re-imposition of a fishing ban or advisory on the lower Bayou Meto segment below the Highway 13 bridge, and that ADH consider adoption of an EPA recommended lower screening level for dioxin in fish tissue. ADH acknowledges communications with the EPA on this subject, but has indicated that after review of the matter, including discussions with legislators, community leaders and representatives, and the governor's office, and consideration of the potential for adverse economic impacts, it decided not to make the changes. The ADH has no funds, or plans, for further study of this issue. In addition, the Highway 13 bridge was dropped as a location for fish flesh sampling, and the responsible party site operator has recommended that the frequency of fish flesh sampling under the Off-Site remedy and Unilateral Administrative Order (UAO) be reduced from every two years to every five years in view of declining concentrations of dioxin in fish tissue sampling events.
- Plan and progress report discrepancies—The second five-year review identified the need for the Site-Wide Groundwater Monitoring Plan to be updated to reflect continued monitoring on a semiannual basis and restoration of 2,3,7,8-TCDD to the groundwater monitoring analyte list as required by the OU 3 Record of Decision (ROD). The Site-Wide Groundwater Monitoring Plan has yet to be updated to reflect these changes. In addition, the annual progress reports are being submitted approximately every two years.
- Reevaluation of new technologies to treat and/or remove non-aqueous phase liquid (NAPL) from the contaminated bedrock aquifer —The ROD for OU 3 (groundwater) called for five-year reviews to evaluate the performance of the hydraulic containment system and to determine if any new technologies are available to remediate the contaminated groundwater to confirm the continued applicability of the TI waiver. This has been done for this third five-year review, but remains an issue to be addressed in future five-year reviews.

Recommendations and Follow-up Actions:

- The sedimentation vault slope failure was repaired in October 2008. The area was surveyed on June 25, 2008 and a letter providing the proposed slope repairs was submitted to the EPA RPM on July 25, 2008. The EPA RPM reviewed the repair plan and directed the site operator to proceed with the plan (EPA 2008b). Upon completion of the slope repairs, EPA inspected the modifications on October 28, 2008 and deemed the repairs adequate.
- The reason for the unpermitted release of WWTP influent water was a control panel dial that did not fully engage in the operating mode which caused the sand filter

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region 6 has conducted a third five-year review of the remedial action (RA) implemented at the Vertac, Inc., Superfund Site (Vertac) in Jacksonville, Pulaski County, Arkansas. The purpose of a five-year review is to determine whether the remedy at a site remains protective of human health and the environment and to document the methods, findings, and conclusions of the five-year review process in a report. The report will identify issues found during each review, if any, and make recommendations to address the issues. This Third Five-Year Review Report documents the results of the review for the Vertac site, conducted in accordance with EPA guidance (EPA 2001) on five-year reviews.

The five-year review process is required by federal statute. The EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121(c), 42 U.S.C. § 9621 (c), states the following:

“If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.”

NCP Section 300.430(f)(4)(ii) states the following:

“If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.”

Because hazardous substances, pollutants, or contaminants remain at the Vertac site above levels that allow for unlimited use and unrestricted exposure, a statutory five-year review is required.

Since the Second Five-Year Review Report was signed on November 20, 2003, the period addressed by this five-year review for the Vertac site extended from 2003 to 2008. The triggering action for this review was the Second Five-Year Review Report completed in November 2003. This third five-year review was conducted from June through November 2008; its methods, findings, conclusions, and recommendations are documented in this report.

This report documents the five-year review for the Vertac site by providing the following information: site chronology (Section 2.0), background information (Section 3.0), overview of the RAs (Section 4.0), progress since the second five-year review (Section 5.0), discussion of the third five-year review process (Section 6.0), technical assessment of the site (Section 7.0), issues (Section 8.0), recommendations and follow-up activities (Section 9.0), protectiveness statement (Section 10.0), and discussion of the next review (Section 11.0). Attachment 1 provides the site related figures and tables. Attachment 2 provides a list of documents reviewed (Attachment 2A) and copies of relevant correspondence (Attachment 2B). Attachment 3 provides the site inspection checklist. Attachment 4 provides the site inspection photographs. Attachment 5 provides the interview records. Attachment 6 provides the relevant county clerk's office documents. Attachment 7 provides copies of public notices.

2.0 SITE CHRONOLOGY

Table 1 presents a chronology of events for the Vertac site. Additional historical information for the site is available online at: <http://www.epa.gov/earth1r6/6sf/pdffiles/0600023.pdf> (EPA 2008a).

3.0 BACKGROUND

This section describes the physical setting of the site, including a description of the land use, resource use, and environmental setting. This section also describes the history of contamination associated with the site, the initial response actions taken at the site, and the basis for each of the initial response actions. Remedial actions (RAs) performed subsequent to the initial response actions for each of the operable units (OUs) defined for the site are described in Section 4.

3.1 PHYSICAL CHARACTERISTICS

The Vertac site is located at 1907 Hill Road near the western edge of Jacksonville, Pulaski County, Arkansas, about 15 miles northeast of Little Rock (Figure 1). The overall Vertac site is about 193 acres in size (EPA 1996a). The Vertac Chemical Corporation, the successor company to Vertac Incorporated, is currently in receivership as ordered by the U.S. District Court. This includes control of Vertac assets, such as the site. The contamination at the site resulted from poor waste management practices, plant operations, and discharges of process wastewater to Rocky Branch Creek and the City of Jacksonville's wastewater treatment systems (EPA 1996a). The site is associated with the nearby Jacksonville Landfill and Rogers Road Municipal Landfill Superfund Sites (some wastes generated at the Vertac site were disposed in the landfills).

The overall site consists of two main parcels of land, consisting of smaller tracts acquired at different times during historical plant operations. Parcel 1, in the southern portion of the site, is about 93 acres in size. This is the original industrial parcel developed during the 1930s including the central process area where facility operations occurred. This is also the area, along with any contaminated contiguous off-site areas, that is considered the Vertac site for purposes of this five-year review.

Parcel 2 includes about 100 acres in the northern part of the greater site; and, as noted below, the City of Jacksonville has taken possession of much of this area and put it to productive re-use. This parcel was purchased by Vertac in 1978, but it was never used for facility operations by Vertac and its predecessors companies, or other site owners and operators (EPA 1990b).

The Vertac site is located in the transition zone between the Gulf Coastal Plain and the Interior Highlands Physiographic Provinces. The land at the site has moderate topographic relief, sloping from approximately 310 feet (ft) above mean sea level in the north to approximately 260 ft above mean sea level in the southwest portion of the site. Soils in the area of the site are classified as the Leadvale-Urban land complex with 1 to 3 percent slope. Because of extensive development and earth-moving activities at the site, natural soil characteristics have been

obscured. Surface water at the site drains into Rocky Branch Creek, which flows through the western portion of the site (EPA 2003b).

Contaminated groundwater at the site occurs within unconsolidated surface soils and weathered and unweathered portions of the Atoka Formation. The Atoka Formation consists of alternating beds of highly consolidated and fractured sandstone, siltstone, and shale. Groundwater flow primarily occurs within the intergranular pore spaces in the unconsolidated surface soils and within fractures and partings within the sandstone layers of the bedrock. The Atoka Formation has a low yield due to its low porosity and permeability. At the site, groundwater flows outward from the central process area towards the east, south, and west (EPA 1996a).

3.2 LAND AND RESOURCE USE

Land use in the vicinity of the site is varied. Residential areas border the site to the south and east. The western side of the site is bounded by an industrial area, and the northern side of the site is bounded by the Little Rock Air Force Base. The site itself is currently zoned for industrial use. Approximately 1,000 people live within 1 mile of the site, and approximately 30,500 people (estimate 2006) live in the city of Jacksonville. Rocky Branch Creek flows through the western side of the site, and it discharges into Bayou Meto approximately 1 mile south of the site.

Groundwater under the site is found within both unconsolidated surface deposits and the fractured bedrock of the Atoka Formation. Groundwater at the site is not currently used, and no groundwater supply wells are located within 0.5 mile of the site (EPA 1996a). Land and resource use have not changed significantly since completion of the second five-year review.

The northern portion of the site (Parcel 2) continues to be operated by the City of Jacksonville with a drive-through recycling facility. In addition, the Sanitation Department is housed in some of the former drum storage sheds EPA constructed on the northern portion of the property during the incineration process described in Section 4. This property was released by EPA for reuse following completion of remedial actions. The City of Jacksonville anticipates in the near future utilizing additional portions of Parcel 2 for the development of a Police and Fire Department training facility and shooting range.

3.3 HISTORY OF CONTAMINATION

The first industrial facilities at the site were built in the central process area by the federal government during the 1930s and 1940s as part of a munitions complex that extended beyond the present site boundaries. In 1948, the site was purchased by the Reasor-Hill Company and converted for manufacture of insecticides such as 1,1,1-trichloro-2,2-bis-(p-chlorophenyl)ethane (DDT), aldrin, dieldrin, and toxaphene. During the 1950's, Reasor-Hill manufactured herbicides such as 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), and 2,4,5-trichlorophenoxypropionic acid (2,4,5-TP, or "Silvex"). A major impurity is formed during the production of 2,4,5-T is 2,3,7,8- tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) which is often referred to generally as dioxin. Dioxins are a group of similar chemicals of which 2,3,7,8-TCDD is the most toxic, and they represent the major contaminants of concern at the site. Reasor-Hill also stored drums of organic waste in an open field southwest of the central process area. Untreated process water was discharged from the western end of the plant directly into Rocky Branch Creek (EPA 1990b).

In 1961, the City of Jacksonville's sewage treatment plant (also known as the Old STP) was upgraded by adding a sludge digester, sludge-drying beds, and two 22-acre oxidation ponds. At this time, the city agreed to accept and treat wastewater from the Reasor-Hill facility, and Reasor-Hill began discharging some of its process wastewater to the city sewage treatment plant (EPA 1990a).

Hercules Powder Company, now known as Hercules Incorporated (Hercules), purchased the facility (consisting of Parcel 1 at that time) in 1961 and continued the manufacture and formulation of herbicides. From 1964 to 1968, Hercules also produced the herbicide Agent Orange (EPA 1996b), which was a formulation of equal parts of 2,4-D and 2,4,5-T, for the Department of Defense. The drums that were left by Reasor-Hill in the open field southwest of the central process area were buried by Hercules in what is now known as the Reasor-Hill Landfill. In 1964, Hercules built a pretreatment facility for its process wastewater that consisted of equalization basins and neutralization systems. Shortly after it took over the facility, Hercules changed the manufacturing process, which resulted in the generation of additional liquid and

solid wastes contaminated with dioxins. These wastes were stored in drums and disposed of in the North Landfill (also known as the Hercules-Transvaal Landfill). In 1969, Hercules and the City of Jacksonville constructed a 3-acre aerated lagoon upstream from the oxidation ponds, and Hercules began discharging all of its process wastewater to city wastewater treatment facilities (the West Wastewater Treatment Facility) at that time (EPA 1990a).

From 1971 to 1976, Hercules leased the facility to Transvaal, Inc. (Transvaal), a predecessor company of Vertac. Transvaal produced 2,4-D and intermittently produced 2,4,5-T. Transvaal continued the practice of burying drums of organic wastes in the North Landfill until 1974, when Transvaal began storing the drums of waste above ground. Transvaal purchased the facility from Hercules in 1976. In 1976, Transvaal reorganized as Vertac, Inc., and was eventually renamed the Vertac Chemical Corporation. Vertac produced 2,4-D on the same equipment used to manufacture 2,4,5-T, which was made by Vertac until 1979. Vertac purchased Parcel 2 (the northern portion of the site) in 1978 but never used it in the herbicide formulation operations. Vertac operated the site until January 1987, when Vertac became insolvent and abandoned the site (EPA 1996b).

3.4 INITIAL RESPONSE

Six different phases of response action were conducted at the Vertac site to address the contamination resulting from past facility operations and disposal practices. The first two response phases performed at the site are discussed in this section as part of the initial response. The site was later separated into four OUs to address the hazards posed by the site, and the four phases of remediation conducted for each of these four OUs are described under Section 4. A summary of each of the remedial actions performed at the site is provided in Table 2.

The Arkansas Department of Pollution Control and Ecology (ADPC&E, now the Arkansas Department of Environmental Quality [ADEQ]) issued an order in 1979 that required Vertac to improve its hazardous waste practices. In 1980, EPA and ADPC&E jointly filed suit against Vertac and Hercules in the United States District Court for the Eastern District of Arkansas

under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §690 1 *et seq.* The parties signed a Consent Decree in January 1982 which required an independent consultant to assess the site conditions and propose a remedial plan for the on-site wastes. The remedial plan proposed by Vertac under the 1982 Consent Decree included leaving hazardous wastes buried on-site in unlined pits, which was deemed unsatisfactory by EPA. The site was placed on the initial National Priorities List (NPL) on September 8, 1983; and EPA returned to court in 1984, opposing the Vertac remedial plan and seeking an order approving an EPA alternative remedial plan, which would have required excavation of buried wastes and disposal in a lined landfill compliant with RCRA Subtitle C. The Court generally decided in favor of the remedy proposed by Vertac in July 1984. The Court-ordered remedy, also known as the Vertac Remedy, was implemented from mid-1984 to July 1986 (EPA 1990b).

The 1984 court-ordered Vertac Remedy, implemented over EPA opposition under the 1982 Consent Decree, is now considered the first phase of remediation (an initial response action). The response action included the closing and capping of the plant cooling water pond and equalization basin. Sediments from these units were removed and land filled within an area where earlier site operators had buried drums of waste. This sediment vault or landfill is commonly referred to as "Mount Vertac".

The land filled area was capped, and a French drain, slurry wall, and leachate collection system were installed around the burial area (Figure 2). Improvements were also made to the surface water collection system at that time. The remedy also included the installation of groundwater monitoring wells and the initiation of a groundwater monitoring program. Contaminated leachate, groundwater, and surface water was pumped from a series of sumps to an on-site wastewater treatment plant (WWTP), and subsequently discharged directly into Rocky Branch Creek (after meeting discharge limits established by ADPC&E) (EPA 1990b). For reasons related to the timing and manner of its selection and implementation, as well as to the non-CERCLA statutory and regulatory authority underlying its selection, response measures that were undertaken as part of the Vertac Remedy are not specifically subject to this five-year review as such. However, since the units, components, and elements of the Vertac Remedy were

incorporated into the CERCLA site remedy selected for OU 3 (discussed below), they are considered as a part of OU 3 and thus part of the overall CERCLA site five-year review.

On or about January 31, 1987, Vertac shut down operations, abandoned the site, and declared bankruptcy. The plant was "mothballed," which consisted of flushing the process lines and draining several process vessels. Approximately 28,500 drums of 2,4-D (D-wastes) and 2,4,5-T (T-wastes) herbicide still bottom wastes were left on-site. Many of the drums were corroded and leaking. After the site was abandoned, EPA initiated an emergency removal action to stabilize and secure the site (EPA 2003b).

The second phase of environmental response was the incineration of drums left on-site when Vertac abandoned the site. As part of this response action, ADPC&E signed a contract in 1989 to have the approximately 28,500 drums of D-waste and T-wastes incinerated on-site. To accomplish the incineration, the State of Arkansas utilized a trust fund that was established by Vertac. Incineration of the D-wastes began in January 1992. In June 1993, funding for the project was becoming depleted, and EPA assumed responsibility for incinerating the remaining drums as a time critical removal action under CERCLA, Section 104, 42 U.S.C. §9604. In late September 1994, the incineration of the dioxin contaminated D-waste was completed at the site. In July 1994, EPA had announced that it would pursue off-site incineration of the dioxin-contaminated "T" waste located at the site. On or about November 9, 1994, a contract was signed between Aptus commercial incineration facility in Coffeyville, Kansas, and EPA's prime contractor, URS Consultants. Aptus accepted the T-wastes remaining in drums at the Vertac site. The first shipment went to Aptus in November 1994, and the last shipment was sent off-site on March 29, 1996 (EPA 1996b).

Approximately 28,500 drums containing D-wastes and T-wastes had been left at the site by the former owners and operators in various conditions. All drummed wastes were treated as F-listed (dioxin containing) wastes pursuant to RCRA, 42 U.S.C. §6901 et seq. (EPA, 1996b). Wastes from the production of 2,4,5-T at Vertac have been found to contain up to 50 parts per million (ppm) of dioxin, while wastes from the production of 2,4-D generally contain dioxin in the low part per billion (ppb) range. The second phase of remediation included the overpacking

of deteriorating and leaking drums, the on-site incineration of D-wastes, the off-site incineration of T-wastes, and the dismantling, decontamination, and disposal/recycling of the incinerator, associated structures, and debris. Overall, the action resulted in the incineration of approximately 25,179 drums of D-waste and 3,200 drums of T-waste (EPA 1998).

On December 31, 1996, EPA issued a Unilateral Administrative Order (UAO) to Hercules requiring the demolition, decontamination, and disposal of the on-site incinerator, associated structures, and debris. Parts of the incinerator, structures, debris, and contaminated soil were disposed in the on-site landfill that is compliant with the requirements of RCRA, Subtitle C (hazardous waste), constructed as part of the remedy for OU 1 (hereinafter referred to as the "OU 1 Landfill"). The majority of the incinerator was decontaminated, and sold to a third party for future use elsewhere. All response activities associated with the demolition of the on-site incinerator were completed in early 1998 (EPA 2003b). This removal action resulted in clean closure of the northern portion of the site. Operation and maintenance (O&M) activities are not required for this portion of the site, and this land is available for reuse (EPA 1998).

3.5 BASIS FOR RESPONSE

The purpose of the response actions conducted at the Vertac site was to protect public health and welfare and the environment from releases or threatened releases of hazardous substances from the site. Exposure to drummed wastes, contaminated building structures and utilities, affected soil, groundwater, surface water, and sediment was determined to be associated with human health risks higher than the acceptable range. The primary threats that the Vertac site posed to public health and safety were: potential releases of contamination from drummed wastes; direct contact with contaminated soils in nearby residential yards; transport and direct contact with contaminated flood plain soils and sediments; consumption of dioxin-contaminated fish in Rocky Branch Creek and Bayou Meto; transport of on-site contaminated soils and sediments to nearby populated areas, Rocky Branch Creek, and Bayou Meto by surface runoff; transport of on-site contaminated soils and sediments along sewer lines to the City of Jacksonville's wastewater treatment plant; direct contact with contaminated site buildings, other structures, and soils; and the migration of contaminated groundwater off-site.

4.0 REMEDIAL ACTIONS

This section provides a description of the remedy objectives, selection, and implementation for each of the four OUs delineated by EPA for the site. It also describes the ongoing O&M activities performed at the site in the period since the second five-year review. The four OUs are: (a) the off-site areas, (b) OU 1 (on-site above-ground media), (c) OU 2 (on-site soil, curbs, foundations, and underground utilities), and (d) OU 3 (groundwater).

4.1 REMEDY OBJECTIVES

The specific remedial objectives of the Off-Site Areas OU remedial action were:

- Remediate residential and agricultural areas to 1.0 ppb 2,3,7,8-TCDD.
- Prevent direct public contact with soil containing 2,3,7,8-TCDD concentrations above 1.0 ppb through soil capping.
- Prevent migration of 2,3,7,8-TCDD contaminated soil into waterways and surrounding flood plains.
- Prevent the migration of 2,3,7,8-TCDD contaminated sediments through sewage collection lines to the new Jacksonville sewage treatment facility.
- The carcinogenic risk after remedy implementation would range between 10^{-5} and 10^{-6} . It was determined that remediation for 2,3,7,8-TCDD contamination would also eliminate risks associated with any other contaminants (EPA 1990a).

The specific remedial objectives of the OU 1 (above ground media) remedial actions were:

- Treat principle threat wastes (such as process vessel contents, spent carbon, shredded trash and pallets, polychlorinated biphenyl (PCB) transformer oils, and miscellaneous drummed wastes).
- Decontaminate and recycle/reuse process equipment where practicable.
- Contain low level threat wastes (demolition debris) in the on-site RCRA Subtitle C landfill.
- The carcinogenic risk after remedy implementation would be reduced to less than 10^{-6} (EPA 1993).

The specific remedial objectives of the OU 2 (soils, foundations, curbs, and underground utilities) remedial actions were:

- Remediate dioxins and furans to 5 ppb, expressed as toxicity equivalents (TEQs) of 2,3,7,8-TCDD (toxicity equivalents use a toxicity equivalency factor for particular dioxin-like compounds to compare each compound's relative toxicity to that of 2,3,7,8-TCDD).
- Remediate tetrachlorobenzene (TCB) contaminated soils to 500 ppm and treat

- through off-site incineration.
- Prevent water migration along underground utilities through the installation of cut-off barriers.
- Return as much land as possible to beneficial use (EPA 1996a).

The specific remedial objectives of the OU 3 (groundwater) remedial action were:

- Prevent potential contamination of off-site groundwater by controlling groundwater migration through the use of groundwater extraction wells and the existing French drain system.
- Prevent off-site human and environmental receptors from potential exposure to contaminated groundwater discharges that would result in an adverse toxic response or a carcinogenic risk greater than 1×10^{-4} to 1×10^{-6} through treatment of extracted groundwater at the on-site WWTP.
- Use institutional controls to prevent the installation of wells on site and prevent exposure of site workers to use of the contaminated groundwater (EPA 1996c).

4.2 REMEDY SELECTION

Four Records of Decision (RODs) were issued by EPA for the Vertac site, for each of the four OUs. The Off-Site Areas OU ROD addressed the clean-up of releases to areas off the Vertac plant site. The ROD for OU 1 addressed the site buildings and other above-ground contaminated media. The ROD for OU 2 dealt with the remedy for subsurface contamination at the site, and the ROD for OU 3 addressed the clean-up of groundwater contamination at the site. The site was also addressed through other response actions (the 1984 court imposed "Vertac Remedy" and the drum incineration time critical removal action) as described in Section 3.4.

The ROD for the Off-Site Areas OU was signed on September 27, 1990, to address the cleanup of contiguous off-site areas that were contaminated as a result of untreated and partially-treated surface and underground discharges of plant wastewater and other releases. Elements of this OU included an active sewer interceptor and an abandoned sewer interceptor, portions of the Old STP, the active West Wastewater Treatment Plant, and the Rocky Branch Creek flood plain (EPA 1990a).

The remedy described in the 1990 ROD for the Off-Site Areas OU consisted of the following elements:

- Sediments were to be removed from the active sewage collection lines and stored and incinerated on-site. Pipe-liners were to be installed in the active line, and the abandoned line was to be filled with grout.
- At the Old STP, sludge was to be removed from the sludge digester and stored and incinerated on-site. The sludge drying beds were to be capped with 1 ft of clean soil. Accumulated water in the treatment units was to be treated and discharged, and the treatment units were to be demolished and capped with 1 ft of clean soil. EPA was to negotiate with the City of Jacksonville to place a restriction on the deed to keep the site zoned as commercial/industrial and to restrict access.
- The aeration basin at the West Wastewater Treatment Plant was to be drained, the dikes demolished, and the basin capped with 1 ft of clean soil. A notice was to be placed in the deed that recommended the site zoning remain as commercial/industrial and access restricted.
- Residentially zoned areas of the Rocky Branch Creek and Bayou Meto flood plains with 2,3,7,8-TCDD concentrations above 1.0 ppb were to be excavated and the soil incinerated on-site.
- The fish in Rocky Branch Creek and Bayou Meto were to be monitored for dioxin, and the ban on commercial fishing and advisory discouraging sport fishing should continue as long as fish tissue dioxin levels remain above the Food and Drug Administration (FDA) alert level of 25 parts per trillion (ppt) (EPA 1990a).

Amendments to the Off-Site Areas OU ROD and the ROD for OU 2 were signed on September 17, 1996, which allowed the excavated media from the Vertac Off-Site Areas OU to be disposed in the on-site RCRA Subtitle C landfill. The reasons for this change were: (1) the on-site incinerator had been permanently shut down, (2) the citizens of Jacksonville had expressed opposition to further on-site incineration, and (3) similar site media should be disposed in a consistent manner (EPA 1996b).

The ROD for OU 1, the on-site above-ground media, was signed on June 30, 1993. The above-ground media included buildings, process equipment, leftover chemicals in the process vessels, spent activated carbon, shredded trash and pallets, and miscellaneous drummed wastes at the site (EPA 2003b).

The remedy described in the ROD for OU 1 (on-site above ground media) included the following elements:

- On-site construction of the OU 1 landfill meeting RCRA Subtitle C substantive requirements.
- On-site incineration of F-listed wastes.
- Off-site treatment/disposal and/or on-site incineration of demonstrated non-F-listed wastes.
- Demonstrated uncontaminated raw materials were to be shipped off-site for recycle/reuse or off-site treatment/disposal, and/or on-site incineration.
- Spent carbon could be regenerated/reused in the on-site leachate collection/treatment system and/or incinerated on-site.
- On-site incineration of drummed French drain oily leachate, spent butyl-T recovery waste, 2,4-D drum wash waste, and used filters.
- On-site disposal of drummed remedial investigation (RI) wastes in the on-site OU 1 landfill.
- Deferment of a remedy for containerized mud and sediments collected from manholes, drains, leaf filters, drilling, and bagged soil until the ROD for OU 2.
- Off-site incineration of PCB transformer oils.
- On-site incineration of shredded trash and pallets.
- Demolition of on-site buildings and disposal of the debris in the on-site OU 1 landfill.
- Process equipment was to be decontaminated to the treatment standards for hazardous debris and shipped off-site for recycle/reuse. Any equipment not meeting decontamination standards would be demolished, and the debris was to be disposed of in the on-site OU 1 landfill.
- Friable asbestos containing materials (ACM) were to be removed following the National Emissions Standards for Hazardous Air Pollutants regulations, and the resultant media was to be disposed of in the on-site OU 1 landfill.
- Spent solvents generated during decontamination activities were to be incinerated on-site. Wastewater generated during decontamination activities was to be treated in the on-site wastewater treatment facility and discharged to Rocky Branch Creek.
- Deferral of a decision for disposal of ash and salt generated by on-site incineration of OU 1 media to be consistent with the ash and salt generated from the incineration of the drummed D-waste and T-waste (EPA 1993a).

A UAO was issued to Hercules in March 1994 requiring it to perform remedial design (RD) and RA under the ROD for OU 1. Hercules' remedial design work plan expressed interest in pursuing off-site incineration as a means to perform some actions under the ROD. EPA agreed, and subsequently, an Explanation of Significant Differences (ESD) was issued in May 1995 by EPA to allow off-site incineration of F-listed process vessel contents, shredded trash and pallets, miscellaneous drummed wastes (except for RI wastes), spent carbon, and decontamination residues (EPA 1995b). Hercules later signed a contract with Aptus for the off-site incineration of contaminated media required by the ROD for OU 1. Hercules completed all aspects of the OU 1 remedy in May 1998 (ERM 1998).

A ROD for OU 2, the soil, foundations and curbs, and underground utilities, was signed on September 17, 1996. This ROD also focused on pads, and it addressed both surface and subsurface soil (EPA 1996a). As part of the remedy for OU 2, a treatability variance from the Land Disposal Restrictions (LDRs) was granted by the Regional Administrator on July 18, 1996. The variance granted a change in the LDR treatability standard for dioxin-contaminated wastes (i.e., incinerator ash and salt residuals) from 1 ppb to 5 ppb (EPA 1998). As noted above, the OU 2 ROD allowed certain Off-Site OU waste to be consolidated on-site in the OU 1 landfill. This standard would apply should placement of wastes be determined to have occurred in the on-site OU 1 landfill.

The remedy for OU 2 as described in the 1996 ROD included the following elements:

- On-site soils containing dioxin concentrations at or above 5 ppb were to be excavated and disposed in the on-site OU 1 landfill. All excavated areas were to be backfilled with clean soil and re-vegetated, and drainage modifications were to be made to control run on and runoff.
- Excavation and off-site incineration of soil containing TCB concentrations above the 500 ppm health-based action level. All excavated areas were to be backfilled with clean soil, graded, and re-vegetated.
- Consolidation in the OU 1 landfill of approximately 2,770 cubic yards (yd³) of dioxin contaminated soil excavated from residential yards by Hercules in 1989.
- Consolidation in the OU 1 landfill of contaminated soil to be excavated from the Rocky Branch Creek and Bayou Meto floodplains.
- Consolidation in the OU 1 landfill of approximately 890 yd³ of digester sludge from the Old STP and about 2 yd³ of sediment removed from the interceptor lines as part of the Off-Site Areas OU.
- Cleaning and removal of solids from underground chemical sewer lines. The lines would then be filled with grout, and cut-off barriers would be installed around various underground utility lines to prevent shallow water migration.
- Foundations and curbs were to be cleaned through scarification, and surface sealing was to be employed for areas where staining is persistent. The foundations and curbs were to be covered with enough soil to support vegetative growth and graded to prevent erosion and the ponding of water.
- During the RA, air monitoring and dust suppression were to be conducted to prevent airborne migration of contaminants off-site.
- EPA would work with the City of Jacksonville and the Vertac receiver to impose deed restrictions and/or land use restrictions to limit the use of the property.
- Long-term O&M measures were to be implemented to ensure that the integrity of the OU 1 landfill is maintained.

- A phased-fencing approach was to be used for the southern parcel, to allow the maximum amount of property possible to be available for potential commercial redevelopment (EPA 2003b).

In 1997, studies by the Agency for Toxic Substances and Disease Registry (ATSDR) and the Arkansas Department of Health (ADH) determined that a resident near the Vertac site had elevated levels of dioxin in blood. ATSDR and ADH recommended that the soil in the area be further investigated (EPA 2003b). EPA and Hercules both collected additional soil samples, and the results showed that four residential properties east of the Vertac site contained soil contaminated with 2,3,7,8-TCDD above the 1 ppb residential action level. These yards were designated the Jacksonville Residential Areas Superfund Site. On January 8, 1998, EPA issued an action memorandum for a time critical removal action to address the residential yard contamination. EPA then signed an ESD for the OU 2 ROD on January 12, 1998. This ESD determined that the Jacksonville Residential Areas Superfund Site was part of an "area of contamination" under OU 2 of the Vertac Superfund Site, and it stipulated that soils excavated from the residential yards were to be disposed in the on-site OU 1 landfill (EPA 1998). On January 15, 1998, the EPA issued an Administrative Order on Consent to Hercules Incorporated requiring it to perform the necessary sampling, analytical, removal, and disposal work called for under the action memo. Response activities performed by Hercules' contractor and overseen by the EPA eventually affected nine residences and a portion of the Vertac site east of Marshall Road. All activities associated with the removal action for the Jacksonville Residential Areas Superfund Site and the ESD for the OU 2 RA were completed in May 1998 (EPA 1998).

The ROD for OU 3, groundwater, was signed on September 17, 1996. This ROD called for the use of a new groundwater extraction system and the existing French drain system (Vertac Remedy) to impede the off-site migration of contaminated groundwater, and invoked a Technical Impracticability (TI) Waiver for non-aqueous phase liquids (NAPLs) identified in the tilted, fractured bedrock system. The presence of NAPL in the bedrock system precluded the cleanup of contaminated groundwater using existing technology, and thus the Maximum Contaminant Levels (MCLs) specified in 40 Code of Federal Regulations (CFR) § 141.11-26 were waived as unachievable (EPA 1996c). The ROD also called for five-year reviews to evaluate the performance of the hydraulic containment system and to determine if any new

technologies are available to remediate the contaminated groundwater to confirm the continued applicability of the TI waiver (EPA 1996c).

The remedy described in the 1996 ROD for OU 3 included the following elements:

- Installation of extraction wells in the central process area to hydraulically control the off-site migration of groundwater to the east.
- Continued operation of the French drain to impede contaminant migration to the south and west.
- Proposed use of the Reasor-Hill well and MW-92 as additional extraction wells to help remove contaminants from the center of mass.
- Treatment of extracted groundwater in the on-site wastewater treatment facility.
- TI waiver granted establishing a TI zone within the central process area where the MCLs are unachievable due to the presence of NAPL in the fractured, tilted bedrock system.
- Established Plume Concentration Levels (PCLs) for contaminants that were to be monitored at the edge of the TI zone (Figure 3). The PCLs act as a trigger level. If a PCL is exceeded, additional actions would be required to ensure the protectiveness of the remedy.
- Established a semi-annual groundwater monitoring program to assess the effectiveness of the remedy at containing the contaminant plume, including monitor wells that were already installed in connection with the Vertac Remedy.
- Restrictions should be imposed on the use of the groundwater at the site (EPA 1996c).

EPA determined that containment, rather than treatment, of the contaminated groundwater was an appropriate approach for OU 3. This decision was based on the presence of NAPLs in the groundwater system that could not be remediated effectively using existing technologies. Also, the Atoka Formation underlying the site has limited potential as a water resource, and there was no anticipated future use of the groundwater at the site (EPA 1996c).

The remedial action goals were to prevent the off-site migration of contaminated groundwater and to prevent off-site receptors from potential exposure to contaminated groundwater discharges. The PCLs were established for selected compounds in order to monitor the boundaries of the plume. These levels were established based on both carcinogenic and non-carcinogenic risks ranging from 1×10^{-4} to 1×10^{-6} .

The PCLs are listed in Table 3. The ROD states that if the PCLs are initially exceeded, then monitoring would increase from semi-annually to quarterly. Additional actions that may be

required to contain the plume could include changing the pumping rates on the existing extraction system and/or installing new wells or reworking existing wells to provide better containment, capture, and control (EPA 1996c).

4.3 REMEDY IMPLEMENTATION

The selected remedies for the Vertac site have been implemented through various UAOs issued by EPA from 1993 to 1996 to the remaining Potentially Responsible Parties (PRPs) for the site: Hercules, Inc., Uniroyal Chemical Ltd., and Vertac Chemical Corporation. The UAOs instructed the PRPs to implement the RD/RA for the selected remedies, however, only Hercules complied with the UAOs. A Statement of Work (SOW) defining the RAs was attached to each UAO.

A UAO was signed by EPA on June 22, 1993, instructing the PRPs, including Hercules, to implement the remedies selected in the ROD for the Off-Site Areas OU (EPA 1993). RAs conducted for the Off-Site Areas OU ROD included the cleaning of the two interceptor lines, removal of sludge from the sludge digester and capping of the sludge drying beds at the Old STP, the demolition and capping of the aeration basin at the West Wastewater Treatment Plant, and the excavation of contaminated sediments from residential areas in the Rocky Branch Creek and Bayou Meto floodplains (ERM 1998b).

The 1993 UAO SOW required the following for the excavation of floodplain soil:

- Soil containing 2,3,7,8-TCDD concentrations greater than 1.0 ppb be excavated to 12 inches (in.).
- Soil containing 2,3,7,8-TCDD concentrations greater than 10.0 ppb be excavated to 4 ft or to bedrock.
- Excavated areas where 2,3,7,8-TCDD concentrations were between 1.0 and 10.0 ppb should be backfilled with 12 in. of clean soil.
- Excavated areas where 2,3,7,8-TCDD concentrations exceeded 10.0 ppb should be backfilled with 4 ft of clean fill or returned to original grade, whichever is less.
- All excavated areas were to be re-graded and re-vegetated.

Hercules was instructed in the UAO to plan the excavation to coincide with the issuance of the ROD for OU 2 to avoid long-term storage of the soil at the site (EPA 1993). On June 27, 1997,

Hercules awarded the RA contract and mobilization to the site began during the week of July 7, 1997. RA activities began with the clearing of vegetation to allow access to grids established for the purposes of sampling and excavation. Samples were collected prior to excavation, except for those grids immediately next to Rocky Branch Creek, which were known to be contaminated. Excavation occurred in 6- to 12-in. intervals. After each interval, confirmation samples were collected to determine if further excavation was required. Eight grids on the west side and ten grids on the east side of Rocky Branch Creek were excavated. Excavation of the floodplain soil was completed in October of 1997, and the backfilling, grading, and seeding were completed by early April 1998 (EPA 2003b). A UAO was issued on March 24, 1994, requiring the implementation of the RD/RA for OU 1 (EPA 1994). Another UAO for the implementation of the RD/RA for OU 2 was issued on December 10, 1996 (EPA 1996d). With EPA concurrence, Hercules modified the OU 1 RD documents to incorporate the work required for OU 2. This allowed for the administration of a comprehensive remedial action for both OUs (EPA 2003b).

While completing the RD, several site stabilization activities were completed in advance to better facilitate work during the RA. These activities included the removal of process vessel contents, storage tank contents, and drummed wastes, asbestos abatement and storage of ACM, the removal of TCB and TCB contaminated soil, and the construction of the OU 1 landfill. Liquid and solid wastes from process vessels were separated into F-listed wastes and non-F-listed wastes. All F-listed wastes were sent to the Aptus incinerator in Coffeyville, Kansas, and all non-F-listed wastes were sent to the Chemical Waste Management Facility incinerator in Port Arthur, Texas. The removal of the process vessel contents was conducted between August 1995 and July 1996. Approximately 1,353,720 pounds of spent carbon were also removed from the site and sent to the Aptus incinerator between August 1996 and February 1997. In January and February 1996, Environmental Resources Management (ERM) performed an asbestos assessment to prepare for ACM abatement activities at the site. Asbestos was found in both friable and non-friable forms in insulation for buildings, vessels, piping, and fittings, as well as in roofing and siding shingles, tar paper, and floor tiles. Abatement activities occurred during April and May 1996, and all materials were wrapped in plastic and stored for disposal in the on-site OU 1 landfill. The excavation of TCB and TCB-contaminated soil began in May 1997.

These contaminated media were sent to Aptus for incineration. Progress was dependent upon the availability of incinerator capacity, and the work was completed in October 1997.

Approximately 2.2 million pounds of TCB-contaminated material was sent to Aptus. Mobley Contractors was awarded the contract to construct the on-site OU 1 landfill. Construction work began in August of 1996. The OU 1 landfill was completed in June 1997 (EPA 2003b).

Mobilization for the comprehensive RA for OU 1 and OU 2 began on July 9, 1997. ENSR was awarded the RA contract by Hercules, and ERM performed quality assurance for Hercules during the RA. The U.S. Army Corps of Engineers performed oversight for EPA during this RA. Activities completed for the OU 1 and OU 2 RA included the demolition of plant buildings, removal and off-site incineration of PCB transformers, transportation and off-site incineration of shredded trash and pallets, excavation of on-site 2,3,7,8-TCDD contaminated soil, cleaning and grouting of underground chemical sewers, installation of trench cutoff barriers along underground utility lines, cleaning of exposed surfaces of building foundations and curbs, decontamination of process equipment and associated materials suitable for recycle/reuse, backfilling of site to final grade, consolidation of materials into the on-site OU 1 landfill, and capping and closure of the on-site OU 1 landfill. All activities were completed in June 1998. As a result of RA activities, 952 tons of equipment, scrap tin, and scrap steel were shipped off-site for recycle/reuse. Approximately 2 million pounds of shredded trash and pallets and four PCB transformers were shipped to Aptus for incineration. Efforts to recycle/reuse site materials resulted in a redesign of the final grade for the cap of the OU 1 landfill. The final elevation was lower than originally designed. Materials disposed of in the on-site OU 1 landfill included demolished site buildings, structures, process equipment, debris, ACM, RI derived wastes, bagged residential soil, drainage ditch soil, Rocky Branch Creek floodplain soil, site soil, drummed sludge and sewer solids, on-site 2,3,7,8-TCDD contaminated soil, and wastes, and debris and soil from remediation of the northern parcel of land (EPA 2003b).

For the removal of on-site 2,3,7,8-TCDD contaminated soil, an approach similar to that for the Rocky Branch Creek floodplain soil was employed. Additional soil sampling had determined that 2,3,7,8-TCDD represented 70 percent of the dioxin TEQ results. Therefore, the clean-up goal of 3.5 ppb 2,3,7,8-TCDD was used for the RA. Grids containing between 3.5 and 35 ppb

of 2,3,7,8-TCDD after the initial excavation required no additional excavation provided that the grid was covered with 1 ft of clean backfill (EPA 2003b).

On December 31, 1996, EPA signed a UAO requiring Hercules to perform a Non-Time Critical Removal action for the dismantling, decontamination, and demolition of the on-site incinerator, associated structures, and debris (EPA 1996f). Activities associated with this action included the demolition and decontamination of the on-site incinerator facility and associated structures, shipment of some materials off-site for recycle/reuse, excavation of soil contaminated above 1 ppb 2,3,7,8-TCDD, stabilization of excavated soil and incinerator ash, and on-site disposal in the OU 1 landfill of soil, incinerator ash, shredded pallets, and all equipment that could not be recycled or reused. As part of this removal action, several buildings on the northern parcel were decontaminated and left in place for potential reuse if the site is redeveloped. Removal activities began in early July 1997 and were completed in March 1998 (EPA 2003c).

On December 10, 1996, EPA signed a UAO requiring Hercules to perform the RA for OU 3 (EPA 1996d). The objective of the RA for OU 3 is to hydraulically contain the flow of the shallow contaminated groundwater at the site through the use of extraction wells and the French drain. Prior to construction of the remedy for OU 3, a new wastewater treatment facility was constructed by Hercules at the site. This construction occurred between January and June of 1997. Activities conducted as part of the RA for OU 3 included the construction of the groundwater recovery building, installation of additional monitor wells, installation of the extraction wells, and the development of a Site-Wide Groundwater Monitoring Plan. Construction of the remedy for OU 3 began in December 1997. The extraction wells were connected to a collection/transfer tank in the groundwater recovery building through underground piping, and the collection/transfer tank was connected to the new wastewater treatment facility through underground piping. The groundwater extraction system was put into operation on May 19, 1998, and all RA activities for OU 3 were completed in June 1998. The ROD had proposed the use of the Reasor-Hill well as an additional extraction well to remove NAPL in the central process area. During excavation activities associated with the RA for OU 2, the well was buried. Attempts to locate the well were unsuccessful, and the well has not been plugged and abandoned (EPA 2003b).

4.4 OPERATION AND MAINTENANCE

As the Respondent under several EPA CERCLA UAOs, Hercules is the site operator and is responsible for O&M activities at the site. Due to the complexity of the Vertac site, the remediation occurred in several phases, and several O&M plans were initially prepared and implemented at the site. In the time since completion of the second five-year review, the Site Wide O&M Manual (Terracon 2008c) for the Vertac site has been updated based on EPA's and ADEQ's comments. Hercules provided a written response letter to EPA and ADEQ on December 28, 2004. A copy of the response letter is provided in Attachment 2B. The latest revision of the manual was conducted in March 2008.

Hercules' contractor, Terracon, currently staffs the site with two operator personnel. Terracon reported at the third five-year review site inspection that current O&M activities are conducted in accordance with this manual.

O&M activities at the site include the continued operation and upkeep of the French drain and groundwater extraction system, operation and upkeep of the WWTP, inspections and upkeep of the OU 1 landfill, inspections and maintenance of the fences at the site, maintenance of the groundwater monitor wells, semi-annual groundwater monitoring, biannual (every other year) fish monitoring in Bayou Meto, Rocky Branch Creek, and Lake Dupree, sampling of the effluent from the WWTP, sampling of stormwater along Rocky Branch Creek, and mowing of the capped burial areas at the site. O&M activities are conducted by on-site personnel, and routine maintenance and monitoring of the various components of the remedy are conducted on a weekly and monthly basis as described by the March 2008 Site Wide O&M Manual (Terracon 2008c) and summarized in the following paragraphs.

The OU 1 landfill is visually inspected once a month to verify the integrity of the landfill cap and associated components. The leachate collection system and leachate detection system are monitored every two weeks, and leachate is extracted on an as needed basis. The site operator indicated during the third five-year review site inspection that leachate is generally removed from the leachate collection system of the north cell about every two weeks,

depending upon rainfall. The site operator also indicated that leachate rarely needs to be removed from the leachate collection system of the south cell. This condition was noted during the second five-year review and appears to be continuing. Additional information regarding this condition is provided in Section 5.0.

The French drain and groundwater extraction system are monitored remotely from the wastewater treatment facility, and repairs are made as necessary to both systems. The French drain sumps and groundwater extraction and monitor wells are inspected monthly. Water levels are collected on a monthly basis to verify that the groundwater flow gradients indicate the contaminant plume is still contained. Groundwater sampling is currently conducted on a semi-annual basis and the results of groundwater sampling events since November 2003 are presented in Table 4.

Biannual (every other year) monitoring of fish tissue in Rocky Branch Creek and Bayou Meto has occurred since 1994 (sample locations are illustrated in Figure 5). Samples have also been collected in certain events at Lake Dupree (which is outside the scope of the site CERCLA remedy). The most recent sampling event occurred in the summer of 2006 (GBMc 2006), however, another event is planned for later this year. Results of the fish monitoring events conducted since 1994 are presented in Table 5.

The fences at the site are inspected monthly. The site operator inspects the signs on the fence and condition of the fence. In addition, each gate is inspected to verify that it is still locked, and observations are made to determine if obvious signs of trespassing are present along the site fence.

The WWTP is inspected monthly to verify that all equipment is operational and no leaks are present. In addition, the system has been automated. Operators can access the system remotely via computer to determine the operational status of the WWTP, amounts of water stored in tanks, and the daily pumping and status of the French drain and groundwater extraction well pumps. The WWTP effluent is sampled in accordance with discharge requirements, and the results are submitted to the ADEQ monthly. In addition, water samples are collected and

analyzed prior to entry into the first carbon treatment unit, after exiting the first carbon treatment unit, and after exiting the second carbon treatment unit. This data is used to determine when the carbon needs to be replaced in the treatment units.

5.0 PROGRESS SINCE THE SECOND FIVE-YEAR REVIEW

The second five-year review of the Vertac site was completed in November 2003, for the period from January 2001 through November 2003. The findings of the second five-year review, the status of recommendations and follow-up actions, the results of implemented actions, and the status of any other issues are described in the following sections.

5.1 PROTECTIVENESS STATEMENT FROM THE SECOND FIVE-YEAR REVIEW

The second five-year review report concluded that the remedies for the Vertac site were considered protective of human health and the environment because the wastes have been removed or contained. Wastes buried in the burial areas and the OU 1 landfill were protected from erosion by caps. Contaminated groundwater was contained and removed by the French drain and groundwater extraction systems and treated at the WWTP prior to discharge. Ongoing implementation of the O&M program monitoring will ensure remedies continue to be protective.

The report also stated because the completed remedial actions and O&M program for the Vertac site are considered protective for the short term, the overall remedy for the site is protective of human health and the environment for the short term, and will continue to be protective if the action items identified in the second five-year review are addressed (EPA 2003b).

5.2 SECOND FIVE-YEAR REVIEW RECOMMENDATIONS AND FOLLOW-UP ACTIONS

The second five-year review of the Vertac site, completed in November 2003, recommended the following follow-up actions (EPA 2003b):

- **Complete reevaluation of the fish consumption advisory for Bayou Meto** – ADH should complete the reevaluation of its fishing advisory for Rocky Branch Creek and Bayou Meto, including the 25 ppt action level for 2,3,7,8-TCDD in fish tissue and the geographical extent of the advisory, and pending completion of its evaluation and determination of an updated action level, should reinstitute the geographical limits of the fish consumption advisory to the pre-existing boundary, as recommended by the first five-year review.
- **Update the draft December 2002 Site Wide Operations and Maintenance Manual in accordance with Agency review comments** – The draft O&M Manual must be updated in accordance with all review comments and resubmitted to the regulatory agencies for review and approval; and following approval, it must be implemented. In particular, it has been noted that the revised manual should specify more direct communication of problems and follow-up actions by the site operator to the regulatory agencies.
- **Document status of disparity in leachate volume between the north and south cells of the OU 1 landfill** – At the time of the five-year review site inspection, the site operators indicated that a disparity in the volume of leachate was being observed between the north cell and the south cell of the OU 1 landfill (with the north cell generating more leachate than the south cell). Actions taken and recommendations for addressing this disparity in leachate volume were to be documented in the next annual progress report for the site and reviewed by EPA and ADEQ.
- **Address detections and exceedances in the wastewater treatment plant effluent** – The detection of low concentrations of chlorophenols and pesticides in the discharge effluent samples from the WWTP should be addressed. Hercules is required to report concentrations of these contaminants in their monthly report to the ADEQ, but no discharge limits have been set. While the concentrations are usually low (less than 10 ppb), the continued detection of these contaminants should be evaluated, including review of the need for discharge limits.

The reported chloride and total dissolved solids (TDS) exceedances should also be reviewed and evaluated by the EPA remedial project manager (RPM) and/or the EPA oversight contractor, along with the 2001-2003 2,3,7,8-TCDD monthly discharge limitation exceedances, including a review of the supporting data, documentation, analysis, and determinations of the site operator with respect to the cause of these discharge exceedances. Although a site waste water treatment facility was originally used as part of the Vertac Remedy, a new plant was constructed just prior to the OU 3 remedial action to treat the leachate produced by the OU 1 landfill, as well as contaminated liquids produced by the new remedial components added in the OU 3 remedial action and the elements of the existing Vertac Remedy that were adopted and incorporated by the OU 3 CERCLA remedy. As part of the actions directed by this review, EPA will investigate and determine if the streamlined treatment methods currently being employed by the WWTP prior to discharge into Rocky Branch Creek meet the OU 3 applicable or relevant and appropriate

requirements (ARARs) Best Available Technology (BAT) standards for certain toxic pollutants under the Clean Water Act.

- **Site Groundwater Monitoring Plan and Operations review** – The site operator has been directed by the EPA RPM to reinstitute semi-annual groundwater monitoring in the first quarter of calendar year 2004 and to restore 2,3,7,8-TCDD to the groundwater monitoring analyte list, as required by the OU 3 ROD. The site operator should also be directed to make corrections to the site groundwater monitoring plan to reflect these requirements, which should continue until otherwise directed. No further modifications to the site remediation O&M program should be undertaken by the site operator without the express prior written approval of both the EPA and the ADEQ.
- **Submission of Level III data packages** – The five-year review recommended that the site operator provide Level III data packages (versus Level II) with at least one of the required annual progress reports per five-year review period to provide for more comprehensive review of data quality in the annual groundwater monitoring progress report by the EPA and ADEQ. The site operator should also be directed to amend the groundwater monitoring plan to provide for this requirement and continue to implement it.
- **Reevaluate the availability of new technologies to treat and/or remove NAPL from the contaminated bedrock aquifer** – The OU 3 ROD requirement for evaluation of the performance of the hydraulic containment system and determination of whether new technologies are available to remediate the contaminated groundwater, should be accomplished at the next five-year review and each subsequent one, in order to confirm the continued applicability of the TI waiver.

5.3 STATUS OF RECOMMENDED ACTIONS

This section describes the current status of implementation of the recommendations included in the second five-year review report.

Complete reevaluation of the fish consumption advisory for Bayou Meto

In 2001 and 2003, as part of the five year review process, the EPA corresponded with the ADH on the issue of re-imposition of a fishing ban or advisory on the lower Bayou Meto segment below the Highway 13 bridge, and the adoption by the ADH of an EPA recommended screening level for dioxin in fish tissue (EPA 2003a). Oral discussions also took place between the EPA and ADH. Following EPA correspondence at the senior level in October 2003, the Executive Director of the ADH directed a re-examination of whether to reopen the screening levels for dioxin in fish tissue and to re-institute either fishing advisories or the fishing ban on Bayou

Meto below the Highway 13 bridge. The director indicated that in this process ADH would “consider the human health implications as well as possible economic, social, and community ramifications” of such actions. The director also indicated that the ADH would be seeking a grant from the ATSDR for a reassessment of these issues (ADH 2003). In the 2008 review process, the Associate Branch Chief for Epidemiology, ADH, acknowledged the prior requests from EPA asking ADH to consider lowering its dioxin screening level for fish tissues taken from state waters to 0.7 ppt, based upon EPA guidance on fish advisories, from the current level of 25 ppt (an action level derived from prior U.S. FDA guidance), as well as the reinstitution of either the fishing ban, or advisory, on the lower Bayou Meto below the Highway 13 bridge. In response to those requests, the ADH staff spoke with some state legislators, as well as community leaders and representatives, and the Office of the Governor. The ADH also considered the potential for major adverse economic impacts from such changes. Ultimately, ADH decided not to make the recommended changes. In follow-up communications with EPA, the ADH indicated that it also had conducted preliminary discussions about the possibility of obtaining an ATSDR grant, but based on the data already available on Vertac and the competitiveness of the grant process, ultimately did not apply for a grant. ADH currently has no funds, or plans, for further study of this issue (ADH 2008). In addition, the sampling location at Highway 13 bridge was dropped as such in the 2006 study, and the responsible party has recommended reduction of the frequency of the sampling interval from every two years to every five years.

Update the draft December 2002 Site Wide Operations and Maintenance Manual

Regarding the recommendation for revision to the draft Site Wide O&M Manual, Terracon has prepared and submitted a revised comprehensive Site Wide O&M Manual to EPA and ADEQ. The manual has been updated in accordance with the review comments and a “Response to Comments” letter from Hercules was submitted to EPA and ADEQ on December 28, 2004, however, formal written approval of the updated manual from EPA and ADEQ was not available. In addition, the revised manual does specify more direct communication of problems and follow-up actions by the site operator to the regulatory agencies. The manual identified specific issues that require immediate reporting to EPA and ADEQ by telephone, e-mail and/or in writing. In addition, any modification to the O&M manual or O&M procedures will be

reported in the annual reports submitted to EPA and ADEQ (Terracon 2008c). The current version of the Site Wide O&M Manual is dated March 2008.

Disparity in leachate volume between the north and south cells of the OU1 landfill

Concerning the status of the disparity in leachate volume between the north and south cells of the OU 1 landfill, no additional actions or recommendations for addressing this disparity has been documented in the annual progress report as recommended in the second five-year review.

Conversations with the on-site consultant, Terracon, indicate that although there is a difference between the north and south cells, the amount of leachate collected from the system is well below the maximum amount of leachate that can be stored in the sump and still maintain less than 2 ft of head in the primary leachate sump. The O&M manual indicated that if less than 1,130 gallons (gal) of leachate is removed from the sump, the leachate level is less than 2 ft of head on the sump (Terracon 2008c). Based on a review of the recorded leachate data obtained an average of 300 gal from the north cell and 135 gal from the south cell is removed every two weeks. These volumes indicate an average depth in each sump of approximately 0.5 ft for the north cell and 0.25 ft for the south cell. Since this is less than the maximum allowable depth, no additional actions or recommendations are anticipated.

Detections and exceedances in the wastewater treatment plant effluent

Although the detection of low concentrations of chlorophenols and pesticides in the discharge effluent samples from the WWTP has continued on an occasional basis, the site operator determined that the cause of the 2,3,7,8-TCDD exceedances was due the use of contaminated backwash water to flush the carbon filters and the presence of leaking valves. Hercules is required to report concentrations of these contaminants in their monthly report to the ADEQ, but there continues to be no set discharge limits. While the concentrations are usually low, the continued detection of these contaminants should be evaluated, including review of the need for discharge limits. In addition, the reported 2,3,7,8-TCDD discharge limitation exceedances, along with chloride, and TDS exceedances should still be reviewed and evaluated by the ADEQ.

Site Groundwater Monitoring Plan and Operations Review

The site operator has reinstituted the semi-annual groundwater monitoring as directed by EPA (Hercules 2006h). In addition, the site operator has restored 2,3,7,8-TCDD to the groundwater monitoring analyte list, as directed by the EPA RPM and as required by the OU 3 ROD. At the time of this review, the Site-Wide O&M Manual (Terracon 2008c) had been updated, but the Site-Wide Groundwater Monitoring Plan (Maud 1998) had not been revised to reflect these requirements. No further modifications other than those identified in the O&M manual have been or will be undertaken by the site operator without the express prior written approval of both the EPA and the ADEQ.

Level III data packages

The second five-year review recommended that the site operator provide Level III data packages with at least one of the required annual progress reports per five-year review period to provide for more a comprehensive review of data quality in the annual groundwater monitoring progress report by the EPA and ADEQ. This requirement has been implemented and the site operator has included a Level III data package with the report of analytical sampling and analysis from the April 2007 groundwater monitoring event for this five-year review period.

Availability of new technologies to treat and/or remove NAPL

Regarding the second five-year review recommendation that the next five-year review include another assessment of the availability of technologies to remove NAPL from the fractured bedrock at the site to confirm the status of the TI waiver for the groundwater, this assessment has been performed as part of this third five-year review. The results of this assessment are included in Section 7.4 of this report.

6.0 THIRD FIVE-YEAR REVIEW PROCESS

This section presents the process and findings of the third five-year review. Specifically, this section presents the findings of the document review, data review, ARARs review, site inspection, and interviews.

6.1 ADMINISTRATIVE COMPONENTS

The third five-year review for the Vertac site was led by Mr. Philip Allen, EPA RPM. EA Engineering, Science, and Technology, Inc. (EA), assisted in the review process. EA's team members included Ms. April Ballweg and Mr. Stan Wallace. Mr. Allen notified the PRP group representatives, Mr. Tim Hassett (Hercules) and Mr. David Jaros (Terracon) at the start of the five-year review process. Two ADEQ agency representatives, Ms. Dianna Kilburn, P.G., and Ms. Annette Cusher, P.E., participated during the third five-year review inspection and interview process in June 2008; and Ms. Shirley Louie, M.S., CIH, Associate Branch Chief for Epidemiology, ADH, also participated in the interview process in June 2008. In November 2008, EPA staff had follow-up communications with ADH about related grant questions. Other individuals involved in the interview process included Mr. Phillip Carlisle with the Concerned Citizens Coalition and Mayor Tommy Swaim with the City of Jacksonville.

In March 2008, the review team established the review schedule, which included the following components:

- Document review;
- Data review;
- ARARs review;
- Site inspection; and
- Interviews.

6.2 COMMUNITY INVOLVEMENT

Three public notices announcing the initiation of the five-year review for the site were published in the following local newspapers; *Arkansas Democrat Gazette*, September 1, 2008, *The Leader*, September 3, 2008, and *Jacksonville Patriot*, September 10, 2008. Copies of the initial public notices are provided in Attachment 7.

Upon signature, the Third Five-Year Review Report will be placed in the information repositories for the site, including the City of Jacksonville City Hall, the ADEQ office in Little Rock, Arkansas, and the EPA Region 6 office in Dallas, Texas. A final notice will then be published in the local newspapers summarizing the findings of the review and announcing the availability of the report at the information repositories.

6.3 DOCUMENT REVIEW

The five-year review for the site included a review of relevant documents, including the RODs, ESDs, UAOs, Second Five-Year Review Report, the Site Wide O&M Manual, the Site Wide Groundwater Monitoring Plan, Discharge Monitoring Reports, Progress Reports, and site correspondence with state and federal agencies. Complete references for the documents reviewed are provided in Attachment 2A, and copies of relevant correspondence are provided in Attachment 2B.

6.4 DATA REVIEW

Performance and compliance monitoring data collected as part of O&M activities at the site were reviewed as part of this third five-year review. These data consist of groundwater quality data, groundwater level measurements, WWTP discharge data, and fish tissue monitoring data.

The treatment plant discharge data are collected monthly and compiled in monthly reports submitted to the ADEQ. Groundwater quality data from November 2003 to the present was collected semi-annually and submitted in a progress report (Hercules 2006h and Terracon 2008a). As described in the progress reports and per EPA's request, the site operator resumed semi-annual groundwater sampling. Currently, under this plan, the next groundwater sampling event is scheduled for October 2008. Annual progress reports are submitted, but it was noted during this five-year review they are submitted every two years instead of on a yearly basis. Groundwater level measurements are collected on a monthly basis, and this data is also submitted in the progress report (Hercules 2006h and Terracon 2008a). The fish tissue monitoring data is collected biannually and submitted in a biannual report (GBMc 2004, 2006). Groundwater data available for the site since the second five-year review in 2003 is summarized in Table 4 (through April 2008). Fish tissue monitoring data available for the years 2004 and 2006 is summarized in Table 5.

The majority of reported contaminant concentrations were either below the corresponding MCL/PCL or were non-detect during the third five-year review period. Exceptions to this were noted for 2,3,7,8-TCDD and toluene. The groundwater monitoring data collected through April

2008 indicated three monitor wells (MW-9, MW-77, and LW-5) located outside of the TI zone, and two of the Rocky Branch Creek samples had 2,3,7,8-TCDD exceedances above the MCL of 0.03 nanograms per liter (ng/L), with one exceedance above the PCL of 7 ng/L for MW-77 in November 2005. Table 6 provides the locations, dates, and 2,3,7,8-TCDD concentrations of the exceedances during this five-year review for wells outside of the TI zone.

In addition, three wells located within the TI zone exceeded MCLs but not PCLs. Monitor wells MW-36 and MW-100 exceeded the 2,3,7,8-TCDD MCL of 0.03 ng/L, and MW-101 exceeded the toluene MCL of 1,000 ug/L. Table 7 provides the well identifications, dates, and concentrations of these exceedances.

The water level data available in the progress reports submitted by Hercules in July 2006 and by Terracon in February 2008 indicate that the groundwater extraction system is containing the majority of groundwater flow to the east in the fresh bedrock aquifer. These results indicate that at times slight eastward gradients were observed between some paired wells (i.e., MW-79/MW-99, MW-100/MW-89, MW-102/MW-90, and MW-91/MW-94). This was most common in well pairs MW-100/MW-89 and MW-91/MW-94. These well pairs are located between the TI waiver boundary and Marshall Road. The groundwater extraction system is controlling the hydraulic flow along the eastern edge of the TI zone with the exception of slight eastward lateral gradients during periods of dry weather (Hercules 2006h and Terracon 2008a). The French drain system was installed to the bedrock surface to intercept the flow of contaminated groundwater to the west and south from the site (EPA 2003b).

The WWTP discharge data is collected on a monthly basis, and the data is submitted to the ADEQ in monthly reports. The data from April 2003 through May 2008 were reviewed as part of this third five-year review. The data show that the WWTP exceeded the discharge limit for 2,3,7,8-TCDD in November 2004 (Hercules 2004k), February and May 2006 (Hercules 2006b, e), October and November 2007 (Hercules 2007j, k), and April 2008 (Hercules 2008d). All other discharge requirements were met during the requisite period. One possible explanation by the site operator for the continued exceedances during this review period was laboratory false positives. The site operator indicated that when an exceedance occurs, an

additional discharge sample is obtained during the month in question and analyzed to verify the initial exceedance. The resulting analytical data indicates that the resamples for every month in question, with the exception of October and November of 2007, were below the limits of detection. While the concentrations are usually low, the continued detection of the contaminants should be evaluated in order to identify the action necessary to eliminate or minimize discharge limit exceedances.

The wastewater treatment discharge data also shows that the monthly average limit for TDS was exceeded in June and August through October 2003 and the monthly average limit for chlorides was exceeded in August through October 2003. In addition, the maximum daily average for TDS and/or chlorides were exceeded at least once for the months August through October 2003 (Hercules 2003c, e, f, g). On February 4, 2004, the site operating consultant met with the ADEQ to present calculations in support of a request to revise the discharge limits at Outfall 002 (the WWTP discharge point) for TDS and chlorides. A letter submitted to ADEQ on February 6, 2004, identified that the personnel from the Hazardous Waste Division and Water Division agreed that the limits should be revised to "Report Only" (Terracon 2004). The site operator initiated implementation of the approved revisions in the January 2004 DMR which was submitted in February 2004.

Various chlorophenol, dichlorophenol, trichlorophenol, and pesticide compounds also continue to be sporadically detected in the WWTP discharge samples. There are no set discharge limits for these compounds, but the ADEQ discharge permit does require that results for these compounds be reported in the monthly reports (ADPC&E 1996). The cause for these detections has not been documented.

In May 2007, ADEQ approved (ADEQ 2007) an Outfall 002 Sampling Reduction Request submitted by Terracon. This approval allowed the removal of silver, DDT, and metabolites from the list of sampling parameters for the discharge monitoring reports. A request to remove mercury, cadmium, chromium, lead, heptachlor epoxide, nitrate+nitrite, and cyanide was not granted by ADEQ until further results and/or analytical methods were conducted. In addition, a request to reduce the monitoring frequency for oil and grease, copper, selenium, and toluene was

not granted due to an insufficient amount of data available for review. A copy of the ADEQ letter is provided in Attachment 2B.

On February 21, 2008, Terracon reported to ADEQ an unpermitted release at the Vertac site. Influent water from an equalization (EQ) tank at the WWTP was released at the site on February 17, 2008. The release of approximately 20,000 gal of EQ tank water commingled with storm water runoff occurred which eventually flowed into the Rocky Branch Creek over an 8 to 10 hour period of time. Based on analytical data obtained on February 12, 2008 for the influent concentration of the equalization water, Terracon estimates approximately 3.5 pounds (lbs) of phenols and 14 lbs of herbicides may have been released (Terracon 2008b).

On February 29, 2008, in a follow-up investigation, Terracon collected soil samples from four locations in the observed area of impact including one sample from an upgradient location (control sample) to be analyzed for phenols and herbicides. One result of 2,4,5-T at 0.110 milligram per kilogram (mg/kg) was detected at the sampling location at the edge of the parking lot of the WWTP. All other samples were below the detection limits. The letter from Terracon to ADEQ noted that the Region 6 Human Health Medium Screening Level 2008 for an industrial outdoor worker for 2,4,5-T is 6,800 mg/kg in soil (Terracon 2008b).

Terracon determined the cause of the equalization tank release was that the control panel dial was not fully engaged in the operating mode which caused the sand filter valve to remain partially open. In addition, a blown fuse caused the EQ tank valve to fail and the associated (backup) sump pump to fail. In order to prevent future incidences, Terracon has marked the sand filter's dial to indicate when the sand filters are in the proper mode of operation, and the operators are now required to check the programmable logic computer along with fuses after any thunderstorms to ensure the system is running properly (Terracon 2008b). Correspondence between ADEQ and Terracon concerning this incident is provided in Attachment 2B.

Fish flesh monitoring pursuant to the CERCLA Off-Site remedy (and at Lake Dupree under a State cleanup) has been performed at seven locations: one in Rocky Branch Creek; one in Lake Dupree; and five along Bayou Meto. The historical sampling locations in the Bayou Meto are

(from upstream near the site to downstream): U.S. Highway 67-167, State Highway 161, Interstate Highway 40, State Highway 15, and State Highway 13. Additionally, as reported in the 2003 Five-Year Review Report, the Arkansas Game and Fish Commission performed fish flesh sampling below the Highway 13 bridge at the request of ADH (EPA 2003b). According to the 2006 Bayou Meto Fish Flesh Monitoring Report (GBMc 2006), the sampling reach at State Highway 13 was eliminated from the study. This decision was made without EPA's approval. Refer to Figures 4 and 5 for the layout of the Rocky Branch Creek, Lake Dupree, and the Bayou Meto relative to the site, and the sampling locations along the Bayou Meto where fish tissue samples are collected. Hercules currently performs biannual fish tissue monitoring at the Rocky Branch Creek location, Lake Dupree, and the four remaining Bayou Meto locations (U.S. Highway 67-167, State Highway 161, Interstate Highway 40, and State Highway 15). The biannual sampling events conducted during this five-year review period occurred in August 2004 (GBMc 2004) and July 2006 (GBMc 2006). The current extent of the fish consumption advisory which now extends only to the State Highway 13 bridge is shown on Figure 4. The analytical results for all sampling events are presented in Table 5.

Geographically, the fish tissue sample results show a general decreasing trend in the 2,3,7,8-TCDD results downstream of the site towards the furthest-downstream sampling location at the State Highway 15 bridge. During the period 2004 to 2006, the highest concentrations of 2,3,7,8-TCDD were detected in fish tissue collected during the 2004 and 2006 events at the Rocky Branch Creek location, and the lowest concentrations of 2,3,7,8-TCDD were detected in the 2004 samples collected near the U.S. Highway 67-167 bridge and Lake Dupree, and in the 2006 samples collected near Arkansas Highway 15 bridge. No sampling results are available at this time for 2008. Although Lake Dupree has been the subject of a separate cleanup response effort involving the ADEQ, it has not been the subject of CERCLA remedial action and is not formally a part of the Vertac site five-year review.

All sample results have been below the FDA advisory level of 25 ppt dioxin in fish tissue samples that is utilized by the ADH. However, fish tissue at all current sampled locations demonstrated the presence of 2,3,7,8-TCDD concentrations above the current EPA recommended screening level of 0.7 ppt (EPA 2003b). Further, in 2001, the special sampling

event conducted by the Arkansas Game and Fish Commission had showed 2,3,7,8-TCDD below the Highway 13 bridge above the recommended EPA screening level in four of five samples (EPA 2003b).

The most recent biannual fish sampling report submitted by Hercules recommended that the fish consumption advisory be rescinded on the Bayou Meto (GBMc 2006). The Hercules report also recommended the cessation of biannual fish tissue monitoring since all of the samples have been less than 25 ppt for three consecutive monitoring periods (GBMc 2006). The Hercules recommendations did not discuss the EPA guidance recommended screening level of 0.7 ppt (EPA 1995a).

During the interview process, the site project manager from Hercules requested that the fish flesh monitoring be modified from biannually to once every five years, with the monitoring event occurring the year prior to the next five-year review (Hercules 2008f). The EPA RPM and the ADEQ representatives present during the meeting tentatively concurred with this recommendation and discussed a postponement of the next fish flesh monitoring event until July and/or August of 2012 with the report to be submitted by December 2012 in time for the next five-year review in 2013. The Hercules representative indicated an intent to submit a formal written request to EPA and ADEQ (Hercules 2008g). However, upon further review of the available data and background information on this subject, the Hercules request will not be approved. Hercules will instead be directed to carry out the regularly scheduled 2008 fish flesh sample by no later than January 31, 2009, and to continue with the fish sampling, and reporting program at all locations on the existing regular two year schedule in 2010, 2012, and so forth under the Off-Site remedy and UAO. In addition, the Highway 13 bridge will be reinstituted as a sampling location, and a special sampling of the Bayou Meto below the Highway 13 bridge will be planned to be conducted in July or August 2009. The EPA will then require an analysis of the question of whether a commercial fishing ban or consumption advisory is necessary on Bayou Meto below the Highway 13 bridge, and will review the potential applicability of the 0.7 ppt dioxin screening level for fish flesh as a TBC, while in the interim requiring the responsible party to employ the 0.7 ppt level for its actual sampling and analysis. EPA will also continue to encourage the ADH by appropriate means to reinstitute the fish consumption advisory or

commercial fishing ban in the areas below the Highway 13 bridge where it was formerly applicable, while EPA reviews the necessity of this extended sampling from a public health standpoint.

6.5 ARAR REVIEW

ARARs for the four OUs at the Vertac site were identified in several decision documents: Off-Site OU ROD dated September 27, 1990 and amended September 17, 1996; OU1 ROD dated June 30, 1993 and ESD dated May 25, 1995; OU2 ROD dated September 17, 1996; and OU3 ROD dated September 17, 1996. In addition, two five-year reviews have been conducted since the remedial action for the Off-Site Areas OU (November 30, 1993) was commenced. These five-year reviews were conducted in July 2001 and November 2003, respectively.

This five-year review evaluates ARARs and TBCs identified in the RODs and ESDs associated with the overall protectiveness of the remedy at the Vertac site and O&M of the remedy as follows:

- Pumping of affected groundwater from the groundwater extraction system along the eastern portion of the site
- Collection of affected groundwater from the French drain that intercepts groundwater flow along the western and southern boundaries of the burial areas at the site
- Treatment and discharge of extracted groundwater from the WWTP to the Rocky Branch Creek
- Management and off-site disposal of WWTP filtrate media
- Maintenance of the capped burial areas and the OU 1 landfill
- Groundwater and surface water monitoring, and
- Maintenance of the groundwater extraction system, French drain, and WWTP.

ARARs associated with the remedy were evaluated to determine if any newly promulgated or modified requirements of federal and state environmental laws and regulations have significantly changed the protectiveness of the remedy implemented at the Vertac site since the decisions documents were issued and the second five-year review was completed.

Changes to ARARs and TBCs identified in the RODs and ESDs were evaluated. Although changes to the regulations have occurred since the second five-year review, none of these changes impact the protectiveness of the remedy at the Vertac site and no newly-promulgated ARARs were found during this review. However, the EPA will review the question of whether the EPA guidance for fish advisories, specifically the recommended screening level of 2,3,7,8-TCDD of 0.7 ppt, should be adopted as a TBC (EPA 1995a).

6.5.1 Chemical-Specific ARARs

The chemical-specific ARARs identified in the RODs and ESDs applicable to the existing remedy at the site include the following:

- **Federal Safe Drinking Water Act, MCLs and Action Levels (40 CFR Part 141), and Secondary MCLs (SMCL) (40 CFR Part 143)**—These requirements are relevant and appropriate to groundwater used for drinking water by residences with private water supply wells at the site. The RODs identified these MCLs and SMCLs as relevant and appropriate to the site except for areas subject to the TI waiver established under the OU 3 ROD (“the TI zone”). The OU 3 ROD required that contaminants of concern (COCs) meet PCLs at the boundary of the TI zone. No changes to the MCLs and SMCLs have been promulgated for the identified COCs. PCLs have not been modified since the ROD was issued as identified in the second five-year review and subsequent review of site data. As indicated in the second five-year review, 2,3,7,8-TCDD was removed from the groundwater monitoring PCL list but was reinstated in the groundwater monitoring program per EPA’s direction (EPA 2003b). The chemical-specific ARARs for groundwater specified in the RODs were the MCLs, SMCLs and PCLs. Specifically MCLs were identified for the Vertac site outside the TI zone. PCLs were defined as the trigger levels for the TI zone.
- **Federal RCRA, Identification and Listing of Hazardous Waste (40 CFR Part 261 and Arkansas Hazardous Waste Management Regulation 23)**—The RODs identified these requirements as applicable to solid wastes generated during the treatment of contaminated groundwater which may be classified as a hazardous waste. Site O&M activities generate hazardous wastes of carbon containing landfill leachate (listed F039 waste) which is sent to Calgon Carbon Corporation for regeneration approximately three times per year (Terracon 2008e) in accordance with these requirements. In addition, during cleanout of the EQ tanks, a sediment/sludge is removed. This removal occurred once in 2000 and has not occurred during the 2003 through 2008 five-year review period. Any future removal of the sediment/sludge would need to meet these ARARs.
- **Federal RCRA, Land Disposal Restrictions (40 CFR Part 268) and Arkansas Hazardous Waste Management Regulation 23**—These requirements were identified in the RODs as applicable to hazardous wastes generated at the site for wastes generated

outside the Area of Contamination (AOC). LDRs do not apply to any wastes consolidated within the AOC. For wastes treated and re-deposited within the AOC, EPA granted a treatability variance for dioxin-contaminated wastes changing the treatability standard from 1 to 5 ppb. For hazardous wastes generated and disposed of off-site the LDRs are applicable. During the 2003-2008 five-year review period, no waste from the site was generated and disposed of in a landfill; therefore, LDRs were not triggered. In the future the LDRs may need to be met for sediment/sludge generated from the cleanout of the EQ tanks. This removal occurred once in 2000 and has not occurred during this review period. Any future removal of the sediment/sludge would need to meet these ARARs.

- **Water Quality Discharge Requirements (40 CFR Parts 122, 125 and 129 and Arkansas Regulations 2 (Regulations Establishing Water Quality Standards for Surface Waters of the State of Arkansas) and 6 (Regulations for State Administration of the National Pollutant Discharge Elimination System (NPDES))**—These requirements were identified in the RODs as applicable to the chemical-specific discharge criteria developed for the discharge of treated groundwater and leachate to Rocky Branch Creek. Regulation 2 was modified in 2007 (effective date November 5, 2007) and Regulation 6 was modified in 2008 (effective date January 17, 2008). Changes made to Regulation 6 do not affect wastewater discharge associated with the Vertac site. Changes made to Regulation 2 do not affect wastewater discharge associated with the Vertac site.

No other chemical-specific federal or State of Arkansas ARARs for the Vertac site were identified during the second five-year review process and no new chemical-specific requirements pertaining to the site have been promulgated since 2003.

6.5.2 Location-specific ARARs

Location-specific ARARs are restrictions on remedial activities solely based on the location of the remedial activity. The location-specific ARARs identified in the RODs and ESDs for the four OUs at the Vertac site are not applicable to the ongoing O&M activities at the site and therefore would not affect the protectiveness of the site remedy.

No other location-specific ARARs for the Vertac site were identified during this five-year review process, and no new location-specific requirements pertaining remedy at the site have been promulgated since 2003.

6.5.3 Action-specific ARARs

Action-specific ARARs are usually technology- or activity-based requirements or limitations on actions or conditions taken with respect to specific substances. These requirements are triggered by the particular remedial activities that are selected to accomplish the remedy. The action-specific ARARs specified in RODs and ESDs are discussed below:

- **Federal RCRA**

- **Standards Applicable to Generators of Hazardous Waste (40 CFR Part 262 and Arkansas Hazardous Waste Management Regulation 23):** The ROD identified these requirements for management and manifesting hazardous waste for off-site transportation and disposal as being applicable to potential hazardous wastes generated from remedial actions at the site. O&M of the treatment system at the site consider these requirements in accordance with the O&M plan. Site O&M activities generate hazardous wastes of carbon containing landfill leachate (listed F039 waste) which is sent to Calgon Carbon Corporation for regeneration (Terracon 2008e) in accordance with these requirements. In addition, during cleanout of the EQ tanks a sediment/sludge is removed periodically. This removal occurred once in 2000 and has not occurred during the 2003 through 2008 review period. Any future removal of the sediment/sludge would need to meet these ARARs.
- **Standards Applicable the Management of Containers and Tanks (40 CFR Part 264, Subpart I and Arkansas Hazardous Waste Management Regulation 23):** These regulations identify the requirements for the management and storage of containers storing hazardous waste. Waste stored for off-site disposal is managed in accordance with these requirements.
- **Standards Applicable to Landfill Capping and Post-Closure Care Requirements (40 CFR Part 264 Subpart N and Arkansas Hazardous Waste Management Regulation 23):** The RODs identified the ARARs associated with the capping and post-closure care related to the land-related units at the Vertac site. These requirements are being met through implementation of the O&M plan.
- **General TSD Facility Requirements Under RCRA (40 CFR 264, Subparts B, C, and D and Arkansas Hazardous Waste Management Regulation 23):** The RODs identified these ARARs which address the general facility requirements associated with preparedness and prevention, and contingency and emergency planning procedures associated with the operation. These requirements are being met through implementation of the O&M plan.
- **Groundwater Monitoring (40 CFR § 264.91 Arkansas Hazardous Waste Management Regulation 23):** The RODs identified this regulation which requires

that owners/operators of land-based RCRA treatment, storage or disposal (TSD) units conduct groundwater monitoring and response program. The OU 3 ROD determined that although these requirements are not applicable to site-wide monitoring that may be part of a selected remedy for groundwater, the RCRA groundwater monitoring program may be consulted, where relevant and appropriate. Groundwater monitor wells will be used to track the operation and performance of the selected remedy. The number and location of the monitoring locations will be determined by site-specific conditions. Existing monitor wells will be utilized if their location and construction are consistent with the monitoring objectives. This five-year review evaluated the relevance and appropriateness of this requirement and determined that the existing groundwater monitoring program was sufficient to ensure the protectiveness of the remedy.

- **Regulation 3 – Licensing of Wastewater Treatment Plant Operators (effective date March 15, 2008):** This regulation, which specifies the requirements for the licensing of wastewater treatment plant operators, was modified in 2008 and was identified as a potential ARAR in the OU 3 ROD. The site project manager currently holds a Class 1 Industrial Wastewater Operator License (#004190), and the site plant operator holds a Class 2B Industrial Wastewater Operator License (#007555). Both licenses have an effective expiration date of December 31, 2009 (ADEQ 2008). Per Section 3.307 of the regulation, current holders of a Class I or Class II Municipal and Industrial Wastewater Operator Licenses will be grandfathered into the Basic Industrial Wastewater Operator License. Changes made to Regulation 3 do not affect the Vertac site operator's licenses.
- **Closure Requirements for Injection Wells Regulated Under 40 CFR 144 and 146 and Arkansas Regulation 17 (with modified effective date February 14, 2005):** The second five-year review noted that during the RA, the Reasor-Hill well was buried and several unsuccessful attempts have been made to locate the well and the well has not been closed. This updated ARAR would apply to the remedy in the event that the Reasor-Hill well is eventually located, or for the closure of other injection, extraction, and monitor wells on-site.

No other action-specific federal or state of Arkansas ARARs for the Vertac site were identified during the five-year review process, and no new action-specific requirements pertaining to the site have been promulgated since 2003.

6.5.4 To Be Considered

The Off-Site OU ROD identified TBCs as follows:

- April 24, 1986, memo from ATSDR to EPA Region 6. This memo recommends cleanup levels specific to the Vertac off-site area.

- January 26, 1989, memo from EPA to ATSDR stating that the highest concentration of 2,3,7,8-TCDD found in the Rocky Branch Creek and Bayou Meto sediments does not pose an unacceptable health threat.
- The EPA 1-ppb action level previously employed at other 2,3,7,8-TCDD contaminated sites.
- Proposed advisories on protection of human health and aquatic life developed under the Clean Water Act (CWA). The advisories for aquatic life are specific to individual fish species, and may have to be adjusted for conditions in Rocky Branch Creek.

These guidelines were reviewed in the second five-year review. During the second five-year review it was identified that the ATSDR had modified its screening levels, evaluation levels, and actions level TEQs in 1997. Since the second five-year review, the ATSDR policy related to dioxins was modified in 2005 (February 17, 2005). In that policy document, the ATSDR removed the 1 ppb action level (ATSDR 2005). Based upon the second five-year review it was determined that the site-specific risk assessments for the Vertac site for residential soil cleanup level of 1 ppb action level and covered with at least 1 ft of clean soil to prevent exposures was protective. Therefore, the ATSDR guidelines in 1997 and 2005 do not affect the protectiveness remedy at the Vertac site.

In 2002, the reaches of two bodies of water (Bayou Meto and Lake Dupree) associated with the Rocky Branch Creek were identified as a potential CWA 303(d) listed water which may have required the development of a total maximum daily load. In 2004 and 2006, the state of Arkansas removed these two tributaries of the Rocky Branch Creek from the CWA 303(d) listed waters as the State demonstrated that there were other pollution control mechanisms required by state, local, or federal authority that will result in attainment of water quality standards for the listed pollutants within a reasonable time.

In addition, the site is required to test the previously mentioned streams for fish tissue dioxin levels above Food and Drug Administration (FDA) advisory levels. The FDA health advisory level recommends that fish containing 2,3,7,8-TCDD concentrations greater than 50 ppt should not be consumed and that fish with levels less than 25 ppt pose no serious health concern (FDA 1981, 1983). Fish tissue has been monitored as part of the Vertac site remedy. Recent analysis in 2006 indicate that the fish flesh concentrations of 2,3,7,8-TCDD TEQ from the collected samples continue to be below the FDA advisory level of 25 ppt. However, as noted above, the

EPA has raised questions with the ADH about the appropriateness of the FDA recommended screening level versus the more recent EPA recommended screening level of 0.7 ppt, which has not been adequately addressed by the ADH. Therefore, the EPA will review and consider the issue of whether this screening level should be adopted as a TBC.

6.6 SITE INSPECTION

An initial site inspection was conducted on April 16, 2008, with the official site inspection conducted on June 24, 2008. The site inspections were conducted to assess the condition of the site and the effectiveness of measures employed to protect human health and the environment from the contaminants still present at the site. Attendees during the official June 24, 2008 site inspection included: Philip Allen (EPA), Dianna Kilburn (ADEQ), Annette Cusher (ADEQ), Stanley Wallace (EA), April Ballweg (EA), Tim Hassett (Hercules), David Jaros (Terracon), Thomas Pilgrim (Terracon), Ken Brown (Terracon), and Roland McDaniel (GBMc). The completed site inspection checklist including the inspection team roster is provided in Attachment 3. The site inspection photographs are provided in Attachment 4.

The Vertac site appears to be well maintained with no signs of vandalism noted. Security fencing and gates were secured and in good condition (Photograph 1) with only two areas of cut fencing noted during the April 2008 site visit. During the subsequent site inspection in June 2008, these areas of fencing had been repaired (Photograph 34). Trees and vegetation were noted along fence lines which may help obscure the site thereby possibly impeding trespasser access to the fence (Photograph 31). Identification signs were posted on the perimeter fences and gates. Site access roads (Photographs 14, 17, 19, and 20) were in good condition throughout the site.

Many of the existing on-site groundwater monitor wells and extraction wells (Photographs 39 – 42) were located during the Vertac site inspection. All observed surface completions were secure and in good condition. Due to the size of the site and the various components of the remedy, every well was not visually inspected during the third five-year review site inspection, but the condition of all inspected wells was good. One of the extraction wells was opened

during the site inspection (Photographs 39 and 40). The equipment inside the well vault was in good condition. The 2006 Progress Report stated that three of the five flow meters in the extraction wells were replaced over the last two-year period due to mechanical failures (Hercules 2006).

The French drain was reviewed during the site inspection. All manholes were in good condition (Photographs 11, 13, and 14). Some of the French drain manholes were inspected and appeared to be functioning as intended (Photographs 11 and 12). The controllers and flow meters for the French drain pumps are mounted on power poles located near the manholes (Photograph 13). Each controller and flow meter appeared to be in good condition and functioning properly. There were no visible signs of surface seepage along the French drain.

The Reasor-Hill Burial Area and the North Burial Area appear to be mowed and maintained (Photographs 16 and 17). The vegetative cover was well established, and no obvious signs of erosion were noted.

The sedimentation vault (Mount Vertac) was also inspected while the team was on-site for the third five-year review site inspection (Photograph 5). The armored (rip-rap) west slope of the vault noted during the previous five-year review appeared to be in good condition with some minor vegetative growth noted but no trees (Photographs 9 and 10).

Slope failure was noted on the north side of the sedimentation vault during the April 2008 and June 2008 site visits (Photographs 6, 7, and 8). The site operator indicated that the area of slope failure was in the same general vicinity of an earlier slope failure event in January 2005, which was subsequently repaired in August 2005 (Terracon 2008d). The area was surveyed on June 25, 2008 and the following observations were reported in a letter from Terracon to the EPA RPM on July 25, 2008 (letter available in Attachment 2B):

- The area of erosion measures approximately 100 ft in width by 100 ft in length.
- The erosion appears to be confined to the vegetative layer and upper clay layer.

- The erosion occurred on the upper surface and apparently occurred due to the excessive saturation resulting from rain events in March and April 2008.
- The side slope on the north face of the landfill is considered steep with an approximate 3 (horizontal) to 1 (vertical) slope.
- The top of the landfill is relatively flat with a 3 to 4 percent slope to the northwest.
- A low area was noted on the top of the landfill near the north edge where stormwater is assumed to accumulate and pond.

Repairs to the sedimentation vault slope were initiated in mid-October, with remedial activities completed by the end of October 2008 (Photographs 61 – 66). On October 28, 2008, the EPA RPM conducted an inspection of the sedimentation vault slope and deemed it adequate at the time.

The third five-year review site inspection also included an inspection of the OU 1 landfill. The cap had a well established and maintained vegetative cover with no signs of erosion, slumping, bulging, cracking, settlement, or animal burrows (Photograph 21). The letdown channels are covered with large rocks and drain stormwater runoff from the top of the cap (Photograph 23). The leachate collection and leachate detection sumps were secured and in good condition (Photographs 25, 26, 27, and 28). During the April 2008 site investigation, the passive landfill gas vents were missing screens to keep birds out. During the subsequent site inspection in June 2008, the screens had been replaced on the vents (Photograph 33). Sedimentation ponds to address runoff from the landfill cap are present along the north, east, and south sides of the landfill. The containment structures surrounding these ponds appeared to be in good condition with the exception of some areas of thin vegetation outer portion of the north basin (Photograph 30). The overflow structures were also in good condition, and no signs of excessive siltation were noted in the sedimentation ponds.

The Vertac site contains two buildings. One building contains equipment associated with the groundwater extraction system (the groundwater recovery building; Photograph 35) while the second building contains the water treatment equipment (the WWTP). The groundwater recovery building contains a holding tank, pumps, piping, and sampling ports (Photographs 37 and 38) for the collection of extracted groundwater from the extraction wells and some of the monitor wells. This building also contains some spare parts and equipment. Several monitor

wells and the extraction wells are connected to the tank (Photograph 36) in the groundwater recovery building via underground piping. The tank is used to store recovered groundwater for transfer via underground pipes to the WWTP. The tank and associated appurtenances appeared in good condition.

The WWTP was also inspected (Photograph 2). Two large equalization tanks are located outside the building (Photograph 45). These tanks store the water extracted from the French drain and the groundwater extraction system which is then transferred to the WWTP through a piping system (Photographs 47 and 48). In addition, leachate recovered from the leachate collection sumps at the OU 1 landfill is also manually pumped into these tanks. The tanks appeared to be in good condition. No leaking was noted around the tanks, and the secondary containment berm was present and in good condition. The WWTP building houses the remaining components of the treatment system including two pumps (Photograph 49), two sand filters (Photograph 50), a backwash holding tank for the sand filters (Photograph 51), three carbon treatment units (Photograph 52), a pH neutralization tank (Photograph 53), and the treated water tank (Photograph 54). Sampling ports are located inside the building before each carbon treatment unit, after the final carbon treatment unit, and after the treated water tank. All components inside the building appeared in good condition, including the newly acquired air compressor (Photograph 55). The WWTP only operates when enough water has been recovered for treatment. The plant was not in operation at the time of the site inspection. The facility can be operated manually, but the system is typically operated by a programmable logic computer located within an on-site control room (Photograph 56). The outfall for the wastewater treatment facility was also inspected (Photograph 57). No effluent discharges were observed, and the discharge pipe appeared to be in good condition.

Other areas of the Vertac site observed during the site inspection included the leachate sump in the former cooling pond (Photograph 15), a surface seep sump near the Reasor-Hill Burial Area, the weir at Rocky Branch Creek where surface water samples can be collected (Photograph 18), and a water meter shed located on the east side of the site. The site operator stated that the shed, which houses a city water meter and supplies water to the nearby hydrant and the rest of the facility, had been blown off of its foundation (Photograph 43). The EPA

RPM identified the need for this building to be replaced onto its concrete footing to ensure safe and adequate access for city inspectors.

6.7 SITE INTERVIEWS

In accordance with the community involvement requirements of the five-year review process, EPA identified eight key individuals to be interviewed. All individuals were interviewed in person during the week of the site investigation on either June 24, 2008 or June 25, 2008. Table 8 lists the individuals that participated in the interviews records for the third five-year review.

In general, the interviews reflected an overall positive perception of the site operations with no comments or issues identified by the local citizens per the Vice President of the Concerned Citizens Coalition and the Mayor of the City of Jacksonville. ADEQ personnel indicated that they will continue to monitor identified issues at the site such as the sedimentation vault slope failure (repaired in October 2008) and the low level exceedances identified in the discharge monitoring reports. In addition, ADEQ mentioned approval of the Hercules-suggested modification in the fish flesh monitor reporting from a biannual event (once every two years) to once every five years prior to the next five-year review. (However, as noted above, the EPA has decided not to approve a change in the biannual sampling requirement and will require restoration of the Highway 13 bridge sample location.) ADH personnel indicated adequate communication during this five-year review period with the ability to sufficiently track progress at the site and no issues identified during the last five years.

7.0 TECHNICAL ASSESSMENT

The conclusions presented in this section support the determination that the selected remedy for the Vertac site is currently protective of human health and the environment. The EPA guidance identifies three questions (Questions A, B, and C) to be used to provide a framework for organizing and evaluating data and information, and to ensure all relevant issues are considered when determining the protectiveness of a remedy. These questions are assessed for the site in the following sections.

7.1 QUESTION A: IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

- **RA Performance**—The documents that detail the remedial decisions for the site are the September 1990 ROD for the Off-Site Areas and its amendment of September 1996; the June 1993 ROD for OU 1 and its May 1995 ESD; the September 1996 ROD for OU 2 and its January 1998 ESD; and the September 1996 ROD for OU 3. EPA and ADEQ have concurred that the remedial actions for the site are complete. The O&M is ongoing, and based on the data review, the site inspection, and interviews, it appears that the Vertac site remedy is functioning as intended by the decision documents.
- **Cost of System and O&M**—According to information provided by the PRP representative, the average cost for O&M has been about \$500,000 per year. The O&M costs estimated in the ROD were approximately \$126,000 (EPA 1996c). The current O&M costs are more than the estimate presented in the ROD, but are reasonable considering the level of effort required on a daily, weekly, and monthly basis, the number of OUs to maintain (i.e., landfills and groundwater systems), the number of wells being sampled, parameters being analyzed, and frequency of sampling.
- **Opportunities for Optimization**—Fish flesh monitor reporting has been occurring on a biannual basis for the two previous five-year reporting periods. Hercules informally requested a modification to the monitor reporting period from once every two years to once every five years prior to the next five-year review process. Although EPA and ADEQ staff tentatively concurred with this request, based on further review of the issue, the EPA will not approve such a change. Hercules indicated that it plans to submit a formal written request to EPA and ADEQ for this modification (Hercules 2008g). In addition, requests to eliminate or reduce the monitoring frequency of parameters for the discharge monitoring reports and/or the progress reports are expected to be submitted to the appropriate agencies for consideration. The EPA and ADEQ will review the submitted requests and determine if the modification is acceptable. Such review should take into account the relevance, if any, of documented exceedances and uncontrolled, unpermitted releases involving COCs occurring during the past several years at the site. If the request is approved, then upon receipt of written approval the modifications may be implemented at the Vertac site.
- **Early Indicators of Potential Issues**—At the time of the five-year review site inspection, the site operator discussed with the inspection team the unpermitted release of untreated water from an EQ tank at the WWTP in February 2008 after a thunderstorm event. It was estimated that approximately 20,000 gallons of EQ tank water commingled with storm water runoff flowed off site and into the Rocky Branch Creek. Based on analytical data obtained on February 12, 2008 for the influent concentration of the equalization water, Terracon estimates approximately 3.5 lbs of phenols and 14 lbs of herbicides may have been released with this water (Terracon 2008b). The site operator had promptly notified the EPA Region 6 RPM of the release. The apparent cause of the release was that the control panel dial did not engage in the operating mode, causing the sand filter valve to remain partially open, coupled with a blown fuse which resulted in the

EQ tank valve and the sump pump failing to operate. In order to prevent future unpermitted releases, the site operator will conduct a system inspection after any significant thunderstorms.

Upon review of the progress reports and the analytical groundwater data, MCL exceedances for 2,3,7,8-TCDD were noted in three wells (MW-9, MW-77, and LW-5) located outside of the TI zone and in two of the Rocky Branch Creek samples. The exceedance noted in MW-77 was also above the PCL for 2,3,7,8-TCDD. In addition, the data indicated two wells (MW-36 and MW-100) were above the MCL for 2,3,7,8-TCDD, and one well (MW-101) was above the MCL for toluene. These three wells are located within the TI zone. The site operator identified the potential reason for the exceedances laboratory false positives. This potential issue should be evaluated further to determine the reason for the observed exceedances, especially for the wells located outside of the TI zone and the Rocky Branch Creek.

Low level exceedances in the discharge limitations of 2,3,7,8-TCDD have been identified in six of the discharge monitoring reports examined during this five-year review. The site operator relayed the fact that when this occurs, an additional discharge sample is obtained during the month in question and analyzed to verify the initial exceedance. The data indicates that the resamples, with the exception of October and November of 2007, were below the limits of detection. ADEQ is monitoring these conditions and will notify the site operator of any required modification to address this issue.

The O&M Manual and Site-Wide Groundwater Monitoring Plan were to be updated to reflect continued monitoring on a semiannual basis and restoration of 2,3,7,8-TCDD to the groundwater monitoring analyte list as required by the OU 3 ROD. The Site-Wide O&M Manual was modified in accordance with comments received from EPA and ADEQ, but the Groundwater Monitoring Plan has not been updated yet. In addition, the annual progress reports are being submitted approximately every two years. These issues can be remedied by updating the Site-Wide Groundwater Monitoring Plan and submitting the progress reports yearly.

- **Implementation of Institutional Controls and Other Measures**—Some institutional controls have been implemented in accordance with the RODs. The court appointed Receiver for Vertac Chemical Corporation filed and recorded three Notices of Lis Pendens (CERCLA Docket Nos. CERCLA 6-01-97, 6-02-97, and 6-04-97) with the Pulaski County Clerk's Office which assert an EPA intention to place a lien upon the Vertac site (EPA 1996e). These documents, filed in 1996-97, contain attached copies of three UAOs issued by the EPA for CERCLA response action at the Vertac site requiring that the said orders be so filed for the purpose of providing notice to third parties (EPA 1996e). The 1987 appointment of the Receiver for all assets of Vertac Chemical Corporation, including the site, by the United States District Court for the Eastern District of Arkansas (which appointment is still in force) is itself an effective form of institutional control. The CERCLA documents provided by the Pulaski County Clerk's Office and reviewed during this five-year review are included in Attachment 6.

Additional institutional controls limit redevelopment of the southern portion of the site (zoned industrial), and access controls physically limit access to the site. Access at the site is controlled by a fence and locked gates. Access through the main gate can only be obtained from inside the WWTP or through the use of an access code. No wells other than those associated with the groundwater extraction and monitoring system have been installed at the site. No development has occurred on the 93-acre southern portion of the site, nor is any development of this part of the Vertac site contemplated due to the remedial action components in place in the area, as well as the presence of contamination below the caps, in the groundwater, and disposal units.

- **Status of the TI Waiver for NAPLs in the Tilted, Fractured Bedrock System**—The OU 3 ROD included a requirement that five-year reviews at the site determine if any new technologies are available to remediate the contaminated groundwater, in light of the NAPLs contained in the fractured bedrock (EPA 1996c). As part of the third five-year review, the potential development of new technologies that might be capable of remediating NAPL in fractured bedrock aquifers was researched. This search was conducted by reviewing available technologies at the Federal Remediation Technologies Roundtable (FRTR) website data-base at <http://www.frtr.gov/> (FRTR 2008). No new technologies that might benefit the groundwater remediation at the Vertac site were identified.

7.2 QUESTION B: ARE THE ASSUMPTIONS USED AT THE TIME OF REMEDY SELECTION STILL VALID?

There have been no changes in the physical condition of the site that would affect the protectiveness of the remedies at the Vertac site.

- **Changes in Standards, Newly Promulgated Standards, and To-Be-Considered**—The changes to ARARs and TBCs identified in the RODs and ESDs were evaluated previously in Section 6.5. Although changes to the regulations have occurred since the second five-year review in 2003, none of these changes impact the protectiveness of the remedy at the Vertac site and no newly promulgated standards were found during this five-year review.
- **Changes in Exposure Pathways**—There have been no changes in exposure pathways for the Vertac site.
- **Changes in Toxicity and Other Contaminant Characteristics**—The previous five-year reviews identified a change in the recommended EPA screening level for dioxin in fish tissues. Although the Off-Site ROD requirement was based on an FDA recommended figure of 25 ppt (EPA 1990a), the EPA currently recommends that 0.7 ppt be used to conduct more intensive site-specific monitoring (EPA 2003b). This change in guidance was reflected in the five-year review recommendation that the State of Arkansas reevaluate the fish consumption advisory for Bayou Meto. EPA has recommended

additional measures in this report for addressing this issue and associated questions concerning fishing bans or consumption advisories. No other changes in toxicity or other contaminant characteristics were identified during this five-year review.

- **Changes in Land Use**—There were no changes in land use identified at the Vertac site (Parcel 1) during this review. The interview with the Mayor of Jacksonville identified a change in the land use for portion of the site located north of the Vertac site (Parcel 2). The city plans on developing fire and police training facilities in that area. These plans are not anticipated to affect the ongoing O&M activities at the Vertac site.

7.3 QUESTION C: HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

No other information has come to light as part of this third five-year review for the site that would call into question the protectiveness of the site remedy.

7.4 TECHNICAL ASSESSMENT SUMMARY

The technical assessment, based on the data review, site inspection, technical evaluation, and interviews, indicates the remedial actions selected for this site generally appear to have been implemented as intended by the decision documents.

As required by EPA during the second five-year review, semi-annual sampling of groundwater was reinstated and conducted throughout this five-year review period. The majority of reported contaminant concentrations were either below the corresponding MCL/PCL or were non-detect during the third five-year review period. Exceptions to this were noted for 2,3,7,8-TCDD and toluene, and are summarized in Tables 6 for wells located outside of the TI zone and Table 7 for wells located inside of the TI zone.

The water level data available in the progress reports submitted by Hercules in July 2006 and by Terracon in February 2008 indicate that the groundwater extraction system is containing the majority of groundwater flow to the east in the fresh bedrock aquifer. These results indicate that at times slight eastward gradients were observed during periods of dry weather.

The WWTP discharge data indicated that discharge limitations were exceeded for 2,3,7,8-TCDD in November 2004, February and May 2006, October and November 2007, and April 2008. The other discharge requirements appear to have been met during the requisite period. When an exceedance occurs, the site operator collects an additional discharge sample to verify the initial exceedance. The resulting analytical data indicates that the resamples for every month in question, with the exception of October and November of 2007, were below the limits of detection.

The discharge limits for TDS and chlorides was modified by the ADEQ on February 4, 2004, to reflect "Report Only" criteria. The site operator initiated implementation of the approved revisions immediately. In addition, ADEQ approved the removal of silver, DDT, and metabolites from the list of sampling parameters for the discharge monitoring reports in May 2007.

On February 17, 2008, an unpermitted release at the Vertac site occurred. Influent water from an EQ tank at the WWTP was released at the site resulting in approximately 20,000 gal of EQ tank water commingled with storm water runoff carrying an estimated 3.5 lbs of phenols and 14 lbs of herbicides.

Fish flesh monitoring shows a general decreasing trend in the 2,3,7,8-TCDD results downstream of the site towards the furthest-downstream sampling location at the State Highway 15 bridge. All of the indicated sample results were below the FDA alert level of 25 ppt, but above the EPA recommended screening level of 0.7 ppt.

No new technologies for the remediation of NAPL in fractured bedrock were identified as part of this five-year review. Also, no changes in ARARs or changes in exposure pathways, toxicity data, or other contaminant characteristics were noted for the second five-year review period.

8.0 ISSUES

Operations and maintenance are ongoing at the site, and based on the data review, site inspection, interviews, and technology assessment, it appears the remedy is functioning as intended by the decision documents. To ensure continued protectiveness, six issues are identified in the third five-year review for this site, as described in the following paragraphs. These issues do not currently affect the protectiveness of the remedy, although they need to be addressed to ensure continued protectiveness.

- **Landfill cap issues**—At the time of the five-year review site inspection a slope failure was noted on the north slope of the sedimentation vault. No exposed waste was observed. The site operator indicated that this had occurred previously in January 2005 and was repaired in August 2005. Due to the recurrence of the slope failure, it was determined that an alternate method to repair the area was required. The area was surveyed on June 25, 2008 and a letter providing the planned repairs for the slope was submitted to EPA and the ADEQ. The EPA RPM approved the plan for repairing the slope and the remediation activities were scheduled to commence during the period of August to October 2008. On October 28, 2008, after repairs to the slope were completed, EPA conducted an inspection of the slope modifications and deemed the repairs to be adequate.
- **Unpermitted release of wastewater treatment plant (WWTP) influent water**—An unpermitted release of untreated water from an EQ tank at the WWTP occurred in February 2008 during a thunderstorm event and was reported to the RPM. It was estimated that approximately 20,000 gallons of EQ tank water commingled with storm water runoff flowed off site and into the Rocky Branch Creek. Based on analytical data obtained on February 12, 2008 for the influent concentration of the equalization water, Terracon estimates approximately 3.5 lbs of phenols and 14 lbs of herbicides may have been released. The cause of the release was determined to be a control panel dial that did not fully engage in the operating mode, causing the sand filter valve to remain partially open, coupled with a blown fuse which resulted in the EQ tank valve and the sump pump failing to operate.
- **Groundwater sample exceedances of MCLs and PCLs**—The Progress Reports and the analytical groundwater data indicated MCL exceedances for 2,3,7,8-TCDD in three wells (MW-9, MW-77, and LW-5) located outside of the TI zone and in two of the Rocky Branch Creek samples. The one exceedance noted in MW-77 was also above the PCL for 2,3,7,8-TCDD. In addition, the data indicated two wells (MW-36 and MW-100) were above the MCL for 2,3,7,8-TCDD, and one well (MW-101) was above the MCL for toluene. These three wells are located within the TI zone.

- **WWTP discharge limitation exceedances**—Low level exceedances in the discharge limitation of 2,3,7,8-TCDD have been identified in six of the discharge monitoring reports examined during this five-year review. The site operator stated that when this occurs, an additional discharge sample is obtained during the month in question. The data indicates that the resamples, with the exception of October and November of 2007, were below the limits of detection.
- **Plan and progress report discrepancies**—The second five-year review identified the need for the Site-Wide Groundwater Monitoring Plan to be updated to reflect continued monitoring on a semiannual basis and restoration of 2,3,7,8-TCDD to the groundwater monitoring analyte list as required by the OU 3 ROD. The Site-Wide Groundwater Monitoring Plan has yet to be updated to reflect these changes. In addition, the annual progress reports are being submitted approximately every two years.
- **Reevaluation of new technologies to treat and/or remove NAPL from the contaminated bedrock aquifer**—The ROD for OU 3 (groundwater) called for five-year reviews to evaluate the performance of the hydraulic containment system and to determine if any new technologies are available to remediate the contaminated groundwater to confirm the continued applicability of the TI waiver. This has been done for this third five-year review, but remains an issue to be addressed in future five-year reviews.
- **Fish flesh monitoring and screening levels and fishing bans or consumption advisories for Rocky Branch Creek and Bayou Meto**—In 2001 and 2003, the EPA recommended that the ADH review and assess re-imposition of a fishing ban or advisory on the lower Bayou Meto segment below the Highway 13 bridge, and that ADH consider adoption of an EPA recommended lower screening level for dioxin in fish tissue. ADH acknowledges communications with the EPA on this subject, but has indicated that after review of the matter, including discussions with legislators, community leaders and representatives, and the governor's office, and consideration of the potential for adverse economic impacts, it decided not to make the changes. The ADH has no funds, or plans, for further study of this issue. In addition, the Highway 13 bridge was dropped as a location for fish flesh sampling, and the responsible party site operator has recommended that the frequency of fish flesh sampling under the Off-Site remedy and UAO be reduced from every two years to every five years in view of declining concentrations of dioxin in fish tissue sampling events.

Table 9 provides a summary table of issues identified, and if they currently affect the remedy protectiveness.

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

The following actions are recommended in response to these issues:

- The sedimentation vault slope was repaired in October 2008. The area was surveyed on June 25, 2008 and a letter providing the proposed slope repairs was submitted to the EPA RPM on July 25, 2008. The EPA RPM reviewed the repair plan and requested the site operator proceed with the plan (EPA 2008b). In mid-October 2008, repairs to the sedimentation vault slope were initiated. The top of the sedimentation vault and the north slope were repaired and on October 28, 2008, EPA inspected the modifications and deemed the repairs to be adequate at the time.
- The reason for the unpermitted release of WWTP influent water was a control panel dial that did not fully engage in the operating mode which caused the sand filter valve to remain partially open, coupled with a blown fuse which resulted in the EQ tank valve and the sump pump failing to operate. In order to prevent future unpermitted releases, the site operator will conduct a system inspection after any significant thunderstorms. This O&M task must be adhered to and documented, in order to prevent future unpermitted releases.
- The recurring low level exceedances of the MCLs and PCLs in groundwater monitoring wells and the Rocky Branch Creek should be evaluated to determine the reason for the observed exceedances. This is expected to be accomplished within the next 12 months by EPA and the PRP.
- The reason for the discharge limitation exceedances of 2,3,7,8-TCDD should be investigated and modifications should be implemented to eliminate this issue. Possible modifications may include additional treatment methods in the WWTP system and increasing quality control of sample collection techniques and/or analytical laboratory services. In addition, the ADEQ is currently monitoring this situation.
- The Site-Wide Groundwater Monitoring Plan should be updated in accordance with the current groundwater monitoring activities. In addition, progress reports should be submitted on an annual basis in order to keep the regulatory agencies up to date on the status of the site. This is expected to be accomplished within 12 months by the PRP.
- The OU 3 ROD requirement for evaluation of the new technologies to treat and/or remove NAPL from the contaminated bedrock aquifer was conducted during this third five-year review. No new technologies for remediation of the NAPL impacted bedrock were identified. This standing requirement should be conducted during the next five-year review.
- Instead of continuing to press the ADH to institute a change in its own fish tissue dioxin screening level to 0.7 ppt, as recommended by EPA guidance, the EPA will require that fish tissue sampling taken for the site remedy be analyzed toward the recommended level, and it will continue to encourage by appropriate means, the ADH to reinstitute the stream fishing ban or advisory in the impacted areas of the Bayou Meto, where it was suspended. The EPA will continue to require that the fish tissue dioxin sampling be performed every two years, including the sampling location on the Bayou Meto at the Highway 13 bridge, and will require a special sampling event below the bridge. EPA

will also review the question of further restrictions on the consumption or taking of fish from the Bayou Meto below the Highway 13 bridge, as well as the appropriateness of the recommended fish flesh screening level as a TBC at this site.

Table 10 summarizes the recommendations and follow-up actions for the Vertac site.

10.0 PROTECTIVENESS STATEMENT

The conclusions presented in this section support the determination that the selected remedy for the Vertac Superfund Site is protective of human health and the environment in the short-term.

Short-Term Protectiveness

Based on the information available during the third five-year review, the remedy for the Vertac Superfund Site currently protects human health and the environment.

After documents and data were reviewed, and the site inspection and interviews were completed, it appears that the remedy is functioning as intended by the RODs and the ESDs. The remedies for the Vertac site are considered protective of human health and the environment because the waste have been removed or contained.

- Wastes buried in the North Burial Area, the Reasor-Hill Burial Area, the sedimentation vault, and the OU 1 landfill, are protected from erosion by caps. The functionality of the caps to prevent exposure of buried wastes was restored with the repairs made to the sedimentation vault.
- Contaminated groundwater is contained and removed by the French drain and the groundwater extraction system and treated at the wastewater treatment plant prior to discharge.
- Groundwater concentrations have generally been below MCLs and PCLs except for the occasional detections in six monitor wells (MW-9, MW-36, MW-77, MW-100, MW-101, and LW-5) and in two of the Rocky Branch Creek samples. These six wells have exhibited groundwater concentrations above current MCLs (and above the PCL in MW-77) since the last five-year review. Because there are groundwater exceedances, institutional controls should continue to be enforced to ensure that the remedy remains protective (i.e., no human contact with the contaminated groundwater occurs).

- Institutional controls have been implemented in accordance with the ROD, but should be expanded. The EPA plans to handle this through the United States District Court, which still has jurisdiction over the Vertac site, as well as the Receiver appointed by the Court.
- EPA continues to require that regular fish tissue sampling and analysis on specimens taken from Rocky Branch Creek and Bayou Meto be performed every two years, and the ADH continues to impose a commercial fishing ban and fish consumption advisory on these waters to the Highway 13 bridge on the Bayou Meto. Data show a continual, declining level of 2,3,7,8-TCDD in these samples.

Because the completed remedial actions and O&M program for the Vertac site are considered protective for the short term, the overall remedy for the site is protective of human health and the environment for the short term, and will continue to be protective if the action items identified in this five-year review are addressed.

Long-Term Protectiveness

Although the third five-year review found that the selected remedy is currently performing as intended and is protective of human health and the environment, the following recommendations and follow-up actions should be addressed to ensure that the remedy will remain protective of human health and the environment in the long-term:

- Evaluate groundwater data for exceedances of MCLs to ensure that institutional controls remain protective of the remedy (i.e., no human contact with the contaminated groundwater occurs).
- Evaluate and remedy the WWTP effluent exceedances associated with the discharge limits.
- EPA will continue to encourage by appropriate means, the ADH to reinstitute the stream fishing ban or advisory in the impacted areas of the Bayou Meto below the Highway 13 bridge, where it is suspended, while EPA reviews the necessity of such an extension from a public health standpoint. The EPA will require that regular fish tissue dioxin sampling and analysis be targeted to the 0.7 ppt EPA recommended screening level, while it reviews the question of whether this level taken from EPA guidance should be adopted as a TBC for the Vertac site. The EPA intends to restore the Highway 13 bridge as a fish tissue sampling location and to require a special sampling of fish tissue taken below the Highway 13 bridge in the summer of 2009.

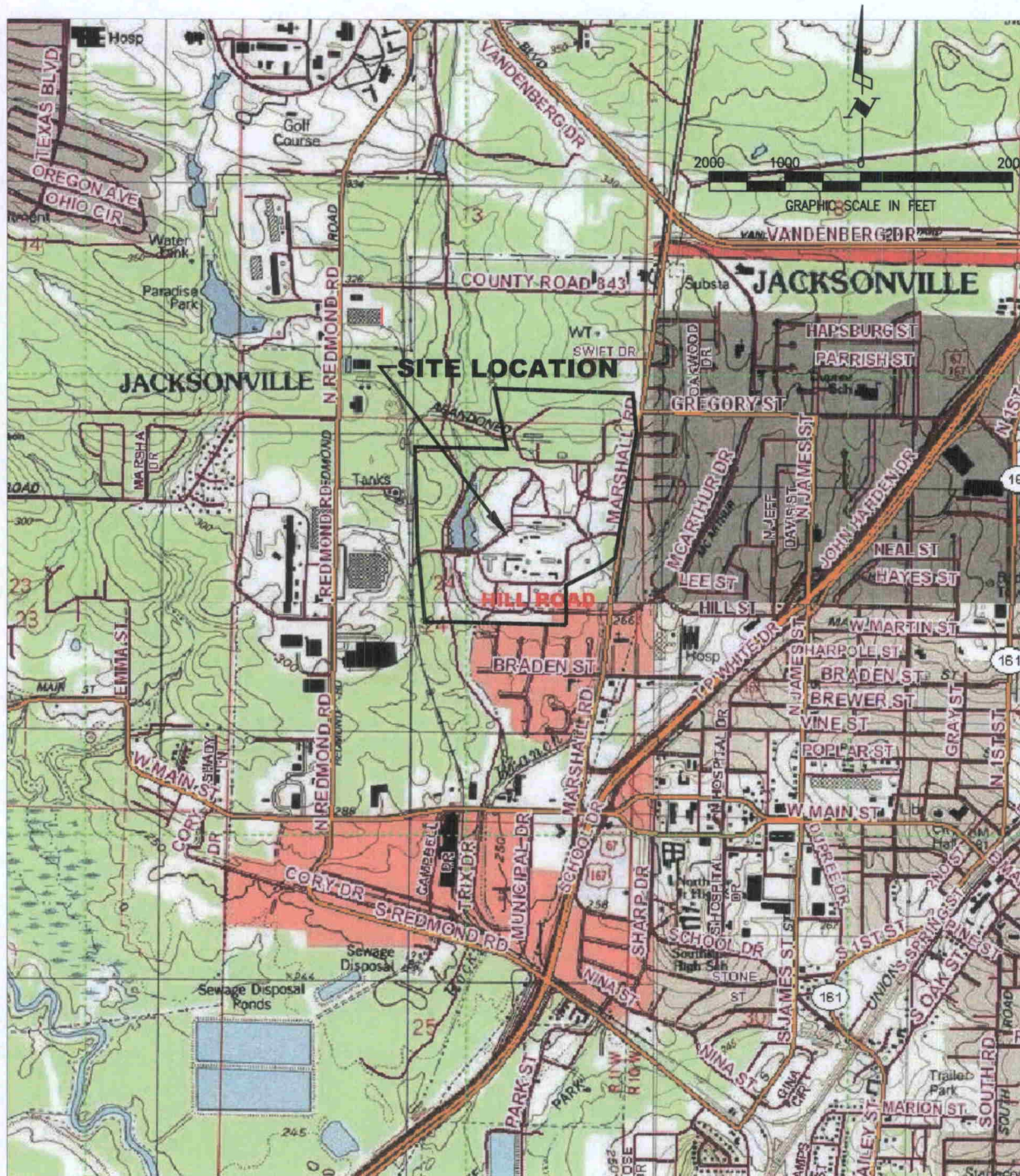
11.0 NEXT REVIEW

The Vertac site requires ongoing statutory five-year reviews. The next review will be conducted within five years from the date of this review but no later than on or before November 20, 2013.



ATTACHMENT 1
FIGURES AND TABLES

FIGURES

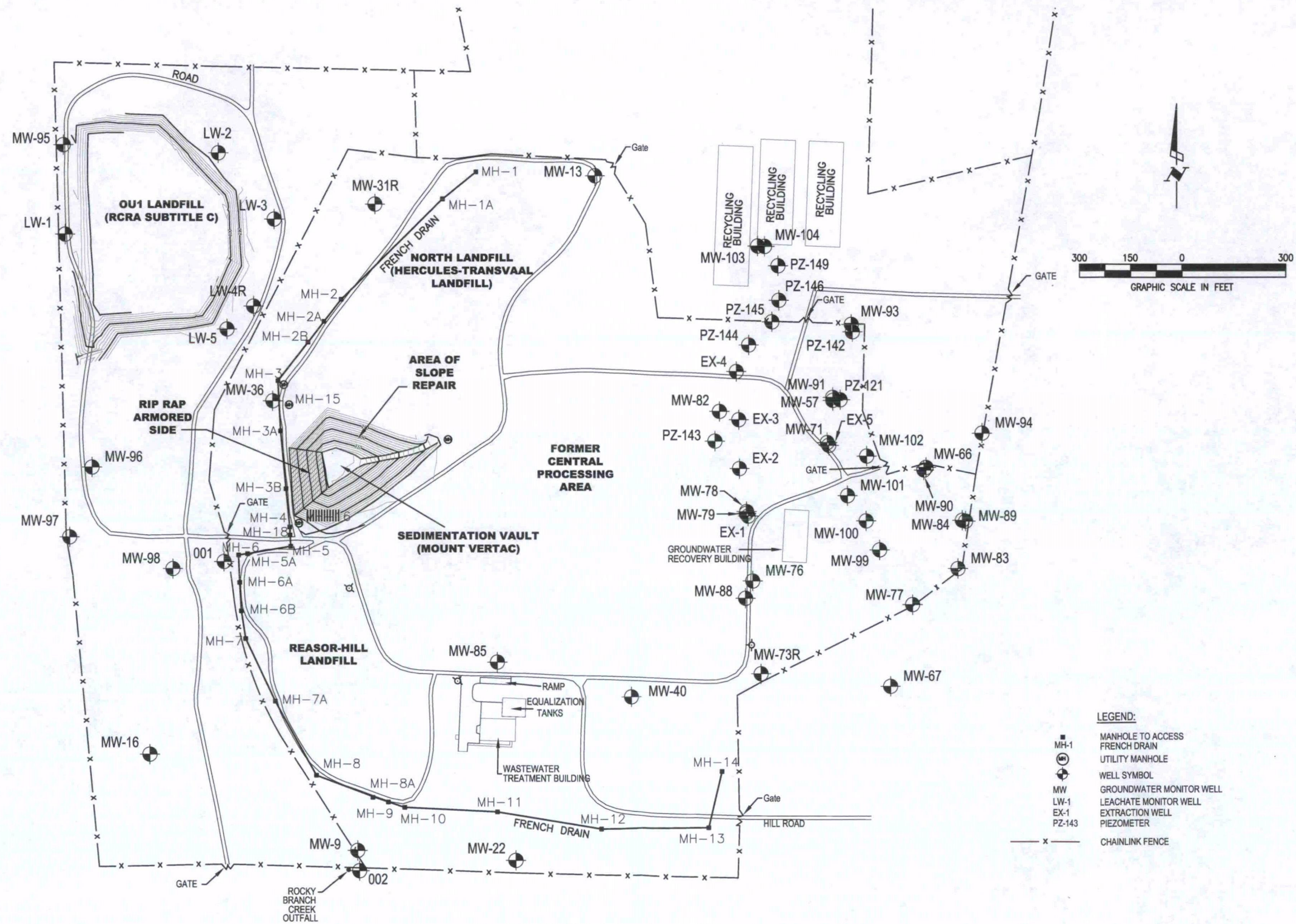
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Referenced From: U.S. Geological Survey 1994

	PREPARED FOR:	DESIGNED BY:	VERTAC SITE 1907 HILL ROAD JACKSONVILLE, ARKANSAS				SITE LOCATION MAP	
		PROJECT MGR: A. BALLWEG						
	BY:	DRAWN BY: L. HORNE	CHECKED BY: A. BALLWEG	SCALE: AS SHOWN	DATE: JULY 2008	PROJECT NO: 1434233	FIGURE: 1	

DRAWING NAME: F:\Fed\epa\raci\0033\figures\vertac-layout.dwg
DATE:07/15/2008 TIME:11:30 DRAWN BY: ihorne



EA ENGINEERING,
SCIENCE, AND
TECHNOLOGY

VERTAC SITE
1907 HILL ROAD
JACKSONVILLE, AR

SITE LAYOUT MAP

PROJECT MGR. AB

DESIGNED BY -

DRAWN BY LAH

CHECKED BY AB

DATE NOVEMBER 2008

PROJECT NO. 1434233

REVISION -

DRAWING NO. -

FIGURE 2



PREPARED FOR:

DESIGNED BY:

PROJECT MGR:

A. BALLWEG

BY: ES&S TECHNOLOGICAL CORPORATION

DRAWN BY:

L. HORNE

CHECKED BY:

AB

SCALE:

AS SHOWN

DATE:

AUGUST 2008

PROJECT NO:

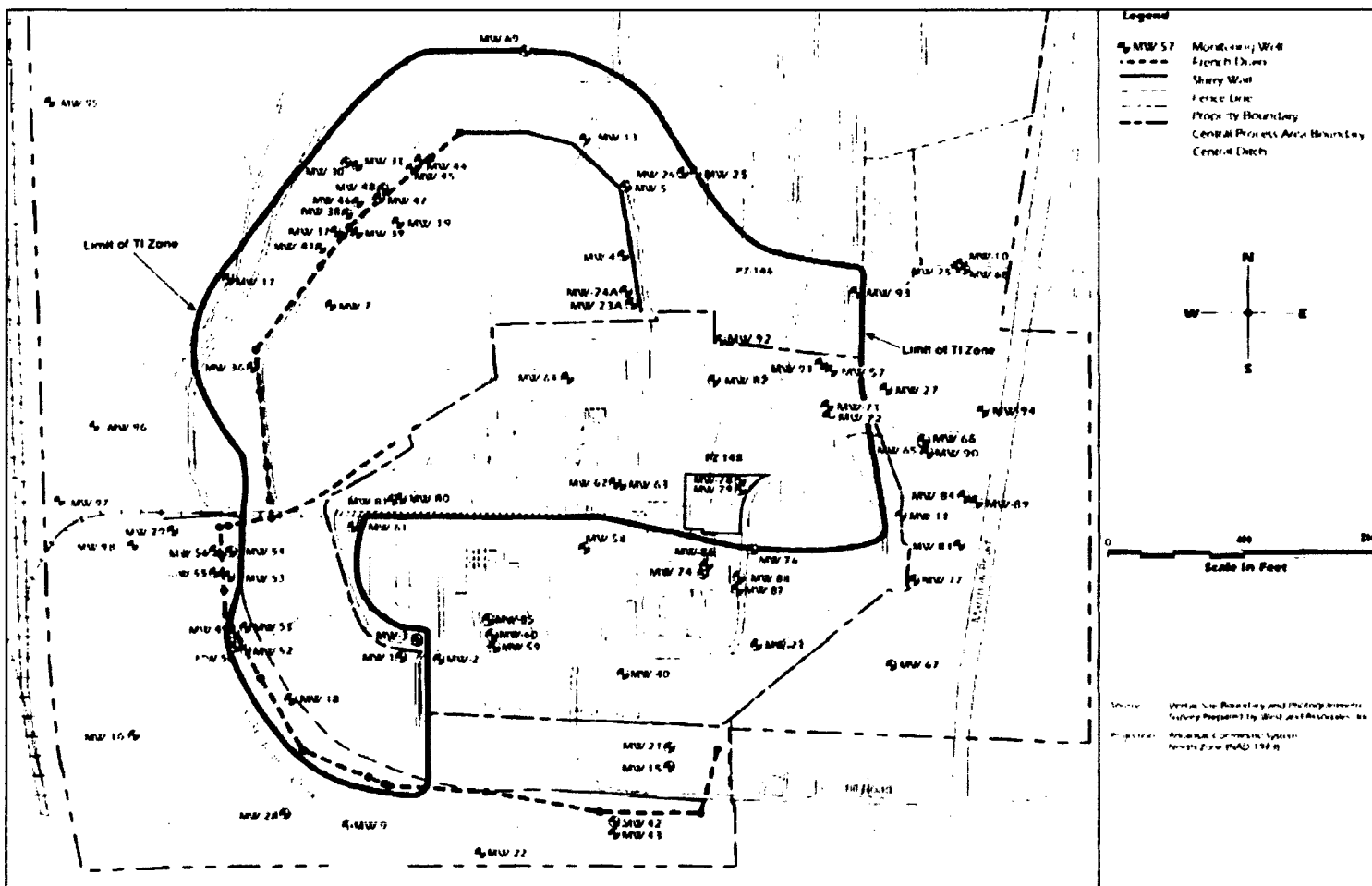
1434233

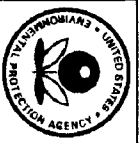
FIGURE:

3

VERTAC SITE, 1907 HILL ROAD JACKSONVILLE, ARKANSAS

SPATIAL EXTENT OF THE TECHNICAL IMPACTIONABILITY ZONE





PREPARED FOR:

DESIGNED BY:

PROJECT MGR
A. BALLWEG

VERTAC SITE, 1907 HILL ROAD
JACKSONVILLE, ARKANSAS

EXISTING BAYOU METO FISH
CONSUMPTION ADVISORY

BY
EPA REGIONAL
TECHNICAL
COORDINATOR

DRAWN BY
L. HORNE

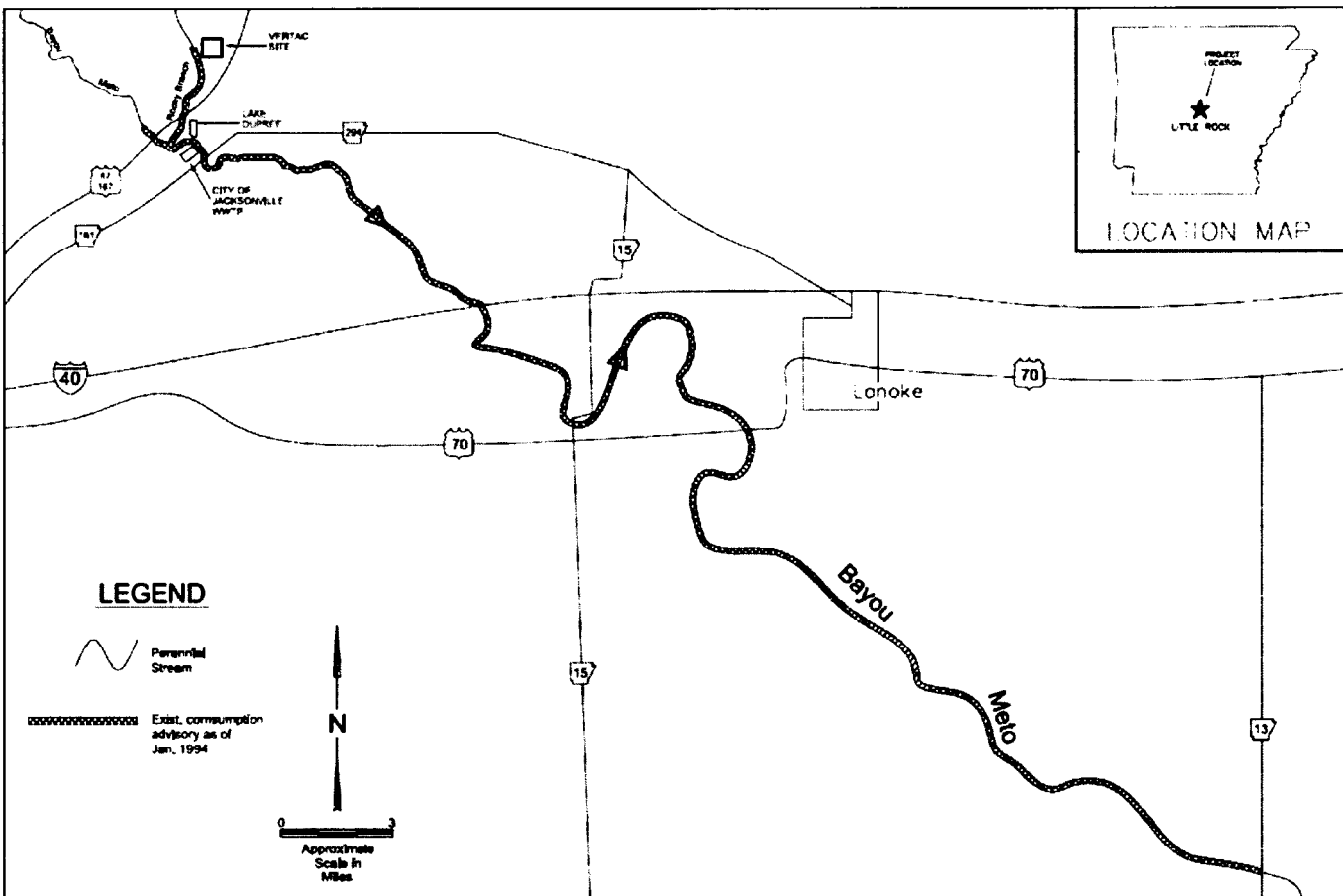
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SCALE
AS SHOWN

DATE
AUGUST 2008

PROJECT NO
1434233

FIGURE
4





PREPARED FOR:

DESIGNED BY:

PROJECT MGR

A. BALLWEG

BY
E.C. ENGINEERING
TECHNOLOGY, LLC

DRAWN BY
L. HORNE

CHECKED BY
AB

SCALE
AS SHOWN

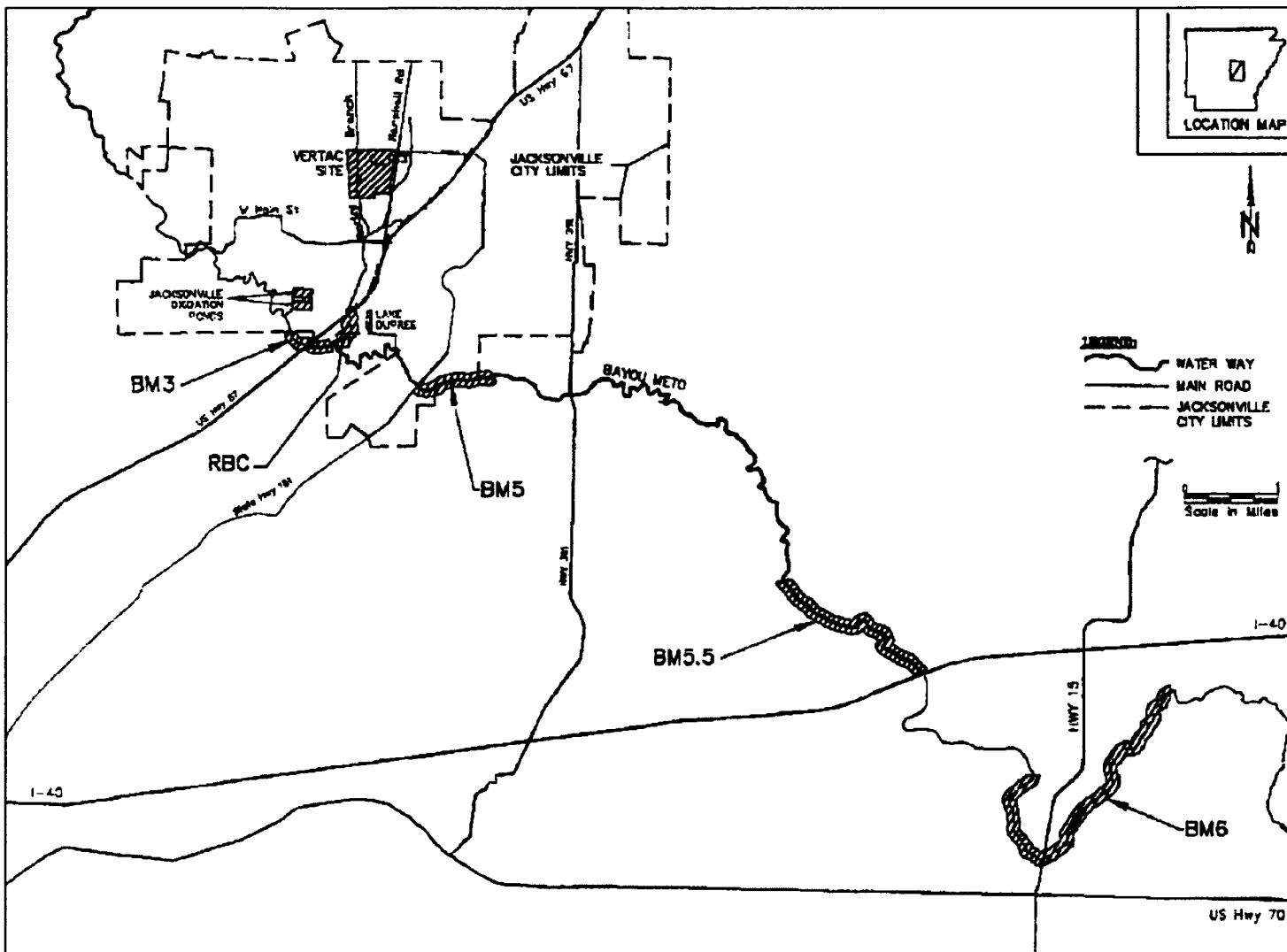
DATE
AUGUST 2008

PROJECT NO
1434233

FIGURE
5

VERTAC SITE, 1907 HILL ROAD
JACKSONVILLE, ARKANSAS

SAMPLING STATIONS FOR THE
BAYOU METO FISH FLESH
MONITORING PROGRAM



TABLES

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TABLE 1
CHRONOLOGY OF SITE EVENTS

Date	Event
1930s	Use of site initiated at Arkansas Ordinance Plant
1948	Reasor Hill purchased the site and began production of insecticides
1950s	Reasor Hill began the production of pesticides
1961	Reasor Hill began discharging process wastewater to the City of Jacksonville's Old Sewage Treatment Plant; Hercules Powder Company purchased the plant
1964-1968	Hercules produced the herbicide "Agent Orange"
1969	The city's West Wastewater Treatment Facility is upgraded, and Hercules began discharging all of its process wastewater to the city's wastewater treatment facility
1971	Hercules leased the plant to Transvaal Corporation
1976	Transvaal Corporation purchased the property from Hercules and reorganized as Vertac, Incorporated
1979	Arkansas Department of Pollution Control and Ecology (ADPC&E) issued orders to Vertac Chemical Corporation to improve its hazardous waste practices
1980	EPA and ADPC&E file joint lawsuit against Vertac Incorporated and Hercules Incorporated
January 1982	Consent Decree entered by all parties to allow an independent consultant to assess the site and propose a remedy
September 8, 1983	Site is finalized on the National Priorities List (NPL)
Fall 1983 – Spring 1985	Remedial investigation/feasibility study (RI/FS) for the offsite areas is conducted
July 1984	Court orders the implementation of the "Vertac Remedy," which was opposed by the EPA
Mid 1984 – July 1986	"Vertac Remedy" is implemented
July 15, 1986	Trust fund is established by Vertac to remediate portions of the site
August 1986	EPA issues a Unilateral Administrative Order (UAO) to the potentially responsible parties requiring the posting of warning signs and fencing at the West Wastewater Treatment Facility and along portions of Rocky Branch Creek
January 1987	Vertac declares insolvency and abandons the site; EPA commences a CERCLA removal action to secure and stabilize the site, including thousands of dioxin-contaminated waste drums
1987-1989	Additional sampling is conducted to determine the extent of offsite contamination in Rocky Branch Creek, Bayou Meto, and Lake Dupree
September 1988	Administrative Order on Consent issued to Hercules requiring the excavation of soils in residential yards south of the site and improvements to onsite drainage control

Date	Event
1989	Hercules completes the removal of soils from residential yards
July 1989	Administrative Order on Consent issued to Hercules requiring Hercules to perform the onsite RI/FS
June 1990	FS for offsite areas revised based on additional data and to meet the requirements of Superfund Act and Reauthorization Act (SARA)
September 27, 1990	Record of Decision (ROD) for the offsite areas is signed
March 1991	RI/FS for OU 1 completed
January 1992	Trial burn approved by ADPC&E and incineration of drummed waste begins
April 1992	Third emergency removal action
May 1993	Trust fund money being used for the incineration is expended
June 1993	EPA takes over incineration of drummed wastes under removal action
June 30, 1993	ROD for OU 1 is signed
July 1993	UAO issued to Hercules to conduct the remedial design (RD)/remedial action (RA) for the offsite areas
November 1993	Hercules commences cleanup of interceptor sewer under EPA offsite UAO
March 1994	UAO issued to Hercules to conduct the RD/RA for OU 1
September 1994	Incineration of D-wastes completed
November 1994	EPA contracts with Aptus Inc. in Coffeyville, Kansas to incinerate 3,100 drums of T-waste
1995	All RA activities for the offsite areas completed except for the excavation of Rocky Branch Creek floodplain soils
January 31, 1995	Onsite incinerator permanently shut down
April 1995	RI/FS for OU 2 completed
May 1995	ESD signed by EPA to allow for offsite incineration under ROD for OU 1
September 1995	RI/FS for OU 3 completed
March 29, 1996	Final shipment of T-waste leaves site for Aptus
July 16, 1996	EPA Region 6 executes a Non-Time Critical Remedial Action Memorandum, which grants a treatability variance from the Land Disposal Restrictions treatment standard for dioxin-contaminated waste to 5 parts per billion
September 17, 1996	RODs for OU 2 and OU 3 signed; ESD signed for Off-Site OU
December 10, 1996	UAOs issued to Hercules to conduct the RD/RA for OU 2 and OU 3
December 20, 1996	Non-Time Critical Removal Action authorized to dismantle, decontaminate, and dispose of the onsite incinerator and associated structures and debris
December 31, 1996	UAO issued to Hercules to dismantle, decontaminate, and dispose of the onsite incinerator and associated structures and debris

Date	Event
Summer 1997	Floodplain soils excavated and disposed of in the onsite landfill; all RA activities for the offsite areas completed
June 1997	Construction of the new onsite wastewater treatment plant completed, and facility begins operating
July 1997 – May 1998	RA for OU 1 and OU 2 conducted and completed
August 11, 1997	Exposure Investigation completed by Agency for Toxic Substances and Disease Registry (ATSDR) and Arkansas Department of Health (ADH); additional soil sampling requested for Jacksonville Residential Areas Superfund Site to determine extent of dioxin contamination in residential soils near Vertac site
November 1997 – May 1998	RA for OU 3 conducted and completed
January 12, 1998	ESD for OU 2 signed by EPA Region 6 to allow for disposal of residential soils from Jacksonville Residential Areas Superfund Site in the onsite landfill
Early 1998	RA activities associated with demolition of the onsite incinerator are completed
June 24, 1998	Final inspection conducted
August 31, 1998	EPA issues preliminary close out report
September 1, 1998	EPA declares all CERCLA remediation complete at ceremony at Jacksonville, Arkansas, City Hall
October 23, 1998	U.S. District Court for the Eastern District of Arkansas finds Hercules Incorporated and Uniroyal Chemical Ltd. liable for EPA past and future CERCLA response costs in summary judgment opinion; <i>United States v. Vertac Chemical Corp., et al.</i> , Civ. No. LR-C-80-109 (E.D. Ark.), <i>United States v. Vertac Chemical Corp.</i> , 33 F.Supp.2d 769 (E.D.Ark., 1998)
August 9, 1999	U.S. District Court enters final judgment against Hercules Incorporated and Uniroyal Chemical Ltd. for EPA CERCLA response costs; <i>United States v. Vertac Chemical Corp., et al.</i> , Civ. No. LR-C-80-109 (E.D.Ark.)
January 21, 2000	Jeffrey and Brenda Shelton sue EPA to require performance of CERCLA Five-Year Review. <i>Shelton v. Browner</i> , Civ. No. 4:00CV00030 HDY (E.D.Ark.)
October 12, 2000	EPA reaches settlement, agreeing to conduct Five-Year Review in <i>Shelton v. Browner</i> (E.D. Ark.)
April 10, 2001	U.S. Eighth Circuit Court of Appeals issues opinion and order remanding the issue of divisibility of harm in the finding of joint and several liability against Hercules Incorporated to the U.S. District Court for further proceedings; <i>United States v. Hercules, Inc.</i> , 247 F.3d 706 (8 th Cir., 2001)
July 30, 2001	First CERCLA Five-Year Review for the Vertac, Inc, Superfund Site is completed

Date	Event
December 12, 2001	U.S. District Court concludes the evidentiary hearing on issue of divisibility of harm in connection with Hercules Incorporated that was conducted from October 9 to 19, 2001 and from December 11 to 12, 2001; <i>United States v. Vertac Chemical Corp., et al.</i> , Civ. No. 4:80dv109 GH (E.D.Ark.)
March 5, 2003	All post hearing briefing is concluded by the parties in the divisibility of harm remand in U.S. District Court. <i>United States v. Vertac Chemical Corp., et al.</i> , Civ. No. 4:80cv109 CH (E.D.Ark.)
November 20, 2003	Second CERCLA Five-Year Review for the Vertac, Inc. Superfund Site is completed

TABLE 2
SUMMARY OF RESPONSE ACTIONS

Phase/Operable Unit	Dates Implemented	Overview of Remedy
1. Vertac Remedy	1984-1986 O&M Ongoing	Removal of sediment from cooling water pond and equalization basin and landfilling of sediment under a cap with French drain and leachate collection system. Contaminated leachate treated onsite and discharged. Includes long-term groundwater monitoring. Ordered by Court over U. S. Environmental Protection Agency opposition.
2. Site Stabilization - offsite residential removal response; drummed waste handling	1987-1998	Site removal actions including stabilization and removal of drummed waste, tanks, vessels, process equipment, and contents. Excavation and removal of contaminated soils and sediments in residential areas and consolidation on the plant site. Onsite and offsite incineration support for, and incineration of, drummed 2,4-D, 2,4,5-T, and Silvex wastes (28,500 drums).
3. Vertac Offsite Areas	1990-1997 O&M Ongoing	Excavation of offsite contaminated sediment/soil, removal of contaminated sludge/sediment in sewer interceptors and treatment plants and contaminated Rocky Branch Creek flood plain sediments, and staging onsite, with ultimate disposal in onsite OU No. 1 RCRA Subtitle C compliant vault under the Offsite Areas Record of Decision Amendment. Includes long-term monitoring of fish for dioxin in tissue.
4. Onsite Aboveground Media (Operable Unit [OU] No. 1)	1994-1998 O&M Ongoing	Onsite incineration, offsite incineration, onsite consolidation/containment of above-ground media including buildings, process equipment, leftover chemicals in the process vessels, spent activated carbon, shredded trash and pallets, and miscellaneous drummed wastes and treatment residues, and recycle/reuse of equipment. Deferral of treatment of excavated offsite soil from residential area to be addressed under OU No. 2 (disposal in onsite RCRA Subtitle C compliant landfill).

TABLE 2
SUMMARY OF RESPONSE ACTIONS

Phase/Operable Unit	Dates Implemented	Overview of Remedy
5. Soils and Underground Utilities (OU No. 2)	1996-1997	Excavation and disposal in the on-site RCRA Subtitle C Compliant consolidation/containment unit of all soils with dioxin concentrations at or above the action level of 5 parts per billion, excavation and offsite incineration of crystalline tetrachlorobenzene (TCB) and TCB-associated spill soils greater than 500 parts per million, cleaning of chemical sewer lines to remove solids and backfilling with grout, scarification of foundations and curbs to remove visible staining, and the application of epoxy sealant where staining persisted, and cover with adequate soil (typically between 18 and 24 inches) to support a vegetative cover, contoured to prevent erosion and ponding of storm water. Also addressed Vertac Offsite Areas soil and OU No. 1 residential soil.
6. Groundwater (OU No. 3)	1996-1998 O&M Ongoing	Installation of extraction wells in the central process area to hydraulically control offsite migration of contaminated groundwater to the east, continued operation of the existing French drain system (Vertac Remedy) to impede groundwater contaminant migration to the south and west, and the proposed use of the Reasor-Hill well and MW-92 as additional extraction wells, and "Technical Impracticability Waiver" for nonaqueous-phased liquids identified in the subsurface.

TABLE 3
PLUME CONTAMINANT LEVELS

Contaminant	Trigger Level
2-Chlorophenol	6 mg/L (N)
2,4-Dichlorophenol	2 mg/L (N)
2,4-Dichlorophenoxyacetic acid (2,4-D)	210 mg/L (N)
Silvex (2,4,5-trichlorophenoxypropionic acid or 2,4-TP)	84 mg/L (N)
Toluene	9 mg/L (N)
2,4,5-Trichlorophenol	52 mg/L (N)
2,4,6-Trichlorophenol	0.1 mg/L (C)
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	210 mg/L (N)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	7 ng/L (C)

Notes:

C = Cancer Risk-Based Concentration
 mg/L = Milligrams per liter
 N = Noncancer Risk-Based Concentration
 ng/L = Nanogram per liter

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachlorobenzene
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ng/L	mg/L	ug/L
PCLs		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
MCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
MW-9	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	5.02	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	12/16/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	4.8	NA
	04/28/05	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Resample	05/12/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	4.5	NA
	06/19/06	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.010	7.2	NA
Resample	01/31/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0171A	12.0	NA
Resample	06/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.15	NA	NA
Reanalyze	06/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.063	NA	NA
Resample	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0063J	NA	NA
Resample (filtered)	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.031	6.4	NA
Resample	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0082 J	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.3	NA
MW-13	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	9.18	NA
	06/21/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	12/15/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	10	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8	ND	ND	ND	ND	ND (d)	11	NA
	11/09/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.1	ND (d)	12	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	7.8	NA
Resample	01/31/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13.0	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0088 J	8.8	NA
Resample	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.1	NA
MW-22	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	7.63	NA
	12/16/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	9.5	NA
	06/19/06	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NA
	12/11/06	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NA
	04/25/07	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NA
	04/29/08	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NA
MW-31R	12/10/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	108	NA
	06/21/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/15/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	120	NA
	04/26/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	110	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	110	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	87	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	NA

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachloro-benzene
		ug/L	ug/L	2- ug/L	4- ug/L	2,4- ug/L	2,6- ug/L	2,3,6- ug/L	2,4,5- ug/L	2,4,6- ug/L	2,4-D ug/L	2,6-D ug/L	2,4,5-T ug/L	2,4,6-T ug/L	ug/L	ng/L	mg/L	ug/L
PCLs		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
MCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
MW-36	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	24.3	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/16/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	23	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	25	NA
	06/19/06	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/11/06	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038	24	NA
Resample	06/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.062	NA	NA
Reanalysis	06/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.12	NA	NA
Resample	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.084	NA	NA
Reanalysis	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.18	NA	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.015 J	19	NA
Resample	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.007 J	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	25	NA
MW-66	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	23.7	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	23	NA
	04/28/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	22	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	21	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	24	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0067J	22	NA
Resample	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
Reanalysis	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	19	NA
MW-76	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND (a)	55.8	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	52	NA
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9	ND	ND	3.7	—	44	NA
	11/11/05	5.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	46	NA
	06/19/06	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	64	NA
	12/11/06	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.7	ND	ND	52	NA
	04/25/07	160	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	53	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.80	ND	52	NA
	04/29/08	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.69	1.10	ND	59	NA
MW-77	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	444	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	470	NA
	04/28/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	420	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	440	NA
	12/07/05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	460	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0052J,JA	450	NA
Resample	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0092	NA	NA

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachlorobenzene
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ng/L	mg/L	ug/L
PCLs		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
MCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
Reanalysis	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	450	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	450	NA
MW-84	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	17.8	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	18	NA
	04/28/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	21	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	21	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	170	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	460	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	NA
MW-85	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.40	NA
Duplicate	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	9.42	NA
	06/21/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
Duplicate	06/21/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	8.3	NA
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	9.8	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	9.8	NA
Duplicate	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	9.8	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	NA
Field Blank	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	NA
Field Blank	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.9	NA
Duplicate	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	NA
Field Blank	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.5	NA
MW-88	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	5.67	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	5.9	NA
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	6.6	NA
	11/11/05	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	5.8	NA
	06/19/06	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.6	NA
	12/11/06	18.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.8	NA
	04/25/07	7.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.0	NA
	10/02/07	4.90	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.1	NA
Duplicate	10/02/07	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.1	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.5	NA
MW-91	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	108	NA
Duplicate	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	107	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	91	NA
	12/17/04	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	89	NA

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachlorobenzene
		ug/L	ug/L	2-	4-	2,4-	2,6-	2,3,6-	2,4,5-	2,4,6-	2,4-D	2,6-D	2,4,5-T	2,4,6-T	ug/L	ng/L	mg/L	ug/L
		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
PCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	53	NA
Duplicate	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	49	NA
	06/23/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	49	NA
	06/23/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	11/10/05	3.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	80	NA
Duplicate	11/10/05	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	79	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	84	NA
Duplicate	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	84	NA
	12/11/06	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	96	NA
Duplicate	12/11/06	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	95	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	94	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	NA
Resample	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	04/29/08	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140	NA
MW-93	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	124	NA
	06/23/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	110	NA
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	79	NA
	11/11/05	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	100	NA
	06/19/06	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	NA
	12/11/06	14	13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	NA
	10/02/07	ND	1,300	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	ND	ND	ND	200	NA
	11/07/07	NA	1,300	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200	NA
MW-99	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	168	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	110	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	380	NA
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	270	NA
	11/11/05	5.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	320	NA
	06/19/06	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	300	NA
	12/11/06	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	220	NA
	04/25/07	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	190	NA
	10/02/07	23.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	300	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	260	NA
MW-100	12/12/03	21.9	ND	ND	17	6	ND	ND	ND	ND	ND	11.0	ND	4.75	ND	ND (a)	86.8	NA
	06/23/04	NA	ND	ND	28	13	ND	ND	ND	ND	5.60	ND	ND	ND	ND	ND (a)	NA	NA
Lab No. 1	12/17/04	NA	NA	ND	10	16	ND	ND	ND	ND	ND	18.6	33	ND	21	3.7	NA	NA
Lab No. 2	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	110	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	110	NA
	04/28/05	89	ND	ND	110	15	ND	ND	ND	ND	11	ND	ND	ND	ND	ND (d)	98	NA
Duplicate	04/28/05	69	ND	ND	120	20	ND	ND	ND	ND	15	ND	ND	ND	ND	ND (d)	98	NA
	11/11/05	26	ND	ND	ND	14	ND	ND	ND	ND	10	ND	2.7	ND	ND	ND (d)	94	NA
	06/19/06	18	ND	ND	ND	ND	ND	ND	ND	ND	4.1	ND	ND	ND	ND	ND	110	NA
Duplicate	06/19/06	59	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	2.8	ND	ND	ND	100	NA
	12/11/06	44	ND	ND	ND	ND	ND	ND	ND	ND	4.7	ND	ND	ND	ND	ND	110	NA

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachlorobenzene
		ug/L	ug/L	2- ug/L	4- ug/L	2,4- ug/L	2,6- ug/L	2,3,6- ug/L	2,4,5- ug/L	2,4,6- ug/L	2,4-D ug/L	2,6-D ug/L	2,4,5-T ug/L	2,4,6-T ug/L	ug/L	ng/L	mg/L	ug/L
PCLs		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
MCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
Duplicate	12/11/06	27	ND	ND	ND	ND	ND	ND	ND	ND	3.3	ND	ND	ND	ND	ND	110	NA
	04/25/07	15	ND	ND	ND	ND	ND	ND	ND	ND	3.4	ND	1.20	ND	0.85	ND	130	NA
Duplicate	04/25/07	13	ND	ND	ND	ND	ND	ND	ND	ND	2.8	ND	0.83	ND	0.68	ND	130	NA
	10/02/07	3.2	ND	ND	ND	ND	ND	ND	ND	ND	0.88	ND	ND	ND	ND	ND	110	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	NA
Duplicate	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	NA
Field Blank	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
MW-101	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	65.4	NA
	06/23/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	06/23/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	150	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	63	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	2.9	NA
	11/11/05	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	61	NA
	06/19/06	680	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	120	NA
	12/11/06	2,600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	56	NA
	04/25/07	25	300	32	170	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	120	NA
Duplicate	04/25/07	30	420	40	220	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	ND	130	NA
	10/02/07	27	160	ND	60	ND	ND	ND	ND	ND	11	ND	1.70	ND	1.1	ND	150	NA
Reanalysis	10/02/07	NA	NA	NA	NA	NA	NA	ND	ND	ND	8.1	ND	NA	NA	NA	NA	NA	NA
	04/29/08	28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0091 J	77	NA
	04/29/08	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	79	NA
MW-102	06/23/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	16	70 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	180	NA
	04/29/05	ND	240	ND	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	190	NA
	11/11/05	4.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	74	NA
	06/19/06	9.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140	NA
	12/11/06	13	ND	ND	ND	ND	ND	ND	ND	ND	2.3	ND	ND	ND	ND	ND	130	NA
	04/25/07	13	ND	ND	ND	ND	ND	ND	ND	ND	35	ND	9.3	9.6	ND	ND	160	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND	92	NA
	04/29/08	6.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	160	NA
MW-103	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	1.75	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/17/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	1	NA
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	ND	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	1.1	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.006 J	ND	NA
	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.016	ND	NA
PZ-142	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	5.53	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/16/04	ND	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	5.3	NA
	04/29/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	5.8	NA

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachloro-benzene
		ug/L	ug/L	2-	4-	2,4-	2,6-	2,3,6-	2,4,5-	2,4,6-	2,4-D	2,6-D	2,4,5-T	2,4,6-T	ug/L	ng/L	mg/L	ug/L
		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
PCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	4.9	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.9	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.9	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.4	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.1	NA
PZ-146	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	2.66	NA
	06/24/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/15-20/2004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	2.2	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	2.2	NA
	11/09/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	1.7	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.3	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.0	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
LW-1	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	8.38	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/15/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	3.2	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	2.9	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	3.5	NA
Duplicate	11/10/05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.5	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.7	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.0	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.0	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Resample	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
LW-2	10/15/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.4	ND
	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	8.47	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/15/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	8.7	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	11	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	10	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.4	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.8	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.1	NA
LW-3	12/09/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	4.78	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/15/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	4.2	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	4.6	NA
	11/09/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	4.2	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.8	NA

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachlorobenzene
		ug/L	ug/L	2- ug/L	4- ug/L	2,4- ug/L	2,6- ug/L	2,3,6- ug/L	2,4,5- ug/L	2,4,6- ug/L	2,4-D ug/L	2,6-D ug/L	2,4,5-T ug/L	2,4,6-T ug/L	ug/L	ng/L	mg/L	ug/L
PCLs		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
MCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.6	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
LW-4R	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	15	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/15/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	24	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	24	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	17	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	38	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.8	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
LW-5	12/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (a)	16	ND
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/15/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	17	NA
	04/27/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	39	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	11/10/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	68	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	86	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	27	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	94	NA
Resample	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.078	NA	NA
Resample	12/05/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
Split	12/05/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	NA
Rocky Branch Creek	12/09/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.03	NA
	06/22/04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (a)	NA	NA
	12/14/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	5.6	NA
	04/26/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (d)	9.2	NA
	06/19/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.009J	10	NA
	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0052JJA	9.7	NA
	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0075J	5.0	NA
Resample	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.012JA	NA	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	160	NA
Resample	11/07/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.038	NA	NA
	04/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.034	18	NA

TABLE 4

ANALYTICAL RESULTS FOR GROUNDWATER MONITORING WELLS, PIEZOMETERS, AND ROCKY BRANCH CREEK

Well	Date	Toluene	Phenol	Chlorophenols		Dichlorophenols		Trichlorophenols			Dichlorophenoxyacetic		Trichlorophenoxyacetic		Silvex	2,3,7,8-TCDD	Chlorides	Tetrachlorobenzene
		ug/L	ug/L	2-	4-	2,4-	2,6-	2,3,6-	2,4,5-	2,4,6-	2,4-D	2,6-D	2,4,5-T	2,4,6-T	ug/L	ng/L	mg/L	ug/L
		9,000	—	6,000	—	2,000	—	—	52,000	100	210,000	—	210,000	—	84,000	7	—	—
PCLs		1,000	—	—	—	—	—	—	—	—	70	—	—	—	50	0.03	250*	—
001 - Cooling	12/11/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	NA
pond sump	04/25/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	NA
	10/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.024	17	NA

Notes:

Reporting Units:

Results reported in micrograms per liter (ug/L) or parts per billion (ppb) for all compounds except as noted below:

2,3,7,8-TCDD reported in nanograms per liter (ng/L) or parts per trillion (ppt)

Method 8290 used to analyze 2,3,7,8-TCDD after 12/2003; units are picograms per liter (pg/L) or parts per quadrillion (ppq)

Method 1613B used to analyze 2,3,7,8-TCDD after 6/2006; units are pg/L or ppq

Chlorides reported in milligrams per liter (mg/l) or parts per million (ppm)

Sample Quantitation Limits:

Phenolics = 5 ug/L

2,6-D and 2,4-D = 5 ug/L

2,4,6-T, Silvex, and 2,4,5-T = 2 ug/L

2,3,7,8-TCDD = 0.03 ng/L, except as notes (a) where detection limit was 3 ng/L

Toluene = 10 ug/L

Chlorides = 0.5 mg/L

Footnotes:

(a)

Sample quantitation limit of 3 ng/L

(b)

Sample quantitation limits of 0.075 ng/L and 0.065 ng/L for LW-1 and LW-4R, respectively

(c)

Sample quantitation limit 9.55 ng/L adjusted to account 2,3,7,8-TCDD in method blank in accordance with provisions in EPA's functional guidelines

2,3,7,8-TCDD was reported in each sample (LW-1 through LW-5) and in the method blank

(d)

Sample quantitation limits < ~4 pg/L. Analysis by STL Laboratories using Method 8290

--

Data/information not provided

*

Secondary MCL

0.15

Contaminant concentrations above MCL or PCL are indicated by ***bold, italicized*** font

444

Contaminant concentrations above secondary MCL are indicated by a *italicized* font

2,3,7,8-TCDD

2,3,7,8-Tetrachlorodibenzo-p-dioxin

J

Estimated result; result is less than the reporting limit

JA

The analyte was positively identified, but the quantitation is an estimate

NA

Not applicable

ND

Not detected at sample quantitation limit

Lab No. 1

Arkansas Analytical

Lab No. 2

Severn Trent Laboratories, Inc.

TABLE 5

FISH MONITORING DATA FOR BAYOU METO AND ROCKY BRANCH CREEK

Station	Fish Species	2,3,7,8-TCDD (ppt)									TEQ (ppt)							
		1994	1996	1998 ¹	1998 ¹	2000	2001 ²	2002	2004	2006	1994	1996	1998 ¹	1998 ¹	2000	2002	2004	2006
Arkansas Highway 13	Bigmouth Buffalo	1.9					0.65				2.43							
	Bigmouth Buffalo						0.63											
	Bigmouth Buffalo						0.72											
	Long Nose Gar						5.5											
	Long Nose Gar						2.1											
	Smallmouth Buffalo						5.6											
	Smallmouth Buffalo						0.77											
	Largemouth Bass	ND									0.18							
Arkansas Highway 15	White Crappie	0.76									0.87							
	Bigmouth Buffalo	12.05	10.4	16	89			3.42	3.97	4.40	12.94	10.8	17	90		3.73	4.30	4.89
	Bigmouth Buffalo	13.9																
	Bigmouth Buffalo	14.19																
	Smallmouth Buffalo					7.97								8.75				
	Largemouth Bass	7.54	10.8	10	11	6.41		1.94	6.17	3.57	8.01	11.1	10	11	6.66	2.03	6.40	3.78
	Largemouth Bass			8	13	7.11		2.82		2.88			9	13	7.38	2.94		3.08
	White Crappie		6.9			4.85						7.16			5.11			
Arkansas Highway 161	Flathead Catfish		6.13									6.72						
	Channel Catfish			37	24								37	24				
	Smallmouth Buffalo		18.6	14	14	17.7			8.39	12.3		19.6	14	14	18.8		8.84	13.3
	Bigmouth Buffalo							3.7								3.95		
	Largemouth Bass		15.2			26.5		3.91	7.03	5.23		15.4			27.2	4.05	7.30	5.32
	Largemouth Bass								7.27								7.53	
	Common Carp			21	38								21	38				
	Bigmouth Buffalo	24.03	20.6	34	31			15.9	11.2	11.5	26.78	21.2	34	32		16.6	11.7	12.1
US Highway 67-167	Smallmouth Buffalo					27.3								28.1				
	Largemouth Bass	34.37	25.2	125	180	35		13.5	12.6		35.59	25.8	126	181	35.5	13.7	12.8	
	Spotted Bass									17.3								17.9
	White Crappie	21.32				23.1					22.06				23.5			
	Black Crappie		31.5									32.1						
	Yellow Bullhead Catfish		10.8									11						
Rocky Branch Creek	Bigmouth Buffalo	69.89	46.1								73.05	47.1						
	Largemouth Bass	18.02	33.9	126	110	36.7		14.7	21.9	18.7	18.71	34.7	128	110	37.2	14.9	22.1	19.1
	Bluegill Sunfish		50.7	113	120			12.4	15.3	15.3		52.3	114	120		12.6	15.5	15.6
	Warmouth Sunfish					28.3									28.6			
	Flathead Catfish		37.4									37.5						
Lake Dupree	Bigmouth Buffalo		7.17						1.44	5.37		7.53					1.57	5.74
	White Crappie		10.6									10.6						
	Channel Catfish							0.84								1.03		
	Largemouth Bass		22.1			5.88		10.2	3.67	5.77		22.3			6.06	10.5	3.79	6.03

Notes:

ppt Parts per trillion

TCDD Tetrachlorodibenzo-p-dioxin

TEQ Toxicity equivalent concentrations

¹ Samples analyzed twice due to quality assurance/quality control concerns.² Samples collected by the Arkansas Game and Fish Commission on May 5, 2001, just south of Highway 13 Bridge. No TEQ data was reported.

TABLE 6

**DETECTED CONCENTRATIONS FOR WELLS
OUTSIDE OF THE TECHNICAL IMPRACTICABILITY ZONE**

2,3,7,8-TCDD						
Well	11/10/05	6/13/07	10/2/07	11/7/07	4/29/08	Comments
MW-9	--	0.15 ng/L 0.063 ng/L*	0.031 ng/L	--	--	Two exceedances above MCL
MW-77	17 ng/L	--	--	--	--	One exceedance above MCL and PCL
LW-5	--	--	--	0.078 ng/L	--	One exceedance above MCL
RBC	--	--	--	0.038 ng/L	0.034 ng/L	Two exceedances above MCL

Notes:

-- = Sample reported below the PCL and MCL

* = Sample reanalyzed

MCL = Maximum Contaminant Level

ng/L = Nanogram per liter

PCL = Plume Concentration Level

RBC = Rocky Branch Creek

2,3,7,8-TCDD MCL = 0.03 ng/L

2,3,7,8-TCDD PCL = 7 ng/L

TABLE 7

**DETECTED CONCENTRATIONS FOR WELLS
INSIDE OF THE TECHNICAL IMPRACTICABILITY ZONE**

2,3,7,8-TCDD						
Well	12/17/04	12/11/06	4/25/07	6/13/07	7/11/07	Comments
MW-36	--	--	0.038 ng/L	0.062 ng/L 0.12 ng/L*	0.084 ng/L	Three exceedances above MCL
MW-100	3.7 ng/L	--	--	--	--	One exceedance above MCL
Toluene						
Well	12/17/04	12/11/06	4/25/07	6/13/07	7/11/07	Comments
MW-101	--	2,600 ug/L	--	--	--	One exceedance above MCL

Notes:

-- = Sample reported below the PCL and MCL

* = Sample reanalyzed

MCL = Maximum Contaminant Level

ng/L = Nanogram per liter

ug/L = Micrograms per liter

2,3,7,8-TCDD MCL = 0.03 ng/L

Toluene MCL = 1,000 ug/L

TABLE 8
LIST OF INTERVIEWEES

Name	Title/Position	Organization	Date of Interview
Tim Hassett	Site Project Manager	Hercules, Inc.	June 24, 2008
David Jeros	Project Manger	Terracon Consultants, Inc.	June 24, 2008
Thomas Pilgrim	Senior Technician	Terracon Consultants, Inc.	June 24, 2008
Phillip Carisle	Vice President	Concerned Citizens Coalition	June 24, 2008
Tommy Swaim	Mayor	City of Jacksonville	June 25, 2008
Shirley Louie	Associate Branch Chief for Epidemiology	Arkansas Department of Health	June 25, 2008
Annette Cusher	Engineer Supervisor	Arkansas Department of Environmental Quality	June 25, 2008
Dianna Kilburn	Geology Supervisor	Arkansas Department of Environmental Quality	June 25, 2008

TABLE 9
ISSUES IDENTIFIED

Issue	Affects Remedy Protectiveness	
	Short-Term	Long-Term
Unpermitted release of WWTP influent water	No	No
Groundwater sample exceedances of MCLs and PCLs	No	Yes
WWTP discharge limitation exceedances	No	No
Plan and progress report discrepancies	No	No
Fish flesh monitoring and screening levels, and fishing bans or consumption advisories for Rocky Branch Creek and Bayou Meto	No	Yes

Notes:

MCL = Maximum Contaminant Level

PCL = Plume Concentration Level

WWTP = Wastewater treatment plant

TABLE 10
RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Remedy Protectiveness (Yes/No)	
					Short-Term	Long-Term
Unpermitted release of WWTP influent water	Adhere to the revised O&M task of conducting a site inspection after any significant storm event	Hercules, Inc.	EPA	Ongoing	No	No
Groundwater sample exceedances of MCLs and PCLs	Conduct further evaluation and determine the reason for the recurring low level exceedances of MCLs and PCLs	Hercules, Inc.	EPA	Ongoing	No	Yes
WWTP discharge limitation exceedances	Determine the reasons for the occasional low level discharge exceedances	Hercules, Inc.	EPA	Within 12 months of the Final Third Five-Year Review Report	No	No
Plan and progress report discrepancies	Update the Site-Wide Groundwater Monitoring Plan, and submit the progress reports on an annual basis	Hercules, Inc.	EPA	Within 12 months of the Final Third Five-Year Review Report	No	No
New technologies for NAPL remediation	Conduct a review of new technologies to treat and/or remove NAPL from the contaminated bedrock aquifer in accordance with the OU 3 ROD	EPA	EPA	During the next five-year review	No	No
Fish flesh monitoring and fishing bans or consumption advisories	Continue fish tissue dioxin sampling to be performed every two years, including Bayou Meto at the Highway 13 bridge	Hercules, Inc.	EPA	Prior to January 31, 2009	No	Yes

Notes:

EPA = U.S. Environmental Protection Agency
MCL = Maximum Contaminant Level
NAPL = Non-aqueous phase liquid

O&M = Operations and maintenance
OU = Operable Unit
PCL = Plume Concentration Level

ROD = Record of Decision
WWTP = Wastewater treatment plant

ATTACHMENT 2A
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ATTACHMENT 2B
RELEVANT CORRESPONDENCE



October 28, 2003

Lbs = Concentration (mg/L) X Flow (MGD) X 8.34

The background for Rocky Branch Creek for chloride in pounds per day:

Lbs of chloride per day = 9 mg/L X 2.59 MGD X 8.34

Lbs of chloride per day = 194.4

Where 9 mg/L is the background concentration for Rocky Branch Creek and 2.59 MGD is the flow based on 4 CFS based on the ADEQ Water Division's Continuing Planning Process Appendix D.

The most conservative lbs of chloride per day over the past two years (September 2001- October 2003) for the Waste water Treatment Plant at the Hercules Vertac Site:

Lbs of chloride per day = 414 mg/L X 0.123 MGD X 8.34

Lbs of chloride per day = 424.7

This was based on the highest concentration of chloride of 414 mg/L in (September 12, 2002) and the highest daily monthly average of 0.123 MGD (February 2003) over the past two years.

Based on Regulation 2 Section 2.511 for Rocky Branch Creek, the maximum chloride concentration is 64 mg/L based on a 4 CFS (2.59 MGD) combined with the Water Treatment maximum flow of 0.123 MGD flow. In pounds of chloride per day this would calculate to be:

Lbs of chloride per day = 64 mg/L X (2.59 MGD + 0.123 MGD) X 8.34

Lbs of chloride per day = 1448.1

The most conservative discharge from the WWTP with the background concentration of Rocky Branch Creek would be 619.1 lbs of chloride per day, which is below the maximum allowed of 1448.1 lbs of chloride per day.

The background for Rocky Branch Creek for TDS in pounds per day:

$$\text{Lbs of TDS per day} = 188 \text{ mg/L} \times 2.59 \text{ MGD} \times 8.34$$

$$\text{Lbs of TDS per day} = 4060.9$$

Where 188 mg/L is the background concentration for Rocky Branch Creek and 2.59 MGD is the flow based on 4 CFS based on the ADEQ Water Division's Continuing Planning Process Appendix D.

The most conservative lbs of TDS per day over the past two years (September 2001- October 2003) for the Waste water Treatment Plant at the Hercules Vertac Site:

$$\text{Lbs of TDS per day} = 999 \text{ mg/L} \times 0.123 \text{ MGD} \times 8.34$$

$$\text{Lbs of TDS per day} = 1024.8$$

This was based on the highest concentration of TDS of 999 mg/L in (September 26, 2002) and the highest daily monthly average of 0.123 MGD (February 2003) over the past two years.

Based on Regulation 2 Section 2.511 for Rocky Branch Creek, the maximum TDS concentration is 390 mg/L based on a 4 CFS (2.59 MGD) flow) combined with the Water Treatment maximum flow of 0.123 MGD flow. In pounds of TDS per day this would calculate to be:

$$\text{Lbs of TDS per day} = 390 \text{ mg/L} \times (2.59 \text{ MGD} + 0.123 \text{ MGD}) \times 8.34$$

$$\text{Lbs of TDS per day} = 8824.3$$

The most conservative discharge from the WWTP with the background concentration of Rocky Branch Creek would be 5085.7 lbs of chloride per day, which is below the maximum allowed of 8824.3 lbs of chloride per day.



GENESIS ENVIRONMENTAL
CONSULTING, INC.
A Terracon Company

February 6, 2004

Mr. Massoud Arjmandi
Arkansas Department of Environmental Quality
Hazardous Waste Division
P.O. Box 8913
Little Rock, AR 72219

**Re: REQUEST FOR CHANGE IN PLANT PERFORMANCE CRITERIA (DISCHARGE LIMITS) FOR
CHLORIDES AND TDS AT OUTFALL 002 AT THE VERTAC SITE LOCATED IN
JACKSONVILLE, ARKANSAS.**

Dear Mr. Arjmandi:

I am writing in regard to our February 4, 2004 meeting at the Arkansas Department of Environmental Quality (ADEQ) offices located in Little Rock, Arkansas. During the meeting Genesis Environmental Consulting, Inc. (GEC) on behalf of Hercules Incorporated presented calculations (Attachment I) to support a request, consistent with the 4-G Study of Rocky Branch Creek, to revise the Outfall 002 limits for chlorides and TDS at the Vertac Site located in Jacksonville, Arkansas. ADEQ personnel (from the Hazardous Waste Division and Water Division) reviewed the calculations and agreed that the limits should be revised to Report Only. In addition, the ADEQ suggested that a letter be sent on behalf of Hercules Incorporated formally requesting that the Plant Performance Criteria (discharge limits) be revised.

This letter will serve as Hercules Incorporated's request that the discharge limits for chlorides and TDS at Outfall 002 are changed from their existing limits to Report Only for a period of two years. Based on our meeting, Hercules Incorporated understands that after this two year period has expired, the ADEQ will review the Outfall 002 chlorides and TDS analytical results. In addition, after the review it is understood that Hercules Incorporated can request that chlorides and TDS be removed from the analyte list for Outfall 002.

To document the agreed upon changes, Hercules Incorporated requests a letter from the ADEQ Hazardous Waste Division confirming the changes as outlined above.

Mr. Massoud Arjmandi
Arkansas Department of Environmental Quality
February 6, 2004

If you have any questions or require any additional information, do not hesitate to call.

Sincerely,

Vertac Site Operation
David Jaros, P.G., R.E.M.
Site Manager

Vertac Site Operation
David V. Hopkins, P.G.
Project Manager

Attachment 1: Calculations

CC: B. Hough – Hercules Plaza
D. Amorose – Hercules Plaza
T. Hassett – Hercules Plaza
P. Allen – EPA, Dallas, TX

December 28, 2004

Mr. Massoud Arjmandi
ADEQ Closed Sites Project Manager
Arkansas Dept. of Environmental Quality
8001 National Drive
Little Rock, AR 72209

Mr. Philip Allen (6SF-AP)
Superfund Division
U.S. EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

RE: Hercules Incorporated Response to the Arkansas Department of Environmental Quality (ADEQ) Review Comments - *Draft Sitewide Operations and Maintenance Manual, Vertac Superfund Site, Jacksonville, Arkansas (December 2002)* (Manual prepared by Genesis Environmental Consulting, Inc. for Hercules Incorporated).

Dear Mr. Arjmandi:

The ADEQ submitted Review Comments to the EPA (Letter Dated February 12, 2003) on the Draft Sitewide Operations and Maintenance Manual for the Vertac Superfund Site located in Jacksonville, Arkansas. The following consists of the Hercules Incorporated response to the ADEQ Review Comments.

1. **2.0 Site Description, page 3:** The location for the Vertac Site is given as 1907 Hill Road in Jacksonville. However, previously the address was 1010 Marshall Road in Jacksonville. Also, a review of the ADEQ files lists the location (address) as 1010 Marshall Road in Jacksonville. Please explain if Hercules has changed the address for the Vertac Site. If the address has been changed for the Vertac Site, Hercules must notify EPA and ADEQ of such changes so the files and databases can be updated.

Response to 1: *A letter dated October 28, 2003 was mailed to notify ADEQ and EPA of the address change to Hill Road. The Marshall Road entrance is no longer in use. In addition, the O&M Manual text page 3 was changed to show the correct address of the Vertac Site as 1907 Hill Road in Jacksonville.*

2. **2.1 Site History, page 3:** According to the Phase I Remedial Investigation Report for Operable Unit 2 (December 1992), the Record of Decision for Operable Unit 2 (September 1996), and the Record of Decision for Operable Unit 3 (September 1996):
 - Hercules produced Agent Orange during 1964 – 1969, not 1967 – 1968.
 - Vertac Chemical Corporation operated the plant site until 1986 not 1987 and therefore, could not have continued to produce 2, 4-D until 1987.
 - The Vertac Remedy was implemented in 1984 and completed in 1986, not 1996.
 - Vertac abandoned the Site on January 31, 1987, not February 1987.

Please revise for these corrections.

Response to 2: The O&M Manual text on page 3 was revised to reflect the corrections requested above.

3. 3.1 Fence, Gates, and Signage, page 6:

- a. Please include the distance between the signs depicting "No Trespassing" (i.e., every 1000 feet). For example, "Signs depicting 'No Trespassing' are located along the perimeter fence every 1000 feet."

Response to 3a: The O&M Manual text (Page 6) was revised to reflect that signage is located along the perimeter fence every 1000 feet.

- b. Please state the Site is accessed via Hill Road.

Response to 3b: A letter dated October 28, 2003 was mailed to notify ADEQ and EPA of the address change to Hill Road. The Marshall Road entrance is no longer in use. In addition, the O&M Manual text on page 6 was changed to show that the Vertac Site is accessed via Hill Road.

4. **3.2 Communications, Page 6:** Appendix C does not contain an inspection form called, "monitoring the communication system." Throughout this manual, several names of the forms in the text do not match with the actual forms. In addition, inspection forms are scattered among several appendices. We recommend all inspection forms be included in one location. Moreover, make the names of the inspection forms consistent with the text. One way to reduce confusion is to number the forms and make reference to the form numbers as well as the form names.

Response to 4: The O&M Manual text has been changed to refer to the inspection forms by name and number and all inspection forms are now located in APPENDIX C. In addition, the inspection form for monitoring the communication system is called Inspection Form #2 Site Security and Communication. This change is also reflected in the O&M Manual text.

5. **4.0 Leachate Collection System, page 7:** According to the Phase I Remedial Investigation Report for Operable Unit 2 (December 1992), the Record of Decision for Operable Unit 2 (September 1996), and the Record of Decision for Operable Unit 3 (September 1996), Vertac operated the plant site until 1986 not 1987. Vertac abandoned the site January 31, 1987. Please revise.

Response to 5: The O&M Manual text on page 8 has been revised to reflect the change requested above.

6. 4.1 Leachate Collection System Components, page 7:

- a. Please submit a map(s) as a Figure(s) depicting the locations with labels of the french drain, manholes, pumping stations, leachate headers, and all other components of the Leachate Collection System.

Response to 6a: Figures 4, 5, and 6 depict the locations with labels for the leachate headers and other components. Figure 3 depicts the location/labels for the French drain, manholes, and pumping stations.

- b. Thirteen (13) pump stations are specified in this section. Appendix E indicates a total of fourteen (14) pump stations. Make proper correction.

Response to 6b: The Appendix E text was revised to state the correct number of pump stations (thirteen pump stations).

7. **4.2 Leachate Collection System Start-up Procedures, page 8:** Please define the acronym PLC. A list of all acronyms and their definitions should be included in the front of the document following the Table of Contents.

Response to 7: A table of acronyms was added following the Table of Contents. In addition the acronym PLC stands for Programmable Logic Controller and it is defined on Page 9.

8. 4.3 Routine Maintenance and Inspection, page 8:

- a. Please define the acronym LDS. A list of all acronyms and their definitions should be included in the front of the document following the table of contents.

Response to 8a: A table of acronyms was added following the Table of Contents. In addition the acronym LCS stands for Leachate Collection System and it is defined on Page 8.

- b. At the minimum a bi-weekly inspection schedule for the inspection of the french drains leachate collection system is recommended.

Response to 8b: The O&M Manual text has been changed to state that the french drain leachate collection system will be inspected on a bi-weekly basis on page 10.

9. 5.0 Groundwater Recovery System, page 9:

- a. Please submit a map(s) as a Figure(s) depicting all of the components of the Groundwater Recovery System.

Response to 9a: Figure 3 presents the location of the Groundwater Recovery System and

Extraction Wells. Figure 8 presents the components of the Groundwater Recovery System.

- b. Second paragraph: Section 3.0 is Site Security not groundwater. Correct accordingly.

Response to 9b: The O&M Manual text (Page 11) was revised to reflect the change requested above.

- 10. 5.1 Groundwater Recovery System Components, page 10: Please change “exists” to “exits.”

Response to 10: The O&M Manual text (Page 12) was revised to reflect the change requested above.

- 11. 5.1 Groundwater Recovery System Components and 5.2 Groundwater Recovery System Startup Procedures, pages 9 – 10: Please revise for consistency and clarification when discussing the Groundwater Recovery System components. Is it the soils storage building, Groundwater Recovery Building, or Groundwater Transfer Building? Is it the groundwater collection tank, Groundwater storage tank, groundwater recovery tank, or groundwater transfer tank? Regardless of the names used for the components, they must be consistent throughout the document. The purpose of compiling this Operations and Maintenance (O&M) Manual is to provide documentation of the O&M procedures for the Vertac Site and to eliminate confusion, especially for new personnel unfamiliar with the Site.

Response to 11: The O&M Manual text (Pages 12) has been revised to reflect the changes requested above. The building in question is referred to as the Groundwater Transfer Building and the tank utilized for transporting the collected groundwater is the Groundwater Transfer Tank.

- 12. 5.2.1 Groundwater Extraction Pump Start Up Sequence, page 11: In checklist item number 6, please change “permissive” to “permission” and change “al” to “all” in the bullet.

Response to 12: The O&M Manual text (Page 13) was revised to reflect the changes requested above.

- 13. 5.3 Routine Maintenance and Inspection, page 11: Appendix C does not contain an inspection form for the Groundwater Recovery System (GRS) as stated. Please submit a GRS inspection form.

Response to 13: Inspection Form #3 Groundwater Recovery System was added to Appendix C and is referred to in Section 5.4 of the O&M manual.

- 14. 6.0 Landfill Monitoring, page 13:** The location of the landfill on the Vertac Site is shown in Figure 3, not Figure 1 as stated. However, it is not labeled or identified as a landfill in Figure 3. Please revise the text and figures to correctly show the location of the landfill.

Response to 14: Figure 3 now has the landfill labeled and the O&M Manual text (Page 14) has been revised to reference Figure 3.

- 15. 6.0 Landfill Monitoring, pages 13 – 16:** Please include a discussion on groundwater monitoring for the landfill. Please provide a map with an adequate scale depicting the landfill groundwater monitoring system.

Response to 15: Figure 9 was added to include the location of the landfill monitoring system and a discussion on groundwater monitoring for the landfill has been added in Section 6.4 (Page 18) of the O&M Manual text.

- 16. 6.2 Leachate Collection System and 6.3 Leak Detection System, pages 15 – 16:** Please explain in detail how damaged components of the Leachate Collection System (LCS) and the Leachate Detection System (LDS) will be repaired as necessary and clearly state that the design, plans and specifications for repairs will be submitted to EPA and ADEQ for approval should repairs be necessary.

Response to 16: In the future, the ADEQ and USEPA will be notified in advance of all major, non-routine repairs that are planned for the various components of the Vertac Site remedy. In addition, the design plans and specifications for the major, non-routine repairs will be submitted to the USEPA and ADEQ for approval prior to commencement of the repair effort. Section 6.2 and 6.3 of the O&M Manual text (Pages 16 -17) have been revised to reflect the changes concerning repairs and acquiring approval from the ADEQ and EPA prior to making major, non-routine repairs. It should be noted that LDS in the O&M Manual stands for Leak Detection System, not Leachate Detection System as stated above.

- 17. 6.2 Leak Collection System; Page 15, Second Paragraph:** Revise to show only the present method of leachate collection and removal. Once the pumping to the manhole or any other method is in place, revise this section to show modification to the system.

Response to 17: The O&M Manual text (Page 16) was revised to reflect only current collection methods in Section 6.2.

- 18. 6.3 Leak Detection System, Page 15:**

- a. Specify the frequency of pumping the LDS pump.

Response to 18a: The O&M Manual text Section 6.3(Page 17) was revised to reflect the frequency of twice a month for pumping the Leak Detection System.

- b. Change LCS to LDS.

Response to 18b: The O&M Manual text Section 6.3(Page 17) was revised to reflect the change from Leachate Collection System to Leak Detection System.

- 19. 7.0 Water Treatment System, pages 17 – 18: Please provide a map as a figure depicting the locations of the French drain manholes, Leachate Header 1, Leachate Header 2, Leachate Header 3, and all other major components of the Water Treatment System. Please provide drawings depicting the components of the Water Treatment System within and adjacent to the Water Treatment System Building.

Response to 19: Figures 3, 4, 5, 6, and 7 were added to the O&M Manual which depict the locations of the items requested above.

- 20. 7.2.1 Oil Water Separator Removal, Page 19: Specify the problems with the oil water separator tank.

Response to 20: The O&M Manual text (Page 21) was revised to provide a discussion detailing the issues with the oil water separator.

- 21. 8.0 Wastewater Discharge Monitoring, page 21:

- c. Outfall locations are not located in Figure 1. Please provide a map as a figure depicting the outfall locations.

Response to 21c: The O&M Manual text (Page 23) was revised and Outfall 002 is now located on Figure 3, not Figure 1 as stated.

- d. It does not appear that Appendix G includes all relevant correspondence. For example, instead of the revised limits of 0.005ng/l, concentration limits of 0.001 ng/l and 0.002 ng/l for dioxin (2, 3, 7, 8-TCDD) are reported.

Response to 21d: The limit for 2, 3, 7, 8-TCDD being utilized for the Vertac site is 0.0053 ng/l per the ADEQ letter (Massoud Arjmandi to Bruce Hough) dated October 20, 2003. In addition, Part I of Appendix G has been edited to reflect a limit of 0.0053 ng/l.

- 22. 8.1 Treated Discharge Monitoring Limitations and Conditions, page 21:

- a. A Table 7-1 is referenced. Please revise Table 7-1 to Table 8-1.

Response to 22a: The O&M Manual text (Page 23) was revised to reflect the change requested above.

- b. Please provide a complete and detailed sampling and analysis plan for sampling treated wastewater discharges.

Response to 22b: The sampling and analysis plan outlining the procedures utilized for sampling treated wastewater is found in APPENDIX L Section 4.5.

23. 8.2 Stormwater Discharge Monitoring Limitations and Conditions, pages 22 – 23:

Please provide a complete and detailed sampling and analysis plan for sampling stormwater discharges.

Response to 23: The sampling and analysis plan for stormwater discharge is found in Appendix K Section 2.5.3 and is referenced on page 24 of the O&M Manual text.

- 24. 8.3 Sample Containers and Handling, page 23:** In addition to individuals conducting the sampling having completed the 40 hours of OSHA 1910.120 (HAZWOPER) training, they also must maintain current status (i.e., 8-hour refresher courses) in the HAZWOPER training. Please revise to include the requirement of individuals maintaining current status in HAZWOPER training.

Response to 24: The O&M Manual text Section 8.3 (Page 25) was revised to include the requirement of maintaining current status in HAZWOPER training (i.e., 8-hour refresher courses).

- 25. 10.0 Sitewide Groundwater Sampling, pages 28 – 29:** Randall Maud's name is misspelled. Please correct the spelling.

Response to 25: The O&M Manual text Section 10.0 (Pages 31) was revised to correct the misspelling of Mr. Maud's name.

- 26. 10.1 Constituents For Analysis, page 28:** It should be clearly stated that the list of constituents for analysis may be reduced only if approved by EPA and ADEQ.

Response to 26: The O&M Manual text Section 10.1 (Page 31) was revised to show that ADEQ and EPA approval must be acquired prior to the removal of any constituents.

- 27. 10.4 Field Sampling Procedures, page 30:** Please add to the first bullet to read "Containerize all purge water and dispose on-site in the Waste Water Treatment Plant."

Response to 27: The O&M Manual text Section 10.6 (Page 32) has been revised to reflect the change requested above.

28. 10.6 Decontamination of Sampling Equipment, page 30: Regardless of whether NAPLs are observed or not, all liquids must be collected during decontamination procedures and must be treated at the Waste Water Treatment Plant. Please revise the bullets to clearly state that this will be done.

Response to 28: The O&M Manual text (Page 33) has been revised to reflect the change requested above.

29. 10.9 Sample Containers and Handling, page 31: In addition to individuals conducting the sampling having completed the 40 hours of OSHA 1910.120 (HAZWOPER) training, they also must maintain current status (i.e., 8-hour refresher courses) in the HAZWOPER training. Please revise to include the requirement of individuals maintaining current status in HAZWOPER training.

Response to 29: The O&M Manual text Section 10.9 (Page 34) has been revised to include the requirement of maintaining current status in HAZWOPER training (i.e., 8-hour refresher courses).

30. 10.10 Laboratory Quality Assurance/Quality Control, Page 32: Change the sentence, "The state of Arkansas may certify the laboratory analyzing the samples," to, "laboratory analyzing the samples must be Arkansas State certified."

Response to 30: The O&M Manual text Section 10.10 (Page 35) has been revised to reflect the change requested above.

10.11 Reporting, Page 32: The text specifies that progress reports are sent to EPA and ADEQ on an annual basis. Table 12-1, Reporting Requirements, states semi-annually, annually. Modify Table 12-1 to annual basis.

Response to 30: Table 12-1 of the O&M Manual (Page 38) was revised to reflect that progress reports are sent to EPA and ADEQ annually.

31. 11.2.1 General, Page 33:

e. Change 2378 TCDD to 2, 3, 7, 8-TCDD.

Response to 31e: The O&M Manual text (Page 36) has been revised to reflect the requested change.

f. **Table 11-1, Hazardous Waste Management:** Description and Storage/Disposal for the Leachate Interceptor Manholes are not accurate. They should be the same as the Landfill row. Revise accordingly.

Response to 31f: The O&M Manual text (Page 37) has been revised to reflect the requested change.

- 32. Appendix C Reporting Forms:** Appendix C does not contain an inspection form for the Groundwater Recovery System (GRS) as stated. Please submit an inspection form for the GRS.

Response to 32: Inspection Form #3 Groundwater Recovery System located in Appendix C was added for the GRS.

- 33. Appendix C Reporting Forms, North Landfill Inspection Form, Leachate Collection System:** Specify the method of measurement for leachate above 2-feet in the sumps.

Response to 33: Inspection Form #1 North Landfill located in Appendix C was added for the North Landfill. In addition, Section 6.2 (Page 16) of the O&M Manual text has been revised to specify the method of measurement for leachate below 2-feet in the sumps.

- 34. Appendix D Waste Water Treatment Plant (WWTP) Operations and Maintenance Manual:**

- a. **2.3 Performance Criteria:** In accordance with CERCLA 121(e)(1), a permit is not required but, the requirements of a permit must be met. Therefore, please explain why a permit number is listed and a permit is referenced.

Response to 34a: The reference to a permit has been deleted as requested.

- b. In the Sitewide Operations and Maintenance Manual, Section 7.2 System Modifications, page 19, it states that the Oil Water Separator Tank, Acidification Process, Spent Carbon Hold Tank, and Sock Filter System were all removed from the Waste Water Treatment System. Therefore, please revise throughout Appendix D to include these system modifications.

Response to 34b: Due to the age of the documents presented in Appendix D, we were unable to locate an electronic copy. Therefore a cover letter has been placed in the front of Appendix D explaining the modifications and notifying the reader to disregard further references of the aforementioned systems throughout Appendix D.

- 35. Appendix E Leachate Collection System:** There should not be any handwritten strikeouts, revisions, or notes in the margins. Please rewrite Appendix E.

Response to 35: Appendix E has been rewritten as requested.

- 36. Appendix F Groundwater Recovery System:** Appendix F is only a copy of Section 5, Operation and Maintenance Plan from the Final Remedial Design (July 1997). It clearly states that an O&M manual for the extraction and monitoring system (i.e., Groundwater Recovery System) will include, but not limited to a list of bulleted items. It also states

that this O&M manual will be prepared and submitted to EPA after the system has been installed and is operational. Please submit a complete and detailed O&M manual for the Groundwater Recovery System which includes, but is not limited to the bulleted items in Section 5 of the Final Remedial Design.

Response to 36: Please note that Appendix D contains the complete O&M Manual for the Groundwater Recovery System and Appendix F has been removed.

37. Appendix G Discharge Limits Rocky Branch Creek: Please submit a sampling and analysis plan for the wastewater discharge monitoring.

Response to 37: The Sampling and Analysis Plan for Wastewater Discharge is found in Section 4.5 of APPENDIX L.

38. Appendix H Stormwater Pollution Prevention Plan:

a. 1.0 Introduction: According to the Phase I Remedial Investigation Report for Operable Unit 2 (December 1992), the Record of Decision for Operable Unit 2 (September 1996), and the Record of Decision for Operable Unit 3 (September 1996);

- Hercules produced Agent Orange during 1964 – 1969, not 1967 – 1968.
- Vertac Chemical Corporation operated the plant site until 1986, not 1987 and therefore, could not have continued to produce 2, 4-D until 1987.
- The Vertac Remedy was implemented in 1984 and completed in 1986, not 1996.
- Vertac abandoned the Site on January 31, 1987, not February 1987.

Please revise for these corrections.

Response to 38a: The Appendix H Section 1.0 (Page 3) text has been revised to reflect the corrections requested above.

b. Table 1 Facility Data Sheet: The location for the Vertac Site is given as 1907 Hill Road in Jacksonville. However, previously the address for the Vertac Site has been 1010 Marshall Road in Jacksonville. Also, a review of the ADEQ files lists the location (address) as 1010 Marshall Road in Jacksonville. Please explain if Hercules has changed the address for the Vertac Site. If the address has been changed for the Vertac Site, Hercules must notify EPA and ADEQ of such changes so the files and databases can be updated.

Response to 38b: A letter was written and mailed to notify ADEQ and EPA of the address change to Hill Road. The Marshall Road entrance is no longer in use. In addition, the O&M Manual text (Appendix H Table 1) has been revised to show that the Vertac Site is located at 1907 Hill Road in Jacksonville, Arkansas.

- c. **3.2.2 Drainage Area 2:** Based on observations during a site visit on July 19, 1995, slope failures had occurred on the northwest slope of the Sedimentation Vault (Mount Vertac). During the site visit, repairs were underway and the entire northwest slope was to be covered with riprap. Therefore, the entire northwest slope was not covered with riprap in 1988 as stated. Please revise.

Response to 38c: The O&M manual text Appendix H, Section 3.2.2 (Page 13) has been revised to reflect that the repair was performed in July of 1995, when the northwest slope of the Sedimentation Vault was covered with rip-rap.

- d. **3.2.3 Drainage Area 3:** change "eat" to "east."

Response to 38d: The O&M Manual text (page 13) has been revised to reflect this requested correction.

- e. **3.4 Materials Inventory and Appendix F Materials Inventory:** According to the discussions with Genesis Environmental Consulting, Inc. (Hercules site contractor) during a May 14, 2002 site visit and in an October 25, 2002 meeting, the sulfuric acid and caustic soda would be removed from the site or placed in the WWTP. Since the acidification process was removed from the WWTP (Section 7.2 System Modifications, page 19), explain why these chemicals are still present.

Response to 38e: Please note that all of the acid and caustic has been removed from the Groundwater Transfer Building and was utilized in the pH Neutralization system (See Section 7.1.5. of the O&M Manual).

- f. **4.4 Sedimentation and Erosion Control:** As stated previously, based on observations during a site visit on July 19, 1995, the entire northwest slope of Mount Vertac was undergoing repairs and was to be covered with riprap. Therefore, the entire northwest slope was not covered with riprap in 1988 as stated. Please revise.

Response to 38f: The O&M Manual text (Appendix H page 23) has been revised to reflect that the repair was performed in July of 1995, when the northwest slope of the Sedimentation Vault was covered with rip-rap.

- 39. Appendix K Sitewide Groundwater Monitoring:** Do not include items marked out by hand or hand written changes on pages or in the margins. Please revise the Table of Contents to be consistent with the text of the Sitewide Groundwater Monitoring Plan. Please submit maps with an adequate scale for the groundwater recovery/containment and monitoring system and for the landfill groundwater monitoring system.

Response to 39: APPENDIX K has been revised to take out any mark out or handwritten changes. Figure 3 of the O&M Manual presents the groundwater recovery and monitoring system. In addition, the Table of Contents has been revised and is now consistent with the Groundwater Monitoring Plan text.

- 40. Appendix L Final Remedial Design for OU#3:** Pages 2-5 and Figures 2-10, pages 2-24 were both misfed when copied. Please revise these pages. In addition, throughout the entire Sitewide Operations and Maintenance Manual there are some other pages that were miscopied but are somewhat readable. Please review the Sitewide Operations and Maintenance Manual and revise as necessary.

Response to 40: In addition to the corrections above being made, the entire O&M manual has been reviewed and recopied as necessary.

- 41.** There are no Operation and Maintenance procedures for the Sedimentation Vault (Mount Vertac), the North Burial Area, and the Reasor-Hill Landfill Area. Please submit O&M procedures for these areas.

Response to 41: Section 13 has been added to the O&M manual (page 40) to present the Operation and Maintenance procedures for the Sedimentation Vault (Mount Vertac), the North Burial Area, and the Reasor-Hill Landfill Area.

- 42.** An issue that is important to ADEQ and EPA which was discussed with Genesis Environmental Consulting, Inc. during a May 14, 2002 site visit and in an October 25, 2002 meeting, is to be able to obtain and keep an accurate record for the date, pumping duration, and the volume of leachate pumped from each of the manhole sumps. Please make proper modifications to the system design to make it possible to collect the above data. Revise this manual accordingly.

Response to 42: Section 4.3 (page 10) was edited to present the procedures to record the date, pumping duration, and volume for each manhole and extraction well on a spreadsheet.

Hercules Incorporated is pleased to submit this response to the ADEQ's comments. If you have any questions or require any additional information, do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Tim Hassett", with a date "(6/7/04)" written below it.

Tim Hassett, P.E.
Site Project Manager
Hercules Incorporated
SHERA Division

ADEQ

ARKANSAS
Department of Environmental Quality

May 4, 2007

Terracon
Attention: David Jaros, P.G., R.E.M.,
Site Manager
1400 West Baseline
Little Rock, Arkansas 72209

Re: Vertac Superfund Site - Outfall 002 Sampling Reduction Request
AFIN # 60-00028

Dear Mr. Jaros:

The Arkansas Department of Environmental Quality has reviewed Terracon's request for sampling frequency reductions at Outfall 002 and offer the following response.

- 1) Mercury should not be removed from the Permit until tests are conducted using EPA Method 1631 which has a MQL of 0.0002 ug/l and the levels are proven to be below the water quality standards. (At this time, the facility is using EPA Method 245.1 which has a MQL of 0.2 ug/l which is above the water quality standard.)
- 2) There are no objections to the removal of Silver, as well as DDT and metabolites. This request is approved due to the number of tests which have been conducted and shown to have no detection.
- 3) Cadmium, Chromium, Lead, Heptachlor Epoxide, Nitrate + Nitrite, and Cyanide should not be removed until a minimum of 24 tests have been conducted with no detection.
- 4) A determination on reducing the monitoring frequency for Oil and Grease, Copper, Selenium, and Toluene cannot be made until data showing the levels of those parameters in the effluent have been examined. Data showing the percentage of the tests during which those parameters have been detected is not sufficient to determine a new sampling frequency.

If you have any questions, please contact me at 501-682-0855.

Sincerely,



Kin Siew, P.E.
Engineer Supervisor
Technical Branch



11400 West Baseline
Little Rock, Arkansas 72209
Phone 501.455.2199
Fax 501.455.4547

December 13, 2007

Mr. Kin Siew
Arkansas Department of Environmental Quality
Hazardous Waste Division
5301 North Shore Drive
North Little Rock, AR 72118-5317

Re: HERCULES-VERTAC SITE DISCHARGE MONITORING – OCTOBER 2007

Dear Mr. Siew:

Terracon Consultants, Inc. (Terracon) is pleased to submit the analytical data for the Outfall 002 sample point located at the Hercules-Vertac site for the month of October 2007 on behalf of Hercules Incorporated (Hercules). This data is being submitted in accordance with discharge limitations and monitoring requirements.

October 2007

Test America. – 10/03/07, 10/9/07, 10/16/07, & 10/23/07
Pace Analytical Services, Inc.– 10/23/07

It should be noted that there was a 2,3,7,8-TCDD detection of 0.017 ng/L on 10/3/07. The site resampled for 2,3,7,8-TCDD on 10/23/07 and split the sample between Test America (TA) and Pace Analytical Services, Inc.(Pace) The resample results for 2,3,7,8-TCDD from Pace were nondetect at 0.005 ng/L. The other split sample from TA had a detection of 0.0018 ng/L for 2,3,7,8-TCDD for the resampling event.

There have been no procedural changes at the Wastewater Treatment Plant and the effluent water from Carbon Bed #2 and Carbon Bed #3 were nondetect for phenols and phenoxyherbicides during the resampling period. Previous detections of 2,3,7,8-TCDD have been associated with detections of phenols and phenoxyherbicides in the effluent waters from Carbon Bed #2 and Carbon Bed #3.

Based on the previous detections of 2,3,7,8-TCDD in Outfall 002 associated with detections of phenols and phenoxyherbicides in the effluent waters from Carbon Bed #2 and Carbon Bed #3 and the nondetect results from the split samples with Pace, it is surmised that the detections of 2,3,7,8-TCDD from TA are false positives.

Based on the discrepancies between the two laboratories, the site is preparing spike split samples with 2,3,7,8-TCDD to check the accuracy of the laboratories.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Terracon

David Jaros
Site Manager

David Hopkins, P.G.
Project Manager

Enclosures

cc B. Hough – Hercules Plaza
P. Allen – EPA, Dallas, TX
S. Louie – ADH



11400 West Baseline
Little Rock, Arkansas 72209
Phone 501.455.2199
Fax 501.455.4547

January 22, 2008

Mr. Kin Siew
Arkansas Department of Environmental Quality
Hazardous Waste Division
5301 North Shore Drive
North Little Rock, AR 72118-5317

Re: HERCULES-VERTAC SITE DISCHARGE MONITORING – NOVEMBER 2007

Dear Mr. Siew:

Terracon Consultants, Inc. (Terracon) is pleased to submit the analytical data for the Outfall 002 sample point located at the Hercules-Vertac site for the month of November 2007 on behalf of Hercules Incorporated (Hercules). This data is being submitted in accordance with discharge limitations and monitoring requirements.

November 2007

Test America. – 11/01/07, 11/06/07, 11/15/07, 11/20/07, & 11/28/07
Pace Analytical Services, Inc.– 11/28/07

It should be noted that there was a 2,3,7,8-TCDD detection of 0.029 ng/L on 11/1/07. The site resampled for 2,3,7,8-TCDD on 11/28/07 and split the sample between Test America (TA) and Pace Analytical Services, Inc.(Pace) The resample result for 2,3,7,8-TCDD from Pace and TA were at 0.0067 ng/L and 0.012 ng/L respectively.

There have been no procedural changes at the Wastewater Treatment Plant. There were no detections of phenols, phenoxyherbicides, or toluene associated with the Outfall 002 sampling event. In addition, phenols were not detected in the Outfall 002 associated with the 11/28/07 sample event. The past detections of 2,3,7,8-TCDD have been associated with detections of phenols, phenoxyherbicides, or toluene in the Outfall 002. It should also be noted that the 12/3/07 sampling event for 2,3,7,8-TCDD was nondetect.

If you have any questions, please feel free to contact me at your convenience.

Hercules-Vertac Site
January 22, 2008

November 2007 DMR

Sincerely,
Terracon

David Jaros
Site Manager

David Hopkins, P.G.
Project Manager

Enclosures
cc B. Hough – Hercules Plaza
P. Allen – EPA, Dallas, TX
S. Louie – ADH



ARKANSAS
Department of Environmental Quality

March 18, 2008

Hercules Incorporated
Attention: Bruce J Hough, Director
Environmental Engineering and Remediation Safety,
Health, Environment & Regulation Affairs
Hercules Research Center
500 Hercules Road
Wilmington, DE 19808-1599

Re: Vertac Superfund Site, Unpermitted Release (AFIN: 60-00028)

Dear Mr. Hough:

On February 21, 2008, David Jaros, P.G., and David Hopkins P.G., of Terracon reported to the Arkansas Department of Environmental Quality, Hazardous Waste Division (ADEQ) that there was an unpermitted release of Equalization Tank (EQ tank) water at the Hercules-Vertac site in Jacksonville, Arkansas on February 17, 2008. The release commingled with storm water runoff which eventually flowed into Rocky Branch Creek. Soil samples were collected by Terracon's staff on February 19, 2008 from the observed runoff area for analysis of phenols and herbicides.

As soon as the soil analysis results are available but no later than 15 days from the receipt of this letter, please submit a report to ADEQ providing a summary of the event, including an explanation of how an automatic valve on one of the sand filters got stuck halfway open causing the unpermitted release (e.g. root causes) and what measures will be taken to prevent a release from occurring again.

If you have any questions, please contact me at (501) 862-0855 or siew@adeq.state.ar.us.

Sincerely,

Kin Siew, P.E.
Engineer Supervisor
Hazardous Waste Division

cc: Mo Shaffi, Assistant Chief, Water Division
Philip Allen, P.E., EPA Region 6
David Jaros, P.G., Terracon
David Hopkins, P.G., Terracon



25809 I-30

Bryant, Arkansas 72022

Phone 501 847 9292

Fax 501 847 9210

April 8, 2008

Mr. Kin Siew
Arkansas Department of Environmental Quality
Hazardous Waste Division
5301 North Shore Drive
North Little Rock, AR 72118-5317

Re: Response to the ADEQ letter dated March 18, 2008 Concerning an Overflow Release at the Hercules-Vertac Site (AFIN: 60-00028)

This letter is in response to the ADEQ letter dated March 18, 2008 to Bruce Hough of Hercules Incorporated concerning an overflow release at the Hercules-Vertac site (AFIN: 60-00028). The letter requested a summary of the incident, soil sample results, and actions taken to prevent the future incidents.

Incident

An incident occurred on Sunday 2/17/08 at the Hercules-Vertac site. David Jaros (Site Supervisor) was remotely operating the plant over the weekend due to the amount of rainfall the site had recently received and the poor weather forecast for the weekend. The Water Treatment Plant (Plant) was in operation on Friday 2/15/08 until about midnight. The Equalization Tanks (EQ tanks) were each at approximately 15% capacity at that time. Mr. Jaros logged in several times on Saturday to check the capacity of the EQ tanks. When the Plant was last checked on Saturday night at approximately midnight, the tanks were still not to capacity, therefore, the Plant was not turned on to treat.

When Mr. Jaros checked the Plant Sunday morning around 9:00 am, the EQ tanks' capacities were at 101% and 70%. The EQ tanks were full enough to warrant operating the Plant at that time. However, it was noted that the influent flow meter for the Plant was reading approximately 40 gal/min. The two pumps that operate the Plant were off at this time and the effluent flow meter for the Plant was reading 0 gal/min. Mr. Jaros thought that there might have been a pipe failure beyond the influent flow meter in the Plant system. This would explain the 40 gal/min reading influent and 0 gal/min effluent.

At this point, Mr. Jaros left his house to do a visual inspection of the Plant. When he arrived at the site, the inside berm in the Plant area was full of water. This area drains to an outside sump which was also full of water and draining off the parking lot into a ditch. The ditch flows into Rocky Branch Creek. The site received a total of 1.5 inches on Saturday so the runoff was a mixture of stormwater and EQ tank water. Upon inspection of the Plant, the cause of the EQ tank water mixing with stormwater was discovered.

Three items had to fail for this to occur:

- The valve on the first EQ tank (TK-002) did not close after treatment was completed on Friday night.
- A valve on the online sand filter was halfway open.
- The sump pump (TK-007) failed to engage when the outside sump was full.

Mr. Jaros switched the sand filters and this closed the half-open valve. Mr. Jaros was also able to start the sump pump (TK-007). The sump pump was then able to evacuate the remaining EQ tank water/stormwater mixture back into the EQ tanks. These actions stopped the runoff almost immediately.

It has been estimated that less than 20,000 gallons of EQ tank water mixed with stormwater as runoff over an 8-10 hour period. Based on the analytical data (dated 2/12/08 from Arkansas Analytical) from the influent concentration of the equalization water, it was estimated that 3.5 pounds of phenols and 14 pounds of herbicides would have been associated with the 20,000 gallons of EQ tank water as a worst case scenario.

Soil Samples and Results

Five soil samples were collected on 2/19/08 from the following areas for analysis (phenols and herbicides):

- S-1 The area where the surface runoff from the parking lot ran (sheet flow) onto the soil.
- S-2 The ditch that drains the sheet flow area (S-1 area).
- S-3 The ditch that receives runoff from the S-2 area.
- S-4 The area in Rocky Branch Creek where the previous ditch discharges (S-3 area).
- S-5 An upgradient control source.

A copy of the sample results and a figure showing the sampling locations are attached with this letter. The soil samples (S-1 - S4) were collected in the surface soil directly downgradient from the mixing area. Soil sample S-5 was collected upgradient from the mixing area and is utilized as a control sample.

The only detection was at S-1 in the area closest to where the mixed water sheetflowed off the parking lot on to the surface soils (See Figure 1). This detection was for 2,4,5-T at 0.110 mg/kg which was just above the detection limit at <0.104 mg/kg. It should be noted that the Region 6 Human Health Medium Screening Level 2008 for an Industrial Outdoor Worker for 2,4,5-T is 6,800 mg/kg in soil. All other parameters for all of the samples were nondetect including the upgradient control sample.

Causes and Remedies

It was determined that the control panel dial was not fully engaged in the operating mode which caused the valve on the sandfilter to become stuck halfway open. The dial's indicator marks are now marked in white to better distinguish when the sandfilters are in the proper mode of operation. The only time the control dials are changed is during the backwashing of the sandfilters and when switching from one sandfilter to another. A

properly aligned after the backwashing or switching of the sandfilters. These actions should prevent any further incidents of this nature associated with the sandfilters.

A blown fuse was determined to be the cause of the failures associated with the sump pump in TK-007 and the valve's failure to close at TK-002. Blown fuses are a very infrequent occurrence and may be due to lighting from the storm that weekend. The fuses were replaced and TK-007 and TK-002 now function properly. The programmable logic computer (PLC) with the fuses will be checked after any thunderstorms.

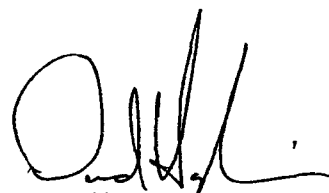
If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Terracon



David Jaros, R.E.M., P.G.
Site Manager



David Hopkins, P.G.
Project Manager

Attachments:

Figure 1- Soil Sample Location Map
Soil Analytical Results

Enclosures

cc B. Hough – Hercules Plaza
P. Allen – EPA, Dallas, TX



11701 I-30 Bldg 1, Ste 115 - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

04 March 2008

David Jaros
Hercules
1907 Hill Rd.
Jacksonville, AR 72076

RE: Soil Samples
SDG Number: 0802273

Enclosed are the results of analyses for samples received by the laboratory on
21-Feb-08 16:48. If you have any questions concerning this report, please feel free to
contact me.

Sincerely,

A handwritten signature in cursive script that reads "Norma James".

Norma James
President

04 March 2008

David Jaros
Hercules
1907 Hill Rd.
Jacksonville, AR 72076
Project: Soil Samples



Date Received: 21-Feb-08 16:48

ANALYTICAL RESULTS

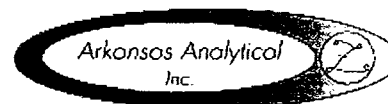
Lab Number: 0802273-01
Sample Name: S1
Date/Time Collected: 2/19/08 16:00
Sample Matrix: Soil

<u>Herbicides</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
2,4,5-T	mg/kg	0.110	3/3/08 20:29	A803014	8151A/615
2,4,5-TP (Silvex)	mg/kg	< 0.104	3/3/08 20:29	A803014	8151A/615
2,4,6-T	mg/kg	< 0.104	3/3/08 20:29	A803014	8151A/615
2,4-D	mg/kg	< 0.414	3/3/08 20:29	A803014	8151A/615
2,6-D	mg/kg	< 0.414	3/3/08 20:29	A803014	8151A/615
DCAA [surr]	%	71.1	3/3/08 20:29	A803014	8151A/615

<u>Phenols</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Phenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
2-Chlorophenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
2,4-Dichlorophenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
4-Chlorophenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
2,6-Dichlorophenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
2,4,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
2,4,5-Trichlorophenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
2,3,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 19:42	A802252	604/8140
2-Fluorophenol [surr]	%	65.4	2/22/08 19:42	A802252	604/8140
2,4,6-Tribromophenol [surr]	%	102	2/22/08 19:42	A802252	604/8140

04 March 2008

David Jaros
Hercules
1907 Hill Rd.
Jacksonville, AR 72076
Project: Soil Samples



Date Received: 21-Feb-08 16:48

ANALYTICAL RESULTS

Lab Number: 0802273-02
Sample Name: S2
Date/Time Collected: 2/19/08 16:10
Sample Matrix: Soil

<u>Herbicides</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
2,4,5-T	mg/kg	< 0.111	3/3/08 21:11	A803014	8151A/615
2,4,5-TP (Silvex)	mg/kg	< 0.111	3/3/08 21:11	A803014	8151A/615
2,4,6-T	mg/kg	< 0.111	3/3/08 21:11	A803014	8151A/615
2,4-D	mg/kg	< 0.444	3/3/08 21:11	A803014	8151A/615
2,6-D	mg/kg	< 0.444	3/3/08 21:11	A803014	8151A/615
DCAA [surr]	%	66.7	3/3/08 21:11	A803014	8151A/615
<u>Phenols</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Phenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
2-Chlorophenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
2,4-Dichlorophenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
4-Chlorophenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
2,6-Dichlorophenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
2,4,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
2,4,5-Trichlorophenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
2,3,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 19:11	A802252	604/8140
2-Fluorophenol [surr]	%	61.1	2/22/08 19:11	A802252	604/8140
2,4,6-Tribromophenol [surr]	%	84.7	2/22/08 19:11	A802252	604/8140

04 March 2008

David Jaros
Hercules
1907 Hill Rd.
Jacksonville, AR 72076
Project: Soil Samples



Date Received: 21-Feb-08 16:48

ANALYTICAL RESULTS

Lab Number: 0802273-03
Sample Name: S3
Date/Time Collected: 2/19/08 16:20
Sample Matrix: Soil

<u>Herbicides</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
2,4,5-T	mg/kg	< 0.110	3/3/08 21:53	A803014	8151A/615
2,4,5-TP (Silvex)	mg/kg	< 0.110	3/3/08 21:53	A803014	8151A/615
2,4,6-T	mg/kg	< 0.110	3/3/08 21:53	A803014	8151A/615
2,4-D	mg/kg	< 0.439	3/3/08 21:53	A803014	8151A/615
2,6-D	mg/kg	< 0.439	3/3/08 21:53	A803014	8151A/615
DCAA [surr]	%	65.2	3/3/08 21:53	A803014	8151A/615

<u>Phenols</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Phenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
2-Chlorophenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
2,4-Dichlorophenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
4-Chlorophenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
2,6-Dichlorophenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
2,4,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
2,4,5-Trichlorophenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
2,3,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 18:40	A802252	604/8140
2-Fluorophenol [surr]	%	61.9	2/22/08 18:40	A802252	604/8140
2,4,6-Tribromophenol [surr]	%	85.8	2/22/08 18:40	A802252	604/8140

04 March 2008

David Jaros
Hercules
1907 Hill Rd.
Jacksonville, AR 72076
Project: Soil Samples



Date Received: 21-Feb-08 16:48

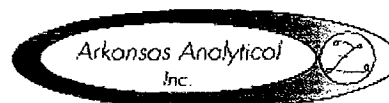
ANALYTICAL RESULTS

Lab Number: 0802273-04
Sample Name: S4
Date/Time Collected: 2/19/08 16:50
Sample Matrix: Soil

<u>Herbicides</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
2,4,5-T	mg/kg	< 0.115	3/3/08 22:35	A803014	8151A/615
2,4,5-TP (Silvex)	mg/kg	< 0.115	3/3/08 22:35	A803014	8151A/615
2,4,6-T	mg/kg	< 0.115	3/3/08 22:35	A803014	8151A/615
2,4-D	mg/kg	< 0.459	3/3/08 22:35	A803014	8151A/615
2,6-D	mg/kg	< 0.459	3/3/08 22:35	A803014	8151A/615
DCAA [surr]	%	57.2	3/3/08 22:35	A803014	8151A/615
<u>Phenols</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Phenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
2-Chlorophenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
2,4-Dichlorophenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
4-Chlorophenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
2,6-Dichlorophenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
2,4,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
2,4,5-Trichlorophenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
2,3,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 20:43	A802252	604/8140
2-Fluorophenol [surr]	%	62.4	2/22/08 20:43	A802252	604/8140
2,4,6-Tribromophenol [surr]	%	89.5	2/22/08 20:43	A802252	604/8140

04 March 2008

David Jaros
Hercules
1907 Hill Rd.
Jacksonville, AR 72076
Project: Soil Samples



Date Received: 21-Feb-08 16:48

ANALYTICAL RESULTS

Lab Number: 0802273-05
Sample Name: S5
Date/Time Collected: 2/19/08 16:40
Sample Matrix: Soil

<u>Herbicides</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
2,4,5-T	mg/kg	< 0.124	3/3/08 23:16	A803014	8151A/615
2,4,5-TP (Silvex)	mg/kg	< 0.124	3/3/08 23:16	A803014	8151A/615
2,4,6-T	mg/kg	< 0.124	3/3/08 23:16	A803014	8151A/615
2,4-D	mg/kg	< 0.496	3/3/08 23:16	A803014	8151A/615
2,6-D	mg/kg	< 0.496	3/3/08 23:16	A803014	8151A/615
DCAA [surr]	%	56.4	3/3/08 23:16	A803014	8151A/615
<u>Phenols</u>	<u>Units</u>	<u>Result</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Phenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
2-Chlorophenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
2,4-Dichlorophenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
4-Chlorophenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
2,6-Dichlorophenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
2,4,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
2,4,5-Trichlorophenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
2,3,6-Trichlorophenol	mg/kg	< 1.00	2/22/08 20:12	A802252	604/8140
2-Fluorophenol [surr]	%	56.1	2/22/08 20:12	A802252	604/8140
2,4,6-Tribromophenol [surr]	%	82.1	2/22/08 20:12	A802252	604/8140

04 March 2008

David Jaros
Hercules
1907 Hill Rd.
Jacksonville, AR 72076
Project: Soil Samples



Date Received: 21-Feb-08 16:48

QUALITY CONTROL RESULTS

Phenols				
Batch: A802252 (Soil); Prepared: 22-Feb-08 09:25				
	Blank	LCS	MS	MSD/RPD
2,3,6-Trichlorophenol	< 1.00 mg/kg	73.7 %	68.4 %	71.5 % / 11.0
2,4,5-Trichlorophenol	< 1.00 mg/kg	75.3 %	70.9 %	73.8 % / 10.5
2,4,6-Trichlorophenol	< 1.00 mg/kg	73.8 %	68.6 %	69.9 % / 8.41
2,4-Dichlorophenol	< 1.00 mg/kg	74.8 %	67.8 %	69.6 % / 9.15
2,6-Dichlorophenol	< 1.00 mg/kg	76.4 %	68.3 %	69.7 % / 8.64
2-Chlorophenol	< 1.00 mg/kg	74.4 %	66.7 %	67.1 % / 7.14
4-Chlorophenol	< 1.00 mg/kg	78.6 %	71.3 %	72.8 % / 8.55
Phenol	< 1.00 mg/kg	73.9 %	66.4 %	66.9 % / 7.36
Surrogate: 2,4,6-Tribromophenol	103 %	93.8 %	82.2 %	78.8 %
Surrogate: 2-Fluorophenol	77.1 %	75.6 %	66.0 %	66.9 %

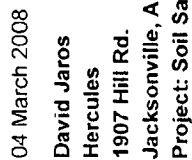
Herbicides				
Batch: A803014 (Soil); Prepared: 03-Mar-08 17:01				
	Blank	LCS	MS	MSD/RPD
2,4,5-TP (Silvex)	< 0.125 mg/kg	95.6 %	95.1 %	100 % / 5.27
2,4-D	< 0.500 mg/kg	68.7 %	65.7 %	67.2 % / 2.18
Surrogate: DCAA	52.6 %	62.8 %	47.3 %	47.8 %

All Analysis performed according to EPA approved methodology when available:
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods, 20th Edition
Instrument calibration and quality control samples performed at or above frequency specified in analytical method

A handwritten signature in cursive script that reads "Norma James".

Reviewed by:

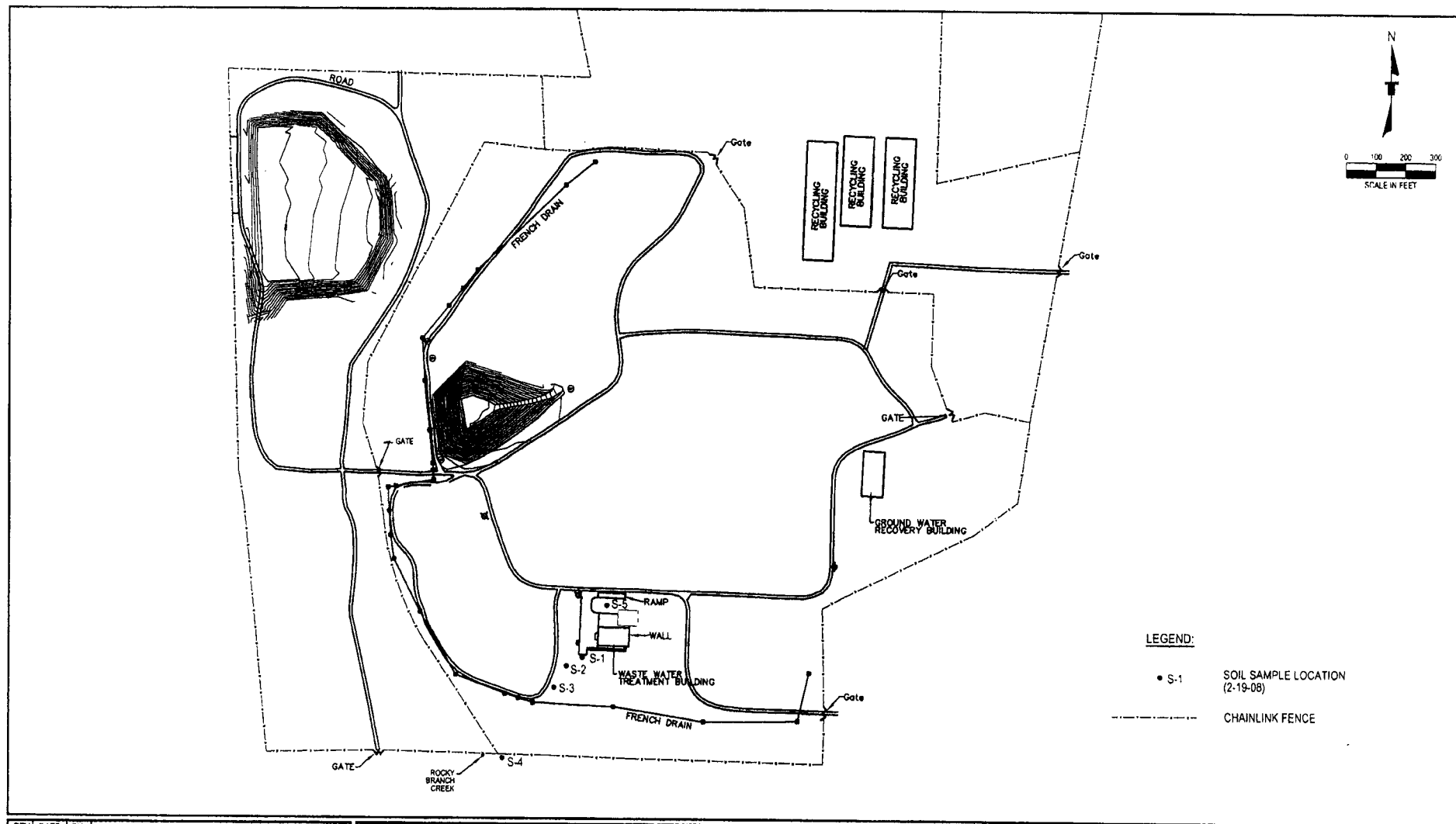
Norma James
President



CHAIN OF CUSTODY FORM(S)

CLIENT INFORMATION		Billing		Project Description		Turnaround Time		Preservation Codes:									
Hercules, Inc.		Hercules, Inc.		Soil Samples		(CIRCLE ONE)		1. Cool, 4 degrees Centigrade				A. Thionylate for decomposition					
1907 Hill Rd.		500 Hercules Rd.		Reporting Information		24 hour		2. Sulfuric Acid, pH <2				B. Hydrochloric Acid for FDA					
Jacksonville, A		Wilmington, DE 19808		Telephone:		48 hour		3. Nitric Acid, pH <3				C. Sodium Hydroxide, pH >12					
				FAX:		10/06/06		TEST PARAMETERS								Bottle type code	
Attn: David Jaros		Attn: Nancy Berrios		P.O.# 4501139860		Pre preservation Code		1	1,2	1,5							#1 - glass P-HHFPI
						Bottle Type		GA	GA								V - septum A - amber
Samples (Signature) Earl Pilgrim		Samples (Printed) Earl Pilgrim						Phenols	Phenox herbicides								Arkansas
Field Number	Sample Collection Date/s	Time/s	Qub	Cong	# of Containers	Sample Matrix	SAMPLE IDENTIFICATION / DESCRIPTION										Analytical Lab #
S1	2/19/08	1600	X		1	SOIL		X	X								02273-01
S2	2/19/08	1610	X		1	SOIL		X	X								-02
S3	2/19/08	1620	X		1	SOIL		X	X								-03
S4	2/19/08	1650	X		1	SOIL		X	X								-04
S5	2/19/08	1640	X		1	SOIL		X	X								-05
1 Received by (Signature) Earl Pilgrim		Date/Time 2/21/08 1649	1 Received by (Signature) Ray Jackson		For completion by laboratory		Condition of samples: yes no Method: 8041A		REMARKS								
2 Received by (Signature) Vet Goldstein		Date/Time	2 Received by Laboratory (Signature) [Signature]		A. Containers Correct?		yes no										
					B. Preservation Correct?		yes no										
					C. Seals intact?		yes no										

This report must be reproduced in its entirety

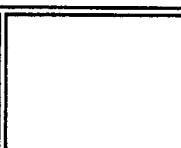


REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists

11400 WEST BASELINE ROAD
PH. (501) 455-2189

LITTLE ROCK, AR 72209
FAX. (501) 455-4347



SOIL SAMPLE LOCATION MAP (2-19-08)

VERTAC SITE
HERCULES, INC.
1907 HILL ROAD

JACKSONVILLE

ARKANSAS

FIGURE 1	
DESIGNED BY	DGJ
DRAWN BY	PTU
APPROV. BY	TSW
SCALE	1" = 300'
CAD	3/8/06
JOB NO.	035-001-36077303
ACAD NO.	015
SHEET NO.	OF



25809 Interstate 30
Bryant, Arkansas 72022
Phone 501 847.9292
Fax 501 847.9210

July 25, 2008

Mr. Philip Allen
U.S. Environmental Protection Agency
Superfund Branch (6SF -AP)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202 - 2733

Re: Vertac Superfund Site - Sedimentation Vault Landfill.

Terracon Consultants, Inc. on behalf of Hercules Incorporated has completed the attached Slope Repair Plan associated with erosion that occurred on the Sedimentation Vault Landfill (SVL) at the Vertac Site, located in Jacksonville, Arkansas.

Terracon and Hercules are currently in the process of obtaining a qualified contractor to perform the proposed construction as presented in the attached plan. It is anticipated that the repair activities will take place during the period of August through October 2008. This plan is being sent to you for informational purposes and to inform you of our progress in regard to the repair.

If have any questions, please feel free to contact me at (501) 847-9292 or kebown@terracon.com at your convenience.

Sincerely,


Terracon

Ken Bown, P.E.
Engineering Department Manager


David Hopkins, P.G.
Office Manager

cc: Ryan Benefield, HWD, ADEQ
T.D. Hassett - Hercules

N:\Projects\2008\35087112\Vertac Slope Repair Workplan 062508.doc

**SLOPE REPAIR PLAN
SEDIMENTATION VAULT LANDFILL
VERTAC FACILITY**

INTRODUCTION

Excessive erosion was identified on the northern face of the Sedimentation Vault Landfill (SVL) at the Vertac Facility in April 2008. The slope erosion area is located in the same general vicinity as occurred in January 2005 and was subsequently repaired in August 2005. Terracon performed a site visit to review the erosion area and prepared a topographic survey of the SVL at the Vertac facility. The following is noted:

- The erosion area measures approximately 100' wide by 100' long on the north slope of the SVL.
- The erosion appears to be confined to the vegetative layer and upper clay layer.
- The erosion occurred on the upper surface and apparently occurred due to excessive saturation during rain events in March and April 2008.
- The side slopes on the north face of the SVL are steep, approximately 3 (horizontal) to 1 (vertical).
- The top of the Landfill is relatively flat sloping to the northwest at approximately 3 to 4 percent.
- A low area exists on the top of the Landfill near the north edge where storm water may accumulate and pond.

PROPOSED CONSTRUCTION

Terracon and Hercules Incorporated propose to repair the north slope of the SVL using a combination of compacted clay and rip rap material. Based upon previous placement of riprap on the west slope of the SVL the placement of riprap should provide a simple and effective way to maintain the north slope of the Landfill. In addition, the rip rap should eliminate future problems with the effected portion of the north slope of the Landfill.

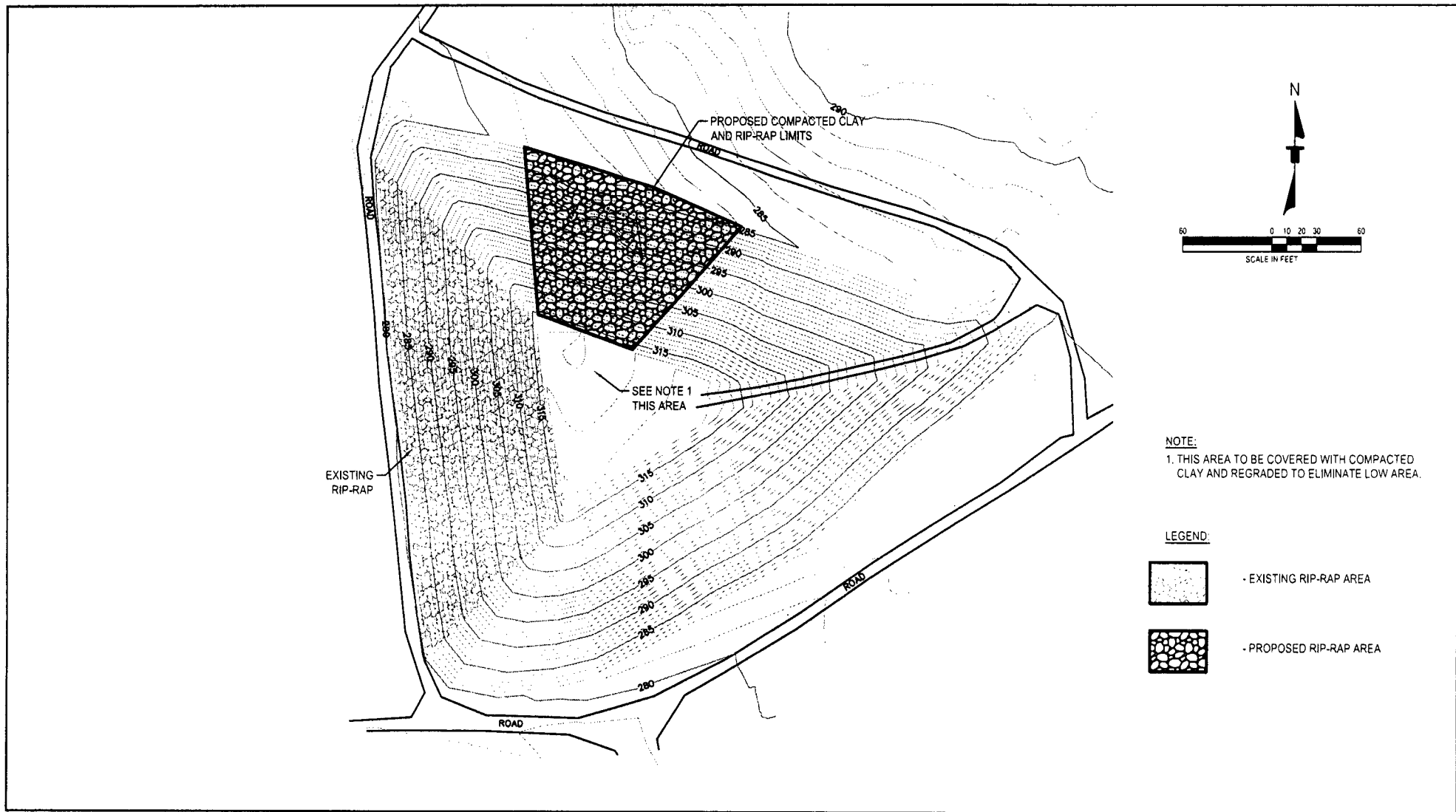
Hercules Incorporated proposes to contract with a qualified contractor to perform construction activities on the north slope and top of the SVL. The proposed construction activities will generally consist of the following:

1. Excavate the unsuitable material (vegetation, topsoil and clay) from the erosion area;
2. Placement of compacted clay layer on the north slope to the approximate grade that existed prior to the erosion. The clay backfill will be compacted to a minimum 90% of the maximum dry density and above optimum moisture according to ASTM D698. A nuclear gauge will be used to verify the moisture/density of the clay backfill according to ASTM D2922. The clay subgrade will be tested at a frequency of one test per 500 square feet of back filled area;

3. Placement of compacted clay layer on a low area on the top of the landfill;
4. Grade the top and north slope of the SVL;
5. Placement of a non-woven geotextile on the north slope of the SVL;
6. Placement of riprap on the north slope of the SVL;
7. A vegetative support layer will be prepared for seeding on the disturbed areas of the SVL. The top three inches of the vegetative support layer will be scarified in preparation for lime, seed and fertilizer.

The proposed construction limits and the area proposed for receiving riprap will be limited to the northwest portion of the slope, as shown on FIGURE 1.

The contractor selected will be required to provide labor, equipment, and the materials necessary to repair the slope and re-grade the top of the SVL to improve storm water drainage management system. In conjunction with the outlined tasks, construction quality assurance (CQA) and construction oversight will be provided. As-built drawings of the completed slope repair will be prepared by Terracon and maintained in the onsite records.



NOTE:
1. THIS AREA TO BE COVERED WITH COMPACTED CLAY AND REGRADED TO ELIMINATE LOW AREA.

LEGEND:



- EXISTING RIP-RAP AREA



- PROPOSED RIP-RAP AREA

REV	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists

25009 I-30
PH. (501) 847-6292

BRYANT, AR 72022
FAX. (501) 847-6210



SLOPE REPAIR
SLOPE REMEDIATION
HERCULES
SEDIMENTATION VAULT LANDFILL - VERTAC SITE

JACKSONVILLE ARKANSAS

FIGURE 1	
DESIGNED BY:	TSW
DRAWN BY:	TSW
APPROVED BY:	KEB
SCALE:	1" = 80'
DATE:	7/22/08
JOB NO.	036-001-3508/112
ACAD NO.	002
SHEET NO.	1 of 1

ATTACHMENT 3
SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE VISIT CHECKLIST

I. SITE INFORMATION											
Site Name: Vertac, Inc., Superfund Site	Date of Inspection: June 24, 2008										
Location and Region: Jacksonville, Arkansas/Region 6	EPA ID: ARD000023440										
Agency, office, or company leading the five-year review: U.S. Environmental Protection Agency, Region 6	Weather/temperature: Clear to partly cloudy, light winds from the south at 3 to 6 miles per hour, temperatures of 80 to 93°F.										
Remedy Includes: (Check all that apply) <table style="width: 100%; margin-top: 5px;"> <tr> <td><input checked="" type="checkbox"/> Landfill cover/containment</td> <td><input checked="" type="checkbox"/> Ground water pump and treatment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input checked="" type="checkbox"/> Surface water collection and treatment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Other (Monitored natural attenuation)</td> </tr> </table>				<input checked="" type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Ground water pump and treatment	<input checked="" type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Surface water collection and treatment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Other (Monitored natural attenuation)		
<input checked="" type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Ground water pump and treatment										
<input checked="" type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Surface water collection and treatment										
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Other (Monitored natural attenuation)										
Attachments: <input checked="" type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached (See Figure 2 of report)											
II. INTERVIEWS (Check all that apply)											
1. O&M Site Manager <u>David Jaros, P.G.</u> <u>Site Manager</u> <u>June 24, 2008</u> <div style="display: flex; justify-content: space-between; margin-top: -10px;"> Name Title Date </div>											
Interviewed: <input type="checkbox"/> by mail <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>501-847-9292, Ext 318</u> Problems, suggestions: <input checked="" type="checkbox"/> Report attached (See Attachment 5)											
2. O&M Staff <u>Thomas Earl Pilgrim</u> <u>Senior Technician</u> <u>June 24, 2008</u> <div style="display: flex; justify-content: space-between; margin-top: -10px;"> Name Title Date </div>											
Interviewed: <input type="checkbox"/> by mail <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions: <input checked="" type="checkbox"/> Report attached (See Attachment 5)											
3. Local regulatory authorities and response agencies (i.e.; State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.). Fill in all that apply.											
Agency <u>Arkansas Department of Environmental Quality (ADEQ)</u>											
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Contact <u>Annette Cusher</u></td> <td style="width: 25%;">Engineer Supervisor</td> <td style="width: 25%;">June 24, 2008</td> <td style="width: 25%;">501-682-0841</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone no.</td> </tr> </table>				Contact <u>Annette Cusher</u>	Engineer Supervisor	June 24, 2008	501-682-0841	Name	Title	Date	Phone no.
Contact <u>Annette Cusher</u>	Engineer Supervisor	June 24, 2008	501-682-0841								
Name	Title	Date	Phone no.								
Problems, suggestions: <input checked="" type="checkbox"/> Report attached (See Attachment 5)											
Agency <u>ADEQ</u>											
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Contact <u>Dianna Kilburn</u></td> <td style="width: 25%;">Geology Supervisor</td> <td style="width: 25%;">June 24, 2008</td> <td style="width: 25%;">501-682-0844</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone no.</td> </tr> </table>				Contact <u>Dianna Kilburn</u>	Geology Supervisor	June 24, 2008	501-682-0844	Name	Title	Date	Phone no.
Contact <u>Dianna Kilburn</u>	Geology Supervisor	June 24, 2008	501-682-0844								
Name	Title	Date	Phone no.								
Problems, suggestions: <input checked="" type="checkbox"/> Report attached (See Attachment 5)											

4. Other interviews (optional): <input checked="" type="checkbox"/> Reports attached to Five-Year Review Report			
Mr. Phillip Carlisle, Concerned Citizens Coalition, 501-985-4038			
Ms. Shirley Louie, Arkansas Department of Health, 501-661-2833			
Mayor Tommy Swaim, City of Jacksonville, 501-982-3146			
Mr. Tim Hassett, Hercules Inc., 302-995-3456			
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1. O&M Documents			
<input checked="" type="checkbox"/> O&M manual (long term monitoring plan)	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> As-built drawings	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Maintenance logs	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: <u>Copy of documents kept on-site and at the Terracon offices</u>			
2. Site-Specific Health and Safety Plan			
<input checked="" type="checkbox"/> Contingency plan/emergency response plan	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: _____			
3. O&M and OSHA Training Records			
<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Remarks: <u>Site manager and site technician maintain 8-hour refresher training, first aid, and CPR</u>			
4. Permits and Service Agreements			
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Effluent discharge	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
5. Gas Generation Records			
<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
6. Settlement Monument Records			
<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
7. Ground Water Monitoring Records			
<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
8. Leachate Extraction Records			
<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
9. Discharge Compliance Records			
<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Water (effluent)	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: _____			
10. Daily Access/Security Logs			
<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Remarks: <u>Monthly inspection, walk/check the perimeter</u>			

IV. O&M COSTS

1. O&M Organization

- ☐ State in-house ☐ Contractor for State ☐ PRP in-house
☒ Contractor for PRP ☐ Other _____

2. O&M Cost Records

- ☐ Readily available ☐ Up to date ☒ Funding mechanism/agreement in place
☐ Original O&M cost estimate ☐ Breakdown attached

Total annual cost by year for review period, if available

<u>Date</u>	<u>Date</u>	<u>Total Cost*</u>	
From <u>2003</u>	to <u>2004</u>	<u>~500,000</u>	- <input type="checkbox"/> Breakdown attached
From <u>2004</u>	to <u>2005</u>	<u>~500,000</u>	- <input type="checkbox"/> Breakdown attached
From <u>2005</u>	to <u>2006</u>	<u>~500,000</u>	- <input type="checkbox"/> Breakdown attached
From <u>2006</u>	to <u>2007</u>	<u>~500,000</u>	- <input type="checkbox"/> Breakdown attached
From <u>2007</u>	to <u>2008</u>	<u>~500,000</u>	- <input type="checkbox"/> Breakdown attached
From _____	to _____	_____	- <input type="checkbox"/> Breakdown attached
From _____	to _____	_____	- <input type="checkbox"/> Breakdown attached

* Average annual costs per Mr. Tim Hassett, Hercules Inc. Project Manager

3. Unanticipated or Unusually High O&M Costs During Review Period

Remarks: Upcoming activities associated with a slope failure (i.e., survey of the slope, repairs)

V. ACCESS AND INSTITUTIONAL CONTROLS

☒ Applicable ☐ N/A

A. Fencing

1. Fencing damaged ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Openings in fence are repaired as they are discovered.

B. Other Access Restrictions

1. Signs and other security measures ☒ Location shown on site map ☐ N/A

Remarks: Signs along the fencing and at the gates.

C. Institutional Controls**1. Implementation and enforcement**Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/ASite conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/AType of monitoring (e.g., self-reporting, drive by) Alarm service, self-reportingFrequency Buildings with continuous alarmed monitoring at night, weekdays technician onsiteResponsible party/agency Hercules, Inc.Contact Mr. Tim Hassett Project Manager June 24, 2008 302-995-3456

Name

Title

Date

Phone no.

Reporting is up-to-date ☒ Yes ☐ No ☐ N/AReports are verified by the lead agency ☒ Yes ☐ No ☐ N/ASpecific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/AViolations have been reported ☒ Yes ☐ No ☐ N/AOther problems or suggestions: ☒ Report attachedUnpermitted release of equalization tank water on February 17, 2008. Violation reported to ADEQon February 21, 2008. Correspondence between ADEQ and Terracon provided in Attachment 6.**2. Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: _____

D. General**1. Vandalism/trespassing** ☒ Location shown on site map ☐ No vandalism evidentRemarks: Three recent incidences: (1) cut lock on gate, (2) cracked windows on treatment plant, and (3) cut fencing on north side of property. Local police were contacted. Repairs were made by Terracon.**2. Land use changes onsite** ☒ N/A

Remarks: _____

3. Land use changes offsite ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS**A. Roads** ☒ Applicable ☐ N/A**1. Roads damaged** ☒ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Landfill Surface			
1. Settlement (Low spots)	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident	
Areal extent _____ Depth _____			
Remarks: _____			
2. Cracks	<input checked="" type="checkbox"/> Location shown on site map	<input type="checkbox"/> Cracking not evident	
Lengths <u>100-feet</u> Widths <u>up to 3-feet</u> Depths <u>up to 2-feet</u>			
Remarks: <u>Slope failure of clay cap. No liner or waste material exposure seen.</u>			
3. Erosion	<input checked="" type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident	
Areal extent _____ Depth _____			
Remarks: <u>Erosion control measures (silt fencing) installed below the slope failure</u>			
4. Holes	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Holes not evident	
Areal extent _____ Depth _____			
Remarks: <u>Holes not noted due to dense grassy coverage.</u>			
5. Vegetative Cover	<input checked="" type="checkbox"/> Grass	<input checked="" type="checkbox"/> Cover properly established	<input type="checkbox"/> No signs of stress
<input checked="" type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram)			
Remarks: <u>Trees and shrubs noted to be growing on the side slopes of the RCRA Subtitle C landfill.</u>			
6. Alternative Cover (armored rock, concrete, etc.)	<input type="checkbox"/> N/A		
Remarks: <u>Armored rock (rip rap) on the north side of "Mount Vertac", installed in Dec 2005.</u>			
7. Bulges	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Bulges not evident	
Areal extent _____ Depth _____			
Remarks: _____			
8. Wet Areas/Water Damage	<input checked="" type="checkbox"/> Wet areas/water damage not evident		
<input type="checkbox"/> Wet areas	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Areal extent _____	
<input type="checkbox"/> Ponding	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Areal extent _____	
<input type="checkbox"/> Seeps	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Areal extent _____	
<input type="checkbox"/> Soft subgrade	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Areal extent _____	
Remarks: _____			
9. Slope Instability	<input checked="" type="checkbox"/> Slides	<input checked="" type="checkbox"/> Location shown on site map	
<input type="checkbox"/> No evidence of slope instability Areal extent <u>East side of landfill (100-ft x 50-ft</u>			
Remarks: <u>Landfill commonly referred to as "Mount Vertac" had a slope failure on the east side of the landfill. In addition, the north slope had failed in the summer of 2004, but was repaired in December 2005 (slope covered in armored rock [rip rap material]).</u>			

B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)	
1. Flows Bypass Bench	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks: _____
2. Bench Breached	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks: _____
3. Bench Overtopped	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks: _____
C. Letdown Channels <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, rip rap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)	
1. Settlement	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of settlement Areal extent _____ Depth _____ Remarks: _____
2. Material Degradation	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of degradation Material type _____ Areal extent _____ Remarks: _____
3. Erosion	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of erosion Areal extent _____ Depth _____ Remarks: _____
4. Undercutting	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of undercutting Areal extent _____ Depth _____ Remarks: _____
5. Obstructions	Type _____ <input checked="" type="checkbox"/> No obstructions <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks: _____
6. Excessive Vegetative Growth	Type _____ <input checked="" type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks: _____

D. Cover Penetrations			<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Gas Vents				
<input checked="" type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Active	<input checked="" type="checkbox"/> Passive	<input type="checkbox"/> Routinely sampled	<input checked="" type="checkbox"/> Good condition
<input type="checkbox"/> Evidence of leakage at penetration	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> Needs O&M	<input type="checkbox"/> N/A	
Remarks: _____ Screens on vents recently replaced.				
2. Gas Monitoring Probes				
<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition	
<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs O&M	<input checked="" type="checkbox"/> N/A		
Remarks: _____				
3. Monitoring Wells (within surface area of landfill)				
<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs O&M	<input checked="" type="checkbox"/> N/A		
Remarks: _____				
4. Leachate Extraction Wells				
<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input checked="" type="checkbox"/> Good condition	
<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs O&M	<input type="checkbox"/> N/A		
Remarks: _____ There are no leachate extraction wells but there are leachate collection sumps.				
5. Settlement Monuments				
<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed	<input checked="" type="checkbox"/> N/A		
Remarks: _____				
E. Gas Collection and Treatment				
			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Gas Treatment Facilities				
<input type="checkbox"/> Flaring	<input type="checkbox"/> Thermal destruction	<input type="checkbox"/> Collection for reuse		
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs O&M			
Remarks: _____				
2. Gas Collection Wells, Manifolds, and Piping				
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs O&M			
Remarks: _____				
3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)				
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs O&M	<input type="checkbox"/> N/A		
Remarks: _____				
F. Cover Drainage Layer				
			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Outlet Pipes Inspected				
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A			
Remarks: _____				
2. Outlet Rock Inspected				
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A			
Remarks: _____				

G. Detention/Sedimentation Ponds <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1. Siltation	Areal extent _____	Size _____
<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Siltation not evident	
Remarks: _____		
<hr/>		
2. Erosion	Areal extent _____	Depth _____
<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Erosion not evident	
Remarks: _____		
<hr/>		
3. Outlet Works	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks: _____		
<hr/>		
4. Dam	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks: _____		
<hr/>		
H. Retaining Walls <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1. Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
Horizontal displacement _____		Vertical displacement _____
Rotational displacement _____		
Remarks: _____		
<hr/>		
2. Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
Remarks: _____		
<hr/>		
I. Perimeter Ditches/Off-Site Discharge <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1. Siltation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident
Areal extent _____		Depth _____
Remarks: _____		
<hr/>		
2. Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Vegetation does not impede flow		
Areal extent _____		Type _____
Remarks: _____		
<hr/>		
3. Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
Areal extent _____		Depth _____
Remarks: _____		
<hr/>		
4. Discharge Structure	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks: _____		

VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Areal extent _____ Depth _____ Remarks: _____			
2. Performance Monitoring Type of monitoring _____ <input type="checkbox"/> Performance not monitored Frequency _____ <input type="checkbox"/> Evidence of breaching Head differential _____ Remarks: _____ _____ _____ _____			
IX. GROUND WATER/SURFACE WATER REMEDIES		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Ground Water Extraction Wells, Pumps, and Pipelines		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Pumps, Wellhead Plumbing, and Electrical <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input type="checkbox"/> Needs O&M <input type="checkbox"/> N/A Remarks: <u>Observed wells appeared to be in working order.</u>			
2. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks: <u>System pipelines are buried underground. There is a maintenance building located near the ground water extraction system. The ground water recovery building contains pumps, valves with sampling ports, and an equalization tank for transferring the extracted ground water to the wastewater treatment facility.</u>			
3. Spare Parts and Equipment <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks: _____			
B. Surface Water Collection Structures, Pumps, and Pipelines		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Collection Structures, Pumps, and Electrical <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks: <u>Surface water is collected within the secondary containment of the holding tanks (equalization tanks) on the outside of the wastewater treatment facility. The sumps transport the water into the wastewater treatment facility.</u>			
2. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks: _____			
3. Spare Parts and Equipment <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks: _____			

C. Treatment System	<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Treatment Train (Check components that apply)		
<input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input checked="" type="checkbox"/> Carbon absorbers <input checked="" type="checkbox"/> Filters <u>Two sand filters</u> <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input checked="" type="checkbox"/> Others <u>pH adjustment tank</u> <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input checked="" type="checkbox"/> Sampling ports properly marked and functional <input checked="" type="checkbox"/> Sampling/maintenance log displayed and up to date <input checked="" type="checkbox"/> Equipment properly identified <input checked="" type="checkbox"/> Quantity of ground water treated annually <u>9-12 million gallons</u> <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks: <u>The wastewater treatment plant is maintained and in good condition. The amount of water treated annual is dependent upon the amount of rainfall that year.</u>		
2. Electrical Enclosures and Panels (Properly rated and functional)		
<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks: _____		
3. Tanks, Vaults, Storage Vessels		
<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs O&M Remarks: <u>Overflow of secondary containment in equalization tank area; incident occurred on February 17, 2008 and was reported to ADEQ.</u>		
4. Discharge Structure and Appurtenances		
<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks: _____		
5. Treatment Building(s)		
<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks: _____		
6. Monitoring Wells (Pump and treatment remedy)		
<input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs O&M <input type="checkbox"/> N/A Remarks: _____ _____ _____		
D. Monitored Natural Attenuation <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1. Monitoring Wells (Natural attenuation remedy)		
<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled (quarterly) <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs O&M <input type="checkbox"/> N/A Remarks: _____		

X. OTHER REMEDIES

If there are remedies applied at the site that are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Plume containment with extraction wells on the east side of the site near the groundwater recovery building, and a French drain located on the west and south sides of the site surrounding the capped areas. Several burial areas on-site: Sedimentation Vault Landfill (also known as Mount Vertac), the Northern Burial Area (north of Mount Vertac), and the Reasor-Hill Burial Area (south of Mount Vertac). A Resource Conservation and Recovery Act Subtitle C landfill is located on the northeast portion of the site and holds hazardous waste.

B. Adequacy of O&M

The O&M activities appear to be adequate. Maintenance of landfill caps (some tree removal noted), collection of landfill leachate, groundwater collection and transfer to the wastewater treatment plant (WWTP), groundwater collection and transfer from French drain to WWTP. O&M of WWTP, collection of discharge water, groundwater samples, other associated activities. Daily, weekly, monthly, and yearly activities and reporting for the site.

C. Early Indicators of Potential Remedy Failure

Noted during the site investigation, excessive erosion (slope failure on the north slope of Mount Vertac; MCL (and one PCL) exceedances of 2,3,7,8-TCDD noted in wells located inside and outside of the Technical Impracticability zone; low-level exceedances of 2,3,7,8-TCDD noted in the monthly discharge monitoring reports (resampling/reanalysis of samples when this occurs)

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. Decrease of the biannual (once every two years) fish flesh monitoring events to once every five years prior to the next five-year review. On-site operator constantly monitoring parameters with requests to reduce analyte list when possible. Requests submitted ADEQ and/or EPA as necessary, with approval provided prior to implementation.

INSPECTION TEAM ROSTERS
(APRIL 16, 2008 AND JUNE 24, 2008)

INSPECTION TEAM ROSTER

[illegible]

ATTACHMENT 4
SITE INSPECTION PHOTOGRAPHS

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 1

Site: Vertac Inc. Superfund Site

Description: View of a site gate located at driveway from Marshall Road, note sign on gate and chain with lock

Date: June 24, 2008

Direction: East



Photograph No. 2

Site: Vertac Inc. Superfund Site

Description: Front entryway of the Wastewater Treatment Plant (WWTP)

Date: April 16, 2008

Direction: East

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 3

Site: Vertac Inc. Superfund Site

Description: View of former Central Processing Area from the road due north of the decontamination pad

Date: April 16, 2008

Direction: North



Photograph No. 4

Site: Vertac Inc. Superfund Site

Description: Concrete decontamination pad for large equipment, located north of the WWTP

Date: April 16, 2008

Direction: East

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 5

Site: Vertac Inc. Superfund Site

Description: View of the south side of sedimentation vault (Mount Vertac)

Date: April 16, 2008

Direction: North



Photograph No. 6

Site: Vertac Inc. Superfund Site

Description: View of north side of sedimentation vault, note recent slope failure

Date: April 16, 2008

Direction: South

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 7

Site: Vertac Inc. Superfund Site

Description: Close-up view of a portion of the slope failure on the north side of Sedimentation vault

Date: June 24, 2008

Direction: NA



Photograph No. 8

Site: Vertac Inc. Superfund Site

Description: View of slope failure area, note erosion control (silt fence) installed below the problem area

Date: June 24, 2008

Direction: Southwest

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 9

Site: Vertac Inc. Superfund Site

Description: View down onto rip-rap armored slope located on the west side of Mt. Vertac; the slope failed in the summer of 2004 and was repaired by Dec 2005

Date: April 16, 2008

Direction: Southwest



Photograph No. 10

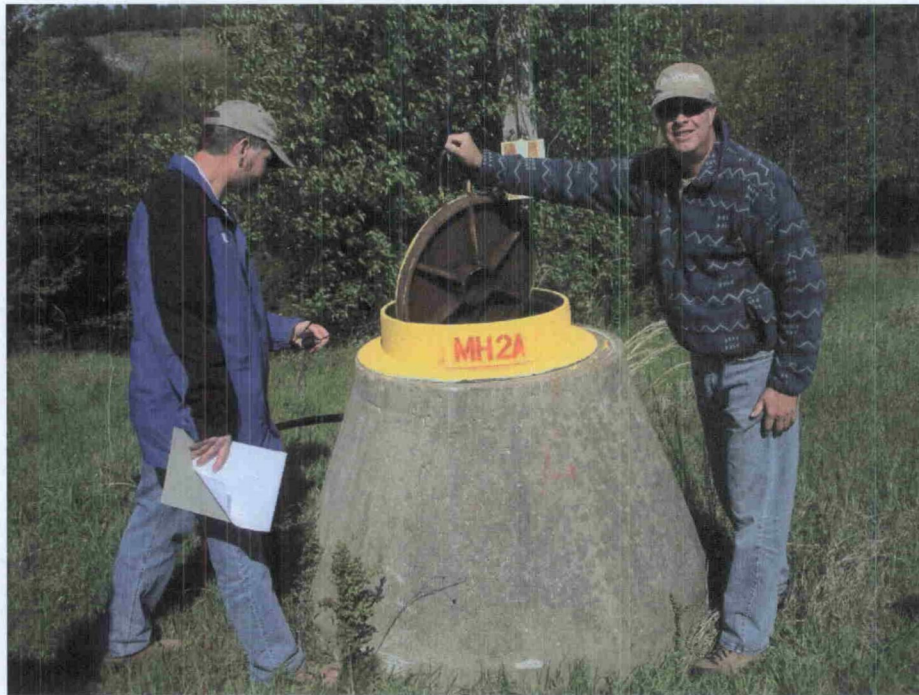
Site: Vertac Inc. Superfund Site

Description: View looking up from the southwest corner of the sedimentation vault, note rip-rap on west slope and vegetative cover on south slope

Date: June 24, 2008

Direction: Northeast

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 11

Site: Vertac Inc. Superfund Site

Description: View of French drain manhole (MH2A) located to the east of the North Burial Area, north of the sedimentation vault

Date: April 16, 2008

Direction: East



Photograph No. 12

Site: Vertac Inc. Superfund Site

Description: Interior of French drain manhole MH2A, note low level of ground water in manhole

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 13

Site: Vertac Inc. Superfund Site

Description: View of French drain manhole MW2B, note controller box for the pump and leachate level detector system is mounted on the pole in the background

Date: June 24, 2008

Direction: East



Photograph No. 14

Site: Vertac Inc. Superfund Site

Description: View of road running parallel to the French drain, note access points (manholes) located along the way

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 15

Site: Vertac Inc. Superfund Site

Description: View of leachate sump installed in the former cooling pump, the sump is located west of the French drain and east of OU1 landfill

Date: April 16, 2008

Direction: NA



Photograph No. 16

Site: Vertac Inc. Superfund Site

Description: View of North Burial Area from the sedimentation vault, note recycle facility shed located on the right side of the picture in the distance (indicated by arrow)

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 17

Site: Vertac Inc. Superfund Site

Description: View of access roads and the Reasor Hill Burial Area from the top of the sedimentation vault

Date: April 16, 2008

Direction: Southwest



Photograph No. 18

Site: Vertac Inc. Superfund Site

Description: View of weir at Rocky Branch Creek where surface water samples are typically collected

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 19

Site: Vertac Inc. Superfund Site

Description: Access road from OU1 landfill area towards the sedimentation vault (on left) and Reasor Hill Burial Area (on right), note double gate to restrict access

Date: April 16, 2008

Direction: East



Photograph No. 20

Site: Vertac Inc. Superfund Site

Description: View from OU1 landfill to access road leading up the side of OU1 landfill

Date: April 16, 2008

Direction: Southwest

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 21

Site: Vertac Inc. Superfund Site

Description: Top of OU1 landfill (RCRA Subtitle C)

Date: April 16, 2008

Direction: North



Photograph No. 22

Site: Vertac Inc. Superfund Site

Description: View of sedimentation basin located on south side of OU1 landfill

Date: April 16, 2008

Direction: East

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 23

Site: Vertac Inc. Superfund Site

Description: Top of letdown channel on the south side of OU1 landfill

Date: April 16, 2008

Direction: Southeast



Photograph No. 24

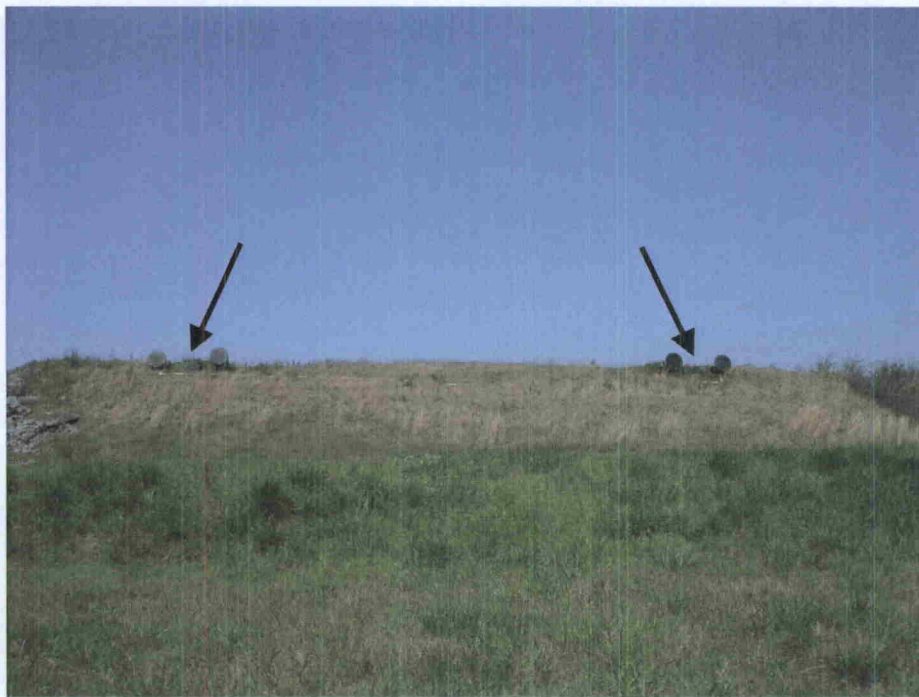
Site: Vertac Inc. Superfund Site

Description: View looking down the letdown channel to the sedimentation basin located on south side of OU1 landfill

Date: April 16, 2008

Direction: Southeast

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 25

Site: Vertac Inc. Superfund Site

Description: East side of OU1 landfill where access pipes for leachate collection and detection system sumps are located (arrows indicate each set of pipes)

Date: April 16, 2008

Direction: West



Photograph No. 26

Site: Vertac Inc. Superfund Site

Description: Access outlets for leachate collection and leachate detection sumps at OU1 landfill

Date: April 16, 2008

Direction: Northwest

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 27

Site: Vertac Inc. Superfund Site

Description: Open access area of leachate collection piping

Date: April 16, 2008

Direction: West



Photograph No. 28

Site: Vertac Inc. Superfund Site

Description: Interior of leachate collection piping, note leachate collection line (larger pipe at center) and electrical line for pump (small diameter line on left)

Date: April 16, 2008

Direction: Northwest

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 29

Site: Vertac Inc. Superfund Site

Description: West side slope of OUI landfill and sedimentation basin

Date: April 16, 2008

Direction: South



Photograph No. 30

Site: Vertac Inc. Superfund Site

Description: Areas of sparse vegetation (indicated by arrows) on the outer portion of the sedimentation basin located on the west side of the landfill

Date: April 16, 2008

Direction: Southwest

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 31

Site: Vertac Inc. Superfund Site

Description: Heavy vegetative growth (i.e., trees) located along the fence line

Date: April 16, 2008

Direction: West



Photograph No. 32

Site: Vertac Inc. Superfund Site

Description: Area of ponded water as a result of beaver dams along the Rocky Branch Creek, located east of the OU1 landfill just beyond the access road

Date: April 16, 2008

Direction: Northeast

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 33

Site: Vertac Inc. Superfund Site

Description: Passive gas vents located at the top of OU1 landfill, note new screens

Date: June 24, 2008

Direction: Southwest



Photograph No. 34

Site: Vertac Inc. Superfund Site

Description: Repaired fence area located on west side of Parcel 1 near the vicinity of OU1 landfill

Date: June 24, 2008

Direction: Southwest

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



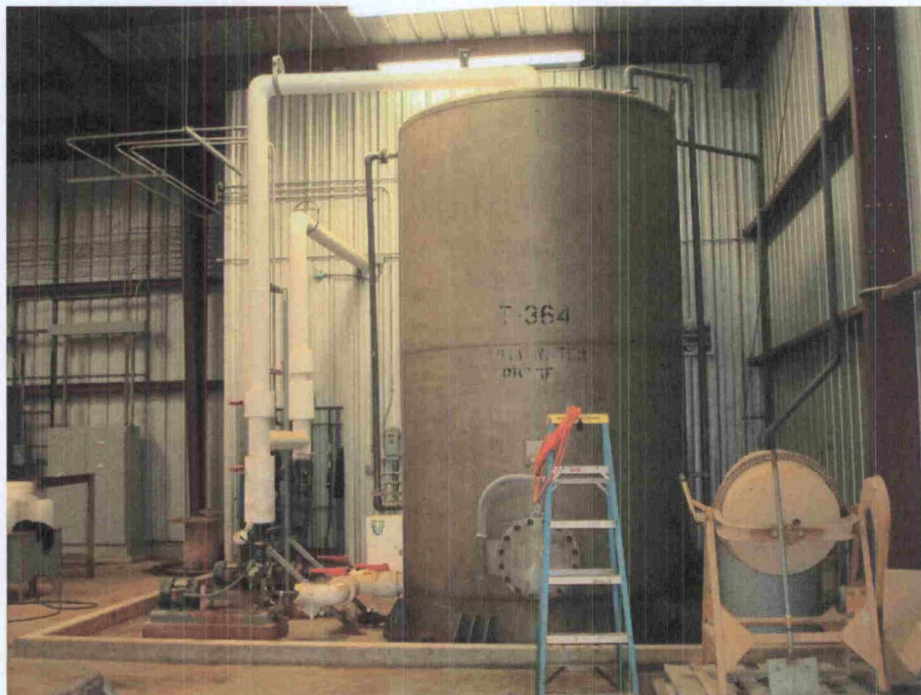
Photograph No. 35

Site: Vertac Inc. Superfund Site

Description: View of groundwater recovery building (GWRB) located on the east side of Parcel 1 near the extraction well

Date: April 16, 2008

Direction: Northeast



Photograph No. 36

Site: Vertac Inc. Superfund Site

Description: Holding tank located inside of the GWRB used to collect extracted groundwater which is then sent to the WWTP for treatment

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



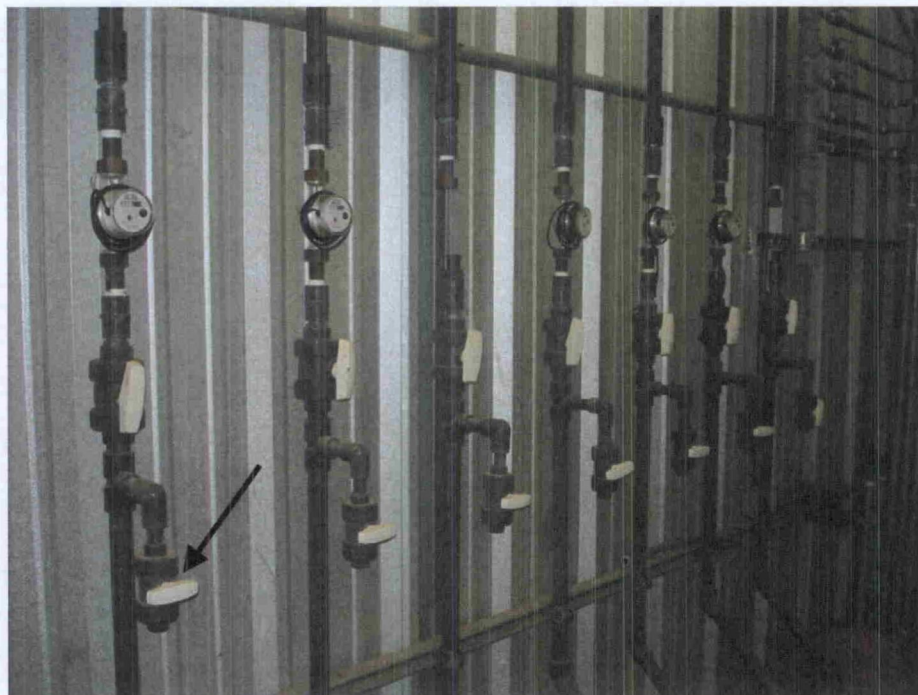
Photograph No. 37

Site: Vertac Inc. Superfund Site

Description: View of GWRB equipment such as piping, pumps, air compressor, all located within an area of secondary containment (arrow indicates concrete berm)

Date: April 16, 2008

Direction: NA



Photograph No. 38

Site: Vertac Inc. Superfund Site

Description: Flow valves with meters and sampling ports (indicated by arrow), located in a small room of the GWRB near the equalization tank

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



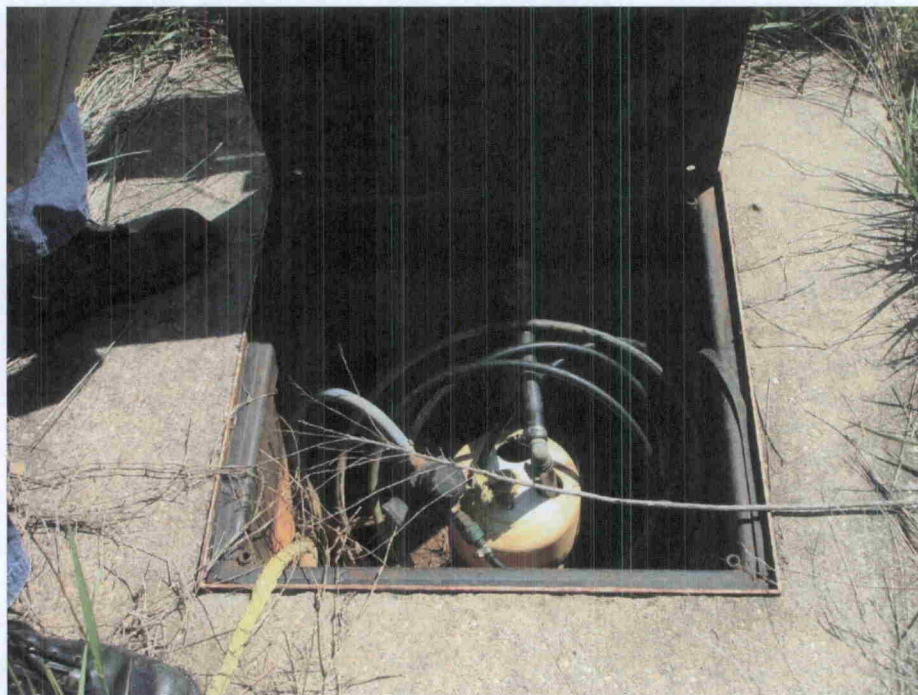
Photograph No. 39

Site: Vertac Inc. Superfund Site

Description: View of monitoring wells MW-79 and MW-78 (left side of picture) and extraction well EX-1 (right side) located north of the GWRB

Date: April 16, 2008

Direction: North



Photograph No. 40

Site: Vertac Inc. Superfund Site

Description: Interior view of the well vault for groundwater extraction well EX-1

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 41

Site: Vertac Inc. Superfund Site

Description: View of monitoring well MW-96 located near the OU1 landfill

Date: April 16, 2008

Direction: Northeast



Photograph No. 42

Site: Vertac Inc. Superfund Site

Description: View of monitoring well MW-76 located near the GWTB building

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 43

Site: Vertac Inc. Superfund Site

Description: Onsite water meter shed located on the east side of Parcel 1 near Marshall Road, note shed was blown by wind off of its foundation

Date: June 24, 2008

Direction: Northeast



Photograph No. 44

Site: Vertac Inc. Superfund Site

Description: View of sump in the Reasor-Hill Burial Area used to collect observed surface seep

Date: April 16, 2008

Direction: Down

Direction: South



Direction: Northeast

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 47

Site: Vertac Inc. Superfund Site

Description: View of pipes leading from the equalization tanks to the interior of the WWTP for treatment

Date: June 24, 2008

Direction: Northeast



Photograph No. 48

Site: Vertac Inc. Superfund Site

Description: View of pipes and pump (indicated by black arrow) from equalization tanks to WWTP for treatment (direction of flow indicated by blue arrow)

Date: June 24, 2008

Direction: East

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 49

Site: Vertac Inc. Superfund Site

Description: View of pneumatic pumps (indicated by arrows) and a sock filtration system (currently bypassed) within the WWTP building

Date: June 24, 2008

Direction: NA



Photograph No. 50

Site: Vertac Inc. Superfund Site

Description: View of sand filter system within the WWTP building

Date: June 24, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 51

Site: Vertac Inc. Superfund Site

Description: View of the backwash holding tank for the sand filters

Date: April 16, 2008

Direction: NA



Photograph No. 52

Site: Vertac Inc. Superfund Site

Description: View of carbon adsorption system located within the WWTP building

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 53

Site: Vertac Inc. Superfund Site

Description: View of pH neutralization tank located within the WWTP building

Date: June 24, 2008

Direction: NA



Photograph No. 54

Site: Vertac Inc. Superfund Site

Description: View of the treated water tank, water exits through an overflow weir and is discharged through the top pipe (indicated by arrow)

Date: April 16, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 55

Site: Vertac Inc. Superfund Site

Description: View of recently replaced air compressor located within the WWTP building

Date: June 24, 2008

Direction: NA



Photograph No. 56

Site: Vertac Inc. Superfund Site

Description: View of control room for WWTP building

Date: June 24, 2008

Direction: NA

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 57

Site: Vertac Inc. Superfund Site

Description: View of outlet pipe for treated ground water coming from the
WWTP and being discharged into the Rocky Branch Creek

Date: April 16, 2008

Direction: NA



Photograph No. 58

Site: Vertac Inc. Superfund Site

Description: View of City of Jacksonville recycling facility located on Parcel 2

Date: June 24, 2008

Direction: Northwest

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 59

Site: Vertac Inc. Superfund Site

Description: View of City of Jacksonville recycling facility located on Parcel 2

Date: June 24, 2008

Direction: South



Photograph No. 60

Site: Vertac Inc. Superfund Site

Description: View of City of Jacksonville environmental education park with walking trail, due north of the recycling facility located on Parcel 2

Date: June 24, 2008

Direction: Northeast

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 61

Site: Vertac Inc. Superfund Site

Description: View of Potentially Responsible Party (PRP)'s subcontractor initiating slope repairs by stripping material off the east slope of the sedimentation vault

Date: October 14, 2008

Direction: West



Photograph No. 62

Site: Vertac Inc. Superfund Site

Description: View of cleared slope and the stockpiled material

Date: October 15, 2008

Direction: North

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 63

Site: Vertac Inc. Superfund Site

Description: View looking up the sedimentation vault slope of the *in situ* subgrade clay material

Date: October 15, 2008

Direction: NA



Photograph No. 64

Site: Vertac Inc. Superfund Site

Description: View of deployed geotextile on the clay surface of the slope, and the delivery of rip-rap material

Date: October 22, 2008

Direction: North

Site Inspection Photographs
Vertac Inc. Superfund Site Third Five-Year Review



Photograph No. 65

Site: Vertac Inc. Superfund Site

Description: Placement of the rip-rap material on the north slope of the sedimentation vault

Date: October 23, 2008

Direction: West



Photograph No. 66

Site: Vertac Inc. Superfund Site

Description: View of the north sedimentation vault slope upon completion of remedial activities

Date: October 27, 2008

Direction: West

ATTACHMENT 5
INTERVIEW RECORDS

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site		EPA ID No.: ARD000023440
Location: Jacksonville, Pulaski County, Arkansas		Date: June 24, 2008
Contact Made By:		
Name: Philip Allen	Title: Remedial Project Manager	Organization: U.S. EPA
Telephone No.: (214) 665-8516 E-Mail: Allen.Philip@epa.gov	Street Address: 1455 Ross Avenue, Suite 1200 City, State, Zip: Dallas, Texas 75202	
Name: April Ballweg	Title: Project Manager	Organization: EA Engineering
Telephone No.: (972) 459-5019 E-Mail: aballweg@eaest.com	Street Address: 405 S. Highway 121, Building C, Suite 100 City, State, Zip: Lewisville, Texas 75067	
Individual Contacted:		
Name: David Jeros and Thomas Pilgrim (Terracon); Tim Hassett (Hercules)	Title: Project Manager, Site Technician, Project Manager	Organization: Terracon and Hercules
Telephone No.: 501-847-9292, Ext. 318 E-Mail Address: dgjaros@terracon.com	Street Address: 25809 Interstate 30 City, State, Zip: Bryant, Arkansas 72022	
Survey Questions		
<p><i>The purpose of the five-year review is to evaluate the implementation and performance of the remedy, and to confirm that human health and the environment continue to be protected by the remedial actions that have been performed at the site. This interview is being conducted as a part of the third five-year review for the Vertac Inc. Superfund Site. The period covered by this five-year review is from the completion of the second five-year review in November 2003 to the current completion of this review.</i></p>		
<p>1. What is your overall impression of the remedial action work conducted at the site since the period of the second five-year review (i.e., since November 2003)?</p>		
<p>Response: There has been an overall improvement since the last five-year review, more efficient system. It appears the leachate has leveled off. There has been a decrease in the carbon change out, three times per year. Current volume of treated water is approximately 9 to 12 million gallons per year. Treated 15 million gallons in 2004.</p>		
<p>2. Please describe the reports available that document the remedy has been functioning as planned since the period covered by the second five-year review (i.e., since November 2003)?</p>		
<p>Response: Yearly groundwater reports, monthly NDPS reports, monthly progress reports (compliance reports), fish flesh reports every other year (even years). July/Aug 2008 next fish flesh period. Fish concentrations at low concentrations, same over the last three sampling periods. Tim Hassett with Hercules requested change of fish reports to once every five years; the year prior to the five-year review period. EPA and ADEQ okay with request, but formal request will need to be submitted for documentation purposes. Next fish flesh monitoring event to occur in July-August 2012, with the report submitted by December 2012, ready for five-year review in 2013.</p>		

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 24, 2008

Survey Questions (Continued)

3. Please describe the onsite operations and maintenance (O&M) staff and activities.

Response: During the summer, technician at site 4-5 days a week and project manager at site 2-3 days. During rainy season, someone at site 5 days a week. Print pump minutes, amount extracted. Sample once per week outfall discharge, inspection of French drain two times per month, collect water from creek at first rainfall (stormwater collection).

4. Please describe any changes in O&M requirements, maintenance schedules, or sampling routines since the period covered by the second five-year review (i.e., since November 2003).

Response: Sampling change, outfall dropped silver, dichloro-diphenyl-trichloroethane (DDT), and metabolites. Chloride and total dissolved solids (TDS) for report only from discharge limits through Arkansas Department of Environmental Quality. Potential future reductions.

5. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: Occasionally, trespassing issues, appears to be "joy riders"; more bolt resistant replacement locks installed. Windows of wastewater treatment plant (WWTP) shot at with a BB-gun (CO2 cartridges left at site). Contacted police department, adjacent neighborhood to be investigated. Three incidences, but no damage noted or equipment missing. Currently an active alarm (monitoring) service for the WWTP, which notifies the police/fire department and then Terracon representative.

6. Please describe any difficulties encountered or unanticipated costs demonstrated since the period covered by the second five-year review (i.e., since November 2003).

Response: Side slope failure (Mount Vertac), topsoil contact with clay. Unknown cost to fix issue. Possibly use rip-rap (armor) slope like west side. Survey of area to be conducted on June 25, 2008, with recommendations of repairs to be submitted. Currently looking at several possible options. Plans to make repairs prior to the rainy season. EPA remedial project manager requested repair plan be submitted by October 2008, letter report being sufficient.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 24, 2008

Survey Questions (Continued)

7. Have there been opportunities to optimize O&M or sampling efforts? Please describe the changes, desired resultant cost savings, and improved efficiency.

Response: Reduction of sampling parameters. Looking at carbon system modifications-set change out and reduce monitoring-3 times per year for last 4 years. Dixon monitoring-semiannual. Influent/effluent from first carbon bed weekly. Effluent from system weekly.

8. Please cite each O&M manual update submitted since the period covered by the second five-year review (i.e., since November 2003).

Response: O&M manual updated in December 2004 and revised in March 2008. Contact information and current practices, one inspection form, change in parameters. Front gate with stop sign, and Mr. Pilgrims and Mr. Jaros names and numbers provided. Also noted change of company names from Genesis to Terracon (site contractor).

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY		
Site Name: Vertac Inc. Superfund Site		EPA ID No.: ARD000023440
Location: Jacksonville, Pulaski County, Arkansas		Date: June 24, 2008
Contact Made By:		
Name: Philip Allen	Title: Remedial Project Manager	Organization: U.S. EPA
Telephone No.: (214) 665-8516 E-Mail: Allen.Phipp@epa.gov	Street Address: 1455 Ross Avenue, Suite 1200 City, State, Zip: Dallas, Texas 75202	
Name: April Ballweg	Title: Project Manager	Organization: EA Engineering
Telephone No.: (972) 459-5019 E-Mail: aballweg@eaest.com	Street Address: 405 S. Highway 121, Building C, Suite 100 City, State, Zip: Lewisville, Texas 75067	
Individual Contacted:		
Name: Phillip Carlisle	Title: Vice President	Organization: Concerned Citizens Coalition
Telephone No.: 501-985-4038 E-Mail: phillip.carlisle@invpro.com	Street Address: 2227 West Main Street, Suite 5 City, State, Zip: Jacksonville, Arkansas 72076	
Survey Questions		
<p><i>The purpose of the five-year review is to evaluate the implementation and performance of the remedy, and to confirm that human health and the environment continue to be protected by the remedial actions that have been performed at the site. This interview is being conducted as a part of the third five-year review for the Vertac Inc. Superfund Site. The period covered by this five-year review is from the completion of the second five-year review in November 2003 to the current completion of this review.</i></p>		
<p>1. What is your overall impression of the remedial action work conducted at the site since the period of the second five-year review (i.e., since November 2003)?</p>		
<p>Response: Mr. Carlisle responded that he had no comments or concerns.</p>		
<p>2. From your perspective, what effect has continuing remedial actions at the site had on the surrounding community?</p>		
<p>Response: Mr. Carlisle responded that he had no comments.</p>		

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 24, 2008

Survey Questions (Continued)

3. Are you aware of any ongoing community concerns regarding the remedial actions at the site?

Response: Mr. Carlisle responded that he didn't know of any ongoing community concerns.

4. Are you aware of community concerns regarding future use of the site?

Response: Mr. Carlisle responded that there is a new walkway at the eastern end of the recycling facility, but that there were no concerns by the community.

5. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: Mr. Carlisle responded that there were issues concerning the materials (i.e., paint thinners, etc.) at the recycle facility but that it was the city's responsibility.

6. Do you feel well-informed about the site's condition and status?

Response: Mr. Carlisle responded that he was informed enough. He also mentioned that the smaller the fencing around the property the better.

7. Do you have any comments, suggestions, or recommendations regarding the site?

Response: Mr. Carlisle responded that there are no comments, suggestions, or recommendations from the citizen's point of view. The site is secure, and no one has an issue regarding the site.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY		
Site Name: Vertac Inc. Superfund Site		EPA ID No.: ARD000023440
Location: Jacksonville, Pulaski County, Arkansas		Date: June 25, 2008
Contact Made By:		
Name: Philip Allen	Title: Remedial Project Manager	Organization: U.S. EPA
Telephone No.: (214) 665-8516 E-Mail: Allen.Phipp@epa.gov	Street Address: 1455 Ross Avenue, Suite 1200 City, State, Zip: Dallas, Texas 75202	
Name: April Ballweg	Title: Project Manager	Organization: EA Engineering
Telephone No.: (972) 459-5019 E-Mail: aballweg@eaest.com	Street Address: 405 S. Highway 121, Building C, Suite 100 City, State, Zip: Lewisville, Texas 75067	
Individual Contacted:		
Name: Mayor Tommy Swaim	Title: Mayor	Organization: City of Jacksonville
Telephone No.: 501-982-3146 E-Mail Address: tswaim@cityofjacksonville.net	Street Address: #1 Municipal Drive City, State, Zip: Jacksonville, Arkansas 72076	
Survey Questions		
<p><i>The purpose of the five-year review is to evaluate the implementation and performance of the remedy, and to confirm that human health and the environment continue to be protected by the remedial actions that have been performed at the site. This interview is being conducted as a part of the third five-year review for the Vertac Inc. Superfund Site. The period covered by this five-year review is from the completion of the second five-year review in November 2003 to the current completion of this review.</i></p>		
<p>1. What is your overall impression of the remedial action work conducted at the site since the period of the second five-year review (i.e., since November 2003)?</p>		
<p>Response: Everything is going well, smoothly. They have a presence on part of the site (recycling center). Looking to add a fire and police training center. No complaints from citizens. The city claimed a portion of the property, it had been for sale for back taxes. May possibly use some of the northern area as industrial. Will have to move some dirt around (level site) for fire drill tower, police firing range, and driver training facility. No plans for the frontage area along Marshall Road, where wells are located. Tax deed – not a quiet title, but title through state land commissioner's office (state attorney), due to owed taxes. Plan on preserving part of the (WWII) bunkers for historical purposes.</p>		
<p>2. From your perspective, what effect has continuing remedial actions at the site had on the surrounding community?</p>		
<p>Response: A lot of people have forgotten. Occasionally, the city receives calls from former residents about health studies, or from university students preparing research papers.</p>		

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY (continued)

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 25, 2008

Survey Questions (Continued)

3. Are you aware of any ongoing community concerns regarding the remedial actions at the site?

Response: None.

4. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by the City regarding the site? If so, please describe purpose and results.

Response: Yes, all of the time on the recycling center side, they keep an eye out on the wildlife as a sign of the health of the area.

5. Have there been any complaints, violations, or other incidents related to the site that required a response by your office, if applicable? If so, please give details of the events and results of the responses.

Response: None.

6. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: The recycle area is fenced and locked at night. Hercules keeps site locked and permission is required to access their area.

7. Is your office aware of any plans to develop the site or any changes in land use at the site or portions of the site? What are the City's expectations or concerns about future land use at the site?

Response: The current plans are for the portion of the property owned by the city (Parcel 2), no plans for the south side (Parcel 1).

8. Are there any local community expectations or concerns about future land use/redevelopment at the site?

Response: The local community expects public access to the recycle area. The city maintains the recycle drive through area, and now provides curb side service as well.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 25, 2008

Survey Questions (Continued)

9. Do you feel well-informed about the site's activities and status?

Response: Yes, well informed about the site. This is Mayor Swaim's last term. He has been involved throughout the process and he felt well informed throughout it.

10. Do you have any comments, suggestions, or recommendations regarding the site?

Response: It would be nice to use all of the site if it was completely cleaned up, but that would be cost prohibitive. The remaining items (Mount Vertac, capped areas, etc.) are out of site and essentially no longer a concern for the citizens. There are no indicating marks, the land now appears to just be undeveloped land.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY**Site Name:** Vertac Inc. Superfund Site**EPA ID No.:** ARD000023440**Location:** Jacksonville, Pulaski County, Arkansas**Date:** June 25, 2008**Contact Made By:****Name:** Philip Allen**Title:** Remedial Project Manager**Organization:** U.S. EPA**Telephone No.:** (214) 665-8516**E-Mail:** Allen.Philip@epa.gov**Street Address:** 1455 Ross Avenue, Suite 1200**City, State, Zip:** Dallas, Texas 75202**Name:** April Ballweg**Title:** Project Manager**Organization:** EA Engineering**Telephone No.:** (972) 459-5019**E-Mail:** aballweg@eaest.com**Street Address:** 405 S. Highway 121, Building C, Suite 100**City, State, Zip:** Lewisville, Texas 75067**Individual Contacted:****Name:** Shirley Louie, M.S., CIH**Title:** Associate Branch
Chief for Epidemiology**Organization:** Arkansas
Department of Health (ADH)**Telephone No.:** 501-661-2833**E-Mail Address:** shirley.louie@arkansas.gov**Street Address:** 4815 West Markham**City, State, Zip:** Little Rock, Arkansas 72205**Survey Questions**

The purpose of the five-year review is to evaluate the implementation and performance of the remedy, and to confirm that human health and the environment continue to be protected by the remedial actions that have been performed at the site. This interview is being conducted as a part of the third five-year review for the Vertac Inc. Superfund Site. The period covered by this five-year review is from the completion of the second five-year review in November 2003 to the current completion of this review.

1. What is your overall impression of the remedial action work conducted at the site since the period of the second five-year review (i.e., since November 2003)?

Response: Ms. Louie responded that she had been keeping up with it as part of her Arkansas Department of Health (ADH) responsibilities. She has been involved since early in the project. The remedial action is going as planned, going good and there have not been any significant deviations. Communications with other agencies have been adequate, and everything is going fine. She is currently receiving copies of the monthly discharge monitoring reports (DMRs) and would like to continue receiving them.

2. From your perspective, what effect has continuing remedial actions at the site had on the surrounding community?

Response: Ms. Louie responded that if anyone calls, she receives the call. Most interest is from new residents usually interested in information of the site (fact finding). Occasionally, she receives pre-EPA stories from persons who use to work there or were kids back then and concerned about health impacts. She provides information from the EPA website and ADH available information, and notifies them to call EPA or ADEQ to obtain additional information.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 25, 2008

Survey Questions (Continued)

3. Are you aware of any ongoing community health concerns regarding the site or its operation and administration?

Response: Ms. Louie responded that there were none at all.

4. Have there been any complaints or other comments related to the site that required a response by your office? If so, please summarize the events and results of the responses.

Response: Ms. Louie responded that there are no complaints just more informational fact finding.

5. Are you aware of any developments which may require changes to the remedial action(s) performed?

Response: Ms. Louie responded no.

6. Do you feel well-informed about the site's activities and progress?

Response: Ms. Louie responded yes absolutely.

7. What is the status of the fishing ban for Bayou Meto? Has the ADH conducted further study regarding the health effects of fish consumption and dioxin levels for Bayou Meto?

Response: Ms. Louie acknowledged that ADH had received letters from EPA asking ADH to consider lowering its dioxin screening level for fish tissues taken from state waters to 0.7 parts per trillion (ppt) based upon EPA guidance on fish advisories from the current level of 25 ppt., as well as the reinstitution of either the fishing ban, or advisory, on the lower Bayou Meto below the Highway 13 bridge. In response to those requests, the ADH talked with some state legislators, as well as community leaders and representatives, and the governor's office. The ADH considered the potential for major adverse economic impacts from such changes. Ultimately, the ADH decided not to make the changes. ADH has no funds, or plans, for further study of this issue.

8. Do you have any comments, suggestions, or recommendations regarding the site?

Response: Ms. Louie responded she was initially concerned with not getting new information during the last five-year review period. She is receiving adequate communication during this five-year review period. Good communication, able to call and ask for more when necessary, good relationship with EPA. They are able to track progress at the site. No complaints. Ms. Louie is receiving the DMRs. She would prefer the summary report as a hard copy (without the analytical attached) and if more information is needed then she will request it. She was notified that the backup data could be provided on compact disc.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY		
Site Name: Vertac Inc. Superfund Site		EPA ID No.: ARD000023440
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Telephone No.: (972) 459-5019 E-Mail: aballweg@eaest.com	Street Address: 405 S. Highway 121, Building C, Suite 100 City, State, Zip: Lewisville, Texas 75067	
Individual Contacted:		
Name: C. Annette Cusher, P.E. and Dianna Kilburn, P.G.	Title: Engineer Supervisor and Geology Supervisor	Organization: Arkansas Department of Environmental Quality (ADEQ)
Telephone No.: 501-683-0744 E-Mail Address:	Street Address: 5301 Northshore Drive City, State, Zip: North Little Rock, Arkansas 72118-5317	
Survey Questions		
<p><i>The purpose of the five-year review is to evaluate the implementation and performance of the remedy, and to confirm that human health and the environment continue to be protected by the remedial actions that have been performed at the site. This interview is being conducted as a part of the third five-year review for the Vertac Inc. Superfund Site. The period covered by this five-year review is from the completion of the second five-year review in November 2003 to the current completion of this review.</i></p>		
<p>1. What is your overall impression of the remedial action work conducted at the site since the period of the second five-year review (i.e., since November 2003)?</p>		
<p>Response: Issues to be addressed concerning the Mount Vertac slope failure. There was a slope failure two years ago and now again. Hercules is addressing the permitted discharge problem and working on the slope issue. Arkansas Department of Environmental Quality (ADEQ) will continue monitoring these issues. The DMR indicates that TCDD is still showing up sporadically in various areas. Need to determine where it's coming from.</p>		
<p>2. From your perspective, what effect has continued remedial operations at the site had on the surrounding community? Are you aware of any ongoing community concerns regarding the site or its operation and maintenance?</p>		
<p>Response: None that ADEQ is aware of (i.e., no call, no request of Freedom of Information Act [FIOAs]). The remedy appears to be protective, lots of insects and animals (deer) at the site. This is a good sign. The remedy appears to be performing as designed, but must continue monitoring since it is such a complex site.</p>		

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 25, 2008

Survey Questions (Continued)

3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please describe purpose and results.

Response: ADEQ reviews reports and annual inspections. Additional efforts if issue arise (i.e., slope failure or excursions).

4. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, or anything that required emergency response from local authorities? If so, please give details.

Response: Nothing reported, no issues.

5. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please summarize the events and result.

Response: Nothing other than what was mentioned previously (slope failure, unpermitted release).

6. Are you aware of any problems or difficulties encountered since the second Five-Year Review which have impacted progress or resulted in a change in operations and maintenance procedures? Please describe changes and impacts.

Response: No, nothing.

7. Have there been any changes in the wastewater treatment plant discharge limits?

Response: Silver, dichloro-diphenyl-trichloroethane (DDT), and metabolites have been removed from the list of parameters. Approval letter from Kin Siew, P.E. of the water division. Changed chloride and total dissolved solids to report only.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY

Site Name: Vertac Inc. Superfund Site

EPA ID No.: ARD000023440

Location: Jacksonville, Pulaski County, Arkansas

Date: June 25, 2008

Survey Questions (Continued)

8. Have there been any changes in state environmental standards since the previous five-year review period which may call into question the current protectiveness or effectiveness of the remedial action?

Response: Nothing for the hazardous waste requirement that they are aware of. There have been changes in the water division/regulations, but not sure how it affects Vertac.

9. Do you know of opportunities to optimize the operation, maintenance, or sampling efforts at the site, and have such changes been adopted?

Response: Nothing new, the wastewater treatment plant modifications hanges were done before the 2003 Five-Year Review (FYR). Fish sampling changed from every 2 years to every 5 years (ok'ed verbally by ADEQ and U.S. EPA). Trend still continuing but slow with little change, therefore, Fish Flesh Sampling will be done prior to the next FYR (i.e., sample in 2012 for 2013 FYR report). Ms. Shirley Louie (Arkansas Department of Health) informed of this modification in reporting period.

10. Do you feel well-informed about the site's activities and progress?

Response: Yes, they have all of the information they need. Well informed, but they continue to review historical information.

11. Do you have any comments, suggestions, or recommendations regarding the site?

Response: No suggestions till the study of the slope failure is available. There is no waste exposed and no concerns with health at this time.

ATTACHMENT 6
COUNTY CLERK'S OFFICE DOCUMENTS

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6

In the Matter of:

Hercules, Incorporated
Uniroyal Chemical, Ltd. and
Vertac Chemical Corporation

CERCLA DOCKET NO.
CERCLA 6-01-97

RESPONDENTS

REGARDING THE
VERTAC, INC., SUPERFUND SITE
OPERABLE UNIT 2
Jacksonville, Arkansas

Proceeding Under Section 106(a) of the
Comprehensive Environmental Response,
Compensation, and Liability Act (CERCLA),
42 U.S.C. § 9606(a)

FILED AND RECORDED
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CIRCUIT COURT CLERK



NOTICE OF LIS PENDENS

Notice is hereby given that the United States Environmental Protection Agency,
has begun an action against Vertac, Inc. in the above-styled cause to assert a lien upon the
following described real property situated in Pulaski County, Arkansas:

Part of the Southeast Quarter of Section 13, Township 3 North, Range 11 West
and the Northeast Quarter of Section 24, Township 3 North, Range 11 West, in
Pulaski County, Arkansas, more particularly described as follows: Commencing
at a concrete monument that is the intersection of the Range Line (Range 10 West
and Range 11 West) and the West Right of Way Line of Marshall Road which is
815.4 feet, North 1 degree 37 minutes East of the Southwest corner of Section 18,
Township 3 North, Range 10 West; thence South 9 degrees 08 minutes West
along the West right-of-way line of Marshall Road, 562.4 feet to the Point of
Beginning; thence continue South 9 degrees 08 minutes West 1017.2 feet; thence
North 1 degree 34 minutes East 1008.0 feet; thence North 88 degrees 24 minutes
East 1932.5 feet to the Point of Beginning; containing 43.207 acres, more or less.

AND

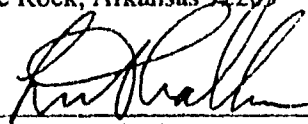
Part of the South Half of Section 13, and part of the North Half of Section 24, Township 3 North, Range 11 West, in Pulaski County, Arkansas, more particularly described as follows: Starting at a concrete monument that is the intersection of the Range Line (Range 10 West and Range 11 West) and the West right-of-way line of Marshall Road which is 815.4 feet, North 1 degree 37 minutes East of the Southwest corner of Section 18, Township 3 North, Range 10 West, thence South 9 degrees 08 minutes West along the West right-of-way line of Marshall Road 582.4 feet; thence North 88 degrees 24 minutes West 1932.5 feet to the Point of Beginning; thence South 1 degree 34 minutes West 788.4 feet; thence North 88 degrees 24 minutes West 1051.9 feet to the Easterly right-of-way line of the Little Rock Air Force Base Railroad; thence North 1 degrees 28 minutes West 789.2 feet along the said right-of-way line; thence South 88 degrees 24 minutes East 1093.4 feet to the point of beginning, containing 19.4 acres, more or less.

This document is being filed pursuant to Paragraph 74 of the Attached Unilateral Administrative Order for Remedial Design and Remedial Action filed December 11, 1996.

Dated this 23 day of December, 1996

ARNOLD, GROBMYER & HALEY
Eighth Floor
One Union National Plaza
P. O. Box 70
Little Rock, Arkansas 72203

By



Lee S. Thalheimer (77132)
Receiver for Vertac Chemical Company

**UNILATERAL ADMINISTRATIVE ORDER
FOR THE REMEDIAL DESIGN AND REMEDIAL ACTION
AT THE VERTAC, INC., SUPERFUND SITE
OPERABLE UNIT 2, SOILS AND UNDERGROUND UTILITIES
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6

In The Matter Of:

Hercules, Incorporated,
Uniroyal Chemical Ltd., and
Vertac Chemical Corporation

RESPONDENTS

REGARDING THE
VERTAC, INC., SUPERFUND SITE
OPERABLE UNIT 2
Jacksonville, Arkansas

Proceeding Under Section 106(a) of the
Comprehensive Environmental Response,
Compensation, and Liability Act, (CERCLA),
42 U.S.C. § 9606(a)

CERCLA DOCKET NO.
CERCLA 6-01-97

UNILATERAL ADMINISTRATIVE ORDER
FOR REMEDIAL DESIGN AND REMEDIAL ACTION

I. INTRODUCTION AND JURISDICTION

1. This Order directs Respondents to perform a remedial design for the selected remedy (the remedy) described in the Record of Decision (ROD) for Operable Unit 2, Soils and Underground Utilities (OU 2) of the Vertac, Inc., Superfund Site (the site) dated September 17, 1996, and to implement the design of the remedy pursuant to this Order by performing the remedial actions described in the ROD. This Order is issued to Respondents by the United States Environmental Protection Agency (EPA) under the authority vested in the President of the United States by Subsection 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9606(a). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580

a waste by-product. The generation and disposal of hazardous substances, including dioxin waste, were inherent in the process performed for Uniroyal's benefit, and at Uniroyal's direction. This dioxin waste included the hazardous substance 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD). Uniroyal knew that the generation and disposal of wastes containing hazardous substances, including TCDD, were an inherent part of the processing of Uniroyal's materials. In short, Uniroyal's tolling agreements with Vertac involved an arrangement for the disposal of hazardous substances, including TCDD.

5. The primary material which Uniroyal sent to Vertac was tetrachlorobenzene (TCB). Uniroyal instructed its agent, Gilmore, Inc. (Gilmore) to purchase TCB from suppliers in Europe. Gilmore purchased TCB on the high seas from these European suppliers, using funds supplied by Uniroyal. At Uniroyal's direction, Gilmore then arranged for the TCB to be imported into the United States at New Orleans, Louisiana, under a temporary importation bond. Another Uniroyal agent, Behring, International, made the bonding and shipping arrangements. Pursuant to Uniroyal's instructions, the TCB was then transported to Jacksonville, Arkansas and was labeled "To: Uniroyal Ltd c/o Vertac." Uniroyal paid for the storage of the TCB in New Orleans, for the temporary import bonds, and for the transportation of the TCB to Jacksonville.

6. Uniroyal, through directions to Gilmore, controlled the timing of the delivery of TCB to Vertac. Uniroyal likewise controlled the quantity of TCB delivered to Vertac. The TCB was the principal starting ingredient which Vertac used in the manufacture of 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). By controlling the timing of TCB delivered to Vertac and the quantity of TCB delivered to Vertac, Uniroyal exerted control over Vertac's manufacture of 2,4,5-T for Uniroyal from Uniroyal's TCB.

7. Some of the waste by-products, including TCB, 2,4,5-trichlorophenol (TCP), 2,4,5-T and TCDD, from Vertac's processing of Uniroyal's materials under the tolling agreements, were disposed into the process equipment, tanks and vessels; into the contents of process equipment, tanks and vessels; into the piping, into the buildings; into drums of waste which

subsequently leaked; and into and on the plant site generally, including, but not limited to the shredded trash and pallets and the soils and groundwater. Wastes from the processing of Uniroyal's materials under the tolling agreements, which contained hazardous substances including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc., Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with and came to be located on the interior and exterior of the buildings and equipment at the Vertac site. In addition, wastes from the processing of Uniroyal's materials came to be located in the central ditch, which runs from east to west through the central processing area. Soils and waste water from the central ditch containing hazardous substances from the processing of Uniroyal's materials also came to be discharged into the cooling pond. The sediments from the cooling pond were placed in an above-ground storage area on site in approximately 1985. Leachate from this storage area containing hazardous substances is intercepted by the french drain system described in Paragraph 17 below.

8. Vertac shipped the 2,4,5-T manufactured from Uniroyal's TCB back to Uniroyal in Canada. Uniroyal directed Vertac where to ship the 2,4,5-T and paid the cost of transporting the 2,4,5-T from Jacksonville, Arkansas back to Canada.

9. Uniroyal is a defendant in an action brought by the United States in the Eastern District of Arkansas, Western Division, case no. LR-C-80-109, styled United States v. Vertac Chemical Corp., et al., in which the United States sought recovery of response costs from, among others, Uniroyal, pursuant to CERCLA section 107(a)(3), 42 U.S.C. § 9607(a)(3).

10. The Court in that case divided proceedings into three phases: Liability, costs, and allocation. The liability phase of the case was tried before an advisory jury and the court beginning on November 3, 1993. Uniroyal was a defendant against whom the United States presented evidence in the liability phase trial. The claims asserted by the United States against Uniroyal in the liability phase trial were based on the same transactions between

Uniroyal and Vertac that are described above involving the toll manufacture of finished product for Uniroyal by Vertac from raw materials supplied by Uniroyal.

11. The jury in the liability phase trial in LR-C-80-109 returned a verdict on November 18, 1993, finding Uniroyal liable to the United States as an arranger for disposal of hazardous substances at the Vertac site

12. Respondent Hercules Incorporated (Hercules) is a Delaware corporation.

13. Hercules was, from on or about December 28, 1961, until on or about October 1, 1971, the owner and operator of the plant portion of the Vertac, Inc., Superfund Site. Hercules continued to own, but not operate, the plant through August 19, 1976. During this time, from October 1, 1971, through August 19, 1976, Hercules leased the Vertac site to a company formerly known as Transvaal, Inc. From on or about December 28, 1961, until on or about October 1, 1971, Hercules disposed hazardous substances, including 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4-dichlorophenol (2,4-DCP), 2,6-dichlorophenol (2,6-DCP), 2,4,5-T, tetrachlorobenzene (TCB), 2,4,5-trichlorophenol (TCP), and 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) into the process equipment, tanks and vessels; into the contents of process equipment, tanks and vessels; into the piping; into the buildings; and into and on the plant site generally, including, but not limited to the shredded trash and pallets and the soils and groundwater. Wastes which contained hazardous substances, including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc., Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with and came to be located on the interior and exterior of the buildings and equipment at the Vertac site. The miscellaneous drummed wastes have been generated through Site activities, including, but not limited to, the remedial investigation. From on or about October 1, 1971, through August 19, 1976, Transvaal continued to dispose hazardous substances in the same manner as described in this Paragraph, using the equipment, buildings, and plant owned by and leased from Hercules.

14. In approximately 1974, prior to Hercules' sale of the Vertac site to Vertac, drums of 2,4,5-T waste began to be stored above ground at the Vertac site. These drummed wastes contained, among other things, TCDD, 2,4,5-T and trichlorophenol. These drummed wastes were stored either on the ground or on pallets, and the drums began leaking some time shortly after being filled. These drums of 2,4,5-T wastes were still present at the site when Vertac abandoned the site in 1987, but have now been shipped off-site and incinerated at the APTUS facility in Coffeyville, KS.

15. Respondent Hercules is a defendant in the action brought by the United States, case no. LR-C-80-109, United States v. Vertac Chemical Corp., et al. In this case, the United States has sought recovery of response costs from, among others, Hercules, pursuant to CERCLA section 107(a), 42 U.S.C. § 9607(a).

16. On October 12, 1993, the Court in United States v. Vertac entered an order granting the United States' motion for partial summary judgment against Hercules on the issue of Hercules' liability to the United States for CERCLA response costs. The Court found that Hercules was jointly and severally liable for those response costs. In that order, the Court mentioned the long prior history of the case and related litigation, and found that Hercules had not disputed: (1) The disposal of hazardous substances, including dioxin, at the Vertac plant site during its ownership and operation of the plant; (2) the releases of hazardous substances at the Vertac plant site during its ownership and operation; (3) that the Vertac Site is a facility; (4) that the United States had incurred response costs; and, (5), that Hercules, as a former owner and operator, was a responsible party under CERCLA.

17. Hercules buried drummed wastes from the processing of 2,4-D and 2,4,5-T in landfills on-site, including what are referred to as still bottom wastes. These wastes contained, among other things, 2,4-D, 2,4,5-T, 2,4-DCP, 2,6-DCP, TCP and TCDD. Water that has come into contact with these buried wastes is collected by means of a french drain system installed by Vertac as a part of the litigation in United States v. Vertac. Oily liquid present in the water collected from the french drain is separated out, and the remaining water is treated with

activated carbon. This process has generated the spent activated carbon and french drain oily leachate that are parts of OU 1.

18. Respondent Vertac Chemical Corporation (Vertac) is a Delaware corporation.

19. Vertac is the corporate successor of Transvaal, Inc. (Transvaal). Transvaal was reorganized into Vertac in 1976. Transvaal and Vertac will be referred to collectively as Vertac.

20. Vertac was, from on or about October 1, 1971, to on or about August 19, 1976, the operator of the Vertac, Inc. Superfund Site. On or about August 19, 1976, Vertac purchased the Vertac site from Hercules. From on or about August 19, 1976, Vertac has been the owner of the Vertac site. Vertac continued to operate the plant for the production of herbicides through late 1986. During Vertac's operation and ownership of the Vertac site, hazardous substances, including 2,4-D, 2,4-DCP, 2,6-DCP, 2,4,5-T, TCP and TCDD, were disposed into the process equipment, tanks, and vessels; into the contents of process equipment, tanks, and vessels; into the piping; into the buildings; and into and on the plant site generally, including, but not limited to the shredded trash and pallets and the soils and groundwater. Wastes which contained hazardous substances, including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc. Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with, and came to be located on the interior and exterior of the buildings and equipment at the Vertac site. The miscellaneous drummed wastes have been generated through site activities, including, but not limited to, the remedial investigation.

21. Vertac continued the burial of drummed wastes on site through some time in 1974. Vertac buried these drummed wastes and other wastes in, among other places, the same landfill on-site that Hercules had used for this purpose.

22. The wastes at the Vertac site are commingled. Wastes generally associated with the processing and manufacture of 2,4,5-T, such as TCP, 2,4,5-T and TCDD are found in and around the tanks, vessels and vessel contents associated with the processing and manufacture of 2,4-D and in the other Operable Unit 1 media. Likewise, 2,4-D contamination at the Vertac site, such as 2,4-DCP, 2,6-DCP and 2,4-D, has been found in and around tanks and vessels associated with 2,4,5-T manufacture and in the other Operable Unit 1 media, and the soils, foundations, and underground utilities associated with Operable Unit 2 media. Practically every area of the Vertac site exhibits some commingling of 2,4-D and 2,4,5-T wastes. Also, the contaminated soils associated with operable unit 2 contain TCB in an isolated area that is associated with a particular spill.

23. On or about February 1, 1987, Vertac abandoned the Vertac site, leaving practically everything behind, including, but not limited to, the following: all of the plant equipment and buildings; chemicals; drummed wastes; spent activated carbon; trash; used pallets; and hazardous substances, as well as contaminated soils, and underground utilities and foundations.

24. Beginning in March 1987 and continuing through April 1988, EPA performed an inventory of the process vessels in the central process area. This inventory consisted of: identifying the vessels; noting their geometric shape and volume; noting their content level, volume, and phase; describing the visual appearance of the contents; and performing analyses of the contents.

25. In 1987, the United States, in United States v. Vertac, requested that a receiver be appointed for Vertac. The court ordered a receiver appointed. The receiver appointed for Vertac was Lee Thalheimer, who continues in his capacity as receiver for Vertac.

26. Pursuant to section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Vertac, Inc., Superfund Site, including, but not limited to, the Site, on the National Priorities List, set forth

at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on September 8, 1983, 48 Fed. Reg. 40,667.

27. To study and undertake response activities in phases, EPA divided the Vertac Inc. Superfund Site into operable units. The operable units for the Vertac Inc., Superfund Site are the Vertac Remedy, Vertac Off-Site, Drummed Wastes Incineration, On-Site Operable Unit 1, On-Site Operable Unit 2, Soils, Foundations and Underground Utilities, and Operable Unit 3, Groundwater. See the ROD for OU2 for more information on these operable units. This Order addresses the Vertac Operable Unit 2, referred to as the Site in this Order.

28. Under the terms of an Administrative Order on Consent, dated July 7, 1989, Hercules agreed to undertake remedial investigations and feasibility studies (RI/FSs) for the Site pursuant to CERCLA Section 104(b), 42 U.S. and the National Contingency Plan (NCP), 40 CFR Part 300. The Remedial Investigation and Focused Feasibility Study (RI/FS) for OU2 was completed in April 1995.

29. Pursuant to section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the RI/FS and of the original proposed plan for remedial action at OU2 on May 24, 1995, in the Jacksonville News, and provided opportunity for public comment on the proposed remedial action.

30. In February 1995, EPA released the draft feasibility study (FS) for Operable Unit 2, and several meetings were held in Jacksonville with local citizens groups and the press to discuss the various options being considered. The Operable Unit 2 FS was finalized in April 1995, and was made available to the public at five local repositories (Jacksonville City Hall, Public Library, Police Courts Building, Air Force Base Library, and the Arkansas Department of Pollution Control and Ecology (ADPC&E)).

31. On May 25, 1995, EPA held an informal open house in Jacksonville to discuss EPA's proposed plan of action for OU2 media at the Vertac site.

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32. On June 15, 1995, EPA held a formal public meeting in Jacksonville at the community civic center to discuss EPA's proposed cleanup scenario for dioxin-contaminated soils at the Vertac site. At that meeting EPA attempted to address all comments or questions raised concerning the proposed cleanup and formally accepted all public comments. Over 100 citizens attended the meeting, including members from the Jacksonville Chamber of Commerce, Jacksonville City Council, the Mayor, representatives from ADPC&E, and the State Health Department. The comment period for the proposal ran from May 26 through August 11, 1995, after EPA granted two extensions of time. All comments received by EPA prior to the end of the public comment period, including those expressed verbally at the public meeting, are addressed in the Responsiveness Summary section of the attached ROD for OU2. Thus, the requirements of CERCLA Sections 113(k)(2)(B)(i-v) and 117, 42 U.S.C. § § 9613(k)(2)(B)(i-v) and 9617, were met during the remedy selection process. During both the May open house and the June public meeting, the community indicated its approval and acceptance of EPA's reasonably anticipated land use for the site and the risk assumptions based on that anticipated future land use.

33. EPA's original proposal for remediation of soils, foundations and underground utilities at Vertac was presented to the community at an informal open house held in Jacksonville on May 25, 1995. At that time EPA's preferred alternative called for the off-site incineration of dioxin-contaminated hot spots and on-site landfilling of dioxin contaminated soils that exceeded a site-specific commercial/industrial exposure level. Under this scenario approximately two-thirds of the site would have potentially been available for future commercial reuse.

34. Following the release of the original Proposed Plan for OU2 in May 1995 and the subsequent community meetings, EPA Administrator Carol M. Browner issued a series of administrative reforms for the Superfund Program on October 3, 1995. One purpose of the reforms was to control remedy costs and to promote cost effectiveness, and the reforms directed EPA to base site cleanup decisions on practical future land usage and reasonable contaminant exposure scenarios.

35. As a result of those reform measures, and due to the ongoing deadlock over the Federal budget occurring at the time, Region 6 revised the proposed plan of action for OU2. The Supplemental Proposed Plan was issued on February 26, 1996, and presented to the public at an Open House on March 5, 1996. The Supplemental Proposed Plan for OU2 eliminated the off-site incineration component of the original proposed plan, included capping in-place soils having dioxin contamination between 5 to 50 ppb, and proposed on-site landfilling of soil contaminated with dioxin in excess of 50 ppb. The community objected strongly to the Supplemental Proposed Plan.

36. After the March 5, 1996, Open House, EPA representatives conducted numerous meetings with several community groups to listen to the concerns of the local residents. Following the March 5, 1996, release of EPA's Supplemental Proposed Plan for OU2, EPA held another comment period to accept formal public comment on the supplemental plan. The response to these comments is contained separately from the original responsiveness summary in the "Supplemental Responsiveness Summary," which is included in the Administrative Record for the ROD for OU2. Subsequently, EPA conducted another open house on July 30, 1996, to present to the public the remedial elements it had reconsidered and currently held under consideration at the time.

37. The decision by EPA on the remedial action to be implemented at the Site is embodied in a Record of Decision (ROD), executed on September 17, 1996, on which the State and the general public had a reasonable opportunity to review and comment. The ROD is attached to this Order as Attachment 1 and is incorporated by reference. The ROD is supported by an administrative record that contains the documents and information upon which EPA based the selection of the response action.

38. Hazardous substances, including asbestos, TCB, TCP, 2,4,5-T, 2,4-D, 2,4-DCP, 2,6-DCP and tetrachlorodibenzo-p-dioxin (TCDD) were disposed at the site.

39. Section 5 of the ROD (Attachment 1) summarizes the data that support the conclusion that there is a release of hazardous substances, including TCDD, at the Site.

40. Potential pathways through which humans may be exposed to hazardous substances, including TCDD, include ingestion, inhalation, and dermal contact with the dioxin in contaminated soils and sediments at the site, and crystalline TCB (tetrachlorobenzene) and TCB contaminated soils in the central process area.

41. The Site is zoned for industrial/commercial development. The Site is partly in and partly adjacent to Jacksonville which had a population of 29,101 in 1990. Therefore, about 29,101 people are considered to be at risk of contamination. TCDD poses a serious threat to human health, welfare, or the environment for reasons which follow. In humans, at certain concentrations, TCDD causes chloracne, a severe skin lesion that usually occurs on the head and upper body. Unlike common acne, chloracne is more disfiguring and often lasts for years after initial exposure. There is suggestive evidence that TCDD causes liver damage in humans, as indicated by an increase in levels of certain enzymes in the blood, although these effects might also have resulted from the concomitant exposure to the chemicals contaminated with TCDD or to the solvents in which these chemicals are usually dissolved. Animal studies have demonstrated severe liver damage in some species. There is suggestive evidence that TCDD causes loss of appetite, weight loss, and digestive disorders in humans, although these effects might also have resulted from the concomitant exposure to the chemicals contaminated with TCDD or to the solvents in which these chemicals are usually dissolved. Although not demonstrated in humans, in animal studies TCDD produced toxicity of the immune system. This toxicity can result in greater susceptibility to infection. Although not demonstrated in humans, in some animal species exposure to TCDD during pregnancy resulted in malformations in the offspring. Low levels of TCDD have been detected in human milk, but the effects on infants and children are unknown. The human evidence for TCDD alone is inadequate to demonstrate or reflect a carcinogenic hazard, although certain herbicide mixtures containing TCDD as an impurity provide limited evidence of causing cancer in exposed

humans. Based on the positive evidence in animal studies, TCDD is probably carcinogenic in humans.

42. The selected remedy, as described in the ROD for OU2, addresses the remediation of dioxin- and herbicide-contaminated on-site soils and debris, of on-site underground utilities, and of on-site building foundations and curbs. This ROD also addresses the disposal of contiguous soils and debris originally addressed by the Vertac Superfund Site Off-Site Areas ROD, dated September 27, 1990, in which EPA had selected its preferred remedy for soils, sediments, and sludges excavated or to be excavated from contiguous areas adjacent to the site. That 1990 Off-Site Areas ROD had selected on-site incineration as the remedy for the soils to be excavated from the Rocky Branch Creek floodplain, the sediments removed from sewage collection lines, and the sludges removed from the sewage digester. Subsequent to executing the 1990 Off-Site Areas ROD, EPA deferred addressing the disposition of the 1990 Off-Site Areas ROD media so that its disposal would be consistent with the disposal of similar media addressed in the RODs for OU1 and OU2.

43. Finally, Hercules, Inc., a party liable for site response actions and costs, in 1990 had performed a removal action in which it excavated and bagged, and then stored on-site, dioxin-contaminated soils excavated from contiguous residential areas. The 1993 ROD for OU1 expressly deferred the disposition of those bagged soils until EPA selected a remedy for OU2. All of the media addressed in this ROD constitute low level threat media, and the remedy selected takes into account the reasonably anticipated future land use for the site, which is commercial/industrial. A brief description of the components of the OU2 remedy follows:

A. On-Site Soils

44. The remedy selected for OU2 consists of the excavation and consolidation within an on-site hazardous waste landfill that meets the substantive requirements of Subtitle C of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq., of site soils and debris that contain dioxin contamination levels at or above a 5 part per billion (ppb)

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cleanup level. Excavated areas will be backfilled with clean fill, graded, and vegetative cover will be established. Upon completion of the site remediation, data indicate that the average dioxin concentrations will be less than 1 ppb. This is due to the fact that a large percentage of the site acreage contains dioxin levels at or below 1 ppb.

45. The northern portion of the site, which is approximately 100 acres, never had been used for industrial operations and the soils are less than 1 ppb dioxin. The northern portion of the site will be unrestricted and will be available for commercial/industrial redevelopment. The southern portion of the site, which consists of about 93 acres, is where active industrial activities had occurred and the highest concentrations of dioxin contamination are found. Some segments of the southern portion of the site will remain fenced and access will be restricted to on-site maintenance workers where existing landfill areas exist, where the on-site hazardous waste landfill will be located, where an active wastewater treatment plant is located, and possibly where ground water extraction and containment wells are likely to be situated as part of implementing the remedy for ground water. The EPA plans to execute the ROD for the Ground Water Operable Unit (OU3) concurrently with the execution of the ROD for OU2.

46. Such restrictions on the southern portion of the site are necessary to prevent trespass into and the disturbance of the existing waste disposal areas that were created as a result of a 1984 order of the U.S. District Court for the Eastern District of Arkansas, into the wastewater treatment plant, into the hazardous waste landfill, and possibly around any future ground water wells. The 1984 court order imposed the "Vertac Remedy," under which the Vertac plant cooling water pond and the equalization basin were closed and sediments from these units were removed and placed into an excavated area where earlier operators had buried drums of waste. The burial area was capped, a French drain and leachate collection system were installed around the burial areas, and a wastewater treatment plant was constructed to treat water from the French drain and storm water runoff. Ground water monitoring wells were also installed and a ground water monitoring program was initiated.

47. Notwithstanding the limitations of the 1984 Court-ordered Vertac Remedy, the remedy selected in the OU2 ROD provides a feasible means of ensuring that the greatest amount of site acreage be returned to commercial/industrial use upon completion of the remedy by addressing low level threat wastes through consolidating them on-site in a RCRA Subtitle C hazardous waste landfill.

B. Crystalline Tetrachlorobenzene (TCB) and Soils Contaminated with TCB

48. In addition to addressing the dioxin contamination within on-site soils and debris at 5 ppb and above, the remedy selected for OU2 will address crystalline tetrachlorobenzene (TCB) and soils having TCB contamination above a 500 parts per million (ppm) action level. This contamination exists in a small area of the central process area of the site where some time during active site operations a TCB spill had occurred from a rail car parked at an on-site siding. Therefore, the remedy calls for the excavation of crystalline TCB material and TCB-contaminated soils where the TCB concentration exceeds 500 ppm. The EPA's risk assessment has established that soils containing TCB concentrations below 500 ppm do not pose an unacceptable risk to future site workers or occasional bypassers. Both the excavated crystalline TCB material and the TCB-contaminated soils will be taken off-site for treatment by incineration at a compliant RCRA-regulated facility.

C. Bagged Residential Soils from a 1990 Removal Action

49. In 1990, Hercules, Inc., conducted a removal action involving the excavation of dioxin-contaminated soils from contiguous residential areas where the dioxin concentrations were 1 ppb or greater. The 1993 ROD for OUI deferred the treatment decision for those soils, and the soils have been stored on-site in bags until a decision on the remedy for similar on-site OU2 soils would be made. The total volume of bagged soil is estimated at 2,770 cubic yards, and the remedy selected in this ROD calls for the on-site consolidation within the RCRA Subtitle C landfill.

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D. Vertac Off-Site Areas ROD Soils, Debris, and Sludges

50. The remedy selected in the 1990 Off-Site Areas ROD specified the removal of sediments from the active sewer interceptor and the installation of pipe liners in the clean sewer, the filling of the abandoned interceptor with grout, the removal of sludge from the sludge digester in the old wastewater treatment plant, the capping of the sludge drying beds in the old wastewater treatment plant with one foot of clean soil, the draining of an aeration basin in the old wastewater treatment plant, the demolition of the berm and capping of the basin with one foot of clean soil, and the excavation of Rocky Branch Creek flood plain soils that are contaminated with dioxin at 1 part per billion (ppb) and greater. That ROD also selected on-site incineration of those excavated soils, sediments and sludges, and monitoring the Rocky Branch Creek and Bayou Meto fish for dioxin.

51. Under the terms of a Unilateral Administrative Order (UAO) issued to Hercules, Inc., pursuant to CERCLA Section 106, 42 U.S.C. § 9606; in July 1993, Hercules, Inc., has completed the performance of the 1990 ROD's off-site remedial actions except for the excavation of the Rocky Branch Creek flood plain soils and the on-site incineration of sediments removed from sewage collection lines, sludge removed from the digester, and the as-yet unexcavated Rocky Branch Creek soils. The removed sediments and sludge are currently stored on-site. Subsequent to issuing the 1990 Off-Site Areas ROD, EPA determined that the off-site soils and debris are similar in their physical characteristics and in the nature and extent of contamination in that they all constitute low level threat media. For that reason, EPA concluded that it was appropriate to defer the disposal of the off-site soils and debris to ensure that such disposal would be consistent with that of the on-site soils.

52. Both EPA's original Proposed Plan for the Vertac Operable Unit 2, presented to the public on May 25, 1995, and the Supplemental Proposed Plan for OU2, presented to the public on ch 5, 1996, stated that EPA intended to address the disposal of the 1990 Off-Site Areas ROD wastes as a component of the OU2 remedy. In addition, both proposals indicated

that EPA's preferred remedy for those off-site soils and debris was on-site consolidation within the RCRA Subtitle C landfill due to their similarity to OU2 contaminated media. Therefore, the public had two opportunities to comment on this change to the remedy selected in the 1990 Off-Site Areas ROD. During those two comment periods, EPA received no adverse comments to that aspect of the proposals.

53. Therefore, in the absence of adverse comment, EPA has amended the 1990 Off-Site Areas ROD and has incorporated the change in the disposal method for off-site soils and debris within the Vertac OU2 ROD.

54. The major components of that amendment, which are selected in the ROD for OU2, include the consolidation of soils to be excavated from the Rocky Branch Creek flood plain within the on-site RCRA Subtitle C landfill. Consistent with the 1990 Off-Site Areas ROD, all soils with dioxin concentrations greater than or equal to 1 ppb in the Rocky Branch Creek flood plain will still be excavated. In addition, the ROD for OU2 calls for the consolidation of removed sediments from the sewage collection lines within the on-site RCRA Subtitle C landfill. Those sediments have been removed and are currently stored on-site. Finally, the OU2 ROD calls for the consolidation of removed digester sludges within the on-site RCRA Subtitle C landfill. Those dioxin-contaminated sludges have been removed from the abandoned sewage treatment plant sludge digester and are currently stored on-site.

E. Underground On-Site Utility Lines, Building Foundations and Curbed Areas

55. The final component of the remedy selected in the ROD for OU2 relates to on-site utility lines, building foundations, and curbed areas. Under this remedy, the underground utility lines will be cleaned to remove solids and filled with grout. Solids from the lines will be consolidated within the on-site RCRA Subtitle C landfill. Cutoff barriers will be installed around various underground utility lines to prevent shallow water migration and contaminant transport along the lines.

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56. The remedy selected for the building foundations and curbed areas consists of the cleaning through hydroblasting and scarification, after which they will be left in place. Areas with persistent staining will be sealed with epoxy type sealants. Upon completion of the cleaning and scarification, the foundations and curbed areas will be covered with soil adequate to support a vegetative cover and contoured to prevent erosion and ponding.

57. While the OU2 feasibility study (FS) identified five underground storage tanks (USTs) suspected of containing petroleum products, and both the original May 1995 Proposed Plan for OU2 and the March 1996 Supplemental Proposed Plan for OU2 discussed those five USTs, Hercules, Inc., has recently taken action to address those tanks by draining their contents and backfilling the tanks with "flowable" grout containing a mixture of cement, fly ash, and sand. Therefore, the ROD for OU2 does not need to address the tanks.

III. CONCLUSIONS OF LAW AND DETERMINATIONS

58. The Site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

59. Respondents are "persons" as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

60. Each Respondent is a "liable party" as defined in section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is subject to this Order under section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

61. Substances described in Paragraphs 4, 5, 6, 7, 8, 13, 14, 17, 20, and 22 are found at the Site and are "hazardous substances" as defined in section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and further defined at 40 CFR § 302.4.

62. These hazardous substances have been released and threaten to be released from the Site into the air, soil, and groundwater.
63. The past disposal at the site, and the past and present migration of hazardous substances from the Site, each constitute a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
64. The potential for future migration of hazardous substances from the Site poses a threat of a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
65. The release or threat of release of one or more hazardous substances from the facility may present an imminent and substantial endangerment to the public health or welfare or the environment. The EPA's Risk Assessment Guidance for Superfund, (EPA/1-89/002, signed October 13, 1989), and supplements thereto, was used in making this determination of imminent and substantial endangerment. Section 6.0 (SUMMARY OF SITE RISKS) of the ROD sets forth more specifically the basis for this determination of imminent and substantial endangerment.
66. The contamination and endangerment at this site constitute an indivisible injury. The actions required by this Order are necessary to protect the public health, welfare, and the environment.

IV. NOTICE TO THE STATE

67. On December 3, 1996, prior to issuing this Order, EPA notified the State of Arkansas, Department of Pollution Control and Ecology, in writing, that EPA would be issuing this Order.

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V. ORDER

68. Based on the foregoing, Respondents are hereby ordered, jointly and severally, to comply with the following provisions, including but not limited to all attachments to this Order, all documents incorporated by reference into this Order, and all schedules and deadlines in this Order, attached to this Order, or incorporated by reference into this Order.

VI. DEFINITIONS

69. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or its implementing regulations. Whenever terms listed below are used in this Order or in the documents attached to this Order or incorporated by reference into this Order, the following definitions shall apply:

a. "ADPC&E" shall mean the Arkansas Department of Pollution Control and Ecology.

b. "ARARs" shall mean all applicable local, state, and Federal laws and regulations, and all "applicable requirements" or "relevant and appropriate requirements" as those terms are defined at 40 CFR § 300.5 and 42 U.S.C. § 9621(d).

c. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § § 9601 et seq.

d. "Day" shall mean a calendar day unless expressly stated to be a business day or working day. "Working day" or "business day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the end of the next working day.

e. "Deliverable" shall mean any action, activity, task, or submission required to be done by Respondents under this Order.

f. "EPA" shall mean the United States Environmental Protection Agency.

g. "National Contingency Plan" or "NCP" shall mean the National Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, and codified at 40 CFR Part 300, including any amendments thereto.

h. "Operation and Maintenance" or "O&M" shall mean all activities or measures required to maintain the effectiveness of the Response Action (if any are so required by EPA), as defined at 40 CFR § 300.5, and includes, but is not limited to, those activities required under the Operation and Maintenance Plan to be developed by Respondents pursuant to this Order and the Statement of Work, and approved by EPA.

i. "Order" shall mean this document including but not limited to the Statement of Work, and all attachments to this document, all documents incorporated by reference into this document, all schedules and deadlines in this document, attached to this document, or incorporated by reference into this document, and any approved submissions required pursuant to the terms of this document. Such submissions shall be incorporated into and become a part of the Order upon final written approval by EPA of such submissions.

j. "Oversight costs" shall mean all costs both direct and indirect, incurred by EPA or its authorized agents or representatives, subsequent to the effective date of this Order, which costs concern the development of the Remedial Design, the implementation of the Remedial Action, and Operation and Maintenance, including, but not limited to: Costs incurred overseeing work; costs incurred for review of submissions; costs incurred for response work, action verification, inspection, or sampling; costs incurred in enforcement

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activities; costs incurred in cost documentation activities; and all other costs incurred by EPA to ensure proper implementation of this Order.

k. "Paragraph" shall mean a portion of this Order identified by an arabic numeral.

l. "Performance Standards" shall mean those cleanup standards, work standards, standards of control, and other requirements, criteria, or limitations, identified in this Order, including but not limited to, the Record of Decision and the Statement of Work.

m. "Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the part of the Vertac, Inc. Superfund Site known as the Vertac Operable Unit 2, signed on September 17, 1996, by the Regional Administrator, EPA Region 6, and all attachments thereto.

n. "Remedial Action" or "RA" shall mean those activities, except for Operation and Maintenance, to be undertaken by Respondents to implement the final plans and specifications submitted by Respondents pursuant to the Remedial Design Work Plan approved by EPA, including any additional activities required under Sections X, XI, XII, XIII, and XIV of this Order.

o. "Remedial Design" or "RD" shall mean those activities to be undertaken by Respondents to develop the final plans and specifications for the Remedial Action pursuant to the Remedial Design Work Plan.

p. "Response Costs" shall mean all costs, including, but not limited to, direct costs, indirect costs, and accrued interest incurred by the United States, and the State at the direction of EPA, in order to perform or support response actions at the Site. Response costs include, but are not limited to, oversight costs, cleanup costs, enforcement costs, and legal costs.

q. "Section" shall mean a portion of this Order identified by a roman numeral and includes one or more paragraphs.

r. "Site" shall mean the part of the Vertac, Inc. Superfund Site known as the Vertac Onsite Operable Unit 2. The Site consists of approximately 193 acres, bounded by Marshall Road to the east, Hill Road to the south, and the Union Pacific Railroad to the west. The Little Rock Air Force Base occupies land farther to the north. The site (for the purpose of this Order) includes, but is not limited to: All soils contaminated with 2,3,7,8 TCDD (dioxin); crystalline TCB and soils contaminated with TCB; underground utilities; and building foundations and curbed areas. The site is described in the ROD including, but not limited to, Figure 2 in the ROD, which is a map of the Vertac onsite areas that includes the area west of Rocky Branch Creek, which is considered a contiguous area of contamination. In addition to those areas described in the ROD, the site also includes those other portions of the Vertac, Inc., Superfund Site which may be used to do any work under this Order.

s. "Site Stabilization" shall mean those activities to be undertaken by the Respondents to develop a plan and to implement the plan to prevent uncontrolled releases of hazardous substances that are present within contaminated soils and sediments, or underground utilities, foundations and curbs. These "site stabilization" activities are especially crucial during excavation operations to prevent contaminant migration by means of sediment transport during rainy periods.

t. "State" shall mean the State of Arkansas.

u. "Statement of Work" or "SOW" shall mean the statement of work for implementation of the Site Stabilization, Remedial Design, Remedial Action, and Operation and Maintenance at the site, as set forth in Attachment 2 to this Order. The Statement of Work is incorporated into this Order and is an enforceable part of this Order.

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v. "Submission" includes any and all written materials Respondents are required to produce pursuant to this Order, including, but not limited to, correspondence, notifications, plans, reports, specifications, and schedules. A submission is a deliverable.

w. "United States" shall mean the United States of America.

x. "Work" shall mean all activities Respondents are required to perform under this Order, including, but not limited to, Site Stabilization, Remedial Design, Remedial Action, Operation and Maintenance, and any activities required to be undertaken pursuant to Sections VII through XXIV and XXVII of this Order. Work includes, but is not limited to, deliverables.

VII. NOTICE OF INTENT TO COMPLY

70. Respondents shall provide, not later than seven (7) days after receipt of this Order, written notice to EPA's Remedial Project Manager (RPM) stating whether they shall comply with the terms of this Order. If Respondents do not unequivocally commit to perform the work as provided by this Order, they shall be deemed to have violated this Order and to have failed or refused to comply with this Order. Respondents' written notice shall describe, using facts that exist on or prior to the effective date of this Order, any "sufficient cause" defenses asserted by Respondents under Sections 106(b) and 107(c)(3) of CERCLA, 42 U.S.C. § § 9606(b) and 9607(c)(3). The absence of a response by EPA to the notice required by this Paragraph shall not be deemed to be acceptance of Respondents' assertions.

VIII. PARTIES BOUND

71. This Order shall apply to and be binding upon each Respondent identified in Paragraphs 3, 6, 9, 11, 12, 15, 16, 18, 19 and 26 (Hercules, Vertac and Uniroyal), their directors, officers, employees, agents, successors, and assigns. Respondents are jointly and severally responsible for carrying out all activities required by this Order. No change in the

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ownership, corporate status, or other control of any Respondents shall alter any of the Respondents' responsibilities under this Order.

72. Respondents shall provide a copy of this Order to any prospective owners or successors before a controlling interest in Respondents' assets, property rights, or stock are transferred to the prospective owner or successor. Respondents shall provide a copy of this Order to each contractor, sub-contractor, laboratory, or consultant retained to perform any work under this Order, within seven (7) days after the effective date of this Order or on the date such services are retained, whichever date occurs later. Respondents shall also provide a copy of this Order to each person representing any Respondent with respect to the site or the work and shall condition all contracts and subcontracts entered into hereunder upon performance of the work in conformity with the terms of this Order. With regard to the activities undertaken pursuant to this Order, each contractor and subcontractor shall be deemed to be related by contract to the Respondents within the meaning of section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). Notwithstanding the terms of any contract, Respondents are responsible for compliance with this Order and for ensuring that their contractors, subcontractors and agents comply with this Order, and perform any Work in accordance with this Order.

73. Within fifteen (15) days after the effective date of this Order, each Respondent who owns real property comprising all or part of the site shall record a copy or copies of this Order in the Pulaski County Circuit Clerk's Office, and in any other appropriate governmental office where land ownership and transfer records are filed or recorded, and shall ensure that the recording of this Order is indexed to the titles of each and every property at the site so as to provide notice to third parties of the issuance and terms of this Order with respect to those properties. Respondents shall, within thirty (30) days after the effective date of this Order, send notice of such recording and indexing to EPA.

74. Not later than sixty (60) days prior to any transfer of any real property interest in any property included within the site, Respondents shall submit a true and correct copy of the

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transfer documents to EPA, and shall identify the transferee by name, principal business address and effective date of the transfer.

IX. WORK TO BE PERFORMED

75. Respondents shall cooperate with EPA in providing information regarding the work to the public. As requested by EPA, Respondents shall participate in the preparation of such information for distribution to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the site.

76. All aspects of the work to be performed by Respondents pursuant to Sections IX (Work To Be Performed), XI (EPA Periodic Review), XII (Additional Response Actions), and XVI (Quality Assurance, Sampling and Data Analysis) of this Order shall be under the direction and supervision of the Supervising Contractor. The Supervising Contractor may assume the role of Respondents' Project Manager, Remedial Designer, Remedial Action Contractor (RA Contractor), and Remedial Action Quality Assurance Official (RA QAO). However, the Supervising Contractor shall not assume both the role of the RA Contractor and the RA QAO. The selection of the Supervising Contractor shall be subject to disapproval by EPA. Within ten (10) days after the effective date of this Order, Respondents shall notify EPA in writing of the name, title, and qualifications of the Supervising Contractor. The EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Respondents propose to change a Supervising Contractor, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new Supervising Contractor performs, directs, or supervises any work under this Order.

77. If EPA disapproves a proposed Supervising Contractor, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed contractors, including the name, title, and qualifications of each contractor, that would be acceptable to them within fifteen (15) days of receipt of EPA's disapproval of the contractor previously proposed. The EPA will provide written notice of the names of any proposed contractors that it disapproves

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and an authorization to proceed with respect to any of the other proposed contractors. Respondents may select any contractor from that list that is not disapproved and shall notify EPA of the name of the contractor selected as Supervising Contractor within fifteen (15) days of EPA's authorization to proceed.

78. All aspects of the work to be performed by Respondents pursuant to this Order shall be under the direction and supervision of a qualified Project Manager the selection of which shall be subject to disapproval by EPA. Within ten (10) days after the effective date of this Order, Respondents shall notify EPA in writing of the name, address, telephone number, and qualifications of the Project Manager, including primary support entities and staff, proposed to be used in carrying out work under this Order. The EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter Respondents propose to change a Project Manager, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new Project Manager performs, directs, or supervises any work under this Order.

79. If EPA disapproves a proposed Project Manager, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed Project Managers, including primary support entities and staff, and including the address, telephone number, and the qualifications of each proposed Project Manager, that would be acceptable to Respondents within fifteen (15) days of receipt of EPA's disapproval of the person previously proposed as Project Manager. The EPA will provide written notice of the names of any proposed Project Manager(s) that it disapproves and an authorization to proceed with respect to any of the other proposed Project Managers. Respondents may select any Project Manager from that list who is not disapproved and shall notify EPA of the name of the Project Manager selected as Project Manager within fifteen (15) days of EPA's authorization to proceed.

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A. Site Stabilization

80. Within twenty-one (21) days after the effective date of this Order, Respondents shall submit to EPA a plan for Site Stabilization. This plan shall include provisions to prevent uncontrolled releases of hazardous substances that are present within contaminated soils and sediments, or underground utilities, foundations and curbs; a health and safety plan; and reports of the activities covered by this task to EPA and the State on a monthly basis. This plan could be similar in nature to a Spill Prevention Control and Countermeasures (SPCC) plan.

81. Within ten (10) days after approval of the Site Stabilization plan, Respondents shall implement the plan.

B. Remedial Design

82. Within twenty (20) days after EPA's issuance of an authorization to proceed with respect to the Supervising Contractor and the Project Manager, Respondents shall submit to EPA a work plan for the Remedial Design at the Site (Remedial Design Work Plan or RD Work Plan) for review and approval. The RD Work Plan shall include a step-by-step plan for completing the remedial design for the remedy described in the ROD and for attaining and maintaining all requirements identified in the ROD and in all other Performance Standards. The RD Work Plan must describe, in detail, deliverables Respondents shall complete during the remedial design phase, and a schedule for completing deliverables in the RD Work Plan. The major deliverables described in the RD Work Plan shall include, but shall not be limited to, those deliverables described in Section V of the SOW, and shall include, but shall not be limited to, the following: (1) Health and Safety Plan; (2) Remedial Design Sampling and Analysis Plan; (3) Remedial Design Quality Assurance Project Plan (RDQAPP); (4) Community Relations Plan; (5) Remedial Design Contingency Plan; (6) a proposed Remedial Design Schedule; (7) Final Design; (8) Permitting Requirements Plan; and (9) any other appropriate components. Respondents shall also, within fifteen (15) days after EPA's issuance of an authorization to proceed with respect to the Supervising Contractor and the Project

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Manager, submit to EPA for review, a Site Health and Safety Plan for field design activities. The Site Health and Safety Plan shall conform to the applicable Occupational Safety and Health Administration and EPA requirements, including, but not limited to, those described at 54 Fed. Reg. 9294.

83. The RD Work Plan and all aspects of Remedial Design shall be consistent with, and shall provide for implementing the Statement of Work, and shall conform to EPA's "Superfund Remedial Design and Remedial Action Guidance," OSWER Directive 9355.0-4A. Upon approval by EPA, the RD Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

84. Upon approval of the RD Work Plan by EPA, Respondents shall implement the RD Work Plan according to the schedule in the approved RD Work Plan. Any violation of the approved RD Work Plan for OU2 shall be a violation of this Order. Unless otherwise directed by EPA, Respondents shall not perform further work at the Site pursuant to this Order prior to EPA's written approval of the RD Work Plan for OU2.

85. Within sixty (60) days after EPA approves the RD Work Plan, Respondents shall submit the Final (100%) design. The Final Design submission shall include, but shall not be limited to, those deliverables described in Section V of the SOW, and shall include, but shall not be limited to, the following: (1) Final plans and specifications; (2) final design report; (3) the Field Sampling Plan (directed at measuring progress towards meeting Performance Standards); (4) health and safety plan for Remedial Action activities; (5) an Operation and Maintenance Plan; (6) request for proposals; (7) the Construction Quality Assurance Plan (CQAP); (8) Remedial Action Release Prevention/Contingency Plan; (9) final construction schedule; (10) final permitting plan; (11) access plan; and (12), provisions for community relations activities. The CQAP shall describe the approach to quality assurance to be taken by Respondents during construction activities at the Site and shall specify a RA QAO, independent of any construction contractor, to conduct a quality assurance program during the construction phase of the project. Respondents shall notify EPA in writing of the name, title,

and qualifications of any RA QAO proposed to be used in carrying out work under this Order. The EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Respondents propose to change a RA QAO, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new RA QAO performs, directs, or supervises any Work under this Order. If EPA disapproves of any proposed RA QAO, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed RA QAOs including the name, title, and qualifications of each proposed RA QAO, that would be acceptable to Respondents, within five (5) days of receipt of EPA's disapproval of the RA QAO previously proposed. The EPA will provide written notice of the names of any proposed RA QAO that it disapproves and an authorization to proceed with respect to any of the other proposed RA QAO. Respondents may select any RA QAO from that list who is not disapproved and shall notify EPA of the name of the person selected as RA QAO within fifteen (15) days of EPA's authorization to proceed.

86. Upon EPA approval, the Final Design is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

C. Remedial Action

87. Not later than thirty (30) days after EPA approves all deliverables required as part of the Final Design, Respondents shall submit a Remedial Action Work Plan (RA Work Plan) to EPA for review and approval. The RA Work Plan shall be developed in accordance with the ROD, any Explanations of Significant Differences (ESDs) made by EPA pursuant to 40 CFR § 300.435, any amendments to the ROD, and the attached Statement of Work, and shall be consistent with the Final Design as approved by EPA. The RA Work Plan shall include, but shall not be limited to, those deliverables described in Section V.B of the SOW, and shall include, but shall not be limited to, methodologies, plans and schedules for completion of the following: (1) Selection of the remedial action contractor; (2) plans for the completion of the Remedial Action including, but not limited to, the execution of the construction contract; (3) Remedial Action schedule; (4) identification of and satisfactory compliance with applicable

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permitting requirements; (5) identification of the Remedial Action Project Team; (6) a description of the roles, relationships, and assignment of responsibilities among the project team; (7) a Transportation and Disposal Plan; (8) strategies and schedules for implementation of the Remedial Action Sampling and Analysis Plan, Health and Safety Plan, Operation and Maintenance Plan, CQAP, and Remedial Action Release Prevention/Contingency Plan; (9) Annual Remedial Action Reports; (10) Pre-Final and Pre-Certification Inspections; (11) Final Remedial Action Report; (12) procedures for certification of Remedial Action; and, (13) provisions establishing procedures for the development and submission of draft construction reports. The RA Work Plan shall also include a schedule for implementing all remedial action deliverables identified in the Statement of Work and shall identify the initial formulation of Respondent's Remedial Action Project Team (including the Supervising Contractor). Respondents shall also submit to EPA for review, not later than fifteen (15) days after EPA approves all deliverables required as part of the Final Design, a Health and Safety Plan for field activities required by the RA Work Plan. The Health and Safety Plan for field activities shall conform to applicable Occupational Safety and Health Administration and EPA requirements, including, but not limited to, the regulations at 54 Fed. Reg. 9294.

88. Upon approval by EPA, the RA Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

89. Upon approval of the RA Work Plan for CU2 by EPA, Respondents shall implement the RA Work Plan according to the schedules in the RA Work Plan. Unless otherwise directed by EPA, in writing, Respondents shall not commence remedial action at the site under this Order prior to approval of the RA Work Plan.

90. If Respondents seek to retain a construction contractor to assist in the performance of the Remedial Action, then Respondents shall submit a copy of the contractor solicitation documents to EPA not later than five (5) days after publishing the solicitation documents.

91. Within ten (10) days after EPA approves the RA Work Plan, Respondents shall notify EPA in writing of the name, title, and qualifications of any construction contractor proposed to be used in carrying out work under this Order. The EPA will issue a notice of disapproval or an authorization to proceed. If, at any time thereafter, Respondents propose to change a construction contractor or to add a new construction contractor, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new construction contractor performs, directs, or supervises any work under this Order. If EPA disapproves of any proposed contractor, including, but not limited to, the Supervising Contractor, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed contractors, including the qualifications of each proposed contractor, that would be acceptable to Respondents, within five (5) days of receipt of EPA's disapproval of the contractor previously proposed. The EPA will provide written notice of the names of any proposed contractors that it disapproves and an authorization to proceed with respect to any of the other proposed contractors. Respondents may select any contractor from that list who is not disapproved and shall notify EPA of the name of the contractor selected as contractor within twenty-one (21) days of EPA's authorization to proceed.

92. The work performed by Respondents pursuant to this Order shall, at a minimum, achieve the Performance Standards specified in the Order, including, but not limited to, the Record of Decision and the Statement of Work.

93. Notwithstanding any action by EPA, Respondents remain fully responsible for achievement of the Performance Standards. Nothing in this Order, or in EPA's approval of the Statement of Work, or in the Remedial Design or Remedial Action Work Plans, or approval of any other submission, shall be deemed to constitute a warranty or representation of any kind by EPA that full performance of the Remedial Design or Remedial Action, or any of the other Work, will achieve the Performance Standards. Respondents' compliance with such approved documents does not foreclose EPA from seeking additional work to achieve the applicable Performance Standards.

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94. Respondents shall, prior to any off-site shipment of hazardous substances from the site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's RPM of such shipment of hazardous substances. However, the notification of shipments shall not apply to any off-site shipments when the total volume of all shipments from the Site to the State will not exceed ten (10) cubic yards.

- a. The notification shall be in writing, and shall include the following information, where available: (1) The name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondents shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.
- b. The identity of the receiving facility and state shall be determined by Respondents following the award of the contract for Remedial Action construction. Respondents shall provide all relevant information, including information under the categories noted in Paragraph 94 a. above, on the off-site shipments as soon as practicable after the award of the contract and before the hazardous substances are actually shipped.

95. Within thirty (30) days after Respondents conclude that the Remedial Action has been fully performed, Respondents shall so notify EPA and shall schedule and conduct a pre-certification inspection to be attended by Respondents and EPA. The pre-certification inspection shall be followed by a written report, the Final Remedial Action Report, to be submitted within thirty (30) days of the inspection by a registered professional engineer and Respondents' Project Manager certifying that the Remedial Action has been completed in full satisfaction of the requirements of this Order. The written report shall include a construction

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chronology, a list of construction modifications, documentation substantiating that the remedy is functioning properly and is performing as designed, and as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by an authorized corporate officer of each Respondent:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

For the purpose of this certification, an "authorized corporate officer" means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar decision-making functions for the corporation.

96. If, after completion of the pre-certification inspection and receipt and review of the written report, EPA determines that the Remedial Action or any portion thereof has not been completed in accordance with this Order, EPA shall notify Respondents in writing of the activities that must be undertaken to complete the Remedial Action and shall set forth in the notice a schedule for performance of such activities. Respondents shall perform all activities described in the notice in accordance with the specifications and schedules established therein.

97. If EPA concludes, following the initial or any subsequent certification of completion by Respondents that the Remedial Action has been fully performed in accordance with this Order, EPA may notify Respondents that the Remedial Action has been fully performed. The EPA's notification shall be based on present knowledge and Respondents' certification to EPA, and shall not limit EPA's right to perform periodic reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the Site, in accordance with CERCLA Sections 104, 106, or 107, 42 U.S.C. §§ 9604, 9606, or 9607.

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98. Within thirty (30) days after Respondents conclude that all phases of the work have been fully performed, that the Performance Standards have been attained, and that all Operation and Maintenance activities have been completed, Respondents shall submit to EPA a written report by a registered professional engineer certifying that the work has been completed in full satisfaction of the requirements of this Order. The EPA shall require such additional activities as may be necessary to complete the work or EPA may, based upon present knowledge and Respondents' certification to EPA, issue written notification to Respondents that the work has been completed, as appropriate. The EPA's notification shall not limit EPA's right to perform periodic reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the Site, in accordance with CERCLA Sections 104, 106, or 107, 42 U.S.C. §§ 9604, 9606, or 9607.

X. FAILURE TO ATTAIN PERFORMANCE STANDARDS

99. In the event that EPA determines that additional response activities are necessary to meet Performance Standards, EPA may notify Respondents that additional response actions are necessary.

100. Unless otherwise stated by EPA, within thirty (30) days of receipt of notice from EPA that additional response activities are necessary to meet any Performance Standards, Respondents shall submit for approval by EPA a Work Plan for the additional response activities. The Work Plan shall conform to the requirements of sections IX, XVI, and XVII of this Order. Upon EPA's approval of the plan pursuant to Section XIV, Respondents shall implement the plan for additional response activities in accordance with the provisions and schedule contained therein.

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XI. EPA PERIODIC REVIEW

101. Under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and any applicable regulations, EPA may review the site to ensure that the work performed pursuant to this Order adequately protects human health and the environment. Until such time as EPA certifies completion of the Work, Respondents shall conduct the requisite studies, investigations, or other response actions as determined necessary by EPA in order to permit EPA to conduct the review under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c). As a result of any review performed under this Paragraph, Respondents may be required to perform additional work or to modify work previously performed.

XII. ADDITIONAL RESPONSE ACTIONS

102. The EPA may determine that in addition to the work identified in this Order and attachments to this Order, additional response activities may be necessary to protect human health and the environment. If EPA determines that additional response activities are necessary, EPA may require the Respondents to undertake any additional response activities in accordance with any applicable laws.

103. Respondents shall notify EPA of their intent to perform such additional response activities within seven (7) days after receipt of EPA's request for additional response activities. Failure of Respondents to notify EPA of their intent to perform additional response activities shall be a violation of this Order. Not later than thirty (30) days after receiving EPA's notice that additional response activities are required pursuant to this Section, Respondents shall submit to EPA for review and approval a Work Plan for the response activities. Upon approval by EPA, the Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order. Upon approval of the Work Plan by EPA, Respondents shall implement the Work plan according to the standards, specifications and schedule in the approved Work Plan.

XIII. ENDANGERMENT AND EMERGENCY RESPONSE

104. In the event of any action or occurrence during the performance of the work that causes or threatens to cause a release of a hazardous substance or which may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action to prevent, abate, or minimize the threat, and shall immediately notify EPA's RPM or, if the RPM is unavailable, EPA's Alternate RPM. If neither of these persons is available, Respondents shall notify the EPA Response and Prevention Branch, Region 6, at (214) 665-2222. Respondents shall take such action in consultation with EPA's RPM and in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan and the Contingency Plan. In the event that Respondents fail to take appropriate response action as required by this Section, and EPA takes that action instead, Respondents shall reimburse EPA for all costs of the response action not inconsistent with the NCP. Respondents shall pay the response costs in the manner described in Section XXIV of this Order, within thirty (30) days of Respondents' receipt of demand for payment and which demand will be accompanied by whatever EPA cost documentation EPA determines, at that time, to be the equivalent of a Cost Documentation Management System (CDMS) report or a Superfund Cost Recovery Enhancement System (SCORES) report of the costs incurred.

105. Nothing in the preceding Paragraph or any other part of this Order shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action to protect human health and the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances on, at, or from the site.

XIV. EPA REVIEW OF SUBMISSIONS

106. In all instances in which this Order requires a submission of any kind (other than monthly progress reports described in Section XV (Progress Reports) (Paragraph 112) to EPA,

the submission must be accompanied by the following certification signed by an authorized corporate officer of each Respondent:

"I certify that the information contained in or accompanying this submission is true, accurate and complete. As to those identified portions of this submission for which I cannot personally verify the truth and accuracy, I certify as the company official having supervisory responsibility for the person(s) who, acting under my direct instructions, made the verification, that this information is true, accurate, and complete."

107. For the purpose of this certification, an "authorized corporate officer" means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar decision-making functions for the corporation.

108. After review of any submission, EPA may: (a) Approve the submission; (b) approve the submission with modifications required by EPA, which modifications may include, but may not be limited to, written passages prepared by EPA, which passages Respondents shall incorporate, word-for-word, into the text of the submission as directed by EPA in writing, and which modifications may also include, but may not be limited to, EPA-required deletions of certain passages contained in the submission, which deletions Respondents shall make, word-for-word, as directed by EPA in writing; (c) disapprove the submission and direct Respondents to re-submit the submission after incorporating EPA's modifications, which modifications may include, but may not be limited to, written passages prepared by EPA, which passages Respondents shall incorporate, word-for-word, into the text of the submission as directed by EPA in writing, and which modifications may also include, but may not be limited to, EPA-required deletions of certain passages contained in the submission, which deletions Respondents shall make, word-for-word, as directed by EPA in writing; or (d), disapprove the submission and assume responsibility for performing all or any part of the response action. As used in this Order, the terms "approval by EPA," "EPA approval," or a similar term, mean the action described in (a) or (b) of this Paragraph.

109. In the event of approval or approval with modifications by EPA, Respondents shall proceed to take any action required by the submission, as approved or modified by EPA.

110. Upon receipt of a notice of disapproval or a request for a modification, Respondents shall, within fourteen (14) days, or other time as specified by EPA in its notice of disapproval or request for modification, correct the deficiencies and resubmit the submission for approval. Notwithstanding the notice of disapproval, or approval with modifications, Respondents shall proceed, at the written direction of EPA, to take any action required by any non-deficient portion of the submission.

111. If any submission by Respondents is not approved by EPA, Respondents shall be in violation of this Order.

XV. PROGRESS REPORTS

112. In addition to the other deliverables set forth in this Order, Respondents shall provide monthly progress reports to EPA with respect to actions and activities undertaken pursuant to this Order. The progress reports shall be submitted on or before the 10th day of each month following the effective date of this Order. Respondents' obligation to submit progress reports continues until EPA gives Respondents written notice under Paragraph 97. At a minimum these progress reports shall: (1) describe the actions that have been taken to comply with this Order during the prior month; (2) include all results of sampling and tests and all other data received by Respondents and not previously submitted to EPA; (3) describe all work planned for the next three months with schedules relating such work to the overall project schedule for RD/RA completion; and, (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

XVI. QUALITY ASSURANCE, SAMPLING AND DATA ANALYSIS

113. Respondents shall use the quality assurance, quality control, and chain of custody procedures described in the "EPA NEIC Policies and Procedures Manual," May 1978, revised May 1986, EPA-330/9-78-001-R, EPA's "Guidelines and Specifications for Preparing Quality Assurance Program Documentation," June 1, 1987, EPA's "Data Quality Objective Guidance," (EPA/540/G87/003 and 004) and any amendments to these documents, while conducting all sample collection and analysis activities required herein, including, but not limited to, all sample collection and analysis activities required herein by any plan. The EPA reserves the right to require Respondents to use EPA's "Data Quality Objectives Process for Superfund," EPA document number 9355.9-01/EPA540-R-93-071, which document has been released in a pre-publication format as an Interim Final Draft in September 1993, and which document is intended as a replacement for 9355.0-7B/EPA 540/G-87/003. To provide quality assurance and maintain quality control, Respondents shall:

- a. Use only laboratories that have a documented Quality Assurance Program that complies with EPA guidance document QAMS-005/80.
- b. Ensure that the laboratory used by the Respondents for analyses performs according to a method or methods deemed satisfactory to EPA and submits all protocols to be used for analyses to EPA at least thirty (30) days before beginning analysis.
- c. Ensure that EPA personnel and EPA's authorized representatives are allowed access, during all business hours, to the laboratory and personnel utilized by the Respondents for analyses.

114. Respondents shall notify EPA not less than fourteen (14) days in advance of any sample collection activity. At the request of EPA, Respondents shall allow split or duplicate samples to be taken by EPA, or its authorized representatives, of any samples collected by Respondents with regard to the Site or pursuant to the implementation of this Order. In addition, EPA shall have the right to take any additional samples that EPA deems necessary.

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XVII. COMPLIANCE WITH APPLICABLE LAWS

115. All activities by Respondents pursuant to this Order shall be performed in accordance with the requirements of all Federal and state laws and regulations. The EPA has determined that the activities contemplated by this Order are consistent with the NCP if they are performed in compliance with this Order.

116. Except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, 40 CFR § 300.400(e), no permit shall be required for any portion of the Work conducted entirely on-site. The term "on-site" means the areal extent of contamination and all suitable areas in close proximity to the contamination used for implementation of the response action. Where any portion of the work requires a Federal or state permit or approval, Respondents shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits and approvals.

117. This Order is not, and shall not be construed to be, a permit issued pursuant to any Federal or state statute or regulation.

118. All materials removed from the Site shall be disposed or treated at a facility approved by EPA's RPM and in accordance with § 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and with the final rule entitled "Procedures for Planning and Implementing Off-Site Response Actions, 58 Fed Reg. 49215 (September 22, 1993), and codified at Section 300.440 of the NCP, 40 CFR § 300.440, and with all other applicable Federal, state, and local requirements.

XVIII. REMEDIAL PROJECT MANAGER

119. Unless otherwise specifically provided elsewhere in this Order, all communications, including, but not limited to, all submissions, whether written or oral, from Respondents to EPA shall be directed to EPA's RPM or Alternate RPM. Respondents shall submit to EPA

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four copies of all submissions, including, but not limited to, plans, reports and other correspondence, which are developed pursuant to this Order, and shall send these documents by certified mail or express mail, return receipt requested.

EPA's RPM is:

Philip H. Allen, P.E.
Remedial Project Manager
Arkansas/Oklahoma/Texas Superfund Branch (6SF-AO)
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-8516

EPA's Alternate RPM is:

Wren Stenger
Section Chief
Arkansas/Louisiana/Texas Superfund Enforcement Branch (6SF-AO)
U.S. Environmental Protection Agency Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-6583

Whenever, under this Order, Respondents are required to notify the EPA Region 6 Response and Prevention Branch, they shall do so by calling the Environmental Emergency Response Hot Line at (214) 665-2222.

120. The EPA has the unreviewable right to change its RPM or Alternate RPM. If EPA changes its RPM or Alternate RPM, EPA will inform Respondents in writing of the name, address, and telephone number of the new RPM or Alternate RPM.

121. The EPA's RPM and Alternate RPM shall have the authority lawfully vested in a RPM and On-Scene Coordinator (OSC) by the NCP, 40 CFR Part 300. The EPA's RPM or Alternate RPM shall have authority, consistent with the NCP, to halt any work required by this Order, and to take any necessary response action. The EPA's RPM and Alternate RPM shall have the authority to call for meetings with representatives of the Respondents and their Project Manager, which meetings the representatives of the Respondents, along with their

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Project Manager, shall attend. The EPA's RPM and Alternate RPM may call for such meetings as EPA's RPM or Alternate RPM determine necessary to discuss the Respondents' performance of the requirements of this Order.

XIX. ACCESS TO SITE NOT OWNED BY RESPONDENTS

122. If the site or other property subject to or affected by the cleanup is owned in whole or in part by parties other than those bound by this Order, Respondents shall obtain or use their best efforts to obtain site access from the owner within sixty (60) days of the effective date of this Order. Such agreements shall provide access for EPA, its contractors and oversight officials, the State and its contractors, and Respondents or Respondents' authorized representatives and contractors, and such agreements shall specify that Respondents are not EPA's representative with respect to liability associated with site activities. Respondents shall save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action or other costs incurred by the United States including, but not limited to, attorneys' fees and other expenses of litigation and settlement arising from or on account of acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on Respondents' behalf or under Respondents' control, in carrying out activities pursuant to this Order, including any claims arising from any designation of Respondents as EPA's authorized representative under CERCLA Section 104(e), 42 U.S.C. § 9604(e). Copies of such agreements shall be provided to EPA prior to Respondents' initiation of field activities. Respondents' best efforts to obtain access shall include providing reasonable compensation to any off-site property owner. If access is not obtained within the time referenced above, Respondents shall immediately notify EPA of their failure to obtain access.

123. Subject to the United States' non-reviewable discretion, EPA may use its legal authorities to obtain access for the Respondents, may perform those response actions with EPA contractors at the property in question, or may terminate the Order if Respondents cannot obtain access agreements. If EPA performs those tasks or activities with contractors

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and does not terminate the Order, Respondents shall perform all other activities not requiring access to that property, and shall reimburse EPA, pursuant to Section XXIV of this Order, for all costs incurred in performing such activities. Respondents shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables. Respondents shall reimburse EPA, pursuant to Section XXIV of this Order, for all response costs (including attorney fees) incurred by the United States to obtain access for Respondents.

XX. SITE ACCESS AND DATA/DOCUMENT AVAILABILITY

124. Respondents shall allow EPA and its authorized representatives and contractors to enter and freely move about all property at the site and off-site areas subject to or affected by the work under this Order or where documents required to be prepared or maintained by this Order are located, for the purposes of inspecting conditions, activities, the results of activities, records, operating logs, and contracts related to the site or Respondents and their representatives or contractors pursuant to this Order; reviewing the progress of the Respondents in carrying out the terms of this Order; conducting tests as EPA or its authorized representatives or contractors deem necessary; using a camera, sound recording device or other documentary type equipment; and, verifying the data submitted to EPA by Respondents. Respondents shall allow EPA and its authorized representatives to enter the site, to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to work undertaken in carrying out this Order. Nothing herein shall be interpreted as limiting or affecting EPA's right of entry or inspection authority under Federal law.

125. Respondents may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this Order under 40 CFR § 2.203, provided such claim is not inconsistent with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), or other provisions of law. This claim shall be asserted in the manner described by 40 CFR § 2.203(b) and substantiated by Respondents at the time the claim is made. Information determined to be confidential by EPA will be given the protection

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specified in 40 CFR Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the State without further notice to the Respondents. Respondents shall not assert confidentiality claims with respect to any data related to Site conditions, sampling, or monitoring.

126. Respondents shall maintain, for the period during which this Order is in effect, an index of documents submitted to EPA pursuant to this Order which Respondents claim contain confidential business information. The index shall contain, for each document, the date, author, addressee, and subject of the document. Upon written request from EPA, Respondents shall submit a copy of the index to EPA.

XXI. RECORD PRESERVATION

127. Respondents shall provide to EPA upon request, copies of all documents and information within their possession and/or control or that of their contractors or agents, relating to activities at the site or to the implementation of this Order, including but not limited to sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the work. Respondents shall also make available to EPA for purposes of investigation, information gathering, or testimony, Respondents' employees, agents, or representatives with knowledge of facts concerning the performance of the work.

128. Until ten (10) years after EPA provides notice pursuant to Paragraph 97, each Respondent shall preserve and retain all records, documents, and information in its possession or control, including the records, documents, and information in the possession or control of its contractors and agents on and after the effective date of this Order that relates in any manner to the site. At the conclusion of this retention period, Respondents shall notify the EPA at least ninety (90) calendar days prior to the destruction of any such records, documents, or information, and upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

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129. Until ten (10) years after EPA provides notice pursuant to Paragraph 97 of this Order, Respondents shall preserve, and shall instruct their contractors and agents to preserve, all records, documents, and information relating to the performance of the Work. At the conclusion of this retention period, Respondents shall notify the EPA at least ninety (90) calendar days prior to the destruction of any such records, documents, or information, and, upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

130. Within 15 days after the effective date of this Order, Respondents shall submit a written certification to EPA that they have not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents, or information relating to their potential liability with regard to the site since notification of potential liability by the EPA or the State. Respondents shall not dispose of any such records, documents, or information without prior written approval by EPA. Upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

XXII. DELAY IN PERFORMANCE

131. Any delay in performance of this Order that, in EPA's judgment, is not properly justified by Respondents under the terms of this Section shall be considered a violation of this Order. Any delay in performance of this Order shall not affect Respondents' obligations to perform fully all obligations under the terms and conditions of this Order.

132. Respondents shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to EPA's RPM or Alternate RPM within forty-eight (48) hours after Respondents first knew or should have known that a delay might occur. Respondents shall adopt all reasonable measures to avoid or minimize any such delay. Within five (5) business days after notifying EPA by telephone, Respondents shall submit to EPA written notification fully describing the nature of the delay, any justification for delay, any reason why Respondents should not be held strictly

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accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that shall be taken to mitigate the effect of the delay. Increased costs or expenses associated with implementation of the activities called for in this Order are not a justification for any delay in performance.

XXIII. ASSURANCE OF ABILITY TO COMPLETE WORK

133. Respondents shall demonstrate their ability to complete the work required by this Order and to pay all claims that arise from the performance of the work by obtaining and presenting to EPA within thirty (30) days after approval of the RD Work Plan, one of the following: (1) a performance bond; (2) a letter of credit; (3) a guarantee by a third party; or, (4) internal financial information to allow EPA to determine that Respondents have sufficient assets available to perform the work. Respondents shall demonstrate financial assurance in an amount no less than \$13,800,000, which is the estimate of the present worth of the Remedial Design, Remedial Action, and Operation and Maintenance contained in the Record of Decision for the site. If Respondents seek to demonstrate ability to complete the work by means of internal financial information, or by guarantee of a third party, they shall resubmit such information annually, on the anniversary of the effective date of this Order. If EPA determines that such financial information is inadequate, Respondents shall, within thirty (30) days after receipt of EPA's notice of determination, obtain and present to EPA for approval one of the other three forms of financial assurance listed above.

134. At least seven (7) days prior to commencing any work at the site pursuant to this Order, Respondents shall submit to EPA a certification that Respondents or their contractors and subcontractors have adequate insurance coverage or have indemnification for liabilities for injuries or damages to persons or property which may result from the activities to be conducted by or on behalf of Respondents pursuant to this Order. Respondents shall ensure that such insurance or indemnification is maintained for the duration of the work required by this Order.

XXIV. REIMBURSEMENT OF RESPONSE COSTS

135. Respondents shall reimburse EPA, upon written demand, for all response costs incurred by the United States in overseeing Respondents' implementation of the requirements of this Order or response costs incurred by EPA in performing any response action which Respondents fail to perform as required by this Order. The EPA may submit to Respondents, from time to time, a demand for payment and an accounting of all of, or some of, the response costs incurred by the United States with respect to this Order. The EPA's Cost Documentation Management System (CDMS) report or a Superfund Cost Recovery Enhancement System (SCORES) report of the costs incurred, or whatever documents EPA considers, at that time, to be the equivalent, shall serve as the sole accounting of all response costs and as the sole basis for EPA's payment demands.

136. Respondents shall, within thirty (30) days of receipt of each EPA accounting and demand for payment, remit, to EPA, a certified or cashier's check for the amount of those response costs. If Respondents' payment is not received by EPA within thirty (30) days of Respondents' receipt of EPA's demand for payment, Respondents shall pay interest on those payments demanded by EPA. Interest shall accrue from the date that EPA's written demand for payment of a specified amount is received by Respondents. The interest rate shall be the rate established by the Department of the Treasury pursuant to 31 U.S.C. § 3717 and 4 C.F.R. § 102.13.

137. Respondents shall make checks payable to the Hazardous Substances Superfund and shall include the name of the Site, the Site identification number, which is 04, the account number, which is CERCLA 6-01-97, and the title of this Order. Checks shall be forwarded to:

U.S. Environmental Protection Agency
Superfund Accounting
Vertac Inc. Superfund Site 04 Region 6
PO Box 360582M
Pittsburgh, Pennsylvania 15251

138. Respondents shall submit copies of each transmittal letter and check to the EPA's RPM.

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XXV. UNITED STATES NOT LIABLE

139. The United States, by issuance of this Order, assumes no liability for any injuries or damages to persons or property resulting from acts or omissions by Respondents, or their directors, officers, employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order. Neither EPA nor the United States may be deemed to be a party to any contract entered into by Respondents or their directors, officers, employees, agents, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order.

140. Respondents shall save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action or other costs incurred by the United States including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from or on account of acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and any person acting on their behalf or under their control, in carrying out any actions or activities pursuant to this Order, including any claims arising from any designation of any Respondent, or Respondents, as EPA's authorized representative under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e).

XXVI. ENFORCEMENT AND RESERVATIONS

141. The EPA reserves the right to bring an action against Respondents under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Order and not reimbursed by Respondents. This reservation shall include, but not be limited to, past costs, direct costs, indirect costs, enforcement costs incurred by any agency of the United States, including the U.S. Department of Justice, the

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costs of oversight, the costs of compiling the cost documentation to support oversight cost demand, as well as accrued interest as provided in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

142. Notwithstanding any other provision of this Order, at any time during the response action, EPA may perform its own studies, complete the response action (or any portion of the response action) as provided in CERCLA and the NCP, and seek reimbursement from Respondents for its costs, or seek any other appropriate relief.

143. Nothing in this Order shall preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, and/or additional remedial or removal actions as EPA may deem necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. § 9606(a), *et seq.*, or any other applicable law. Respondents shall be jointly and severally liable under CERCLA Section 107(a), 42 U.S.C. § 9607(a), for the costs of any such additional actions.

144. Notwithstanding any provision of this Order, the United States hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, 42 U.S.C. § 9601 *et seq.*, the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 *et seq.*, and any other applicable statutes or regulations.

145. Respondents shall be subject to civil penalties under Section 106(b) of CERCLA, 42 U.S.C. § 9606(b), of not more than \$25,000 for each day in which Respondents willfully violate, or fail or refuse to comply with this Order without sufficient cause. In addition, failure to properly provide response action under this Order, or any portion hereof, without sufficient cause, may result in liability under Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), for punitive damages in an amount at least equal to, and not more than three times the amount of any costs incurred by the Fund as a result of such failure to take proper action.

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146. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person for any liability such person may have arising out of or relating in any way to the site.

147. If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XXVII. ADMINISTRATIVE RECORD

148. Upon request by EPA, Respondents must submit to EPA all records, documents, and information related to the selection of the response action for possible inclusion in the administrative record file.

XXVIII. EFFECTIVE DATE AND COMPUTATION OF TIME

149. This Order shall be effective twenty (20) days after the day it is signed by the Director, EPA Region 6 Superfund Division. Unless otherwise specifically set forth in this Order, all times for performance of ordered activities shall be calculated from this effective date.

XXIX. OPPORTUNITY TO CONFER

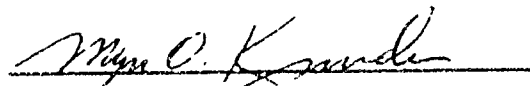
150. Respondents may, within ten (10) days after the date this Order is signed, request a conference with EPA to discuss this Order. If requested, the conference shall occur on December 19, 1996 at 10 a.m. at the U.S. Environmental Protection Agency Region 6, 1445 Ross Avenue, Dallas, Texas 75202-2733. Requests for a conference shall be made by telephone followed by a written request confirmation mailed that day, by certified mail, return receipt requested, to Philip H. Allen, P.E., U.S. Environmental Protection Agency Region 6,

AR/OK/TX Superfund Branch (6SF-AO) 1445 Ross Avenue, Dallas, Texas 75202-2733,
telephone (214) 665-8516.

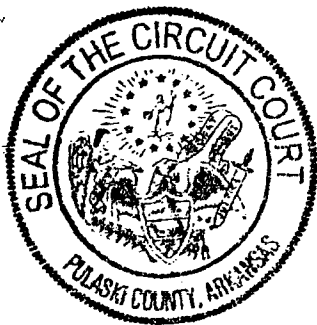
151. The purpose and scope of the conference shall be limited to issues involving the implementation of the response actions required by this Order and the extent to which Respondents intend to comply with this Order. This conference is not an evidentiary hearing, and does not constitute a proceeding to challenge this Order. It does not give Respondents a right to seek review of this Order, or to seek resolution of potential liability, and no official stenographic record of the conference will be made. At any conference held pursuant to Respondents' request, Respondents may appear in person or by an attorney or other representative.

So Ordered, this 12 day of December, 1996.

BY:



Myron O. Knudson, P.E.
Director, Superfund Division
U.S. Environmental Protection Agency - Region 6



STATE OF ARKANSAS } S S
COUNTY OF PULASKI }

I, Pat O'Brien, County Clerk of the aforesaid County,
do hereby certify that the foregoing instrument is a true
and correct copy of the original

Notice of his Pendency
filed in this office on the 23 day of December, 201994
IN TESTIMONY WHEREOF, I have hereunto set my hand
and affixed the seal of this office this 22 day of July
2008.

PAT O'BRIEN, Pulaski County Circuit County Clerk

BY William S. Johnson
Deputy Clerk

96 86086

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6

In the Matter of:

Hercules, Incorporated
Uniroyal Chemical, Ltd. and
Vertac Chemical Corporation

CERCLA DOCKET NO.
CERCLA 6-02-97

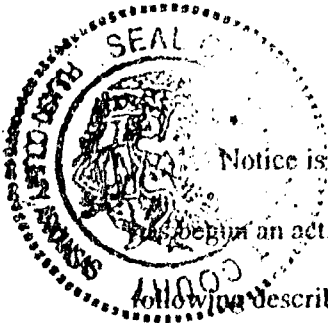
RESPONDENTS

REGARDING THE
VERTAC, INC., SUPERFUND SITE
OPERABLE UNIT 2
Jacksonville, Arkansas

Proceeding Under Section 106(a) of the
Comprehensive Environmental Response,
Compensation, and Liability Act (CERCLA),
42 U.S.C. § 9606(a)

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CERCLA CLERK

NOTICE OF LIS PENDENS



Notice is hereby given that the United States Environmental Protection Agency,
has begun an action against Vertac, Inc. in the above-styled cause to assert a lien upon the
following described real property situated in Pulaski County, Arkansas:

Part of the Southeast Quarter of Section 13, Township 3 North, Range 11 West
and the Northeast Quarter of Section 24, Township 3 North, Range 11 West, in
Pulaski County, Arkansas, more particularly described as follows: Commencing
at a concrete monument that is the intersection of the Range Line (Range 10 West
and Range 11 West) and the West Right of Way Line of Marshall Road which is
815.4 feet, North 1 degree 37 minutes East of the Southwest corner of Section 18,
Township 3 North, Range 10 West; thence South 9 degrees 08 minutes West
along the West right-of-way line of Marshall Road, 562.4 feet to the Point of
Beginning; thence continue South 9 degrees 08 minutes West 1017.2 feet; thence
North 1 degree 34 minutes East 1008.0 feet; thence North 88 degrees 24 minutes
East 1932.5 feet to the Point of Beginning; containing 43.207 acres, more or less.

AND

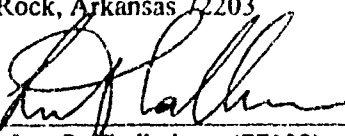
Part of the South Half of Section 13, and part of the North Half of Section 24, Township 3 North, Range 11 West, in Pulaski County, Arkansas, more particularly described as follows: Starting at a concrete monument that is the intersection of the Range Line (Range 10 West and Range 11 West) and the West right-of-way line of Marshall Road which is 815.4 feet, North 1 degree 37 minutes East of the Southwest corner of Section 18, Township 3 North, Range 10 West, thence South 9 degrees 08 minutes West along the West right-of-way line of Marshall Road 582.4 feet; thence North 88 degrees 24 minutes West 1932.5 feet to the Point of Beginning; thence South 1 degree 34 minutes West 788.4 feet; thence North 88 degrees 24 minutes West 1051.9 feet to the Easterly right-of-way line of the Little Rock Air Force Base Railroad; thence North 1 degrees 28 minutes West 789.2 feet along the said right-of-way line; thence South 88 degrees 24 minutes East 1093.4 feet to the point of beginning, containing 19.4 acres, more or less.

This document is being filed pursuant to Paragraph 64 of the Attached Unilateral Administrative Order for Remedial Design and Remedial Action filed December 11, 1996.

Dated this 23 day of December, 1996

ARNOLD, GROBMYER & HALEY
Eighth Floor
One Union National Plaza
P. O. Box 70
Little Rock, Arkansas 72203

By



Lee S. Thalheimer (77132)

Receiver for Vertac Chemical Company

**UNILATERAL ADMINISTRATIVE ORDER
FOR THE REMEDIAL DESIGN AND REMEDIAL ACTION
AT THE VERTAC, INC., SUPERFUND SITE
OPERABLE UNIT 3, GROUND WATER
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**UNILATERAL ADMINISTRATIVE ORDER
FOR THE REMEDIAL DESIGN AND REMEDIAL ACTION
AT THE VERTAC, INC., SUPERFUND SITE
OPERABLE UNIT 3, GROUND WATER
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 6

In The Matter Of:

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Hercules, Incorporated,
Uniroyal Chemical Ltd., and
Vertac Chemical Corporation

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RESPONDENTS

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CERCLA DOCKET NO.
CERCLA 6-02-97

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REGARDING THE
VERTAC, INC., SUPERFUND SITE
OPERABLE UNIT 2
Jacksonville, Arkansas

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Proceeding Under Section 106(a) of the
Comprehensive Environmental Response,
Compensation, and Liability Act (CERCLA),
42 U.S.C. § 9606(a)

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UNILATERAL ADMINISTRATIVE ORDER
FOR REMEDIAL DESIGN AND REMEDIAL ACTION

I. INTRODUCTION AND JURISDICTION

1. This Order directs Respondents to perform a remedial design for the selected remedy (the remedy) described in the Record of Decision (ROD) for Operable Unit 3, Ground Water (OU 3) of the Vertac, Inc., Superfund Site (site) dated September 17, 1996, and to implement the design of the remedy pursuant to this Order by performing the remedial actions described in the ROD. This Order is issued to Respondents by the United States Environmental Protection Agency (EPA) under the authority vested in the President of the United States by Subsection 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9606(a). This authority was delegated to the

Uniroyal's direction, and this processing generated hazardous substances, including dioxins, as a waste by-product. The generation and disposal of hazardous substances, including dioxin waste, were inherent in the process performed for Uniroyal's benefit, and at Uniroyal's direction. This dioxin waste included the hazardous substance 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). Uniroyal knew that the generation and disposal of wastes containing hazardous substances, including TCDD, were an inherent part of the processing of Uniroyal's materials. In short, Uniroyal's tolling agreements with Vertac involved an arrangement for the disposal of hazardous substances, including TCDD.

5. The primary material which Uniroyal sent to Vertac was tetrachlorobenzene (TCB). Uniroyal instructed its agent, Gilmore, Inc., (Gilmore) to purchase TCB from suppliers in Europe. Gilmore purchased TCB on the high seas from these European suppliers, using funds supplied by Uniroyal. At Uniroyal's direction, Gilmore then arranged for the TCB to be imported into the United States at New Orleans, Louisiana, under a temporary importation bond. Another Uniroyal agent, Behring, International, made the bonding and shipping arrangements. Pursuant to Uniroyal's instructions, the TCB was then transported to Jacksonville, Arkansas and was labeled "To: Uniroyal Ltd c/o Vertac." Uniroyal paid for the storage of the TCB in New Orleans, for the temporary import bonds, and for the transportation of the TCB to Jacksonville.

6. Uniroyal, through directions to Gilmore, controlled the timing of the delivery of TCB to Vertac. Uniroyal likewise controlled the quantity of TCB delivered to Vertac. TCB was the principal starting ingredient which Vertac used in the manufacture of 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). By controlling the timing of TCB delivered to Vertac and the quantity of TCB delivered to Vertac, Uniroyal exerted control over Vertac's manufacture of 2,4,5-T for Uniroyal from Uniroyal's TCB.

7. Some of the waste by-products, including TCB, 2,4,5-trichlorophenol (TCP), 2,4,5-T and TCDD, from Vertac's processing of Uniroyal's materials under the tolling agreements, were disposed into the process equipment, tanks and vessels; into the contents of process

Uniroyal and Vertac that are described above involving the toll manufacture of finished product for Uniroyal by Vertac from raw materials supplied by Uniroyal.

11. The jury in the liability phase trial in LR-C-80-109 returned a verdict on November 18, 1993, finding Uniroyal liable to the United States as an arranger for disposal of hazardous substances at the Vertac site.

12. Respondent Hercules Incorporated (Hercules) is a Delaware corporation.

13. Hercules was, from on or about December 28, 1961 until on or about October 1, 1971, the owner and operator of the plant portion of the Vertac, Inc., Superfund Site. Hercules continued to own, but not operate, the plant through August 19, 1976. During this time, from October 1, 1971 through August 19, 1976, Hercules leased the Vertac site to a company formerly known as Transvaal, Inc. From on or about December 28, 1961 until on or about October 1, 1971, Hercules disposed of hazardous substances, including 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4-dichlorophenol (2,4-DCP), 2,6-dichlorophenol (2,6-DCP), 2,4,5-T, tetrachlorobenzene (TCB), 2,4,5-trichlorophenol (TCP), and 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) into the process equipment, tanks and vessels; into the contents of process equipment, tanks and vessels; into the piping; into the buildings; and into and on the plant site generally, including, but not limited to the shredded trash and pallets, and the soils and groundwater. Wastes which contained hazardous substances, including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc., Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with and came to be located on the interior and exterior of the buildings and equipment at the Vertac site. The miscellaneous drummed wastes have been generated through site activities, including, but not limited to, the remedial investigation. From on or about October 1, 1971, through August 19, 1976, Transvaal continued to dispose hazardous substances in the same manner as described in this Paragraph, using the equipment, buildings, and plant owned by and leased from Hercules.

equipment, tools and vessels; into the piping, into the buildings; into drums or tanks which subsequently leaked; and into and on the plant site generally, including, but not limited to, shredded trash and pallets, and the soils and groundwater. Wastes from the processing of Uniroyal's materials under the tolling agreement, which contained hazardous substances including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc., Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with and came to be located on the interior and exterior of the buildings and equipment at the Vertac site. In addition, wastes from the processing of Uniroyal's materials came to be located in the central ditch, which runs from east to west through the central processing area. Soils and waste water from the central ditch containing hazardous substances from the processing of Uniroyal's materials also came to be discharged into the cooling pond. The sediments from the cooling pond were placed in an above-ground storage area on-site in approximately 1985. Leachate from this storage area containing hazardous substances is intercepted by the french drain system described in Paragraph 17 below.

8. Vertac shipped the 2,4,5-T manufactured from Uniroyal's TCB back to Uniroyal in Canada. Uniroyal directed Vertac where to ship the 2,4,5-T and paid the cost of transporting the 2,4,5-T from Jacksonville, Arkansas back to Canada.

9. Uniroyal is a defendant in an action brought by the United States in the Eastern District of Arkansas, Western Division, case no. LR-C-80-109, styled United States v. Vertac Chemical Corp., et al., in which the United States sought recovery of response costs from, among others, Uniroyal, pursuant to CERCLA section 107(a)(3), 42 U.S.C. § 9607(a)(3).

10. The Court in that case divided proceedings into three phases: Liability, costs, and allocation. The liability phase of the case was tried before an advisory jury and the court beginning on November 3, 1993. Uniroyal was a defendant against whom the United States presented evidence in the liability phase trial. The claims asserted by the United States against Uniroyal in the liability phase trial were based on the same transactions between

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14. In approximately 1974, prior to Hercules' sale of the Vertac site to Vertac, drums of 2,4,5-T waste began to be stored above ground at the Vertac site. These drummed wastes contained, among other things, TCDD, 2,4,5-T and trichlorophenol. These drummed wastes were stored either on the ground or on pallets, and the drums began leaking some time shortly after being filled. These drums of 2,4,5-T wastes were still present at the site when Vertac abandoned the site in 1987, but have now been shipped off-site and incinerated at the APTUS facility in Coffeyville, KS.

15. Respondent Hercules is a defendant in the action brought by the United States, case no. LR-C-80-109, United States v. Vertac Chemical Corp., et al.. In this case, the United States has sought recovery of response costs from, among others, Hercules, pursuant to CERCLA section 107(a), 42 U.S.C. § 9607(a).

16. On October 12, 1993, the court in United States v. Vertac entered an order granting the United States' motion for partial summary judgment against Hercules on the issue of Hercules' liability to the United States for CERCLA response costs. The Court found that Hercules was jointly and severally liable for those response costs. In that order, the Court mentioned the long prior history of the case and related litigation, and found that Hercules had not disputed: (1) The disposal of hazardous substances, including dioxin, at the Vertac plant site during its ownership and operation of the plant; (2) the releases of hazardous substances at the Vertac plant site during its ownership and operation; (3) that the Vertac site is a facility; (4) that the United States had incurred response costs; and (5) that Hercules, as a former owner and operator, was a responsible party under CERCLA.

17. Hercules buried drummed wastes from the processing of 2,4-D and 2,4,5-T in landfills on-site, including what are referred to as still bottom wastes. These wastes contained, among other things, 2,4-D, 2,4,5-T, 2,4-DCP, 2,6-DCP, TCP and TCDD. Water that has come into contact with these buried wastes is collected by means of a french drain system installed by Vertac as a part of the litigation in United States v. Vertac. Oily liquid present in the water collected from the french drain is separated out, and the remaining water is treated with

activated carbon. This process has generated the spent activated carbon and french drain oily leachate that are parts of OU 1.

18. Respondent Vertac Chemical Corporation (Vertac) is a Delaware corporation.

19. Vertac is the corporate successor of Transvaal, Inc. (Transvaal). Transvaal was reorganized into Vertac in 1976. Transvaal and Vertac will be referred to collectively as Vertac.

20. Vertac was, from on or about October 1, 1971 to on or about August 19, 1976, the operator of the Vertac, Inc., Superfund Site. On or about August 19, 1976, Vertac purchased the Vertac site from Hercules. From on or about August 19, 1976, Vertac has been the owner of the Vertac site. Vertac continued to operate the plant for the production of herbicides through late 1986. During Vertac's operation and ownership of the Vertac site, hazardous substances, including 2,4-D, 2,4-DCP, 2,6-DCP, 2,4,5-T, TCP and TCDD, were disposed into the process equipment, tanks, and vessels; into the contents of process equipment, tanks, and vessels; into the piping; into the buildings; and into and on the plant site generally, including, but not limited to shredded trash and pallets, and the soils and groundwater. Wastes which contained hazardous substances, including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc., Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with, and came to be located on the interior and exterior of the buildings and equipment at the Vertac site. The miscellaneous drummed wastes have been generated through site activities, including, but not limited to, the remedial investigation.

21. Vertac continued the burial of drummed wastes on-site through some time in 1974. Vertac buried these drummed wastes and other wastes in, among other places, the same landfill on site that Hercules had used for this purpose.

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22. The wastes at the Vertac site are commingled. Wastes generally associated with the processing and manufacture of 2,4,5-T, such as TCP, 2,4,5-T and TCDD are found in and around the tanks, vessels and vessel contents associated with the processing and manufacture of 2,4-D and in the other Operable Unit 1 media. Likewise, 2,4-D contamination at the Vertac site, such as 2,4-DCP, 2,6-DCP and 2,4-D, has been found in and around tanks and vessels associated with 2,4,5-T manufacture and in the other Operable Unit 1 media, and the soils, foundations, and underground utilities associated with Operable Unit 2 media. Practically every area of the Vertac site exhibits some commingling of 2,4-D and 2,4,5-T wastes. Also, the contaminated soils associated with Operable Unit 2 contain TCB in an isolated area that is associated with a particular spill.

23. On or about February 1, 1987, Vertac abandoned the Vertac site, leaving practically everything behind, including, but not limited to, the following: all of the plant equipment and buildings; chemicals; drummed wastes; spent activated carbon; trash; used pallets; and hazardous substances, as well as contaminated soils, and underground utilities and foundations.

24. Beginning in March 1987 and continuing through April 1988, EPA performed an inventory of the process vessels in the central process area. This inventory consisted of: Identifying the vessels; noting their geometric shape and volume; noting their content level, volume, and phase; describing the visual appearance of the contents; and performing analyses of the contents.

25. In 1987, the United States, in United States v. Vertac, requested that a receiver be appointed for Vertac. The court ordered a receiver appointed. The receiver appointed for Vertac was Lee Thalheimer, who continues in his capacity as receiver for Vertac.

26. Pursuant to section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Vertac, Inc., Superfund Site, including, but not limited to, the site, on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on

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September 8, 1983, 48 Fed. Reg. 40,667.

27. To study and undertake response activities in phases, EPA divided the Vertac, Inc., Superfund Site into operable units. The operable units for the Vertac, Inc., Superfund Site are the Vertac Remedy, Vertac Off-Site, Drummed Wastes Incineration, On-Site Operable Unit 1, On-Site Operable Unit 2, Soils, Foundations and Underground Utilities and Operable Unit 3, ground water. See the ROD for OU2 for more information on operable units other than OU3. This Order addresses the Vertac Operable Unit 3, referred to as the site in this Order.

28. Under the terms of an Administrative Order on Consent, dated July 7, 1989, Hercules agreed to undertake remedial investigations and feasibility studies (RI/FSs) for the site pursuant to CERCLA Section 104(b), 42 U.S.C § 9604(b), and the National Contingency Plan (NCP), 40 CFR Part 300. The Remedial Investigation and Focused Feasibility Study (RI/FS) for OU3 was completed in September 1995.

29. In June 1996 EPA released the feasibility study (FS) for Operable Unit 3, and several meetings were held in Jacksonville with local citizens groups and the general public to describe the various options under consideration and EPA's proposed option. The Operable Unit 3 FS was made available to the public at two local repositories (Jacksonville City Hall and the ADPC&E office in Little Rock).

30. The EPA released its Proposed Plan for addressing ground water at the site to the Concerned Citizens Coalition (CCC), the current recipient of the Vertac site Technical Assistance Grant (TAG), and to the Mayor of Jacksonville at a meeting on May 31, 1996.

31. Pursuant to section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the issuance of the Proposed Plan for OU3 in the June 4, 1996 edition of the Jacksonville Patriot, and in the June 5, 1996 edition of the North Pulaski Leader, and provided opportunity for public comment on the proposed remedial action.

32. As part of its decision on the remedy selected for Operable Unit 3 (OU3), the Agency conducted a public open house on June 11, 1996, at the Jacksonville City Hall to present the Proposed Plan and answer questions.

33. The EPA held a public comment period regarding the RI/FS, Proposed Plan and Administrative Record from June 12, 1996, to July 26, 1996. The documents in the Administrative Record were made available to the public at the Jacksonville City Hall, the ADPC&E in Little Rock and the EPA in Dallas. The public comment period was re-opened on August 2, 1996 and closed on August 19, 1996.

34. A formal public meeting was held on July 16, 1996, at the Jacksonville City Hall, at which representatives from EPA presented a description of the site geology, nature of ground water contamination, remedial alternatives considered in the proposed plan, and EPA's preferred alternative. The EPA solicited public comments at this meeting and answered questions on the plan. Thus, the requirements of CERCLA Sections 113(k)(2)(B)(i-v) and 117, 42 U.S.C. § § 9613(k)(2)(B)(i-v) and 9617, were met during the remedy selection process.

35. The decision by EPA on the remedial action to be implemented at the site is embodied in a Record of Decision (ROD), executed on September 17, 1996, on which the State and the general public had a reasonable opportunity to review and comment. The ROD is attached to this Order as Attachment 1 and is incorporated by reference. The ROD is supported by an administrative record that contains the documents and information upon which EPA based the selection of the response action.

36. Hazardous substances, including asbestos, TCB, TCP, 2,4,5-T, 2,4-D, 2,4-DCP, 2,6-DCP and tetrachlorodibenzo-p-dioxin (TCDD) were disposed of at the site.

37. Section 5 of the ROD (Attachment 1) summarizes the data that support the conclusion that there is a release of hazardous substances into the ground water, including 2-Chlorophenol, 4-Chlorophenol, 2,4-Dichlorophenol, 2,6-Dichlorophenol, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, Toluene, Tetrachlorobenzene, 2,4-D, 2,6-D, Silvex, 2,4,5-T, 2,4,6-T, and 2,3,7,8-TCDD, underneath the site.

38. Potential pathways exist through which humans may be exposed to hazardous substances of concern found in the site ground water and listed in Paragraphs 36 and 37 above through contact with produced ground water, soil, surface water, and air.

39. The site is zoned for industrial/commercial development. The site is partly in and partly adjacent to Jacksonville which had a population of 29,101 in 1990. Therefore, about 29,101 people are considered to be at risk of contamination. TCDD poses a serious threat to human health, welfare, or the environment for reasons which follow. In humans, at certain concentrations, TCDD causes chloracne, a severe skin lesion that usually occurs on the head and upper body. Unlike common acne, chloracne is more disfiguring and often lasts for years after initial exposure. There is suggestive evidence that TCDD causes liver damage in humans, as indicated by an increase in levels of certain enzymes in the blood, although these effects might also have resulted from the concomitant exposure to the chemicals contaminated with TCDD or to the solvents in which these chemicals are usually dissolved. Animal studies have demonstrated severe liver damage in some species. There is suggestive evidence that TCDD causes loss of appetite, weight loss, and digestive disorders in humans, although these effects might also have resulted from the concomitant exposure to the chemicals contaminated with TCDD or to the solvents in which these chemicals are usually dissolved. Although not demonstrated in humans, in animal studies TCDD produced toxicity of the immune system. This toxicity can result in greater susceptibility to infection. Although not demonstrated in humans, in some animal species exposure to TCDD during pregnancy resulted in malformations in the offspring. Low levels of TCDD have been detected in human milk, but the effects on infants and children are unknown. The human evidence for TCDD alone is inadequate to demonstrate or reflect a carcinogenic hazard, although certain herbicide mixtures

containing TCDD as an impurity provide limited evidence of causing cancer in exposed humans. Based on the positive evidence in animal studies, TCDD is probably carcinogenic in humans.

40. In the ROD for OUB, EPA has determined that it is technically impracticable to address non-aqueous phase liquids (NAPLs) that constitute the principal threat posed to ground water found underneath the site. However, EPA has also determined that currently the ground water in the contaminated Atoka aquifer is not used as a drinking water source due to limited yield of this aquifer and the availability of municipal water supplies, and therefore the reasonably anticipated ground water use scenario does not include such a future use.

41. Therefore, the remedy selected in the ROD for Operable Unit 3 will contain within the site's confines dioxin- and herbicide-contaminated ground water that constitutes a low-level long-term threat, will treat to State of Arkansas water quality standards the ground water extracted from the site in connection with the hydraulic containment of the contaminated ground water plume, and will provide a legal mechanism by which EPA will reevaluate the remedy selected in five-year intervals from the date the remedy is initiated. These five-year periodic reviews will permit EPA to assess any new technologies that may emerge in the future and determine the appropriateness of amending this ROD at that time to utilize such new technologies that would permit EPA to treat the principal threat NAPLs.

42. The Vertac site can be divided roughly into two 100-acre tracts. The northern half was never a part of the industrial operations at Vertac, and therefore does not contain ground water contamination. The southern portion of the site was the location of most manufacturing and waste disposal areas during the site's active operational life. Therefore, the southern portion of the site is heavily contaminated.

43. In addition, the southern portion of the site contains three burial areas, two of which have been and continue to be a confirmed source of ground water contamination, and the third

of which is suspected of being a ground water contamination source. Those three disposal areas are the result of litigation described below.

44. In 1980 EPA and ADPC&E jointly filed suit in the United States District Court for the Eastern District of Arkansas against Vertac and Hercules. A Consent Decree entered into by EPA, the Arkansas Department of Pollution Control and Ecology (ADPC&E), Vertac, and Hercules in January 1982 required that an independent consultant assess the conditions of on-site wastes and develop a proposed disposal method for the wastes. The proposal, called the "Vertac Remedy," was deemed by EPA to be unsatisfactory. The Court decided in favor of the proposed remedy, which was implemented in the summer of 1984 and completed in July 1986. As part of the remedy, the Vertac plant cooling water pond was closed and sediment from this unit was removed and placed in an above-ground clay-lined vault constructed adjacent to where the cooling pond had been located. The Reasor-Hill and Hercules/Transvaal Landfills were capped, and a french drain and leachate collection system were installed around the burial (landfill) areas. Those two landfills are not lined and are known to be sources of ground water contamination. Ground water monitoring wells were also installed, and a ground water monitoring program was initiated.

45. The remedy for Operable Unit 3 will result in the restoration of ground water quality in some areas of the site and on-site containment of contaminated ground water in areas where restoration is not practicable due to the presence of substantial volumes of NAPLs in fractured bedrock. Due to the technical impracticability of treating the NAPLs, the ROD for Operable Unit 3 invokes a waiver from meeting drinking water standards, known as maximum concentration levels (MCLs) under the Safe Drinking Water Act (SDWA), 42 U.S.C. § 300f et seq., and found at 40 CFR § 141.11-26, for these latter areas, which include the northern portion of the central process area, and areas where wastes were buried on-site as part of past operations and subject to the 1984 Court-ordered remedy. Ground water containment operations implemented under Operable Unit 3 will be necessary for the foreseeable future.

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46. Ground water beneath much of the southern half of the site is contaminated with dissolved-phase site compounds. Ground water beneath the eastern part of the central process area moves eastward, whereas ground water beneath the western part of the central process area has a westward component. The remedy for Operable Unit 3 involves the installation of ground water extraction wells in key areas of the site to reverse the eastward ground water gradient, and use of the existing french drain, which was installed as a result of a 1984 Court-ordered remedy, to prevent off-site migration of contaminated ground water to the west. The extraction wells are expected to retract the eastern component of the waste plume, which if left unchecked, could move off-site to a point of discharge (e.g., any creek hydraulically connected to the aquifer or a similarly connected domestic water well).

47. The remedy also includes removal of non-aqueous phase liquids (NAPLs) from an old on-site water supply well in the central process area into which some wastes were reportedly dumped by site workers. This well contained a layer of light non-aqueous phase liquid approximately 1 foot thick, which was the thickest occurrence of NAPL observed at the site during the remedial investigation. In addition to these engineering controls, deed restrictions will be imposed to assure that no water wells are installed on-site (other than those associated with containment efforts) or in an area that could affect containment efforts.

48. Finally, because hazardous substances will remain at the site under the selected remedy for Operable Unit 3, CERCLA Section 121(c), 42 U.S.C. § 9621(c), requires EPA to reevaluate the remedy selected herein in five-year intervals following the initiation of the remedy. Therefore, should a technology emerge in the future that will provide a practicable means to treat the principal threat NAPLs, EPA will reassess the remedy and possibly amend the OUB ROD to utilize such a treatment technology.

III. CONCLUSIONS OF LAW AND DETERMINATIONS

49. The site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
50. Respondents are "persons" as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
51. Each Respondent is a "liable party" as defined in section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is subject to this Order under section 106(a) of CERCLA, 42 U.S.C. § 9606(a).
52. Substances described in Paragraphs 4, 5, 6, 7, 8, 13, 14, 17, 20, 22, 36 and 37 are found at the site and are "hazardous substances" as defined in section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and further defined at 40 CFR § 302.4.
53. These hazardous substances have been released and threaten to be released from the site into the air, soil, and groundwater.
54. The past disposal at the site, and the past and present migration of hazardous substances from the site, each constitute a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
55. The potential for future migration of hazardous substances from the site poses a threat of a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
56. The release or threat of release of one or more hazardous substances from the facility may present an imminent and substantial endangerment to the public health or welfare or the environment. EPA's Risk Assessment Guidance for Superfund, (EPA/1-89/002, signed October 13, 1989), and supplements thereto, were used in making this determination of

imminent and substantial endangerment. Section 6.0 (SUMMARY OF SITE RISKS) of the ROD sets forth more specifically the basis for the determination of imminent and substantial endangerment.

57. The contamination and endangerment at this site constitute an indivisible injury. The actions required by this Order are necessary to protect the public health, welfare, and the environment.

IV. NOTICE TO THE STATE

58. On December 3, 1996, prior to issuing this Order, EPA notified the State of Arkansas, Department of Pollution Control and Ecology, in writing, that EPA would be issuing this Order.

V. ORDER

59. Based on the foregoing, Respondents are hereby ordered, jointly and severally, to comply with the following provisions, including but not limited to all attachments to this Order, all documents incorporated by reference into this Order, and all schedules and deadlines in this Order, attached to this Order, or incorporated by reference into this Order.

VI. DEFINITIONS

60. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or its implementing regulations. Whenever terms listed below are used in this Order or in the documents attached to this Order or incorporated by reference into this Order, the following definitions shall apply:

- a. "ADPC&E" shall mean the Arkansas Department of Pollution Control and Ecology.
- b. "ARARs" shall mean all applicable local, state, and Federal laws and regulations, and all "applicable requirements" or "relevant and appropriate requirements" as those terms are defined at 40 CFR § 300.5 and 42 U.S.C. § 9621(d).
- c. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § § 9601 et seq.
- d. "Day" shall mean a calendar day unless expressly stated to be a business day or working day. "Working day" or "business day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the end of the next working day.
- e. "Deliverable" shall mean any action, activity, task, or submission required to be done by Respondents under this Order.
- f. "EPA" shall mean the United States Environmental Protection Agency.
- g. "National Contingency Plan" or "NCP" shall mean the National Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, and codified at 40 CFR Part 300, including any amendments thereto.
- h. "Operation and Maintenance" or "O&M" shall mean all activities or measures required to maintain the effectiveness of the Response Action (if any are so required by EPA), as defined at 40 CFR § 300.5, and includes, but is not limited to, those activities required under the Operation and Maintenance Plan to be developed by Respondents pursuant to this Order and the Statement of Work, and approved by EPA.

i. "Order" shall mean this document including but not limited to the Statement of Work, and all attachments to this document, all documents incorporated by reference into this document, all schedules and deadlines in this document, attached to this document, or incorporated by reference into this document, and any approved submissions required pursuant to the terms of this document. Such submissions shall be incorporated into and become a part of the Order upon final written approval by EPA of such submissions.

j. "Oversight costs" shall mean all costs both direct and indirect, incurred by EPA or its authorized agents or representatives, subsequent to the effective date of this Order, which costs concern the development of the Remedial Design, the implementation of the Remedial Action, and Operation and Maintenance, including, but not limited to: costs incurred overseeing work; costs incurred for review of submissions; costs incurred for response work, action verification, inspection, or sampling; costs incurred in enforcement activities; costs incurred in cost documentation activities; and all other costs incurred by EPA to ensure proper implementation of this Order.

k. "Paragraph" shall mean a portion of this Order identified by an arabic numeral.

l. "Performance Standards" shall mean those cleanup standards, work standards, standards of control, and other requirements, criteria, or limitations, identified in this Order, including, but not limited to, the Record of Decision and the Statement of Work.

m. "Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the part of the Vertac, Inc., Superfund Site known as the Vertac Operable Unit 3, Ground Water, signed on September 17, 1996, by the Regional Administrator, EPA Region 6, and all attachments thereto.

n. "Remedial Action" or "RA" shall mean those activities, except for Operation and Maintenance, to be undertaken by Respondents to implement the final plans and specifications submitted by Respondents pursuant to the Remedial Design Work Plan

approved by EPA, including any additional activities required under Sections X, XI, XII, XIII, and XIV of this Order.

o. "Remedial Design" or "RD" shall mean those activities to be undertaken by Respondents to develop the final plans and specifications for the Remedial Action pursuant to the Remedial Design Work Plan.

p. "Response Costs" shall mean all costs, including, but not limited to, direct costs, indirect costs, and accrued interest incurred by the United States, and the State at the direction of EPA, in order to perform or support response actions at the site. Response costs include, but are not limited to, oversight costs, cleanup costs, enforcement costs, and legal costs.

q. "Section" shall mean a portion of this Order identified by a roman numeral and includes one or more paragraphs.

r. "Site" shall mean the part of the Vertac, Inc., Superfund Site known as the Vertac Ground Water Operable Unit 3. The site consists of approximately 193 acres, bounded by Marshall Road to the east, Hill Road to the south, and the Union Pacific Railroad to the west. The Little Rock Air Force Base occupies land farther to the north. The site (for the purpose of this Order) includes, but is not limited to: all ground water contaminated with chlorophenols, chlorophenoxyherbicides, dioxin and other constituents related to past industrial activities; soils contaminated with 2,3,7,8 TCDD (dioxin); crystalline TCB and soils contaminated with TCB; underground utilities; and building foundations and curbed areas. The site is described in the Record of Decision (ROD) including, but not limited to, Figure 2 in the ROD, which is a map of the Vertac on-site areas that includes the area west of Rocky Branch Creek, which is considered a contiguous area of contamination. In addition to those areas described in the ROD, the site also includes those other portions of the Vertac, Inc., Superfund Site that may be used to do any work under this Order.

s. "State" shall mean the State of Arkansas. 554

t. "Statement of Work" or "SOW" shall mean the Statement of Work for implementation of the Remedial Design, Remedial Action, and Operation and Maintenance at the site, as set forth in Attachment 2 to this Order. The Statement of Work is incorporated into this Order and is an enforceable part of this Order.

u. "Submission" includes any and all written materials Respondents are required to produce pursuant to this Order, including, but not limited to, correspondence, notifications, plans, reports, specifications, and schedules. A submission is a deliverable.

v. "United States" shall mean the United States of America.

w. "Work" shall mean all activities Respondents are required to perform under this Order, including, but not limited to, Remedial Design, Remedial Action, Operation and Maintenance, and any activities required to be undertaken pursuant to Sections VII through XXIV and XXVII of this Order. Work includes, but is not limited to, deliverables.

VII. NOTICE OF INTENT TO COMPLY

61. Respondents shall provide, not later than seven (7) days after the effective date of this Order, written notice to EPA's Remedial Project Manager (RPM) stating whether they shall comply with the terms of this Order. If Respondents do not unequivocally commit to perform the work as provided by this Order, they shall be deemed to have violated this Order and to have failed or refused to comply with this Order. Respondents' written notice shall describe, using facts that exist on or prior to the effective date of this Order, any "sufficient cause" defenses asserted by Respondents under Sections 106(b) and 107(c)(3) of CERCLA, 42 U.S.C. § § 9606(b) and 9607(c)(3). The absence of a response by EPA to the notice required by this Paragraph shall not be deemed to be acceptance of Respondents' assertions.

62. This Order shall apply to and be binding upon each Respondent identified in Paragraphs 3, 6, 9, 11, 12, 15, 16, 18, 19 and 25 (Hercules, Vertac and Uniroyal), their directors, officers, employees, agents, successors, and assigns. Respondents are jointly and severally responsible for carrying out all activities required by this Order. No change in the ownership, corporate status, or other control of any Respondents shall alter any of the Respondents' responsibilities under this Order.

63. Respondents shall provide a copy of this Order to any prospective owners or successors before a controlling interest in Respondents' assets, property rights, or stock are transferred to the prospective owner or successor. Respondents shall provide a copy of this Order to each contractor, sub-contractor, laboratory, or consultant retained to perform any work under this Order, within seven (7) days after the effective date of this Order or on the date such services are retained, whichever date occurs later. Respondents shall also provide a copy of this Order to each person representing any Respondent with respect to the site or the work and shall condition all contracts and subcontracts entered into hereunder upon performance of the work in conformity with the terms of this Order. With regard to the activities undertaken pursuant to this Order, each contractor and subcontractor shall be deemed to be related by contract to the Respondents within the meaning of section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). Notwithstanding the terms of any contract, Respondents are responsible for compliance with this Order and for ensuring that their contractors, subcontractors and agents comply with this Order, and perform any Work in accordance with this Order.

64. Within fifteen (15) days after the effective date of this Order, each Respondent who owns real property comprising all or part of the site shall record a copy or copies of this Order in the Pulaski County Circuit Clerk's Office, and in any other appropriate governmental office where land ownership and transfer records are filed or recorded, and shall ensure that the recording of this Order is indexed to the titles of each and every property at the site so as

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to provide notice to third parties of the issuance and terms of this Order with respect to those properties. Respondents shall, within thirty (30) days after the effective date of this Order, send notice of such recording and indexing to EPA.

65. Not later than sixty (60) days prior to any transfer of any real property interest in any property included within the site, Respondents shall submit a true and correct copy of the transfer documents to EPA, and shall identify the transferee by name, principal business address, and effective date of the transfer.

IX. WORK TO BE PERFORMED

66. Respondents shall cooperate with EPA in providing information regarding the work to the public. As requested by EPA, Respondents shall participate in the preparation of such information for distribution to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the site.

67. All aspects of the work to be performed by Respondents pursuant to Sections IX (Work To Be Performed), XI (EPA Periodic Review), XII (Additional Response Actions), and XVI (Quality Assurance, Sampling and Data Analysis) of this Order shall be under the direction and supervision of the Supervising Contractor. The Supervising Contractor may assume the role of Respondents' Project Manager, Remedial Designer, Remedial Action Contractor (RA Contractor), and Remedial Action Quality Assurance Official (RA QAO). However, the Supervising Contractor shall not assume both the role of the RA Contractor and the RA QAO. The selection of the Supervising Contractor shall be subject to disapproval by EPA. Within ten (10) days after the effective date of this Order, Respondents shall notify EPA in writing of the name, title, and qualifications of the Supervising Contractor. EPA will issue a notice of disapproval or an authorization to proceed. If, at any time thereafter, Respondents propose to change a Supervising Contractor, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new Supervising Contractor performs, directs, or supervises any work under this Order.

68. If EPA disapproves a proposed Supervising Contractor, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed contractors, including the name, title, and qualifications of each contractor, who would be acceptable to them within fifteen (15) days of receipt of EPA's disapproval of the contractor previously proposed. The EPA will provide written notice of the names of any proposed contractors it disapproves and an authorization to proceed with respect to any of the other proposed contractors. Respondents may select any contractor from that list who is not disapproved and shall notify EPA of the name of the contractor selected as Supervising Contractor within fifteen (15) days of EPA's authorization to proceed.

69. All aspects of the work to be performed by Respondents pursuant to this Order shall be under the direction and supervision of a qualified Project Manager the selection of which shall be subject to disapproval by EPA. Within ten (10) days after the effective date of this Order, Respondents shall notify EPA in writing of the name, address, telephone number, and qualifications of the Project Manager, including primary support entities and staff, proposed to be used in carrying out work under this Order. The EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter Respondents propose to change a Project Manager, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new Project Manager performs, directs, or supervises any work under this Order.

70. If EPA disapproves a proposed Project Manager, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed Project Managers, including primary support entities and staff, and including the address, telephone number, and the qualifications of each proposed Project Manager, who would be acceptable to Respondents within fifteen (15) days of receipt of EPA's disapproval of the person previously proposed as Project Manager. The EPA will provide written notice of the names of any proposed Project Manager(s) that it disapproves and an authorization to proceed with respect to any of the other proposed Project Managers. Respondents may select any Project Manager from that list who

is not disapproved and shall notify EPA of the name of the Project Manager selected as Project Manager within twenty-one (21) days of EPA's authorization to proceed.

A. Remedial Design

71. Within twenty (20) days after EPA's issuance of an authorization to proceed with respect to the Supervising Contractor and the Project Manager, Respondents shall submit to EPA a Work plan for the Remedial Design at the site ("Remedial Design Work Plan" or "RD Work Plan") for review and approval. The RD Work Plan shall include a step-by-step plan for completing the remedial design for the remedy described in the ROD and for attaining and maintaining all requirements identified in the ROD and in all other Performance Standards. The RD Work Plan must describe, in detail, deliverables Respondents shall complete during the remedial design phase, and a schedule for completing deliverables in the RD Work Plan. The major deliverables described in the RD Work Plan shall include, but shall not be limited to, those deliverables described in Section V of the SOW, and shall include, but shall not be limited to, the following: (1) Health and Safety Plan; (2) Remedial Design Sampling and Analysis Plan; (3) Remedial Design Quality Assurance Project Plan (RDQAPP); (4) Community Relations Plan; (5) Remedial Design Contingency Plan; (6) a proposed Remedial Design Schedule; (7) Pre-Final/Final Design; (8) Permitting Requirements Plan; and (9) any other appropriate components. Respondents shall also, within fifteen (15) days after EPA's issuance of an authorization to proceed with respect to the Supervising Contractor and the Project Manager, submit to EPA for review, a Site Health and Safety Plan for field design activities. The Site Health and Safety Plan shall conform to the applicable Occupational Safety and Health Administration and EPA requirements, including, but not limited to, those described at 54 Fed. Reg. 9294.

72. The RD Work Plan and all aspects of Remedial Design shall be consistent with, and shall provide for implementing the Statement of Work, and shall conform to EPA's "Superfund Remedial Design and Remedial Action Guidance, OSWER Directive 9355.0-4A."

Upon approval by EPA, the RD Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

73. Upon approval of the RD Work Plan for OU3 by EPA, Respondents shall implement the RD Work Plan according to the schedule in the approved RD Work Plan. Any violation of the approved RD Work Plan shall be a violation of this Order. Unless otherwise directed by EPA, Respondents shall not perform further work under the OU3 ROD at the site prior to EPA's written approval of the RD Work Plan for OU3.

74. Within forty (40) days after EPA approves the RD Work Plan, Respondents shall submit a Pre-Final (85%) design to EPA for review in accordance with Section V of the SOW. Within sixty (60) days after EPA approves the RD Work Plan, Respondent shall submit the Final (100%) design. The Final Design submission shall include, but shall not be limited to, those deliverables described in Section V of the SOW, and shall include, but shall not be limited to, the following: (1) final plans and specifications; (2) final design report; (3) the Field Sampling Plan (directed at measuring progress towards meeting Performance Standards); (4) health and safety plan for Remedial Action activities; (5) an Operation and Maintenance Plan; (6) request for proposals; (7) the Construction Quality Assurance Plan (CQAP); (8) Remedial Action Release Prevention/Contingency Plan; (9) final construction schedule; (10) final permitting plan; (11) access plan; and (12) provisions for community relations activities. The CQAP shall describe the approach to quality assurance to be taken by Respondents during construction activities at the site and shall specify a RA QAO, independent of any construction contractor, to conduct a quality assurance program during the construction phase of the project. Respondents shall notify EPA in writing of the name, title, and qualifications of any RA QAO proposed to be used in carrying out Work under this Order. The EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Respondents propose to change a RA QAO, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new RA QAO performs, directs, or supervises any work under this Order. If EPA disapproves of any proposed RA QAO, EPA will notify Respondents in writing. Respondents shall submit to

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EPA a list of proposed RA QAOs including the name, title, and qualifications of each proposed RA QAO, who would be acceptable to Respondents, within five (5) days of receipt of EPA's disapproval of the RA QAO previously proposed. The EPA will provide written notice of the names of any proposed RA QAO it disapproves and an authorization to proceed with respect to any of the other proposed RA QAO. Respondents may select any RA QAO from that list who is not disapproved and shall notify EPA of the name of the person selected as RA QAO within fifteen (15) days of EPA's authorization to proceed.

75. Upon EPA approval, the Final Design is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

B. Remedial Action

76. Not later than thirty (30) days after EPA approves all deliverables required as part of the Final Design, Respondents shall submit a Remedial Action Work Plan (RA Work Plan) to EPA for review and approval. The RA Work Plan shall be developed in accordance with the ROD, any Explanations of Significant Differences (ESDs) made by EPA pursuant to 40 CFR § 300.435, any amendments to the ROD, and the attached Statement of Work, and shall be consistent with the Final Design as approved by EPA. The RA Work Plan shall include, but shall not be limited to, those deliverables described in Section V.B of the SOW, and shall include, but shall not be limited to, methodologies, plans and schedules for completion of the following: (1) selection of the remedial action contractor; (2) plans for the completion of the Remedial Action including, but not limited to, the execution of the construction contract; (3) Remedial Action schedule; (4) identification of and satisfactory compliance with applicable permitting requirements; (5) identification of the Remedial Action Project Team; (6) a description of the roles, relationships, and assignment of responsibilities among the project team; (7) a Transportation and Disposal Plan; (8) strategies and schedules for implementation of the Remedial Action Sampling and Analysis Plan, Health and Safety Plan, Operation and Maintenance Plan, CQAP, and Remedial Action Release Prevention/Contingency Plan; (9) Annual Remedial Action Reports, (10) Pre-Final and Pre-Certification Inspections; (11) Final

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Remedial Action Report; (12) procedures for certification of Remedial Action; and (13) provisions establishing procedures for the development and submission of draft construction reports. The RA Work Plan shall also include a schedule for implementing all remedial action deliverables identified in the Statement of Work and shall identify the initial formulation of Respondent's Remedial Action Project Team (including the Supervising Contractor). Respondents shall also submit to EPA for review, not later than fifteen (15) days after EPA approves all deliverables required as part of the Final Design, a Health and Safety Plan for field activities required by the RA Work Plan. The Health and Safety Plan for field activities shall conform to applicable Occupational Safety and Health Administration and EPA requirements, including, but not limited to, the regulations at 54 Fed. Reg. 9294.

77. Upon approval by EPA, the RA Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

78. Upon approval of the RA Work Plan for OUB by EPA, Respondents shall implement the RA Work Plan according to the schedules in the RA Work Plan. Unless otherwise directed by EPA, in writing, Respondents shall not commence remedial action under the ROD for OUB at the site prior to approval of the RA Work Plan for OUB.

79. If Respondents seek to retain a construction contractor to assist in the performance of the Remedial Action, then Respondents shall submit a copy of the contractor solicitation documents to EPA not later than five (5) days after publishing the solicitation documents.

80. Within ten (10) days after EPA approves the RA Work Plan, Respondents shall notify EPA in writing of the name, title, and qualifications of any construction contractor proposed to be used in carrying out work under this Order. EPA will issue a notice of disapproval or an authorization to proceed. If, at any time thereafter, Respondents propose to change a construction contractor or to add a new construction contractor, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new construction contractor performs, directs, or supervises any work under this Order. If EPA

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disapproves of any proposed contractor, including, but not limited to, the Supervising Contractor, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed contractors, including the qualifications of each proposed contractor, who would be acceptable to Respondents, within five (5) days of receipt of EPA's disapproval of the contractor previously proposed. The EPA will provide written notice of the names of any proposed contractors it disapproves and an authorization to proceed with respect to any of the other proposed contractors. Respondents may select any contractor from that list who is not disapproved and shall notify EPA of the name of the contractor selected as contractor within twenty-one (21) days of EPA's authorization to proceed.

81. The work performed by Respondents pursuant to this Order shall, at a minimum, achieve the Performance Standards specified in the Order, including, but not limited to, the Record of Decision and the Statement of Work.

82. Notwithstanding any action by EPA, Respondents remain fully responsible for achievement of the Performance Standards. Nothing in this Order, or in EPA's approval of the Statement of Work, or in the Remedial Design or Remedial Action Work Plans, or approval of any other submission, shall be deemed to constitute a warranty or representation of any kind by EPA that full performance of the Remedial Design or Remedial Action, or any of the other Work, will achieve the Performance Standards. Respondent's compliance with such approved documents does not foreclose EPA from seeking additional work to achieve the applicable Performance Standards.

83. Respondents shall, prior to any off-site shipment of hazardous substances from the site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's RPM of such shipment of hazardous substances. However, the notification of shipments shall not apply to any off-site shipments when the total volume of all shipments from the site to the state will not exceed ten (10) cubic yards.

- a. The notification shall be in writing, and shall include the following information, where available: (1) The name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondents shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.
- b. The identity of the receiving facility and state shall be determined by Respondents following the award of the contract for Remedial Action construction. Respondents shall provide all relevant information, including information under the categories noted in Paragraph 83 a. above, on the off-site shipments as soon as practicable after the award of the contract and before the hazardous substances are actually shipped.

84. Within thirty (30) days after Respondents conclude that the Remedial Action has been fully performed, Respondents shall so notify EPA and shall schedule and conduct a pre-certification inspection to be attended by Respondents and EPA. The pre-certification inspection shall be followed by a written report, the Final Remedial Action Report, to be submitted within thirty (30) days of the inspection by a registered professional engineer and Respondents' Project Manager certifying that the Remedial Action has been completed in full satisfaction of the requirements of this Order. The written report shall include a construction chronology, a list of construction modifications, documentation substantiating that the remedy is functioning properly and is performing as designed, and as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by an authorized corporate officer of each Respondent:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false

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information, including the possibility of fine and imprisonment for knowing violations."

For the purpose of this certification, an "authorized corporate officer" means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar decision-making functions for the corporation.

85. If, after completion of the pre-certification inspection and receipt and review of the written report, EPA determines that the Remedial Action or any portion thereof has not been completed in accordance with this Order, EPA shall notify Respondents in writing of the activities that must be undertaken to complete the Remedial Action and shall set forth in the notice a schedule for performance of such activities. Respondents shall perform all activities described in the notice in accordance with the specifications and schedules established therein.

86. If EPA concludes, following the initial or any subsequent certification of completion by Respondents that the Remedial Action has been fully performed in accordance with this Order, EPA may notify Respondents that the Remedial Action has been fully performed. The EPA's notification shall be based on present knowledge and Respondents' certification to EPA, and shall not limit EPA's right to perform periodic reviews pursuant to Section 121 of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the site, in accordance with CERCLA Sections 104, 106, or 107, 42 U.S.C. §§ 9604, 9606, or 9607.

87. Within thirty (30) days after Respondents conclude that all phases of the work have been fully performed, that the Performance Standards have been attained, and that all Operation and Maintenance activities have been completed, Respondents shall submit to EPA a written report by a registered professional engineer certifying that the work has been completed in full satisfaction of the requirements of this Order. The EPA shall require such additional activities as may be necessary to complete the work or EPA may, based upon present knowledge and Respondents' certification to EPA, issue written notification to

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Respondents that the work has been completed, as appropriate. The EPA's notification shall not limit EPA's right to perform periodic reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the site, in accordance with CERCLA Sections 104, 106, or 107, 42 U.S.C. § § 9604, 9606, or 9607.

X. FAILURE TO ATTAIN PERFORMANCE STANDARDS

88. In the event that EPA determines that additional response activities are necessary to meet Performance Standards, EPA may notify Respondents that additional response actions are necessary.

89. Unless otherwise stated by EPA, within thirty (30) days of receipt of notice from EPA that additional response activities are necessary to meet any Performance Standards, Respondents shall submit for approval by EPA a Work Plan for the additional response activities. The Work Plan shall conform to the requirements of sections IX, XVI, and XVII of this Order. Upon EPA's approval of the plan pursuant to Section XIV, Respondents shall implement the plan for additional response activities in accordance with the provisions and schedule contained therein.

XI. EPA PERIODIC REVIEW

90. Under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and any applicable regulations, EPA may review the site to ensure that the work performed pursuant to this Order adequately protects human health and the environment. Until such time as EPA certifies completion of the work, Respondents shall conduct the requisite studies, investigations, or other response actions as determined necessary by EPA in order to permit EPA to conduct the review under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c). As a result of any review performed under this Paragraph, Respondents may be required to perform additional work or to modify work previously performed.

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XII. ADDITIONAL RESPONSE ACTIONS

91. The EPA may determine that in addition to the work identified in this Order and attachments to this Order, additional response activities may be necessary to protect human health and the environment. If EPA determines that additional response activities are necessary, EPA may require the Respondents to undertake any additional response activities in accordance with any applicable laws.

92. Respondents shall notify EPA of their intent to perform such additional response activities within seven (7) days after receipt of EPA's request for additional response activities. Failure of Respondents to notify EPA of their intent to perform additional response activities shall be a violation of this Order. Not later than thirty (30) days after receiving EPA's notice that additional response activities are required pursuant to this Section, Respondents shall submit to EPA for review and approval a Work Plan for the response activities. Upon approval by EPA, the Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order. Upon approval of the Work Plan by EPA, Respondents shall implement the Work plan according to the standards, specifications and schedule in the approved Work Plan.

XIII. ENDANGERMENT AND EMERGENCY RESPONSE

93. In the event of any action or occurrence during the performance of the work that causes or threatens to cause a release of a hazardous substance or which may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action to prevent, abate, or minimize the threat, and shall immediately notify EPA's RPM or, if the RPM is unavailable, EPA's Alternate RPM. If neither of these persons is available, Respondents shall notify the EPA Response and Prevention Branch, Region 6, at (214) 665-2222. Respondents shall take such action in consultation with EPA's RPM and in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan and the Contingency Plan. In the

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event that Respondents fail to take appropriate response action as required by this Section, and EPA takes that action instead, Respondents shall reimburse EPA for all costs of the response action not inconsistent with the NCP. Respondents shall pay the response costs in the manner described in Section XXIV of this Order, within thirty (30) days of Respondents' receipt of demand for payment, and which demand will be accompanied by whatever EPA cost documentation EPA determines, at that time, to be the equivalent of a Cost Documentation Management System (CDMS) report or a Superfund Cost Recovery Enhancement System (SCORES) report of the costs incurred.

94. Nothing in the preceding Paragraph or any other part of this Order shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action to protect human health and the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances on, at, or from the site.

XIV. EPA REVIEW OF SUBMISSIONS

95. In all instances in which this Order requires a submission of any kind (other than monthly progress reports described in Section XV (Progress Reports) Paragraph 101), to EPA, the submission must be accompanied by the following certification signed by an authorized corporate officer of each Respondent:

"I certify that the information contained in or accompanying this submission is true, accurate and complete. As to those identified portions of this submission for which I cannot personally verify the truth and accuracy, I certify as the company official having supervisory responsibility for the person(s) who, acting under my direct instructions, made the verification, that this information is true, accurate, and complete."

96. For the purpose of this certification, an "authorized corporate officer" means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar decision-making functions for the corporation.

97. After review of any submission, EPA may: (a) Approve the submission; (b) approve the submission with modifications required by EPA, which modifications may include, but may not be limited to, written passages prepared by EPA, which passages Respondents shall incorporate, word-for-word, into the text of the submission as directed by EPA in writing, and which modifications may also include, but may not be limited to, EPA-required deletions of certain passages contained in the submission, which deletions Respondents shall make, word-for-word, as directed by EPA in writing; (c) disapprove the submission and direct Respondents to re-submit the submission after incorporating EPA's modifications, which modifications may include, but may not be limited to, written passages prepared by EPA, which passages Respondents shall incorporate, word-for-word, into the text of the submission as directed by EPA in writing, and which modifications may also include, but may not be limited to, EPA-required deletions of certain passages contained in the submission, which deletions Respondents shall make, word-for-word, as directed by EPA in writing; or (d) disapprove the submission and assume responsibility for performing all or any part of the response action. As used in this Order, the terms "approval by EPA," "EPA approval," or a similar term, mean the action described in (a) or (b) of this Paragraph.

98. In the event of approval or approval with modifications by EPA, Respondents shall proceed to take any action required by the submission, as approved or modified by EPA.

99. Upon receipt of a notice of disapproval or a request for a modification, Respondents shall, within fourteen (14) days, or other time as specified by EPA in its notice of disapproval or request for modification, correct the deficiencies and resubmit the submission for approval. Notwithstanding the notice of disapproval, or approval with modifications, Respondents shall proceed, at the written direction of EPA, to take any action required by any non-deficient portion of the submission.

100. If any submission by Respondents is not approved by EPA, Respondents shall be in violation of this Order.

XV. PROGRESS REPORTS

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101. In addition to the other deliverables set forth in this Order, Respondents shall provide monthly progress reports to EPA with respect to actions and activities undertaken pursuant to this Order. The progress reports shall be submitted on or before the 10th day of each month following the effective date of this Order. Respondents' obligation to submit progress reports continues until EPA gives Respondents written notice under Paragraph 86. At a minimum these progress reports shall: (1) describe the actions that have been taken to comply with this Order during the prior month; (2) include all results of sampling and tests and all other data received by Respondents and not previously submitted to EPA; (3) describe all work planned for the next three months with schedules relating such work to the overall project schedule for RD/RA completion; and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

XVI. QUALITY ASSURANCE, SAMPLING AND DATA ANALYSIS

102. Respondents shall use the quality assurance, quality control, and chain of custody procedures described in the "EPA NEIC Policies and Procedures Manual," May 1978, revised May 1986, EPA-330/9-78-001-R, EPA's "Guidelines and Specifications for Preparing Quality Assurance Program Documentation," June 1, 1987, EPA's "Data Quality Objective Guidance," (EPA/540/G87/003 and 004) and any amendments to these documents, while conducting all sample collection and analysis activities required herein, including, but not limited to, all sample collection and analysis activities required herein by any plan. The EPA reserves the right to require Respondents to use EPA's "Data Quality Objectives Process for Superfund," EPA document number 9355.9-01/EPA540-R-93-071, which document has been released in a pre-publication format as an Interim Final Draft in September 1993, and which document is intended as a replacement for 9355.0-7B/EPA 540/G-87/003. To provide quality assurance and maintain quality control, Respondents shall:

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- a. Use only laboratories that have a documented Quality Assurance Program that complies with EPA guidance document QAMS-005/80.
 - b. Ensure that the laboratory used by the Respondents for analyses performs according to a method or methods deemed satisfactory to EPA and submits all protocols to be used for analyses to EPA at least thirty (30) days before beginning analysis.
 - c. Ensure that EPA personnel and EPA's authorized representatives are allowed access, during all business hours, to the laboratory and personnel utilized by the Respondents for analyses.

103. Respondents shall notify EPA not less than fourteen (14) days in advance of any sample collection activity. At the request of EPA, Respondents shall allow split or duplicate samples to be taken by EPA, or its authorized representatives, of any samples collected by Respondents with regard to the site or pursuant to the implementation of this Order. In addition, EPA shall have the right to take any additional samples that EPA deems necessary.

XVII. COMPLIANCE WITH APPLICABLE LAWS

104. All activities by Respondents pursuant to this Order shall be performed in accordance with the requirements of all Federal and state laws and regulations. The EPA has determined that the activities contemplated by this Order are consistent with the NCP, 40 CFR Part 300, if they are performed in compliance with this Order.

105. Except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, 40 CFR § 300.400(e), no permit shall be required for any portion of the Work conducted entirely on-site. The term "on-site" means the areal extent of contamination and all suitable areas in close proximity to the contamination used for implementation of the response action. Where any portion of the Work requires a Federal or state permit or approval, Respondents shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits and approvals.

106. This Order is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

107. All materials removed from the site shall be disposed or treated at a facility approved by EPA's RPM and in accordance with § 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and with the final rule entitled "Procedures for Planning and Implementing Off-Site Response Actions, 58 Fed Reg. 49215 (September 22, 1993), and codified at Section 300.440 of the NCP, 40 CFR § 300.440, and with all other applicable Federal, state, and local requirements.

XVIII. REMEDIAL PROJECT MANAGER

108. Unless otherwise specifically provided elsewhere in this Order, all communications, including, but not limited to, all submissions, whether written or oral, from Respondents to EPA shall be directed to EPA's RPM or Alternate RPM. Respondents shall submit to EPA four copies of all submissions, including, but not limited to, plans, reports and other correspondence, which are developed pursuant to this Order, and shall send these documents by certified mail or express mail, return receipt requested.

EPA's RPM is:

Philip Dellinger
Remedial Project Manager
Arkansas/Oklahoma/Texas Superfund Branch (6SF-AO)
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-8324

EPA's Alternate RPM is:

Wren Stenger
Section Chief
Arkansas/Louisiana/Texas Superfund Enforcement Branch (6SF-AO)
U.S. Environmental Protection Agency Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-6583

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Whenever, under this Order, Respondents are required to notify the EPA Region 6 Response and Prevention Branch, they shall do so by calling the Environmental Emergency Response Hot Line at (214) 665-2222.

109. The EPA has the unreviewable right to change its RPM or Alternate RPM. If EPA changes its RPM or Alternate RPM, EPA will inform Respondents in writing of the name, address, and telephone number of the new RPM or Alternate RPM.

110. The EPA's RPM and Alternate RPM shall have the authority lawfully vested in a RPM and On-Scene Coordinator (OSC) by the NCP, 40 CFR Part 300. The EPA's RPM or Alternate RPM shall have authority, consistent with the NCP, to halt any work required by this Order, and to take any necessary response action. The EPA's RPM and Alternate RPM shall have the authority to call for meetings with representatives of the Respondents and their Project Manager, which meetings the representatives of the Respondents, along with their Project Manager, shall attend. The EPA's RPM and Alternate RPM may call for such meetings as EPA's RPM or Alternate RPM determine necessary to discuss the Respondents' performance of the requirements of this Order.

XIX. ACCESS TO SITE NOT OWNED BY RESPONDENTS

111. If the site or other property subject to or affected by the cleanup is owned in whole or in part by parties other than those bound by this Order, Respondents shall obtain or use their best efforts to obtain site access from the owner within sixty (60) days of the effective date of this Order. Such agreements shall provide access for EPA, its contractors and oversight officials, the State and its contractors, and Respondents or Respondents' authorized representatives and contractors, and such agreements shall specify that Respondents are not EPA's representative with respect to liability associated with site activities. Respondents shall save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action or other costs incurred by the United States including, but not limited to, attorneys fees and other

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expenses of litigation and settlement arising from or on account of acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on Respondents' behalf or under Respondents' control, in carrying out activities pursuant to this Order, including any claims arising from any designation of Respondents as EPA's authorized representative under CERCLA Section 104(e), 42 U.S.C. § 9604(e). Copies of such agreements shall be provided to EPA prior to Respondents' initiation of field activities. Respondents' best efforts to obtain access shall include providing reasonable compensation to any off-site property owner. If access is not obtained within the time referenced above, Respondents shall immediately notify EPA of their failure to obtain access.

112. Subject to the United States' non-reviewable discretion, EPA may use its legal authorities to obtain access for the Respondents, may perform those response actions with EPA contractors at the property in question, or may terminate the Order if Respondents cannot obtain access. If EPA performs those tasks or activities with contractors and does not terminate the Order, Respondents shall perform all other activities not requiring access to that property, and shall reimburse EPA, pursuant to Section XXIV of this Order, for all costs incurred in performing such activities. Respondents shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables. Respondents shall reimburse EPA, pursuant to Section XXIV of this Order, for all response costs (including attorney fees) incurred by the United States to obtain access for Respondents.

XX. SITE ACCESS AND DATA/DOCUMENT AVAILABILITY

113. Respondents shall allow EPA and its authorized representatives and contractors to enter and freely move about all property at the site and off-site areas subject to or affected by the work under this Order or where documents required to be prepared or maintained by this Order are located, for the purposes of inspecting conditions, activities, the results of activities, records, operating logs, and contracts related to the site or Respondents and their representatives or contractors pursuant to this Order; reviewing the progress of the Respondents in carrying out the terms of this Order; conducting tests as EPA or its authorized

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representatives or contractors deem necessary; using a camera, sound recording device or other documentary type equipment; and, verifying the data submitted to EPA by Respondents. Respondents shall allow EPA and its authorized representatives to enter the site, to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to work undertaken in carrying out this Order. Nothing herein shall be interpreted as limiting or affecting EPA's right of entry or inspection authority under federal law.

114. Respondents may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this Order under 40 CFR § 2.203, provided such claim is not inconsistent with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), or other provisions of law. This claim shall be asserted in the manner described by 40 CFR § 2.203(b) and substantiated by Respondents at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 CFR Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the State without further notice to the Respondents. Respondents shall not assert confidentiality claims with respect to any data related to site conditions, sampling, or monitoring.

115. Respondents shall maintain, for the period during which this Order is in effect, an index of documents submitted to EPA pursuant to this Order which Respondents claim contain confidential business information. The index shall contain, for each document, the date, author, addressee, and subject of the document. Upon written request from EPA, Respondents shall submit a copy of the index to EPA.

XXI. RECORD PRESERVATION

116. Respondents shall provide to EPA upon request, copies of all documents and information within their possession and/or control or that of their contractors or agents, relating to activities at the site or to the implementation of this Order, including but not

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limited to sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the work. Respondents shall also make available to EPA for purposes of investigation, information gathering, or testimony, Respondents' employees, agents, or representatives with knowledge of facts concerning the performance of the work.

117. Until ten (10) years after EPA provides notice pursuant to Paragraph 86, each Respondent shall preserve and retain all records, documents, and information in its possession or control, including the records, documents, and information in the possession or control of its contractors and agents on and after the effective date of this Order that relates in any manner to the site. At the conclusion of this retention period, Respondents shall notify the EPA at least ninety (90) calendar days prior to the destruction of any such records, documents, or information, and upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

118. Until ten (10) years after EPA provides notice pursuant to Paragraph 86 of this Order, Respondents shall preserve, and shall instruct their contractors and agents to preserve, all records, documents, and information relating to the performance of the Work. At the conclusion of this retention period, Respondents shall notify the EPA at least ninety (90) calendar days prior to the destruction of any such records, documents, or information, and, upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

119. Within 15 days after the effective date of this Order, Respondents shall submit a written certification to EPA that they have not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents, or information relating to their potential liability with regard to the site since notification of potential liability by the EPA or the State. Respondents shall not dispose of any such records, documents, or information without prior written approval by EPA. Upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

XXII. DELAY IN PERFORMANCE

120. Any delay in performance of this Order that, in EPA's judgment, is not properly justified by Respondents under the terms of this Section shall be considered a violation of this Order. Any delay in performance of this Order shall not affect Respondents' obligations to perform fully all obligations under the terms and conditions of this Order.

121. Respondents shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to EPA's RPM or Alternate RPM within forty-eight (48) hours after Respondents first knew or should have known that a delay might occur. Respondents shall adopt all reasonable measures to avoid or minimize any such delay. Within five (5) business days after notifying EPA by telephone, Respondents shall submit to EPA written notification fully describing the nature of the delay, any justification for delay, any reason why Respondents should not be held strictly accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that shall be taken to mitigate the effect of the delay. Increased costs or expenses associated with implementation of the activities called for in this Order are not a justification for any delay in performance.

XXIII. ASSURANCE OF ABILITY TO COMPLETE WORK

122. Respondents shall demonstrate their ability to complete the work required by this Order and to pay all claims that arise from the performance of the work by obtaining and presenting to EPA within thirty (30) days after approval of the RD Work Plan, one of the following: (1) a performance bond; (2) a letter of credit; (3) a guarantee by a third party; or, (4) internal financial information to allow EPA to determine that Respondents have sufficient assets available to perform the work. Respondents shall demonstrate financial assurance in an amount no less than \$2,525,000, which is the estimate of the present worth of the Remedial Design, Remedial Action, and Operation and Maintenance contained in the Record of

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Decision for the site. If Respondents seek to demonstrate ability to complete the work by means of internal financial information, or by guarantee of a third party, they shall resubmit such information annually, on the anniversary of the effective date of this Order. If EPA determines that such financial information is inadequate, Respondents shall, within thirty (30) days after receipt of EPA's notice of determination, obtain and present to EPA for approval one of the other three forms of financial assurance listed above.

123. At least seven (7) days prior to commencing any work at the site pursuant to this Order, Respondents shall submit to EPA a certification that Respondents or their contractors and subcontractors have adequate insurance coverage or have indemnification for liabilities for injuries or damages to persons or property which may result from the activities to be conducted by or on behalf of Respondents pursuant to this Order. Respondents shall ensure that such insurance or indemnification is maintained for the duration of the work required by this Order.

XXIV. REIMBURSEMENT OF RESPONSE COSTS

124. Respondents shall reimburse EPA, upon written demand, for all response costs incurred by the United States in overseeing Respondents' implementation of the requirements of this Order or response costs incurred by EPA in performing any response action which Respondents fail to perform as required by this Order. The EPA may submit to Respondents, from time to time, a demand for payment and an accounting of all of, or some of, the response costs incurred by the United States with respect to this Order. The EPA's Cost Documentation Management System (CDMS) report or a Superfund Cost Recovery Enhancement System (SCORES) report of the costs incurred, or whatever documents EPA considers, at that time, to be the equivalent, shall serve as the sole accounting of all response costs and as the sole basis for EPA's payment demands.

125. Respondents shall, within thirty (30) days of receipt of each EPA accounting and demand for payment, remit, to EPA, a certified or cashier's check for the amount of those

response costs. If Respondents' payment is not received by EPA within ~~thirty~~³⁰ (30) days of Respondents' receipt of EPA's demand for payment, Respondents shall pay interest on those payments demanded by EPA. Interest shall accrue from the date that EPA's written demand for payment of a specified amount is received by Respondents. The interest rate shall be the rate established by the Department of the Treasury pursuant to 31 U.S.C. § 3717 and 4 C.F.R. § 102.13.

126. Respondents shall make checks payable to the Hazardous Substances Superfund and shall include the name of the site, the site identification number, which is 04, the account number, which is 6-02-97, and the title of this Order. Checks shall be forwarded to:

U.S. Environmental Protection Agency
Superfund Accounting
Vertac Inc. Superfund Site 04 Region 6
PO Box 360582M
Pittsburgh, Pennsylvania 15251

127. Respondents shall submit copies of each transmittal letter and check to the EPA's RPM.

XXV. UNITED STATES NOT LIABLE

128. The United States, by issuance of this Order, assumes no liability for any injuries or damages to persons or property resulting from acts or omissions by Respondents, or their directors, officers, employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order. Neither EPA nor the United States may be deemed to be a party to any contract entered into by Respondents or their directors, officers, employees, agents, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order.

129. Respondents shall save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action or other costs incurred by the United States including, but not limited to,

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attorneys fees and other expenses of litigation and settlement arising from or on account of acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and any person acting on their behalf or under their control, in carrying out any actions or activities pursuant to this Order, including any claims arising from any designation of any Respondent, or Respondents, as EPA's authorized representative under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e).

XXVI. ENFORCEMENT AND RESERVATIONS

130. The EPA reserves the right to bring an action against Respondents under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Order and not reimbursed by Respondents. This reservation shall include, but not be limited to, past costs, direct costs, indirect costs, enforcement costs incurred by any agency of the United States, including the U.S. Department of Justice, the costs of oversight, the costs of compiling the cost documentation to support oversight cost demand, as well as accrued interest as provided in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

131. Notwithstanding any other provision of this Order, at any time during the response action, EPA may perform its own studies, complete the response action (or any portion of the response action) as provided in CERCLA and the NCP, and seek reimbursement from Respondents for its costs, or seek any other appropriate relief.

132. Nothing in this Order shall preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, and/or additional remedial or removal actions as EPA may deem necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. § 9606(a), ~~et seq.~~, or any other applicable law. Respondents shall be jointly and severally liable under CERCLA Section 107(a), 42 U.S.C. § 9607(a), for the costs of any such additional actions.

133. Notwithstanding any provision of this Order, the United States hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, 42 U.S.C. § 9601 et seq., the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq., and any other applicable statutes or regulations.

134. Respondents shall be subject to civil penalties under Section 106(b) of CERCLA, 42 U.S.C. § 9606(b), of not more than \$25,000 for each day in which Respondents willfully violate, or fail or refuse to comply with this Order without sufficient cause. In addition, failure to properly provide response action under this Order, or any portion hereof, without sufficient cause, may result in liability under Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), for punitive damages in an amount at least equal to, and not more than three times the amount of any costs incurred by the Fund as a result of such failure to take proper action.

135. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person for any liability such person may have arising out of or relating in any way to the site.

136. If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XXVII. ADMINISTRATIVE RECORD

137. Upon request by EPA, Respondents must submit to EPA all records, documents, and information related to the selection of the response action for possible inclusion in the administrative record file.

XXVIII. EFFECTIVE DATE AND COMPUTATION OF TIME

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138. This Order shall be effective twenty (20) days after the day it is signed by the Director, EPA Region 6 Superfund Division. Unless otherwise specifically set forth in this Order, all times for performance of ordered activities shall be calculated from this effective date.

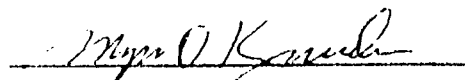
XXIX. OPPORTUNITY TO CONFER

139. Respondents may, within ten (10) days after the date this Order is signed, request a conference with EPA to discuss this Order. If requested, the conference shall occur on December 19, 1996, at 10 a.m. at the U.S. Environmental Protection Agency Region 6, 1445 Ross Avenue, Dallas, Texas 75202-2733. Requests for a conference shall be made by telephone followed by a written request confirmation mailed that day, by certified mail, return receipt requested, to Philip Dellinger, U.S. Environmental Protection Agency Region 6, AR/OK/TX Superfund Branch (6SF-AO) 1445 Ross Avenue, Dallas, Texas 75202-2733, telephone (214) 665-8324.

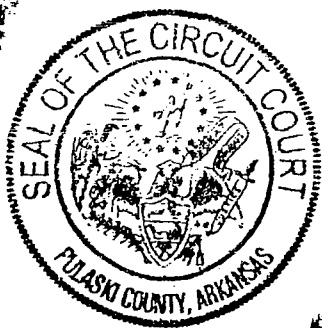
140. The purpose and scope of the conference shall be limited to issues involving the implementation of the response actions required by this Order and the extent to which Respondents intend to comply with this Order. This conference is not an evidentiary hearing, and does not constitute a proceeding to challenge this Order. It does not give Respondents a right to seek review of this Order, or to seek resolution of potential liability, and no official stenographic record of the conference will be made. At any conference held pursuant to Respondents' request, Respondents may appear in person or by an attorney or other representative.

So Ordered, this 10 day of December, 1996.

BY:



Myron O. Knudson, P.E.
Director, Superfund Division
U.S. Environmental Protection Agency - Region 6



STATE OF ARKANSAS }
COUNTY OF PULASKI } S S

I, Pat O'Brien, County Clerk of the aforesaid County,
do hereby certify that the foregoing instrument is a true
and correct copy of the original

Notice of Lis Pendens
filed in this office on the *23* day of *December*, 20 *1994*
IN TESTIMONY WHEREOF, I have hereunto set my hand
and affixed the seal of this office this *22* day of *July*
20 *02*.

PAT O'BRIEN, Pulaski County Circuit County Clerk

BY *Debra C. Ahern*
Deputy Clerk

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6

In the Matter of:

Hercules, Incorporated
Uniroyal Chemical, Ltd. and
Vertac Chemical Corporation

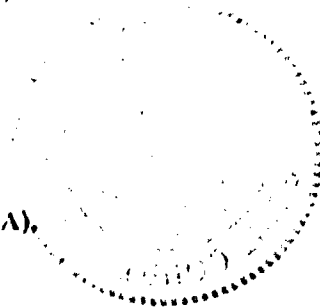
CERCLA DOCKET NO.
CERCLA 6-04-97

RESPONDENTS

REGARDING THE
DISMANTLING, DECONTAMINATION, AND
ON-SITE CONSOLIDATION OF THE ON-SITE
INCINERATOR AND INCINERATOR ASH
AND PALLETS AT THE VERTAC, INC.,
SUPERFUND SITE

Jacksonville, Arkansas

Proceeding Under Section 106(a) of the
Comprehensive Environmental Response,
Compensation, and Liability Act (CERCLA),
42 U.S.C. § 9606(a)



FILED IN DOCKETED
97 JAN -6 PM 4:04
CIRCUIT COURT CLERK

NOTICE OF LIS PENDENS

Notice is hereby given that the United States Environmental Protection Agency,
has begun an action against Vertac, Inc. in the above-styled cause to assert a lien upon the
following described real property situated in Pulaski County, Arkansas:

Part of the Southeast Quarter of Section 13, Township 3 North, Range 11 West
and the Northeast Quarter of Section 24, Township 3 North, Range 11 West, in
Pulaski County, Arkansas, more particularly described as follows: Commencing
at a concrete monument that is the intersection of the Range Line (Range 10 West
and Range 11 West) and the West Right of Way Line of Marshall Road which is
815.4 feet, North 1 degree 37 minutes East of the Southwest corner of Section 18,
Township 3 North, Range 10 West; thence South 9 degrees 08 minutes West
along the West right-of-way line of Marshall Road, 562.4 feet to the Point of
Beginning; thence continue South 9 degrees 08 minutes West 1017.2 feet; thence

North 1 degree 34 minutes East 1008.0 feet; thence North 88 degrees 24 minutes East 1932.5 feet to the Point of Beginning; containing 43.207 acres, more or less.

AND

Part of the South Half of Section 13, and part of the North Half of Section 24, Township 3 North, Range 11 West, in Pulaski County, Arkansas, more particularly described as follows: Starting at a concrete monument that is the intersection of the Range Line (Range 10 West and Range 11 West) and the West right-of-way line of Marshall Road which is 815.4 feet, North 1 degree 37 minutes East of the Southwest corner of Section 18, Township 3 North, Range 10 West, thence South 9 degrees 08 minutes West along the West right-of-way line of Marshall Road 582.4 feet; thence North 88 degrees 24 minutes West 1932.5 feet to the Point of Beginning; thence South 1 degree 34 minutes West 788.4 feet; thence North 88 degrees 24 minutes West 1051.9 feet to the Easterly right-of-way line of the Little Rock Air Force Base Railroad; thence North 1 degrees 28 minutes West 789.2 feet along the said right-of-way line; thence South 88 degrees 24 minutes East 1093.4 feet to the point of beginning, containing 19.4 acres, more or less.

This document is being filed pursuant to Paragraph 60 of the Attached Unilateral Administrative Order for Remedial Design and Remedial Action filed December 31, 1996

Dated this 5th day of January, 1997.

ARNOLD, GROBMYER & HALEY
Eighth Floor
One Union National Plaza
P. O. Box 70
Little Rock, Arkansas 72203

By



Lee S. Thalheimer (77132)
Receiver for Vertac Chemical Company

**UNILATERAL ADMINISTRATIVE ORDER
FOR THE DISMANTLING, DECONTAMINATION, AND
CONSOLIDATION WITHIN THE ON-SITE HAZARDOUS WASTE
LANDFILL OF THE ON-SITE INCINERATOR AND
ASSOCIATED STRUCTURES AND DEBRIS, AND INCINERATOR
ASH AND PALLETS AT THE VERTAC, INC., SUPERFUND SITE**

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6

In The Matter Of:	§	
	§	
Hercules, Incorporated,	§	
Uniroyal Chemical Ltd., and	§	
Vertac Chemical Corporation	§	
	§	
RESPONDENTS	§	CERCLA DOCKET NO.
	§	CERCLA 06-04-97
REGARDING THE	§	
DISMANTLING, DECONTAMINATION, AND	§	
ON-SITE CONSOLIDATION OF THE ON-SITE	§	
INCINERATOR AND INCINERATOR ASH	§	
AND PALLETS AT THE VERTAC, INC.,	§	
SUPERFUND SITE	§	
	§	
Jacksonville, Arkansas	§	
	§	
Proceeding Under Section 106(a) of the	§	
Comprehensive Environmental Response,	§	
Compensation, and Liability Act, (CERCLA).	§	
42 U.S.C. § 9606(a)	§	

UNILATERAL ADMINISTRATIVE ORDER FOR THE
DISMANTLING, DECONTAMINATION, AND ON-SITE
CONSOLIDATION OF THE ON-SITE INCINERATOR
AND INCINERATOR ASH AND PALLETS

I. INTRODUCTION AND JURISDICTION

1 This Order directs Respondents to perform the dismantling, decontamination, and consolidation of the on-site hazardous waste incinerator and incinerator ash and associated storage pallets within the on-site hazardous waste landfill at the Vertac Chemical Corporation Superfund Site (the Site) pursuant to the Amended Non-Time Critical Action Memorandum

dated December 20, 1996. This Order is issued to Respondents by the United States Environmental Protection Agency (EPA) under the authority vested in the President of the United States by Subsection 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9606(a). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580 (52 Fed. Reg. 2926, January 29, 1987), was further delegated to EPA Regional Administrators on May 11, 1994, by EPA Delegation No. 14-14-B, and was redelegated on August 4, 1995, to the Director, Region 6 Superfund Division, by Region 6 Redelegation No. R6-14-14-B.

II. FINDINGS OF FACT

2 The Site is part of the Vertac, Inc. Superfund Site in Jacksonville, Arkansas. The Site consists of approximately 193 acres, bounded by Marshall Road to the east, Hill Road to the south, and the Union Pacific Railroad to the west. The Little Rock Air Force Base occupies land farther to the north. The Site consists of various media located primarily above ground in the central processing area of the Vertac, Inc. Superfund Site. The Site includes, but is not limited to: Buildings; process equipment; tanks; vessels; the contents of the process equipment, tanks and vessels; piping; PCB transformer oils; shredded trash and pallets; spent activated carbon; french drain oily leachate; and miscellaneous drummed wastes, including Remedial Investigation wastes. For additional Site information, see the Amended Non-Time Critical Action Memorandum, dated December 20, 1996, attached as Attachment 1 to this Order, and the Amended Non-Time Critical Action Memorandum July 18, 1996, attached as Attachment 2 to this Order.

3 Respondent Uniroyal Chemical Ltd. (Uniroyal) is a Canadian corporation.

4 Uniroyal, in 1978 and 1979, entered into contractual tolling agreements with Vertac. The tolling agreements differed, but under each agreement, Uniroyal sent material to Vertac for processing at the plant located on the Vertac, Inc. Superfund Site. The processed material was then returned to Uniroyal. While the material was at Vertac for processing, any charges

for the material, which would have been due, had this material been sold to Vertac by Uniroyal instead of transferred under a tolling arrangement, were "tolled" -- meaning such charges were not required to be paid. Vertac received a "tolling fee" from Uniroyal, as payment for the processing. The raw materials were thus owned by Uniroyal throughout the process. Vertac charged Uniroyal a tolling fee for the processing of Uniroyal's material. Vertac performed a process on material owned by Uniroyal for Uniroyal's benefit and at Uniroyal's direction, and this processing generated hazardous substances, including dioxins, as a waste by-product. The generation and disposal of hazardous substances, including dioxin waste, were inherent in the process performed for Uniroyal's benefit, and at Uniroyal's direction. This dioxin waste included the hazardous substance 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). Uniroyal knew that the generation and disposal of wastes containing hazardous substances, including TCDD, were an inherent part of the processing of Uniroyal's materials. In short, Uniroyal's tolling agreements with Vertac involved an arrangement for the disposal of hazardous substances, including TCDD.

5 The primary material which Uniroyal sent to Vertac was tetrachlorobenzene (TCB). Uniroyal instructed its agent, Gilmore, Inc. (Gilmore) to purchase TCB from suppliers in Europe. Gilmore purchased TCB on the high seas from these European suppliers, using funds supplied by Uniroyal. At Uniroyal's direction, Gilmore then arranged for the TCB to be imported into the United States at New Orleans, Louisiana, under a temporary importation bond. Another Uniroyal agent, Behring International, made the bonding and shipping arrangements. Pursuant to Uniroyal's instructions, the TCB was then transported to Jacksonville, Arkansas and was labeled "To: Uniroyal Ltd c/o Vertac." Uniroyal paid for the storage of the TCB in New Orleans, for the temporary import bonds, and for the transportation of the TCB to Jacksonville.

6 Uniroyal, through directions to Gilmore, controlled the timing of the delivery of TCB to Vertac. Uniroyal likewise controlled the quantity of TCB delivered to Vertac. TCB was the principal starting ingredient which Vertac used in the manufacture of 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). By controlling the timing of TCB delivered to Vertac

and the quantity of TCB delivered to Vertac, Uniroyal exerted control over Vertac's manufacture of 2,4,5-T for Uniroyal from Uniroyal's TCB.

7. Some of the waste by-products, including TCB, 2,4,5-trichlorophenol (TCP), 2,4,5-T and TCDD, from Vertac's processing of Uniroyal's materials under the tolling agreements, were disposed of into the process equipment, tanks and vessels; into the contents of process equipment, tanks and vessels; into the piping, into the buildings, into drums of waste which subsequently leaked; and into and on the plant Site generally, including, but not limited to the shredded trash and pallets and the soils and groundwater. Wastes from the processing of Uniroyal's materials under the tolling agreements, which contained hazardous substances including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc. Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with and came to be located on the interior and exterior of the buildings and equipment at the Vertac Site. In addition, wastes from the processing of Uniroyal's materials came to be located in the central ditch, which runs from east to west through the central processing area. Soils and waste water from the central ditch containing hazardous substances from the processing of Uniroyal's materials also came to be discharged into the cooling pond. The sediments from the cooling pond were placed in an above-ground storage area on-site in approximately 1985. Leachate from this storage area containing hazardous substances is intercepted by the trench drain system described in Paragraph 17 below.

8. Vertac shipped the 2,4,5-T manufactured from Uniroyal's TCB back to Uniroyal in Canada. Uniroyal directed Vertac where to ship the 2,4,5-T and paid the cost of transporting the 2,4,5-T from Jacksonville, Arkansas back to Canada.

9. Uniroyal is a defendant in an action brought by the United States in the Eastern District of Arkansas, Western Division, case no. LR-C-80-109, styled United States v. Vertac Chemical Corp., et al., in which the United States sought recovery of response costs from, among others, Uniroyal, pursuant to CERCLA section 107(n)(3), 42 U.S.C. § 9607(a)(3).

10. The Court in that case divided proceedings into three phases. Liability, costs, and allocation. The liability phase of the case was tried before an advisory jury and the court beginning on November 3, 1993. Uniroyal was a defendant against whom the United States presented evidence in the liability phase trial. The claims asserted by the United States against Uniroyal in the liability phase trial were based on the same transactions between Uniroyal and Vertac that are described above involving the toll manufacture of finished product for Uniroyal by Vertac from raw materials supplied by Uniroyal.

11. The jury in the liability phase trial in LR-C-80-109 returned a verdict on November 18, 1993, finding Uniroyal liable to the United States as an arranger for disposal of hazardous substances at the Vertac Site.

12. Respondent Hercules Incorporated (Hercules) is a Delaware corporation.

13. Hercules was, from on or about December 28, 1961, until on or about October 1, 1971, the owner and operator of the plant portion of the Vertac, Inc. Superfund Site. Hercules continued to own, but not operate, the plant through August 19, 1976. During this time, from October 1, 1971, through August 19, 1976, Hercules leased the Vertac Site to a company formerly known as Transvaal, Inc. From on or about December 28, 1961, until on or about October 1, 1971, Hercules disposed of hazardous substances, including 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4-dichlorophenol (2,4-DiCP), 2,6-dichlorophenol (2,6-DiCP), 2,4,5-T, tetrachlorobenzene (TCB), 2,4,5-trichlorophenol (TCP), and 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) into the process equipment, tanks and vessels; into the contents of process equipment, tanks and vessels; into the piping; into the buildings; and into and on the plant Site generally, including, but not limited to the shredded trash and pallets and the soils and groundwater. Wastes which contained hazardous substances, including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc. Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with and came to be located on the interior and exterior of the buildings and equipment at the Vertac

Site. The miscellaneous drummed wastes have been generated through Site activities, including, but not limited to, the remedial investigation. From on or about October 1, 1971, through August 19, 1976, Transvaal continued to dispose of hazardous substances in the same manner as described in this Paragraph, using the equipment, buildings, and plant owned by and leased from Hercules.

14 In approximately 1974, prior to Hercules' sale of the Vertac Site to Vertac, drums of 2,4,5-T waste began to be stored above ground at the Vertac Site. These drummed wastes contained, among other things, TCDD, 2,4,5-T and trichlorophenol. These drummed wastes were stored either on the ground or on pallets, and the drums began leaking some time shortly after being filled. These drums of 2,4,5-T wastes were still present at the Site when Vertac abandoned the Site in 1987, but have been shipped off-site and incinerated at the APTUS facility in Coffeyville, KS.

15 Respondent Hercules is a defendant in the action brought by the United States, case no. LR-C-80-109, United States v. Vertac Chemical Corp., et al.. In this case, the United States has sought recovery of response costs from, among others, Hercules, pursuant to CERCLA section 107(a), 42 U.S.C. § 9607(a).

16 On October 12, 1993, the Court in United States v. Vertac entered an order granting the United States' motion for partial summary judgment against Hercules on the issue of Hercules' liability to the United States for CERCLA response costs. The Court found that Hercules was jointly and severally liable for those response costs. In that order, the Court mentioned the long prior history of the case and related litigation, and found that Hercules had not disputed: (1) The disposal of hazardous substances, including dioxin, at the Vertac plant Site during its ownership and operation of the plant; (2) the releases of hazardous substances at the Vertac plant Site during its ownership and operation; (3) that the Vertac Site is a facility; (4) that the United States had incurred response costs; and, (5), that Hercules, as a former owner and operator, was a responsible party under CERCLA.

17 Hercules buried drummed wastes from the processing of 2,4-D and 2,4,5-T in landfills on-site, including what are referred to as still bottom wastes. These wastes contained, among other things, 2,4-D, 2,4,5-T, 2,4-DCP, 2,6-DCP, TCP and TCDD. Water that has come into contact with these buried wastes is collected by means of a french drain system installed by Vertac as a part of the litigation in United States v. Vertac. Oily liquid present in the water collected from the french drain is separated out, and the remaining water is treated with activated carbon. This process has generated the spent activated carbon and french drain oily leachate that are parts of OU 1.

18. Respondent Vertac Chemical Corporation (Vertac) is a Delaware corporation.

19. Vertac is the corporate successor of Transvaal, Inc. (Transvaal). Transvaal was reorganized into Vertac in 1976. Transvaal and Vertac will be referred to collectively as Vertac.

20. Vertac was, from on or about October 1, 1971, to on or about August 19, 1976, the operator of the Vertac, Inc. Superfund Site. On or about August 19, 1976, Vertac purchased the Vertac Site from Hercules. From on or about August 19, 1976, Vertac has been the owner of the Vertac Site. Vertac continued to operate the plant for the production of herbicides through late 1986. During Vertac's operation and ownership of the Vertac Site, hazardous substances, including 2,4-D, 2,4-DCP, 2,6-DCP, 2,4,5-T, TCP and TCDD, were disposed of into the process equipment, tanks, and vessels; into the contents of process equipment, tanks, and vessels; into the piping; into the buildings; and into and on the plant Site generally, including, but not limited to the shredded trash and pallets and the soils and groundwater. Wastes which contained hazardous substances, including TCDD, TCP, TCB and 2,4,5-T, also leaked or were spilled onto the surface soils in and around the processing areas at the plant located on the Vertac, Inc. Superfund Site. These hazardous substances were also further spilled or transported, coming into contact with, and came to be located on the interior and exterior of the buildings and equipment at the Vertac Site. The miscellaneous drummed

wastes have been generated through Site activities, including, but not limited to, the remedial investigation.

21. Vertac continued the burial of drummed wastes on-site through some time in 1974. Vertac buried these drummed wastes and other wastes in, among other places, the same landfill on-site that Hercules had used for this purpose.

22. The wastes at the Vertac Site are commingled. Wastes generally associated with the processing and manufacture of 2,4,5-T, such as TCP, 2,4,5-T and TCDD, are found in and around the tanks, vessels and vessel contents associated with the processing and manufacture of 2,4-D and in the other Operable Unit 1 media. Likewise, 2,4-D contamination at the Vertac Site, such as 2,4-DXP, 2,6-DXP and 2,4-D, has been found in and around tanks and vessels associated with 2,4,5-T manufacture and in the other Operable Unit 1 media, and the soils, foundations, and underground utilities associated with Operable Unit 2 media. Practically every area of the Vertac Site exhibits some commingling of 2,4-D and 2,4,5-T wastes. Also, the contaminated soils associated with operable unit 2 contain TCB in an isolated area that is associated with a particular spill.

23. On or about February 1, 1987, Vertac abandoned the Vertac Site, leaving practically everything behind, including, but not limited to, the following: All of the plant equipment and buildings; chemicals; drummed wastes; spent activated carbon; trash; used pallets; and hazardous substances, as well as contaminated soils, and underground utilities and foundations.

24. Beginning in March 1987 and continuing through April 1988, EPA performed an inventory of the process vessels in the central process area. This inventory consisted of: identifying the vessels; noting their geometric shape and volume; noting their content level, volume, and phase; describing the visual appearance of the contents; and performing analyses of the contents.

25 In 1987, the United States, in United States v. Vertac, requested that a receiver be appointed for Vertac. The court ordered a receiver appointed. The receiver appointed for Vertac was Lee Thalheimer, who continues in his capacity as receiver for Vertac.

26 Pursuant to section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Vertac, Inc. Superfund Site, including, but not limited to, the Site, on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on September 8, 1983, 48 Fed. Reg. 40,667

27 To study and undertake response activities in phases, EPA divided the Vertac Inc. Superfund Site into operable units. The operable units for the Vertac Inc. Superfund Site are the Vertac Remedy, Vertac Off-Site, Drummed Wastes Incineration, On-Site Operable Unit 1, On-Site Operable Unit 2, Soils, Foundations and Underground Utilities, and Operable Unit 3, Groundwater. This Order addresses the Vertac on-site incinerator, associated structures and debris, and ash and associated storage pallets that resulted from the on-site incineration of drummed D wastes, hereinafter referred to as the Site in this Order.

28 When Vertac Chemical Corporation (Vertac) abandoned the Site in January 1987, it left about 28,440 drums of production still bottom wastes on the Site. The principal constituents of the drum contents were toluene and various chlorinated phenols. However, the dioxin contamination of these still bottoms has been measured as high as 50 parts-per-million (ppm).

29 When EPA went on-site in February 1987, it found widespread drum failure due to the corrosivity of the still bottoms to metal (pH -2) and ultraviolet degradation of the plastic containers. There were about 270 vessels of various sizes on the Site that were part of the production process. EPA had estimated that 95 of these vessels had quantities of material that totaled approximately 650 tons of solids, sludges, and liquids. Of the 95 vessels, 46 had contents that were considered dioxin-containing wastes by virtue of their use in the production processes. Subsequent characterization of wastes identified as 2,4-dichlorophenoxyacetic acid

(2,4-D) still bottoms have shown that these wastes were also contaminated with dioxin up to 500 ppb

30 Further, extensive areas of soil were contaminated with dioxin at levels that required physical removal and disposal as part of on-site remediation efforts selected in Records of Decision (RODs) for Operable Unit (OU) 1 (on-site structures), executed on June 30, 1993, and the ROD for OU2 (contiguous soils and underground utilities), executed on September 17, 1996

31 EPA Region 6 initiated a time-critical removal action in February 1987 to mitigate the hazards posed by the deteriorating drums, the tanks and contaminated solid debris. EPA continued this initial removal action for the storage and inspection of overpacked drums and the further overpacking of any drums in failing condition. Those actions were considered to be interim measures intended to minimize hazards until the drums were incinerated. Routine inspection had ensured that any further drum or tank failures would be overpacked or repaired in a timely manner. The overpacked materials that were highly corrosive and had high solvent content limited the life of the original drums. These materials also limited the life of the overpacked drums, requiring a more permanent solution within a reasonable time frame.

32 Including the original Action Memorandum in 1987 and all subsequent Action Memoranda, including those which only increased ceiling limits, the Region has executed a total of 12 Action Memoranda for response actions at the Site. Also included in this total are four non-time critical removal action ceiling increases which were approved by the Assistant Administrator for the Office of Solid Waste and Emergency Response (OSWER) on January 6, 1990, by the Regional Administrator on April 15, 1992, on August 17, 1994, and July 18, 1996.

33 The decision by EPA on the non-time critical removal action to be implemented at the Site is embodied in an Amended Non-Time Critical Action Memorandum dated December 20, 1996. The Amended Non-Time Critical Action Memorandum is attached to this Order as

Attachment 1 and is incorporated by reference. The Amended Non-Time Critical Action Memorandum is supported by an administrative record that contains the documents and information upon which EPA based the selection of the response action.

34. Hazardous substances, including asbestos, TCB, TCP, 2,4,5-T, 2,4-D, 2,4-DCP, 2,6-DCP and tetrachlorodibenzo-p-dioxin (TCDD) were disposed of at the Site.

35. Section II.A.4 of the December 20, 1996, Amended Non-Time Critical Action Memorandum (Attachment 1) summarizes the data that support the conclusion that there is a release of hazardous substances, including TCDD, at the Site.

36. Potential pathways through which humans may be exposed to hazardous substances, including TCDD, include ingestion, inhalation, and dermal contact with the dioxin adhering to the incinerator, its associated structures and debris, and the drummed incinerator ash.

37. The Site is zoned for industrial/commercial development. The Site is partly in and partly adjacent to Jacksonville which had a population of 29,101 in 1990. Therefore, about 29,101 people are considered to be at risk of contamination. TCDD poses a serious threat to human health, welfare, or the environment for reasons which follow. In humans, at certain concentrations, TCDD causes chloracne, a severe skin lesion that usually occurs on the head and upper body. Unlike common acne, chloracne is more disfiguring and often lasts for years after initial exposure. There is suggestive evidence that TCDD causes liver damage in humans, as indicated by an increase in levels of certain enzymes in the blood, although these effects might also have resulted from the concomitant exposure to the chemicals contaminated with TCDD or to the solvents in which these chemicals are usually dissolved. Animal studies have demonstrated severe liver damage in some species. There is suggestive evidence that TCDD causes loss of appetite, weight loss, and digestive disorders in humans, although these effects might also have resulted from the concomitant exposure to the chemicals contaminated with TCDD or to the solvents in which these chemicals are usually dissolved. Although not demonstrated in humans, in animal studies TCDD produced toxicity of the immune system.

This toxicity can result in greater susceptibility to infection. Although not demonstrated in humans, in some animal species, exposure to TCDD during pregnancy resulted in malformations in the offspring. Low levels of TCDD have been detected in human milk, but the effects on infants and children are unknown. The human evidence for TCDD alone is inadequate to demonstrate or reflect a carcinogenic hazard, although certain herbicide mixtures containing TCDD as an impurity provide limited evidence of causing cancer in exposed humans. Based on the positive evidence in animal studies, TCDD is probably carcinogenic in humans.

38. The selected remedy, as described in the December 20, 1996 Amended Non-Time Critical Action Memorandum, is to implement the final phase of the on-site incineration support activities by dismantling the incinerator and its associated structures and debris, decontaminating, and consolidating those materials within the on-site RCRA Subtitle C landfill. In addition, another portion of the Work included in this Order for completion of the final phase of the on-site incineration support activities, as described in the Amended Non-Time Critical Action Memorandum dated July 18, 1996 (attached as Attachment 2 to this Order), is the consolidation of approximately 6,400 drums of incinerator ash and associated storage pallets within the on-site RCRA Subtitle C landfill. The consolidation of the on-site incinerator and ash and associated pallets within the RCRA Subtitle C landfill is entirely consistent with EPA's general approach of consolidating low level threat dioxin-contaminated wastes within that landfill and is consistent with the remedies selected in the RODs for OUI and OUI2. The actions proposed in the December 20, 1996 Amended Non-Time Critical Action Memorandum follow below:

39. The OUI ROD requires that process vessels and tanks that had contained F02X-listed dioxin wastes to be decontaminated in a manner consistent with the alternative treatment standards for hazardous debris set out in 40 CFR § 268.45, Table 1, A.1.e., prior to on-site consolidation. Therefore, any visibly-stained incinerator components and structures, or components (including structures associated with the incinerator) known to be heavily

contaminated, such as the shaker belt and portions of the drum handling building, will likewise be decontaminated pursuant to 40 CFR § 268.45.

40 Those decontamination residuals would constitute an F02X-listed hazardous waste by virtue of the fact that they were derived from the decontamination process. Therefore, following the separation of solids from liquids within the decontamination residuals, separated solids will have to be properly disposed of off-site unless they meet applicable LDR treatment standards, in which case they could be disposed of on-site within the RCRA Subtitle C landfill. EPA's July 18, 1996, Amended Non-Time Critical Action Memorandum selected a 5 ppb treatability variance from the 1 ppb standard imposed by 40 CFR § 268.31 for dioxin-contaminated media. Therefore, should any solid decontamination residuals fall below the 5 ppb variance level for F02X wastes, those residuals could be disposed of within the on-site RCRA Subtitle C landfill. The separated liquids shall be treated within the on-site waste water treatment plant until they meet the treatment standards imposed by the State of Arkansas, whereupon the treated waters shall be discharged on-site.

41 Incinerator components that are not contaminated following wipe sampling can be either recycled or sold for scrap. However, any F02X-listed contaminated materials to which LDRs apply and to be sent to an off-site RCRA Subtitle C hazardous waste disposal facility must be sent to a facility that is in compliance with CERCLA's Off-Site Rule promulgated pursuant to CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and entitled "Amendment to the National Oil and Hazardous Substances Pollution Contingency Plan: Procedures for Planning and Implementing Off-Site Response Action: Final Rule," 58 Fed. Reg. 49200 (September 22, 1993), and codified at 40 CFR § 300.440.

42 For all material sent off-site, RCRA waste analysis requirements found at 40 CFR § § 261.20 and 261.30, RCRA manifesting requirements found at 40 CFR § 262.20, and RCRA packaging and labeling requirements found at 40 CFR § § 262.30 and 262.32 will be followed. All off-site transportation of hazardous waste will be performed in conformance

with RCRA and US Department of Transportation (USDOT) requirements. See generally 40 CFR Part 263.

43. All RCRA requirements applicable to owners and operators of landfills found at 40 CFR § 264, Subpart N, and closure and post-closure requirements found at 40 CFR § § 264.117(a)(1) and (c), and 40 CFR § § 264.310(a) and (b), will be complied with.

44. Other requirements under the Occupational Safety and Health Act (OSHA) of 1970, 29 U.S.C. § 651 et seq., and under the laws of states with plans approved under section 18 of the States OSHA laws, as well as other applicable safety and health requirements, will be followed. Federal OSHA requirements include among other things, Hazardous Materials Operation, 20 CFR Part 1910, and amended by 54 Fed. Reg. 9317 (March 5, 1989), all OSHA General Industry (29 CFR Part 1910) and Construction (29 CFR Part 1926) standards wherever they are relevant, as well as OSHA record-keeping and reporting regulations, and the EPA regulations set forth in 40 CFR Part 300, relating to the conduct of work at Superfund sites.

III. CONCLUSIONS OF LAW AND DETERMINATIONS

45. The Site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

46. Respondents are "persons" as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

47. Each Respondent is a "liable party" as defined in section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is subject to this Order under section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

48. Substances described in Paragraphs 4, 5, 6, 7, 8, 13, 14, 17, 20, and 22 are found at the Site and are "hazardous substances" as defined in section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and further defined at 40 CFR § 302.4.

49. These hazardous substances have been released and threaten to be released from the Site into the air, soil, and groundwater.

50. The past disposal at the Site, and the past and present migration of hazardous substances from the Site, each constitute a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

51. The potential for future migration of hazardous substances from the Site poses a threat of a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

52. The release or threat of release of one or more hazardous substances from the facility may present an imminent and substantial endangerment to the public health or welfare or the environment as determined at Section IV of the Amended Non-Time Critical Action Memoranda dated July 18, 1996, and December 20, 1996.

53. The contamination and endangerment at this Site constitute an indivisible injury. The actions required by this Order are necessary to protect the public health, welfare, and the environment.

IV. NOTICE TO THE STATE

54. On December 30, 1996, prior to issuing this Order, EPA notified the State of Arkansas, Department of Pollution Control and Ecology, in writing, that EPA would be issuing this Order.

V. ORDER

55. Based on the foregoing, Respondents are hereby ordered, jointly and severally, to comply with the following provisions, including but not limited to all attachments to this Order, all documents incorporated by reference into this Order, and all schedules and deadlines in this Order, attached to this Order, or incorporated by reference into this Order.

VI. DEFINITIONS

56. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or its implementing regulations. Whenever terms listed below are used in this Order or in the documents attached to this Order or incorporated by reference into this Order, the following definitions shall apply:

- a. "ADPC&E" shall mean the Arkansas Department of Pollution Control and Ecology.
- b. "Amended Non-Time Critical Action Memorandum" shall mean the Amended Non-Time Critical Action Memorandum for the Vertac Site executed on December 20, 1996, unless otherwise specified.
- c. "ARARs" shall mean all applicable State and Federal laws and regulations, and all "applicable requirements" or "relevant and appropriate requirements" as those terms are defined at 40 CFR § 300.5 and 42 U.S.C. § 9621(d).
- d. "Ash" shall mean the approximately 6,400 drums of ash residuals from the thermal destruction of approximately 25,180 drums of D waste in the on-site Vertac incinerator that is subject to the treatability variance selected for the on-site consolidation.

within a RCRA Subtitle C hazardous waste landfill, which is set out in the Amended Non-Time Critical Action Memorandum dated July 18, 1996 (Attachment 2 to this Order).

e. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601 et seq.

f. "Day" shall mean a calendar day unless expressly stated to be a business day or working day. "Working day" or "business day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the end of the next working day.

g. "Deliverable" shall mean any action, activity, task, or submission required to be done by Respondents under this Order.

h. "EPA" shall mean the United States Environmental Protection Agency.

i. "Incinerator" shall mean the on-site thermal destruction unit used to destroy approximately 25,180 drums of D wastes.

j. "National Contingency Plan" or "NCP" shall mean the National Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, and codified at 40 CFR Part 300, including any amendments thereto.

k. "Order" shall mean this document including but not limited to the Statement of Work, and all attachments to this document, all documents incorporated by reference into this document, all schedules and deadlines in this document, attached to this document, or incorporated by reference into this document, and any approved submissions required pursuant to the terms of this document. Such submissions shall be incorporated into and become a part of the Order upon final written approval by EPA of such submissions.

l. "Oversight costs" shall mean all costs both direct and indirect, incurred by EPA or its authorized agents or representatives, subsequent to the effective date of this Order, which costs concern the development of the Work items set out in the Statement of Work (SOW) attached to this Order as Attachment 3; Costs incurred overseeing work; costs incurred for review of submissions; costs incurred for response work, action verification, inspection, or sampling; costs incurred in enforcement activities; costs incurred in cost documentation activities, and all other costs incurred by EPA to ensure proper implementation of this Order.

m. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.

n. "Performance Standards" shall mean those cleanup standards, work standards, standards of control, and other requirements, criteria, or limitations, identified in this Order, including but not limited to, the Amended Non-Time Critical Action Memoranda dated July 18, 1996, and December 20, 1996, and the Statement of Work attached as Attachment 3 to this Order.

o. "Removal Action" or "RA" shall mean those activities to be undertaken by Respondents to implement the actions proposed in the Amended Non-Time Critical Action Memoranda dated July 18, 1996, and December 20, 1996, including any additional activities required under Sections X, XI, XII, XIII, and XIV of this Order.

p. "Response Costs" shall mean all costs, including, but not limited to, direct costs, indirect costs, and accrued interest incurred by the United States, and the State at the direction of EPA, in order to perform or support response actions at the Site. Response costs include, but are not limited to, oversight costs, cleanup costs, enforcement costs, and legal costs.

q. "Section" shall mean a portion of this Order identified by a roman numeral and includes one or more paragraphs.

r. "Site" shall mean the part of the Vertac, Inc. Superfund Site associated with the on-site hazardous waste incinerator, including all associated structures and contaminated debris and approximately 6,100 drums of incinerator ash and associated storage pallets. The Site consists of approximately 193 acres, bounded by Marshall Road to the east, Hill Road to the south, and the Union Pacific Railroad to the west. The Little Rock Air Force Base occupies land farther to the north. In addition to those areas, the Site also includes those other portions of the Vertac, Inc. Superfund Site which may be used to do any Work under this Order.

s. "State" shall mean the State of Arkansas.

t. "Statement of Work" or "SOW" shall mean the statement of work for implementation of the actions proposed in the Amended Non-Time Critical Action Memorandum, as set forth in Attachment 3 to this Order. The Statement of Work is incorporated into this Order and is an enforceable part of this Order.

u. "Submission" includes any and all written materials Respondents are required to produce pursuant to this Order, including, but not limited to, correspondence, notifications, plans, reports, specifications, and schedules. A submission is a deliverable.

v. "United States" shall mean the United States of America.

w. "Work" shall mean all activities Respondents are required to perform under this Order, including, but not limited to, Work Planning and Removal Action, and any activities required to be undertaken pursuant to Sections VII through XXIV and XXVII of this Order. Work includes, but is not limited to, deliverables.

x. "Work Plan" shall mean the "Incinerator Decontamination, Dismantlement, and Disposal Plan" (Disposal Plan), which includes the decontamination, dismantlement, demolition (as necessary), salvaging or recycling (as appropriate), and disposal of all incinerator components and equipment in the on-site RCRA Subtitle C landfill. The Work

Plan also includes all planning necessary for the on-site disposal of the incinerator ash and associated pallets in the on-site RCRA Subtitle C landfill.

VII. NOTICE OF INTENT TO COMPLY

57 Respondents shall provide, not later than seven (7) days after the effective date of this Order, written notice to EPA's Remedial Project Manager (RPM) stating whether they shall comply with the terms of this Order. If Respondents do not unequivocally commit to perform the Work as provided by this Order, they shall be deemed to have violated this Order and to have failed or refused to comply with this Order. Respondents' written notice shall describe, using facts that exist on or prior to the effective date of this Order, any "sufficient cause" defenses asserted by Respondents under Sections 106(b) and 107(c)(3) of CERCLA, 42 U.S.C. § § 9606(b) and 9607(c)(3). The absence of a response by EPA to the notice required by this Paragraph shall not be deemed to be acceptance of Respondents' assertions.

VIII. PARTIES BOUND

58 This Order shall apply to and be binding upon each Respondent identified in Paragraphs 3, 6, 9, 11, 12, 15, 16, 18, 19 and 25 (Hercules, Vertac and Uniroyal), their directors, officers, employees, agents, successors, and assigns. Respondents are jointly and severally responsible for carrying out all activities required by this Order. No change in the ownership, corporate status, or other control of any Respondents shall alter any of the Respondents' responsibilities under this Order.

59 Respondents shall provide a copy of this Order to any prospective owners or successors before a controlling interest in Respondents' assets, property rights, or stock are transferred to the prospective owner or successor. Respondents shall provide a copy of this Order to each contractor, sub-contractor, laboratory, or consultant retained to perform any Work under this Order, within seven (7) days after the effective date of this Order or on the date such services are retained, whichever date occurs later. Respondents shall also provide a

63. All aspects of the Work to be performed by Respondents pursuant to Sections IX (Work To Be Performed), XI (EPA Periodic Review), XII (Additional Response Actions), and XVI (Quality Assurance, Sampling and Data Analysis) of this Order shall be under the direction and supervision of the Supervising Contractor. The Supervising Contractor may assume the role of Respondents' Project Manager, Remedial Designer, Removal Action Contractor (RA Contractor), and Removal Action Quality Assurance Official (RA QAO). However, the Supervising Contractor shall not assume both the role of the RA Contractor and the RA QAO. The selection of the Supervising Contractor shall be subject to disapproval by EPA. Within ten (10) days after the effective date of this Order, Respondents shall notify EPA in writing of the name, title, and qualifications of the Supervising Contractor. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Respondents propose to change a Supervising Contractor, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new Supervising Contractor performs, directs, or supervises any Work under this Order.

64. If EPA disapproves a proposed Supervising Contractor, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed contractors, including the name, title, and qualifications of each contractor, that would be acceptable to them within fifteen (15) days of receipt of EPA's disapproval of the contractor previously proposed. EPA will provide written notice of the names of any proposed contractors that it disapproves and an authorization to proceed with respect to any of the other proposed contractors. Respondents may select any contractor from that list that is not disapproved and shall notify EPA of the name of the contractor selected as Supervising Contractor within fifteen (15) days of EPA's authorization to proceed.

65. All aspects of the Work to be performed by Respondents pursuant to this Order shall be under the direction and supervision of a qualified Project Manager the selection of which shall be subject to disapproval by EPA. Within ten (10) days after the effective date of this Order, Respondents shall notify EPA in writing of the name, address, telephone number, and qualifications of the Project Manager, including primary support entities and staff, proposed to

be used in carrying out Work under this Order. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter Respondents propose to change a Project Manager, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new Project Manager performs, directs, or supervises any Work under this Order.

66. If EPA disapproves a proposed Project Manager, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed Project Managers, including primary support entities and staff, and including the address, telephone number, and the qualifications of each proposed Project Manager, that would be acceptable to Respondents within fifteen (15) days of receipt of EPA's disapproval of the person previously proposed as Project Manager. EPA will provide written notice of the names of any proposed Project Manager(s) that it disapproves and an authorization to proceed with respect to any of the other proposed Project Managers. Respondents may select any Project Manager from that list that is not disapproved and shall notify EPA of the name of the Project Manager selected as Project Manager within fifteen (15) days of EPA's authorization to proceed.

67. Within thirty (30) days after EPA's issuance of an authorization to proceed with respect to the Supervising Contractor and the Project Manager, Respondents shall submit to EPA an "Incinerator Decontamination, Dismantlement, and Disposal Plan" (Disposal Plan) which shall include all planning for the Work necessary for the dismantlement, demolition (as necessary), salvaging and or recycling (as appropriate), and disposal of all incinerator components and equipment in the on-site RCRA Subtitle C landfill. The Disposal Plan shall also include all planning and/or design necessary for the on-site disposal of approximately 6,400 drums of incinerator ash and associated storage pallets and approximately 1,050 "supersacks" of shredded pallets located at the north end of the site, in the on-site RCRA Subtitle C landfill. The Disposal Plan shall be submitted to EPA for review and approval. The Disposal Plan shall include a step-by-step plan for completing the Work described above and for attaining and maintaining all requirements identified in the Order and in all other Performance Standards. The Disposal Plan must include the following: (1) Plans and

specifications: (2) Disposal Sampling and Analysis Plan; (3) Disposal Quality Assurance Project Plan (DQAPP); (4) Health and Safety Plan; (5) Request for proposals; (6) Disposal Release Prevention Contingency Plan; (7) Final construction schedule, and; any other appropriate components. The Health and Safety Plan Section of the Disposal Plan shall conform to the applicable Occupational Safety and Health Administration and EPA requirements, including, but not limited to, those described at 54 Fed. Reg. 9294. The DQAPP shall describe the approach to quality assurance to be taken by Respondents during construction activities at the Site and shall specify a Disposal QAO (DQAO), independent of any construction contractor, to conduct a quality assurance program during the construction phase of the project. Respondents shall notify EPA in writing of the name, title, and qualifications of any DQAO proposed to be used in carrying out Work under this Order. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Respondents propose to change a DQAO, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new DQAO performs, directs, or supervises any Work under this Order. If EPA disapproves of any proposed RA QAO, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed DQAOs including the name, title, and qualifications of each proposed DQAO, that would be acceptable to Respondents, within five (5) days of receipt of EPA's disapproval of the DQAO previously proposed. EPA will provide written notice of the names of any proposed DQAO that it disapproves and an authorization to proceed with respect to any of the other proposed DQAO. Respondents may select any DQAO from that list that is not disapproved and shall notify EPA of the name of the person selected as DQAO within fifteen (15) days of EPA's authorization to proceed.

68. Upon approval by EPA, the Disposal Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

69. Upon approval of the Disposal Plan by EPA, Respondents shall implement the Disposal Plan according to the schedules in the Plan. Unless otherwise directed by EPA, in

writing. Respondents shall not commence any decontamination, dismantling, demolition or disposal operations at the Site under this Order prior to approval of the Disposal Plan.

70. If Respondents seek to retain a construction contractor to assist in the performance of the Removal Action, then Respondents shall submit a copy of the contractor solicitation documents to EPA not later than five (5) days after publishing the solicitation documents.

71. Within ten (10) days after EPA approves the Disposal Plan, Respondents shall notify EPA in writing of the name, title, and qualifications of any construction contractor proposed to be used in carrying out Work under this Order. EPA will issue a notice of disapproval or an authorization to proceed. If, at any time thereafter, Respondents propose to change a construction contractor or to add a new construction contractor, Respondents shall give such notice to EPA and must obtain an authorization to proceed from EPA before the new construction contractor performs, directs, or supervises any Work under this Order. If EPA disapproves of any proposed contractor, including, but not limited to, the Supervising Contractor, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of proposed contractors, including the qualifications of each proposed contractor, that would be acceptable to Respondents, within five (5) days of receipt of EPA's disapproval of the contractor previously proposed. EPA will provide written notice of the names of any proposed contractors that it disapproves and an authorization to proceed with respect to any of the other proposed contractors. Respondents may select any contractor from that list that is not disapproved and shall notify EPA of the name of the contractor selected as contractor within twenty-one (21) days of EPA's authorization to proceed.

72. The Work performed by Respondents pursuant to this Order shall, at a minimum, achieve the Performance Standards specified in the Order, including, but not limited to, the Statement of Work.

73. Notwithstanding any action by EPA, Respondents remain fully responsible for achievement of the Performance Standards. Nothing in this Order, or in EPA's approval of

the Disposal Plan, or approval of any other submission, shall be deemed to constitute a warranty or representation of any kind by EPA that full performance of the Work pursuant to the Disposal Plan, will achieve the Performance Standards. Respondents' compliance with such approved documents does not foreclose EPA from seeking additional work to achieve the applicable Performance Standards.

74. Respondents shall, prior to any off-site shipment of hazardous substances from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's RPM of such shipment of hazardous substances. However, the notification of shipments shall not apply to any off-site shipments when the total volume of all shipments from the Site to the State will not exceed ten (10) cubic yards.

- a. The notification shall be in writing, and shall include the following information, where available: (1) The name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondents shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.
- b. The identity of the receiving facility and state shall be determined by Respondents following the award of the contract for the Removal Action. Respondents shall provide all relevant information, including information under the categories noted in Paragraph 74 a. above, on the off-site shipments as soon as practicable after the award of the contract and before the hazardous substances are actually shipped.

75. Within thirty (30) days after Respondents conclude that the Removal Action has been fully performed, Respondents shall so notify EPA and shall schedule and conduct a pre-certification inspection to be attended by Respondents and EPA. The pre-certification inspection shall be followed by a written report, the Final Removal Action Report, to be submitted within thirty (30) days of the inspection by a registered professional engineer and Respondents' Project Manager certifying that the Removal Action has been completed in full satisfaction of the requirements of this Order. The written report shall include a construction chronology, a list of construction modifications, documentation substantiating that the disposal has been completed as planned. The report shall contain the following statement, signed by an authorized corporate officer of each Respondent:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

For the purpose of this certification, an "authorized corporate officer" means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar decision-making functions for the corporation.

76. If, after completion of the pre-certification inspection and receipt and review of the written report, EPA determines that the Removal Action or any portion thereof has not been completed in accordance with this Order, EPA shall notify Respondents in writing of the activities that must be undertaken to complete the Removal Action and shall set forth in the notice a schedule for performance of such activities. Respondents shall perform all activities described in the notice in accordance with the specifications and schedules established therein.

77. If EPA concludes, following the initial or any subsequent certification of completion by Respondents that the Removal Action has been fully performed in accordance with this Order, EPA may notify Respondents that the Removal Action has been fully performed.

EPA's notification shall be based on present knowledge and Respondents' certification to EPA, and shall not limit EPA's right to perform periodic reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the Site, in accordance with CERCLA Sections 104, 106, or 107, 42 U.S.C. §§ 9604, 9606, or 9607.

78. Within thirty (30) days after Respondents conclude that all phases of the Work have been fully performed, that the Performance Standards have been attained, Respondents shall submit to EPA a written report by a registered professional engineer certifying that the Work has been completed in full satisfaction of the requirements of this Order. EPA shall require such additional activities as may be necessary to complete the Work or EPA may, based upon present knowledge and Respondents' certification to EPA, issue written notification to Respondents that the Work has been completed, as appropriate. EPA's notification shall not limit EPA's right to perform periodic reviews pursuant to Section 121^(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the Site, in accordance with CERCLA Sections 104, 106, or 107, 42 U.S.C. §§ 9604, 9606, or 9607.

X. FAILURE TO ATTAIN PERFORMANCE STANDARDS

79. In the event that EPA determines that additional response activities are necessary to meet Performance Standards, EPA may notify Respondents that additional response actions are necessary.

80. Unless otherwise stated by EPA, within thirty (30) days of receipt of notice from EPA that additional response activities are necessary to meet any Performance Standards, Respondents shall submit for approval by EPA a Work Plan for the additional response activities. The Work Plan shall conform to the requirements of sections IX, XVI, and XVII of this Order. Upon EPA's approval of the plan pursuant to Section XIV, Respondents shall

implement the plan for additional response activities in accordance with the provisions and schedule contained therein.

XI. EPA PERIODIC REVIEW

81. Under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and any applicable regulations, EPA may review the Site to ensure that the Work performed pursuant to this Order adequately protects human health and the environment. Until such time as EPA certifies completion of the Work, Respondents shall conduct the requisite studies, investigations, or other response actions as determined necessary by EPA in order to permit EPA to conduct the review under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c). As a result of any review performed under this Paragraph, Respondents may be required to perform additional work or to modify Work previously performed.

XII. ADDITIONAL RESPONSE ACTIONS

82. EPA may determine that in addition to the Work identified in this Order and attachments to this Order, additional response activities may be necessary to protect human health and the environment. If EPA determines that additional response activities are necessary, EPA may require the Respondents to undertake any additional response activities in accordance with any applicable laws.

83. Respondents shall notify EPA of their intent to perform such additional response activities within seven (7) days after receipt of EPA's request for additional response activities. Failure of Respondents to notify EPA of their intent to perform additional response activities shall be a violation of this Order. Not later than thirty (30) days after receiving EPA's notice that additional response activities are required pursuant to this Section, Respondents shall submit to EPA for review and approval a Work Plan for the response activities. Upon approval by EPA, the Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order. Upon approval of

the Work Plan by EPA. Respondents shall implement the Work Plan according to the standards, specifications and schedule in the approved Work Plan.

XIII. ENDANGERMENT AND EMERGENCY RESPONSE

84. In the event of any action or occurrence during the performance of the Work that causes or threatens to cause a release of a hazardous substance or which may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action to prevent, abate, or minimize the threat, and shall immediately notify EPA's RPM or, if the RPM is unavailable, EPA's Alternate RPM. If neither of these persons is available, Respondents shall notify the EPA Response and Prevention Branch, Region 6, at (214) 665-7222. Respondents shall take such action in consultation with EPA's RPM and in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan and the Contingency Plan. In the event that Respondents fail to take appropriate response action as required by this Section, and EPA takes that action instead, Respondents shall reimburse EPA for all costs of the response action not inconsistent with the NCP. Respondents shall pay the response costs in the manner described in Section XXIV of this Order, within thirty (30) days of Respondents' receipt of demand for payment and which demand will be accompanied by whatever EPA cost documentation EPA determines, at that time, to be the equivalent of a Cost Documentation Management System (CDMS) report or a Superfund Cost Recovery Enhancement System (SCORES) report of the costs incurred.

85. Nothing in the preceding Paragraph or any other part of this Order shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action to protect human health and the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances on, at, or from the Site.

XIV. EPA REVIEW OF SUBMISSIONS

86. In all instances in which this Order requires a submission of any kind (other than monthly progress reports described in Section XV (Progress Reports) (Paragraph 92) to EPA, the submission must be accompanied by the following certification signed by an authorized corporate officer of each Respondent:

"I certify that the information contained in or accompanying this submission is true, accurate and complete. As to those identified portions of this submission for which I cannot personally verify the truth and accuracy, I certify as the company official having supervisory responsibility for the person(s) who, acting under my direct instructions, made the verification, that this information is true, accurate, and complete."

87. For the purpose of this certification, an "authorized corporate officer" means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar decision-making functions for the corporation.

88. After review of any submission, EPA may: (a) Approve the submission; (b) approve the submission with modifications required by EPA, which modifications may include, but may not be limited to, written passages prepared by EPA, which passages Respondents shall incorporate, word-for-word, into the text of the submission as directed by EPA in writing, and which modifications may also include, but may not be limited to, EPA-required deletions of certain passages contained in the submission, which deletions Respondents shall make, word-for-word, as directed by EPA in writing; (c) disapprove the submission and direct Respondents to re-submit the submission after incorporating EPA's modifications, which modifications may include, but may not be limited to, written passages prepared by EPA, which passages Respondents shall incorporate, word-for-word, into the text of the submission as directed by EPA in writing, and which modifications may also include, but may not be limited to, EPA-required deletions of certain passages contained in the submission, which deletions Respondents shall make, word-for-word, as directed by EPA in writing; or (d)

disapprove the submission and assume responsibility for performing all or any part of the response action. As used in this Order, the terms "approval by EPA," "EPA approval," or a similar term, mean the action described in (a) or (b) of this Paragraph.

89. In the event of approval or approval with modifications by EPA, Respondents shall proceed to take any action required by the submission, as approved or modified by EPA.

90. Upon receipt of a notice of disapproval or a request for a modification, Respondents shall, within fourteen (14) days, or other time as specified by EPA in its notice of disapproval or request for modification, correct the deficiencies and resubmit the submission for approval. Notwithstanding the notice of disapproval, or approval with modifications, Respondents shall proceed, at the written direction of EPA, to take any action required by any non-deficient portion of the submission.

91. If any submission by Respondents is not approved by EPA, Respondents shall be in violation of this Order.

XV. PROGRESS REPORTS

92. In addition to the other deliverables set forth in this Order, Respondents shall provide monthly progress reports to EPA with respect to actions and activities undertaken pursuant to this Order. The progress reports shall be submitted on or before the 10th day of each month following the effective date of this Order. Respondents' obligation to submit progress reports continues until EPA gives Respondents written notice under Paragraph 77. At a minimum these progress reports shall: (1) Describe the actions that have been taken to comply with this Order during the prior month; (2) include all results of sampling and tests and all other data received by Respondents and not previously submitted to EPA; (3) describe all Work planned for the next three months with schedules relating such Work to the overall project schedule for removal completion; and, (4) describe all problems encountered and any anticipated

problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

XVI. QUALITY ASSURANCE, SAMPLING AND DATA ANALYSIS

93. Respondents shall use the quality assurance, quality control, and chain of custody procedures described in the "EPA NEIC Policies and Procedures Manual," May 1978, revised May 1986, EPA-330/9-78-001-R, EPA's "Guidelines and Specifications for Preparing Quality Assurance Program Documentation," June 1, 1987, EPA's "Data Quality Objective Guidance," (EPA-540/G-87-003 and 004) and any amendments to these documents, while conducting all sample collection and analysis activities required herein, including, but not limited to, all sample collection and analysis activities required herein by any plan. EPA reserves the right to require Respondents to use EPA's "Data Quality Objectives Process for Superfund," EPA document number 9355.9-01/EPA540-R-93-071, which document has been released in a pre-publication format as an Interim Final Draft in September 1993, and which document is intended as a replacement for 9355.0-7B/EPA 540/G-87/003. To provide quality assurance and maintain quality control, Respondents shall:

- a. Use only laboratories that have a documented Quality Assurance Program that complies with EPA guidance document QAMS-005/80.
- b. Ensure that the laboratory used by the Respondents for analyses performs according to a method or methods deemed satisfactory to EPA and submits all protocols to be used for analyses to EPA at least thirty (30) days before beginning analysis.
- c. Ensure that EPA personnel and EPA's authorized representatives are allowed access, during all business hours, to the laboratory and personnel utilized by the Respondents for analyses.

94. Respondents shall notify EPA not less than fourteen (14) days in advance of any sample collection activity. At the request of EPA, Respondents shall allow split or duplicate samples to be taken by EPA, or its authorized representatives, of any samples collected by

Respondents with regard to the Site or pursuant to the implementation of this Order. In addition, EPA shall have the right to take any additional samples that EPA deems necessary.

XVII. COMPLIANCE WITH APPLICABLE LAWS

95. All activities by Respondents pursuant to this Order shall be performed in accordance with the requirements of all federal and state laws and regulations. EPA has determined that the activities contemplated by this Order are consistent with the NCP if they are performed in compliance with this Order.

96. Except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, 40 CFR § 300.400(e), no permit shall be required for any portion of the Work conducted entirely on-site. The term "on-site" means the areal extent of contamination and all suitable areas in close proximity to the contamination used for implementation of the response action. Where any portion of the Work requires a federal or state permit or approval, Respondents shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits and approvals.

97. This Order is not, and shall not be construed to be, a permit issued pursuant to any Federal or State statute or regulation.

98. All materials removed from the Site shall be disposed of or treated at a facility approved by EPA's RPM and in accordance with § 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and with the final rule entitled "Procedures for Planning and Implementing Off-Site Response Actions, 58 Fed Reg. 49215 (September 22, 1993), and codified at Section 300.440 of the NCP, 40 CFR § 300.440, and with all other applicable federal, state, and local requirements.

XVIII. REMEDIAL PROJECT MANAGER

99. Unless otherwise specifically provided elsewhere in this Order, all communications, including, but not limited to, all submissions, whether written or oral, from Respondents to EPA shall be directed to EPA's RPM or Alternate RPM. Respondents shall submit to EPA four copies of all submissions, including, but not limited to, plans, reports and other correspondence, which are developed pursuant to this Order, and shall send these documents by certified mail or express mail, return receipt requested.

EPA's RPM is:

Philip H. Allen, P.E.
Remedial Project Manager
Arkansas/Oklahoma/Texas Superfund Enforcement Branch (6SF-AO)
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-8516

EPA's Alternate RPM is:

Wren Stenger
Section Chief
Arkansas/Louisiana/Texas Superfund Enforcement Branch (6SF-AO)
U.S. Environmental Protection Agency Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-6583

Whenever, under this Order, Respondents are required to notify the EPA Region 6 Response and Prevention Branch, they shall do so by calling the Environmental Emergency Response Hot Line at (214) 665-2222.

100. EPA has the unreviewable right to change its RPM or Alternate RPM. If EPA changes its RPM or Alternate RPM, EPA will inform Respondents in writing of the name, address, and telephone number of the new RPM or Alternate RPM.

101. EPA's RPM and Alternate RPM shall have the authority lawfully vested in a RPM and On-Scene Coordinator (OSC) by the NCP, 40 CFR Part 300. EPA's RPM or Alternate RPM shall have authority, consistent with the NCP, to halt any Work required by this Order, and to take any necessary response action. EPA's RPM and Alternate RPM shall have the authority to call for meetings with representatives of the Respondents and their Project Manager, which meetings the representatives of the Respondents, along with their Project Manager, shall attend. EPA's RPM and Alternate RPM may call for such meetings as EPA's RPM or Alternate RPM determine necessary to discuss the Respondents' performance of the requirements of this Order.

XIX. ACCESS TO SITE NOT OWNED BY RESPONDENTS

102. If the Site or other property subject to or affected by the cleanup is owned in whole or in part by parties other than those bound by this Order, Respondents shall obtain or use their best efforts to obtain Site access from the owner within sixty (60) days of the effective date of this Order. Such agreements shall provide access for EPA, its contractors and oversight officials, the State and its contractors, and Respondents or Respondents' authorized representatives and contractors, and such agreements shall specify that Respondents are not EPA's representative with respect to liability associated with Site activities. Respondents shall save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action or other costs incurred by the United States including, but not limited to, attorneys' fees and other expenses of litigation and settlement arising from or on account of acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on Respondents' behalf or under Respondents' control, in carrying out activities pursuant to this Order, including any claims arising from any designation of Respondents as EPA's authorized representative under CERCLA Section 104(e), 42 U.S.C. § 9604(e). Copies of such agreements shall be provided to EPA prior to Respondents' initiation of field activities. Respondents' best efforts to obtain access shall include providing reasonable

compensation to any off-site property owner. If access is not obtained within the time referenced above, Respondents shall immediately notify EPA of their failure to obtain access.

103. Subject to the United States' non-reviewable discretion, EPA may use its legal authorities to obtain access for the Respondents, may perform those response actions with EPA contractors at the property in question, or may terminate the Order if Respondents cannot obtain access. If EPA performs those tasks or activities with contractors and does not terminate the Order, Respondents shall perform all other activities not requiring access to that property, and shall reimburse EPA, pursuant to Section XXIV of this Order, for all costs incurred in performing such activities. Respondents shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables. Respondents shall reimburse EPA, pursuant to Section XXIV of this Order, for all response costs (including attorney fees) incurred by the United States to obtain access for Respondents.

XX. SITE ACCESS AND DATA/DOCUMENT AVAILABILITY

104. Respondents shall allow EPA and its authorized representatives and contractors to enter and freely move about all property at the Site and off-site areas subject to or affected by the Work under this Order or where documents required to be prepared or maintained by this Order are located, for the purposes of inspecting conditions, activities, the results of activities, records, operating logs, and contracts related to the Site or Respondents and their representatives or contractors pursuant to this Order; reviewing the progress of the Respondents in carrying out the terms of this Order; conducting tests as EPA or its authorized representatives or contractors deem necessary, using a camera, sound recording device or other documentary type equipment; and, verifying the data submitted to EPA by Respondents. Respondents shall allow EPA and its authorized representatives to enter the Site, to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to Work undertaken in carrying out this Order. Nothing herein shall be interpreted as limiting or affecting EPA's right of entry or inspection authority under Federal law.

105. Respondents may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this Order under 40 CFR § 2.203, provided such claim is not inconsistent with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), or other provisions of law. This claim shall be asserted in the manner described by 40 CFR § 2.203(b) and substantiated by Respondents at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 CFR Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the State without further notice to the Respondents. Respondents shall not assert confidentiality claims with respect to any data related to Site conditions, sampling, or monitoring.

106. Respondents shall maintain, for the period during which this Order is in effect, an index of documents submitted to EPA pursuant to this Order which Respondents claim contain confidential business information. The index shall contain, for each document, the date, author, addressee, and subject of the document. Upon written request from EPA, Respondents shall submit a copy of the index to EPA.

XXI. RECORD PRESERVATION

107. Respondents shall provide to EPA upon request, copies of all documents and information within their possession and/or control or that of their contractors or agents, relating to activities at the Site or to the implementation of this Order, including but not limited to sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondents shall also make available to EPA for purposes of investigation, information gathering, or testimony, Respondents' employees, agents, or representatives with knowledge of facts concerning the performance of the Work.

108. Until ten (10) years after EPA provides notice pursuant to Paragraph 77, each Respondent shall preserve and retain all records, documents, and information in its possession

or control, including the records, documents, and information in the possession or control of its contractors and agents on and after the effective date of this Order that relates in any manner to the Site. At the conclusion of this retention period, Respondents shall notify the EPA at least ninety (90) calendar days prior to the destruction of any such records, documents, or information, and upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

109. Until ten (10) years after EPA provides notice pursuant to Paragraph 77 of this Order, Respondents shall preserve, and shall instruct their contractors and agents to preserve, all records, documents, and information relating to the performance of the Work. At the conclusion of this retention period, Respondents shall notify the EPA at least ninety (90) calendar days prior to the destruction of any such records, documents, or information, and, upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

110. Within 15 days after the effective date of this Order, Respondents shall submit a written certification to EPA that they have not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents, or information relating to their potential liability with regard to the Site since notification of potential liability by the EPA or the State. Respondents shall not dispose of any such records, documents, or information without prior written approval by EPA. Upon request by EPA, Respondents shall submit any such records, documents, or information, or copies thereof, to EPA.

XXII. DELAY IN PERFORMANCE

111. Any delay in performance of this Order that, in EPA's judgment, is not properly justified by Respondents under the terms of this Section shall be considered a violation of this Order. Any delay in performance of this Order shall not affect Respondents' obligations to perform fully all obligations under the terms and conditions of this Order.

112 Respondents shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to EPA's RPM or Alternate RPM within forty-eight (48) hours after Respondents first knew or should have known that a delay might occur. Respondents shall adopt all reasonable measures to avoid or minimize any such delay. Within five (5) business days after notifying EPA by telephone, Respondents shall submit to EPA written notification fully describing the nature of the delay, any justification for delay, any reason why Respondents should not be held strictly accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that shall be taken to mitigate the effect of the delay. Increased costs or expenses associated with implementation of the activities called for in this Order are not a justification for any delay in performance.

XXIII. ASSURANCE OF ABILITY TO COMPLETE WORK

113 Respondents shall demonstrate their ability to complete the Work required by this Order and to pay all claims that arise from the performance of the Work by obtaining and presenting to EPA within thirty (30) days after approval of the Removal Work Plan, one of the following: (1) A performance bond; (2) a letter of credit; (3) a guarantee by a third party; or (4), internal financial information to allow EPA to determine that Respondents have sufficient assets available to perform the Work. Respondents shall demonstrate financial assurance in an amount no less than \$2,000,000, which is the estimate of the costs the EPA would incur were it to perform the actions required in this Order. If Respondents seek to demonstrate ability to complete the Work by means of internal financial information, or by guarantee of a third party, they shall resubmit such information annually, on the anniversary of the effective date of this Order. If EPA determines that such financial information is inadequate, Respondents shall, within thirty (30) days after receipt of EPA's notice of determination, obtain and present to EPA for approval one of the other three forms of financial assurance listed above.

114. At least seven (7) days prior to commencing any work at the Site pursuant to this Order, Respondents shall submit to EPA a certification that Respondents or their contractors and subcontractors have adequate insurance coverage or have indemnification for liabilities for injuries or damages to persons or property which may result from the activities to be conducted by or on behalf of Respondents pursuant to this Order. Respondents shall ensure that such insurance or indemnification is maintained for the duration of the Work required by this Order.

XXIV. REIMBURSEMENT OF RESPONSE COSTS

115. Respondents shall reimburse EPA, upon written demand, for all response costs incurred by the United States in overseeing Respondents' implementation of the requirements of this Order or response costs incurred by EPA in performing any response action which Respondents fail to perform as required by this Order. EPA may submit to Respondents, from time to time, a demand for payment and an accounting of all of, or some of, the response costs incurred by the United States with respect to this Order. EPA's Cost Documentation Management System (CDMS) report or a Superfund Cost Recovery Enhancement System (SCORES) report of the costs incurred, or whatever documents EPA considers, at that time, to be the equivalent, shall serve as the sole accounting of all response costs and as the sole basis for EPA's payment demands.

116. Respondents shall, within thirty (30) days of receipt of each EPA accounting and demand for payment, remit to EPA a certified or cashier's check for the amount of those response costs. If Respondents' payment is not received by EPA within thirty (30) days of Respondents' receipt of EPA's demand for payment, Respondents shall pay interest on those payments demanded by EPA. Interest shall accrue from the date that EPA's written demand for payment of a specified amount is received by Respondents. The interest rate shall be the rate established by the Department of the Treasury pursuant to 31 U.S.C. § 3717 and 4 C.F.R. § 102.13.

117. Respondents shall make checks payable to the Hazardous Substances Superfund and shall include the name of the Site, the Site identification number, which is 04, the account number, which is CERCLA 06-04-97, and the title of this Order. Checks shall be forwarded to

U.S. Environmental Protection Agency
Superfund Accounting
Vertac Inc. Superfund Site 04 Region 6
PO Box 360582M
Pittsburgh, Pennsylvania 15251

118. Respondents shall submit copies of each transmittal letter and check to the EPA's RPM.

XXV. UNITED STATES NOT LIABLE

119. The United States, by issuance of this Order, assumes no liability for any injuries or damages to persons or property resulting from acts or omissions by Respondents, or their directors, officers, employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order. Neither EPA nor the United States may be deemed to be a party to any contract entered into by Respondents or their directors, officers, employees, agents, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order.

120. Respondents shall save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action or other costs incurred by the United States including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from or on account of acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and any person acting on their behalf or under their control, in carrying out any actions or activities pursuant to this Order, including any claims arising from any designation of any Respondent, or Respondents, as EPA's authorized representative under Section 101(e) of CERCLA, 42 U.S.C. § 9604(e).

XXVI. ENFORCEMENT AND RESERVATIONS

121. EPA reserves the right to bring an action against Respondents under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Order and not reimbursed by Respondents. This reservation shall include, but not be limited to, past costs, direct costs, indirect costs, enforcement costs incurred by any agency of the United States, including the U.S. Department of Justice, the costs of oversight, the costs of compiling the cost documentation to support oversight cost demand, as well as accrued interest as provided in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

122. Notwithstanding any other provision of this Order, at any time during the response action, EPA may perform its own studies, complete the response action (or any portion of the response action) as provided in CERCLA and the NCP, and seek reimbursement from Respondents for its costs, or seek any other appropriate relief.

123. Nothing in this Order shall preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, and/or additional remedial or removal actions as EPA may deem necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. § 9606(a), et seq., or any other applicable law. Respondents shall be jointly and severally liable under CERCLA Section 107(a), 42 U.S.C. § 9607(a), for the costs of any such additional actions.

124. Notwithstanding any provision of this Order, the United States hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, 42 U.S.C. § 9601 et seq., the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq., and any other applicable statutes or regulations.

125. Respondents shall be subject to civil penalties under Section 106(b) of CERCLA, 42 U.S.C. § 9606(b), of not more than \$25,000 for each day in which Respondents willfully violate, or fail or refuse to comply with, this Order without sufficient cause. In addition, failure to properly provide response action under this Order, or any portion hereof, without sufficient cause, may result in liability under Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), for punitive damages in an amount at least equal to, and not more than three times the amount of any costs incurred by the Fund as a result of such failure to take proper action.

126. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person for any liability such person may have arising out of or relating in any way to the Site.

127. If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XXVII. ADMINISTRATIVE RECORD

128. Upon request by EPA, Respondents must submit to EPA all records, documents, and information related to the selection of the response action for possible inclusion in the administrative record file.

XXVIII. EFFECTIVE DATE AND COMPUTATION OF TIME

129. This Order shall be effective twenty (20) days after the day it is signed by the Director, EPA Region 6 Superfund Division. Unless otherwise specifically set forth in this Order, all times for performance of ordered activities shall be calculated from this effective date.

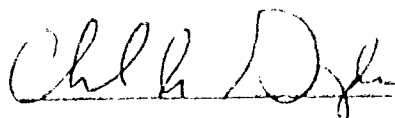
XXIX. OPPORTUNITY TO CONFER

130. Respondents may, within ten (10) days after the date this Order is signed, request a conference with EPA to discuss this Order. If requested, the conference shall occur at a time to be determined by mutual consent during January, 1997 at the U.S. Environmental Protection Agency Region 6, 1445 Ross Avenue, Dallas, Texas 75202-2733. Requests for a conference shall be made by telephone followed by a written request confirmation mailed that day, by certified mail, return receipt requested, to Philip H. Allen, P.E., U.S. Environmental Protection Agency Region 6, AR/OK/TX Superfund Branch (6SF-AO) 1445 Ross Avenue, Dallas, Texas 75202-2733, telephone (214) 665-8516.

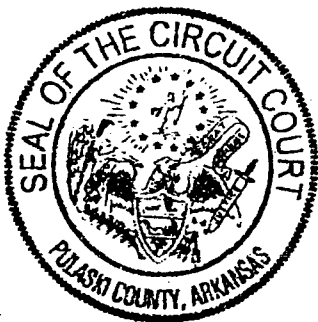
131. The purpose and scope of the conference shall be limited to issues involving the implementation of the response actions required by this Order and the extent to which Respondents intend to comply with this Order. This conference is not an evidentiary hearing, and does not constitute a proceeding to challenge this Order. It does not give Respondents a right to seek review of this Order, or to seek resolution of potential liability, and no official stenographic record of the conference will be made. At any conference held pursuant to Respondents' request, Respondents may appear in person or by an attorney or other representative.

So Ordered, this 31st day of December, 1996.

BY:



for Myron O. Knudson, P.E.
Director, Superfund Division
U.S. Environmental Protection Agency - Region 6



STATE OF ARKANSAS }
COUNTY OF PULASKI } S S

I, Pat O'Brien, County Clerk of the aforesaid County,
do hereby certify that the foregoing instrument is a true
and correct copy of the original

filed in this office on the 6 day of January, 2019
IN TESTIMONY WHEREOF, I have hereunto set my hand
and affixed the seal of this office this 22 day of July
2008.

PAT O'BRIEN, Pulaski County Circuit County Clerk
BY Debi L. Almon
Deputy Clerk

ATTACHMENT 7
PUBLIC NOTICES

BERNARD HODES GROUP

220 East 42nd Street, 15th Floor, New York, NY 10017

PROOF OF INSERTION

Client: CH2MHILL

Publication: ARKANSAS DEMOCRAT GAZETTE

Insertion Dates: Mon, Sep 1, 2008

IN58039

58039

VERTAC, INC. SUPERFUND SITE

U.S. EPA Begins Third Five-Year Review of Site Remedy August 2008



The U.S. Environmental Protection Agency (EPA) Region 6 is conducting the Third Five-Year Review at the Vertac Superfund Site. This review is required by section 121(c) of the Comprehensive Environmental Response, Compensation and Liability Act, also known as "CERCLA" or "Superfund," 42 U.S.C. §9621(c). The purpose of this review is to assure that human health and the environment are being protected by remedial actions taken at the Vertac Site.

The Vertac Superfund Site is located in Jacksonville, Arkansas, and was an herbicide manufacturing facility from the 1950s to 1987. During that time frame, the Vertac facility manufactured 2,4-dichlorophenoxy acetic acid (2,4-D). From 1957 to 1979, it manufactured 2,4,5-trichlorophenoxy acetic acid (2,4,5-T), as well as the *Agent Orange* blend of these two chemicals from 1964 through 1968. Production of 2,4,5-T produces dioxin, and the facility was contaminated with it. The site was the subject of both State and EPA enforcement and cleanup actions. In 1990, EPA approved a remedial action for the Vertac Off-Site areas. Additional EPA

remedial actions were approved in 1993 for process equipment and buildings; in 1996 for on-site soils and debris; and in 1996 for ground water. Remedial action began in late 1993. EPA and the State performed site stabilization and incineration of over 28,000 dioxin contaminated drums, both on and off-site, through a series of removal and other response actions, from 1987 to 1998. All site response was completed by September 1, 1998.

The EPA will publish a second public notice when the review is completed and the results are available for review at the following information repositories:

**Jacksonville City Hall, 1 Municipal Drive,
Jacksonville, AR 72078 Tel: (501) 982-3181.**

**Arkansas Department of Environmental
Quality, 8001 National Drive, Little Rock, AR
72219 Tel: (501) 682-0744.**

Questions concerning the Vertac site should be directed to Philip Allen at (214) 665-8516 or 1-800-533-3508 (toll-free). Information on the Vertac Inc., Superfund Site can be found in the Internet at <http://www.epa.gov/earth1r6/6sf/6sf-ar.htm>.

BERNARD HODES GROUP

220 East 42nd Street, 15th Floor, New York, NY 10017

PROOF OF INSERTION

Client: CH2MHILL

Publication: JACKSONVILLE PATRIOT

Insertion Dates: Wed, Sep 10,

IN58040

58040

VERTAC, INC. SUPERFUND SITE

U.S. EPA Begins Third Five-Year Review of Site Remedy August 2008



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The Vertac Superfund Site is located in Jacksonville, Arkansas, and was an herbicide manufacturing facility from the 1950s to 1987. During that time frame, the Vertac facility manufactured 2,4- dichlorophenoxy acetic acid (2,4-D). From 1957 to 1979, it manufactured 2,4,5- trichlorophenoxy acetic acid (2,4,5-T), as well as the *Agent Orange* blend of these two chemicals from 1964 through 1968. Production of 2,4,5-T produces dioxin, and the facility was contaminated with it. The site was the subject of both State and EPA enforcement and cleanup actions. In 1990, EPA approved a remedial action for the Vertac Off-Site areas. Additional EPA

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BERNARD HODES GROUP

220 East 42nd Street, 15th Floor, New York, NY 10017

PROOF OF INSERTION

Client: CH2MHILL

Publication: THE LEADER

Insertion Dates: Wed, Sep 3, 2008

IN58038

58038

VERTAC, INC. SUPERFUND SITE

U.S. EPA Begins Third Five-Year Review of Site Remedy August 2008



The U.S. Environmental Protection Agency (EPA) Region 6 is conducting the Third Five-Year Review at the Vertac Superfund Site. This review is required by section 121(c) of the Comprehensive Environmental Response, Compensation and Liability Act, also known as "CERCLA" or "Superfund," 42 U.S.C. §9621(c). The purpose of this review is to assure that human health and the environment are being protected by remedial actions taken at the Vertac Site.

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