SECOND FIVE-YEAR REVIEW REPORT
FOR
CABOT CARBON/KOPPERS SUPERFUND SITE

GAINESVILLE,
ALACHUA COUNTY, FLORIDA
EPA ID: FLD980709356

Prepared for

U.S. Environmental Protection Agency
Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303

April 4, 2006

U.S. Army Corps of Engineers
Mobile District
109 Saint Joseph Street
Mobile, Alabama 36602

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Approved by:

Beverly H. Banister
Acting Director
Waste Management Division
U.S. Environmental Protection Agency, Region 4

Date: 4/4/06

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LIST OF ACRONYMS, SYMBOLS, AND ABBREVIATIONS

ACEPD	Alachua County Environmental Protection Department
AOC	Administrative Order on Consent
ARARs	Applicable or Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances and Disease Registry
BMS	Beazer Materials and Services, Inc. (now Beazer East, aka Beazer)
CCA	chromated copper arsenate
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COCs	contaminants of concern, or chemicals of concern
COD	chemical oxygen demand
CY	cubic yards
DNAPL	dense non-aqueous phase liquid
EPA	Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc., consulting firm, wrote RI/FS (1990) for Cabot/Koppers site
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FS	Feasibility Study
gpm	gallons per minute
GRU	Gainesville Regional Utilities (also the POTW, publicly-owned treatment works)
GCTL	groundwater cleanup target level
IDW	investigation-derived waste
IT	consulting firm, conducted some pre-ROD investigations
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NA,N/A	not applicable
NAPL	non-aqueous phase liquid
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
PAHs	polycyclic aromatic hydrocarbons
PCP	pentachlorophenol
pH	potential of hydrogen
POTW	publicly-owned treatment works (in this case GRU, Gainesville Regional Utilities)
PRPs	potentially responsible parties
QA/QC	quality assurance/quality control
RA	remedial action
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RD	remedial design

RETEC	consultant to Beazer (Koppers PRP); RETEC is not an acronym, it is the company name, aka The RETEC Group
RI	Remedial Investigation
RSFS	revised supplemental feasibility study
ROD	Record of Decision
SERDP	Strategic Environmental Research & Development Program
SFS	supplemental feasibility study
SRI	Soil Remediation, Inc.
TOC	total organic carbon
TRC	consultant to Beazer (Koppers PRP); TRC is the company name, and not an acronym
UAO	Unilateral Administrative Order
µg/L, ug/L	micrograms per liter
USACE	U.S. Army Corps of Engineers

EXECUTIVE SUMMARY

The Cabot Carbon/Koppers Superfund site encompasses about 170 acres, bridging two properties in a commercial and residential area of Gainesville, Florida. This site was originally two sites, Cabot Carbon in the southeast portion of the site, and Koppers on the western portion of the site. In 1983 this site was placed on the National Priorities List (NPL) making it eligible as a Superfund site. Cabot Carbon is inactive, and is now commercial property. Koppers has continued to operate as an industrial plant. Contamination has impacted soil and groundwater, and possibly offsite surface water. Two potentially responsible parties (PRPs) are funding the cleanup for each site. Beazer East, Inc. (Beazer) is the PRP for the Koppers portion of the site. Cabot Corporation is the PRP for the Cabot Carbon portion of the site. The trigger for this five-year review was the initial five-year review report signed on March 23, 2001.

The 1990 Record of Decision (ROD) for the Cabot Carbon/Koppers site specified a remedy addressing soil and groundwater contamination. The remedy specified for the Cabot Carbon portion consisted of the installation of a groundwater trench to intercept contaminated groundwater from the upper surficial aquifer and discharge to the publicly-owned treatment works (POTW). This remedy was implemented in 1995, and groundwater monitoring has been continuing quarterly. Also specified in the ROD was additional soil sampling at the former Cabot wastewater lagoon area and the northeast "wetland lagoon area" near North Main Street. The ROD specified remediation of these areas, if necessary.

In the 1990 ROD, the remedy for the Koppers portion included excavation and treatment of contaminated unsaturated soil, soil backfilling, and installation of a groundwater pump and treat system in the surficial aquifer. The surficial aquifer pump-and-treat system was installed in 1995. During the investigation for the remedial design, a greater extent of soil contamination, than originally estimated, was found. The depth and levels of contamination were greater than previously determined from the pre-ROD investigations. This larger extent of contamination necessitated re-evaluation of the remediation strategy and technologies because treatability studies showed that the selected remedy could not reach the soil cleanup criteria specified in the ROD. In 2001, the U.S. Environmental Protection Agency (EPA) proposed a new remedial plan specifying containment, but it was determined to be ineffective and was rescinded. The post-ROD remedial investigations have been continuing at the Koppers portion of the site, particularly because dense non-aqueous phase liquids (DNAPLs) have been found in the deeper aquifers (Hawthorn and Floridan). The 1995 surficial groundwater pump-and-treat system was intended to prevent offsite migration of contaminated groundwater. However, the system of shallow extraction wells situated along the downgradient perimeter of the Koppers site is now believed to be ineffective in preventing offsite migration of contaminated shallow groundwater. Furthermore, the system does not affect contaminated groundwater that may have migrated through the surficial aquifer into the Hawthorn Group and Floridan aquifers.

For many years, the clay in the Upper Hawthorn Group was assumed to be a barrier to downward migration of contamination into the Floridan aquifer. As recently as 2002, this assumption changed. Sampling data from 2003 revealed that contamination was widespread in the Hawthorn Group. In 2004, contamination was discovered in the Floridan aquifer from an onsite Koppers well. Remedial investigations and remedy selection now should focus on the surficial aquifer,

the Hawthorn Group (intermediate aquifer), and the Floridan aquifer. New Floridan wells are currently being installed at the Koppers portion of the site. At the Cabot Carbon site, no current evidence of contaminated groundwater migration to the Floridan aquifer or offsite exists. However, the results of investigative subsurface work, studies, models, and data gathered over the past several years have revealed a lack of adequate assessment beneath the surficial aquifer at both sites.

Additional investigations at both the Koppers and Cabot portions of the site are needed for better delineation of contamination in the surficial aquifer, Hawthorn Group, and the Floridan aquifer. A new feasibility study (FS) by the PRP for the Koppers portion of the site is planned.

A protective determination of the remedy in place at the Cabot Carbon portion of the site cannot be made at this time until further information is obtained. Further information will be obtained by taking the actions pertaining to the Cabot portion of the site outlined in Section IX of this report. There is a possibility of contaminant migration which should be addressed by further investigations. Confirmation of complete capture of contamination in the surficial groundwater by the interceptor trench is needed. A more thorough evaluation of the potential for contamination in the Hawthorn on site is also necessary. It is expected that these actions will take approximately one year to complete, at which time an assessment of protectiveness can be made.

The partial remedies in place at Koppers are not protective of human health and the environment. The groundwater containment system is not effective in preventing offsite migration of contaminated surficial aquifer groundwater. The system needs to be re-evaluated to determine modifications needed for maximum capture efficiency. Investigations within the past few years indicate that widespread contamination exists in the Hawthorn at the Koppers site. Furthermore, contamination exceeding drinking water standards in the Floridan aquifer has also been detected. More delineation of contamination in all of the aquifers is required to gain a thorough understanding of site conditions in order to re-evaluate and select a remedy that will be protective.

Overall, the remedy at the Cabot Carbon/Koppers site is not protective, as demonstrated by the following issues. The selected remedy in the 1990 ROD addressed only the surficial aquifer. Since the 1990 ROD was issued, contamination has been found to be far greater and deeper than was realized at the time. Until recently, the clay at the top of the Upper Hawthorn Group was assumed to be a barrier to downward migration of contamination. Recent findings indicate this is not the case. In addition to the surficial aquifer, widespread contamination in the Hawthorn exists at the Koppers site, and contamination in the Floridan aquifer has been detected. More delineation of contamination is needed in the surficial aquifer, the Hawthorn Group (Intermediate aquifer) and the Floridan aquifer on and off site. At a minimum, the issues and deficiencies outlined in this five-year review should be addressed. Once adequate delineation is achieved, remediation strategies and technologies should be evaluated to select appropriate remedial actions. A new remedy is required to address the full extent of contamination at the site.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Cabot Carbon/Koppers Site		
EPA ID *(from WasteLAN)*: FLD980709356		
Region: 4	**State:** FL	**City/County:** Gainesville/Alachua

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:** N/A
Has site been put into reuse? ☒ YES ☐ NO	

REVIEW STATUS	
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency	
Author name: Laura Roebuck	
Author title: Geologist	**Author affiliation:** U.S. Army Corps of Engineers
Review period:** 01 / 9 / 2006 to 03 / 17 / 2006	
Date(s) of site inspection: 02 / 01 / 2006, 02/02/2006 and 02/03/2006	
Type of review: ☒ 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 Remedial Action On-site Construction (OU-2) ☐ Actual Remedial Action Start at OU# NA ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify)	
Triggering action date *(from WasteLAN)*: 03/23/2001	
Due date *(five years after triggering action date)*: 03/23/2006	

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

1. The groundwater extraction/containment system at the Koppers site is ineffective in preventing offsite migration of contaminated surficial aquifer groundwater. Annual groundwater monitoring reports indicate that groundwater downgradient of the site is contaminated with naphthalene and other contaminants.
2. The lateral and vertical migration of contaminated groundwater and DNAPL in the surficial aquifer at Koppers should be investigated further to determine impacts to surficial aquifer groundwater downgradient of the site and impacts to the Hawthorn Group and Floridan aquifer. Additionally, impacts to surface water flowing offsite into Springstead Creek and Hogtown Creek should be investigated.
3. The widespread contamination in the Hawthorn Group discovered at Koppers is not fully delineated, including the downgradient and westerly areas of the site. The potential for contamination in the Hawthorn Group exists at the Cabot site. The source areas at the Koppers site are of particular concern since they have not been remediated and likely continue to release contamination into the groundwater.
4. The Hawthorn Group was previously assumed to be a barrier to downward migration of contamination. The Hawthorn Group is now believed to be composed of leaky confining layers, capable of releasing contamination into the underlying Floridan aquifer. Groundwater contaminants have been detected at Koppers in several Floridan aquifer wells.
5. Contamination at source areas has not been fully delineated, and remedial measures in these areas have not been implemented. Soil contamination in the source areas at the Koppers site has not been remediated and the former Cabot Lagoons may still be acting as a source.
6. The full extent of downward migration of DNAPL and dissolved polyaromatic hydrocarbon and phenolic compounds including pentachlorophenol contamination from the Koppers source areas is unknown.
7. Arsenic contamination has been detected in monitoring wells at the site, including a Floridan well. The full extent of arsenic contamination is unknown. Arsenic potentially migrating into the Floridan aquifer is a concern.
8. At the Cabot site, the effectiveness of the groundwater interceptor trench system in intercepting contaminated surficial groundwater at Cabot Carbon should be evaluated. The degree of capture of surficial groundwater contaminants below the depth of the interceptor system has not been determined. The deepest groundwater collection piping in the interceptor system is 12 feet below ground surface, and the surficial aquifer is approximately 28 feet deep in this area. Additionally, the sole determining factors of the effectiveness of the trench are only two downgradient monitoring wells.
9. Many of the monitoring wells installed at the Cabot Carbon/Koppers site have not been monitored routinely over the years. An insufficient amount of data exists as a result.

Five-Year Review Summary Form, cont'd.

Issues, cont'd:

10. Odors associated with the Cabot Lift Station and the sumps are a concern. Complaints by the public continue, particularly near the Lift Station. Air quality monitoring at Cabot Lift Station was performed in 2005. Sampling was conducted for one day. The results indicated the air contained low levels of naphthalene, toluene, and ethylbenzene, all below EPA's risk-based criteria.
11. COCs and remedial goals for the site have changed since the ROD was issued (see Table 4).
12. Arsenic and dioxin contamination have been documented on site in unsaturated soils. In addition, arsenic has been detected offsite. However, the contamination has not been adequately delineated on or off site.

Recommendations and Follow-up Actions:

1. The Koppers surficial extraction system should be re-evaluated to determine optimum well locations, optimum well spacing, and well pumping rates. An evaluation for adding wells near source areas and laterally, as necessary, should be performed to maintain hydraulic capture of the surficial groundwater.
2. In the ditch located immediately offsite and northeast of Koppers, sediment and water sampling should be conducted for analysis of contaminants of concern (COCs). The groundwater exiting the site must meet surface water criteria since the groundwater is discharging to a ditch that flows into Springstead Creek.
3. Further characterization of the Hawthorn Group sediments is necessary for remedial design and action. The extent of contamination in the Hawthorn Group at the entire site should be better delineated. Investigations at Koppers confirms the presence of contamination in the Hawthorn. At Cabot, due to historic practices and data obtained from past investigations, the possibility of contamination in the Hawthorn exists; therefore more groundwater data is needed.
4. The possibility of contamination in the Floridan needs to be addressed. The new Floridan wells installed by Beazer should continue to be monitored regularly. Vertical and horizontal delineation of groundwater contaminants should be established.
5. Interim remedial measures at the source areas should be evaluated and implemented, if feasible, to prevent further contamination.
6. Subsurface investigations, such as direct-push sampling, should be performed at the base of the surficial aquifer beneath the Koppers source areas to determine the extent of contamination in the surficial and the potential for continued downward DNAPL migration into the Hawthorn. Surface geophysics, combined with confirmed borehole geophysical logging information, should be considered as a tool to better characterize the Hawthorn.

Five-Year Review Summary Form, cont'd.

Recommendations and Follow-up Actions, cont'd:

7. The vertical and lateral extent of arsenic contamination in the groundwater on and off site should be delineated. Identification of background and baseline arsenic concentrations is also needed as part of the investigation.
8. The Cabot groundwater interceptor trench system should be re-evaluated to determine its effectiveness in intercepting groundwater contaminants. Additional subsurface investigations are necessary for a thorough evaluation. The entire length along the eastern side of the trench should be evaluated, as well as the northern boundary.
9. All of the surficial wells installed in the 1984 to 1995 investigations should be cleaned out and redeveloped. Re-surveying of the wells should be performed as necessary. Regular monitoring of all of the wells and sample analysis for all site COC's should be performed.
10. Air quality monitoring at Cabot Lift Station and the sumps should continue. Air monitoring should be performed over a period of at least two days during the summer, and seasonally. Data should be evaluated based on health and nuisance effects. Local regulatory agencies should be contacted regarding nuisance ordinances. At the lift station, the air samples should be collected near the vent. The effectiveness of the carbon filters installed to reduce odors emitting from the vent at the lift station should be monitored, with replacement of filters as necessary. Pilot studies to determine optimum treatment options should be considered.
11. Re-evaluate the list of COCs and associated remedial goals (including dioxins, arsenic and phenolic compounds) based on more recent toxicological information.
12. The extent of soil contamination for all COCs (including arsenic and dioxin) needs to be delineated on and off site, and addressed if necessary to assure protectiveness.

Protectiveness Statement:

A protective determination of the remedy in place at the Cabot Carbon portion of the site cannot be made at this time until further information is obtained. Further information will be obtained by taking the actions pertaining to the Cabot portion of the site outlined in Section IX of this report. There is a possibility of contaminant migration which should be addressed by further investigations. Confirmation of complete capture of contamination in the surficial groundwater by the interceptor trench is needed. A more thorough evaluation of the potential for contamination in the Hawthorn on site is also necessary. It is expected that these actions will take approximately one year to complete, at which time an assessment of protectiveness can be made.

The partial remedies in place at Koppers are not protective of human health and the environment. The groundwater containment system is not effective in preventing offsite migration of contaminated surficial aquifer groundwater. The system needs to be re-evaluated to determine modifications needed for maximum capture efficiency. Investigations within the past few years indicate that widespread contamination exists in the Hawthorn at the Koppers

Five-Year Review Summary Form, cont'd.

Protectiveness Statement, cont'd:

site. Furthermore, contamination exceeding drinking water standards in the Floridan aquifer has also been detected. More delineation of contamination in all of the aquifers is required to gain a thorough understanding of site conditions in order to re-evaluate and select a remedy that will be protective.

Overall, the remedy at the Cabot Carbon/Koppers site is not protective, as demonstrated by the following issues. The selected remedy in the 1990 ROD addressed only the surficial aquifer. Since the 1990 ROD was issued, contamination has been found to be far greater and deeper than was realized at the time. Until recently, the clay at the top of the Upper Hawthorn Group was assumed to be a barrier to downward migration of contamination. Recent findings indicate this is not the case. In addition to the surficial aquifer, widespread contamination in the Hawthorn exists at the Koppers site, and contamination in the Floridan aquifer has been detected. More delineation of contamination is needed in the surficial aquifer, the Hawthorn Group (Intermediate aquifer) and the Floridan aquifer on and off site. At a minimum, the issues and deficiencies outlined in this five-year review should be addressed. Once adequate delineation is achieved, remediation strategies and technologies should be evaluated to select appropriate remedial actions. A new remedy is required to address the full extent of contamination at the site.

Other comments:

A review of the numerous investigations, studies, and models for this site over the years indicates a lack of information in the subsurface below the surficial aquifer, particularly at the Koppers portion of the site. EPA developed a Floridan Monitoring Plan for the Koppers portion of the site in 2005, which is being implemented as this five-year review was being performed.

SECOND FIVE-YEAR REVIEW REPORT
CABOT CARBON/KOPPERS SITE
GAINESVILLE, FLORIDA

I. INTRODUCTION

The U.S. Army Corps of Engineers (USACE) was tasked by the U.S. EPA to conduct a five-year review of the remedial action (RA) implemented at the Cabot Carbon/Koppers Site in Gainesville, Florida, to evaluate the protectiveness of the site. The five-year review was conducted in January, February and March 2006. This report documents the results of the review.

The primary purpose of the five-year review is to determine if the site remedy is protective of human health and the environment. In addition to presenting the findings and conclusions of the review, deficiencies are identified, and corrective actions are recommended. The five-year review documents the evaluation of the site remedy, operation and maintenance activities, and the continued appropriateness of remedial action objectives (RAOs) at the site.

This five-year review is prepared pursuant to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) §121 and the National Contingency Plan (NCP). CERCLA § 121 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. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

This requirement is interpreted further in the NCP; 40 Code of Federal Regulations (CFR) § 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.*

This five-year review is the second review for the Cabot Carbon/Koppers site. The trigger for this review was the first five-year review completed in March 2001. The initial trigger was the commencement of a RA at the Cabot Carbon site in August 1995. This five-year review is

required because contaminants remain at the site above levels allowing for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

The site chronology has been summarized based on the EPA Administrative Record and documents listed in Attachment 1. Table 1 presents the chronology of events for the Cabot Carbon/Koppers site.

Table 1
Chronology of Site Events

Event	Date
Industrial activities commence at Koppers site	1916
Industrial activities commence at Cabot Carbon site	1945
Cabot Carbon site fined for causing pollution of Hogtown Creek	1967 -1977
Cabot/Koppers site listed on NPL	August 1983
Initial groundwater interceptor trench installed on Cabot portion of site	1985
Initial Remedial Investigation by IT Corporation completed	1987
Cabot and Beazer East (aka BMS) enter into AOC to perform supplemental RI	October 1988
Supplemental RI completed	September 1989
Baseline Risk Assessment and FS completed	February 1990, and May 1990
Record of Decision (ROD) signed	September 27, 1990
Cabot Carbon signs Consent Decree	1991
EPA issues UAO to Beazer and Koppers directing development of RD	March 1991
Hydrogeologic Investigation of surface water body area, eastern portion of site, by Weston completed	March 1993
EPA amends UAO issued to Beazer and Koppers	April 1994
Contaminated sediments removed from Northeast Lagoon, Cabot Carbon	1994
EPA signs Administrative Order on Consent for Removal Action at Cabot site	January 1995
Construction of the Groundwater Interceptor Trench completed	June 1995
Final Northeast Lagoon Closure Report for Eastern Portion, Cabot Carbon site, submitted to EPA	September 1995
Environmental Science and Engineering, Inc., (ESE) submits extraction well system rehabilitation and testing report for Koppers site	June 1995
Groundwater ‘pump and treat’ system (shallow aquifer) installed at Koppers.	1995
Beazer submits Koppers site quarterly comprehensive monitoring report	May 1996
Hydrological assessment report by Stidham completed	September 1996
Cabot submits groundwater remedial report for eastern portion (Cabot Carbon)	May 1997
Beazer submits Closure Report for former creosote treatment bldg 2A	August 1997

Table 1, cont'd
Chronology of Site Events

Event	Date
Beazer completes an Interim Remedial Action by removing the former creosote treatment building and performing in place closure of the buildings' foundation	1997
Beazer submits a SFS	January 1997
Beazer submits RSFS Volume 1 and 2	September 1999
EPA signs Initial Five-Year Review	March 2001
EPA submits proposed remedy plan based on (revised) SFS; Plan is rescinded.	May/June 2001
Beazer conducts further studies to characterize Hawthorn clay and develop a database of local private wells in the vicinity.	June 2001
Beazer conducts additional field investigations to characterize the Hawthorn Group and aquifer.	March, April 2002
Beazer report on Field investigations to further characterize Hawthorn Group. Significant groundwater contamination of creosote and petroleum hydrocarbons was found up to 90' below ground surface, and below several clay layers.	September 2002
Beazer conducts further field investigations to further characterize Hawthorn Group and Floridan aquifer water quality and flow direction. Mail survey of private wells is completed. Floridan aquifer and Hawthorn aquifer groundwater contamination is confirmed.	April – June 2003, and November 2003
Gainesville Mayor and GRU send letters to EPA urging remediation of Koppers.	October, November 2003
GRU installs and samples sentinel wells between Koppers site and Murphree wellfield. One well had arsenic contamination above MCL.	October – December 2003, and April 2004
Beazer conducts water quality testing in 8 offsite shallow private and one deep Floridan aquifer well. Arsenic was detected in one shallow well; and low levels of contamination detected in the Floridan well.	February 2004
County and City Commission approve resolutions urging EPA to expedite source remediation efforts and take actions to address contamination discharges to Floridan and Intermediate aquifers.	March, April 2004
EPA directs Beazer to develop a Floridan Aquifer Monitoring Plan and to expedite and complete field activities to further characterize source areas.	March 2004
Beazer works on developing new groundwater model for Koppers site using GRU, county and recent new data.	January – June 2004
Floridan Aquifer Monitoring Plan developed by Beazer.	June 2004
EPA directs Beazer to submit all data from field investigations, and to develop project plan to address deep contamination in source areas, and submit a project schedule for remediation by August 30, 2004.	June 2004
Beazer presents results confirming contamination in Floridan aquifer wells in source areas. Requests extension of August 2004 deadline to December 2004.	July 2004

Table 1, cont'd
Chronology of Site Events

Event	Date
Beazer submits Proposed Interim Measures/Remedy Pilot Approach.	August 2004
Contamination found in Floridan aquifer well above drinking water standard.	August 2004
EPA prepares Revised Floridan Aquifer Monitoring Plan, and Beazer agrees to implement.	August 2005
Floridan aquifer monitoring wells installation begins.	Late 2005
Second five-year review begins.	January 2006
Preliminary sampling and analysis results indicate contamination in Floridan wells at depths in the deepest zones of the drilled wells (approximate depths of 90' below top of Floridan, about 200' below ground surface).	February 2006
Second five-year review signed	April 2006

Notes: NPL – National Priorities List
GRU – Gainesville Regional Utilities
EPA – Environmental Protection Agency
SFS – Supplemental Feasibility Study
RSFS – Revised Supplemental Feasibility Study
MCL – maximum contaminant level

III. BACKGROUND

The following subsections present background information for the Cabot Carbon/Koppers site including physical characteristics, land resource use, history of contamination, initial response, and basis for taking action.

PHYSICAL CHARACTERISTICS

The Cabot Carbon/Koppers site is located within the city limits of Gainesville, Florida, and encompasses approximately 170 acres. See Figure 1 in Attachment 2 for location map. Elevation ranges from 150 to 200 feet above mean sea level. The site is located at the northwest corner of North Main Street and NW 23rd Avenue in the northern part of Gainesville. The site is bounded by residential and commercial areas in a busy part of Gainesville. The Koppers portion of the site is the only zoned industrial site in the immediate area. The Cabot Carbon portion of the site is zoned commercial. Cabot Carbon lies immediately to the east of Koppers. The land to the immediate west of the site is residential. The land northwest is also residential. North-northwest of the site are businesses and a small trailer park. South and east along NW 23rd Avenue and North Main Street are commercial areas. See Figure 2 in Attachment 2.

The Floridan aquifer underlies the site, lying beneath the surficial aquifer and the Intermediate aquifer (aka Hawthorn Group). The flow in the Floridan aquifer at the site is northeast. The Gainesville Regional Utilities (GRU) well field and treatment facility is approximately 2 ½ miles northeast (downgradient) of the site. It provides the municipal water supply for Gainesville, withdrawing water from the Floridan aquifer from the Murphree wellfield.

The site lies within the Hogtown Creek drainage basin, covering 15.6 square miles. Hogtown Creek drains southward across the transition zone into the western plains region, where it ultimately discharges directly to the Floridan aquifer via Haile sink, about 10 miles downstream of the site. Drainage patterns have resulted in limited onsite wetlands. Within the northeast undeveloped portion of the site, a forested area covering about 30 acres represents second growth conditions and supports both wetland and upland species. Historical aerial photography indicates this area was previously marsh and swampland.

For the Koppers portion of the site, access is from NW 23rd Avenue. A large Koppers sign is present at the entrance. The site is completely fenced, and has an entry gate. Entry is restricted, with visitors directed to report to and sign in at the Koppers office. The Koppers portion of the site covers approximately 90 acres. This site gently slopes to the north-northeast. Low swampy areas are prevalent in an undeveloped, vegetated area to the northeast of the Site. A drainage ditch bisects the site from south to north. Surface run-off from the site drains to the northeast into Springstead Creek, via a ditch just offsite. Springstead Creek is about 750 feet north of Koppers. The Creek flows west and eventually discharges to Hogtown Creek, approximately 3000 feet west of the site. Hogtown Creek eventually discharges to the Floridan aquifer via Haile sink.

The site is currently an operating wood-treating facility that also temporarily stores creosote-treated timber. Chromated copper arsenate (CCA) is used in the current wood treating operations. Creosote is not used in current wood-treating operations.

Four areas of concern exist on the Koppers site:

- 2 wastewater ponds (north lagoon and south lagoon)
- Former cooling pond/process area
- Drip track area

These source areas ceased being used in plant operations before the ROD was signed. (See Figure 3 in Attachment 2 for approximate source area locations.) Available information regarding how the source areas were closed is limited.

The Cabot Carbon portion of the site lies east of the Koppers portion. The area is now a shopping center with a large parking lot, another strip mall, and a car dealership. Access is unrestricted. Entrance to the parking lot is from NW 23rd and Main Street. The Cabot Carbon site encompasses about 34 acres. Surface water drainage is controlled by a storm water pond located in the northwestern portion of the Cabot portion of the site overlying the former Cabot lagoons, a storm water pond at North Main Street and 31st Avenue, and a concrete lined drainage ditch that runs along Main Street. The lined drainage ditch overlies the groundwater interceptor trench system, and runs north along the eastern boundary of the site until it intersects an east-west ditch near NE 31st Avenue. This ditch discharges into Springstead Creek approximately 750 feet to the north of the northern site boundary. Springstead Creek flows in a westerly direction into Hogtown Creek, which flows in a southerly direction, and is located approximately 3,000 feet west of the site.

Three former lagoons in the northwest portion of the Cabot property existed for storing wastewater for product recovery from the pine distillation processes. See Figure 3 in Attachment

2 for source area locations. Wastewater was discharged to these three unlined lagoons which contained pyroligneous constituents and pine tar. The lagoons allowed pine tar to settle for product recovery. Acid water was also contained in the lagoons. The impoundment walls were breached in 1967, and the lagoon contents were discharged to the ditch and eventually to Hogtown Creek.

LAND AND RESOURCE USE

The facility on the Koppers site has been an active plant since 1916 and has historically been used to preserve wood utility poles and timbers. Three different chemical solutions have been used, including creosote, PCP, and chromated copper arsenate (CCA). The main industrial facilities on the Koppers property are primarily used for wood storage. More recently the site also stores creosote timbers temporarily. The facility originally used creosote in their wood-treating operations. Later, the chemicals changed to PCP and CCA. It is reported that PCP was used at the site beginning in 1969. The current CCA plant was constructed in the 1960's. At the present time only CCA treatment processes are being used.

The facility originally on the Cabot Carbon site began its pine tar and charcoal generation operations in 1911. The operations ceased in 1967. The processing involved the destructive distillation of pine stumps to produce pine oil, pine tar, turpentine, charcoal and pyroligneous acid. Currently the site is a shopping center, a car dealership, and a large parking lot.

The land uses in the area are industrial (Koppers site), commercial and residential. This area lies in the northern part of Gainesville, within the city limits, in a very busy and heavily trafficked area. The land uses in the area are expected to remain the same for the foreseeable future. Beazer, the responsible party for the Koppers site, does not currently own or operate the site. Another car dealership is planned for an undeveloped area directly across the street from the Cabot Carbon lift station.

The surficial aquifer at the site is contaminated with numerous compounds from previous processing operations at both sites. Underlying the surficial aquifer is the Hawthorn Group, the Intermediate aquifer. Underlying the Hawthorn Group is the Floridan aquifer. The depth to the top of the Floridan at the site is 200' to 250' below ground surface. See Figure 4 in Attachment 2 for a generalized cross section view of the site geology. It was previously believed that the Hawthorn Group was composed of impermeable clay, 30 to 35' thick and, as a result, believed that no interconnection between the Intermediate and surficial aquifer existed. Therefore, for many years, investigations in the Hawthorn and below were not addressed. However, mention of a hydraulic connection between the surficial, Intermediate and Floridan aquifers exists in the Health Assessment of 1989.

Recent investigations have shown that the Hawthorn Formation is a series of clay and silt/clay units, resulting in two water-bearing units termed the Upper Hawthorn Group and the Lower Hawthorn Group. See Figure 5 in Attachment 2 for a simplified cross section of the Hawthorn Group at the site. Recent investigations have also revealed contamination in the Hawthorn Group, and the underlying Floridan aquifer at the Koppers site. The Floridan aquifer is the primary source of area drinking water. The City's Murphree wellfield extracts water from the

Floridan, and supplies the water for the City of Gainesville. This wellfield is about 2 ½ miles northeast of the site.

The potential for environmental damage by off-site migration of shallow contaminated groundwater into the offsite down gradient ditch and Springstead Creek is a concern. Springstead Creek flows into Hogtown Creek, which discharges into Haile sink, which discharges into the Floridan aquifer.

Remedial actions at both the Cabot and Koppers sites addressing the shallow groundwater contamination have been implemented. Remedial actions addressing the subsurface below the surficial aquifer and the source areas have not been established.

HISTORY OF CONTAMINATION

Industrial processes at the site began in 1911. Studies conducted by the University of Florida in 1961 and 1962 concluded that the operating wood treatment facilities were having a detrimental effect on Hogtown Creek.

Cabot Carbon

Industrial processes at the site began in 1911. The pine tar and charcoal generation facility operated under various names over the years, including:

- The Williamson Chemical Company
- The Florida Industrial Corporation
- The Retort Chemical Company (built the pine processing plant in 1928)
- Cabot Carbon Company

Cabot Carbon acquired the property in 1945 and operated it until 1966. The Cabot Carbon process, consisting of the destructive distillation of pine stumps, produced about 6000 gallons of crude wood oil and pitch daily. The process produced:

- pine oil
- turpentine
- pine tar
- charcoal
- pyroligneous acid

The general layout of the Cabot facilities is presented in Figure 6 in Attachment 2. The facilities included a series of retorts, briquette processing and storage facilities, a machine shop, a barreling shed, office and garage areas, and a series of storage bins and tanks. Railroad sidings serviced the retort areas and the briquette processing and storage facilities. The plant facilities included a boiler house, locker room, pump house and showers. It is believed that three production wells near the pump house provided the water supply for the site and the processes. These wells were abandoned in 1998.

Types of Hazardous substances, Cabot Carbon:

- Phenols
- Terpenes
- Terpenoids
- Resin acids

One concrete-lined acid water pond was in the northern part of the site, where wastewater containing residual pyroligneous constituents and pine tar was discharged. Pine tar was allowed to settle for product recovery. This pond was approximately 27 feet by 90 feet, and consisted of a series of shallow concrete basins separated by partitions with connecting spillways. The settled pine tar was recovered periodically as product and pumped to adjacent storage facilities. The pond overflowed intermittently to an onsite drainage ditch that discharged to a second ditch paralleling North Main Street and ultimately discharged to Hogtown Creek. In latter years, three unlined earthen lagoons were constructed to the north and downstream of the lined pond to increase capacity.

In 1967, the new owner breached these three lagoons, and the contents flowed offsite through an adjacent 50-acre wetland and into a stormwater ditch connecting with Springstead and Hogtown Creeks. The environmental damage to Hogtown Creek following this incident was detectable for five miles downstream. In 1977 the new property owner began construction of the shopping center, and allowed lagoon wastes to drain into Hogtown Creek. In 1977, Florida Department of Environmental Regulation (FDER) (now Florida Department of Environmental Protection, FDEP) conducted a biological survey in parts of Hogtown Creek and determined it was devoid of life from the point of drainage discharge for 1.1 miles downstream. Cleanup operations were performed in 1979 to remove some contaminated sediments from the ditch, but there is no documented evidence of the extent of source remediation activities.

The Northeast Lagoon that is northeast of Cabot Carbon former boundaries had elevated concentrations of carcinogenic PAHs, a chemical signature consistent with coal tar and creosote. Most historical information on the Northeast Lagoon is available from aerial photography, soil sampling, and property records. The lagoon was installed prior to 1937, was on the railroad property, and evidently was filled with coal tar. Most information on the Northeast Lagoon was determined after the ROD was signed. Investigations in the 1990s revealed the extent of contamination of this lagoon. Although human health risk assessments undertaken to evaluate potential risks to Northeast Lagoon soils were acceptable, over 4,000 tons of soil were excavated, transported and treated offsite. Part of the footprint of the Northeast Lagoon was overlain by North Main Street, and all affected vadose zone soils in unpaved areas were excavated and removed in 1994. The reasons for the Northeast Lagoon removal were:

- To protect groundwater quality in the surficial aquifer and
- To remove contaminated soils prior to digging the Cabot Carbon groundwater interceptor trench, which was constructed through a portion of the lagoon.

A portion of contaminated soil in the former Northeast Lagoon lies under the footprint of North Main Street. These soils are limited and inaccessible since they are covered by pavement.

Koppers

Industrial processes at the site began in 1916 with the American Lumber and Treating Company preserving wood utility poles and timbers. This company primarily used creosote in the treatment process. Koppers purchased plant operations in 1954, and bought the property in 1984. Wood treating processing over the years were modified to include two additional processes; one using CCA, beginning in the 1960's, and another using PCP, beginning in 1969. The site is a currently-active wood-treating and storage facility. The main processing activities occur on the southeastern portion of the property. See Figure 7 in Attachment 2 for Koppers site layout. The current CCA Plant was constructed in the late 1960's. CCA is used in the wood treating processes today. Creosote is no longer used to treat wood at the facility.

Investigations by Koppers in the 1980s revealed soil and groundwater contamination. The surficial groundwater is contaminated. Groundwater flow direction is northeast. A groundwater extraction system to prevent offsite migration of contaminated shallow groundwater was initiated in 1995, but is ineffective. Therefore, shallow contaminated groundwater may be migrating offsite into adjacent surface water bodies. Contamination has also been found in the Floridan aquifer from onsite wells. The groundwater flow in the Floridan is towards the northeast, towards the Murphree wellfield which extracts water from the Floridan for Gainesville water supply.

INITIAL RESPONSE

The earliest regulatory action occurred in 1967 when Cabot Carbon was fined $100 for polluting Hogtown Creek. Another charge was assessed to cover the City's cost for corrective action. Cabot/Koppers was placed on the NPL in 1983. FDER and EPA entered into a cooperative agreement giving FDER management lead at the site. Other pre-ROD actions are outlined in Table 2.

Table 2. Pre-ROD actions**

Year	Action
1967	Cabot Carbon fined for polluting Hogtown Creek and charged to cover the City's cost of corrective action.
1977	FDER conducted biological survey for 2.8 miles in Hogtown Creek and found creek was devoid of life for 1.1 miles downstream of the 1977 illegal discharge from Cabot lagoons by new owner.
1979	Cleanup operations performed to remove some contaminated sediments from ditch from lagoon breach (no documented evidence of cleanup).
1979-1981	EPA and FDER conducted preliminary studies of the site(s).
1982	University of Florida conducted further evaluations on the Cabot site.
1983	Second EPA investigation: soil and groundwater from both sites; surface water and macroinvertebrate sampling in ditches; sediment sampling in Hogtown Creek, Main Street drainage system, and Koppers drainage ditch.
1984	EPA granted Florida Department of Environmental Protection (FDEP) a cooperative agreement to perform the RI/FS.
1985	Koppers Site investigation further evaluated the groundwater for TOC, chemical oxygen demand (COD), phenols, PCP, copper, chromium and arsenic.
1985	FDER installed leachate collection system on Cabot site.
1986	FDER completed study addressing potential environmental issues associated with widening North Main Street.
1987	Initial RI completed and found deficient.
1988	The PRPs entered into AOC to perform a supplemental RI, a risk assessment and a FS.
1989	Supplemental RI for Koppers completed.
1989	Health Assessment completed.
1990	Baseline Risk Assessment and FS completed.

**list of pre-ROD investigations is not comprehensive

BASIS FOR TAKING ACTION

The basis for taking action at the Cabot Carbon/Koppers site relates to soil and groundwater contaminants found at the site, sediment and water contaminants found offsite, and the risk assessment conducted in 1990. The following subsections present a summary of the contaminants and risk assessment for the Cabot Carbon/Koppers site.

Contaminants

Numerous investigations pre and post ROD indicate soil and groundwater contamination resulted from poor waste handling procedures and storage in unlined lagoons. The contaminants of concern identified in the ROD from the Cabot Carbon/Koppers Superfund site are listed in Table 3, and are discussed here.

Table 3. Contaminants of Concern, soil and groundwater

Inorganic Constituents
• Arsenic
• Chromium
Organic Compounds
• Anthracene
• Fluorene
• Phenanthrene
• Acenaphthylene
• Acenaphthene
• Pyrene
• Potentially Carcinogenic PAHs
• Naphthalene
• Phenol
• Pentachlorophenol
• Benzene
• Dioxin*

*ROD requires additional assessment and evaluation of dioxin as COC.

Cabot Carbon

Soil and groundwater contamination resulted from poor waste handling procedures, and the storage of waste in unlined lagoons that were breached in 1967. Process wastewater containing residual pine tar was discharged to the unlined lagoons. The accumulated tar was recovered and sold. The breach in 1967 allowed the phenolic contents to flow across adjacent wetlands and into a stormwater ditch that eventually flowed to Springstead and Hogtown Creeks. The environmental damage to Hogtown Creek was detectable for five miles downstream from point of discharge. In 1977, the new property owner began to develop the property. During construction, the remaining pine tar sludges were mixed into the topsoil on the property. A stormwater retention pond was built over the location of the former lagoons. Shortly thereafter, a dark malodorous phenolic leachate began to appear in nearby ditch water.

Koppers

Poor waste handling procedures from creosote wood-treating processes over the years, particularly in the four source areas at Koppers, resulted in soil, groundwater and sediment contamination in the Koppers ditch. Soil and groundwater contamination was found at Koppers in a 1983 investigation by EPA. Sediments in the Koppers drainage ditch were also found to be contaminated. Koppers conducted their own initial investigations in 1984 and 1985. Results from monitoring wells over the site showed concentrations of phenols, TOC, COD, naphthalene, PCP, copper, chromium arsenic, and PAHs.

Investigations, both sites

Early investigations revealed soil and groundwater contamination on site. EPA and FDER conducted preliminary studies of the site from 1979 through 1981. At the Cabot site, the shallow groundwater was found to be contaminated; soil, surface water and sediments in ditch and Hogtown Creek. The University of Florida further evaluated the Cabot Carbon site in 1982, and also found shallow groundwater contamination. In 1983 EPA conducted investigations at the Koppers and Cabot Carbon sites. One shallow Koppers well was contaminated with naphthalene. Three wells around the Cabot property contained organic chemicals. Soil samples collected near a former Cabot lagoon contained high concentrations of naphthalene and phenanthrene, PCP, phenol, benzene, toluene, ethylbenzene, xylene, and copper. Macroinvertebrate sampling in North Main Street Ditch confirmed contamination. Surface water samples from Main Street ditch indicated various organic compound contamination, and chemical compounds associated with destructive distillation and creosote wood preserving processes. Other surface water and sediment contamination were also found at various locations. Other evaluations by EPA, FDER and Koppers were performed over the next few years, including the first remedial investigation in 1987. This first RI had data gaps, and a Supplemental RI was performed in 1989.

Field investigation of the design for the 1990 ROD remedy revealed that the volume and nature of contamination at the source areas at the Koppers portion of the site was different than what was realized at the time the ROD was issued. DNAPLs were identified to be present below the groundwater table. Contamination in the source area was identified to extend throughout the 20-foot thick saturated zone below the groundwater table. The volume of contaminated soil was also found to be much greater than indicated in the 1990 RI. The presence of DNAPL and the depth of contamination necessitate the need to reevaluate the selected ROD remediation strategy and technologies.

These remedial investigations indicated soil and groundwater contamination resulted from the storage of residual waste materials in unlined lagoons and associated constituents from the industrial activities conducted at Koppers and Cabot Carbon. The remedial investigations identified chemical contaminants in soil and groundwater on site. Based on chemical screening guidelines, 13 chemicals of concern (COCs) were retained for the detailed health and risk assessment. The COCs are listed in Table 3.

Risk Assessment

The results of risk and health assessments conducted in the late 1980's and 1990 are discussed below.

A risk assessment was conducted as part of the FS of 1990. The Risk Assessment evaluated and selected appropriate indicator chemicals, evaluated potential exposure pathways, and contaminant concentrations that were selected as the most sensitive to exposed populations, and based on those factors, calculated risks posed by contamination at the site.

The risk assessment indicated that migration of affected groundwater north and east of the site represents a potential health risk from hypothetical future receptors utilizing the shallow aquifer as a potable water source. It also indicated there is no present risk to human health or the

environment by the site. The results of the assessment indicate endangerment can be mitigated by any remedy that addresses the migration of site constituents of concern in the groundwater. Site constituents contained in on-site source areas (former north and south lagoons and former cooling pond/treatment plant area) contribute to the potential risks only via migration to the groundwater. Source controls were thus considered for the purpose of increasing the effectiveness and reducing the duration of groundwater remedial actions. Visual criteria with remedial action objective analytical confirmation was applied to soil above the groundwater table for purposes of source control measures considered at the site.

A Health Assessment was conducted in 1989. The site was concluded to be a potential health concern because of the potential risk to human health resulting from possible exposure to hazardous substances at concentrations that result in adverse health effects. Human exposure to arsenic, chromium, benzene, phenol, and creosote may occur via contact with contaminated groundwater. Persons may be exposed to arsenic through contact with contaminated surface soil. The susceptible receptor populations are workers at Koppers site, nearby residents, and people involved daily in business at this contaminated commercial area. Groundwater at both sites is contaminated but a susceptible receptor population was not identified. Most residents in the vicinity of the site should be connected to municipal water supplies, however an area survey for the presence of wells had not been carried out and the presence of domestic supply wells or irrigation wells could not be ruled out at that time. The Agency for Toxic Substances and Disease Registry (ATSDR) made several recommendations in the conclusions of the assessment for human health safety.

IV. REMEDIAL ACTIONS

The following subsections present the remedy selection in the ROD, remedial actions implemented at the Cabot/Koppers site, and operation and maintenance. Field investigation of the design for the 1990 ROD remedy revealed that the volume and the nature of contamination at the source areas at the Koppers portion of the site is different than what was realized at the time the ROD was issued. These additional findings necessitate the re-evaluation of the remediation strategy and technologies. Details of the partial remedies implemented are also summarized below.

REMEDY SELECTION

The ROD for the Cabot/Koppers site was signed September 27, 1990. Remedial Action Objectives (RAOs) and goals were developed as a result of data collected during the Remedial Investigations in 1987 and 1990 to aid in the development and screening of remedial alternatives to be considered for the ROD. The objectives and goals for the site groundwater and soils, the ROD cleanup criteria and additional remedial action objectives and cleanup criteria developed since the ROD are discussed in this section.

The remedy at the Cabot/Koppers site addressed shallow groundwater contamination and source contamination. Institutional controls were an additional component of the remedy. At this time, operable unit designations have not been established. Details of the selected remedy are also discussed in this section.

The ROD states that hypothetical wells assumed for the risk assessment (located at the North and East site boundaries) were the only complete exposure pathway of potential concern recognized in the RI/FS (ESE 1990). As a result, the RAOs defined in the RI/FS for site groundwater established numerical cleanup goals based on groundwater in the shallow aquifer. The cleanup goals established to remediate the groundwater were also determined to be protective of human health and the environment. However, since the ROD was issued in 1990, several groundwater maximum contaminant levels (MCLs) changed. Many of the soil cleanup goals were based on the groundwater MCLs. For other potential contaminants of concern, there is now adequate toxicological information to establish cleanup goals for those constituents. Therefore it is necessary to modify soil and groundwater remedial goals based on the updated regulation and information available at this time. Table 4 identifies the current ROD soil and groundwater remediation levels, the proposed EPA 2001 plan levels, along with the State of Florida's cleanup target levels pursuant to Chapter 62.780 and 62-777, F.A.C.

Table 4
Remedial Action Objectives
for Soil and Groundwater

Contaminant	Soil Remediation Levels, in ROD, mg/kg	Soil Remediation Levels, proposed EPA 2001 plan	Soil Remediation Levels, FDEP current, mg/kg			Groundwater Remediation Levels, in ROD, ug/L	Groundwater Remediation Levels, proposed EPA 2001 plan, ug/L	Groundwater Remediation Levels, FDEP GCTL, current, ug/L
			Health based		Leaching criteria			
			residential	industrial				
Acenapthene	389	68.4	2,400	20,000	2.1	260	370	20
Acenaphthylene	72.3	3	1,800	20,000	27	130	180	210
Anthracene	7,700	40.7	21,000	300,000	2,500	1,310	180	2,100
Benzo(a)anthracene	n/s	n/s	#	#	0.8	n/s	n/s	0.05
Benzo(a)pyrene	n/s	n/s	0.1	0.7	8	n/s	n/s	0.2
Benzo(b)fluoranthene	n/s	n/s	#	#	2.4	n/s	n/s	0.05
Benzo(k)fluoranthene	n/s	n/s	#	#	24	n/s	n/s	0.5
Carbazole	n/s	n/s	49	240	0.2	n/s	n/s	1.8
Chrysene	n/s	n/s	#	#	77	n/s	n/s	4.8
Dibenzofuran	n/s	n/s	320	6,300	15	n/s	n/s	28
Fluoranthene	n/s	n/s	3,200	59,00	1,200	n/s	n/s	280
Fluorene	323	85.4	2,600	33,000	160	323	240	280
2-Methyl Naphthalene	n/s	n/s	210	2,100	8.5	n/s	n/s	28
Naphthalene	211	0.4	55	300	1.2	18	100	14
Phenanthrene	700	55.5	2,200	36,000	250	130	180	210
Pyrene	673	159	2,400	45,000	880	130	180	210
Total, Potentially Carcinogenic PAHs	0.59	2.3	500	220,000	0.05	0.003	0.2	n/s
Phenol[1]	4.28	2.26	500	220,000	0.05	2,630	22,000	10
2-Methyl Phenol	n/s	n/s	2,900	31,000	0.3	n/s	n/s	35

Table 4, cont'd
Remedial Action Objectives
for Soil and Groundwater

Contaminant	Soil Remediation Levels, in ROD, mg/kg	Soil Remediation Levels, proposed EPA 2001 plan, mg/kg	Soil Remediation Levels, FDEP current, mg/kg			Groundwater Remediation Levels, in ROD, ug/L	Groundwater Remediation Levels, proposed EPA 2001 plan, ug/L	Groundwater Remediation Levels, FDEP GCTL, current, ug/L
			Health based		Leaching criteria			
			residential	industrial				
3-Methyl Phenol	n/s	n/s	2,900	33,000	0.3	n/s	n/s	35
4-Methyl Phenol	n/s	n/s	300	3,400	0.03	n/s	n/s	3.5
2,4-Dimethyl Phenol	n/s	n/s	1,300	18,000	1.7	n/s	n/s	140
Pentachlorophenol	2.92	0.03	7.2	28	0.03	0.1	1	1
Arsenic	27	4.5	2.1	12	***	50	50	10[2]
Chromium (total)	92.7	199	210	470	38	50	10	100
Benzene	n/s	0.007	1.2	1.7	0.007	1	1	1
Toluene	n/s	n/s	7,500	60,000	0.5	n/s	n/s	1,000
Ethyl Benzene	n/s	n/s	1,500	9,200	0.6	n/s	n/s	700
Xylenes (total)	n/s	n/s	n/a	n/a	n/a	n/s	n/s	10,000
Dioxins[3,4]	n/s	0.001	7 ppt	30 ppt	3 ug/kg	n/s	n/s	0.00003

Sources: Record of Decision, September 1990; EPA 2001 Proposed Plan; ARARs, F.A.C. Chapter 62-780/777

n/s = not selected

n/a = not available

= PAHs to be converted to BaP equivalents for comparison with SCTL for BaP per F.A.C. chapter 62.777

*** = default leaching criteria in F.A.C. chapter 62.777

[1] Phenol = soil; direct exposure based on acute effects on children

[2]The new drinking water standard for arsenic is 10 ug/L based on revisions to the Florida primary drinking water standard for arsenic described in Rule 62-5550.310. EPA also revised the arsenic standard to 0.010 mg/L. Compliance with the new federal standard began January 23, 2006.

[3]EPA added Dioxin post-ROD.

[4]2,3,7,8-TCDD TEQ (toxicity equivalent of 2,3,7,8-tetrachlorodibenzo-p-dioxin)

MCL = maximum contaminant level

ug/L = micrograms per liter

mg/kg = milligrams per kilogram

PAH = polycyclic aromatic hydrocarbons

ppt = parts per trillion

F.A.C. = Florida Administrative Code

BaP = Benzo(a)pyrene

SCTL = state cleanup target level

Major Components of Remedy

The major components of the selected remedy in the 1990 ROD include the following:

- Alternate 2 – Extraction of contaminated groundwater from the shallow aquifer, pre-treatment, if necessary, and discharge to a publicly owned treatment works (POTW). A plan for satisfying National Pollutant Discharge Elimination System (NPDES) requirements will be developed in the Remedial Design, as a contingency against POTW not allowing this discharge;
- Alternate 7 – Excavation of contaminated soils from the former North and South Lagoons on the Koppers facility;
- Alternate 11 – In situ bioremediation and institutional controls for process areas on Koppers facility, including the former Cooling pond and Drip Track areas;
- Alternate 12 – Soil washing of the soils from the former North and South Lagoons; bioremediation and, if appropriate, solidification/stabilization of residual materials, and deposition of treated soils back onsite.

Additional Components of Remedy

Additional components of the selected remedy in the 1990 ROD include the following:

- Institutional Controls for the former Cabot Carbon facility;
- Provision for lining of North Main Street Ditch to prevent further discharge of leachate into the Ditch and Springstead and Hogtown Creeks; to be implemented if Ditch is, in the long term, to remain intact;
- Continued O & M of the North Main Street lift station until implementation of groundwater remediation system renders it superfluous.

Additional Tasks Identified for Remedial Design

In addition to the preferred alternatives selected and the additional component requirements, EPA also proposed additional activities as a means of further delineating contamination at the site prior to implementation of the remedial action. These additional tasks to be undertaken as part of the remedial design phase include the following:

- Confirmatory sampling of the Intermediate aquifer, Springstead Creek, old Cabot lagoons areas, and wetland/lagoon area;
- Sample sediment in Springstead Creek;
- Locate the old Cabot Carbon production well and properly plug and abandon;
- Determine existence of underground storage tanks under paved area of former Cabot Carbon property onsite and properly abandon any existing tanks no longer in use;
- Perform additional subsurface soil sampling on both sides of North Main Street to delineate the extent of any surface soil contamination around old wetland/lagoon

area at the intersection of North Main Street and NE 28th Avenue and east of North Main Street;

- Perform additional soil sampling in the Cabot Carbon old lagoon area.

Significant Changes to the Remedy

The ROD recognized that the excavated and treated soil would potentially not meet the treatment standards required for compliance with Land Disposal Requirements (LDRs), but that replacement (backfilling) of "partially" treated soil would be allowable with a treatability variance under 40 CFR 268.44. The ROD also recognized that treatment to ROD cleanup goals for metals would not be achieved in the in-situ biological treatment areas and selected long-term institutional controls for addressing potential exposure to metals in these areas.

REMEDY IMPLEMENTATION

Remedial action activities were partially implemented and activities were conducted in accordance with the ROD and associated remedial design and remedial action plans. As part of the ROD, further investigations were to be conducted as part of the remedial design. Details specific to the remedial design investigations and each implemented action are presented below.

Pre-Design Investigations

In 1992, the PRPs conducted data acquisition and site characterization activities (McLaren/Hart 1993) in accordance with the UAO issued in March 1991 to Beazer by EPA and the Consent Decree signed by Cabot in 1991. The purpose of field data acquisition activities was to address the characterization of both soils and groundwater at the site and to facilitate the design of the final remedial action alternatives. During these investigations, it was determined that more contamination existed, than was previously realized. These remedial design investigations are outlined in McLaren/Hart 1993. The investigations and remedies implemented are presented below. Investigations to fully define the site are ongoing.

Cabot Carbon

In 1991, Cabot signed an Administrative Order on Consent (AOC) that required implementation of the ROD-required actions, including remedial actions and supplemental investigations and studies. The supplemental studies, which were implemented as part of the remedial design, identified two additional areas requiring additional actions: 1) affected soils in the Northeast Lagoon; and, 2) former Cabot production well location. The other studies undertaken to address the other issues identified in the ROD (Cabot Lagoon soil sampling, Intermediate aquifer monitoring, Springstead Creek sampling, and former Cabot UST location and abandonment) did not require remedial actions. The other action required by the AOC was the installation of the surficial groundwater interceptor trench. Details of each action are presented below.

Northeast Lagoon

In accordance with the 1991 AOC, removal activities were carried out in 1995 for the contaminated soil within the former Northeast Lagoon. The removal action performed included:

- Excavation of soil from unpaved areas of the Northeast Lagoon down to the water table.
- Placing the excavated soil into dump trucks for transport to the Soil Remediation, Inc. (SRI) facility in Ray City, Georgia for thermal treatment.
- Treatment of the subject soil using low temperature thermal desorption at the SRI facility.

Following EPA approval of the work plan and subsequent issuance of the removal order, Weston initiated soil removal activities for the Northeast Lagoon in January 1995.

Groundwater Interceptor Trench

In 1985, an interim groundwater remedy, referred to as Project Jumpstart, was installed by FDER (now FDEP) along the eastern edge of the site. A lift station was installed in the drainage ditch along the west side of North Main Street (aka North Main Street Ditch) where it collected groundwater, which was then pumped to the GRU POTW for treatment and disposal.

This system was replaced in 1995 by a permanent subsurface drainage trench and collection pipe installed under North Main Street Ditch. This interceptor trench consists of two perforated pipes (spanning the range of seasonal groundwater elevation fluctuations) surrounded by aggregate fill. (See Figure 8 in Attachment 2.) A cleanout station and four sumps are located along the interceptor trench. Groundwater from either side flows into the trench, and is pumped at the lift station located at the northern end of the trench. Extracted groundwater continues to be pumped to the GRU sewage treatment plant. Over the past 20 years, more than half of one billion gallons of impacted groundwater has been captured by the trench system, and pumped to the POTW.

As part of the interceptor trench installation, the earthen North Main Street Ditch was replaced with an engineered concrete-lined swale, as indicated in Figure 9 in Attachment 2. This was required by the ROD to prevent discharge of affected groundwater into the ditch.

Quarterly groundwater quality monitoring is conducted on selected upgradient and downgradient monitoring wells. Weston Solutions, Inc., the consultant to the PRP, performs the monitoring and produces the monitoring reports.

Koppers

In 1991 EPA issued a UAO to Beazer East, Inc., the PRP, to conduct data acquisition and site characterization for remedial design. In 1992, Beazer conducted the field activities in accordance with the UAO. Key differences in these studies from the RI/FS included:

- The presence of DNAPL and residuals of this DNAPL in the soil matrix that represent a significant source of the COCs to groundwater;
- Greater volume of soils above remedial goals in the former process areas.

The original RI/FS estimated the volume of affected soils to be 6,400 cubic yards (CY) above the water table (i.e. 4 feet below ground surface) in the north and south lagoon areas, while the 1992 investigation revealed approximately 33,000 CY of soil above remedial goals at depths of 7 to 9 feet below ground surface. Beazer's 2005 Source Removal Assessment Report estimated a total of 441,000 CY (to a depth of 23 feet below ground surface) of contaminated soils in the source areas.

Bench scale treatability studies conducted in the early 1990's on both soil remedies selected in the ROD indicated the test soils did not reach the soil cleanup criteria in the ROD.

Groundwater containment system

A groundwater 'pump and treat' system for the surficial aquifer was installed in 1995. Seventeen extraction wells were installed, with a design extraction rate for each well of 3 gallons per minute (gpm). Currently, 14 wells are operating. The extracted water is treated and discharged to a POTW.

The wells are sited on the northern and eastern boundary of the Koppers site. The groundwater containment system was designed to prevent offsite migration of contaminated groundwater.

According to recent groundwater modeling, and groundwater quality monitoring data from down gradient wells, this groundwater 'containment system' is not preventing offsite migration of contaminated surficial groundwater.

Other remedial actions

Remedial actions outside the ROD were also implemented at the Koppers site. DNAPL is bailed from five Upper Hawthorn wells biweekly, with approximately 0.4 gallons of DNAPL recovered from each well in each sampling event. This recovery effort began in 2005. Beazer evaluated some private wells in the area. This evaluation led to the abandonment of one well just west of the Koppers western boundary. This well is known as the Geiersbach well. It was an open-hole uncased well in the Floridan aquifer, found to have elevated levels of several organic constituents including phenols and naphthalene. In addition, several onsite wells were abandoned, to prevent cross contamination between aquifers. These wells, ITW-10 and ITW-21, may have been screened across the Upper Hawthorn. FW-1 is a Floridan well on the eastern boundary of Koppers. It was an open hole, uncased well. It was shortened as a preventative measure, to reduce the potential for acting as a conduit to deeper zones.

OPERATION AND MAINTENANCE

Operation and Maintenance (O&M) activities are conducted for both surficial groundwater capture systems with the associated O&M plans. Details specific to each system are presented below.

Cabot Carbon

The O&M Plan, prepared by Roy F. Weston, Inc., (now Weston Solutions, Inc.), is dated December 1993. It includes the O&M Manual, the Quality Assurance Project Plan, and the Field Sampling Plan. Aspects of the O&M are presented below.

O&M activities

O&M requirements for the trench system include sump maintenance, pump station operation, pump station maintenance, and emergency response. O&M activities are to be conducted in accordance with the O&M Manual dated December 1993. A network of monitoring wells exists throughout the Cabot site. See Figure 10 in Attachment 2 for monitoring well locations. These wells are maintained and repaired on an as-needed basis.

Sump maintenance involves removing, cleaning and recoating sump lids; lubricating padlocks; skim oil and grease from water surface inside of sump; remove sand/sediment from sand sump; inspect and repair concrete work; inspect and log flow patterns and correct as required. Sump maintenance has been conducted annually. No records or logs were provided for this maintenance. Beginning in 2006, sump maintenance will take place bi-annually, in an effort to reduce odors at the sumps and lift station.

Bill Campbell is the Cabot site's O&M operator. Mr. Campbell provided his log book of records for years 2000 through 2005. Data entry in the log books include daily flow meter reading, the total cumulative number of gallons pumped, the flow in gallons per minute at the time of meter reading, and readings from both pumps. Two pumps are engaged, with one serving as a back-up in case of failure of the lead pump. Amount of rain received is also recorded. Twice a week, Mr. Campbell visits the site and logs the information. The 'daily' meter readings are recorded automatically. This information is reported three times per year to GRU, along with the results from the effluent discharge analysis.

Pumping station maintenance, according to the manual, includes inspect and maintain building interior and exterior, including fences, gates, etc.; replace carbon filters on treatment facility; inspect and lubricate pump motors, exhaust fans, vents, gravity louvers; inspect and clean flume; inspect each inlet gate valve; replace light bulbs, inspect fire extinguisher, conduct general housekeeping; inspect and log flow measurement data; check for anomalies in flow measurement and make necessary repairs; inspect electrical outlets. The schedule for these activities is outlined in the manual. The lift station structure and fence were completely replaced in January 2005 due to hurricane damage. Pumping station operation is per manufacturers' instructions.

Since the last five year review, all the monitoring wells on Cabot were inspected, and all problems were corrected. Monitor well ITW-12 was damaged in 2003 and was subsequently repaired.

Three times per year, groundwater samples are taken at the lift station and analyzed. A summary of the discharge data for 2001 through 2005 is presented in Table 5 below.

Table 5. Groundwater Discharged to GRU from Cabot Groundwater Interceptor Trench Collection, 2001 – 2005*

Year	Total Volume of Groundwater Discharged to GRU, million gallons	Avg flow, gpm	Rainfall at lift station, inches
2001	19.46649	37	35.6
2002	19.30328	36.7	29.7
2003	28.97974	52.5	48.8
2004	22.23503	41	51.4
2005	37.878814	71	54.8

*Source: Cabot compliance sampling results and groundwater discharge records reporting to GRU, 2001 thru 2005, prepared by Weston Solutions, Inc.

The analysis results showed the groundwater contained benzene, ethylbenzene, toluene, xylenes, fluorene, naphthalene, phenol, phenanthrene, acenaphthrene, copper, and chromium. Benzene and naphthalene concentrations were above cleanup goals for most sampling events.

Koppers

Koppers has a surficial aquifer groundwater contaminant containment system, a network of monitoring wells in the surficial, Hawthorn and Floridan aquifers, and a DNAPL recovery program from the Hawthorn.

The groundwater containment system consists of 14 wells on the northern and eastern boundary extracting approximately 2 gpm each, pretreatment of the extracted groundwater to remove arsenic, then discharge to a POTW (GRU). See Figure 11 in Attachment 2 for extraction well locations. Extraction wells are numbered EW-1 thru EW-17. The purpose of the system is to prevent offsite migration of the shallow contaminated groundwater on-site and to remediate the surficial aquifer to ROD cleanup goals. The network of monitoring wells is also presented in Figures 11 and 12 in Attachment 2.

The O&M Manual, prepared by RETEC, consists of Volume 1 and Volume 2. Both volumes are dated February 2003. The manuals were provided by the site O&M operator, Michael McKinney during the site visit on Feb 3, 2006. Volume 1 provides guidance on the operation and maintenance of the groundwater treatment facility at the site. Volume 2 contains the vendor information for the individual components of the system, and detailed information for troubleshooting and maintaining the system. Aspects of the O&M are presented below.

Mike McKinney provides all the O&M and reporting for the groundwater extraction system and treatment plant, including the quarterly sampling and reporting for the Annual Stage 2 groundwater monitoring.

System operations, Groundwater Containment System

This system is the part of the selected remedy from the 1990 ROD, Alternate 2. The system is composed of several components:

- The groundwater extraction system (aka groundwater containment system)
- The extraction well conveyance system
- The groundwater treatment system
- Treatment system effluent discharge system

Information on start-up, emergencies, shutdown, troubleshooting, maintenance, and monitoring and data collection is included in Volume 1. Detailed procedures are discussed in the manual. Aspects of the components of the system are presented below.

Groundwater Extraction System. The system contains 14 wells in the surficial aquifer, composed of 6" stainless steel, with 15' screen lengths. The well depths range from 23 to 31 feet below ground surface, with a 2' sump in the Hawthorn Group. Some wells are equipped with a chemical metering pump with chlorine solution injected in the well in case of biological fouling. Each well was designed to pump 5 gpm. The target operational pumping rate is 3 gpm. However, according to a 2004 GeoTrans report, the average extraction rate is approximately 2 gpm. Each well has a sample port for collecting groundwater samples.

Extraction Well Conveyance System. The distribution of the extracted groundwater to the pre-treatment plant on site is via stainless steel discharge piping in the well, and HDPE piping below ground surface. The discharge pipe is equipped with a total and instantaneous flow meter. A wooden prefabricated pump house is situated over each extraction well for housing the system controls and piping network. The discharge line exits the well house through the concrete floor to the extraction well influent line. This influent line connects the discharge piping from the thirteen extraction wells to the treatment facility.

Treatment System. The water from EW-16 has excessive concentrations of arsenic which must be treated with ferric chloride. The pH of the remaining groundwater must be adjusted before treatment. The groundwater with the pretreatment chemicals is discharged into a fiberglass settling tank. A series of tanks handles sludge, with the remaining water pumped continuously at approximately 30 gpm through the rest of the treatment system consisting of filter media, and two 1,500 pound carbon units.

Effluent Discharge System. The treated water flows into a 6,000 gallon storage tank, where it gravity feeds to the POTW. Discharge is monitored via a flow meter, a weir and for pH to ensure compliance. The design flow rate through the treatment system has been set at 51 gpm. The effluent discharge is sampled and analyzed three times per year.

Total O&M Costs

Estimated total annual O&M costs from the FS were $137,990 for the Koppers Groundwater Extraction System, assuming 7 wells. Estimated O&M costs for the Cabot interceptor trench is not available.

O&M, site investigations, and other remedial related costs for the Koppers portion of the site are presented in Table 6 for 2001 through 2005. These costs were provided by Beazer.

Table 6
Operation and Maintenance Costs, Koppers
For January 1, 2001 through December 31, 2005*

Description	Cost
Investigations	$3,483,500
Operations, Maintenance, Monitoring (gw extraction)	$1,719,400
Design/Engineering	$830,800
Other, unspecified	$370,900
TOTAL COSTS	**$6,404,600**

*Source: Beazer East, Inc.

O&M costs presented in Table 7 are for the Cabot portion of the site for 2001 through January 31, 2006. These costs were provided by Weston Solutions, Inc., the consultant to Cabot Corporation (PRP). The O&M costs presented include groundwater sampling and analysis, lift station O&M, and ambient air sampling in 2005.

Table 7
Operation and Maintenance Costs, Cabot Carbon*

Dates		Total Cost Rounded to Nearest $1,000			
From	To	GW sampling	Lift Station	Other, Misc.	Subtotal
Feb 1 2001	Jan 31 2002	$51,000	$53,000	n/a	$104,000
Feb 1 2002	Jan 31 2003	$53,000	$52,000	n/a	$105,000
Feb 1 2003	Jan 31 2004	$53,000	$49,000	n/a	$102,000
Feb 1 2004	Jan 31 2005	$50,000	$47,000	$66,000[a]	$163,000
Feb 1 2005	Jan 31 2006	$52,000	$53,000	$40,000[b]	$145,000

[a] Lift station building replacement due to hurricane damage.
[b] Includes $29,000 for ambient air sampling and $11,000 for expanded GW sampling for five-year review.
* Source: Weston Solutions, Inc.

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

The protectiveness statement from the initial five-year review for the Cabot Carbon/Koppers Superfund Site was included in a memorandum from EPA signed March 23, 2001, and stated the following:

Cabot Carbon Site Portion:

The selected remedy, as executed along the eastern portion of the site, currently remains protective of human health and the environment. Continued site inspections and groundwater monitoring of the collection system should be conducted to ensure long-term protectiveness.

Koppers Site Portion:

A statement of protectiveness cannot be made at this time since the 'selected' remedial actions have only shown partial effectiveness results in accomplishing the remedial action objectives.

EPA provided recommendations for the following:

Cabot Carbon:

- Abandon any wells deemed unnecessary or permanently damaged. Also repair washout area along the side and underneath the concrete lined trench.
- Reduce the sampling/monitoring frequency of the wells along the trench. Also remove drums of investigation-derived waste (IDW) currently stored in a fenced area in the center of the strip mall parking lot.
- Perform a detailed maintenance inspection of the pretreatment (pump house) facility and appurtenances. The interior of the pump house showed evidence of corrosion in many areas apparently due to moisture in the air that contained chemicals that attached the metal components inside the pump house.

Koppers:

- Conclude the re-evaluation of the Selected (current) RA remedy that is on-going at the site and initiate a "complete" RA remedy.
- Place the SERDP demonstration project records in the site repository.
- Abandon any extraction and/or permanent monitoring wells deemed unnecessary or permanently damaged. Currently there are several perimeter wells that should be considered for replacement, abandonment or removal.
- EPA and PRP come to resolution on the Revised Supplemental Feasibility Study submitted to EPA by TRC representing Beazer Industries. Note, EPA is currently working with the Koppers Site PRPs to amend the ROD and implement a "complete" RA remedy for this site.
- Recommend the PRPs perform additional assessments on the environmental risks at this site. The toxicity quotients indicated that aquatic organisms may be adversely impacted long term due to arsenic in Springstead Creek, chromium in the North Main Street Ditch and PCP and PAHs in both the Creek and the Ditch.

Table 8 outlines the actions taken since the last five-year review, with respect to recommendations in the last five-year review.

Table 8. Actions Taken Since the Last Five-Year Review

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Action Taken and Outcome	Date of Action
Monitoring wells	Abandon unnecessary or damaged wells	Cabot	Monitoring well ITW-12 was damaged in 2003 and was subsequently repaired.	2003
Washout area of trench	Repair washout area along the side and underneath the concrete lined ditch	Cabot	Washout area was repaired. Bill Campbell called Doyle Rayburg at Alachua County Public works. Erosion caused the damage. Documentation of the repair is not available.	unknown
Frequency of monitoring well sampling	Reduce the frequency of sampling/monitoring of wells along the trench	Cabot	The sampling/monitoring frequency of wells along the trench has not been reduced.	n/a
IDW drums in parking lot	Remove drums of IDW stored in fenced area in center of strip mall parking lot	Cabot	The drums were removed shortly after the site visit in 2000, and the fence was also taken down. Documentation of the action is not available.	Probably 2000
Pump house condition	Perform detailed maintenance inspection of the pump house (lift station structure) and appurtenances	Cabot	The lift station structure was completely replaced. All four sump lids were also replaced at the same time.	January 2005
Selected remedy	Reevaluate the selected remedy ongoing at the site and initiate complete remedy	Beazer	Reevaluation of the remedy has been ongoing since the last five-year review. Investigations are still underway.	Ongoing over past 5 years
SERDP project	Reports or data collected as part of the SERDP demonstration project to be placed in site repository	Beazer	SERDP project info is in the site repository.	unknown
Unused wells	Abandon unnecessary, damaged or unused extraction or monitoring wells at Koppers	Beazer	Monitoring wells ITW-10 and ITW-21 were abandoned because it was believed they were screened across the Upper Hawthorn Clay, involving risk for cross contamination.	2004
RSFS prepared by TRC	Beazer and EPA should address the RSFS submitted to EPA by TRC representing Beazer Industries	Beazer	The RSFS was disapproved.	
Environmental risk assessment	The PRP should perform additional assessments on environmental risks at the Koppers site and as a result of offsite migration from the Koppers site	Beazer	Additional risk assessments will be conducted as part of the site-wide feasibility study that Beazer is planning to conduct soon. Beazer submitted a supplemental soil and sediment sampling plan to EPA in February 2006, for obtaining additional data for a new Risk Assessment. An anticipated field start date of March 2006 was also provided.	In planning stage

VI. FIVE-YEAR REVIEW PROCESS

The second five-year review was conducted by the USACE under guidance from the EPA Remedial Project Manager for the Cabot Carbon/Koppers Superfund site. The five-year review process consisting of administrative and additional components, document review, data review, site inspection, and interviews, is described in the following subsections.

ADMINISTRATIVE COMPONENTS

The Cabot Carbon/Koppers Superfund site five-year review was led by Laura Roebuck of the USACE. FDEP; the PRPs including Beazer and Cabot; Weston Solutions, Inc, consultant to Cabot; Mike McKinney, consultant to Beazer; the EPA Community Involvement Coordinator for Cabot Carbon/Koppers; and Alachua County Environmental Protection Department (ACEPD); were notified of the initiation of the five-year review for the site.

COMMUNITY NOTIFICATION

A public notice was issued on January 28, 2006 by EPA to notify the community of the second five-year review for the site. The notice, presented in Attachment 6, was published in the Gainesville Sun daily newspaper.

DOCUMENT REVIEW

This second five-year review consisted of a review of relevant documents including decision documents, monitoring reports, site inspection reports, O&M records, groundwater models, and reports of investigations conducted over the past few years. Attachment 1 provides a list of all documents reviewed for this effort. RAOs established in the ROD were also reviewed and compared to current Applicable or Relevant and Appropriate Requirements (ARARs) (see Section VII).

DATA REVIEW

Background: Investigations, Findings in Past Five Years

In 1990, EPA approved a remedy for the site, which was only partially implemented. The majority of the 1990 remedy was not implemented because subsequent investigations revealed that greater contamination existed at the site than was realized when the 1990 remedy was selected. Basically, the source and groundwater remediation had not been adequately assessed. It was determined that the 1990 selected remedy was inadequate for the actual site conditions. Since then, i.e. since approximately 1993, investigations have been directed toward developing a final clean-up strategy for the site contamination.

In 2001, a new remedy was proposed by EPA that assumed the soil contamination at the site would be prevented from leaching into the Floridan aquifer due to the impenetrable nature of the Hawthorn Group located between the soil contamination sources and the deeper Floridan aquifer underlying the site. This plan was opposed and soon rescinded, citing concerns that the underlying Hawthorn 'Clay' (Group) was not adequate to prevent contamination migration through the Hawthorn, into the underlying Floridan aquifer. Continued site investigations revealed rescission of this new proposed remedy was the correct action. Data presented in

reports in 2002, 2003, and 2004, subsequent groundwater monitoring results, and preliminary reports in 2006 have confirmed that contaminants including phenolic compounds, PAHs, DNAPLs, and arsenic have migrated through the surficial aquifer, through the underlying Hawthorn formation, and possibly into the Floridan aquifer.

Low levels of benzene and phenolics in the upper Hawthorn Group were detected in the remedial investigations before the 1990 ROD. However, this contamination was believed to be related to "carry down" during drilling and was not addressed by the 1990 selected remedy. Investigations within the past five years have revealed that the Hawthorn Group is contaminated with creosote DNAPL and other site constituents. Five monitoring wells screened in the Upper Hawthorn have mobile DNAPL, and are bailed every other week as part of a pilot study to support remedy. About 0.4 gallons of DNAPL is recovered from each well every two weeks.

Numerous investigations and studies at the Koppers site over the past five years include geophysics, groundwater modeling, Hawthorn well(s) installation, shallow Floridan well(s) installation, the recent deeper Floridan multi-screen well(s) installation (ongoing at time of press), and various source remediation studies. A thorough discussion of all studies and investigations accomplished by the various entities, including the PRPs, EPA, and the stakeholders, is not possible within the scope of this five-year review. Table 9 presents a summary outline and status of various investigations and studies conducted in the past five years.

Table 9. Studies, Investigations Since the Last Five-Year Review

Year	Subject/Title	Purpose	Party Responsible	Results	Status
2001	EPA Proposed Remedy, draft	To amend 1990 remedy selection	EPA	The proposed containment remedy was rescinded because the assumption was the Hawthorn was a 'barrier' to downward migration of contamination into the Floridan.	NFA
2002	Additional characterization of Hawthorn, Koppers	Further characterize Hawthorn geology at Koppers	Beazer (work performed by TRC)	Confirmed that Hawthorn is not a confining clay unit, and therefore, downward migration of contamination into Floridan possible	Followed up with more investigations outlined below
2003, 2004	Additional characterization of the Hawthorn; Install Floridan wells; Koppers	Further characterize groundwater quality and potential impacts in the Hawthorn and Floridan	Beazer (work performed by TRC)	Contamination was confirmed in Upper and Lower Hawthorn, and uppermost part of Floridan	DNAPL is bailed from 5 Hawthorn wells, every other week
2003	Sentinel Floridan wells installed	Monitor potential offsite migration of contaminated groundwater in Floridan	GRU	High levels of Arsenic discovered; but concentrations are reducing over time	Determined these wells are too shallow
2004	Source characterization studies, Koppers	Determine extent, depth of contamination in source areas	Beazer	Found creosote in Upper and Lower Hawthorn, with North Lagoon having highest concentrations	More delineation of source areas required
2004	Proposed Interim Measures/Remedy Pilot Approach Cabot/Koppers Superfund Site	1)Proposal of surficial aquifer interim source remedies: Chemical Oxidation; Grout Injection; Free product bailing 2)Presented DNAPL remediation approaches, and plans for interim source remedial actions 3) Further analysis on Floridan well near North Lagoon	Beazer	Floridan well FW-6 has high levels naphthalene and creosote related constituents	On hold
2004	Bench scale testing of Chemical Oxidation of source areas	To determine if this is a feasible interim source remedial action	Beazer (prepared by GeoTrans)	Presented work plan to EPA	On hold

Year	Subject/Title	Purpose	Party Responsible	Results	Status
2004	Groundwater model, Flow and Transport, in Floridan	To estimate how long it would take contamination in Floridan aquifer at Koppers to reach Murphree wellfield	Beazer (prepared by GeoTrans)	States would take over 100 years for Koppers site groundwater contamination to reach Murphree wellfield	Results disputed by stakeholders and subsequent modeling
2004, 2005	Surficial aquifer DNAPL recovery pilot test	To remove mobile DNAPL from surficial aquifer	Beazer	Pilot recovery test at PW-1 at Koppers was not successful in removing mobile DNAPL. During 5 month period, 89 gallons of DNAPL recovered with 335,169 gallons water pumped	Discontinued
2005	Intermediate aquifer DNAPL recovery pilot test	To remove mobile DNAPL from Intermediate aquifer	Beazer	Work plan submitted to EPA	Currently bailing DNAPL from Intermediate aquifer
Jan 2005	Source Removal Assessment Report	To evaluate various options for removing sources, Koppers	Beazer	Beazer concluded source removal options infeasible; but EPA and stakeholders did not agree all options are infeasible	On hold
2005	Various Floridan aquifer monitoring plans are developed by Beazer	For further investigating potential contamination in Floridan aquifer	Beazer	Most plans were disapproved by EPA	Disapproved; EPA developed plan
April 2005	Chemical Oxidation Pilot Plan submitted	For remediating contamination in groundwater	Beazer	Disapproved by EPA	Disapproved, based on proposed use-stabilization by Mn precipitation
May 2005	Arsenic in Groundwater study by Dr. Pichler	To understand the excessive levels of Arsenic detected in groundwater in vicinity of Koppers and Murphree	GRU	Results of study are inconclusive	n/a
June 2005	Electrical Resistivity Report	To further characterize subsurface geology at Koppers site	Beazer	Disapproved by EPA and stakeholders	Disapproved
July 2005	EPA develops final Floridan aquifer monitoring plan	For installing Floridan aquifer wells at Koppers	Beazer	Disapproved by Beazer initially	Beazer agreed to implement, Aug 2005

Year	Subject/Title	Purpose	Party Responsible	Results	Status
Sept 2005	Remedy Status and Expanded Remedy Performance Monitoring Report	To assess effectiveness of Cabot groundwater interceptor trench	Cabot	Reviewed past 10 years of monitoring data	EPA, stakeholders requested additional information and amended report
Nov 2005	Evaluation of the Capture Effectiveness of the Groundwater Extraction System at Koppers	To determine if offsite migration of contaminated surficial groundwater is occurring	GRU	Indicates that offsite migration of contaminated groundwater is occurring	Ongoing
Feb 2006	Review and Recommendations Report for the Cabot Carbon/Koppers Superfund Site	To evaluate all investigations, studies, and data acquired since the ROD, to recommend course of action for future investigations	GRU	A long list of investigations and work to accomplish before the FS can be finalized	In review

Monitoring Reports

Cabot Carbon

Weston Solutions, consultant for Cabot, submits monthly monitoring reports for their site. Seven monitoring wells total are sampled and analyzed. The wells sampled include: ITW-13, ITW-14, WMW-17E, WMW-18E, ESE-002, ESE-004, ESE-007, and two upgradient wells, ITW-1 and ITW-2. Water level measurements are also taken from 30 wells, 9 piezometers and the 4 sumps. Results consistently show that ITW-14 has tar in the well. This well is installed in the former Northeast Lagoon.

The quarterly reports consist of a potentiometric map of the surficial aquifer at the site, the quality analysis results for the sampled wells, analytical data, and well construction information. Many contaminant concentrations have been detected over the last five years including benzene, naphthalene, arsenic, chromium, phenol, total potentially carcinogenic PAHs, acenaphthene, acenaphthylene, phenanthrene, and fluorene, and anthracene. The water level information on site also indicates a downward hydraulic gradient between the surficial and Intermediate aquifer. However, the groundwater interceptor trench should be capturing the contaminated groundwater, which is discharged to the POTW.

Another monitoring report produced by Weston Solutions, Remedy Status and Expanded Remedy Performance Monitoring Report (September 2005), evaluating the past 10 years of remedy performance monitoring, indicates that contaminant concentrations continue to decline. Much of this was based on the quality monitoring data for WMW-17E and 18E, downgradient wells. Another assumption is that an upward gradient of surficial groundwater exists at the trench, indicating that all the surficial groundwater from the site, even the surficial groundwater from elevations below the trench, is captured. The basis for this assumption, other than the 'clean' downgradient wells, WMW-17E and 18E, is recommended to be presented in an amended report. It was noted in the Cabot quarterly monitoring reports that Table 3.1, columns for well depth and screened interval depths do not correspond for many wells. Some of the depths noted

for well depth are shallower than the screened interval depths. This was brought to Cabot's and Weston's attention.

The Cabot remedy in place addresses only the surficial aquifer. There are questions regarding the effectiveness of the interceptor trench system. The trenching system is shallow, approximately 11 to 12' below ground surface. The depth of the surficial aquifer is approximately 28 feet in this area. The capture of surficial groundwater from elevations below the trenching system is doubtful. Although the two downgradient wells, WMW-17E and 18E, used as a primary basis for declaring the effectiveness of the trench, are 'clean' wells, other confirmation is needed. Additional subsurface investigations, such as direct push, is necessary for more thorough evaluation. The existing network of wells should also be cleaned and redeveloped. There are questions regarding the potential for existing contamination in the Hawthorn Group and Floridan aquifer at the Cabot site, and impacts associated with this potential contamination. Investigations at the Koppers site since the 1990 ROD was issued, raises questions about deeper contamination that may be present at the Cabot site.

Koppers monitoring reports

RETEC, consultant to Beazer, submits annual monitoring reports of the groundwater containment system. The reports are called Annual Stage 2 Groundwater Monitoring Report. The reports for the years 2000 through 2004 were reviewed. The reports include quarterly water level readings from extraction and monitoring wells, quarterly monitoring for presence of NAPL, flow rates for the extraction wells, and annual groundwater sampling results from 19 onsite and offsite shallow wells and extraction wells. The reports contains tables of water level, DNAPL, pumping data, extraction well flow rates, potentiometric maps, site maps, groundwater sampling forms, and analytical data. Some reports contain FLOWPATH II groundwater modeling maps of the site.

A review of the reports reveal that the groundwater containment system is not preventing offsite migration of surficial groundwater, as designed. Evidence is presented in the potentiometric maps, and downgradient monitoring wells. The potentiometric maps do not show closure of the contours around the extraction wells. MW-33B, a downgradient monitoring well, is contaminated with naphthalene.

RETEC also submits quarterly monitoring reports of the Floridan aquifer wells. Reports reviewed include the 2nd and 3rd quarter, of year 2005. See Figure 12 in Attachment 2 for locations of the Floridan wells monitored for the quarterly reports. These show naphthalene contamination in FW-6, near the North Lagoon, as well as some other PAH's above Florida Groundwater Cleanup Target Level (GCTL). FW-3 also showed arsenic contamination above the new Florida GCTL in the 3rd quarter results. In the 2nd quarter results, FW-3 also showed arsenic contamination, benzene, and phenol above Florida GCTL. Very recent sampling and preliminary information from the newer, deeper Floridan aquifer wells, installed onsite in the latter part of 2005, and early 2006, show that these wells are also contaminated.

SITE INSPECTION

The site inspection was conducted on February 1, 2, and 3, 2006. The Koppers portion of the site inspection was conducted on the afternoon of February 1, 2006, led by Mike McKinney, site O&M operator for all remedial activities for Beazer. Attendees included Laura Roebuck (USACE), Amy McLaughlin (EPA), Kelsey Helton (FDEP), and John Mousa (ACEPD). The Cabot Carbon portion of the site inspection was conducted on the morning of February 2, 2006, led by Ralph McKeen, PM for Weston Solutions, Inc., consultant to Cabot. Attendees were the same as for Koppers noted above. Bill Campbell, O&M site operator, was also present for a short time at the lift station. The purpose of the inspection was to assess the protectiveness of the remedy. Notes and observations from the site inspection were recorded on the Site Inspection Check List provided in Attachment 3. Photographs were taken by Laura Roebuck and are provided in Attachment 4.

Koppers site inspection

An active wood preserving plant and creosote treated timber storage is on this site. The North Lagoon was visited first. The North Lagoon was filled in years ago. The drip track area was visited next, where a new Floridan well had just been installed. The soil cuttings generated from the drilling of this well had to be transported off site and incinerated, due to the contamination. It was also noted that lighting had recently been installed in this area, with light poles, with the electrical wiring installed below grade. The monitoring wells and extraction wells were observed. The extraction wells have wooden fabricated pump houses. The treatment plant was visited next. Mr. McKinney described the pretreatment process. The drums containing drill cuttings from the ongoing Floridan well installation were also stored in the area of the water treatment plant, with Mr. McKinney in charge of composite sampling, characterization, proper hazard labeling and arranging for proper transport offsite.

Mr. McKinney showed us PW-1, and explained the recent pilot test for DNAPL recovery. This pilot study was not effective in extracting DNAPL, so five Hawthorn wells are manually bailed every other week, with about 0.4 gallon of DNAPL extracted per well. The former cooling pond area was also visited, as well as the former south lagoon. A new Floridan well was being installed near the limits of the south lagoon at the time of our visit.

Cabot site inspection

The former Cabot Lagoons area was visited first. A stormwater retention pond covers part of the former lagoon area. No trespassing signs were posted in the area. The trench area and the lift station were inspected next. The lift station structure, the fencing surrounding it, and the sump lids were replaced in January 2005. The lift station is near the Gainesville Dodge Dealership. The general manager met us and mentioned the frequency of the foul odors from the lift station, and the fact that the odors permeate the interior of his dealership. Outcome of the air sampling event in 2005, the recommendation for another air sampling event, and a carbon filter pilot study were also discussed.

The trench, sump lids, lift station and appurtenances appeared to be in good condition. Erosion along the concrete side slope of the trench and drainpipe near the lift station that were observed and photographed in the last five year review were not observed during this site inspection. Bill

Campbell, site O&M operator, noted these deficiencies have been repaired since the last five-year review. Strong odors inside the lift station, over the grate of the flowing groundwater were noted. Odors near the sumps were also detected.

Other offsite inspections

After the Cabot site inspection, Amy McLaughlin left, and John Herbert (GRU consultant) joined the group. John Mousa, Laura Roebuck, Kelsey Helton, and John Herbert traveled to the ditch, northeast and just offsite of Koppers. Faded FDER signage was posted along the ditch. Strong creosote odors were also detected at the bank. However, it was unclear if the odors were emanating from the Koppers property, where stacked creosote timbers were stored, or from the ditch and surface water. Dark, foamy substances in the surface water at the outfall in the ditch were observed.

INTERVIEWS

During the five-year review process, several individuals were interviewed in January and February 2006 concerning the Cabot Carbon/Koppers Superfund site. The individuals interviewed include PRPs, the state, site O&M operators, County Environmental personnel, a consultant for GRU, and a nearby property owner. Issues and concerns were expressed by most during the interviews.

The state, the County environmental personnel, and GRU consultant interviewed expressed dissatisfaction with the remedy in place, and the lack of progress being made towards ROD amendment. There was a general consensus regarding a lack of communication with the community; and also the lack of communication between the PRPs, stakeholders, and EPA in terms of status updates, progress monitoring, resolution and agreement on pilot studies, and some technical issues. Other issues and concerns:

- Sampling and analysis QA/QC for the ongoing Floridan well installation and sampling;
- Surface water and sediment contamination in offsite ditch, Springstead Creek, and Hogtown Creek;
- Lack of information in the Hawthorn Group (Intermediate aquifer) at both sites;
- The depth of the Cabot interceptor trench and the ability to capture surficial groundwater from the lower surficial aquifer;
- The air odor nuisance issues from the Cabot Lift Station;
- The lack of progress for many pilot studies and overall ROD amendment and remedy;
- The fact that source removal at Koppers is not accomplished;
- The overall consequences if the Murphree well water supply is impacted.

Positive aspects discussed include the Hawthorn well DNAPL bailing program underway at Koppers; the new lift station, fencing, and sump lids for the Cabot Groundwater Intercept System; and the new Floridan well installation program.

Details of the interviews are provided in Attachment 5.

VII. TECHNICAL ASSESSMENT

The following Questions A, B, and C were answered to provide a technical assessment of the site remedy.

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

Remedial Action Performance

Field investigations of the design for the 1990 ROD remedy revealed that the volume and the nature of contamination at the source areas at the Koppers portion of the site is different than what was realized at the time the ROD was issued. Based on findings of additional investigatory work since the ROD was issued, EPA determined that changes to the 1990 ROD are necessary to ensure protection of human health and the environment. Partial remedies are in place. The groundwater containment system at the Koppers portion of the site is not functioning as designed to protect human health and the environment. This conclusion is based on the review of site documents, groundwater monitoring data, risk assumptions, and results from the site inspection. Over the past few years, widespread contamination in the Hawthorn has been discovered. Also, it has been determined that the Hawthorn is not an impermeable barrier to downward migration of contamination into the Floridan. Investigations to fully delineate the site are ongoing. The Cabot groundwater interceptor trench is capturing contaminated shallow groundwater from the site. However, further investigations are recommended to ensure complete capture of all impacted surficial groundwater. The deeper aquifers at Cabot should be re-evaluated, to confirm that deeper contamination is not present. This conclusion is based on the review of site documents, groundwater monitoring data and the network, ARARs, risk assumptions, and results from the site inspection.

System Operations

Many deficiencies in the systems were noted. The Cabot interceptor trench system may not be preventing offsite migration of contaminated surficial groundwater. The depth of the trench does not fully penetrate the surficial aquifer at Cabot. The Hawthorn Group at Cabot may be contaminated. The lack of capture by the groundwater containment system at Koppers should be evaluated to determine the cause. The system was designed to prevent offsite migration of shallow groundwater, but offsite migration is occurring. Widespread contamination of the Hawthorn Group has been discovered in the last few years. Contaminants have been detected in the Floridan. Remedies to address Hawthorn and Floridan contamination will be selected after thorough investigations and delineation.

Opportunities for Optimization

Many opportunities for optimization exist at this site, as discussed in Sections VIII and IX. Opportunities to optimize the partial remedies in place were identified. The groundwater containment system at Koppers should be re-evaluated and re-designed, if necessary, to prevent offsite migration of contaminated groundwater. Additional extraction wells are necessary to enhance capture. Existing extraction wells may need to be cleaned and redeveloped. This system was not designed to extract DNAPL. Since the system was designed, the presence of DNAPL

has been confirmed in the aquifers at the site. This presence of DNAPL will need to be addressed in the re-evaluation of the groundwater containment system.

Early Indicators of Potential Issues

Numerous issues and problems that place protectiveness at risk are discussed in Sections VIII and IX.

Implementation of Institutional Controls and Other Measures

The institutional controls specified in the 1990 ROD have not been implemented, because the selected remedy was later found to be inappropriate. New institutional controls should be addressed in the ROD amendment. Site access and fencing is adequate. Faded FDER signage at the offsite ditch, northeast of Koppers, needs to be addressed pursuant to State requirements for warning signs at contaminated sites.

QUESTION B: ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS, AND REMEDIAL ACTION OBJECTIVES USED AT THE TIME OF THE REMEDY STILL VALID?

A review of the Applicable or Relevant and Appropriate Requirements (ARARs) listed in the 1990 ROD was conducted in order to answer the regulatory related portion of Question B. The ARAR review was conducted in accordance with the EPA guidance document, "Comprehensive Five-Year Review Guidance," EPA 540-R-01-007, June 2001.

Resource Conservation and Recovery Act (RCRA)

ARARs identified in the 1990 ROD included several RCRA hazardous waste regulations. Of those RCRA standards listed in the ROD, the ARAR requiring evaluation for this review is Section 17-30-180 of F.A.C (Florida State RCRA groundwater monitoring requirements). This regulation has since been transferred to Section 62-730.180 of F.A.C. and is equivalent to requirements of 40 CFR. 264.91-100 (Florida has adopted the Federal requirements with a few additional State-specific requirements). RCRA groundwater monitoring requirements of 40 CFR 264.94 call for monitoring the groundwater for the constituents at the levels indicated in Table 10.

Table 10.
40 CFR 264.94 Maximum Concentration of Constituents for Groundwater Protection

Constituent	Maximum Concentration (mg/L)
Arsenic……	0.05
Barium……	1.0
Cadmium……	0.01
Chromium……..	0.05
Lead……	0.05
Mercury ……	0.002
Selenium…….	0.01
Silver……..	0.05
Endrin ……	0.0002
Lindane……	0.004
Methoxychlor……..	0.1
Toxaphene……..	0.005
2,4 D ……..	0.1
2,4,5-T ……..	0.01

Note: mg/L – milligrams per liter

Per 40 CFR 264.94, groundwater concentrations of hazardous constituents must not exceed background level of any constituent or the levels shown in Table 1 of 40 CFR 264.94 (provided in the above table) or must not exceed an alternate level established by the regulating agency. As no alternate levels were identified in the ROD, it is assumed the Table 1 levels apply as a requirement of the ARAR.

There have been no changes to the 40 CFR 264.94 values since the last five year review conducted in 2001.

In March 2006 FDEP renewed the Koppers RCRD closure permit, clarifying that closure of the pertinent RCRA units and associated corrective action would be addressed under the Superfund cleanup.

Changes in Standards

Safe Drinking Water Act Maximum Contaminant Levels (MCLs)

Table 4 of the 1990 ROD identified Federal MCLs as ARARs for the site. MCLs have not been promulgated for many of the groundwater contaminants at the site. However, MCLs do exist for chromium, arsenic, benzene and PCP. The MCL for all four of these contaminants has changed since the 1990 ROD as shown in Table 11.

Table 11. MCL Change in Contaminants Since 1990 ROD

Contaminant	1990 ROD Level (ug/L)	2006 Florida[1] MCL (ug/L)	2006 Federal MCL (ug/L)	Change
Arsenic	50	10	10	Decrease
Chromium	50	100	100	Increase
Benzene	1[2]	1	5	Increase[3]
Pentachlorophenol	0.1[4]	1	1	Increase

Footnotes:
1. Florida State MCLs were not specifically listed in Table 4 of the ROD as ARARs, however, the text discussing groundwater cleanup criteria in the ROD stated the Florida ARAR of 1 ug/L would be used to establish the cleanup level for benzene. Therefore the State MCLs have been included in the table for consideration.
2. Benzene was not specifically listed in Table 1.1-4 of the ROD for groundwater remedial action objectives. However, a cleanup criteria was established for benzene in the ROD. See footnote #1 above.
3. The Federal MCL for benzene is higher than the State MCL, which was not specifically identified as an ARAR.
4. The groundwater remedial action objective in Table 1.1-4 of the ROD was listed as 0.1 with no units provided. This could have been either 0.1 ug/L or 100 ug/L. It is assumed the value in the ROD was intended as 0.1 ug/L, therefore the table shows the MCL as having increased.

Effective January 1, 2005, the drinking water standard for arsenic changed to 0.010 milligrams per liter (mg/L) based on revisions to the Florida primary drinking water standard for arsenic described in Rule 62-550.310. EPA has also revised the arsenic standard to 0.010 mg/L and compliance with the new federal standard began January 23, 2006. The potential for significant impacts resulting from the changes in the MCL values exists if the current groundwater treatment system cannot achieve the more stringent standards for arsenic.

Effluent Guidelines, Pretreatment Standards and NPDES Standards

Table 4 of the ROD listed 40 CFR 403, Effluent Guidelines and Pretreatment Standards and 40 CFR 122 as ARARs for the site. Numerical values for the Gainesville POTW pretreatment standards at the time of the ROD could not be located and as such, no direct evaluation of changes could be made. However, if changes have occurred in the standards they will have to be attained as the discharge is occurring off-site, and therefore the standards are not technically ARARs. The most current requirements would have to be attained prior to discharging treated groundwater to the Gainesville POTW.

As no remedial action related discharges to surface water are occurring at the site, it is assumed that 40 CFR 122 was listed as an ARAR for purposes of regulating stormwater discharges associated with remedial action activities that could have been considered a construction industrial activity. This category of activity includes excavation, grading and clearing (40 CFR 122.26). The only significant change to this standard since the ROD is a change in the size of the area of land being disturbed before the requirements apply. At the signing of the ROD, the standards applied to areas greater than 5 acres. Now the standards apply to disturbing an area 1

acre or larger. Potential impacts from the change in this standard could occur if future activities at the site include disturbing areas of land greater than 1 acre in size.

Changes in Exposure Pathways

Significant changes have occurred that affects potential exposure pathways. Evidence exists that contaminated groundwater is migrating offsite, and may be adversely impacting surface water. Evidence also exists that newly discovered DNAPL contamination in the Hawthorn and possibly the Floridan aquifer has probably migrated offsite, involving a potential threat to the Murphree wellfield and other potable Floridan wells in the area. The land usage and human usage of resources is the same. There is inadequate delineation of offsite dioxin and arsenic in soils to their respective health based criteria for unrestricted use to evaluate that current exposure pathway.

Changes in Toxicity and Other Contaminant Characteristics

Due to changes in toxicity information and development of more recent health based criteria for some site related contaminants, a re-evaluation of the adequacy of existing cleanup target levels and COCs is necessary.

Changes in Risk Assessment Methods

New risk assessments will be conducted at this site as part of the new RI/FS underway. Risk aspects to evaluate will depend upon the results of the full investigations of the new RI. This should be addressed in the next five-year review.

Expected Progress Towards Meeting RAOs

Progress towards meeting RAOs is not expected with the partial remedies in place. New remedies should be selected.

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

New ecological risks include the potential for surface water and sediment contamination offsite, due to the offsite migration of impacted surficial groundwater from Koppers. Another risk is the hydraulic connection between the surficial, Intermediate and Floridan aquifers at the site, creating a new pathway of exposure to the Floridan aquifer, the water supply source for the City of Gainesville.

Impacts from natural disasters do not appear to be an issue at this site.

New information has come to light since the ROD was issued that affects the protectiveness of the remedy selected in the ROD. The results of additional investigatory work conducted at the site, indicate that in selecting the remedy in the 1990 ROD, the existence of DNAPL, the extent of contamination in the soil, and the downward migration of the contamination into and through the Hawthorn Group (Intermediate aquifer) and into the Floridan aquifer, was not fully realized. Until recently, the conceptual model for the site assumed the Hawthorn Group was a ‘barrier’ to

downward migration of contamination into the Floridan. Recently, more thorough site investigations have revealed this is not the case. Further contaminant delineation and re-evaluation of the selected site remedies is necessary.

TECHNICAL ASSESSMENT SUMMARY

According to the data review, site inspection, and interviews, the partial remedies in place may not be functioning as intended by the ROD. The partial remedy for the surficial groundwater at the Koppers site is not preventing the offsite migration of contaminated groundwater. New ecological risks include potential impacts to the surface water. Since recent investigations have revealed that the deeper aquifers on site are contaminated, new human health risks include potential impacts to the Floridan aquifer at Murphree wellfield, and other Intermediate and Floridan aquifer well users in the vicinity. While a well survey and limited offsite potable well sampling has been completed, the extent of offsite groundwater contamination has not been defined.

The focus for investigations now must include the potential for downward migration through the Hawthorn into the Floridan. A thorough evaluation of the surficial, Hawthorn and Floridan aquifers on site is necessary to select an appropriate remedy. Site investigations are ongoing. Based on the findings, changes to the 1990 ROD are necessary to ensure protection of human health and the environment.

VIII. ISSUES

Table 12 presents issues to be resolved at the Cabot Carbon/Koppers site.

Table 12
Issues

Issue	Currently Affects Protectiveness (Yes/No)	Affects Future Protectiveness (Yes/No)
The groundwater extraction/containment system at the Koppers site is ineffective in preventing offsite migration of contaminated surficial aquifer groundwater. Annual groundwater monitoring reports indicate that groundwater downgradient of the site is contaminated with naphthalene and other contaminants.	Yes	Yes
The lateral and vertical migration of contaminated groundwater and DNAPL in the surficial aquifer at Koppers should be investigated further to determine impacts to surficial aquifer groundwater downgradient of the site and impacts to the Hawthorn Group and Floridan aquifer. Additionally, impacts to surface water flowing offsite into Springstead Creek and Hogtown Creek should be investigated.	Yes	Yes

Table 12
Issues, cont'd

Issue	Currently Affects Protectiveness (Yes/No)	Affects Future Protectiveness (Yes/No)
The widespread contamination in the Hawthorn Group discovered at Koppers is not fully delineated, including the downgradient and westerly areas of the site. The potential for contamination in the Hawthorn Group exists at the Cabot site. The source areas at the Koppers site are of particular concern since they have not been remediated and likely continue to release contamination into the groundwater.	Yes	Yes
The Hawthorn Group was previously assumed to be a barrier to downward migration of contamination. The Hawthorn Group is now believed to be composed of leaky confining layers, capable of releasing contamination into the underlying Floridan aquifer. Groundwater contaminants have been detected at Koppers in several Floridan aquifer wells.	Yes	Yes
Contamination at source areas has not been fully delineated, and remedial measures in these areas have not been implemented. Soil contamination in the source areas at the Koppers site has not been remediated and the former Cabot Lagoons may still be acting as a source.	Yes	Yes
The full extent of downward migration of DNAPL and dissolved polyaromatic hydrocarbon and phenolic compounds including pentachlorophenol contamination from the Koppers source areas is unknown.	Yes	Yes
Arsenic contamination has been detected in monitoring wells at the site, including a Floridan well. The full extent of arsenic contamination is unknown. Arsenic potentially migrating into the Floridan aquifer is a concern.	Yes	Yes
At the Cabot site, the effectiveness of the groundwater interceptor trench system in intercepting contaminated surficial groundwater at Cabot Carbon should be evaluated. The degree of capture of surficial groundwater contaminants below the depth of the interceptor system has not been determined. The deepest groundwater collection piping in the interceptor system is 12 feet below ground surface, and the surficial aquifer is approximately 28 feet deep in this area. Additionally, the sole determining factors of the effectiveness of the trench are only two downgradient monitoring wells.	Yes	Yes
Many of the monitoring wells installed at the Cabot Carbon/Koppers site have not been monitored routinely over the years. An insufficient amount of data exists, as a result.	No	No

Table 12
Issues, cont'd

Issue	Currently Affects Protectiveness (Yes/No)	Affects Future Protectiveness (Yes/No)
Odors associated with the Cabot Lift Station and the sumps are a concern. Complaints by the public continue, particularly near the lift station. Air quality monitoring at Cabot Lift Station was performed in 2005. Sampling was conducted for one day. The results indicated the air contained low levels of naphthalene, toluene, and ethylbenzene, all below EPA's risk-based criteria.	No	No
COCs and remedial goals for the site have changed since the ROD was issued (see Table 4).	Yes	Yes
Arsenic and dioxin contamination have been documented on site in unsaturated soils. In addition, arsenic has been detected offsite. However, the contamination has not been adequately delineated on or off site.	Yes	Yes

IX. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 13 provides recommendations and follow-up actions to address the issues presented in Section VIII.

Table 13
Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Yes/No)	
					Current	Future
The groundwater extraction/containment system at the Koppers site is ineffective in preventing offsite migration of contaminated surficial aquifer groundwater. Annual groundwater monitoring reports indicate that groundwater downgradient of the site is contaminated with naphthalene and other contaminants.	The Koppers surficial extraction system should be re-evaluated to determine optimum well locations, optimum well spacing, and well pumping rates. An evaluation for adding wells near source areas and laterally, as necessary, should be performed to maintain hydraulic capture of the surficial groundwater.	Beazer	EPA	12/01/06	Yes	Yes
The lateral and vertical migration of contaminated surficial groundwater and DNAPL in the surficial aquifer at Koppers, should be investigated further to determine impacts to surficial groundwater downgradient of the site and impacts to the Hawthorn Group and Floridan aquifer. Additionally, impacts to surface water flowing offsite into Springstead Creek and Hogtown Creek should be investigated.	In the ditch located immediately offsite and northeast of Koppers, sediment and water sampling should be conducted for analysis of COCs. The groundwater exiting the site must meet surface water criteria since the groundwater is discharging to a ditch that flows into Springstead Creek.	Beazer	EPA	7/31/06	Yes	Yes
The widespread contamination in the Hawthorn Group discovered at Koppers is not fully delineated, including the downgradient and westerly areas of the site. The potential for contamination in the Hawthorn Group exists at the Cabot site. The source areas at the Koppers site are of particular concern since they have not been remediated and likely continue to release contamination into the groundwater.	Further characterization of the Hawthorn Group sediments is necessary for remedial design and action. The extent of contamination in the Hawthorn Group at the entire site should be better delineated. Investigations at Koppers confirms the presence of contamination in the Hawthorn. At Cabot, due to historic practices and data obtained from past investigations, the possibility of contamination in the Hawthorn exists; therefore more groundwater data is needed.	Beazer and Cabot	EPA	3/31/07	Yes	Yes

Table 13
Recommendations and Follow-Up Actions, cont'd

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Yes/No)	
					Current	Future
The Hawthorn Group was previously assumed to be a barrier to downward migration of contamination. The Hawthorn Group is now believed to be composed of leaky confining layers, capable of releasing contamination into the underlying Floridan aquifer. Groundwater contaminants have been detected at Koppers in several Floridan aquifer wells.	The possibility of contamination in the Floridan needs to be addressed. The new Floridan wells installed by Beazer should continue to be monitored regularly. Vertical and horizontal delineation of groundwater contaminants should be established.	Beazer	EPA	3/31/07	Yes	Yes
Contamination at source areas has not been fully delineated, and remedial measures in these areas have not been implemented. Soil contamination in the source areas at the Koppers site has not been remediated and the former Cabot Lagoons may still be acting as a source.	Interim remedial measures at the source areas should be evaluated and implemented, if feasible, to prevent further contamination.	Beazer and Cabot	EPA	12/01/06	Yes	Yes
The full extent of downward migration of DNAPL and dissolved polyaromatic hydrocarbon and phenolic compounds including pentachlorophenol contamination from the Koppers source areas is unknown.	Subsurface investigations, such as direct-push sampling, should be performed at the base of the surficial aquifer beneath the Koppers source areas to determine the extent of contamination in the surficial and the potential for continued downward DNAPL migration into the Hawthorn. Surface geophysics, combined with confirmed borehole geophysical logging information, should be considered as a tool to better characterize the Hawthorn.	Beazer	EPA	3/31/07	Yes	Yes

Table 13
Recommendations and Follow-Up Actions, cont'd

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Yes/No)	
					Current	Future
Arsenic contamination has been detected in monitoring wells at the site, including a Floridan well. The full extent of arsenic contamination is unknown. Arsenic potentially migrating into the Floridan aquifer is a concern.	The vertical and lateral extent of arsenic contamination in the groundwater on and off site should be delineated. Identification of background and baseline arsenic concentrations is also needed as part of the investigation.	Beazer	EPA	12/01/06	Yes	Yes
At the Cabot site, the effectiveness of the groundwater interceptor trench system in intercepting contaminated surficial groundwater at Cabot Carbon should be evaluated. The degree of capture of surficial groundwater contaminants below the depth of the interceptor system has not been determined. The deepest groundwater collection piping in the interceptor system is 12 feet below ground surface, and the surficial aquifer is approximately 28 feet deep in this area. Additionally, the sole determining factors of the effectiveness of the trench are only two down-gradient monitoring wells.	The Cabot groundwater interceptor trench system should be re-evaluated to determine its effectiveness in intercepting groundwater contaminants. Additional subsurface investigations are necessary for a thorough evaluation. The entire length along the eastern side of the trench should be evaluated, as well as the northern boundary.	Cabot	EPA	3/31/07	Yes	Yes
Many of the monitoring wells installed at the Cabot Carbon/Koppers site have not been monitored routinely over the years. An insufficient amount of data exists, as a result.	All of the surficial wells installed in the 1984 to 1995 investigations should be cleaned out and redeveloped. Re-surveying of the wells should be performed as necessary. Regular monitoring of all the wells and sample analysis for all site COCs should be performed.	Beazer and Cabot	EPA	7/31/06	No	No

Table 13
Recommendations and Follow-Up Actions, cont'd

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Yes/No)	
					Current	Future
Odors associated with the Cabot Lift Station and the sumps are a concern. Complaints by the public continue, particularly near the Lift Station. Air quality monitoring at Cabot Lift Station was performed in 2005. Sampling was conducted for one day. The results indicated the air contained low levels of naphthalene, toluene, and ethylbenzene, all below EPA's risk-based criteria.	Air quality monitoring at the Cabot Lift Station and the sumps should continue. Air monitoring should be performed over a period of at least two days during the summer, and seasonally. Data should be evaluated based on health and nuisance effects. Local regulatory agencies should be contacted regarding nuisance ordinances. At the lift station, the air samples should be collected near the vent. The effectiveness of carbon filters installed to reduce odors emitting from the vent at the lift station should be monitored with replacement of filters as necessary. Pilot studies to determine optimum treatment options should be considered.	Cabot	EPA	7/31/06	No	No
COCs and remedial goals for the site have changed since the ROD was issued (see Table 4).	Re-evaluate the list of COCs and associated remedial goals (including dioxins, arsenic, and phenolic compounds) based on more recent toxicological information.	Beazer	EPA	12/01/06	Yes	Yes
Arsenic and dioxin contamination have been documented on site in unsaturated soils. In addition, arsenic has been detected offsite. However, the contamination has not been adequately delineated on or off site.	The extent of soil contamination for all COCs (including arsenic and dioxin) needs to be delineated on and off site and addressed if necessary to assure protectiveness.	Beazer	EPA	3/31/07	Yes	Yes

X. PROTECTIVENESS STATEMENT

Cabot:

A protective determination of the remedy in place at the Cabot Carbon portion of the site cannot be made at this time until further information is obtained. Further information will be obtained

by taking the actions pertaining to the Cabot portion of the site outlined in Section IX of this report. There is a possibility of contaminant migration which should be addressed by further investigations. Confirmation of complete capture of contamination in the surficial groundwater by the interceptor trench is needed. A more thorough evaluation of the potential for contamination in the Hawthorn on site is also necessary. It is expected that these actions will take approximately one year to complete, at which time an assessment of protectiveness can be made.

Koppers:

The partial remedies in place at Koppers are not protective of human health and the environment. The groundwater containment system is not effective in preventing offsite migration of contaminated surficial aquifer groundwater. The system needs to be re-evaluated to determine modifications needed for maximum capture efficiency. Investigations within the past few years indicate that widespread contamination exists in the Hawthorn at the Koppers site. Furthermore, contamination exceeding drinking water standards in the Floridan aquifer has also been detected. More delineation of contamination in all of the aquifers is required to gain a thorough understanding of site conditions in order to re-evaluate and select a remedy that will be protective.

Overall:

The remedy at Cabot Carbon/Koppers site is not protective as demonstrated by the following issues. The selected remedy in the 1990 ROD addressed only the surficial aquifer. Since the 1990 ROD was issued, contamination has been found to be far greater and deeper than was realized at the time. Until recently, the clay at the top of the Upper Hawthorn Group was assumed to be a barrier to downward migration of contamination. Recent findings indicate this is not the case. In addition to the surficial aquifer, widespread contamination in the Hawthorn exists at the Koppers site, and contamination in the Floridan aquifer has been detected. More delineation of contamination is needed in the surficial aquifer, the Hawthorn Group and the Floridan aquifer on and off site. At a minimum, the issues and deficiencies outlined in this five-year review should be addressed. Once adequate delineation is achieved, remediation strategies and technologies should be evaluated to select appropriate remedial actions. A new remedy is required to address the full extent of contamination at the site.

XI. NEXT REVIEW

The next five-year review for the Cabot Carbon/Koppers site is required five years from the date of this review.

ATTACHMENTS

ATTACHMENT 1

LIST OF DOCUMENTS REVIEWED

Documents Reviewed

Alachua County Environmental Protection Department. 2005a. Overview of Cabot – Koppers Superfund Site powerpoint presentation, by John Mousa, March 23, 2005.

Alachua County Environmental Protection Department. 2005b. ACEPD comments on 1st Quarter Floridan Aquifer Groundwater Monitoring Report, July 13, 2005.

Alachua County Environmental Protection Department. 2006. Chronology of Site Events since 2001, January 9, 2006.

Beazer East, Inc. 2006. Transmittal of Initial Laboratory Water Quality Results Transect Wells FW-10B through FW-16B, Cabot Carbon/Koppers Superfund Site in Gainesville, Florida, February 10, 2006.

EPA. 1990. EPA Superfund Record of Decision: Cabot/Koppers, EPA ID: FLD980709356, OU-00, Gainesville, FL, September 27, 1990.

EPA. 2001a. Superfund Proposed Plan, Cabot Carbon/Koppers Site, Record of Decision Amendment, May 2001.

EPA. 2001b. Comprehensive Five-Year Review Guidance, EPA 540-R-01-007, OSWER No. 9355.7-03B-P, June 2001.

EPA. 2002. OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), November 2002.

EPA. 2006. Letter from EPA to Cabot, Review of Remedy Status and Expanded Remedy Performance Monitoring Report, Eastern Portion of the Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, January 23, 2006.

Environmental Science and Engineering, Inc. 1990. Final Feasibility Study for the Cabot Carbon/Koppers Site, Gainesville, Florida, May 9, 1990.

Florida Department of Health and Rehabilitative Services (HRS). 1989. Health Assessment for Cabot Carbon/Koppers Site, Gainesville, Alachua County, Florida, April 24, 1989.

GeoTrans, Inc. 2004. Data Report for Additional Investigation of Hawthorn Group DNAPL Source Evaluation for the Koppers Industries Proper, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, September 15, 2004.

GeoTrans, Inc. 2005a. Upper Floridan Monitoring Well Alternative Design, Koppers Inc. Site in Gainesville, Florida, October 17, 2005.

GeoTrans, Inc. 2005b. Transmittal of Beazer's Comments on the GRU Team June 7, 2005 Report entitled "A Critique of the GeoTrans Flow and Transport Model, Koppers Inc. Site, Gainesville, Florida", December 29, 2005.

Gradient Corporation. 2005. Remedy Status and Expanded Remedy Performance Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, September 20, 2005.

Gradient Corporation. 2006. Letter to EPA, Eastern Portion of Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, in response to EPA's January 23, 2006 comments on the Expanded Remedy Performance Monitoring Report of September 2005, March 6, 2006.

Jones Edmunds & Associates, Inc. 2006. Review and Recommendations Report for the Cabot Carbon/Koppers Superfund Site, February 2006.

RETEC Group, Inc. 2001. 2000 Annual Stage 2 Groundwater Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, April 2001.

RETEC Group, Inc. 2002. 2001 Annual Stage 2 Groundwater Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, April 2002.

RETEC Group, Inc. 2003a. 2002 Annual Stage 2 Groundwater Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, April 2003.

RETEC Group, Inc. 2004. 2003 Annual Stage 2 Groundwater Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, April 2004.

RETEC Group, Inc. 2005a. 2004 Annual Stage 2 Groundwater Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, August 2005.

RETEC Group, Inc. 2003b. Volume 1 and Volume II (Vendor Information), Operations and Maintenance Manual, Gainesville, Florida, RETEC project number BEAZ7-03610-094, February 2003.

RETEC Group, Inc. 2005b. 2005 2nd Quarter Floridan Aquifer Groundwater Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, September 1, 2005.

RETEC Group, Inc. 2005c. 2005 3rd Quarter Floridan Aquifer Groundwater Monitoring Report, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, November 21, 2005.

Pichler, Dr. Thomas. 2005. Arsenic Concentrations in Groundwater in the Vicinity of Koppers and Murphree Wellfield, May 2005.

TRC. 2003. Second Addendum to the Workplan for Additional Characterization of the Hawthorn Group, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, November 2003.

TRC. 2004a. Data Report, November (2003) Sampling Event Investigation of the Hawthorn Group Formation, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, January 2004.

TRC. 2004b. Floridan Aquifer Monitoring Plan, revised, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, June 23, 2004.

TRC. 2005. Source Removal Assessment Report, prepared for Beazer East, Inc., Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, January 2005.

Waterloo Hydrogeologic. 2005. Evaluation of the Capture Effectiveness of the Ground Water Extraction System at the Koppers, Inc. Site, Gainesville, Florida, November 2, 2005.

Weston, Roy F., Inc. 1993. Operations and Maintenance Manual, Gainesville Environmental Remediation, Eastern Portion of Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, December 1993.

Weston Solutions, Inc. 2000 – 2005, Daily Log Books, by Bill Campbell, O&M Operator, Cabot site, one book per year for years 2000 through 2005.

Weston Solutions, Inc. 2000, 2001. Results of Quarterly Groundwater Sampling (four quarterly reports covering year 2000), Eastern Portion of the Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, 2000 and 2001.

Weston Solutions, Inc. 2001, 2002. Results of Quarterly Groundwater Sampling (four quarterly reports covering year 2001), Eastern Portion of the Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, 2001 and 2002.

Weston Solutions, Inc. 2002, 2003. Results of Quarterly Groundwater Sampling (four quarterly reports covering year 2002), Eastern Portion of the Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, 2002 and 2003.

Weston Solutions, Inc. 2003, 2004. Results of Quarterly Groundwater Sampling (four quarterly reports covering year 2003), Eastern Portion of the Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, 2003 and 2004.

Weston Solutions, Inc. 2004, 2005. Results of Quarterly Groundwater Sampling (four quarterly reports covering year 2004), Eastern Portion of the Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, 2004 and 2005.

Weston Solutions, Inc. 2005. Results of Quarterly Groundwater Sampling (three quarterly reports covering January through September 2005), Eastern Portion of the Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, 2005.

Weston Solutions, Inc. 2000 – 2005. Groundwater Discharge Sampling Compliance Results Reports, submitted to GRU three times per year. 2000 – January 2006.

US Army Corps of Engineers. 2001. Five-Year Review, Cabot Carbon/Koppers Superfund Site, Gainesville, Florida, March 2001.

ATTACHMENT 2

FIGURES

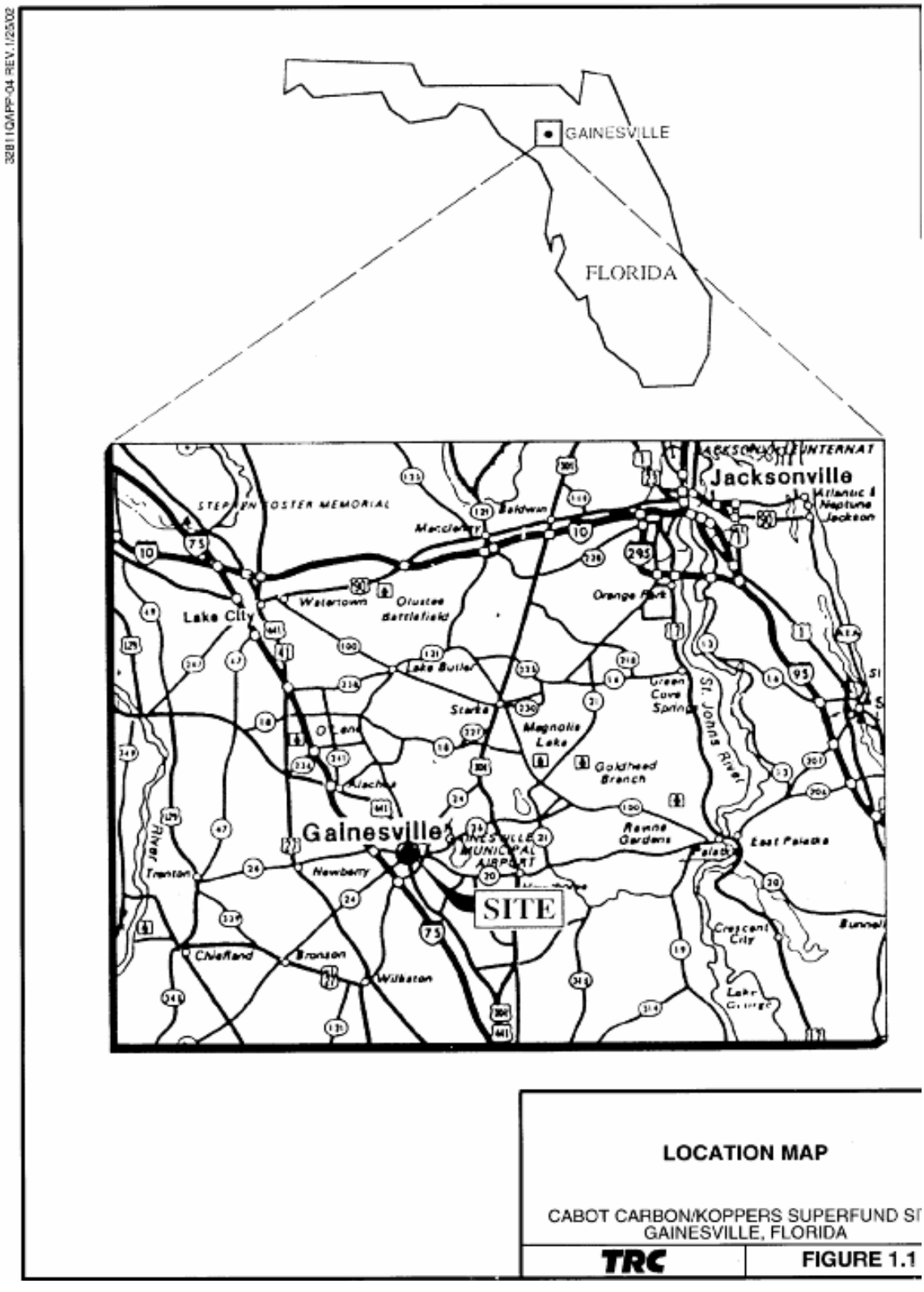


Figure 1. Location Map

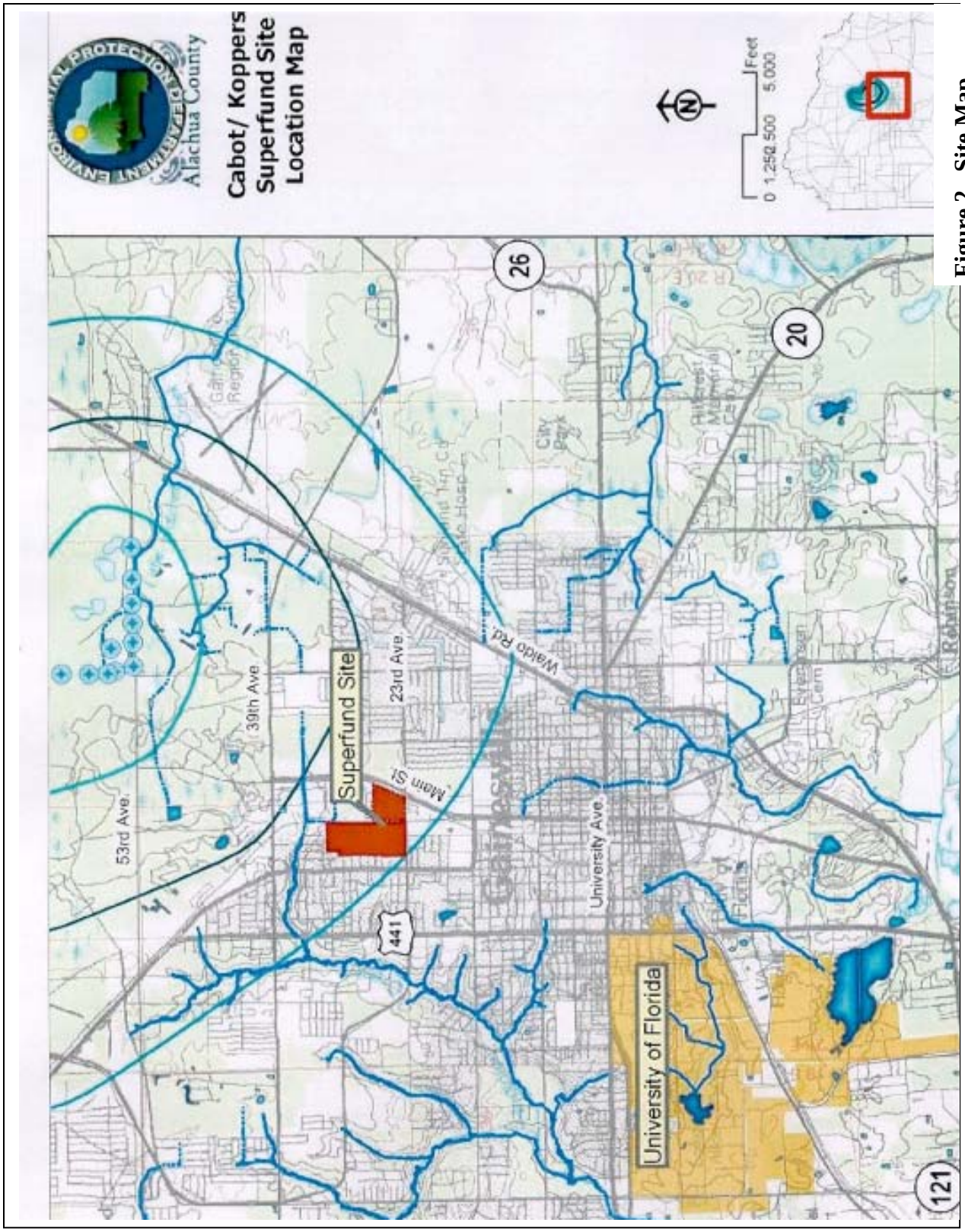


Figure 2. Site Map (Source: Alachua County Environmental Protection Department)

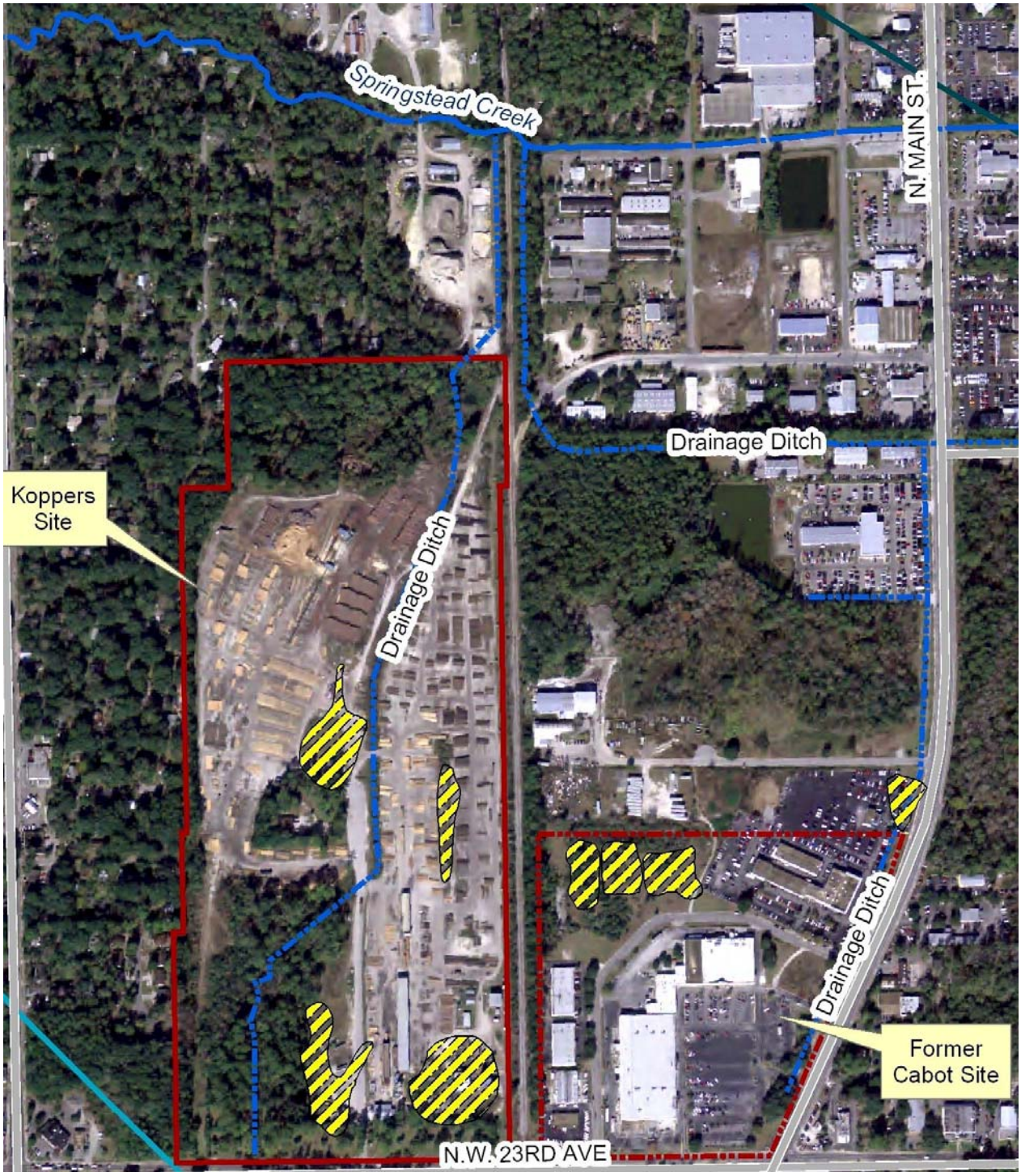


Figure 3. Source areas, for Cabot and Koppers sites (Source of photo: Alachua County Environmental Protection Department)

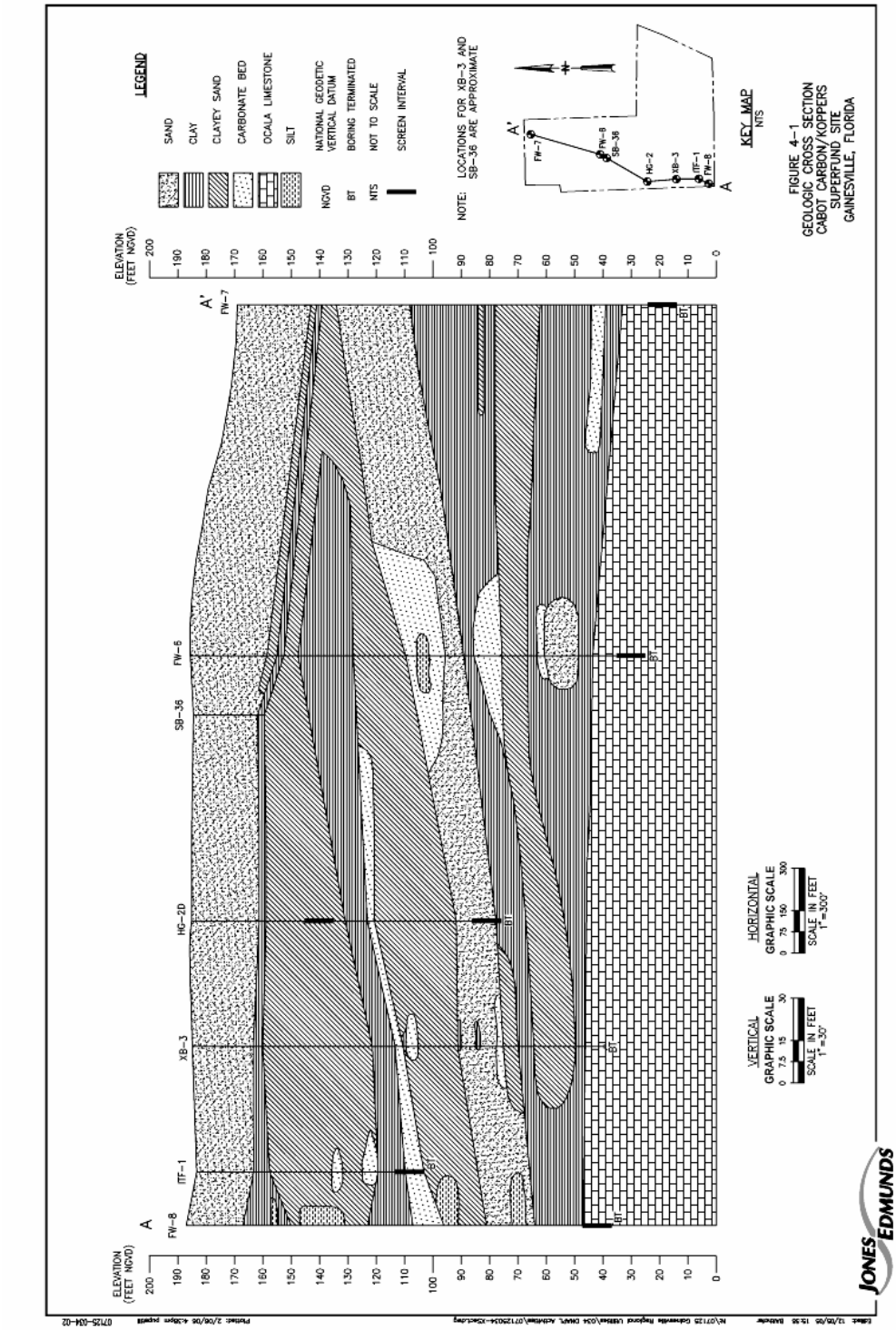


Figure 4. Generalized geologic cross section at site (Source: Jones Edmunds)

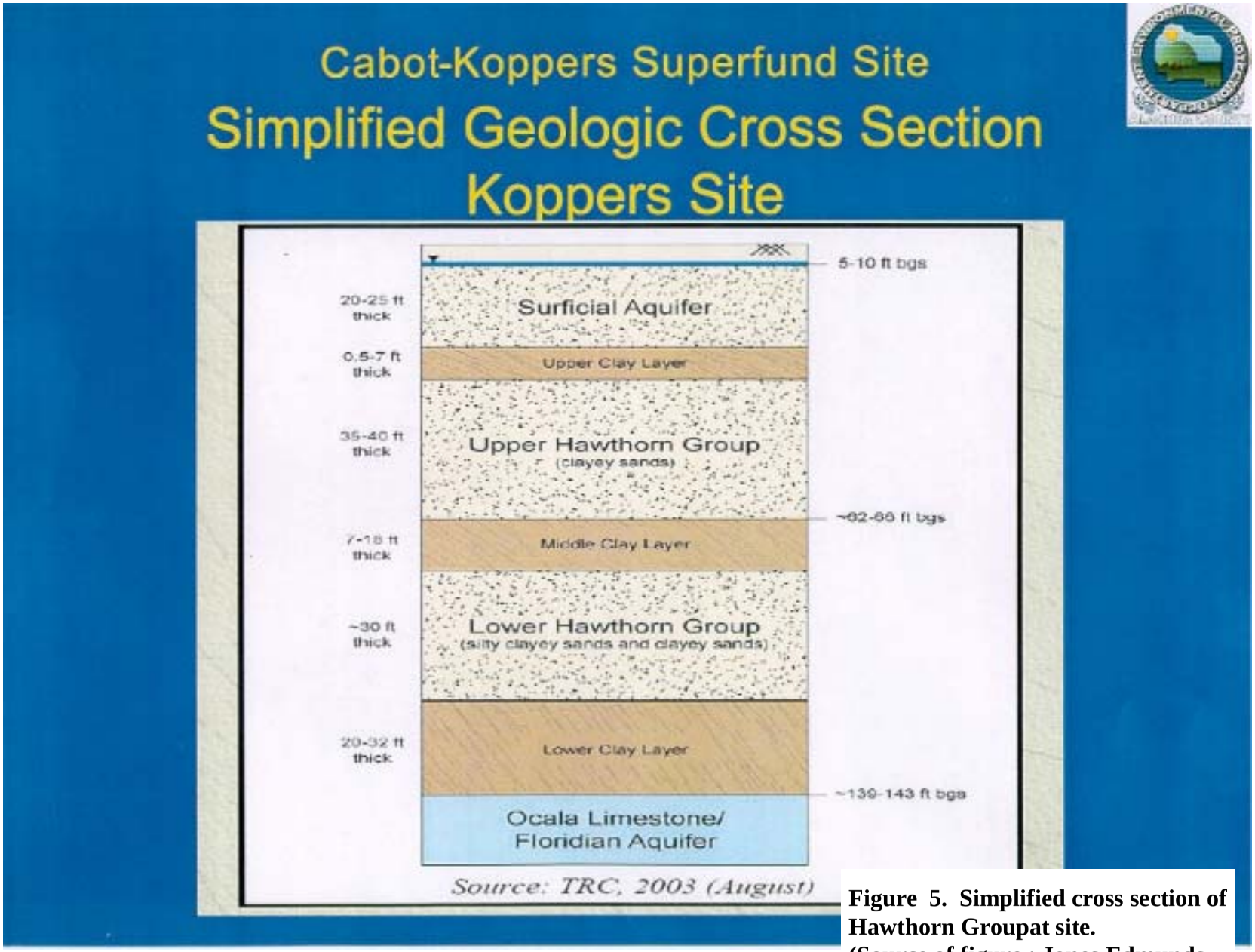


Figure 5. Simplified cross section of Hawthorn Groupat site.
(Source of figure,: Jones Edmunds and Alachua County Environmental Protection Department)

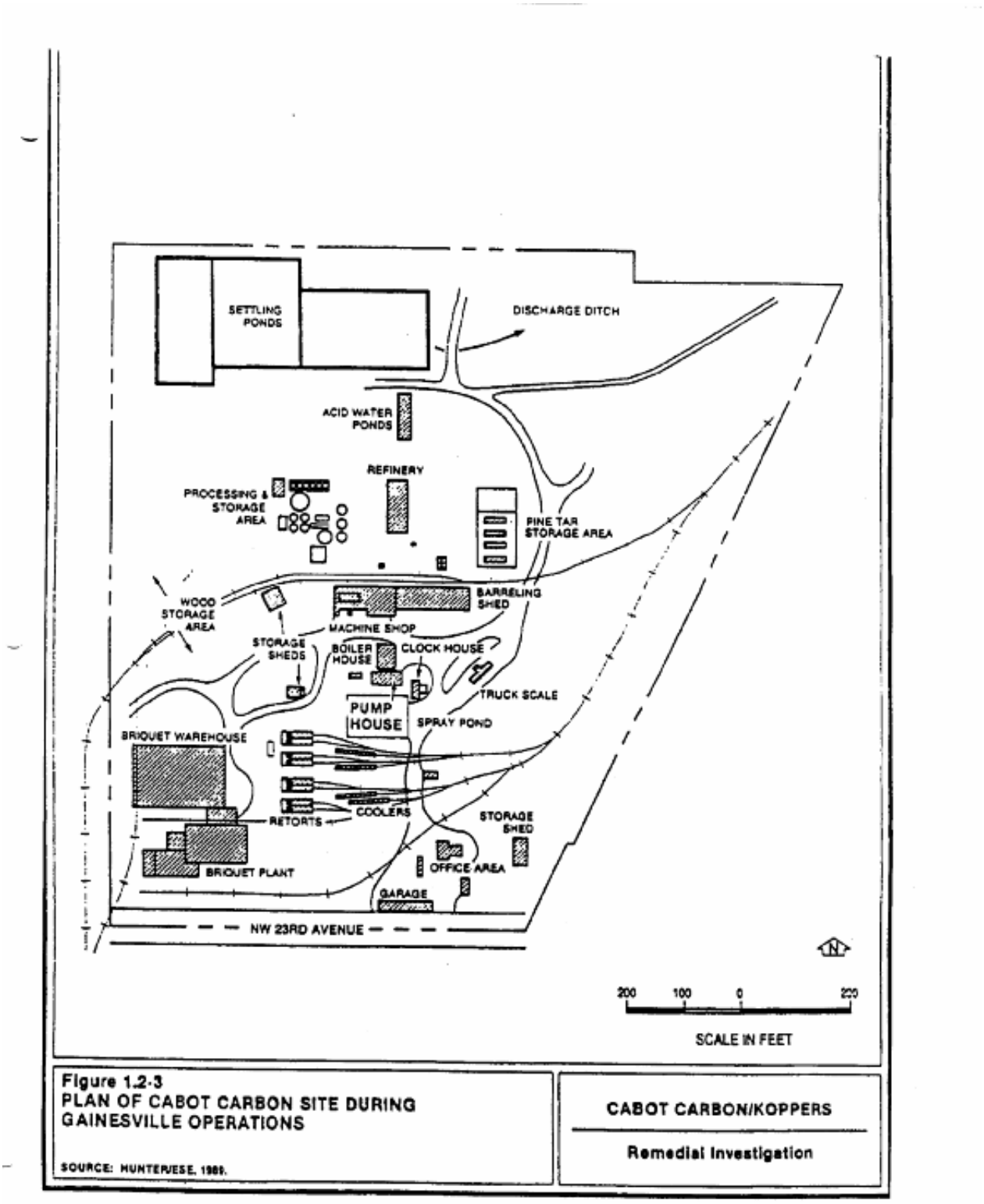


Figure 6. Layout of Cabot facilities.

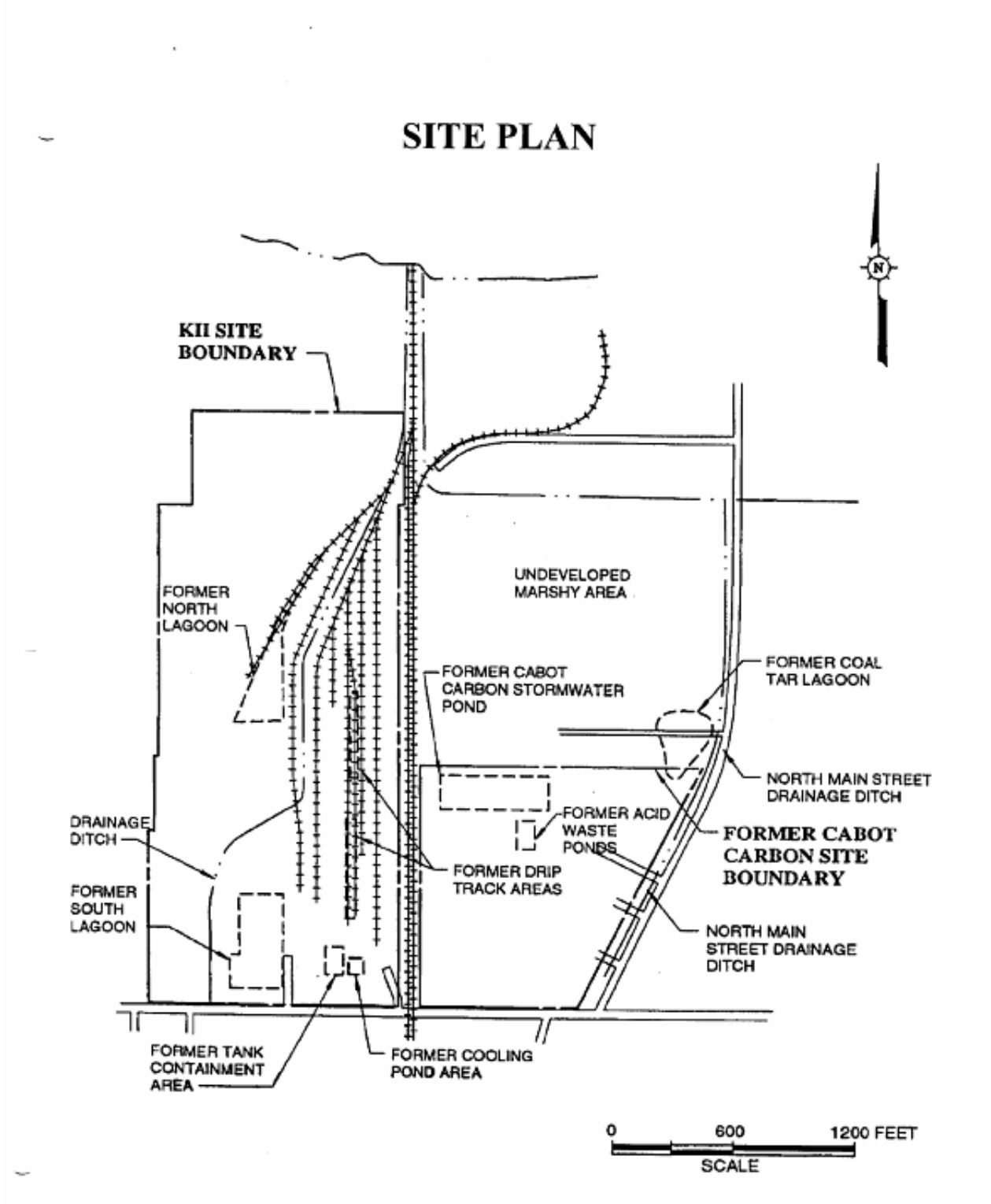


Figure 7. Layout of Koppers facilities (historic)

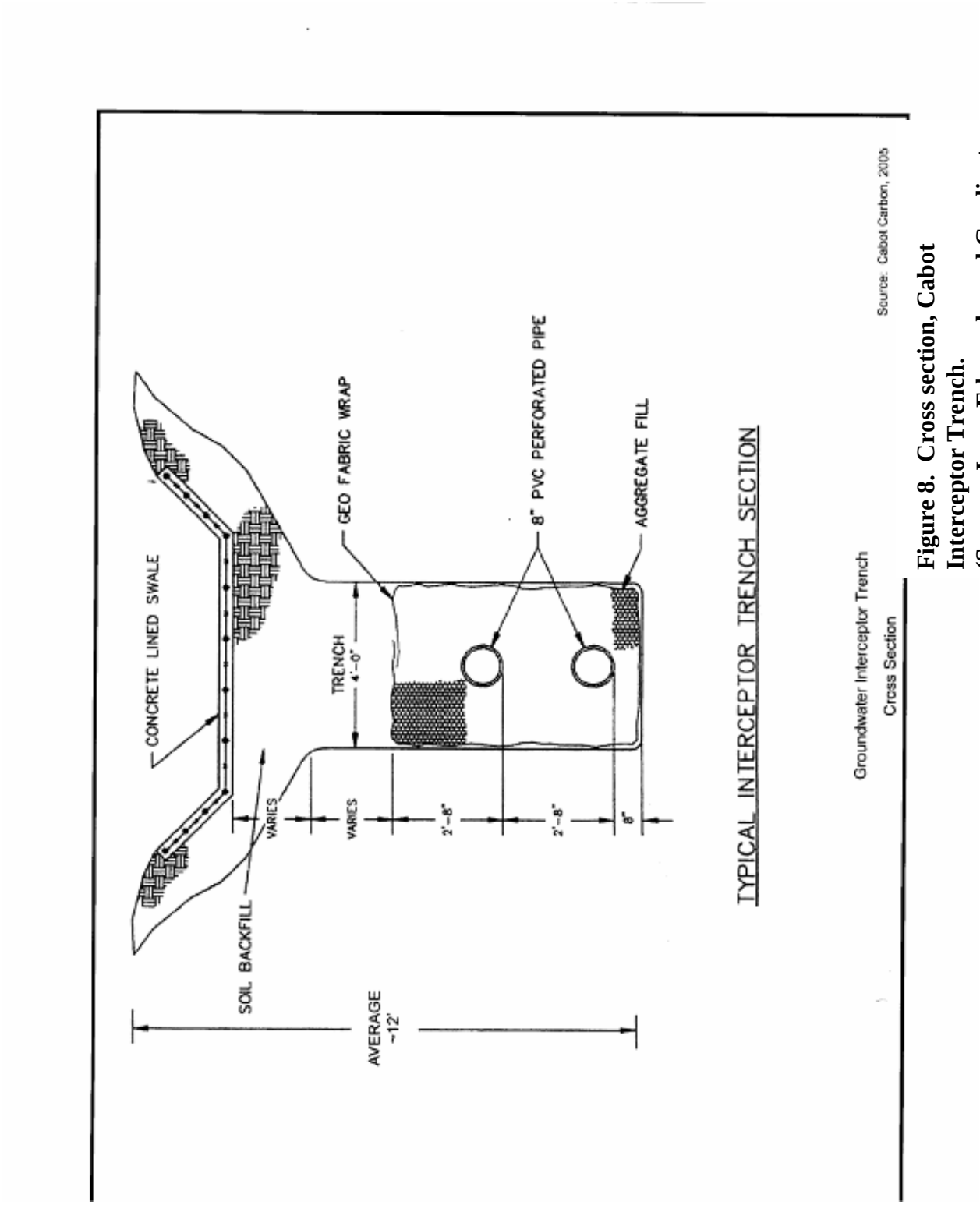


Figure 8. Cross section, Cabot Interceptor Trench. (Source: Jones Edmunds, and Gradient, 2005)

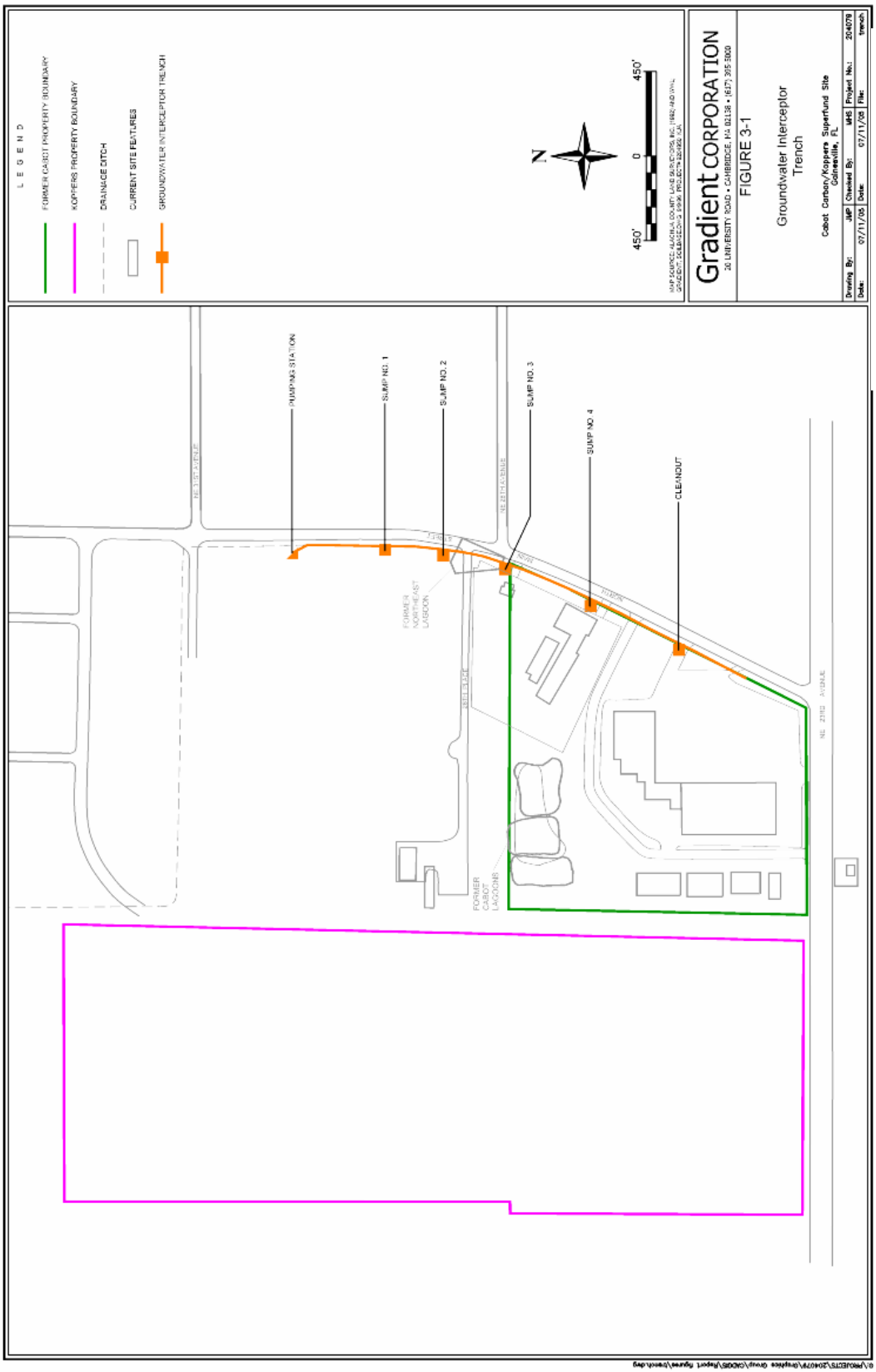


Figure 9. Interceptor trench and sump locations, Cabot. (Source: Gradient, 2005)

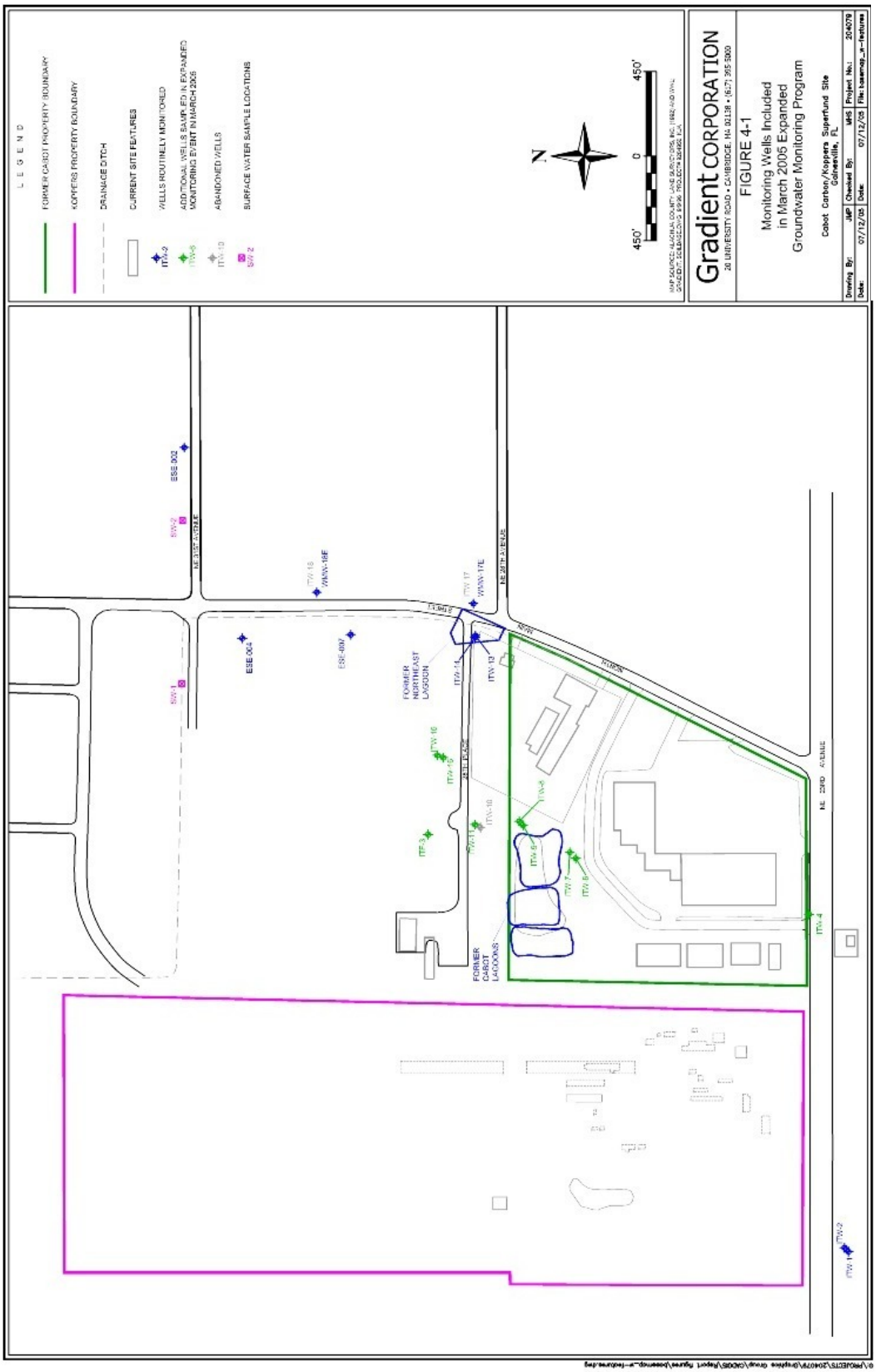


Figure 10. Cabot monitoring well locations. (Source: Gradient, 2005)

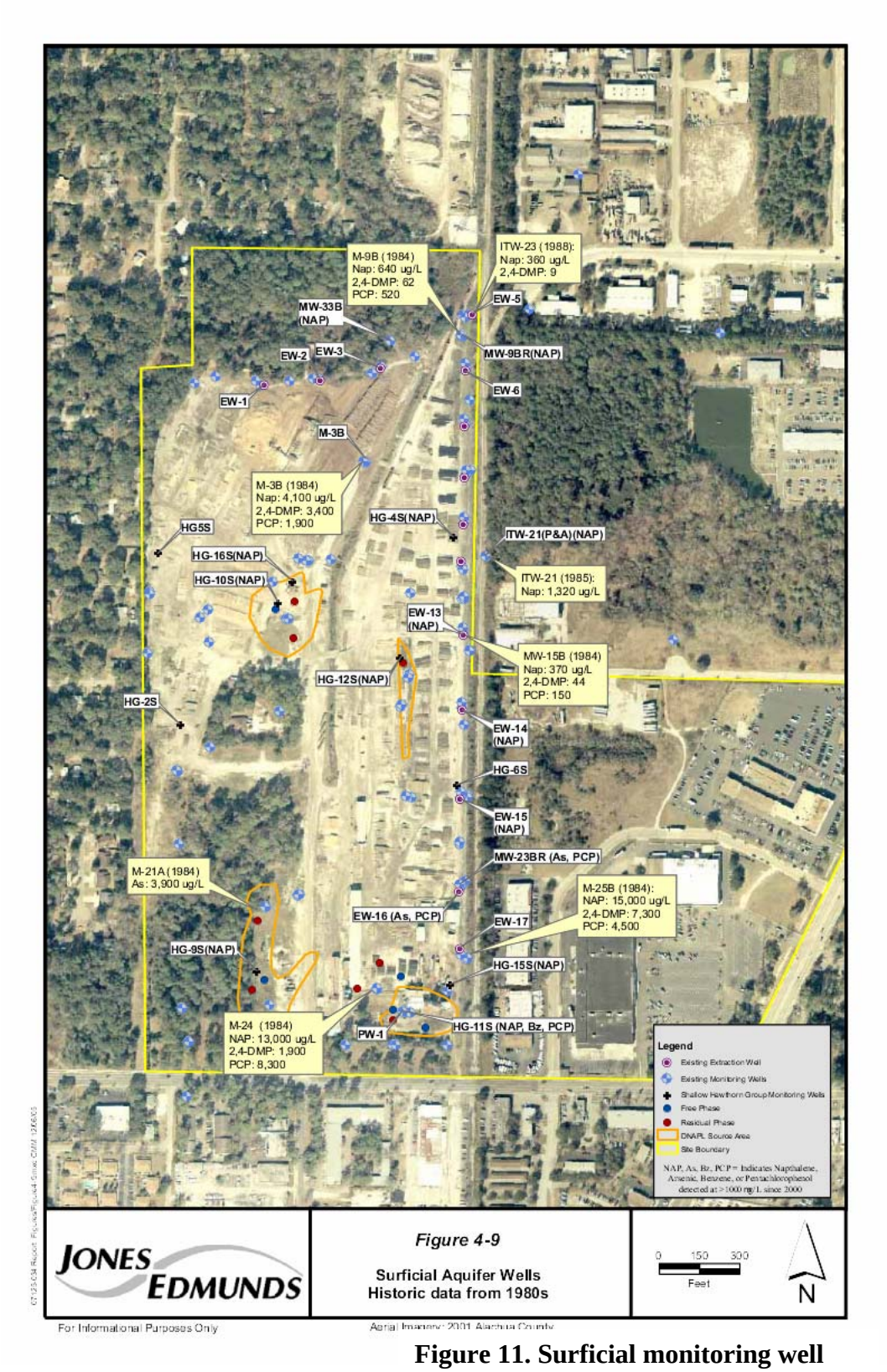


Figure 11. Surficial monitoring well and extraction well locations, Koppers. (Source: Jones Edmunds)

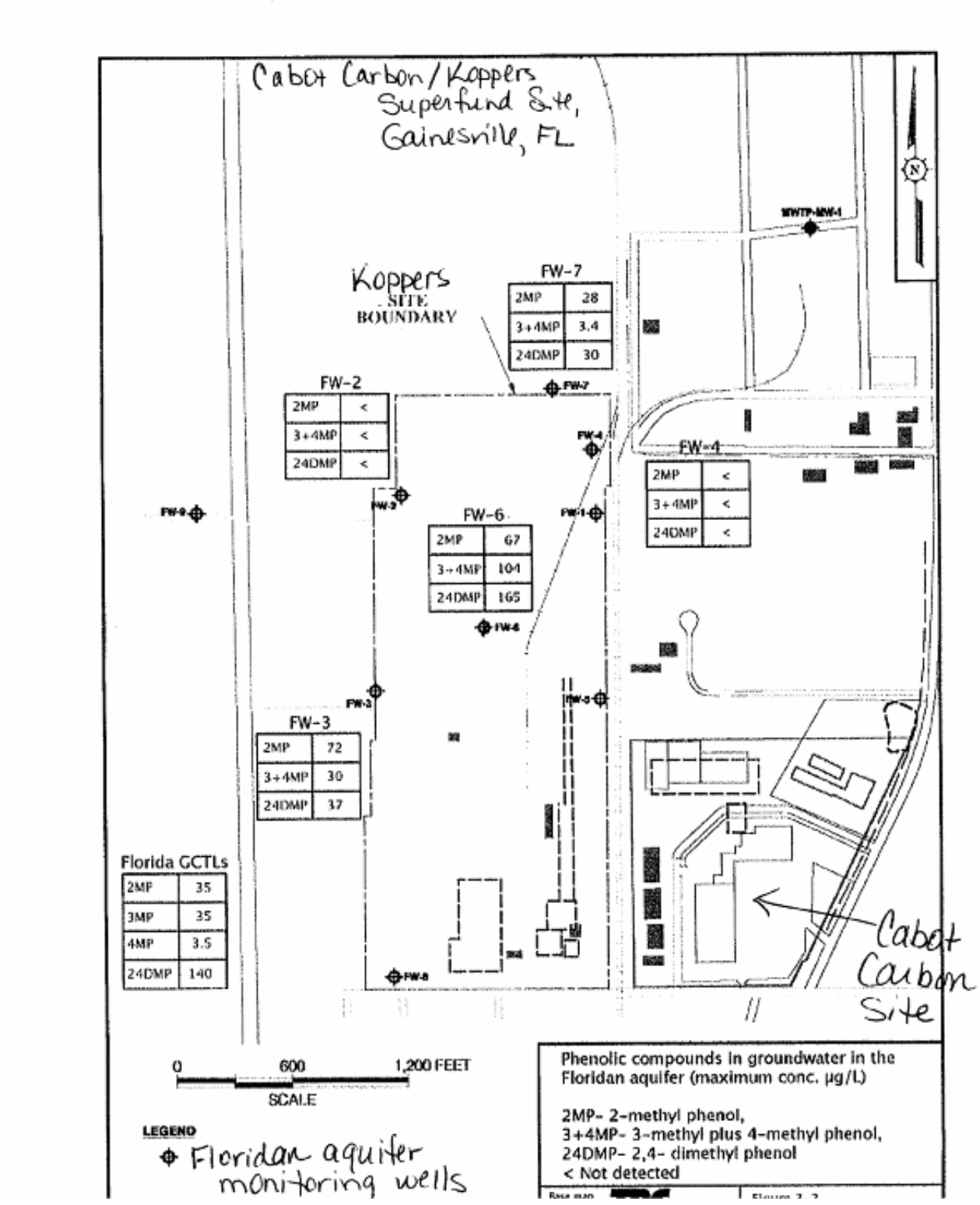


Figure 12. Floridan wells, pre-2005, Koppers

ATTACHMENT 3

SITE INSPECTION CHECK LIST

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION	
Site name: Cabot Carbon/Koppers Superfund Site (Koppers portion)	**Date of inspection:** 1 February 2006
Location and Region: Gainesville, Florida/Region 4	**EPA ID:** FLD980709356
Agency, office, or company leading the five-year review: US Army Corps of Engineers	**Weather/temperature:** sunny, temps in 60's

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ RCRA cover/containment
- ☐ Access controls
- ☐ Vertical barrier walls (slurry wall)
- ☒ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other _____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Institutional controls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Mike McKinney (Name) O&M manager (Title) 1, 2 & 3 February 2006 (Date)
   Interviewed ☒ at site ☒ at office ☒ by phone Phone no. 352-375-5829
   Problems, suggestions; ☒ Report attached _____

2. **O&M staff** n/a (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

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 Florida Department of Environmental Protection
Contact Kelsey Helton, Hazardous Waste Clean Up | Geologist | February 1 & 2, 2006 | 850-245-8969
Name | Title | Date | Phone no.
Problems; suggestions; ☒ Report attached _____

Agency Alachua County Environmental Protection Department
Contact John Mousa, PhD (Chemist) | Pollution Prevention Manager | Feb. 1 & 2, 2006 | 352-264-6805
Name | Title | Date | Phone no.
Problems; suggestions; ☒ Report attached _____

Agency _____
Contact _____ | _____ | _____ | _____
Name | Title | Date | Phone no.
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____ | _____ | _____ | _____
Name | Title | Date | Phone no.
Problems; suggestions; ☐ Report attached _____

4. **Other interviews** (optional) ☒ Report attached.

Mike Slenska, Beazer, PRP for Koppers portion of site

Robin Hallbourg, hydrogeologist, Alachua County Environmental Protection Department

John Herbert, consultant at Jones Edmunds for Gainesville Regional Utilities (GRU)

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - ☒ O&M manual — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ As-built drawings — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ Maintenance logs — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks_____

2. **Site-Specific Health and Safety Plan** — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ Contingency plan/emergency response plan — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks_____

3. **O&M and OSHA Training Records** — ☒ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☒ Effluent discharge — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ Waste disposal, POTW — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☐ Other permits_____ — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

7. **Groundwater Monitoring Records** — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks_____

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☒ Water (effluent) — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks___viewed all records from beginning 2000 through 2005.

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — ☒ N/A

    Remarks_____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____

2. **O&M Cost Records** *cost figures presented here were made available for this five-year review by Beazer upon request.

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

O&M, and groundwater extraction monitoring, for Jan 1, 2001 through Dec 31, 2005 = $1,719,400

Total annual cost by year for review period if available

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

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

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

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

Remarks_____chain link fence surrounds property; in good condition. Unrestricted entry through gate during the day.

B. Other Access Restrictions

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

Remarks___Site located in fenced area, can proceed through gate, visitors must check-in at office.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☒ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☒ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

_____

_____

_____

_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks_____

_____

_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks_____

_____

2. **Land use changes on site** ☒ N/A

Remarks_____

_____

3. **Land use changes off site** ☒ 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 Active wood treating operation by Koppers on site. Creosote treated timbers are also stored on site.

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☒ Good condition ☒ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☒ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☒ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   - ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   - ☐ Air stripping ☒ Carbon adsorbers
   - ☒ Filters bag
   - ☐ Additive (*e.g.*, chelation agent, flocculent)
   - ☐ Others
   - ☒ Good condition ☐ Needs Maintenance
   - ☒ Sampling ports properly marked and functional
   - ☒ Sampling/maintenance log displayed and up to date
   - ☒ Equipment properly identified
   - ☐ Quantity of groundwater treated annually 14.6 million gallons
   - ☐ Quantity of surface water treated annually
   - Remarks

2. **Electrical Enclosures and Panels** (properly rated and functional)
   - ☐ N/A ☒ Good condition ☐ Needs Maintenance
   - Remarks

3. **Tanks, Vaults, Storage Vessels**
   - ☐ N/A ☒ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   - Remarks

4. **Discharge Structure and Appurtenances**
   - ☐ N/A ☒ Good condition ☐ Needs Maintenance
   - Remarks

5. **Treatment Building(s)**
   - ☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
   - ☒ Chemicals and equipment properly stored
   - Remarks

6. **Monitoring Wells** (pump and treatment remedy)
   - ☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
   - ☒ All required wells located ☐ Needs Maintenance ☐ N/A
   - Remarks

D. Monitoring Data

1. Monitoring Data
   - ☒ Is routinely submitted on time ☒ Is of acceptable quality

2. Monitoring data suggests:
   - ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☒ N/A
Remarks_____
_____

X. OTHER REMEDIES

Investigations continue for the development of a new Feasibility Study. As a result of recent investigations, DNAPL in the Hawthorn Group (aquifer) has been discovered. An interim partial remedy to extract DNAPL from the Hawthorn began in 2005. Approximately 0.4 gallon of DNAPL is recovered from five Upper Hawthorn wells every two weeks.

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.).

The partial remedy of the shallow groundwater 'pump and treat' extraction system (aka groundwater containment system) was designed to prevent offsite migration of contaminated groundwater in the surficial aquifer. From a review of the documents, monitoring reports, etc., it appears that offsite migration of contaminated shallow groundwater is occurring. The final remedy has not been selected. Remedial investigations are ongoing and currently underway. Until a few years ago, it was believed and assumed that the Hawthorn 'Clay' (aka Group) was an impermeable barrier to the downward migration of contamination from the surficial aquifer into the Floridan aquifer. Investigations in the last few years have revealed that the Hawthorn 'Clay' (aka Group) is not a confining unit; the Hawthorn Group (aquifer) is contaminated; and very recently, contamination has been discovered in the Floridan aquifer at Koppers. The new Floridan well installation and monitoring program that is currently ongoing should reveal the extent of contamination after sufficient monitoring. More thorough investigations in the Hawthorn Group throughout the site (Koppers and Cabot) is necessary.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

This partial remedy is inadequate as interim remedy. As discussed above, the shallow groundwater containment system at Koppers is not functioning as designed; i.e., to prevent offsite migration of contaminated groundwater. Offsite migration of contaminated groundwater from Koppers and/or Cabot may impact surface water bodies and sediments, the underlying Hawthorn aquifer, and eventually the Floridan. With the widespread use of the Floridan aquifer for water supply in the area, adverse impacts should be avoided.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

As discussed in this report, this is only a partial remedy, as the RI/FS is currently underway. This interim remedy is not protective.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Delineate arsenic plume near EW-16. Determine extent of offsite migration of shallow contaminated groundwater. Downgradient well MW33B is contaminated. Downgradient of site, at ditch outfall (northeast of northeastern site boundary), strong creosote odors were present on 2 February 2006. In addition at the outfall, foamy conditions and darker water color was observed. This ditch discharges to Springstead Creek.

Extent of contamination in Hawthorn Group (Intermediate aquifer) and Floridan aquifer needs to be established. Source areas need to be addressed. Remedies to remove, contain, immobilize and/or prevent further downward migration of contamination should be established and implemented after full delineation.

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION	
Site name: Cabot Carbon/Koppers Superfund Site (Cabot portion)	**Date of inspection:** 2 February 2006
Location and Region: Gainesville, FL/Region 4	**EPA ID:** FLD980709356
Agency, office, or company leading the five-year review: US Army Corps of Engineers	**Weather/temperature:** overcast, temp in 60's

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ RCRA cover/containment
- ☐ Access controls
- ☐ Vertical barrier walls (slurry wall)
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other groundwater collection lift station
- ☐ Monitored natural attenuation
- ☒ Groundwater containment
- ☐ Institutional controls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Ralph McKeen (Name) PM, Weston Solutions (Title) 2 February 2006 (Date)
   Interviewed ☒ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☒ Report attached _____

2. **O&M staff** Bill Campbell (Name) O&M technician for site (Title) 2 February 2006 (Date)
   Interviewed ☒ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☒ Report attached _____

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 Alachua County Environmental Protection Department
Contact Robin Hallbourg — Geologist — _____ — 352-264-6825
Name — Title — Date — Phone no.
Problems; suggestions; ☒ Report attached _____

Agency FDEP
Contact Kelsey Helton — Geologist — 1,2 Feb 2006 — 850-245-8969
Name — Title — Date — Phone no.
Problems; suggestions; ☒ Report attached _____

Agency _____
Contact _____ — _____ — _____ — _____
Name — Title — Date — Phone no.
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____ — _____ — _____ — _____
Name — Title — Date — Phone no.
Problems; suggestions; ☐ Report attached _____

4. **Other interviews** (optional) ☒ Report attached.

John Mousa, Pollution Prevention Manager, Alachua County Environmental Protection Department

John Herbert, Project Manager, consultant to GRU

David Tindale, Sales Manager, Gainesville Dodge Dealership

Wayne Reiber, Project Manager, Cabot Corporation Inc.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - ☒ O&M manual — ☒ Readily available — ☐ Up to date — ☐ N/A
   - ☒ As-built drawings — ☒ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Maintenance logs — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

2. **Site-Specific Health and Safety Plan** — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ Contingency plan/emergency response plan — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks_____

3. **O&M and OSHA Training Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☒ Waste disposal, POTW — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☐ Other permits_____ — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

7. **Groundwater Monitoring Records** — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☒ Water (effluent) — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks_____

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — ☒ N/A

    Remarks_____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☒ Other Weston Solutions, Inc.

2. **O&M Cost Records**

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

Total annual cost by year for review period if available

From 2/1/2001 (Date)	To 1/31/2002 (Date)	$104,000 (Total cost)	☐ Breakdown attached
From 2/1/2002 (Date)	To 1/31/2003 (Date)	$105,000 (Total cost)	☐ Breakdown attached
From 2/1/2003 (Date)	To 1/31/2004 (Date)	$102,000 (Total cost)	☐ Breakdown attached
From 2/1/2004 (Date)	To 1/31/2005 (Date)	$163,000 (Total cost)	☐ Breakdown attached
From 2/1/2005 (Date)	To 1/31/2006 (Date)	$145,000 (Total cost)	☐ Breakdown attached

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

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable ☒ N/A

A. Fencing

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

Remarks _____

B. Other Access Restrictions

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

Remarks _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☒ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☒ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

_____

_____

_____

_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate ☒ N/A

Remarks_____

_____

_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks_____

_____

2. **Land use changes on site** ☒ N/A

Remarks_____

_____

3. **Land use changes off site** ☐ N/A

Remarks A new car dealership will be built across the street from the lift station. Currently the land across the street is undeveloped, and appears to have natural vegetation, trees, etc.

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 The site is on commercial property now, with the groundwater trench running parallel to a busy road. There is a shopping center with a grocery store, car dealerships, restaurants, and various other commercial establishments, in a very busy and heavily traveled area of Gainesville. Residential areas are nearby.

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☒ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks Groundwater interceptor trench, shallow groundwater collection (containment) system, consisting of a groundwater collection trench with a lined ditch, with the collected shallow groundwater piped to a lift station, then discharged to Kanapaha Sewage Treatment Plant.

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☒ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

B. Surface Water Collection Structures, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☒ Good condition ☐ Needs Maintenance
   Remarks

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☒ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   - ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   - ☐ Air stripping ☐ Carbon adsorbers
   - ☐ Filters_____
   - ☐ Additive (*e.g.*, chelation agent, flocculent)_____
   - ☐ Others_____
   - ☐ Good condition ☐ Needs Maintenance
   - ☐ Sampling ports properly marked and functional
   - ☐ Sampling/maintenance log displayed and up to date
   - ☐ Equipment properly identified
   - ☒ Quantity of groundwater treated annually__19 to 38 million gallons, from 2001 through 2005
   - ☐ Quantity of surface water treated annually_____

   Remarks__discharge to Gainesville Regional Utilities (GRU)_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   - ☐ N/A ☒ Good condition ☐ Needs Maintenance

   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   - ☐ N/A ☒ Good condition ☐ Proper secondary containment ☐ Needs Maintenance

   Remarks___A total of 4 sumps, currently being cleaned annually. In 2006 will be cleaned biannually to help reduce odors._____

4. **Discharge Structure and Appurtenances**
   - ☐ N/A ☒ Good condition ☐ Needs Maintenance

   Remarks_____

5. **Treatment Building(s)**
   - ☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
   - ☐ Chemicals and equipment properly stored

   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   - ☐ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☐ Good condition
   - ☐ All required wells located ☐ Needs Maintenance ☐ N/A

   Remarks_____

D. Monitoring Data

3. Monitoring Data
   - ☒ Is routinely submitted on time ☐ Is of acceptable quality

4. Monitoring data suggests:
   - ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☒ N/A
Remarks_____
_____

X. OTHER REMEDIES

n/a

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.).

The groundwater trenching system with a lined concrete ditch is designed to collect the contaminated shallow groundwater from the Cabot Carbon portion of the 'Site'. The groundwater is piped to a lift station, where the collected groundwater is discharged to a POTW (GRU). Two downgradient offsite surficial monitoring wells, WMW-17E and WMW-18E, are routinely monitored and are not contaminated. These two wells are screened the length of the surficial aquifer. A set of nested wells, immediately upgradient of the trench in the area of northeast lagoon, ITW 13 and ITW 14, are also routinely monitored, The fact that the downgradient shallow wells, WMW-17E and WMW-18E are clean, and the upgradient wells, ITW-13 and 14 are contaminated indicates the trench is effective. However there is a question of the upward gradient of the groundwater in the lower part of the surficial aquifer, below 12', i.e. below the bottom depth of the trench. Also, there is no monitoring of the intermediate aquifer at the site. There is a question of the potential for downward migration of contamination into the Intermediate aquifer.

The effectiveness of the Cabot groundwater interceptor trench should be evaluated to ensure complete capture is occurring, and that contaminated groundwater in the surficial is not migrating offsite._____ _____

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The operation and maintenance of the groundwater trench system appears to be effective. However, there is a question of the upward gradient of the shallow groundwater from the lower part of the surficial aquifer (i.e. below 12') being captured by the trench. Also, the two downgradient offsite wells, WMW-17E and 18E, indicate the trench is effective in capturing all the groundwater, as these two wells are clean, while two upgradient wells, ITW-13 and 14, are contaminated. The two downgradient wells should be re-evaluated for proper well depth, proper screen depths, redeveloped, cleaned out, resurveyed as necessary to ensure these wells are suitable as downgradient, monitoring wells. The groundwater interceptor trench at Cabot may not be providing complete capture of all the surficial groundwater from the site. A more thorough examination of all available information, and additional monitoring and/or subsurface investigations is necessary to ensure effectiveness.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

See B above

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

There is a lack of information on the Intermediate aquifer on site. A set of Intermediate aquifer wells north of the lagoons is recommended. Monitoring for the full suite of COC's from both sites is recommended. The two shallow offsite downgradient wells should be closely evaluated for proper well depth, proper screen depth, proper well functioning with accurate elevations, etc. This is critical, as these wells are a determining factor in assessing effectiveness of the trench. Additional subsurface investigations to ensure the trench is effective is necessary to ensure complete capture. Complaints of odor issues near the lift station and sumps should be addressed. Another analysis of air quality at the lift station, and possibly also the sump areas is recommended. The testing event should be performed in the summer, over a few days. The air should be sampled at the vent, and inside the lift station. Treatment of the air inside the lift station should also be considered. A pilot study for establishing the proper treatment or filtering technology should be performed.

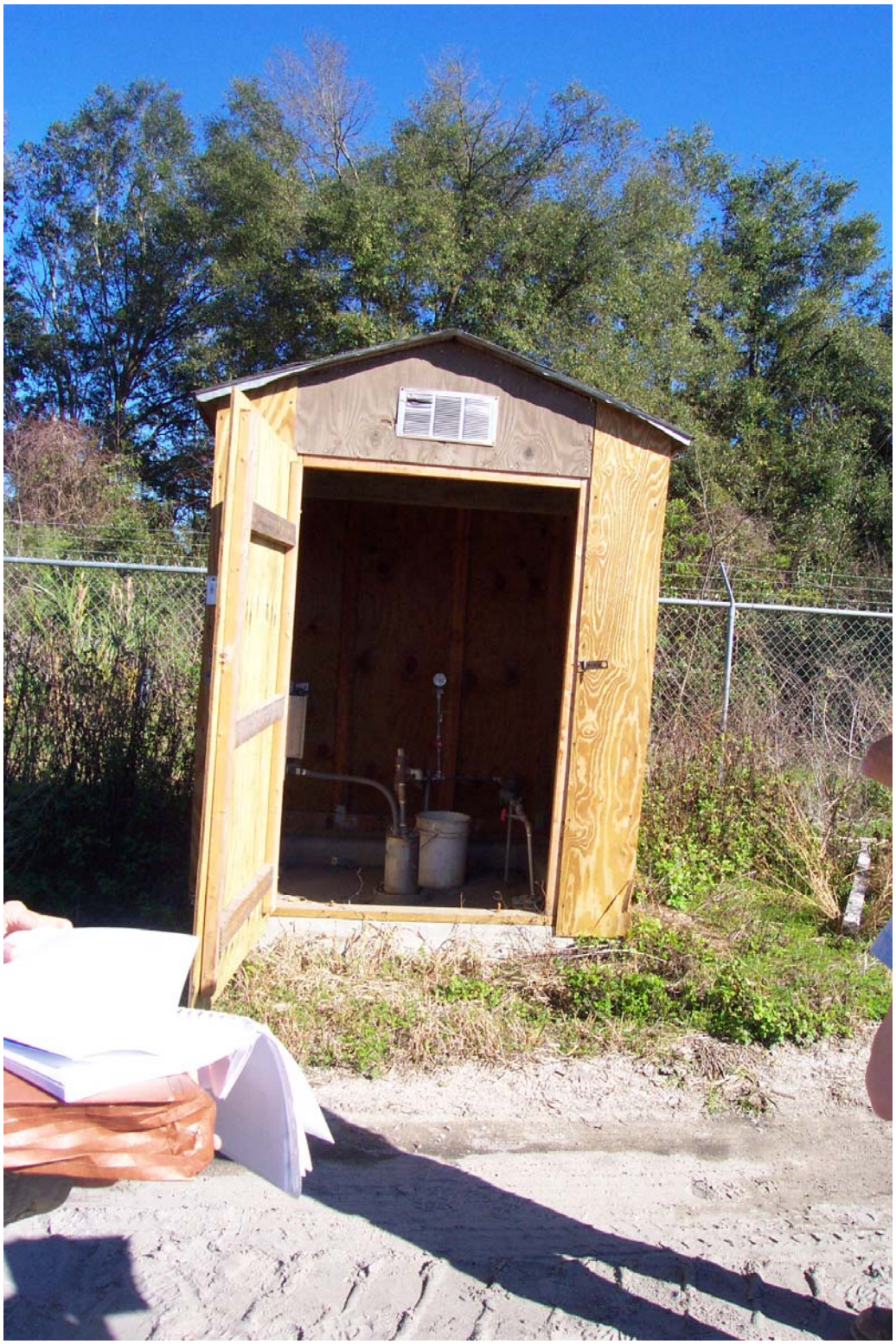
ATTACHMENT 4

PHOTOGRAPHS DOCUMENTING SITE CONDITIONS

PHOTOGRAPH 1. KOPPERS, NORTH LAGOON, FEB 1 2006

PHOTOGRAPH 2. TYPICAL MONITORING WELL, EASTERN BOUNDARY, KOPPERS 1 FEB 06

PHOTOGRAPH 3. INTERIOR OF PUMP HOUSE, EXTRACTION WELL, KOPPERS, 1 FEB 06



PHOTOGRAPH 4. TYPICAL EXTRACTION WELL AND PUMP HOUSE, KOPPERS, FEB 1 06

PHOTOGRAPH 5. CLOSE-UP TYPICAL MONITORING WELL, KOPPERS, 1 FEB 06

PHOTOGRAPH 6. WATER TREATMENT PLANT, KOPPERS, 1 FEB 06

PHOTOGRAPH 7. WATER TREATMENT PLANT, CLOSE-UP, KOPPERS 1 FEB 06

PHOTOGRAPH 8. WATER TREATMENT PLANT, INTERIOR VIEW, KOPPERS, 1 FEB 06

PHOTOGRAPH 9. DRIP TRACK AREA, KOPPERS, 1 FEB 06

PHOTOGRAPH 10. CLOSE-UP, DRIP TRACK AREA, WITH NEW FLORIDAN WELL, KOPPERS, 1 FEB 06

PHOTOGRAPH 11. FORMER COOLING POND AREA, KOPPERS, 1 FEB 06

PHOTOGRAPH 12. INTERMEDIATE AQUIFER MONITORING WELL, WITH DNAPL, KOPPERS, 1 FEB 06

PHOTOGRAPH 13. NEWLY INSTALLED FLORIDAN WELL, KOPPERS, 1 FEB 06

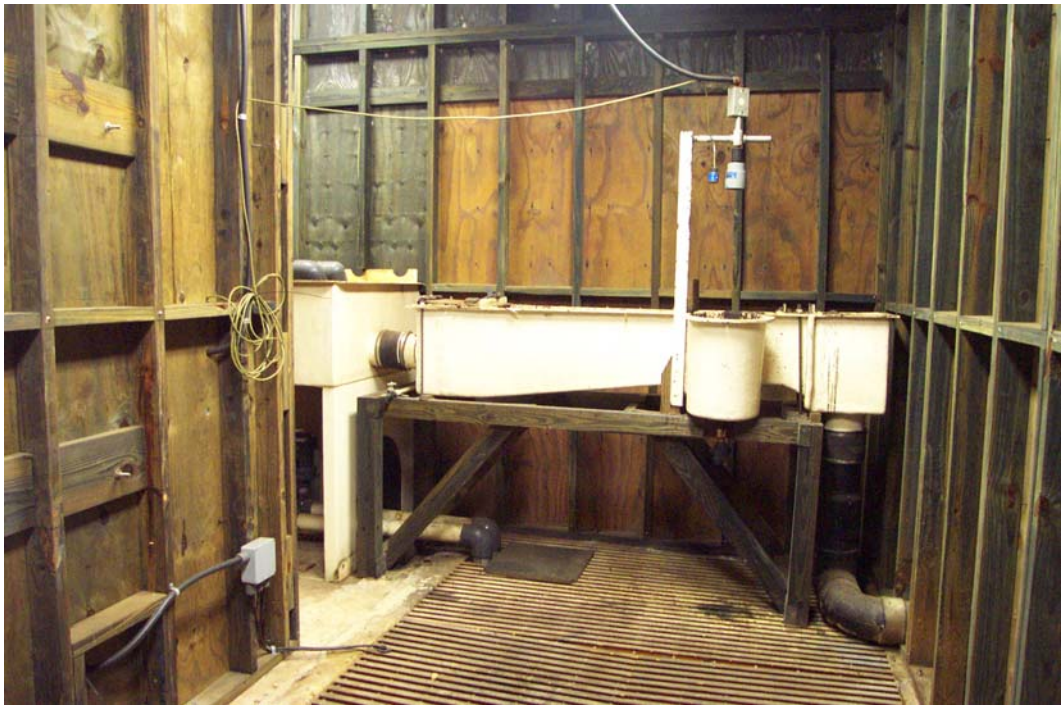
PHOTOGRAPH 14. AREA OF FORMER CABOT LAGOONS, 2 FEB 06

PHOTOGRAPH 15. AREA OF FORMER CABOT LAGOONS, 2 FEB 06

PHOTOGRAPH 16. MONITORING WELLS EAST OF FORMER CABOT LAGOONS, 2 FEB 06

PHOTOGRAPH 17. SUMP, CABOT TRENCH, 2 FEB 06

PHOTOGRAPH 18. CABOT LIFT STATION, 2 FEB 06



PHOTOGRAPH 19. INSIDE CABOT LIFT STATION, CABOT 2 FEB 06

PHOTOGRAPH 20. DITCH NE OF KOPPERS NE BOUNDARY, 2 FEB 06

PHOTOGRAPH 21. FADED FDEP (FDER) SIGN NEAR DITCH, NE OF KOPPERS

ATTACHMENT 5

INTERVIEW RECORDS

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site		**EPA ID No.:** FLD980709356	
Subject: 5 year review		**Time:**	**Date:** 30 Jan, 1, 2 Feb 06
Type: ☒ Telephone ☒ Visit ☒ Other **Location of Visit:** Cabot Carbon/Koppers Site		☐ Incoming ☒ Outgoing	
Contact Made By:			
Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers	
Individual Contacted:			
Name: John Mousa	**Title:** Pollution Prevention Manager	**Organization:** Alachua County Environmental Protection Department	
Telephone No: 352-264-6805 **Fax No:** 352-264-6852 **E-Mail Address:** jjm@alachua.fl.us		**Street Address:** 201 SE 2nd Ave, Suite 201 **City, State, Zip:** Gainesville FL 32601	

Summary Of Conversation

The information in this interview record was obtained during the site visit at Koppers and Cabot Carbon on February 1 and 2, 2006, during one telephone conversation on 30 January 2006, and some emails in February 2006.

John explained that ACEPD (through the efforts of himself and Robin Hallbourg) has been monitoring on-site activities at the Koppers portion of the Cabot Koppers superfund site as well as providing technical review of documents and conveying local environmental concerns to USEPA Region 4. John keeps a running chronology of site events and concerns, which is available on Alachua County's website.

John receives calls from the public requesting status updates and progress on investigations and remediation of the Koppers site. John stated that he would like to see more public meetings or information to the public from USEPA to the local community to explain progress at the Koppers superfund site. John has received calls regarding obnoxious odors near the Cabot Carbon lift station and the sumps on North Main Street near the Dodge dealership. The odor nuisance calls seems to be more prevalent after heavy rains. John is concerned about the odors near the sumps and lift station, and is in favor of action being taken to reduce the odors, and in favor of another air sampling and analysis event at the lift station especially during the summer or hotter months of the year.

John is concerned about the accuracy and QA of some of the water sampling and analysis of the new Floridan wells. John outlined his concerns to EPA and Beazer. Although some concerns were addressed to his satisfaction, there still seems to be a problem with emulsions that may cast some uncertainty on the reliability of the phenolic compound concentrations measured. John, on behalf of Alachua Co., recommends that Beazer be careful about making generalized statements or conclusions about increasing or decreasing concentrations or trends until enough data is obtained. Also more care needs to be taken by the laboratory in doing the extractions to minimize emulsion formation. At the same time the surrogate recovery information is one of the primary tools to judge the quality of the

Summary Of Conversation, cont'd

data obtained. When these recoveries are less than 10% for several of the surrogates as in the earlier 1st Qtr sampling by RETEC, it casts doubt on the validity and defensibility of all the data.

John feels that some progress toward investigating possible remedial alternatives for source treatment or removal that were being made over the past couple of years at the Koppers site has been delayed (in March 2005 or thereabouts) by the more recent focus shifting to the Floridan well installation program and the concern about Floridan contamination. While John agrees that the resolving Floridan issue is important, he would like to see progress on developing remedial alternatives and some of the pilot studies resumed or concluded. One example is the source removal and onsite treatment option. John feels the source areas need to be addressed. Alachua County disagreed with Beazer that source removal options are infeasible.

John indicated that ACEPD had expressed to USEPA and continues to believe that investigation of contamination in the Hawthorn (Intermediate) aquifer to the west of the Koppers site needs to be performed. He believes that there has been an inadequate investigation of the Hawthorn to the west of the site especially considering that contamination was detected in a private offsite well adjacent to the western Koppers site boundary. This well has since been abandoned.

John also wants the signage issue resolved near a drainage ditch off of N. Main Terrace which is offsite to the North of the Koppers property. The FDEP signs along the ditch are very old and faded, and either need to be replaced or taken down. However, sampling to confirm or dismiss contamination needs to be performed to establish proper signage action.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site		**EPA ID No.:** FLD980709356	
Subject: 5 year review		**Time:**	**Date:** 1,2 Feb 06
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:** Koppers site, Cabot Carbon site		☐ Incoming ☐ Outgoing	
Contact Made By:			
Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers	
Individual Contacted:			
Name: Kelsey Helton, Hazardous Waste Clean Up	**Title:** Geologist	**Organization:** Florida Department of Environmental Protection	
Telephone No: 850-245-8969 **Fax No:** 850-245-8976 **E-Mail Address:** Kelsey.helton@dep.state.fl.us		**Street Address:** 2002 Old St. Augustine Rd, Old St. Augustine Rd Office Park, Bldg D **City, State, Zip:** Tallahassee FL 32301	

Summary Of Conversation

The information in this interview record was obtained during the site visit at Koppers and Cabot Carbon on February 1 and 2, 2006.

The odors at the Cabot Carbon lift station are a concern. Kelsey discussed the Ambient Air Quality Impact Assessment performed in May 2005 on the air inside the lift station. Low levels of toluene, naphthalene, and ethyl benzene were detected. The results were below EPA's risk-based criteria. Phenol was detected at 0.184 mg/L. The PEL is 19 mg/L; the risk-based level is 1.0 mg/L. This results in a detectable odor, but well below risk-based criteria. Kelsey is concerned about an odor nuisance issue. Air monitoring may need to be conducted in areas of the sumps, and air sampling may need to be conducted at the lift station vent. Another air sampling and analysis event conducted in the summer over a larger number of days is recommended. Kelsey also recommended a carbon air treatment system to be installed in the lift station to help reduce odors. A pilot study on the air quality to determine the type of system to install was suggested. The constituent causing the primary odor nuisance (phenol?) should be established. Biweekly monitoring and carbon change out is suggested as a reasonable estimate of what may be expected for an air treatment system.

Kelsey also discussed the addition of the effluent water quality results in the monitoring reports.

Kelsey also discussed including in the recent Gradient report, the screened intervals of the wells. During the discussion on site about the trench design, the bottom depth of the trench, the depth to the bottom of the surficial aquifer, and the depths of the various monitoring wells on Cabot, the inclusion of the screened intervals of the wells in Table format in the report was suggested.

Kelsey is also concerned about the lack of Hawthorn wells and the potential for offsite migration of contaminated groundwater in the Intermediate aquifer (Hawthorn) from both sites.

Summary Of Conversation, cont'd

The ditch downgradient of Koppers was also visited and discussed. This ditch discharges into Springstead Creek. The original remedy concluded there was no risk posed by surface water (therefore NFA). Recent concerns about the potential for contamination in the ditch have surfaced. 'Bleb's in the ditch sediments have been reported. The ditch is downgradient from Koppers. A Koppers downgradient monitoring well in the surficial aquifer, MW-33B, just upstream from the ditch and outfall, is contaminated with naphthalene. (This is in the Dec 2004 monitoring report from the Koppers site, which is the most recent available quality analysis results. The November/December 2005 sampling and analysis results may not be available for a few more months.)

Kelsey also recommended that all surficial wells be sampled, and the arsenic plume on the Koppers site be mapped.

The FDEP signs near the creek are very faded. If the sediments and surface water are contaminated, new signs should be posted.

Kelsey is also concerned about the lack of Hawthorn wells north of the former Cabot lagoons; the lack of an entire suite of sampling for COC's from both sites. Due to the high temperatures in the retort waste stream that was discharged into the lagoons, enhanced migration of contaminants from the Cabot site deeper into the subsurface (i.e. Hawthorn) is a possibility.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site	**EPA ID No.:** FLD980709356	
Subject: 5 year review	**Time:** 10 a.m; and 10:30 a.m.	**Date:** 2 Feb 06; and 17 Feb 06
Type: ☒ Telephone ☒ Visit ☐ Other **Location of Visit:** Cabot Carbon	☐ Incoming ☒ Outgoing	

Contact Made By:

Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers

Individual Contacted:

Name: Bill Campbell	**Title:** O&M manager and technician for Cabot Carbon	**Organization:** consultant for Weston Solutions, Inc.
Telephone No: 352-495-3282 **Fax No:**	**Street Address:** 5430 Metric Place, Suite 100 **City, State, Zip:** Norcross GA 30092-2550	

Summary Of Conversation

Bill is the onsite manager of the Cabot Carbon groundwater interceptor trench system, and other misc issues at the site. Bill participated in the site visit of Cabot Carbon on 2 Feb 2006. Most of the information in this interview record is from a telephone conversation on 17 February 2006.

Bill explained his biweekly O&M operations. He repairs all the electrical problems, and contracts out any other necessary repairs. He also supervises other on-site maintenance issues, such as the well abandonment years ago at Cabot (in parking lot), the annual (now bi-annual) sump cleanout, etc. Bill does not think the odor problems are too bad at the lift station or the sumps.

Bill did not mention any problems or concerns with the site.

Bill mentioned that he has recently started some trials using carbon filters in the vent at the lift station. He will be experimenting with different carbon filters, thicknesses, etc. to determine what will work to reduce foul odors at the lift station.

During the site visit, the rusting of the interior of the previous lift structure was discussed. Bill explained that the high degree of rusting was caused from the excessive moisture and lack of air flushing because of the enclosed structure, combined with the low contaminant levels in the air caused the rusting. He did not feel it was anything that warrants concern.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site	**EPA ID No.:** FLD980709356	
Subject: 5 year review	**Time:** 10 a.m.; 12:30 p.m.	**Date:** 2 Feb 06; 17 Feb 06
Type: ☒ Telephone ☒ Visit ☐ Other **Location of Visit:** Cabot Lift station (at Gainesville Dodge Dealership)	☐ Incoming ☒ Outgoing	

Contact Made By:

Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers

Individual Contacted:

Name: David Tindale	**Title:** Sales Manager	**Organization:** Gainesville Dodge
Telephone No: 352-372-4343 **Fax No:** 352-377-2829 **E-Mail Address:** sales@gainesvilledodge.com	**Street Address:** 3000 N. Main Street **City, State, Zip:** Gainesville FL 32609	

Summary Of Conversation

This interview record is predominantly from the telephone conversation on 17 Feb 2006 with David Tindale, the sales manager at Gainesville Dodge. A small portion of the information in this record is from the visit at the lift station site with Andy Johnson, the Gainesville Dodge Manager.

David has been at the Dodge Dealership for many years. He was there when the Northeast Lagoon sediments were excavated.

Structure (around the lift station) was rebuilt a year ago. The physical part looks great. They never see anything outside the building. Just very strong odor in the area from the lift station. There were great concerns regarding the severe corrosion of the interior of the previous lift station, and the adjacent chain link fence. The galvanized steel fence was completely rusted out and the interior of the former building was also severely rusted. The severity of the rusting concerned lots of folks in the area.

David lived in Gainesville when the lagoons were breached in 1967. His friend rode his bike through Hogtown Creek near 39th Ave shortly after the lagoon breach of 1967, and his friend and bike were covered in creosote. This was about 2 or 3 miles downstream from the breach.

Fumes have been more pungent lately. The odors used to linger just around the lift station, but the odors are now hanging under the eaves of the dodge dealership building, and on occasion the odors are inside the building. The odors have been stronger over the past year than in previous years. 2004 and previously, the odors would not accumulate inside the building.

David thinks the odors are worse in the evenings and early in the morning.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site		**EPA ID No.:** FLD980709356	
Subject: 5 year review		**Time:**	**Date:** 2 Feb 06
Type: ☒ Telephone ☒ Visit ☐ Other **Location of Visit:** Cabot Carbon site		☐ Incoming	☒ Outgoing
Contact Made By:			
Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers	
Individual Contacted:			
Name: Ralph McKeen	**Title:** Project Manager	**Organization:** Weston Solutions, Inc., consultant for Cabot Carbon	
Telephone No: 770-325-7900 **Fax No:** **E-Mail Address:** Ralph.McKeen@WestonSolutions.com		**Street Address:** 5430 Metric Place, Suite 100 **City, State, Zip:** Norcross, GA 30092	

Summary Of Conversation

Ralph participated in the site visit for Cabot Carbon on 2 February 2006. Other participants were Bill Campbell of Weston Solutions, Kelsey Helton of FDEP, John Mousa of ACEPD, Laura Roebuck of USACE, and Amy McLaughlin of EPA Region 4. We met near the lift station at the Dodge Dealership. The structure around the lift station was replaced in January 2005. The original structure was damaged by hurricanes in 2004. The lids over all the sumps were also replaced last year.

We walked the length of the trench. Cabot will start cleaning out the sumps and pump station twice a year. The cleaning is currently done annually. They are implementing this in an effort to help reduce the odors. Ralph briefly discussed the air quality sampling and analysis that was conducted last year. It is referred to as the Ambient Air Quality Impact, conducted in May 2005. The samples were collected inside the lift station. The results are below EPA risk-based criteria.

Ralph said he receives odor complaints from the Dodge dealership frequently.

Ralph said the raw water is pumped directly to GRU. He said the raw water quality is sampled and analyzed 3 times per year.

Ralph explained the protectiveness of the trench, with the upward gradient of the water in the surficial aquifer into the trench. The evidence is the clean downgradient wells, WMW-18E and 17E.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site		**EPA ID No.:** FLD980709356
Subject: 5 year review	**Time:** various	**Date:** 30 Jan, 1 & 3 Feb 2006
Type: ☒ Telephone ☒ Visit ☐ Other **Location of Visit:** Koppers site	☐ Incoming ☒ Outgoing	

Contact Made By:

Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers

Individual Contacted:

Name: Mike McKinney	**Title:** O&M Manager	**Organization:** consultant for Beazer, Inc
Telephone No: 352-375-5829 **Fax No:** **E-Mail Address:** mhmckinney@bellsouth.net		**Street Address:** **City, State, Zip:** Gainesville, FL

Summary Of Conversation

Mike is the primary manager of the O&M of the groundwater containment system and the Floridan aquifer monitoring. Mike expressed concern with the source areas at the site. He is concerned about the lack of management, and closure. He did not indicate any problems with the groundwater treatment system.

Mike conducted the site visit at the Koppers portion of the site, and provided all the O&M documentation, safety plans, monitoring reports, discharge compliance reporting records, NOV's, etc.

The North Lagoon was visited first during the site visit. A set of Hawthorn nested wells are near the lagoon. The deeper Hawthorn well here does not have contamination. The shallower Hawthorn well (60'deep) does have contamination. Mike bails DNAPL from 5 wells around the site, recovering about 0.2 gallon of DNAPL per well per week. The sampling interval recently changed from weekly to every two weeks. Now the recovery is 0.4 gallon every sampling event.

Mike said there are a total of 88 wells; surficial, extraction and monitoring. These wells are gauged quarterly.

The drip track area was visited. It was noted that new light poles had been installed, with underground power lines, running through the drip track area, which is one of the more contaminated parts of the entire Koppers site.

A new Floridan aquifer well was being installed in the drip track area, FW-21B. The soil cuttings from this well had to be transported off site and incinerated.

Summary Of Conversation, cont'd

The current wood treating operations do not use creosote to treat the wood. CCA is used instead. Creosote logs are stockpiled at the site, treated and brought in from elsewhere.

Mike is also handling the cuttings and water disposal of the current Floridan aquifer well drilling and installation. The drums are stored in the water treatment plant area. Mike composites the soil, and characterizes. Once the analysis is obtained, Mike labels the drums and takes to landfill.

The 14 shallow extraction wells are all about 30' deep, and they pump an average of 3 gpm, 24 hours/day. Extraction well EW-13 was abandoned before 2000 because the yield had dropped to about 0.5 gallon per minute. EW-16 was installed between EW-17 and EW-15, and the groundwater from this well has high levels of Arsenic. EW-17 and EW-15 do not have Arsenic contamination (or very low levels). It was noted that EW-16 is also directly downgradient of the CCA chemicals storage area. The Arsenic in the water from well EW-16 must be treated before shipping to the POTW. The Ferric Chloride treatment system was installed to treat the Arsenic in well EW-16.

Mike said the results of the raw water quality discharge were good, and no issues of concern were identified. Sampling and analysis of the raw water being discharged from the treatment system is analyzed three times per year, with GRU participating jointly with the sampling and analysis once a year. The samples are collected at the outfall. Caustic soda must be added to the water before transporting to POTW because it is too close to the limit for the POTW which is 5.5. About 30 gpm of effluent is discharged to the POTW.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site	**EPA ID No.:** FLD980709356	
Subject: 5 year review	**Time:**	**Date:** 2 Feb 06
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:** Cabot Carbon site, and nearby vicinity	☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers

Individual Contacted:

Name: John Herbert	**Title:** Geologist, Senior Dept Mgr	**Organization:** Jones Edmunds & Assoc.
Telephone No: 352-377-5821, ext 5332 **Fax No:** 352-377-3166 **E-Mail Address:** jherbert@jonesedmunds.com		**Street Address:** 730 NE Waldo Rd **City, State, Zip:** Gainesville, FL 32641

Summary Of Conversation

John expressed concern with the lack of protectiveness of the partial remedies currently in place in general, and the potential for contamination of the Floridan aquifer due to the recent contamination found in the Hawthorn and Floridan aquifer wells on site. Groundwater modeling conducted by the GRU DNAPL Team indicates that neither the groundwater extraction system at Koppers nor the Interceptor Trench and ditch at Cabot Carbon are adequately containing contaminated groundwater on the Superfund Site.

John expressed concern that:

- DNAPL beneath the Koppers Site is potentially mobile in the Surficial, Hawthorn, and Floridan.
- Much more information regarding the stratigraphy and contaminant distribution within the Hawthorn Group, especially near the source areas, is required in order to develop a plan to prevent lateral and vertical migration.
- High arsenic concentrations are reported in Surficial aquifer monitoring wells at the Koppers Site but the vertical and horizontal extent of that plume have not been delineated.
- Potential impact to the Murphree Wellfield from phenol contamination in groundwater may be unrelated to toxicity. Phenol concentrations in water, even very low concentrations, can cause odor problems when the water is chlorinated. If phenol or chlorophenol contamination in the Floridan groundwater reaches the Murphree wells, there is a concern that taste and odor problems may result in the treated water supply from the reaction with chlorine. He believes that the cleanup goal for phenol and phenolic compounds must protect against potential taste and odor problems.
- There is potential for discharge of groundwater contaminated by creosote constituents and arsenic to the ditch downgradient of the Koppers site. He agrees that sediment and water samples in this ditch should be collected and analyzed for the COC's.

Summary Of Conversation, cont'd
John believes that, in light of the history of the investigations at the Koppers Site and the newly acquired knowledge of contaminant migration at that site, that the Cabot Carbon Site should be reevaluated regarding the potential for the presence and migration of DNAPL and the potential for downward migration of contaminated groundwater into the Hawthorn Group and then into the Floridan. The Team is currently compiling a report that will provide a review of existing data and make recommendations for filling data-gaps so the upcoming Koppers Feasibility Study can adequately protect the Murphree Wellfield. Evidence of DNAPL and possibly LNAPL at the former Northeast Lagoon (Cabot Carbon Site) is presented in the report.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site		**EPA ID No.:** FLD980709356
Subject: 5 year review	**Time:**	**Date:** 13 March 2006
Type: ☐ Telephone ☐ Visit ☒ Other **Location of Visit:**		☐ Incoming ☐ Outgoing

Contact Made By:

Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers

Individual Contacted:

Name: Mike Slenska	**Title:** Environmental Manager	**Organization:** Beazer East, Inc.
Telephone No: 412-208-8867 **Fax No:** 412-208-8869 **E-Mail Address:** mike.slensk@hanson.biz		**Street Address:** c/o Three Rivers Management Co One Oxford Centre, Suite 3000 **City, State, Zip:** Pittsburgh PA 15202

Summary Of Conversation

Mr. Slenska has been working on the Site as Beazer's Environmental Manager since May 2001 (about the time the proposed Plan fact sheet was issued by EPA). Mr. Slenska has been working as an Environmental Manager for the company since 1993.

Mr. Slenska believes that Beazer is doing everything possible to move the project forward toward a final Site remedy. Mr. Slenska pointed to the number of activities completed and the amount of money Beazer has spent over the past five years attempting to redefine the Site conceptual model and understand any potential risks that the Site may pose, particularly any potential risks to GRU's Murphree Wellfield due to historic Site impacts.

Mr. Slenska described that since questions were raised at the May 2001 public meeting Beazer has spent over $4.5 million installing new Hawthorn Group and Floridan aquifer monitoring wells, identifying and sampling private wells near the Site, abandoning a number of old monitoring wells that might have been allowing leakage from the Surficial zone or upper part of the Hawthorn Group to the lower part of the Hawthorn Group, conducting a Source Area delineation effort, completing a comprehensive Site groundwater model, examining Source zone removal for the Surficial zone, submitting a number of interim remedial measure pilot study work plans, etc.

Mr. Slenska discussed that the work conducted over the past several years has allowed a more thorough and accurate conceptual model to be developed for the Site. Additionally, it seems clear that the Murphree Wellfield is not at risk of being impacted by historic Site impacts.

Summary Of Conversation, cont'd

Mr. Slenska expressed concern that EPA appears to be relying heavily on the technical opinions of consultants hired by GRU. Mr. Slenska stated that he believes that GRU's consultants have utilized unrealistic assumptions to theorize unrealistic potential risks to GRU's Murphree Wellfield.

Mr. Slenska also expressed concern regarding the ongoing Floridan monitoring well installation program where EPA required Beazer to install a number of Floridan monitoring wells extremely close to Site source zones. Mr. Slenska is concerned that the installation of these wells may create potential pathways for constituent migration from the Hawthorn Group to the Floridan aquifer due to the vertical head difference between these two hydrogeologic units.

General Comments/Concerns

Mr. Slenska believes Beazer has been acting responsibly to address the historical environmental issues associated with the Site. Beazer is also committed to working with all environmental agencies and GRU to continue implementing a scientific approach to investigating the Site, completing the analysis to help determine potential options for remediation and implementing an appropriate remedy for the Site.

Mr. Slenska stated his concern that EPA may ultimately require remedial actions at the Site that are based more on perceived potential risks rather on scientifically substantiated potential risks. Mr. Slenska continued by stating that any unwarranted remedial actions that may be required may inadvertently exacerbate Site impacts.

INTERVIEW RECORD

Site Name: Cabot Carbon/Koppers Superfund Site		**EPA ID No.:** FLD980709356	
Subject: 5 year review		**Time:**	**Date**: 3/13/2006
Type: ☐ Telephone ☐ Visit ☒ Other **Location of Visit:**		☐ Incoming ☐ Outgoing	
Contact Made By:			
Name: Laura Roebuck	**Title:** Geologist	**Organization:** US Army Corps of Engineers	
Individual Contacted:			
Name: Wayne Reiber	**Title:** Mgr. Environmental Assessment & Remediation	**Organization:** Cabot Corporation	
Telephone No: (617-342-6023) **Fax No:** 617-342-6018 **E-Mail Address:** Wayne_Reiber@cabot-corp.com		**Street Address:** Two Seaport Ln, Suite 1300 **City, State, Zip:** Boston MA 02210	

Summary Of Conversation

Wayne Reiber is Manager of Environmental Assessment and Remediation for Cabot Corporation and has been working on the Gainesville Site since April 1987 (19 years).

The installation of the groundwater interceptor trench over 10 years ago has worked remarkably well in managing and remediating contamination associated with the historical Cabot Carbon operation and the northeast lagoon. Coupled with the removal of almost 4700 tons of contaminated soil from the northeast lagoon, which Cabot never owned or operated but voluntarily excavated, the remedy has achieved a substantial reduction of contaminant toxicity and volume. Accordingly, there are no specific or even general concerns regarding the effectiveness of the remedy for the Eastern Portion of the site. It is important to recognize that the Cabot Carbon interceptor trench was never intended or designed as a remedy for contamination originating from the adjacent Koppers facility, although it was recognized that some dissolved phase contaminants associated with that operation that migrated beyond Koppers eastern property boundary before the implementation of the Koppers groundwater remedy were expected to find their way into the groundwater interceptor trench.

A comprehensive review and evaluation of the significant amount of data available from over 20 years of assessments, confirmation studies and post-remedial action monitoring at the Eastern Portion of the Site indicates that remedial actions undertaken have been effective in remediating contamination associated with the former Cabot Carbon operation and continue to remain protective of human health and the environment.

Summary Of Conversation, cont'd

Notably:

- Groundwater elevations and groundwater quality data collected along and downgradient of the interceptor trench indicate that the trench is effectively capturing groundwater from the surficial aquifer;
- Groundwater concentrations at monitoring wells throughout the Eastern Site continue to decline; and
- Groundwater concentrations for pine processing compounds at the former Cabot Lagoons continue to comply with ROD-specified groundwater cleanup goals.

Furthermore, an examination of soil and groundwater quality data indicates that no DNAPL is expected to be present at the former Cabot property and that although a limited quantity of residual NAPL may be present at the water table at the Northeast Lagoon, DNAPL is not likely to be present.

ATTACHMENT 6

PUBLIC NOTICE OF FIVE-YEAR REVIEW

U. S. Environmental Protection Agency
Region 4
Announces
Cabot/Koppers Superfund Site
Second Five Year Review

Purpose/Objective: Pursuant to Section 121 of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), the United States Environmental Protection Agency (EPA) is conducting a five-year review for the Cabot/Koppers Superfund Site. The objective of the review is to ensure that the selected remedy continues to protect human health and the environment.

Site Background: The Cabot/Koppers Site is comprised of two sites, the Cabot Carbon Site and the Koppers Site. The mailing address is 200 NW 23rd Ave, Gainesville, Florida 32609. The Cabot facility operated as a pine tar and charcoal generation facility prior to 1967. The facility on the Koppers property, currently operated by Koppers Industries, has been an active plant since 1916 and has been used primarily to preserve wood utility poles and timbers. Both sites have been contaminated with dense non-aqueous phase liquid (DNAPL) waste.

Cleanup Action: EPA began environmental assessment at the Site in 1982, listed the Site on the National Priorities List (NPL) in 1984, and issued a Record of Decision (ROD) in 1990. Remedial actions specified in the ROD for the Cabot Site were an interceptor trench and excavation/disposal of contaminated sediments. The interceptor trench was initially installed as a surface water interceptor in 1985, and the trench was completed in 1995, allowing contaminated groundwater to be intercepted from the shallow aquifer and discharged to a Publicly Owned Treatment Works (POTW). Excavation/disposal of contaminated sediments was completed in 1994. Remedial actions specified in the ROD for the Koppers property were installation of a groundwater pump-and-treat system in the surficial aquifer and removal of contaminated soils. The groundwater pump and treat system, installed in 1995 to maintain hydraulic containment in the surficial aquifer, continues to operate at the site. Removal of contaminated soils has not taken place at the Koppers Site. The first Five Year Review for the Site was signed on March 23, 2001.

Five-Year Review Schedule: The five-year review process, which began in 2005, is being conducted to evaluate the effectiveness of remedial measures in place at the site. The five-year review process includes a review of data and information, inspection of the site and community interviews. These activities will assist in the determination of whether the selected remedy remains protective of human health and the environment. Site inspection and community interviews are planned for February 2006. Completion of the five-year review process is expected in Spring 2006.

Contact Information: If you have any questions, comments and/or concerns about the five-year review, you may contact the following:

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