Second Five-Year Review Report

for the

Madisonville Creosote Works

Superfund Site

Madisonville, St. Tammany Parish, Louisiana

March 2009

PREPARED BY:

United States Environmental Protection Agency
Region 6
Dallas, Texas

Determinations

I have determined that the selected remedy for the Madisonville Creosote Works (MCW) Superfund site is protective of human health and the environment and will remain so provided that the dense nonaqueous phase liquid (DNAPL) recovery trenches and the wastewater treatment plant (WWTP) are maintained, ground water monitoring data are evaluated to determine if the protection of ground water and the Upland Terrace Aquifer is occurring, security fencing around the DNAPL recovery trenches and WWTP is maintained, and access restrictions continue to be enforced.

Pamela Phillips, Acting

Samuel Coleman, P.E.
Director
Superfund Division

2/26/09

Date

CONCURRENCES

FIVE-YEAR REVIEW
Madisonville Creosote Works Superfund Site
EPA ID# LAD981522998

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List of Acronyms

§	Section
µg/L	Micrograms per liter
µm	Micrometer
AMP	Air management plan
ARAR	Applicable or relevant and appropriate requirement
B(a)P	Benzo(a)pyrene
bgs	Below ground surface
BOD	Biological oxygen demand
BTEX	Benzene, toluene, ethylbenzene, and xylene
CEC	Callicott Environmental Consultants
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of concern
DNAPL	Dense nonaqueous phase liquid
DO	Dissolved oxygen
E&E	Ecology and Environment, Inc.
EDW	Effluent discharge water
EPA	U.S. Environmental Protection Agency Region 6
FS	Feasibility study
FSP	Field sampling plan
HASP	Health and Safety Plan
IASD	Inactive and Abandoned Sites Division
LAC	Louisiana Administrative Code
LDEQ	Louisiana Department of Environmental Quality
LNAPL	Light nonaqueous phase liquid
LPAC	Liquid Phase Activated Carbon
LSWR	Louisiana Solid Waste Regulations
LTTD	Low temperature thermal desorption
MCL	Maximum contaminant level
MCW	Madisonville Creosote Works
MCWI	Madisonville Creosote Works, Inc.
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	Non-detect
NIOSH	National Institute of Occupational Safety and Health

NPL	National Priorities List
NRHP	National Registry of Historic Places
NTU	Nephelometric turbidity unit
O&M	Operation and maintenance
OSHA	Occupational Health and Safety Administration
OU	Operable unit
PAH	Polycyclic aromatic hydrocarbon
PM-10	Particulate matter smaller than 10 micrometers (µm) in diameter
PRP	Potentially responsible party
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAC	Response Action Contract
RACR	Remedial Action Completion Report
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SH 22	Louisiana State Highway 22
SVOC	Semivolatile organic compound
TBC	To be considered
TCRA	Time Critical Removal Action
Tetra-Tech	Tetra-Tech EM Inc.
VOC	Volatile organic compound
WWTP	Wastewater treatment plant

Executive Summary

The second Five-Year Review of the Madisonville Creosote Works (MCW) Superfund Site located in Madisonville, St. Tammany Parish, Louisiana was completed in January 2009. The review was conducted from September 2008 to January 2009. The results of the Five-Year Review indicate that the remedy completed to date is operating as intended and is currently protective of human health and the environment in the short term.

The MCW was a wood treatment facility from 1956 or 1957 until 1994 when MCW declared bankruptcy. The MCW site was listed on the National Priorities List (NPL) in 1996. EPA signed the Record of Decision (ROD) for the MCW site on August 25, 1998. The remedial action objectives (RAO), selected remedy, and implementation status for the operable unit (OU) 01 are discussed in the following paragraphs.

The RAO for OU 01 is as follows:

- Prevent human (oral and dermal) and environmental exposure to soil, sediment, and surface water, both on-property and off-property
- Prevent migration of media contaminants into the Upland Terrace Aquifer

The selected remedy for OU 01 included (1) the excavation and treatment of contaminated soil and sediments using low temperature thermal desorption (LTTD) technologies, (2) installing a dense nonaqueous phase liquid (DNAPL) recovery trench system, and (3) constructing a DNAPL collection system and wastewater treatment plant.

The remedial action (RA) activities began in January 1999 and concluded in May 2000 after the final inspection certifying that all cleanup activities associated with LTTD operations and DNAPL recovery trench construction were complete. Operations and Maintenance (O&M) of the DNAPL collection system and wastewater treatment plant is associated with the OU 01 RA.

During this review, several issues were noted that may affect the protectiveness of the remedy:

- The effluent discharge limits from the wastewater treatment plant (WWTP) have been occasionally exceeded.
- DNAPL may stand in the recovery trench system piping because of plugging with the potential of related migration to the lower aquifers.
- The ground water analytical data show that detection limits for polycyclic aromatic hydrocarbons (PAHs) are higher than their maximum contaminant levels (MCLs).

- Arsenic has been detected in the WWTP effluent at concentrations above the MCL, but it is not known what the groundwater concentrations are and whether the arsenic concentration in the ground water meets the Remedial Action Objectives (RAOs).
- The annual sampling of wells MW-1 and MW-2, and the semi-annual sampling of well RA-5 has not been consistently carried out.
- Naphthalene is now considered a carcinogenic compound which may change its toxicity characteristic.

At this time, based on the information available during the second Five-Year Review, the selected remedy appears to be performing as intended. The selected remedy currently protects human health and the environment based on results from treated waste sampling and shallow groundwater sampling. However, for the remedy to be protective in the long term, DNAPL recovery trenches, the pump vaults, pumps, and WWTP need to be maintained, ground water monitoring data need to be collected and evaluated on a routine basis to ensure contamination of the ground water and the Upland Terrace Aquifer is not occurring, security fencing around the DNAPL recovery trenches and WWTP needs to be maintained, and access restrictions need to continue to be enforced.

Five Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Madisonville Creosote Works Superfund Site		
EPA ID *(from WasteLAN)*: LAD981522998		
Region: EPA Region 6	**State:** Louisiana	**City/County:** Madisonville/St. Tammany Parish

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:** May 2000
Has site been put into reuse? ☐ YES ☒ NO	

REVIEW STATUS
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____
Author name: EPA Region 6, with support from USACE Tulsa District
Review period: March 2004 to January 2009
Date(s) of site inspection: 9 / 30 / 2008
Type of review: ☒ Statutory ☐ Policy ☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion
Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify) _____
Triggering action: ☐ Actual RA Onsite Construction ☐ Actual RA Start ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify)
Triggering action date *(from WasteLAN)*: March 1, 2004 (date of signing of last Five-Year Review)
Due date *(five years after triggering action date)*: March 1, 2009 (five years after 1st review)

*OU refers to operable unit

Five-Year Review Summary Form, cont'd

Issues: The following issues were identified:

1. The effluent discharge limits from the WWTP have been occasionally exceeded.
2. DNAPL may stand in the recovery trench system piping because of plugging with the potential of related migration to the lower aquifers.
3. The ground water analytical data show that detection limits for PAHs are higher than their MCLs.
4. Arsenic has been detected in the WWTP effluent at concentrations above the MCL, but it is not known what the groundwater concentrations are and whether the arsenic concentration in the ground water meets the RAOs.
5. The annual sampling of wells MW-1 and MW-2, and the semi-annual sampling of well RA-5 has not been consistently carried out.
6. Naphthalene is now considered a carcinogenic compound which may change its toxicity characteristic.

Recommendations and Follow-up Actions: The following recommendations or follow-up actions are given:

1. Ensure that effluent criteria are met before release of the effluent and discuss exceedences in the monthly report.
2. Evaluate overall operation of DNAPL collection and treatment system in the monthly report and institute corrective action for regular cleaning of the DNAPL recovery trench system piping.
3. Ensure that the laboratory detection limits are at or below the respective MCLs for PAHs.
4. The arsenic MCL was changed during the 5 year reporting period to 10 parts per billion (ppb), hence during the treated effluent operational period when the arsenic MCL was 50 ppb, there was only one exceedence in Feb 2007. Arsenic was not a constituent used in past facility operations; however, in order to meet the RAOs for ground water, analysis for arsenic should be included in the ground water monitoring schedule.

Five-Year Review Summary Form, cont'd

5. Ground water monitoring was resumed approximately two years after the first Five-Year Review; however, after Hurricane Katrina hit the southern Louisiana area the ground water monitoring schedule was disrupted. While a regular ground water monitoring schedule should be established and maintained, the monthly report should note if sampling could not be carried out due to catastrophic weather events.
6. Re-evaluate the toxicity characteristics for naphthalene within specified time or upon EPA promulgation of an MCL

Protectiveness Statement(s): At this time, based on the information available during the second five-year review, the selected remedy appears to be performing as intended. The selected remedy currently protects human health and the environment based on results from treated waste sampling and shallow groundwater sampling. However, for the remedy to be protective in the long term, DNAPL recovery trenches, the pump vaults, pumps, and WWTP need to be maintained, ground water monitoring data need to be collected and evaluated on a routine basis to ensure contamination of the ground water and the Upland Terrace Aquifer is not occurring, security fencing around the DNAPL recovery trenches and WWTP is maintained, and access restrictions need to continue to be enforced.

Other Comments: The site is well maintained.

1.0 Introduction

The purpose of a Five-Year Review is to determine how well an existing remedial action is operating in order to protect human health and the environment, and to identify any problems or concerns that are affecting the current and future protectiveness of the remedy. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) call for Five-Year Reviews of certain remedial actions. The EPA policy also calls for a Five-Year Review of remedial actions in some other cases. The statutory requirement to conduct a Five-Year Review was added to CERCLA as part of the Superfund Amendments and Reauthorization Act (SARA) of 1986. The EPA classifies each Five-Year Review as either statutory or policy depending on whether it is being required by statute or is being conducted as a matter of policy. The Five-Year Review for the Madisonville Creosote Works (MCW) site is required by statute.

As specified by CERCLA and the NCP, statutory reviews are required for sites where, after remedial actions are complete, hazardous substances, pollutants, or contaminants will remain onsite at levels that will not allow for unlimited use or unrestricted exposure. Statutory reviews are required for such sites if the Record of Decision (ROD) was signed on or after the effective date of SARA. CERCLA §121(c), as amended by SARA, states:

> 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.

Under the NCP, the Code of Federal Regulations (CFR) states, in 40 CFR §300.430(f)(4)(ii):

> 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.

The MCW Superfund Site is organized into one Operable Unit (OU): OU 01. The ROD was signed in August 1998. The Five-Year Review for the MCW site is required by statute because materials remain onsite above levels that allow for unlimited use and unrestricted exposure. Because the MCW site is a Superfund site, the EPA has regulatory authority. The triggering action for this review is five years from the last Five-Year Review. The last Five-Year Review was accepted by the EPA on March 1, 2004. This is the second Five-Year Review for the MCW site and was conducted for the period of January 2004 through January 2009 by the U.S. Army Corps of Engineers, Tulsa District, on behalf of EPA Region 6.

2.0 Site Chronology

A chronology of events and dates is included in **Table 1**, provided at the end of the report.

3.0 Background

This section describes the physical setting of the site, a description of the land and resource use, and the environmental setting. This section also describes the history of contamination associated with the site, the initial response actions taken, and the basis for each action.

3.1 Physical Characteristics

The MCW site is located adjacent to the southern side of Louisiana State Highway 22 (SH 22), about 3 miles west of downtown Madisonville and 1.25 miles from the Madisonville city limits. The site covers approximately 29 acres in Section 42, Township 7S, Range 10E, St. Tammany Parish, in southeastern Louisiana. (Ecology & Environment, Inc. [E&E] 1997). The area surrounding the property is predominantly rural and wooded (see Figure 1). During the site visit, three residences were noted adjacent to the site on the west side of the site and one was noted adjacent to the site on the east side.

The topography is gently sloping to the south of the property and includes two primary surface-water runoff receiving ditches. The southern ditch runs south on the west side of the property, then turns east and leads off property to the south stream. The north ditch runs parallel to SH 22, outside the north property line and leads to a culvert that flows north under SH 22 to an unnamed stream (north stream).

The area of St. Tammany Parish is located in the Gulf Coastal plain physiographic province (Tetra-Tech 2001). The coastal plain sediments typically thicken and dip to the south and are structurally influenced by faulting and salt domes. The total sediment column thickness under the MCW site is about 14,000 feet.

EPA delineated the site-specific geology and associated hydrogeology in order to address these areas of potential contamination. In descending order from the ground surface, the geological formations are described as the following:

- Surface soils or fill materials from approximately ground surface to 2 feet below ground surface (bgs);
- Shallow clayey-silt from approximately just below surface soils to 25 feet bgs (the first saturated zone is located within this matrix);

- Intermediate clay/peat from approximately 25 to 30 feet bgs;
- Intermediate silt from approximately 32 to 35 feet bgs (the second saturated zone is located within this matrix); and,
- Deep silty-clay from approximately 35 to 80 feet bgs (the third saturated zone, before the Upland Terrace Aquifer, is located within this matrix).

Information gathered during the Remedial Investigation (RI) geological and hydrogeological investigations revealed that the three saturated zones did not constitute viable aquifers because of their low hydraulic conductivity and slow recharge. Hence, the ground water at the MCW Site, composed of these three saturated zones, is not viable for domestic or industrial purposes. The Remedial Action Completion Report (TetraTech, 2001) reports that the groundwater in aquifers underlying southeastern Louisiana typically move from north to south. More specifically, the waters in the shallow subsurface layers described above (shallow clayey silt, intermediate silt, deep silty clay) are believed to run as follows. The water in the shallow layer is perched above the intermediate layer with flow directions and gradient varying from the southeast and northwest. Water in the lower two units flows to the south-southwest.

Eight major aquifers that underlie the site area are (in descending order) the Shallow, Upper Ponchatoula, Lower Ponchatoula, Abita, Covington, Tchefuncte, Hammond, and Amite (USGS 1994). Of the eight major aquifers, the viable aquifers, not associated with the saturated zones at the MCW Site, for domestic and industrial water usage were identified during the RI and are listed as follows:

- Shallow Aquifer, also known as the Upland Terrace Aquifer, from approximately 80 to 200 feet bgs;
- Upper Ponchatoula Aquifer from approximately 250 to 650 feet bgs; and,
- Lower Ponchatoula Aquifer from approximately 650 to 1,100 feet bgs.

The three active monitoring wells at the site are screened in the lower portion of the Upland Terrace Aquifer and are located in the northwest, central, and southwest portions of the site.

3.2 Land and Resource Use

Prior to the establishment of wood-treating operations, the site was primarily forested land, with a farmstead encompassing about 5.5 acres along the western property boundary. Wood-preserving operations at the site began in 1956 or 1957 under the name Madisonville Creosote Works, Inc. (MCWI) (LDEQ 1987).

As stated in the MCW Feasibility Study report, the Louisiana Department of Environmental Quality (LDEQ) Inactive and Abandoned Sites Division (IASD) is aware of the presence of two protected or endangered species, the bald eagle (threatened) and the red-cockaded woodpecker (endangered), in the Madisonville area. The presence of either of these species at the MCW site has not been documented by the LDEQ IASD. Other endangered species (that is, Gulf of Mexico sturgeon) potentially inhabit the vicinity of the site; however, no endangered species have been documented within the study area (E&E 1997). Furthermore, an evaluation of the site for historical or archaeological significance indicated that the site is not listed on the National Register of Historic Places (NRHP). As well, the site contains no cultural resources eligible to be listed on the NRHP.

During the RI, E&E identified an exceptionally large live oak (*Quercus virginiana*) tree. The tree's girth and spread of limbs were measured on February 6, 1997, to evaluate its eligibility for registration in The Live Oak Society. At 4 to 4.5 feet above ground surface, the tree's girth was 16.2 feet and the limb spread was 102 feet. The minimum required 16-foot girth was exceeded, indicating that the tree was likely to be greater than 100 years old, making the tree eligible for registration. As directed by U.S. EPA, E&E completed and submitted a registration form, thereby protecting the tree under the constitution and by-laws of The Live Oak Society (E&E 1997).

The district surrounding the MCW site is primarily zoned as rural, but large tracts within 1 mile of the site are zoned for suburban use. Subdivisions are under construction on these tracts, and other subdivisions are being planned. The property directly across SH 22 from the site and several other tracts on SH 22 west of the site are zoned for highway commercial use (E&E 1997). A current site layout map is available as **Figure 2**.

3.3 History of Contamination

During wood-treating operations, poles, ties, and lumber were treated by impregnating the wood with creosote in retort cylinders under elevated temperature and pressure. The waste streams generated during these operations included process water, cooling water, boiler water, and waste creosote (LDEQ 1987). The process water and waste creosote were considered hazardous as defined by Resource Conservation and Recovery Act (RCRA) regulations, and the wastes were categorized as K001 and F034 waste, respectively. Waste code K001 applies to bottom sediment sludge from the treatment of wastewater from wood-preserving processes that use creosote. Waste code F034 applies to wastewater, process residuals, preservative drippage, and spent formulations from wood-preserving processes generated at plants that use creosote formulations. The cooling and boiler water were considered nonhazardous waste streams under RCRA.

Since at least 1974, the facility used two unlined process water ditches and two unlined ponds to convey and store process waste liquids and sludges. Waste creosote and wastewater drained from the treatment cylinders to the large process ditch. The small process ditch conveyed waste liquids from the large process ditch to former process water pond. The solids settled, and water overflowed through a depression in the earthen dike separating the ponds, and into an evaporation pond.

The ponds and the process water ditches were closed as solid waste management units between 1984 and 1986 under an LDEQ-approved and inspected closure (Callicott Environmental Consultants [CEC] 1993). However, a post-closure maintenance and monitoring plan was required due to the presence of ground water contamination.

The principal threats at the site were the creosote polycyclic aromatic hydrocarbons (PAH) that are considered highly toxic and present a significant risk to human health or the environment should an exposure occur. The majority of the principal threats were located within the on-site soil areas (EPA 1998).

On-site soil contamination was defined by the layer of contaminated soil that was not more than 4 feet below ground surface (bgs). Off-site soil contamination was further delineated to no more than the banks of the north drainage ditch and the banks of the north and south streams. The layer of soil contamination that was in contact with surface water defines sediment contamination in the north drainage ditch, north stream, and south stream. The majority of the soil contamination was located within on-site areas.

Surface water contamination was also found at the MCW site. Surface water contamination was affected by the creosote-contaminated soil and sediment sources. The source of surface water contamination was eliminated and no additional action was required once the contaminated soil and sediments were removed from the streams and ditches.

The ground water within the shallow clayey-silt matrix, immediately beneath the on-site area, is contaminated. Creosote can be characterized as a DNAPL because it has a low solubility in water and will separate out and settle towards the bottom within a saturated zone. DNAPL contamination was found in this saturated zone, within the shallow clayey-silt matrix, approximately 15 to 25 feet bgs (Tetra-Tech, 2000).

The ROD stated that the LTTD component of the cleanup remedy would address the source of contamination, approximately 75,000 cubic yards of contaminated soil and sediment. At the end of the soil treatment operations, the amount of contaminated materials treated at the MCW site was approximately 87,000 cubic yards.

3.4 Initial Response

Based on the results from preliminary assessments and sampling, EPA initiated RI activities at the MCW site in March 1996 to determine the nature and extent of the contamination. In June 1996, EPA proposed that the MCW site be included on the National Priorities List (NPL). In December 1996, EPA announced that the MCW site had been added to the NPL.

During the RI activities, a Time-Critical Removal Action (TCRA) was conducted concurrently. The 1996 EPA TCRA involved demolition, consolidation, and/or disposal of the following: 11 site buildings and their contents (including drums of oil waste); the process area (including 15 storage tanks and their contents, three treatment cylinders, asbestos insulation, mercury-contaminated debris, and the concrete pad); piles of treated wood; and steel railroad tracks leading from treatment cylinders to wood storage areas. In addition, a 6-foot-high chain-link fence with barbed wire fencing was installed along the SH 22 side of the highway.

3.5 Summary of Basis for Taking Action

Based on the data collected during the RI, it was determined that actual or threatened releases of hazardous substances from the MCW site, if not addressed by implementing the remedy selected in the ROD, could present an imminent and substantial endangerment to public health, welfare, or the environment. The most significant threats included (1) the risk of carcinogenic and noncarcinogenic effects for a future on-site resident exposed to PAHs in the soil and ground water, (2) the risk of carcinogenic and non-carcinogenic effects for an off-site resident exposed to PAHs in the soil and ground water, and (3) the risk of carcinogenic and non-carcinogenic effects for a current or future on-site resident exposed to soils with carcinogenic PAHs (Tetra-Tech 1997).

4.0 Remedial Actions

This section provides a description of the RAO, selection, and implementation. It also describes the ongoing O&M, and the overall progress made at the MCW site.

4.1 Remedial Action Objectives

The EPA signed the ROD for the MCW site on August 25, 1998. Specific remedial objectives were developed to aid in the development and screening of remedial action (RA) alternatives for the site. The remedial objectives for the site are listed below:

- Soil: Prevent direct contact/ingestion with media exceeding the lifetime incremental cancer risk of $1x10^{-4}$ to $1x10^{-6}$ due to carcinogenic PAHs based on residential risk scenarios.

- Sediment: Prevent direct contact/ingestion with media exceeding the lifetime incremental cancer risk of $1x10^{-4}$ to $1x10^{-6}$ due to carcinogenic PAHs based on residential risk scenarios.
- Surface Water: Prevent direct contact/ingestion with media exceeding the lifetime incremental cancer risk of $1x10^{-4}$ to $1x10^{-6}$ due to carcinogenic PAHs based on residential risk scenarios.
- Groundwater: Prevent migration of media contaminants into the Upland Terrace Aquifer which would result in the Upland Terrace Aquifer exceeding the Maximum Contaminant Levels (highest permissible concentration of a substance allowed in drinking water) or lifetime incremental cancer risk of $1x10^{-4}$ to $1x10^{-6}$ due to carcinogenic PAHs based on residential risk scenarios.

The following benzo(a)pyrene (B[a]P) equivalents performance goals were set and must be met in order to achieve cleanup of the MCW site:

- Benzo(a)pyrene B[a]P equivalent concentrations of 3 milligrams per kilogram (mg/Kg) for all RAOs where residential risk scenarios are applicable.
- B[a]P equivalent concentrations of 100 mg/Kg for all RAOs where recreational risk scenarios are applicable

4.2 Remedy Selection

The remedy selected in the ROD addressed contamination in the soil, sediment, surface water, and groundwater at the site by:

- Low Temperature Thermal Desorption (LTTD) to address the principal threat wastes within the soil and sediment (thus eliminating the source of contamination for surface water);
- Dense NonAqueous Phase Liquids (DNAPL) Recovery Trench System to contain and recover low level threat wastes within the groundwater;
- Institutional controls to ensure that future individuals will not be exposed to remaining low level Site contaminants during its containment and recovery; and,
- Ground water monitoring to ensure the effectiveness of the cleanup remedy.

The overall Site cleanup strategy was to clean up the MCW Site such that the areas of concern are made safe for residential and recreational usage. The RAOs were based on human health exposure pathways. Ecological habitat was limited on-site with limited ecological exposure pathways; therefore, ecological RAOs were not needed. Ecological exposure to off-site contamination in North and South ditches and streams was addressed with the selected remedy.

4.3 Remedy Implementation

The ROD for the MCW Superfund Site was signed by the EPA Region 6, Regional Administrator on

August 25, 1998. The remedial design (RD) was completed and submitted to EPA on September 28, 1998.

Tetra-Tech performed RA activities for EPA under the Response Action Contract (RAC). Construction began on January 14, 1999. RA activities included the following (Tetra-Tech 2001):

- Demolition of site structures, and construction of a wastewater treatment plant (WWTP) and on-site perimeter roads.
- Installation of perimeter fence, meteorological station, and electrical service for air monitoring.
- Excavation of north ditch, north stream, south stream, and on-site contaminated soils.
- Construction of thermal desorption pad, contaminated soils building, WWTP building, stormwater holding basin, sound barrier wall, and secondary sound barrier.
- Thermal treatment of contaminated soils, hauling and disposing of hazardous and nonhazardous debris offsite, backfilling excavated areas on-property, restoration and final grading of site, planting of perimeter tree buffer, and improving the site's stormwater drainage.
- Modification design and construction of the DNAPL transfer and treatment system and revision of the O&M manual.

During the RA, excavation depths of on-site soils ranged from 2 to 4 feet bgs. Confirmation samples were collected and analyzed for semivolatile organics and reported as B[a]P equivalents. If the confirmation samples met the project RAO of 100 mg/kg, the area was released for backfill. All soils were excavated and processed through the LTTD unit. Soils were treated to B[a]P equivalents of 3.0 mg/Kg or less. Soils that did not meet this criterion were retreated. Treated soils were backfilled on site. Confirmatory samples were collected from the bottom of the 2-foot excavation area. In each case where B[a]P equivalents were exceeded in a confirmation sample, the excavation for that square was continued to a 2 to 4 foot depth interval. Per the RD and field sampling plan (FSP), no confirmation samples were collected for areas excavated to the 4-foot depth (Tetra-Tech 1998). In addition to removing additional contamination in the 2 to 4 foot excavation area due to elevated confirmation results, soils that were visibly stained were excavated as well. Based on (1) the results of the confirmation samples for the 0 to 2 foot excavation areas, (2) the removal of all visibly stained soils in the 2 to 4 foot excavation area, and (3) the limits of excavation identified in the RI and RD, the removal of contaminated soils from the on-property areas has been accomplished (Tetra-Tech 2001).

The "Basis of Design" in the RD indicated that stream segments identified for cleanup on the (1) north ditch, (2) north stream, and (3) south stream would be excavated 1 foot deep from bank to bank (Tetra-Tech 1998). This procedure was identified in the FSP; therefore, confirmation sampling was not conducted for the off-property areas. During the excavation of these off-property areas, Tetra-Tech

personnel informed EPA of visible contaminants. At the time of identification, EPA authorized field changes to excavate additional quantities in those areas. All excavated areas were backfilled with imported soil. Based on (1) the excavation of all visible contamination and (2) the limits of contaminants identified within the RI and RD, the complete removal of off-property contaminated sediment has been accomplished (Tetra-Tech 1997, 1998).

Treated Waste Sampling—Using the procedures identified in the FSP and Quality Assurance Project Plan (QAPP) (Tetra-Tech 1999a, 1999b), Tetra-Tech field personnel conducted treated waste sampling during the execution of the RA. Treatment of contaminated materials at the site included both on- and off-property materials. The treated waste sampling results that failed to meet the waste treatment standards were re-treated and subsequently re-sampled. Based on the results, the complete effective thermal treatment of on- and off-property contaminated materials have been accomplished.

Upland Terrace Aquifer Sampling—During remedial activities, monitoring wells RA-1 through RA-5 were initially installed. Wells RA-1 through RA-4 were completed in the 10-25 ft bgs interval and were later plugged and abandoned. Well RA-5 was completed in the lower portion of the Upland Terrace Aquifer from an interval of 166-181 ft bgs. To more completely monitor conditions in the lower Upland Terrace Aquifer, wells MW1 and MW-2 are screened at intervals of 140-160 ft bgs and 153-173 ft bgs, respectively. Using the procedures identified in the O&M manual, Tetra-Tech field personnel conducted ground water sampling from the Upland Terrace Aquifer utilizing monitoring well RA-5 and water wells no. 1 and no. 2 in June 2001, and residential well sampling in May 2001. Analysis of those samples yielded no contaminants above acceptable detection levels. Based on the sample results and the fact that no contamination of the Upland Terrace Aquifer has ever been detected during previous investigations, migration of media contaminants into the Upland Terrace Aquifer was proven to have been prevented at that time.

DNAPL Recovery System – The DNAPL recovery and treatment system is composed of a system of trenches for the recovery of the DNAPL and a WWTP for treatment of the recovered fluids. Ten trenches were installed with the low ends being paired on the central portion of the trench field as shown in Figure 2. A vertical riser with an extraction pump is located at the low end of each trench. The pumps are run manually as needed to remove DNAPL with a minimal volume of associated groundwater. Extracted fluids are transferred from the trenches to the WWTP via a pipeline consisting of a 3-inch, stainless steel, inner pipeline with a 6-inch PVC outer casing.

A diagram of the WWTP facilities is presented in **Figure 4**. At the WWTP, extracted fluids are collected at the equalization tank (T-1). The equalization tank equalizes flow from the DNAPL recovery system and decontamination sump extraction pump prior to discharge to the oil-water separator (OWS). Primary

separation of DNAPL and suspended solids, via gravity, from the incoming waste water stream occurs in the equalization tank.

The OWS tank (T-2) is the secondary treatment unit in the WWTP. The OWS tank separates DNAPL and light nonaqueous phase liquids (LNAPL) constituents not removed from the waste water entering the equalization tank from the field extraction pumps. DNAPL collected in the DNAPL chamber of the OWS is removed from the OWS tank by the DNAPL sump pump and transferred to the DNAPL storage tank (T-3). LNAPL collected in the LNAPL chamber of the OWS flows by gravity to the LNAPL storage tank (T-5).

Water separated from the nonaqueous phase liquids (NAPL) constituents in the OWS tank flows via gravity from the OWS to the OWS effluent tank (T-7, not shown in Figure 4). The OWS effluent tank is a horizontal cylindrical tank 6 feet long by 4 feet in diameter with a capacity of 550 gallons. At predetermined levels in the OWS effluent tank, stored waste water from the OWS effluent tank is pumped to the sand filters (F-1, F-2, F-3). The sand filters remove suspended solids from the waste water stream. Effluent from the sand filters is pumped to two liquid phase activated carbon (LPAC) units (C-1A and C-1B). The LPAC units are piped to allow operation in parallel or series, allowing continuous operation of the WWTP system during media change out and alternation of the lead-lag orientation of the units.

The backwash tank (T-6) is used to store treated water from the LPAC units for use in backwashing the sand filters and LPAC units. The backwash tank is a vertical cylindrical tank 8 feet tall by 6 feet in diameter with a capacity of 5,500 gallons. Backwash water is removed from the backwash tank by the backwash pump. Effluent from the backwash tank drains by gravity through flow meter F-12 to either a discharge line in the North Ditch, or can be connected to a temporary storage device by employing 3-inch flex hose equipped with cam-lock fittings connected to the backwash tank manifold located outside on the northwest corner of the WWTP building.

EPA conducted a pre-final inspection on April 20, 2000, and a final inspection on May 31, 2000. EPA determined that the RA was completed during the final inspection, and an official construction completion ceremony was held on July 27, 2000.

4.4 Operations and Maintenance

After the construction phase of the RA was completed, EPA maintained ground water monitoring and operation of the underground recovery trench system for approximately one year. On September 2, 2001, LDEQ took over the maintenance duties of the MCW site, and official O&M activities began at that time.

The O&M costs for 2004 through 2007 are listed below.

January 2004 – December 2004	$111,000
January 2005 – December 2005	$159,000
January 2006 – December 2006	$76,000
January 2007 – December 2007	$67,000

The contractors for LDEQ conduct weekly inspections and subsequent maintenance of the MCW site.

5.0 Progress Since Last Review

This section reviews the protectiveness statement and issues and recommendations from the last Five-Year Review, which was the first Five-Year Review for the MCW site. The status of the recommendations made in that report are also reviewed and discussed.

5.1 Protectiveness Statements from Last Review

The protectiveness statement from the last Five-Year Review is given as follows:

> At this time, based on the information available during the first five-year review, the selected remedy appears to be performing as intended. The selected remedy currently protects human health and the environment based on results from treated waste sampling and shallow groundwater sampling. However, for the remedy to be protective in the long term, the pump vaults, pumps, and wastewater treatment plant need to be maintained, ground water monitoring data need to be collected and evaluated on a routine basis to ensure contamination of the ground water is not occurring, and the security fencing needs to be maintained.

5.2 Status of Recommendations

The previous Five-Year Review report stated that the remedy continues to be protective of human health and the environment in the short term. Four issues, however, were identified that could have potentially required further actions. The previous Five-Year Review recommended that these issues be monitored and re-evaluated to determine if they would adversely impact operations at the site. A summary of the

issues from the last 5-Year Review and actions taken at the MCW site since the previous Five-Year Review are given below (*TetraTech, 2004*):

1. **Issue:** Minimal amounts of DNAPL collected – The pumps in the field are operated once a week, and the amount of DNAPL collected has diminished significantly since the initial collection of 2,102 gallons in March 2002. The reason for the significant decrease had not been determined.
   Actions: In April 2004 and in January 2008, the trench collection pipes were cleaned out and flushed using the clean outs that are on the end of each trench. The monthly DNAPL recovery volume has increased since January with a slight decrease in the last reported month (August 2008) (Figure 3).
2. **Issue:** Lack of groundwater sampling – Semiannual sampling of monitoring well RA-5 had occurred once during O&M activities. Annual sampling of on-property water wells identified as monitoring well no. 1 and monitoring well no. 2 had not occurred during O&M activities.
   Actions: Monitoring of well RA-5 was scheduled to occur semi-annually while monitoring of the water well 1 (MW-1) and 2 (MW-2) was scheduled to occur annually. Ground water sampling has been resumed; however, MW-1 was not sampled in 2004 and 2005, and RA-5 was only sampled annually in 2005 and 2007.
3. **Issue:** Electrical identification – Wiring in the electrical system had been identified by the state's contractor as being mislabeled. The contractor suggested that the panel wiring did not appear to match the electrical wiring diagrams of the operating manual in use.
   Actions: The wiring problems have been corrected.
4. **Issue:** Overgrowth of vegetation – The vegetation around the perimeter of the site was tall and dense. An adjacent resident, to the west of the site, issued a complaint about the overgrowth of vegetation along the fence perimeter through a follow-up e-mail.
   Actions: The vegetation has been regularly mowed.

An issue that was not addressed in the last 5-Year Review was that of implementing Institutional Controls in the form of a Conveyance (deed restriction). The LDEQ filed a Notice of Conveyance on August 11, 2004, with the St. Tammany Parish Clerk of Court Land Records. (see Section 7.1)

6.0 Five-Year Review Process

This Five-Year Review has been conducted in accordance with the EPA's Comprehensive Five-Year Review Guidance (*EPA, 2001*). The Five-Year Review for this site was initiated by the EPA which tasked the U.S. Army Corps of Engineers to perform the technical components of the multidisciplinary review. The scheduled completion date for this review is March 1, 2009; five years after completion of the last Five-Year Review. Interviews were conducted with relevant parties; a site inspection was conducted; and

applicable data and documentation covering the period of the review were evaluated. The findings of the review are described in the following sections.

6.1 Community Involvement

A public notice announcing initiation of the Five-Year Review was published in the St. Tammany News on September 29, and Oct 1 and 3, 2008. Furthermore, fact sheets were left at the Madisonville Town Hall and at the Post Office during the site visit. Upon signature, the Five-Year Review will be placed in the information repository for the site, housed currently at the Madisonville Town Hall, a copy will also be placed at the LDEQ office in Baton Rouge, Louisiana. A notice will be published in the St. Tammany News to summarize the findings of the review and announce the availability of the report at the information repositories. A copy of the first public notice and the fact sheet are provided as **Attachment 5** to this report.

6.2 Document Review

This Five-Year Review included a review of relevant site documents, including decision documents, construction and implementation reports, O&M reports, and related monitoring data. Documents that were reviewed are listed in **Attachment 1**.

6.3 Data Review

Review of the Monthly Operational Reports, covering the time period from March 2004 through August 2008, provided information on volumes of extracted and treated groundwater, chemical analytical results for groundwater sampled from monitoring wells at the site and treated groundwater (effluent). The extracted quantities taken from these monthly reports were tabulated as shown in **Table 2** with **Figure 3** providing a graphical representation of the data over time. As shown in the table and figure, monthly extraction volumes have ranged from no extraction due to Hurricane Katrina or pump replacement to over 30,000 gallons. The average monthly extraction volume is approximately 9,400 gallons.

Monthly recovered DNAPL volumes have ranged from no recovery in seven months to 948 gallons in April 2004. The period from April 2007 through January 2008 was dominated by a lack of recovered DNAPL. However, after February 2008, monthly DNAPL recovery showed a definite increasing trend. This increase followed clean out operations on the extraction trenches and suggests that the clean out procedures improve the mobility of nonaqueous phase contaminant into the collection system. During the period of no DNAPL recovery, it is possible that DNAPL collected and stood in the unlined collection trenches. However, monitoring well results from this period do not indicate any infiltration into the aquifer.

The Monthly Operational Reports present the results of analytical sampling performed on the effluent from the wastewater treatment system. The O&M Manual for the site dated August 2004 lists sampling

frequency for the effluent as well as parameters for analysis. As listed in the O&M manual, the effluent is to be sampled once a month for semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), three metals (arsenic, chromium, and zinc), and other parameters (BOD, COD, chloride, sulfate, oil & grease, total dissolved solids, total suspended solids, turbidity, pH, and dissolved oxygen). The results, except for SVOCs and VOCS are compiled in **Table 3**. In the period from March 2004 through August 2008, there were eleven (11) monthly reports that did not contain analytical results for the effluent water. Those months were April and May 2004, May, September, and December 2005, July and October 2006, January and December 2007 and January and February 2008. During the months with no analytical data the collection and treatment system were off-line due to mechanical and/or maintenance issues.

For SVOCs and VOCs, there were limited detections over this reporting period. Listed below are the detections for this review period. For SVOCs, one detection, 2,4-dimethylphenol, was over the effluent limit. For the VOCs, none of the reported detections were of analytes with assigned effluent limits.

Semi-volatile Organic Compounds Detected in Wastewater Treatment Plant Effluent		
	Maximum Effluent Limitation (μg/L)	Detection Result (μg/L) [Sample Date]
Bis(2-ethylhexyl)phthalate	258	12.1 [8/3/2004] 12.6 [2/15/05]
2,4-Dimethylphenol	47	107 (7/7/2004)

Volatile Organic Compounds Detected in Wastewater Treatment Plant Effluent		
	Maximum Effluent Limitation (μg/L)	Detection Result (μg/L) [Sample Date]
Acetone	No Limit Provided	1.65 J [8/3/2004] 5.32 J [2/15/05]
2-Butanone	No Limit Provided	1.49 J [9/7/2004]
Chloroform	No Limit Provided	6.85 [9/4/2007]
Methylene chloride	No Limit Provided	1.21 J [8/3/2004] 1.21 J [9/7/2004]

For the parameters listed in **Table 3**, exceedances of the effluent limitations were seen for BOD, dissolved oxygen, total organic carbon, t urbidity, and arsenic. All except turbidity appear to be low

frequency and random exceedances with no apparent pattern. Turbidity has been elevated in the last five months of available monthly reports. This increase in turbidity may be related to the increase in recovered DNAPL.

Groundwater was sampled from wells MW-2 and RA-5 six times from April 7, 2004 through May 9, 2006. Well MW-1 was sampled August 23, 2006 and on December 19, 2006, MW-2 and RA-5 were sampled again. All three wells were sampled on July 11, 2007, and April 22, 2008. The samples collected during these sampling events were analyzed for SVOCs. These sampling events have been tabulated in **Table 4**. Seven compounds were detected in RA-5 in May 13, 2004 but were not repeated in subsequent sampling events. One compound was detected in MW1 in July 11, 2007 with no other detections reported in subsequent sampling events. Analysis of the data showed no discernable trends.

6.4 Interviews

Interviews were conducted with the site O&M manager, Rick Tibbs, the LDEQ Project Manager, Rich Johnson, and the Honorable Peter Gitz, Mayor of Madisonville, during the site visit conducted on September 30, 2008. An interview was also conducted by phone with Mrs. Pam Camp, a resident of property adjacent to the site. The completed interview record forms are presented in **Attachment 2**.

6.5 Site Inspection

An inspection was conducted at the site on September 30, 2008. The completed site inspection checklist is provided in **Attachment 3**. Site inspection tasks included a visual inspection of site features including the WWTP facility, fences and gates, and the monitoring wells. During the site inspection, an interview was conducted with the site manager, and the site logs, documents, and records were reviewed. Photographs taken during the site inspection are provided in **Attachment 4**. The site inspection indicated that the remedy was effective and operating as intended. No concerns were noted. Site fencing restricts property access. The security fencing is in good shape and access is controlled through locked gates. Also, site vegetation is regularly mowed. The registered live oak tree appeared to be in good condition, as well as most of the planted trees located around the site's boundary. The inspection was conducted by Cliff Murray and Frank Roepke of the U.S. Army Corps of Engineers. They were accompanied by Rick Tibbs (O&M Site Manager), Rich Johnson (LDEQ Project Manager), and Laura Stankosky (EPA Region 6 RPM).

7.0 Technical Assessment

The Five-Year Review must determine whether the remedy at a site is protective of human health and the environment. The EPA guidance describes three questions used to provide a framework for organizing

and evaluating data and information, and to ensure all relevant issues are considered when determining the protectiveness of a remedy.

7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?

The document that details the remedial decisions for the site is the August 1998 ROD. The remedy is ongoing, and based on the data review, the site inspection, and interviews; the remedy is functioning as intended. Remedial action performance and monitoring results, O&M operations, and O&M costs are discussed in Sections 4 and 6. Opportunities for optimization, early indicators of potential remedy problems, and implementation of institutional controls are discussed below.

Opportunities for Optimization. The site appears to be well run and functioning as intended. The previous 5-Year Review had mentioned an issue with the trench collection pipes needing to be cleaned out and flushed. An opportunity for optimization would be to regularly inspect these pipes to prevent them from clogging in the future.

Early Indicators of Potential Remedy Problems. No early indications of problems were noted.

Implementation of Institutional Controls. The LDEQ filed a Notice of Conveyance on August 11, 2004, with the St. Tammany Parish Clerk of Court Land Records (Instrument # 1448326) to provide notice of site conditions and that the site was closed with contaminant levels in place. The notice describes that at the completion of site remediation that an estimated 379,000 gallons of creosote constituents remained in the soil sand lens under the site. It states that a collection system has operated since the commencement of the O&M phase and is currently operating; therefore, the amount of remaining creosote is undetermined. The notice describes that the site was closed with contaminant levels present that are acceptable for industrial/commercial use. The notice notes that in accordance with Louisiana Administrative Code 33:I., Chapter 13, if land use changes from industrial to non-industrial, the responsible party shall notify the LDEQ within 30 days and the Site shall be reevaluated to determine if conditions are appropriate for the proposed land use.

Engineering Controls. Engineering controls are in place to restrict property access. The site is fenced and access is controlled through locked gates.

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7.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of the Remedy Selection Still Valid?

The purpose of this question is to evaluate the effects of any significant changes in standards or assumptions used at the time of remedy selection. Changes in promulgated standards or "to be considered" (TBC) and assumptions used in the original definition of the remedial action may indicate that an adjustment in the remedy is necessary to ensure the protectiveness of the remedy.

7.2.1 Changes in ARARs

ARARs pertaining to RA activities at the MCW site are divided into chemical-, location-, and action-specific categories. These categories are discussed below.

Chemical-Specific ARARs. Chemical-Specific ARARs are usually health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, establish numerical values. Each value establishes the acceptable amount or concentration of a chemical that may remain in or be discharged to the ambient environment. If more than one chemical-specific requirement exists for a contaminant of concern (COC), the most stringent requirement is identified as an ARAR for the RA.

The 1998 ROD for MCW identified one chemical-specific ARAR for ground water: EPA's National Primary Drinking Water Standards. Maximum contaminant levels (MCL) were identified as relevant and appropriate for the viable water aquifers located deeper beneath the contaminated saturated zone at the site. The ROD determined that the shallow clayey-silt saturated zone, which contains the DNAPL and the LNAPL, is not considered a drinking water source due to insufficient yield. As part of the RA, the Upland Terrace Aquifer (located deeper beneath the shallow clayey-silt saturated zone), which is used as drinking water, is to be sampled to ensure contaminants from the shallow clayey-silt saturated zone do not migrate to the Upland Terrace Aquifer. No changes to the pertinent MCLs have occurred since the last Five Year Review except for arsenic and naphthalene.

The arsenic MCL was changed from 50 μg/L to 10 μg/L in 2006. Arsenic is not among the constituents analyzed in the groundwater monitoring but is one of the metals tested for discharge of the treated wastewater. However, the monthly results for arsenic in the treated wastewater have been below 10 μg/L except in February, March, and April of 2007.

Naphthalene was not considered a carcinogenic compound when the ROD was signed but is considered one now.

The O&M manual states that three monitoring wells are to be sampled: RA-5 semiannually and monitoring wells MW-1 and MW-2 annually. The samples are to be analyzed for (1) SVOCs and (2) benzene, toluene, ethyl benzene, and xylene (BTEX).

Several chemical-specific contaminant values were used for the purpose of health and safety monitoring during the soil excavation activities. The health and safety plan (HASP) for the MCW soil excavation and LTTD activities used the following values to determine appropriate worker health and safety procedures: (1) the Occupational Safety and Health Administration (OSHA) permissible exposure limit and time-weighted average levels and (2) the National Institute of Occupational Safety and Health (NIOSH) recommended exposure levels, short-term exposure limits, and immediately dangerous to life and health limits. Monitoring was conducted and worker health and safety procedures were reviewed and adjusted accordingly. The Remedial Action Completion Report (RACR) documents compliance with the HASP requirements.

The soil cleanup levels for the MCW site were risk-based. Soils were cleaned up to 3 mg/kg B[a]P equivalent concentrations for the 0 to 2 foot level and 100 mg/kg B[a]P equivalent concentrations for the 2 to 4 foot level as documented in the RACR. The soil cleanup goal for B[a]P equivalent concentrations is based on risk assessment information, such as the cancer slope factor for B[a]P and exposure factors. In the case of a five-year review, only contaminants for which significant changes in risk assessment information reflect increased risk are pertinent, and then only if the selected remedy is no longer protective. No changes in the cancer slope factor for B[a]P have occurred since the 1998 ROD was issued; therefore, the original cleanup levels cited in the 1998 ROD are protective.

Location-Specific ARARs. Location-Specific ARARs are restrictions placed on the concentrations of hazardous substances or the performance of activities solely because they are in special locations. Examples of locations that might prompt a location-specific ARAR include wetlands, sensitive ecosystems or habitat, flood plains, and areas of historical significance. The 1998 MCW ROD identified two location-specific ARARs for the off-site areas: (1) the Floodplain Management Order, Executive Order No. 11988, and (2) the Protection of Wetlands Order, Executive Order No. 11990.

As documented in the RACR, neither the on-property nor the off-property portions of the MCW site reside within the 100- or 500-year floodplain. Therefore, the Floodplain Management Order was deemed not applicable as an ARAR to the MCW RA. In addition, no on-property or off-property portion of the MCW site has been identified as a wetland. Therefore, the Protection of Wetlands Order was not applicable as an ARAR to the MCW RA. No new location-specific ARARs have been promulgated since the 1998 MCW ROD was issued.

Action-Specific ARARs. Action-Specific ARARs are usually (1) technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes or (2) requirements to conduct certain actions to address particular site circumstances. Such requirements are triggered by the particular remedial activities selected to implement a remedy. Because there are usually several alternative actions for any remedial site, very different requirements can come into play. Action-specific requirements do not in themselves determine a remedial alternative; rather, they indicate how a selected alternative must be achieved.

The action-specific ARARs for the MCW RA are identified and discussed below:

- Solid Waste Requirements – Solid waste, such as nonhazardous, contaminated waste soils and debris generated at the MCW site through industrial activities, is defined under the Louisiana Administrative Code (LAC) 33:VII. Chapter 1, identified by these regulations under LAC 33:VII. Chapter 3, and subject to the requirements of RCRA Subtitles C and D and the provisions of the Louisiana Solid Waste Regulations (LSWR). These regulations require that persons generating, collecting, transporting, storing, processing, and disposing of solid waste comply with the notification requirements for facilities and landfills under the LSWR, LAC 33:VII. As documented in the RACR, all solid waste disposal activities were conducted in accordance with (1) the appropriate chapters of LAC 33, (2) RCRA Subtitle C and D, and (3) the LSWR identified above.

- Hazardous Waste Requirements – The rules and regulations for a hazardous waste management system were established by the LDEQ under LAC 33:V. Generators of hazardous waste in Louisiana must comply with the rules set forth by LDEQ in LAC 33:V. Chapter 11 (40 CFR 261 and 261).

  As documented in the RACR, all rules and regulations listed above for hazardous waste management were followed during the disposal of contaminated soil and debris.

  These hazardous waste rules and regulations also apply to the disposal of the DNAPL collected as part of the ground water treatment system. As documented in the RACR, approximately 11,800 gallons of DNAPL were transported to, and incinerated at Waste Management's Port Arthur hazardous waste incineration facility.

- Air Quality Requirements – As documented in the RACR, the LDEQ determined that the LTTD unit used for MCW remedial activities did not qualify as a "major" source because it would not emit more than 10 tons of a single toxic air pollutant per year or 25 tons or more per year of any

combination of toxic air pollutants. The air management plan (AMP) for the LTTD activities required air quality monitoring at four monitoring stations and established chemical action levels based on time-weighted average permissible exposure limits and national ambient air quality standards. Chemical monitoring was conducted for VOC, SVOCs, and particulate matter smaller than 10 micrometers (µm) in diameter (PM-10); meteorological conditions were monitored as well. The RACR documents the results of the air monitoring and the actions taken when exceedences of established chemical concentrations were found.

- Department of Transportation Regulations – As required by the U.S. Department of Transportation (49 CFR 171), hazardous materials cannot be transported in interstate and intrastate commerce, except in accordance with the requirements of 49 CFR 171, Subpart C. Hazardous wastes or environmentally hazardous substances transported within the state must comply with the applicable packaging, labeling, marking, and placarding requirements of 49 CFR 171, Subpart C and/or Louisiana Hazardous Material Regulations Subchapter C and the Department of Public Safety under LAC 33:V, Subpart 2, Chapter 101.

  As documented in the RACR, all waste transportation activities at the MCW site were performed in accordance with the requirements listed above.

  These transportation requirements will also be applicable to the destruction of the accumulated DNAPL.

- Water Quality Requirements – The Clean Water Act (33 U.S.C. 1251 to 1376), as amended by the Water Quality of Act of 1987 (Public Law 100-4-103), provides authority for each state to adopt water quality standards designed to protect beneficial uses of each water body and requires states to designate uses for each water body. All discharges from the MCW site are required to meet storm water and wastewater discharge limitations and monitoring requirements established by the LDEQ. Even though the creosote wastes left in place were considered listed wastes, the ROD specified that that the treated wastewater would only need to comply with State of Louisiana effluent discharge criteria.

  As documented in the RACR, the storm water generated during the soil excavation activities was handled in accordance with LDEQ requirements. Storm water from clean, open excavations and non-excavated areas was discharged off site through silt fencing material with no monitoring conducted. Storm water collected in open excavation areas that may have been contaminated was pumped into the storm water holding basin. The water was sampled and discharged in accordance with LDEQ requirements.

Treated effluent from the on-site ground water treatment system is discharged to a ditch. LDEQ established discharge limitation requirements and monitoring requirements for the effluent discharge. Overall, the treated effluent has met most discharge limitations. The LDEQ discharge limits have not changed since the last Five Year Review. All discharge limitation exceedences as documented in the monthly operating reports for March 2004 through August 2008 are listed in Table 3.

Overall, the DNAPL recovery system appears to be meeting most effluent discharge limitations. The monthly operating report should be expanded in accordance with the reporting requirements detailed in the O&M manual. However, the monthly operating report does not (1) adequately report exceedences; (2) explain exceedences; (3) evaluate overall operation of the system; (4) provide suggestions for corrective actions, if necessary; or (5) determine that the laboratory data are valid in accordance with the O&M manual.

7.2.2 Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

There have been no changes in exposure pathways, toxicity characteristics, or other contaminant characteristics for the Madisonville site that would impact the protectiveness of the remedy with the possible exception of naphthalene. Naphthalene is now considered a carcinogenic compound which may change its toxicity characteristic. There has been no change to the standardized risk assessment methodology or land use that could affect the protectiveness of the remedy. An evaluation of possible vapor intrusion has been considered for this site. Vapor intrusion is the exposure pathway where volatile organic vapors are emitted from the soil into an enclosed area like a residence. This exposure pathway is not considered a risk at this site due to the lack of volatile organics detected in the groundwater and the distance from the site of the nearest residences.

7.3 Question C: Has Any Other Information Come to Light That Could Call into Question the Protectiveness of the Remedy?

No other information has been identified that calls the protectiveness of the selected remedy into question. There was minimal impact on the site from Hurricane Katrina. Trees located outside the site fell onto and damaged the security fencing. The fencing has since been repaired and is in good condition.

8.0 Issues

Several issues are identified for this site, as described in the following table.

No.	Issues	Affects Protectiveness (Y/N)	
		Current	Future
1	The effluent discharge limits from the WWTP have been occasionally exceeded.	N	Y
2	DNAPL may stand in the recovery trench system piping because of plugging with the potential of related migration to the lower aquifers.	N	Y
3	The ground water analytical data show that detection limits for PAHs are higher than their MCLs.	N	Y
4	Arsenic has been detected in the WWTP effluent at concentrations above the MCL, but it is not known what the groundwater concentrations are and whether the arsenic concentration in the ground water meets the RAOs.	N	Y
5	The annual sampling of wells MW-1 and MW-2, and the semi-annual sampling of well RA-5 has not been consistently carried out.	N	Y
6	Naphthalene is now considered a carcinogenic compound which may change its toxicity characteristic.	N	Y

9.0 Recommendations and Follow-Up Actions

Recommended further actions are listed in the table below.

No.	Recommendations/Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)	
					Current	Future
1	Ensure that effluent criteria are met before release of the effluent and discuss exceedences in the monthly report.	LDEQ	EPA	within 3 months of final report date	N	Y
2	Evaluate overall operation of DNAPL collection and treatment system in the monthly report and institute corrective action for regular cleaning of the pipes.	LDEQ	EPA	within 6 months of final report date	N	Y

3	Ensure that the laboratory detection limits are at or below the respective MCLs for PAHs.	LDEQ	EPA	within 3 months of final report date	N	Y
4	The arsenic MCL was changed during the 5 year reporting period to 10 ppb, hence during the treated effluent operational period when the arsenic MCL was 50 ppb, there was only one exceedence in February 2007. Arsenic was not a constituent used in past facility operations; however, in order to meet the RAOs for ground water, arsenic should be included in the ground water monitoring schedule.	LDEQ	EPA	within 3 months of final report date	N	Y
5	Ground water monitoring was resumed approximately two years after the first Five-Year Review; however, after hurricane Katrina hit the southern Louisiana area the ground water monitoring schedule was disrupted. While a regular ground water monitoring should be established and maintained, the monthly report should be established and maintained, the monthly report should note if sampling could not be carried out due to catastrophic weather events	LDEQ	EPA	within 3 months of final report date	N	Y
6	Re-evaluate the toxicity characteristics for naphthalene.	LDEQ	EPA	within 12 months of final report date *	N	Y

* or upon EPA promulgation of an MCL

10.0 Protectiveness Statement

At this time, based on the information available during the second five-year review, the selected remedy appears to be performing as intended. The selected remedy currently protects human health and the environment based on results from treated waste sampling and shallow groundwater sampling. However, for the remedy to be protective in the long term, DNAPL recovery trenches, the pump vaults, pumps, and WWTP need to be maintained, ground water monitoring data need to be collected and evaluated on a routine basis to ensure contamination of the ground water and the Upland Terrace Aquifer is not

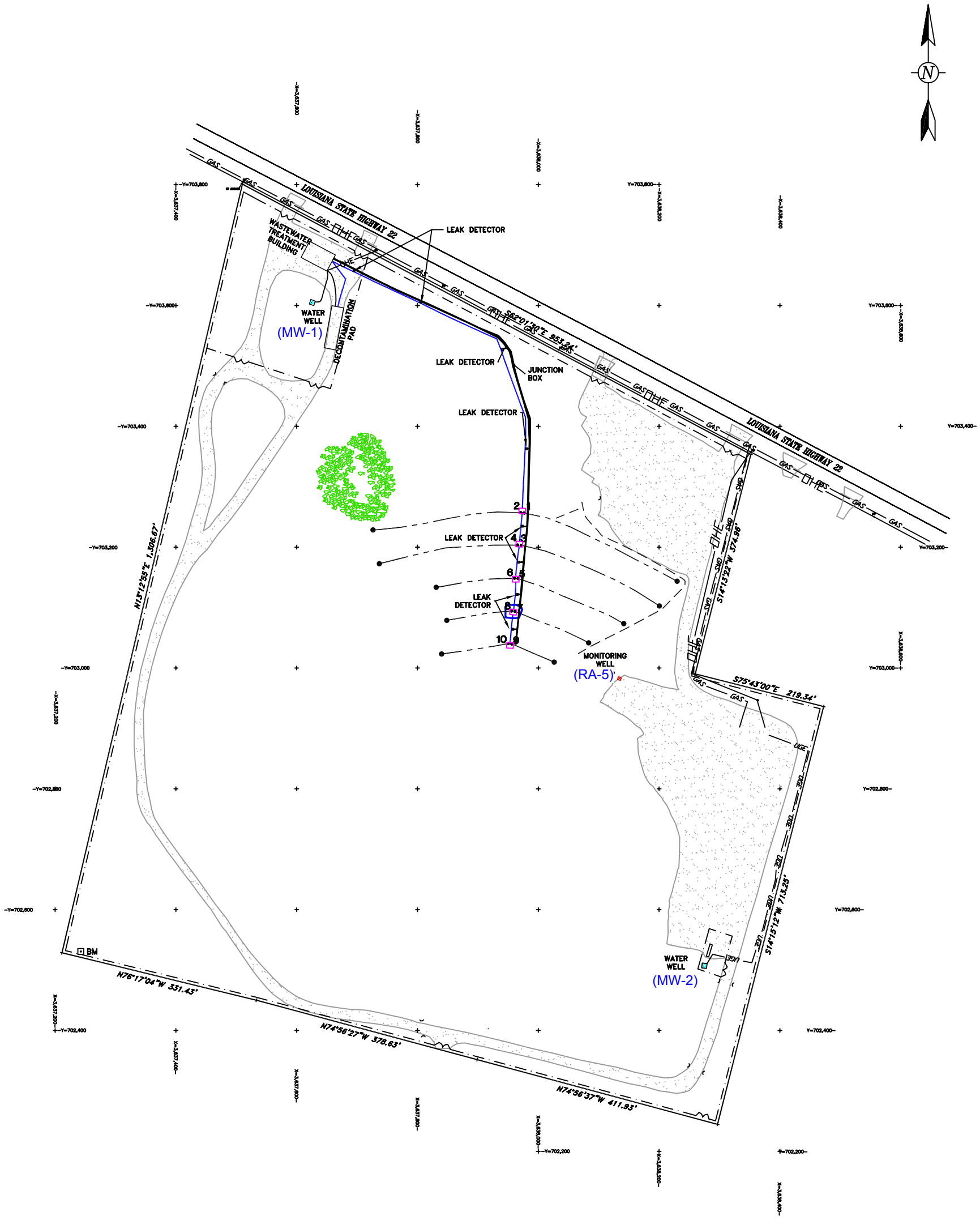
occurring, security fencing around the DNAPL recovery trenches and WWTP is maintained, and access restrictions need to continue to be enforced.

11.0 Next Review

The next Five-Year Review, the third for this site, should be completed by March 1, 2013.

Figures and Tables

Figure 1
Madisonville Creosote Works Site and Surrounding Area
Aerial Photograph



LEGEND

- MONITORING WELL
- VAULT FOR DNAPL TRENCH VERTICAL RISER
- DNAPL TRENCH CLEANOUT
- BURIED DNAPL TRANSFER PIPE
- BURIED ELECTRICAL CONDUIT AND APPURTENANCES (AS-LABELED)
- DNAPL RECOVERY TRENCH SYSTEM
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- SECURITY FENCING
- PROPERTY BOUNDARY
- GRAVEL HAUL ROADS AND PARKING AREAS
- CULVERT
- REGISTERED LIVE OAK TREE

MADISONVILLE CREOSOTE WORKS
ST. TAMMANY PARISH, LOUISIANA

FIGURE 2
SITE LAYOUT MAP

PREPARED FOR: EPA

BY: Tetra Tech EM Inc.

T:\CADD\G\00da\1116\ FIG2.dwg 12/03/2003 jack.schwertz TX

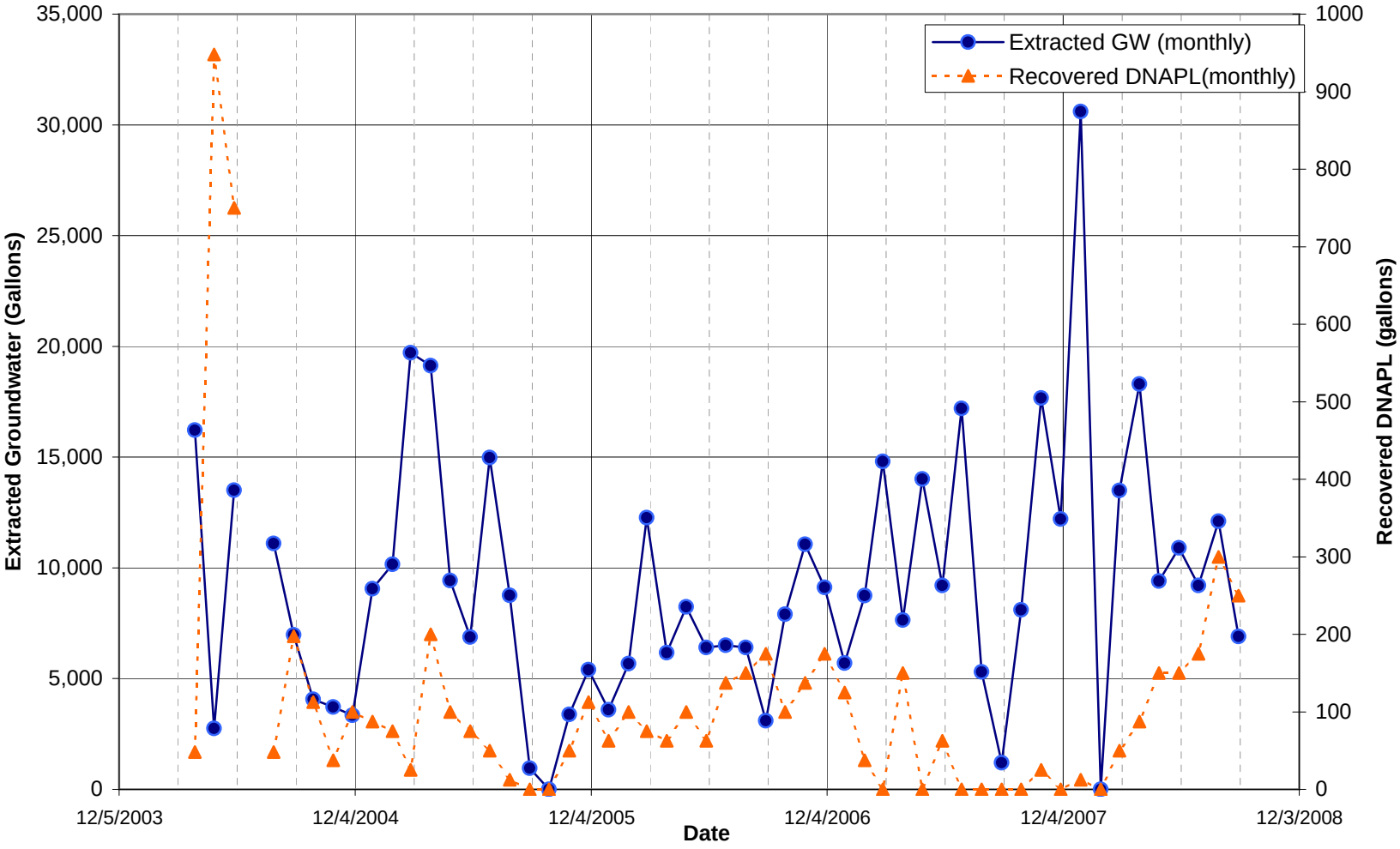
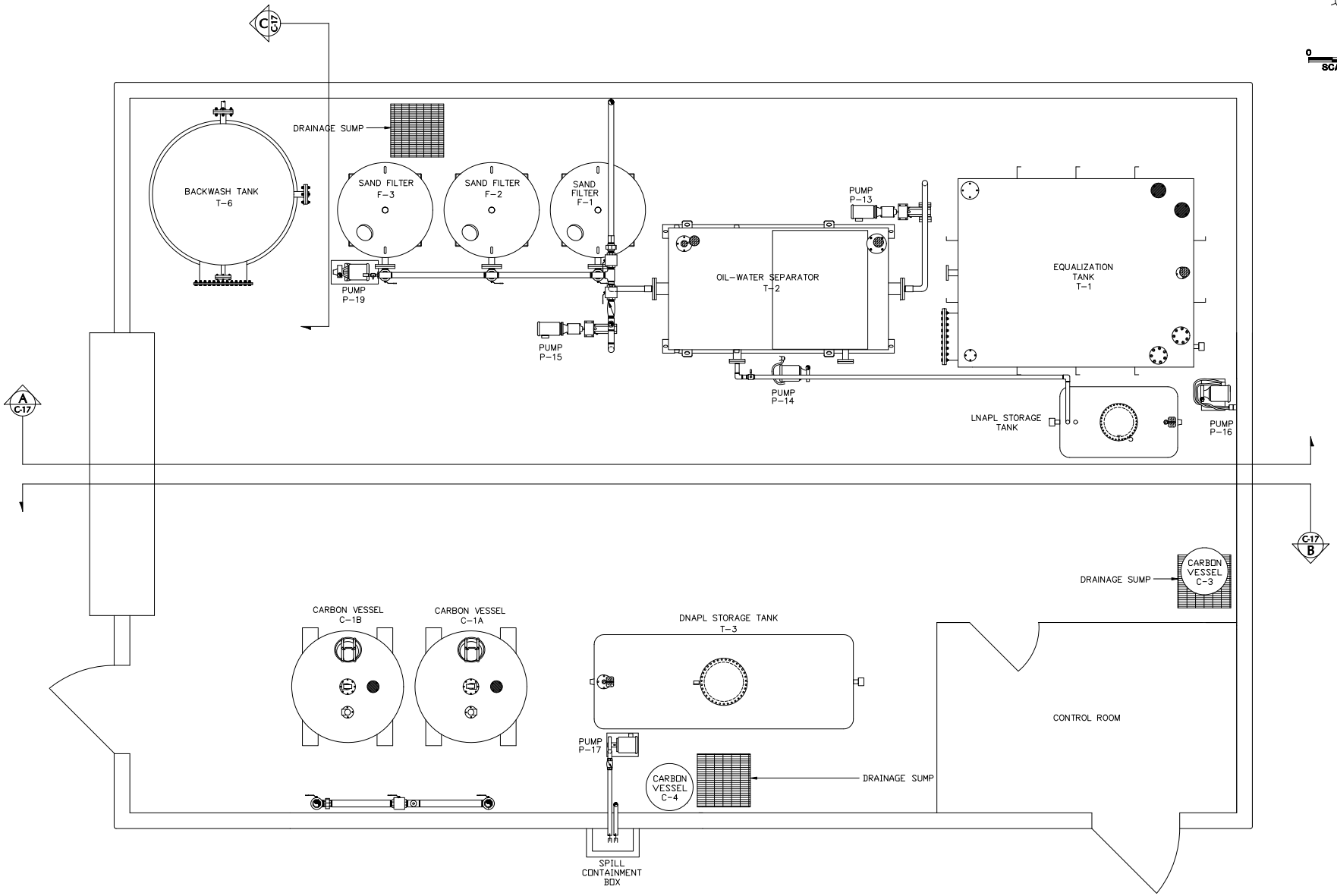


Figure 3
Madisonville Creosote Works
Groundwater Recovery System Extraction Volumes



REVISIONS					
REMARKS					
REV.	DATE	DRWN	CHKD		
1	5/24/00	MD.W	T.J.O.		

ASBUILT CONSTRUCTION

Tetra Tech EM Inc.

DESIGNED BY: H.A.G.
DRAWN BY: R.T.F.
CHECKED BY: R.T.F.
RECHECKED BY: T.J.O.
APPROVED BY: T.J.O.
DATE: 9/28/98

MADISONVILLE CREOSOTE WORKS
MADISONVILLE, ST. TAMMANY, LOUISIANA

DETAILS,
Wastewater Treatment Plant
Plan View Middle Level

EPA

WORK ASSIGNMENT NO.:
026-RA-RA-06AJ

Figure 4

Table 1
Chronology of Site Events
Madisonville Creosote Works Superfund Site
Madisonville, Louisiana

Date	Event
1956-1957	Wood preserving operations begin at the site
July 22, 1994	Site discovery
March 14, 1996	Initial residential water sampling
March 26, 1996	Initiation of Remedial Investigation
June 17, 1996	Proposed inclusion on the National Priorities List
September 10, 1996	Open house with community concerning site activities
September 23, 1996 – January 9, 1997	Removal action
November 12, 1996	Ecological evaluation report
December 23, 1996	Final NPL listing
January 17, 1997	Feasibility Study initiated
February 6, 1997	Open house with community concerning site activities
March 27, 1997	Human Health Risk and Ecological Screening Risk Assessments
August 1997	Community Relations Plan complete
September 26, 1997	RI report complete
October 24, 1997	RI supplemental sampling report
November 18, 1997	Feasibility Study completed
March 26, 1998	Proposed Plan community meeting
March 28, 1998	Open house with community concerning site activities
August 25, 1998	Record of Decision issued
January 1999	Remedial Action initiated
February 11, 1999	Community bulletin provided
April 20, 2000	Pre-final inspection
May 31, 2000	Final inspection completed
July 27, 2000	Official construction completion ceremony
July 2000 – August 2001	Groundwater maintenance and operation
September 1, 2001	State operation and maintenance begins
September 28, 2001	Remedial Action Completion Report submitted
March 1, 2004	First Five Year Review report signed

Table 2
Madisonvill Creosote Works
Groundwater Treatment System Volumes
As Reported in Monthly Operational Reports

Month Ending Date	Extracted GW (gallons)	Water Treated and Discharged (gallons)	Recovered DNAPL (gallons)
3/31/2004	16,214	9,446	48
4/30/2004	2,750	2,946	948
5/31/2004	13,500	10,709	750
6/30/2004			
7/31/2004	11,106	11,563	48
8/31/2004	6,980	6,717	197.5
9/30/2004	4,065	4,071	112.5
10/31/2004	3,716	5,718	37.5
11/30/2004	3,350	3,583	100
12/31/2004	9,056	9,105	87.5
1/31/2005	10,156	10,156	75
2/28/2005	19,710	19,713	25
3/31/2005	19,130	21,318	200
4/30/2005	9,430	956	100
5/31/2005	6,875	7,015	75
6/30/2005	14,975	15,190	50
7/31/2005	8,760	8,767	12.5
8/31/2005	950	950	NA1
9/30/2005	NA1	NA1	NA1
10/31/2005	3,380	3,402	50
11/30/2005	5,400	5,426	112.5
12/31/2005	3,590	3,606	62.5
1/31/2006	5,670	5,751	100
2/28/2006	12,270	10,548	75
3/31/2006	6,175	7,213	62.5
4/30/2006	8,240	8,055	100
5/31/2006	6,400	6,243	62.5

Month Ending Date	Extracted GW (gallons)	Water Treated and Discharged (gallons)	Recovered DNAPL (gallons)
6/30/2006	6,500	4,835	137.5
7/31/2006	6,400	5,296	150
8/31/2006	3,100	3,016	175
9/30/2006	7,904	3,293	100
10/31/2006	11,064	3,631	137.5
11/30/2006	9,116	5,476	175
12/31/2006	5,693	4,650	125
1/31/2007	8,750	9,530	37.5
2/28/2007	14,800	15,322	NA2
3/31/2007	7,650	9,328	150
4/30/2007	14,014	13,252	0
5/31/2007	9,200	9,995	62.5
6/30/2007	17,200	17,291	0
7/31/2007	5,300	6,005	0
8/31/2007	1,200	1,482	0
9/30/2007	8,100	7,886	0
10/31/2007	17,671	12,760	25
11/30/2007	12,200	11,622	0
12/31/2007	30,600	28,891	12.5
1/31/2008	0	0	0
2/29/2008	13,494	13,267	50
3/31/2008	18,300	18,622	87.5
4/30/2008	9,400	8,652	150
5/31/2008	10,900	11,678	150
6/30/2008	9,200	9,363	175
7/31/2008	12,100	11,589	300
8/31/2008	6,900	9,808	250

NA1 - Value unavailable due to Hurricane Katrina.
NA2 - Value unavailable due to replacement of recovery pumps.

Table 3
Madisonville Creosote Works
Treated Effluent Discharge Sampling Results (March 2004 through August 2008)
(VOC and SVOC results summarized in text)

	Sample ID	EDW-18	EDW-20	EDW-21	EDW-22	EDW-23	EDW-24	EDW-25	EDW-26	EDW-27
Parameter (mg/L)	Effluent Limit	3/9/2004	7/7/2004	8/3/2004	9/7/2004	10/12/2004	11/2/2004	12/7/2004	1/12/2005	2/15/2005
BOD, 5 day	20	6.14	5.37	8.1	**26.5**	< 2	7.13	2.88	8.94	< 2
COD	70	< 5	20	20	8	< 5	11	8	6	9
Chloride	-	NA	38.8	96.1	35.1	4.32	24.4	27.7	15.7	19.3
Oil & Grease	15	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Sulfate	-	NA	< 1	<10	< 1	3.91	<1	5.25	6.27	2.1
Total Dissolved Solids	-	684	640	716	540	156	480	432	392	444
Total Organic Carbon	35	3.58	6.77	6.21	5.98	< 1	4.98	2.2	15.6	15.6
Total Suspended Solids	45	8	< 4	16	< 4	< 4	4	9	< 4	5
Turbidity (NTU)	50	31.6	20.6	23.2	30	0.75	32.9	**74.5**	17.2	28.7
pH	6.0 - 8.5	7.6	7.54	7.48	7.6	7.83	7.83	7.75	7.5	7.3
Dissolved Oxygen	5	5.1	5.1	5.02	5.1	5	5	5.12	5.1	5.12
Metals (ug/L)										
Arsenic	50	<10	<10	<10	<10	<10	<10	10.3	13.4	8.13 J
Chromium	150	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	500	<20	<20	<20	<20	**520**	<20	<20	25.7	5.67 J

NA = not analyzed
NR = not reported

Table 3
Madisonville Creosote Works
Treated Effluent Discharge Sampling Results (March 2004 through August 2008)
(VOC and SVOC results summarized in text)

	Sample ID	EDW-28	EDW-29	EDW-30	EDW-31	EDW-32	EDW-33	EDW-34	EDW-35	EDW-36
Parameter (mg/L)	Effluent Limit	3/9/2005	4/7/2005	6/1/2005	7/6/2005	8/8/2005	10/4/2005	11/15/2005	1/11/2006	2/7/2006
BOD, 5 day	20	< 2	9.02	6.24	9.2	< 2	7.2	6.39	< 2	< 2
COD	70	< 5	5	< 5	11	17	13	11	6	16
Chloride	-	20.9	28.1	22.6	32.6	17.5	36.8	36.3	28.5	27.2
Oil & Grease	15	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Sulfate	-	6.56	< 1	< 1	< 1	< 1	< 1	< 1	< 1	29.7
Total Dissolved Solids	-	416	552	404	892	392	804	620	730	655
Total Organic Carbon	35	26.5	15.6	11.7	4.84	15.7	7.08	**43.2**	7.44	20.8
Total Suspended Solids	45	< 4	12	10	31	< 4	32	7	8	5
Turbidity (NTU)	50	19.8	**53**	NR	**73**	15.4	**97.5**	**83**	28.3	**53**
pH	6.0 - 8.5	7.75	7.76	7.5	7.58	7.63	7.57	7.56	7.54	7.5
Dissolved Oxygen	5	5.5	5.1	5.2	5	5.2	5.4	5.1	5	5.2
Metals (ug/L)										
Arsenic	50	<10	<10	<10	**145**	<10	<10	<10	<10	<10
Chromium	150	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	500	<20	<20	<20	<20	28.3	20.1	24.3	27.2	<20

NA = not analyzed
NR = not reported

Table 3
Madisonville Creosote Works
Treated Effluent Discharge Sampling Results (March 2004 through August 2008)
(VOC and SVOC results summarized in text)

	Sample ID	EDW-37	EDW-38	EDW-39	EDW-40	EDW-41	EDW-42	EDW-43	EDW-44	EDW-45
Parameter (mg/L)	Effluent Limit	3/7/2006	4/11/2006	5/9/2006	6/14/2006	8/9/2006	9/6/2006	11/1/2006	12/19/2006	2/7/2007
BOD, 5 day	20	< 2	14.2	19.6	13	< 6	7.02	< 6	6.66	< 6
COD	70	6	13	5	17	< 5	< 5	28	7	< 5
Chloride	-	12	14.7	33.2	43.1	5.39	24.5	53.1	12.4	8.12
Oil & Grease	15	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Sulfate	-	16.8	23.7	< 1	< 1	4.52	1.94	< 1	8.28	< 1
Total Dissolved Solids	-	544	< 10	584	600	132	264	595	330	264
Total Organic Carbon	35	3.76	3.08	6.84	9.52	< 2	2.5	10.01	< 2	< 2
Total Suspended Solids	45	< 4	4	4	6	4	6	24	5	< 4
Turbidity (NTU)	50	14	26.1	**51**	**81**	5.1	25.5	28.4	15	0.59
pH	6.0 - 8.5	7.54	7.58	7.7	7.54	7.62	7.52	7.53	7.5	7.46
Dissolved Oxygen	5	5.1	5.1	5	5.1	5.4	5.1	5.2	5.1	5.1
Metals (ug/L)										
Arsenic	50	<10	<10	<10	<10	<10	<10	<10	<10	**94.9**
Chromium	150	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	500	26.3	84.4	22.7	<20	55.6	<20	<20	35	46.6

NA = not analyzed
NR = not reported

Table 3
Madisonville Creosote Works
Treated Effluent Discharge Sampling Results (March 2004 through August 2008)
(VOC and SVOC results summarized in text)

	Sample ID	EDW-45	EDW-47	EDW-48	EDW-49	EDW-50	EDW-51	EDW-52	EDW-53	EDW-54
Parameter (mg/L)	Effluent Limit	3/6/2007	4/10/2007	5/2/2007	6/18/2007	7/11/2007	8/15/2007	9/4/2007	10/3/2007	11/13/2007
BOD, 5 day	20	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
COD	70	5	< 5	< 5	5	< 5	< 5	< 5	10	33
Chloride	-	19.5	25	27.3	31	31.6	29.7	20.3	29.2	35.9
Oil & Grease	15	< 5	< 5	< 5	< 5	5.2	< 5	< 5	< 5	< 5
Sulfate	-	< 5	12	5.15	18.7	< 1	< 1	9.87	< 2	< 1
Total Dissolved Solids	-	555	544	616	592	544	1240	272	720	568
Total Organic Carbon	35	< 2	< 2	< 2	< 2	3.72	< 2	< 2	4.41	5.31
Total Suspended Solids	45	5	< 4	< 4	< 4	< 4	4	< 4	16	19
Turbidity (NTU)	50	1.6	12.8	4.25	9.29	25.4	36.9	0.26	**91**	**147**
pH	6.0 - 8.5	7.52	7.55	7.51	7.51	7.55	7.5	7.52	7.6	7.54
Dissolved Oxygen	5	5.1	5	5.1	5.1	5.1	5.3	5.3	5.1	5
Metals (ug/L)										
Arsenic	50	47.8	12.4	<10	<10	<10	<10	<10	<10	<10
Chromium	150	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	500	<20	<20	<20	<20	<20	<20	<20	<20	<20

NA = not analyzed
NR = not reported

Table 3
Madisonville Creosote Works
Treated Effluent Discharge Sampling Results (March 2004 through August 2008)
(VOC and SVOC results summarized in text)

	Sample ID	EDW-55	EDW-56	EDW-57	EDW-58	EDW-59	EDW-60
Parameter (mg/L)	Effluent Limit	3/5/2008	4/22/2008	5/6/2008	6/3/2008	7/2/2008	8/5/2008
BOD, 5 day	20	< 6	6.72	21.8	12	7.02	17.1
COD	70	8	21	30	20	16	25
Chloride	-	18.2	2.76	33.9	42.2	46	56.6
Oil & Grease	15	< 5	< 5	< 5	< 5.56	6.67	< 5.56
Sulfate	-	9.26	< 1	< 1	< 1	< 1	< 1
Total Dissolved Solids	-	464	596	1170	645	745	670
Total Organic Carbon	35	4.04	14.2	15.3	13.1	7.66	9.66
Total Suspended Solids	45	5	21	17	15	24	10
Turbidity (NTU)	50	37.5	**80**	**150**	**134**	**108**	**66.7**
pH	6.0 - 8.5	7.58	7.68	7.6	7.52	7.5	7.55
Dissolved Oxygen	5	5.1	5.4	5.1	5	5.1	6.1
Metals (ug/L)							
Arsenic	50	<10	<10	<10	<10	<10	<10
Chromium	150	<10	<10	<10	<10	<10	<10
Zinc	500	<20	<20	<20	<20	<20	<20

NA = not analyzed
NR = not reported

Table 4 - Madisonville Creosote Works
Groundwater Monitoring Well Results

Parameter (Semi-volatile organic) ug/L	MW2 4/7/2004	RA-5 4/7/2004	MW2 5/13/2004	RA-5 5/13/2004	MW2 7/7/2004	RA-5 7/7/2004
Acenaphthene	< 10	< 10	< 10	**89.8**	< 10	< 10
Acenaphthylene	< 10	< 10	< 10	< 10	< 10	< 10
Anthracene	< 10	< 10	< 10	**12.2**	< 10	< 10
Benzidine	< 30	< 30	< 30	< 30	< 30	< 30
Benzo(a)anthracene	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(b)fluoranthene	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(k)fluoranthene	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(g,h,i)perylene	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(a)pyrene (MCL 0.2)	< 10	< 10	< 10	< 10	< 10	< 10
4-Bromophenyl-phenylether	< 10	< 10	< 10	< 10	< 10	< 10
Butylbenzylphthalate	< 10	< 10	< 10	< 10	< 10	< 10
bis(2-Chloroethoxy)methane	< 10	< 10	< 10	< 10	< 10	< 10
bis(2-Chloroethyl) ether	< 10	< 10	< 10	< 10	< 10	< 10
2,2'-oxybis(I-Chloropropane)	< 10	< 10	< 10	< 10	< 10	< 10
2-Chloronaphthalene	< 10	< 10	< 10	< 10	< 10	< 10
2-Chlorophenol (o-Chlorophenol)	< 10	< 10	< 10	< 10	< 10	< 10
4-Chlorophenyl phenyl ether	< 10	< 10	< 10	< 10	< 10	< 10
Chrysene	< 10	< 10	< 10	< 10	< 10	< 10
Dibenz(a,h)anthracene	< 10	< 10	< 10	< 10	< 10	< 10
Di-n-butylphthalate	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dichlorobenzene (o-Dichlorobenzene) (MCL 600)	< 10	< 10	< 10	< 10	< 10	< 10
1,3-Dichlorobenzene (m-Dichlorobenzene)	< 10	< 10	< 10	< 10	< 10	< 10
1,4-Dichlorobenzene (p-Dichlorobenzene) (MCL 75)	< 10	< 10	< 10	< 10	< 10	< 10
3,3'-Dichlorobenzidine	< 20	< 20	< 20	< 20	< 20	< 20
2,4-Dichlorophenol	< 10	< 10	< 10	< 10	< 10	< 10
Diethylphthalate	< 10	< 10	< 10	< 10	< 10	< 10
2,4-Dimethylphenol	< 10	< 10	< 10	< 10	< 10	< 10
Dimethylphthalate	< 10	< 10	< 10	< 10	< 10	< 10
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	< 25	< 25	< 25	< 25	< 25	< 25
2,4-Dinitrophenol	< 25	< 25	< 25	< 25	< 25	< 25
2,4-Dinitrotoluene	< 10	< 10	< 10	< 10	< 10	< 10
2,6-Dinitrotoluene	< 10	< 10	< 10	< 10	< 10	< 10
Di-n-octylphthalate	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Diphenylhydrazine (as azobenzene)	< 10	< 10	< 10	< 10	< 10	< 10
bis(2-Ethylhexyl)phthalate (MCL 6)	< 10	< 10	< 10	< 10	< 10	< 10
Fluoranthene	< 10	< 10	< 10	**35.2**	< 10	< 10
Fluorene	< 10	< 10	< 10	**71.3**	< 10	< 10
Hexachlorocyclopentadiene (MCL 5)	< 10	< 10	< 10	< 10	< 10	< 10
Hexachloroethane	< 10	< 10	< 10	< 10	< 10	< 10
Indeno(l,2,3-cd)pyrene	< 10	< 10	< 10	< 10	< 10	< 10
Isophorone	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	< 10	< 10	< 10	**341**	< 10	< 10
Nitrobenzene	< 10	< 10	< 10	< 10	< 10	< 10
2-Nitrophenol (o-Nitrophenol)	< 10	< 10	< 10	< 10	< 10	< 10
4-Nitrophenol (p-Nitrophenol)	< 25	< 25	< 25	< 25	< 25	< 25
N-Nitrosodimethylamine	< 10	< 10	< 10	< 10	< 10	< 10
N-Nitroso-di-n-propylaminc	< 10	< 10	< 10	< 10	< 10	< 10
N-Nitrosodiphenylamine (Diphenylamine)	< 10	< 10	< 10	< 10	< 10	< 10
Pentachlorophenol (MCL 1)	< 25	< 25	< 25	< 25	< 25	< 25
Phenanthrene	< 10	< 10	< 10	**155**	< 10	< 10
Phenol	< 10	< 10	< 10	< 10	< 10	< 10
Pyrene	< 10	< 10	< 10	**14.4**	< 10	< 10
1.2,4-Trichlorobenzene (MCL 70)	< 10	< 10	< 10	< 10	< 10	< 10
2,4,6-Trichlorophenol	< 10	< 10	< 10	< 10	< 10	< 10

Table 4 - Madisonville Creosote Works
Groundwater Monitoring Well Results

Parameter (Semi-volatile organic) ug/L	MW2 12/7/2004	RA-5 12/7/2004	MW2 7/6/2005	RA-5 7/6/2005
Acenaphthene	< 10	< 10	< 11.6	< 12,2
Acenaphthylene	< 10	< 10	< 11.6	< 12.2
Anthracene	< 10	< 10	< 11.6	< 12.2
Benzidine	< 30	< 30	< 34.8	< 36,6
Benzo(a)anthracene	< 10	< 10	< 11.6	< 12.2
Benzo(b)fluoranthene	< 10	< 10	< 11.6	< 12.2
Benzo(k)fluoranthene	< 10	< 10	< 11.6	< 12.2
Benzo(g,h,i)perylene	< 10	< 10	< 11.6	< 12.2
Benzo(a)pyrene (MCL 0.2)	< 10	< 10	< 11.6	< 12.2
4-Bromophenyl-phenylether	< 10	< 10	< 11.6	< 12,2
Butylbenzylphthalate	< 10	< 10	< 11.6	< 12.2
bis(2-Chloroethoxy)methane	< 10	< 10	< 11.6	< 12,2
bis(2-Chloroethyl) ether	< 10	< 10	< 11.6	< 12.2
2,2'-oxybis(I-Chloropropane)	< 10	< 10	< 11.6	< 12.2
2-Chloronaphthalene	< 10	< 10	< 11.6	< 12.2
2-Chlorophenol (o-Chlorophenol)	< 10	< 10	< 11.6	< 12.2
4-Chlorophenyl phenyl ether	< 10	< 10	< 11.6	< 12.2
Chrysene	< 10	< 10	< 11.6	< 12.2
Dibenz(a,h)anthracene	< 10	< 10	< 11.6	< 12.2
Di-n-butylphthalate	< 10	< 10	< 11.6	< 12.2
1,2-Dichlorobenzene (o-Dichlorobenzene) (MCL 600)	< 10	< 10	< 11.6	< 12.2
1,3-Dichlorobenzene (m-Dichlorobenzene)	< 10	< 10	< 11.6	< 12.2
1,4-Dichlorobenzene (p-Dichlorobenzene) (MCL 75)	< 10	< 10	< 11.6	< 12.2
3,3'-Dichlorobenzidine	< 20	< 20	< 23.2	< 24.4
2,4-Dichlorophenol	< 10	< 10	< 11.6	< 12.2
Diethylphthalate	< 10	< 10	< 11.6	< 12.2
2,4-Dimethylphenol	< 10	< 10	< 11.6	< 12.2
Dimethylphthalate	< 10	< 10	< 11.6	< 12,2
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	< 25	< 25	< 29	< 30.5
2,4-Dinitrophenol	< 25	< 25	< 29	< 30.5
2,4-Dinitrotoluene	< 10	< 10	< 11.6	< 12.2
2,6-Dinitrotoluene	< 10	< 10	< 11.6	< 12.2
Di-n-octylphthalate	< 10	< 10	< 11.6	< 12.2
1,2-Diphenylhydrazine (as azobenzene)	< 10	< 10	< 11.6	< 122
bis(2-Ethylhexyl)phthalate (MCL 6)	< 10	< 10	< 11.6	< 12.2
Fluoranthene	< 10	< 10	< 11.6	< 12.2
Fluorene	< 10	< 10	< 11.6	< 12.2
Hexachlorocyclopentadiene (MCL 5)	< 10	< 10	< 11.6	< 12.2
Hexachloroethane	< 10	< 10	< 11.6	< 12.2
Indeno(l,2,3-cd)pyrene	< 10	< 10	< 11.6	< 12.2
Isophorone	< 10	< 10	< 11.6	< 12.2
Naphthalene	< 10	< 10	< 11.6	< 12.2
Nitrobenzene	< 10	< 10	< 11.6	< 12.2
2-Nitrophenol (o-Nitrophenol)	< 10	< 10	< 11.6	< 12.2
4-Nitrophenol (p-Nitrophenol)	< 25	< 25	< 29	< 30.5
N-Nitrosodimethylamine	< 10	< 10	< 11.6	< 12.2
N-Nitroso-di-n-propylaminc	< 10	< 10	< 11.6	< 12.2
N-Nitrosodiphenylamine (Diphenylamine)	< 10	< 10	< 11.6	< 12.2
Pentachlorophenol (MCL 1)	< 25	< 25	< 29	< 30.5
Phenanthrene	< 10	< 10	< 11.6	< 122
Phenol	< 10	< 10	< 11.6	< 12.2
Pyrene	< 10	< 10	< 11.6	< 12.2
1.2,4-Trichlorobenzene (MCL 70)	< 10	< 10	< 11.6	< 122
2,4,6-Trichlorophenol	< 10	< 10	< 11.6	< 12.2

Table 4 - Madisonville Creosote Works
Groundwater Monitoring Well Results

	MW2	RA-5	MW1	MW2	RA-5	MW1
Parameter (Semi-volatile organic) ug/L	5/9/2006	5/9/2006	8/23/2006	12/19/2006	12/19/2006	7/11/2007
Acenaphthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Acenaphthylene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Acetophenone	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Anthracene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Atrazine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzaldehyde	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(a)anthracene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(b)fluoranthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(k)fluoranthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(g,h,i)perylene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(a)pyrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Biphenyl (Diphenyl)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Bromophenylphenyl ether	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Butylbenzylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Caprolactam	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Carbazole	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Chloro-3-methylphenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Chloroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
bis(2-Chloroethoxy)methane	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
bis(2-ehloroethyl) ether	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Chloronaphthalene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Chlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Chlorophenylphenyl ether	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chrysene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Dibenz(a,h)anthracene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Dibenzofuran	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
3,3'-Dichlorobenzidine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dichlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Diethylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dimethylphenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Dimethylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Di-n-butylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4,6-Dinitro-2-methylphenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dinitrophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dinitrotoluene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,6-Dinitrotoluene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Di-n-octylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
bis(2-Ethylhexyl)phthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	**12.1**
Fluoranthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Fluorene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachloro-l.3-butadiene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachlorobenzene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachlorocyclopentadiene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachloroethane	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Indeno(l.2.3-ed)pyrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Isophorone	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Methylnaphthalene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Methylphenol (o-Cresol)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methylphenol (p-Cresol)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	NA
Naphthalene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Nitroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
3-Nitroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Nitroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Nitrobenzene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

Table 4 - Madisonville Creosote Works
Groundwater Monitoring Well Results

	MW2	RA-5	MW1	MW2	RA-5
Parameter (Semi-volatile organic) ug/L	7/11/2007	7/11/2007	4/22/2008	4/22/2008	4/22/2008
Acenaphthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Acenaphthylene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Acetophenone	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Anthracene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Atrazine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzaldehyde	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(a)anthracene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(b)fluoranthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(k)fluoranthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(g,h,i)perylene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzo(a)pyrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Biphenyl (Diphenyl)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Bromophenylphenyl ether	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Butylbenzylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Caprolactam	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Carbazole	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Chloro-3-methylphenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Chloroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
bis(2-Chloroethoxy)methane	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
bis(2-ehloroethyl) ether	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Chloronaphthalene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Chlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Chlorophenylphenyl ether	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chrysene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Dibenz(a,h)anthracene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Dibenzofuran	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
3,3'-Dichlorobenzidine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dichlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Diethylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dimethylphenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Dimethylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Di-n-butylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4,6-Dinitro-2-methylphenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dinitrophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,4-Dinitrotoluene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2,6-Dinitrotoluene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Di-n-octylphthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
bis(2-Ethylhexyl)phthalate	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Fluoranthene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Fluorene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachloro-l.3-butadiene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachlorobenzene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachlorocyclopentadiene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Hexachloroethane	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Indeno(l.2.3-ed)pyrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Isophorone	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Methylnaphthalene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Methylphenol (o-Cresol)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methylphenol (p-Cresol)	NA	NA	NA	NA	NA
Naphthalene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Nitroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
3-Nitroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Nitroaniline	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Nitrobenzene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

Table 4 - Madisonville Creosote Works
Groundwater Monitoring Well Results

Parameter (Semi-volatile organic) ug/L	MW2 5/9/2006	RA-5 5/9/2006	MW1 8/23/2006	MW2 12/19/2006	RA-5 12/19/2006	MW1 7/11/2007
2-Nitrophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Nitrophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
N-Nitroso-di-n-propylamine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
N-Nitrosodiphenylamine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2.2'-oxybis(l-ehloropropane)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Pentachlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Phenanthrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Phenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Pyrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2.4,5-Trichlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2.4,6-Trichlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

Table 4 - Madisonville Creosote Works
Groundwater Monitoring Well Results

	MW2	RA-5	MW1	MW2	RA-5
Parameter (Semi-volatile organic) ug/L	7/11/2007	7/11/2007	4/22/2008	4/22/2008	4/22/2008
2-Nitrophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Nitrophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
N-Nitroso-di-n-propylamine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
N-Nitrosodiphenylamine	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2.2'-oxybis(l-ehloropropane)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Pentachlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Phenanthrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Phenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Pyrene	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2.4,5-Trichlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2.4,6-Trichlorophenol	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

Attachment 1

Documents Reviewed

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Attachment 2

Interview Record Forms

INTERVIEW RECORD

Site Name: Madisonville Creosote		**EPA ID No.: LAD981522998**
Subject: 5 year review La. State Views		**Time:** **Date:10/22/2008**
Type: □ Telephone □ Visit X Other **Location of Visit: via electronic mail**		□ Incoming □ Outgoing
Contact Made By:		
Name: Laura Stankosky	**Title: RPM**	**Organization: US EPA**
Individual Contacted:		
Name: Rich Johnson	**Title: Environmental Scientist III**	**Organization: LDEQ**
Telephone No: (225) 219-3200 **Fax No: (225) 219-3239** **E-Mail Address: Rich.Johnson@la.gov**		**Street Address: 602 N. Fifth St.,** **City, State, Zip: Baton Rouge, LA 70802**

Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)
My feelings are good as the overall impression of the project.

2. What effects have post-construction site activities in the last five years had on the surrounding community?

I have heard of no complaints.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
None.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.

None

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

Yes.

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

Yes the state has several improvements on site performance by changing recovery wells.

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

No.

8. Is the remedy functioning as expected? How well is the remedy performing?

Yes

9. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Yes

10. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Yes, a technician visits the site regularly, and has access to site computers via phone.

11. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

None that I know of except the inclusion of a drinking water well for sampling at the request of the EPA,

12. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

None that I know of. Just improvements performed by the technicians running the plant to make it more effecting and smoother to operate.

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

Yes as stated previously the state implemented changing well types out to more effective recovery wells. Also the experienced technicians have been able to keep and old system up and running by the sheer expertise they possess.

14. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

No

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INTERVIEW RECORD

Site Name: MADISONVILLE CREOSOTE SUPERFUND SITE		**EPA ID No.: LAD981522998**
Subject: Five-Year Review		**Time:** **Date: 10-24-08**
Type: □ Telephone □ Visit X Other **Location of Visit: via electronic mail**		□ Incoming □ Outgoing

Contact Made By:

Name: Laura Stankosky	**Title: RPM**	**Organization: US EPA**

Individual Contacted:

Name: RICK TIBSS	**Title: OPERATOR**	**Organization: McDONALD**
Telephone No: 985-847-1122 **Fax No: 985-847-9639** **E-Mail Address: ricktibbs@excite.com**	**Street Address: 425 WEST HALL AVE.** **City, State, Zip: SLIDELL, LA 70460**	

Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)

The project and system are doing what it was designed to do.

2. What effects have post-construction site activities in the last five years had on the surrounding community?

None.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

None.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.

None.

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

Yes.

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

Yes, the 5-year evaluation done by the EPA. And monthly visits done by LDEQ.

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

none.

8. Is the remedy functioning as expected? How well is the remedy performing?

Yes and Yes.

9. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

For a few months now recovery has shown an increase.

10. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Yes. McDonald Construction has the present O&M contract. Pumping and Maintenance is done at least one week out of the month.

11. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

There have been small changes , but for the most part the system is run by design.

12. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

Only storm issues, but LDEQ has worked with us on that.

12. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

None.

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

System has been run the same since we got the contract 6 years ago. Newair pumps were purchased and installed. These pumps replaced the old electric pumps.

14. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Happy at this time.

INTERVIEW RECORD

Site Name: Madisonville Creosote Works		**EPA ID No.: LAD981522998**
Subject: Five-Year Review		**Time: 0830 am** **Date: 9-30-08**
Type: □ Telephone X Visit □ Other **Location of Visit: Madisonville City Hall**		□ Incoming □ Outgoing
Contact Made By:		
Name: Laura Stankosky*	**Title: RPM**	**Organization: US EPA**
Individual Contacted:		
Name: The Honorable Peter Gitz	**Title: Mayor of Madisonville**	**Organization:**
Telephone No: (985) 845-3636 **Fax No:** **E-Mail Address:**	**Street Address: Madisonville City Hall** **403 St Frances Street** **City, State, Zip: Madisonville, LA 70447**	

Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)
No real concerns.

2. What effects have site operations had on the surrounding community?
No negative site effects were discussed. Development in the area was noted.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
Mr. Gitz expressed an interest in the reuse of the property for parking and storage of city and county equipment. He said that the city had suffered losses due to gas that had been provided to the site operator when it was active without receiving payment. He felt like use of the property would help offset those losses.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
No incidents noted.

5. Do you feel well informed about the site's activities and progress?
Mr. Gitz felt like he was being informed of any activities that would impact the community.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
No management or operation comments were given.

* Mr. Frank Roepke and Mr. Cliff Murray with the Tulsa District Corps of Engineers accompanied Ms. Stankosky at the interview.

INTERVIEW RECORD

Site Name: Madisonville Creosote Works	**EPA ID No.: LAD981522998**	
Subject: Five-Year Review	**Time: 3:45 pm**	**Date: 10-31-08**
Type: X Telephone □ Visit □ Other **Location of Visit:**	□ Incoming □ Outgoing	

Contact Made By:

Name: Laura Stankosky	**Title: RPM**	**Organization: US EPA**

Individual Contacted:

Name: Mrs. Pam Camp	**Title:**	**Organization:**
Telephone No: (985) 845-0321 **Fax No:** **E-Mail Address:**	**Street Address: 1411 Highway 22W** **City, State, Zip: Madisoniville, LA 70447**	

Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)
No real concerns.

2. What effects have site operations had on the surrounding community?
She was curious about the small building that went up on the east side of the property. There is often a truck parked next to this building. I let Mrs. Camp know that this was an air quality monitoring station that is operated by the LDEQ and actually has nothing to do with the former creosote site. She also indicated that some of her neighbors are curious as to what the property reuse may be. She said rumors periodically circulate.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
No concerns on operation. She did note that there has been a lot of subdivision development in the area around Madisonville since Hurricane Katrina hit. More concerns with the increase in traffic in the area.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
The gates are usually well secured with locks, the site is securely fenced, and she has not observed any vandalism incidents.

5. Do you feel well informed about the site's activities and progress?
She had questions about the truck, the new small building, and possible property reuse. She said all her questions were answered with my call.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
Mrs. Camp recommended that I give her father-in-law (Mr. Adrian Camp) a call. He may be interested to know about the site's status. He lived next door to the site during the cleanup. Mrs. Camp and Mr. Adrian Camp's son now live in the house next to the site. The in-laws have moved to a smaller home to "downsize."

Attachment 3

Site Inspection Checklist

FIVE-YEAR REVIEW SITE VISIT CHECKLIST

I. SITE INFORMATION

Site Name: Madisonville 5-Year Review	**Date of Inspection:** September 30, 2008
Location and Region: Madisonville, LA	**EPA ID:**
Agency, office, or company leading the five-year review: U. S. EPA Region 6	**Weather/temperature:** Clear and sunny; high around 90 °F

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☒ Ground water pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other

Attachments: ☐ Inspection team roster attached ☒ Site map attached (Figure 2 of report)

II. INTERVIEWS (Check all that apply)

1. O&M Site Manager Rick Tibbs (Name) Operations Manager, McDonald Construction (Title) 9/30/08 (Date)

Interviewed: ☐ by mail ☒ at site ☐ by phone Phone no. 985-847-1122

Problems, suggestions: ☒ Report attached

2. O&M Staff _____ (Name) _____ (Title) _____ (Date)

Interviewed: ☐ by mail ☐ 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 LDEQ

Contact Rich Johnson (Name) Environmental Scientist III (Title) 9/30/08 (Date) (225) 219-3200 (Phone no.)

Problems, suggestions: ☒ Report attached Survey forms

Agency _____

Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone no.)

Problems, suggestions: ☐ Report attached _____

4. Other interviews (optional): ☒ Report attached

Survey from adjacent neighbor, east of the site.

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

1. O&M Documents

☒ O&M manual (long term monitoring plan)	☒ Readily available	☐ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☐ Up to date	☐ N/A
☒ Maintenance logs (semi-annual well inspection sheets)	☒ Readily available	☐ Up to date	☐ N/A

Remarks: Maintenance logs are the monthly reports submitted to LDEQ

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: At Office in O&M manual.

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

Remarks: At Office

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: Mr. Tibbs stated that because the site is a Superfund site, an effluent discharge permit is not required, but effluent limitations are observed and met for the wastewater treatment plant.

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

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

7. Ground Water Monitoring Records ☒ Readily available ☐ Up to date ☐ N/A

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

9. Discharge Compliance Records

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☒ Water (effluent)	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Monthly effluent (water) discharged from the wastewater treatment plant.

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 ☐ Other _____

2. O&M Cost Records (O&M cost information not available during inspection)

☐ Readily available ☐ Up to date ☒ Funding mechanism/agreement in place

☐ Original O&M cost estimate ☐ Breakdown attached

Total annual cost by year for review period, if available

Date	Date	Total Cost		
From 1/1/2004	to 12/31/2004	$111,000	-	☐ Breakdown attached
From 1/1/2005	to 12/31/2005	$159,000	-	☐ Breakdown attached
From 1/1/2006	to 12/31/2006	$76,000	-	☐ Breakdown attached
From _____	to _____	_____	-	☐ Breakdown attached
From _____	to _____	_____	-	☐ Breakdown attached
From _____	to _____	_____	-	☐ Breakdown attached
From _____	to _____	_____	-	☐ Breakdown attached
From _____	to _____	_____	-	☐ Breakdown attached

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

.

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: Property surrounded by chain link fence. Fencing with barbed wire is partially surrounding the wastewater treatment plant.

C. Institutional Controls

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) Monitored during site maintenance visits.

Frequency Tens days/month (minimum)

Responsible party/agency LDEQ

Contact Rich Johnson (Name) Environmental Scientist III (Title) 9/30/08 (Date) (713) 219-3200 (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 onsite ☒ N/A

Remarks:

3. Land use changes offsite ☒ N/A

Remarks:

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

Remarks: Dirt roads around the perimeter of the site are in good condition. Walked and verified.

B. Other Site Conditions

Remarks:

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. Settlement (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks: _____

2. Cracks ☐ Location shown on site map ☐ Cracking not evident
Lengths _____ Widths _____ Depths _____
Remarks: _____

3. Erosion ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks: _____

4. Holes ☐ Location shown on site map ☐ Holes not evident
Areal extent _____ Depth _____
Remarks: _____

5. Vegetative Cover ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram) (None)
Remarks: _____

6. Alternative Cover (armored rock, concrete, etc.) ☐ N/A
Remarks: _____

7. Bulges ☐ Location shown on site map ☐ Bulges not evident
Areal extent _____ Depth _____
Remarks: _____

8. Wet Areas/Water Damage ☐ Wet areas/water damage not evident

☐ Wet areas	☐ Location shown on site map	☐ Areal extent _____
☐ Ponding	☐ Location shown on site map	☐ Areal extent _____
☐ Seeps	☐ Location shown on site map	☐ Areal extent _____
☐ Soft subgrade	☐ Location shown on site map	☐ Areal extent _____

Remarks: _____

9. Slope Instability ☐ Slides ☐ Location shown on site map
☐ No evidence of slope instability Areal extent _____
Remarks: _____

B. Benches ☐ Applicable ☐ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. Flows Bypass Bench ☐ Location shown on site map ☐ N/A or okay

Remarks: _____

2. Bench Breached ☐ Location shown on site map ☐ N/A or okay

Remarks: _____

3. Bench Overtopped ☐ Location shown on site map ☐ N/A or okay

Remarks: _____

C. Letdown Channels ☐ Applicable ☐ N/A

(Channel lined with erosion control mats, rip rap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. Settlement ☐ Location shown on site map ☐ No evidence of settlement

Areal extent _____ Depth _____

Remarks: _____

2. Material Degradation ☐ Location shown on site map ☐ No evidence of degradation

Material type _____ Areal extent _____

Remarks: _____

3. Erosion ☐ Location shown on site map ☐ No evidence of erosion

Areal extent _____ Depth _____

Remarks: _____

4. Undercutting ☐ Location shown on site map ☐ No evidence of undercutting

Areal extent _____ Depth _____

Remarks: _____

5. Obstructions Type _____

☐ No obstructions ☐ Location shown on site map

Areal extent _____ Size _____

Remarks: _____

6. Excessive Vegetative Growth Type _____

☐ No evidence of excessive growth ☐ Vegetation in channels does not obstruct flow

☐ Location shown on site map Areal extent _____

Remarks: _____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. Gas Vents ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

2. Gas Monitoring Probes
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

3. Monitoring Wells (within surface area of landfill)
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

4. Leachate Extraction Wells
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

5. Settlement Monuments ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. Gas Treatment Facilities
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs O&M
Remarks: _____

2. Gas Collection Wells, Manifolds, and Piping ☐ Good condition ☐ Needs O&M
Remarks: _____

3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs O&M ☐ N/A
Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. Outlet Pipes Inspected ☐ Functioning ☐ N/A
Remarks: _____

2. Outlet Rock Inspected ☐ Functioning ☐ N/A
Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. Siltation Areal extent _____ Size _____
☐ N/A ☐ Siltation not evident
Remarks: _____

2. Erosion Areal extent _____ Depth _____
☐ Erosion not evident
Remarks: _____

3. Outlet Works ☐ Functioning ☐ N/A
Remarks: _____

4. Dam ☐ Functioning ☐ N/A
Remarks: _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. Deformations ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement _____ Vertical displacement _____
Rotational displacement _____
Remarks: _____

2. Degradation ☐ Location shown on site map ☐ Degradation not evident
Remarks: _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. Siltation ☐ Location shown on site map ☐ Siltation not evident
Areal extent _____ Depth _____
Remarks: _____

2. Vegetative Growth ☐ Location shown on site map ☐ N/A
☐ Vegetation does not impede flow
Areal extent _____ Type _____
Remarks: _____

3. Erosion ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks: _____

4. Discharge Structure ☐ Functioning ☐ N/A
Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. Settlement ☐ Location shown on site map ☐ Settlement not evident

Areal extent _____ Depth _____

Remarks: _____

2. Performance Monitoring Type of monitoring _____

☐ Performance not monitored Frequency _____ ☐ Evidence of breaching

Head differential _____

Remarks: _____

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

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

1. Pumps, Wellhead Plumbing, and Electrical

☒ Good condition ☒ All required wells located ☐ Needs O&M ☐ N/A

Remarks: _____

2. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☒ Good condition ☐ Needs O&M

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 O&M

Remarks: _____

2. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☐ Good condition ☐ Needs O&M

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 absorbers
☒ Filters sand
☐ Additive (e.g., chelation agent, flocculent) _____
☒ Others Equilization tank, creosote holding tank
☒ Good condition ☐ Needs O&M
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☒ Quantity of ground water treated annually (68,000-143,000 gallons)
☐ Quantity of surface water treated annually _____

Remarks: _____

2. Electrical Enclosures and Panels (Properly rated and functional)

☐ N/A ☒ Good condition ☐ Needs O&M

Remarks: Noted that alarms result from power outages and surges (normal operational problems).

3. Tanks, Vaults, Storage Vessels

☐ N/A ☒ Good condition ☐ Proper secondary containment ☐ Needs O&M

Remarks: _____

4. Discharge Structure and Appurtenances

☐ N/A ☒ Good condition ☐ Needs O&M

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 O&M ☐ N/A

Remarks _____

D. Monitored Natural Attenuation ☐ Applicable ☒ N/A

1. Monitoring Wells (Natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs O&M ☐ N/A

Remarks: _____

X. OTHER REMEDIES

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

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

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

The goal of the remedy is to collect DNAPL and treat ground water collected from the field.

B. Adequacy of O&M

O&M appeared to be adequate.

C. Early Indicators of Potential Remedy Failure

D. Opportunities for Optimization

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

Attachment 4

Site Inspection Photographs

Photograph No. 1 Site: Madisonville Creosote Works
Orientation: Southeast Date: 30 September 2008
Description: Registered Live Oak tree

Photograph No. 2 Site: Madisonville Creosote Works
Orientation: Southeast Date: 30 September 2008
Description: Wastewater Treatment Plant Building (registered live oak in center rear of photo)

Photograph No. 3 Site: Madisonville Creosote Works
Orientation: South Date: 30 September 2008
Description: Wastewater Treatment Plant Building (discharge point in middle foreground)

Photograph No. 4 Site: Madisonville Creosote Works
Orientation: Southeast Date: 30 September 2008
Description: Highway 22 and fence line along north side of site

Photograph No. 5 Site: Madisonville Creosote Works
Orientation: North Date: 30 September 2008
Description: Wastewater Treatment Plant Building (discharge point in middle foreground)

Photograph No. 6 Site: Madisonville Creosote Works
Orientation: Northeast (Wastewater treatment plant interior) Date: 30 September 2008
Description: Influent equalization tank (T1)

Photograph No. 7 Site: Madisonville Creosote Works
Orientation: North (Wastewater treatment plant interior) Date: 30 September 2008
Description: Oil/water Separator in rear (T2); oil/water separator holding tank in left foreground(T7)

Photograph No. 8 Site: Madisonville Creosote Works
Orientation: North (Wastewater treatment plant interior) Date: 30 September 2008
Description: PEP sand filtration tanks

Photograph No. 9 Site: Madisonville Creosote Works
Orientation: Southwest (Wastewater treatment plant interior) Date: 30 September 2008
Description: Creosote holding tank; TIGG carbon filtration tanks in background to the right

Photograph No. 10 Site: Madisonville Creosote Works
Orientation: North (Wastewater treatment plant interior) Date: 30 September 2008
Description: Wastewater treatment plant programmable logic controllers (PLC) screen

Photograph No. 11 Site: Madisonville Creosote Works
Orientation: North (Wastewater treatment plant interior) Date: 30 September 2008
Description: Wastewater treatment plant programmable logic controllers (PLC) screen

Photograph No. 12 Site: Madisonville Creosote Works
Orientation: West (Wastewater treatment plant interior) Date: 30 September 2008
Description: Skylight that required sealing following Hurricane Gustav (1 Sept 2008)

Photograph No. 13 Site: Madisonville Creosote Works
Orientation: South-southeast Date: 30 September 2008
Description: Open pump vaults; note compressor building in center-right of photo

Photograph No. 14 Site: Madisonville Creosote Works
Orientation: North Date: 30 September 2008
Description: Open pump vaults; sumps 3& 4 in foreground; 1&2 in background; note hoses from compressor

Photograph No. 15 Site: Madisonville Creosote Works
Orientation: South Date: 30 September 2008
Description: Open pump vaults; Trench #1 riser on the left; #2 on the right

Photograph No. 16 Site: Madisonville Creosote Works
Orientation: South-southeast Date: 30 September 2008
Description: Building housing compressor for pneumatic pumps

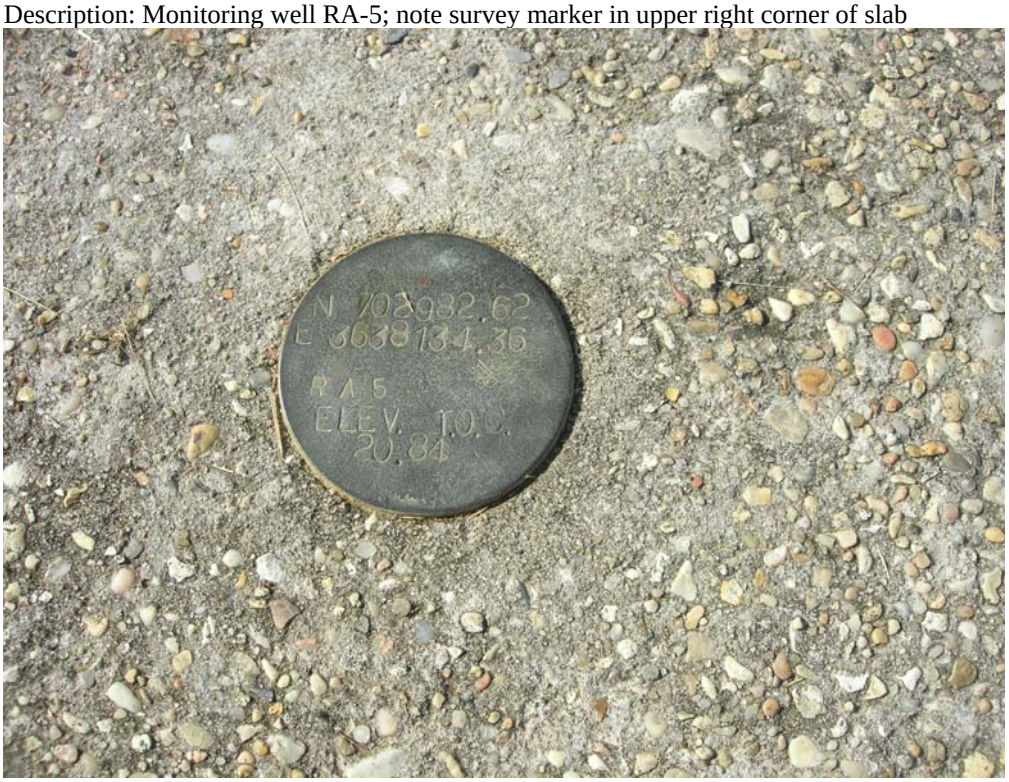
Photograph No. 17 Site: Madisonville Creosote Works
Orientation: South Date: 30 September 2008
Description: Interior of compressor building

Photograph No. 18 Site: Madisonville Creosote Works
Orientation: North-northeast Date: 30 September 2008
Description: Open vaults; note LDEQ air monitoring station in upper right background

Photograph No. 19 Site: Madisonville Creosote Works
Orientation: North Date: 30 September 2008
Description: Recovery trench #9 cleanout

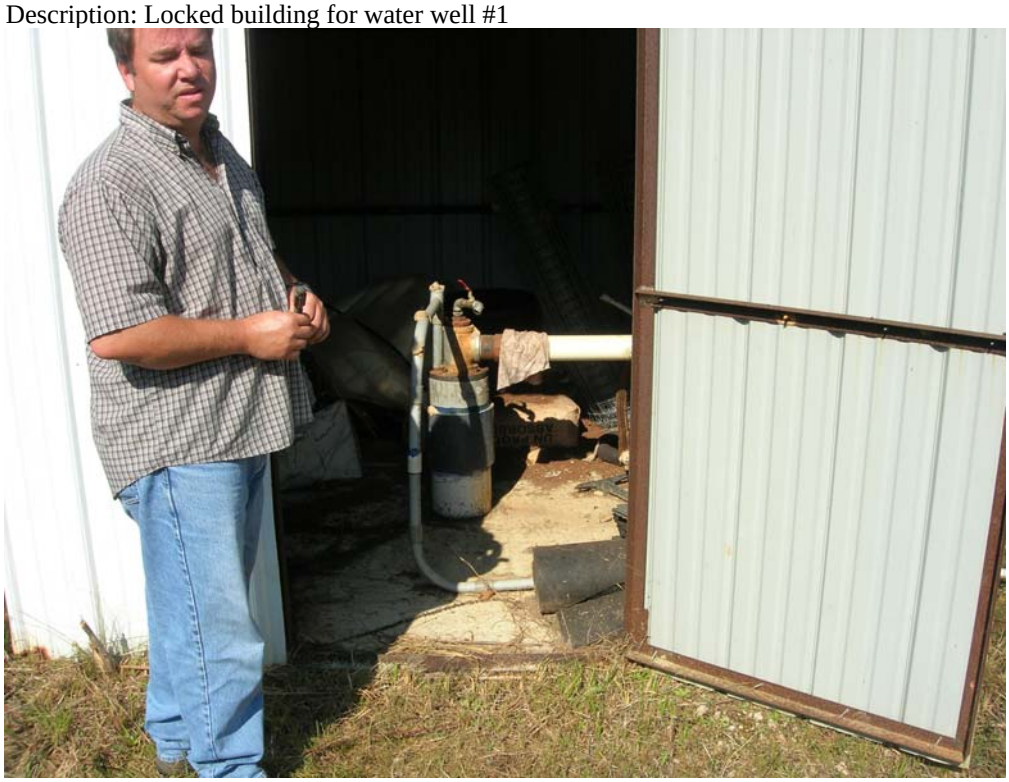
Photograph No. 20 Site: Madisonville Creosote Works
Orientation: Northwest Date: 30 September 2008
Description: Monitoring well RA-5; note LDEQ air monitoring station in upper right cornert

Photograph No. 21 Site: Madisonville Creosote Works
Orientation: North Date: 30 September 2008
Description: Monitoring well RA-5; note survey marker in upper right corner of slab



Photograph No. 22 Site: Madisonville Creosote Works
Orientation: South Date: 30 September 2008
Description: Survey marker for RA-5 showing coordinates and elevation

Photograph No. 23 Site: Madisonville Creosote Works
Orientation: West Date: 30 September 2008
Description: Locked building for water well #1



Photograph No. 24 Site: Madisonville Creosote Works
Orientation: West Date: 30 September 2008
Description: Water well #1

Photograph No. 25 Site: Madisonville Creosote Works
Orientation: West Date: 30 September 2008
Description: Road along inside of south edge of property

Attachment 5
Fact Sheet and Notice to the Public Regarding the Five-Year Review

ST. TAMMANY NEWS

P.O. Box 90, Covington, LA 70434 P.O. Box 910, Slidell, LA 70459

CERTIFICATE OF PUBLICATION

STATE OF LOUISIANA
PARISH OF ST. TAMMANY

Before me, the undersigned authority, personally came and appeared ***TERRY MADDOX,*** *who after being duly sworn, did depose and say that he or she is the* ***PUBLISHER,*** *of* ***ST. TAMMANY NEWS*** *three times a week newspaper of general circulation is the St. Tammany Parish, Louisiana, and that the following legal notice appeared in the* ***ST. TAMMANY NEWS*** *in its regular editions of:*

9/28, 10/1 & 10/3/08

TERRY MADDOX, PUBLISHER

SWORN TO AND SUBSCRIBED BEFORE ME THIS 14th **DAY OF** Oct **2008 A.D.**

NOTARY PUBLIC
RANDOLPH C. SLONE
BAR ROLL # 12137

Madisonville Creosote Works Superfund Site
PUBLIC NOTICE
U.S. EPA Region 6 Begins Third Five-Year Reviews of Site Remedy

The U.S. Environmental Protection Agency Region 6 (EPA) has begun the Second Five-Year Review of the remedy for the Madisonville Creosote Works Superfund Site in St. Tammany Parish near Madisonville, Louisiana. The Review will evaluate the ability of the remedy to correct contamination problems and protect public health and the environment. The site is located are located approximately 3 miles west of downtown Madisonville on the southern side of Louisiana State Highway 22.

Once completed, the results of the Five-Year Review will be made available to the public at the following Information Repository:

Madisonville Town Hall
403 St Francis Street
Madisonville, LA 70447

Information about the sites is also available on the Internet at
www.epa.gov/region6/superfund.

For more information about the Site, contact:

Ms. Laura Stankosky
Remedial Project Manager (Mail Code 6SF-RL)
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202
Phone: (214) 665-7525
E-mail Stankosky.Laura@epamail.epa.gov

Mr. Rich Johnson
Louisiana Department of Environmental Quality
Remediation Services Division
P.O. Box 4314
Baton Rouge, LA 70821
Phone: (225) 219-3200
E-mail: Rich.Johnson@la.gov

United States
Environmental Protection
Agency

EPA Begins Five-year Review of Site Remedy

Madisonville Creosote Works
St. Tammany Parish, Louisiana October 2008

The five-year review is:

- A regular inspection of a Superfund site;
- Conducted at sites that need continued monitoring;
- A way to determine if a cleanup is protecting public health and the environment; and
- A chance for you to tell EPA about site activities.

Checking up on Superfund sites: The five-year review

After a Superfund National Priorities List (NPL) site cleanup action is completed, the U.S. Environmental Protection Agency (EPA) conducts regular inspections, called five-year reviews, at selected Superfund sites. The EPA has begun a five-year review for the Madisonville Creosote Works Superfund Site, St. Tammany Parish, Louisiana.

The Site consists of a defunct creosote wood treating facility and covers about 29 acres adjacent to the southern side of Louisiana State Highway 22, about 3 miles west of downtown Madisonville and 1.25 miles from the Madisonville city limits. The cleanup was completed in May 2000. Cleanup consisted of Low Temperature Thermal Desorption (LTTD) to address the creosote contamination within the soil and steam sediment and to eliminate the source of contamination for surface water. A recovery trench system continues to be used to contain and recover dense non-aqueous phase liquids within the ground water. Institutional controls are in place to ensure that future individuals will not be exposed to remaining low level Site contaminants. Ground water monitoring is conducted to ensure the effectiveness of the cleanup remedy. The site is currently in operation & maintenance status. The Louisiana Department of Environmental Quality (LDEQ) operates the recovery trench system and performs routine monitoring.
Since wastes remain onsite at the Madisonville Creosote Works Superfund Site above levels that allow for unrestricted use, EPA will perform site reviews at a minimum of every five years to determine if the cleanup at the site is still protecting public health and the environment.

During the review, EPA studies information on the site, including the cleanup and the laws that apply, inspects the site, and may interview people in the nearby area. The EPA will consider any information or concerns that people may have about the site during the review. If you are familiar with the site, you may know things that can help the review team. Here are some examples:

- Broken fences, unusual odors, illegal dumping, or other problems;
- Buildings or land being used in new ways around the site;
- Any unusual activities at the site such as vandalism or trespassing; and
- How the cleanup at the site has helped the area.

This fact sheet will tell you more about five-year reviews.

The five-year review: protecting you and the environment

The EPA's Remedial Project Manager (RPM) is working with State and Federal scientists and engineers to evaluate the site. The five-year review began on September 29, 2008. The RPM will collect information about the site from a variety of sources including historic information. The site will be inspected to see if the cleanup continues to function properly and if it is well maintained. The RPM will talk with local officials to see if they have any concerns or if there have been any changes in local policy or zoning that might affect the original cleanup. People who live near the site, own businesses nearby, or work at the site may also be contacted to see if they have any information or concerns about the site. These people may be contacted with a mailed survey, a phone call, or an interview. The RPM plans to conduct interviews with the local officials and members of the community during September/October 2008. The RPM will use the information collected to decide whether or not the cleanup continues to be protective of human health and the environment.

A report will be made available to the public once the five-year review is complete. The report will include historical information on the site and cleanup activities, site inspection results, data review and analysis, conclusions and recommendations. A copy of the report will be made available at Madisonville City Hall, St. Frances Street. You will be notified when the report is finished.

What happens after the review?

The EPA will insure that if any problems are identified by the review, they will be addressed. Since wastes or contaminants that prevent unlimited use and unrestricted exposure remain onsite, EPA will return every five years for another review. The EPA and the State will also keep an eye on the site between reviews. If at any time you have concerns or questions about the site, let EPA know. You can contact EPA through the RPM, at 1.800.533.3508 (Toll-Free Number).

For more information, please contact...

Laura Stankosky, Remedial Project Manager
U.S. EPA Region 6
214.665.7525 or 1.800.533.3508 (toll-free)
stankosky.laura@epa.gov

Donn Walters, EPA Public Liaison
U.S. EPA Region 6
214.665.6483 or 1.800.533.3508 (toll-free)
walters.donn@epa.gov

For news media inquires contact, David Bary or Tressa Tillman, EPA Region 6 Press Office, at 214.665.2208

Louisiana Department of Environmental Quality
Rich Johnson
Louisiana Department of Environmental Quality
Environmental Technology Division
P.O. Box 4314
Baton Rouge, LA 70821-4314
225-219-3200
rich.johnson@la.gov

Information Repositories

Madisonville City Hall
St. Frances Street
Madisonville, LA
985.845.7311

U.S. EPA on the Internet

U.S. EPA Headquarters
www.epa.gov

U.S. EPA Region 6
www.epa.gov/region6

U.S. EPA Region 6 Superfund
www.epa.gov/region6/superfund

EPA
United States
Environmental Protection
Agency

Region 6
1445 Ross Ave. (6SF-TS)
Dallas, TX 75202