

Health Consultation

Groundwater Sampling Evaluation

COMBUSTION, INC.
LIVINGSTON PARISH, LOUISIANA

EPA FACILITY ID: LAD072606627

Prepared by
Louisiana Department of Health and Hospitals

OCTOBER 26, 2011

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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List of Acronyms

AST	Aboveground storage tank
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	Below ground surface
CVs	Health based comparison values
EDC	1,2-Dicloroethane
EPA	Environmental Protection Agency
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department of Health and Hospitals
MW	Monitoring well
NPL	National Priorities List
OPH	Office of Public Health
PCBs	Polychlorinated biphenyls
PRPs	Potentially responsible parties
ROD	Record of Decision
SEET	Section of Environmental Epidemiology and Toxicology
SVOCs	Semi volatile organic compounds
TDA	2,4/2,6-toluenediamine
UST	Underground storage tank
VOCs	Volatile organic compounds

Summary and Statement of Issues

INTRODUCTION

In April 2010, EPA contractors collected groundwater samples from 36 monitoring wells at the Combustion, Inc. site, located in Livingston Parish, Louisiana.

In cooperation with EPA, Louisiana Department of Health and Hospitals/Office of Public Health/Section of Environmental Epidemiology and Toxicology (LDHH/OPH/SEET) evaluated the most recent groundwater data available for the Combustion, Inc. site to determine whether the site poses potential harm to public health.

CONCLUSION

After assessing the potential for the public to be exposed to these contaminants, SEET concludes that the contaminants remaining at the Combustion, Inc. site will not harm people's health.

**BASIS FOR
DECISION**

Drinking water is sourced from the Ward 2 Water District. There is no current exposure pathway between onsite groundwater at the Combustion Inc., site and the local population. Onsite groundwater will not harm people's health. Regularly scheduled groundwater sampling will be conducted to monitor any future changes to pathways of exposure.

NEXT STEPS

SEET will be available to assess any additional samples collected from the Combustion, Inc. site or to reassess the current data following any changes in usage of or access to the site.

The information produced within this health consultation will be made available to the community members and stakeholders in Livingston Parish, LA.

**FOR MORE
INFORMATION**

If you have further concerns about the site, you can call ATSDR at 1-800-CDC-INFO and ask for information about the Combustion, Inc. site.

Background

Site Description & History

The Combustion, Inc. site is an inactive, abandoned waste oil recycling facility in Livingston Parish, Louisiana. The facility is located 3 miles northeast of Denham Springs, Louisiana, at Milton Road and Burgess Road. Combustion, Inc., formerly Dubose Oil Company, operated from the late 1960s until the early 1980s. The facility consisted of a small processing plant, a pond area, and a connecting pipeline. The facility conducted both oil reclamation and wastewater treatment. The 2.5 acre process area contained 16 aboveground storage tanks (ASTs), a small tanker truck, 11 underground storage tanks (USTs), a boiler, a boiler shed, a pump shed and associated foundations, piping, sumps and containment walls. The wastewater treatment system in the former pond area treated storm water run-off and excess water from hydrocarbon recycling activities contaminated by oil or oily wastes. The 6.5 acre pond area contained two ASTs, one UST and 14 interconnected ponds with a total surface area of approximately 2.4 acres and an estimated capacity of approximately 4 million gallons [1].

The site hydrology is characterized by upper and lower water bearing zones identified in the vicinity of the former process area. Based on interpreted boring logs, these zones are hydraulically connected, although varying degrees of separation occur. The top of the upper water bearing zone is generally encountered at depths ranging from 4 to 18 feet below ground surface (bgs) and the base is variable but no greater than 30 feet bgs. The top of the lower water bearing zone is encountered at depths of 26 to 42 feet bgs but is usually near 30 feet bgs and the base is encountered at depths of 59 to 102 feet bgs [2].

Combustion, Inc. completely shut down operations in May 1982. In October 1983, the Louisiana Department of Environmental Quality (LDEQ) analyzed wastes from the site and found they contained polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and heavy metals. In February 1985, LDEQ detected lead and thallium in groundwater at the site, and VOCs in the air. The site was added to the NPL in August 1990 following the identification of potentially responsible parties (PRPs) and a site assessment [1].

An expedited removal action was completed during late 1992 through 1993. Approximately 25,700 tons of soil and 2,000 tons of debris and foundation materials were excavated and disposed offsite; 8,000 tons of solidified sludge and paraffin and 3,400 linear feet of pipeline were excavated and disposed offsite; approximately 58,086 gallons of oil was sent offsite for energy recovery; 18 ASTs and 12 USTs were emptied of contents, dismantled and recycled; and 11.3 million gallons of wastewater were treated and discharged. Per EPA, this removal action eliminated unacceptable health risks associated with soil, sludge, and waste for future industrial workers and future residents [2].

Groundwater beneath the former facilities in the process area has been impacted by site activities. Based on sample results, the groundwater contains concentrations of VOCs and semivolatile organics (SVOCs). The more widely distributed constituent groups in this area are the semivolatile aromatic amines and volatile chlorinated organics including 1,2-dichloroethane. The constituents are present in the groundwater to approximately 30 feet bgs, and groundwater movement to the south has contributed to contaminant migration approximately 500 feet beyond

the former process area, leaving approximately a 500-foot wide zone between the plume edges and the southern site boundary [2].

The Record of Decision (ROD) was signed by LDEQ April 30, 2004 and by EPA on May 28, 2004. The major elements of the remedy include phytoremediation to prevent further migration of contaminants in the groundwater; groundwater monitoring in the upper and lower water bearing zones in the vicinity of the former process area; natural attenuation and fate and transport modeling of the groundwater; groundwater monitoring in the vicinity of the former pond area for VOCs; a site long-term care plan that provides a framework for site upkeep during the remedial action; hot-spot treatment as the remedy in the more highly contaminated areas of the groundwater plume; and institutional controls [2].

Demographics

The Combustion, Inc. site is located in Livingston Parish, Louisiana. Census Population Estimates for 2009 record a parish population of 123,326. The largest ethnic group in that parish at that time was Caucasian (94.4%), followed by African American (5.6%). 83.2% of the population age 25 or older had earned at least a high school diploma. The median household income was \$52,779 with 12% of persons living below poverty level [3].

There are approximately 1,000 residents that live within a 1-mile radius of the site. The immediate residential properties are located along the northern, eastern, and western boundaries of the site and consist of 36 homes [2]. The nearest home is approximately 60 feet away from the background monitoring well for the former process area (Appendix A, figure 1

Discussion

Environmental Data

In April 2010, EPA contractors collected groundwater samples from 36 monitoring wells located in zones 1 (17 feet below ground surface (bgs) and 2 (38 feet bgs) [4]. of the former pond area and the upper and lower water-bearing zones of the former process area [4]. All samples were analyzed for volatile organic compounds (VOCs), with the former process area also being sampled for 2,4-/2,6-toluenediamine (TDA) related semi-volatiles.

Two tracking compounds were selected by EPA during on site groundwater analyses at the Combustion Inc. site. 1,2-Dichloroethane (EDC) was selected as the tracking constituent for the volatile organic compounds, while 2,4-/2,6-toluenediamine (TDA) was selected as the tracking constituent for the aromatic amine compounds. The behavior of these two compounds is representative of the behavior of similar compounds at the site. Performance goals are focused on the concentrations of these constituents to evaluate the progress of remediation [5].

Analytical results revealed that all groundwater samples collected from zones 1 and 2 of the former pond area were below health comparison values (CVs) with the exception of benzene at monitoring well location MW-02 (appendix A, table 1). Furthermore, all samples collected from the lower water bearing zone of the former process area were below CVs. Health based comparison values and their usage in the screening process are explained further in appendix A.

Two TDA-related semi-volatiles and seven VOCs were detected above their respective CVs in the upper water bearing zone of the former process area (appendix A, table 2, figures 1 and 2). Excluding benzene, the detected compounds are known EDC and TDA degradation products of

natural attenuation. The detected contaminant concentrations demonstrate the desired effect of actively degrading EDC and TDA constituents present in the site groundwater. Characterization of reducing conditions will continue via future semi-annual groundwater monitoring as stipulated in the ROD.

The background monitoring well for the former process area is located (approximately 60 feet) adjacent to the nearest neighboring house (Appendix A, figure 1). All samples collected from the background well were at non-detectable levels. The nearest houses to the site are located up gradient of the site.

Exposure Pathways

To determine whether a child or adult would be exposed to contaminants detected in groundwater from the Combustion, Inc. site, SEET evaluated the environmental and human components that lead to exposure. An exposure pathway contains the following five elements: a source of contamination, transport through one or more environmental media, a point of exposure where the public could be exposed, a route of exposure such as ingestion, inhalation or dermal exposure, and a receptor population. An exposure pathway can be categorized as a completed or potential exposure pathway if the exposure pathway cannot be eliminated. Completed pathways require that the five elements exist and indicate that exposure to a contaminant has occurred in the past, is presently occurring, or will occur in the future. Potential pathways, however, indicate that exposure to a contaminant could have occurred in the past, could be occurring now, or could occur in the future. An exposure pathway can be eliminated if at least one of the five elements is missing and will never be present

The Combustion, Inc. site has an upper and lower water bearing zone, unconnected with the municipal drinking water source. The Ward 2 Water District provides municipal drinking water to the immediate vicinity of the Combustion Inc. site.

In 1988, Louisiana State University conducted a survey of private water wells in the vicinity of the Combustion Inc. site [4]. Two unregistered wells were identified, but neither well was used for drinking water. The wells were not sampled.

A door-to-door survey was conducted by the potentially responsible parties' (PRPs) consultant in 1996 [4]. The survey covered an approximately ½-mile radius around the Combustion Inc., site. One location up gradient (north) of the site was still using their well for domestic water. Other wells were identified as used for washing tractors and/or water for the yard and garden. These wells were not sampled.

Although contamination is present within onsite water bearing zones at the Combustion Inc., site, the neighboring residences have no contact with the contamination. Background well data confirms that the contamination plume remains within the boundaries of the site. There is no current exposure pathway between onsite groundwater at the Combustion Inc., site and the local population. Onsite groundwater will not harm people's health. Semi-annual groundwater sampling will be conducted to monitor any future changes to pathways of exposure.

Because groundwater contaminant plumes that migrate under or near buildings/homes may be a source for vapor intrusion, this pathway should be considered during future groundwater monitoring. Vapor intrusion is not a current pathway of concern.

Child Health Considerations

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than are adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than are adults; this means they breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher intake rate results in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus adults need as much information as possible to make informed decisions regarding their children's health. SEET found no harm to children living near the Combustion, Inc. site.

Conclusions

Evaluation of the groundwater sampled by EPA contractors suggests that there is no harm related to exposures to onsite groundwater from the Combustion, Inc. site since there is no exposure pathway between the onsite groundwater and the local population. Vapor intrusion is not a current concern at the Combustion Inc., site; however, it should continue to be monitored during future sampling events.

Recommendations

SEET recommends that EPA continue to execute the current phytoremediation remedy to treat the onsite groundwater at the Combustion Inc., site. Future semi-annual sampling should monitor the potential for vapor intrusion in neighboring homes.

Public Health Action Plan

The information produced within this health consultation will be disseminated to the public repositories, community members and stakeholders within Livingston Parish, Louisiana by SEET.

SEET will review future groundwater data to ensure that contaminant exposures are not occurring at levels of health concern.

REPORT PREPARATION

This Public Health Assessment for the Combustion Inc. Site was prepared by the Louisiana Department of Health and Hospitals, Office of Public Health, Section of Environmental Epidemiology and Toxicology (LDHH/OPH/SEET) under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved agency methodology and procedures existing at the time the health assessment was initiated. Editorial review was completed by the cooperative agreement partner. ATSDR has reviewed this health assessment and concurs with its findings based on the information presented in this report. ATSDR's approval of this document has been captured in an electronic database, and the approving reviewers are listed below.

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4. URS Corporation. Response to Comments, Department of Health and Hospitals. Combustion, Inc. Site, Livingston Parish, Louisiana. August 30, 2011.
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Appendix A

Appendix A: Screening Process

Health based comparison values (CVs) were used to determine which samples needed further evaluation. CVs are not used to predict health effects or to set clean-up levels. Contaminants with media concentrations above a health based comparison value do not necessarily represent a health threat, but are selected for further evaluation. Contaminants with media concentrations below a health based comparison value are unlikely to be associated with illness and are not evaluated further.

The Agency for Toxic Substances and Disease Registry's (ATSDR) Environmental Media Evaluation Guide (EMEG), Cancer Risk Evaluation Guide (CREG), the U.S. Environmental Protection Agency's (EPA) Risk Based Concentration (RBC) and the Louisiana Department of Environmental Quality's (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) values were used as CVs in this evaluation. EMEGs are estimated contaminant concentrations that are unlikely to cause adverse non-carcinogenic health effects. EMEGs are calculated by using ATSDR's Minimal Risk Level (MRL), which is also an estimate of daily exposure to contaminants that are unlikely to cause adverse non-cancer health effects. Like EMEGs, RMEGs represent concentrations of substances in water to which humans may be exposed without experiencing adverse health effects. CREGs are media-specific comparison values that are used to identify concentrations of cancer-causing substances that are unlikely to result in an increase of cancer rates in an exposed population. RBC and RECAP values represent constituent concentrations in media that are protective of human health and the environment under site-specific conditions.

Table 1: Groundwater contaminants detected above comparison values (CV). Former pond area of Combustion Inc. Site, April 2010.

Chemical	MW-02 (mg/L) ¹	CV ²
Benzene	0.0278	0.006 CREG ³

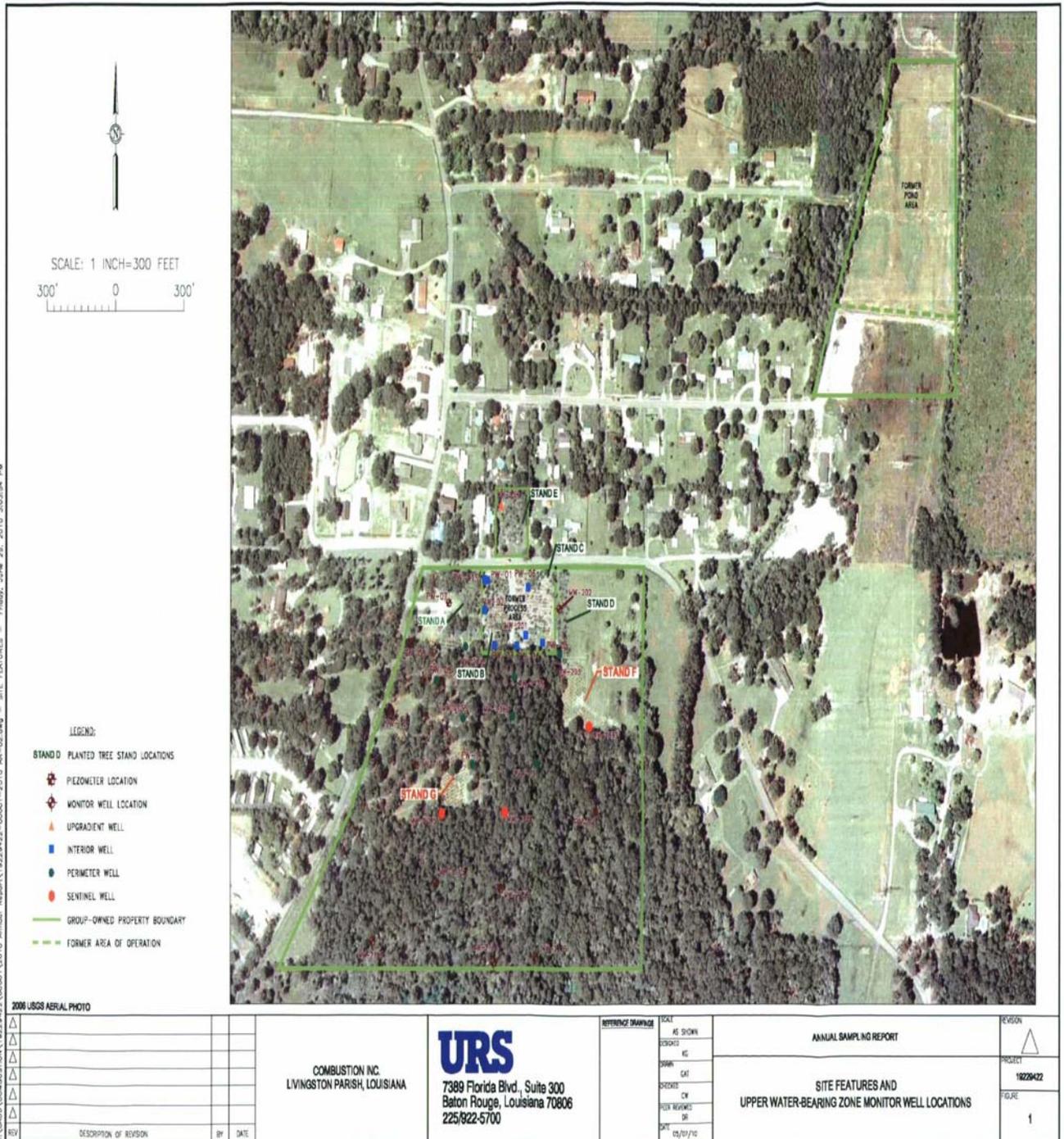
¹mg/L- milligrams per liter; ²CV- comparison value; ³CREG- Cancer Risk Evaluation Guide

Table 2: Groundwater contaminants (reported as milligrams per liter (mg/L)) detected above comparison values (CV). Upper water bearing zone of former process area. Combustion Inc. Site, April 2010.

Chemical	MW-201 (mg/L) ¹	MW-203	MW-204S	MW-205S	MW-213S	PW-01S	PW-02	PW-03	PW-04	PW-05	PW-06	PW-08	PW-12	CV ²
2,4/2,6-toluenediamine related semi-volatiles														
2,4/2,6-toluenediamine	7.25	0.0162	2.82	24.8	20.2		7.32	4.93	0.0637	7.88	1.67		5.44	0.01 RECAP ³
O and/or P-toluidine	0.144	0.0212	0.0305	0.366	0.235		0.435	0.255		0.531	0.0341		0.0758	0.000035 RBC ⁴
Volatile Organic Compounds														
1,1-dichloroethane		0.00678	0.139	0.374	0.00518	4.03	0.0837	0.168	0.0182	0.0106	0.0459	2.75	0.0652	0.0024 RBC
1,1-dichloroethene						0.319						0.112		0.09 EMEG ⁵
1,2-dichloroethane												3.32		0.0004 CREG ⁶
Benzene	0.0185			0.023	0.00632			0.0551		0.0156			0.00741	0.006 CREG
Toluene	8.27													0.2 EMEG
Trichloroethene						0.00835								0.002 RBC
Vinyl chloride						0.256								0.00002 CREG

¹mg/L- milligrams per liter; ²CV- comparison value; ³RECAP- Risk Evaluation/Corrective Action Program; ⁴RBC- Risk Based Concentration; ⁵EMEG- Environmental Media Evaluation Guide; ⁶CREG- Cancer Risk Evaluation Guide

Figure 1: April 2010 Groundwater Sampling Locations, Upper Water Bearing Zones of the Former Process Area, Combustion, Inc. site. Livingston Parish, LA.



Source: URS Corporation, 2010 Annual Report, Year 5 Remedy Implementation, Combustion, Inc. Superfund Site, Livingston Parish, LA. August 2010.

