

Health Consultation

**DEVILS SWAMP LAKE
A REVIEW OF FISH DATA**

EAST BATON ROUGE PARISH, LOUISIANA

EPA FACILITY ID: LAD985202464

AUGUST 29, 2006

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333**

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR 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 which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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Prepared by:

Louisiana Department of Health and Hospitals
Office of Public Health
Section of Environmental Epidemiology and
Toxicology
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

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List of Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
ATVs	All-terrain vehicles
DSHC	Devil's Swamp Hunting Club
EPA	Environmental Protection Agency
HCB	Hexchlorobenzene
HCBD	Hexchlorobutadiene
HHRA	Human Health Risk Assessment
HSWA	Hazardous and Solid Waste Amendments
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department of Health and Hospitals
LDWF	Louisiana Department of Wildlife and Fisheries
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OPH	Office of Public Health
PCBs	Polychlorinated biphenyls
PPM	Parts per Million
PRPs	Potentially Responsible Parties
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
SEET	Section of Environmental Epidemiology and Toxicology
SLRA	Screening Level Risk Assessment
USGS	United States Geological Survey

Summary and Statement of Issues

On March 8, 2004, the United States Environmental Protection Agency (EPA) proposed the Devil's Swamp Lake site in Baton Rouge, East Baton Rouge Parish, Louisiana, to the National Priorities List (NPL). Health Consultations such as this are conducted to evaluate sites proposed to the NPL. As part of prudent public health practices, the Louisiana Department of Health and Hospitals/Office of Public Health/Section of Environmental Epidemiology (LDHH/OPH/SEET) has reviewed catfish and largemouth bass data from the Devil's Swamp Lake site, dated from March, June and November 1997. This document serves as a review of possible pathways of human exposure to contaminants detected in catfish and largemouth bass from the Devil's Swamp Lake site. Under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), SEET staff reviewed said data to determine whether ingestion of the fish would pose a threat to human health and to establish what further public health actions, if any, may be needed.

Background

Site Description and History

Devil's Swamp Lake is in a large flood plain area which consists of Devil's Swamp Lake and areas of Devil's Swamp immediately adjoining the lake. The site is near Scotlandville, East Baton Rouge Parish, Louisiana, about ten miles north of the City of Baton Rouge [1]. The Devil's Swamp flood plain is a freshwater wetland covering approximately 12 square miles of land along the east side of the Mississippi River. From its southern end, Devil's Swamp extends about five to six miles to the north. Devil's Swamp Lake is characterized as a man-made lake, resulting from the construction of Baton Rouge Harbor in 1973. Baton Rouge Harbor is located just south of Devil's Swamp Lake along the east side of Devil's Swamp. Devil's Swamp Lake is oxbow-shaped, having a width of approximately 400 feet and a length of about 4200 feet. The dredged out area of the lake covers approximately 39 acres, however, the overall lake area is about 64 acres as a result of natural ponds that connect directly to the dredged area [2]. During flood conditions, the western and northern boundaries of the lake are indistinct as it coalesces with water of the surrounding swamp. A centerline depth ranging from approximately 10 to 25 feet has been measured in the lake during low water conditions. However the lake stage, and thus the lake depth, varies considerably from the high-water season in the spring to the low water season in the fall. The lake stage depicted on United States Geological Survey (USGS) topographic maps is 30 feet above mean sea level, but was observed to fluctuate 10 to 15 feet between high and low water sampling events [3].

Prior to the 1950s, uses of the area around Devil's Swamp and Devil's Swamp Lake consisted of farming, grazing, and some logging. Rapid industrialization throughout the 1960s and 1970s resulted in numerous waste storage sites and subsequent releases of hazardous substances in areas surrounding Devil's Swamp. The sites were used as depositories for various organic wastes from petrochemical processes and refining industries, landfills and receiving basins.

The Clean Harbors Environmental Services, Inc. (Clean Harbors), formerly Rollins Environmental Services of Louisiana, Inc. (Rollins), is located north of the Baton Rouge Harbor

and west of Scenic Highway. Rollins began operating a hazardous chemical disposal facility in 1971. Most of the landfill cells and receiving basins were below grade and used the natural clay soils for liners. In 1980, Rollins initiated improvements to the facility which included excavation of previous disposal units, the construction of new landfills with liners (clay and synthetic), and implementation of a groundwater monitoring and recovery program. However, in 1986 sampling conducted by the Louisiana Department of Environmental Quality (LDEQ) confirmed the presence of polychlorinated biphenyls (PCBs) in sediments from Devil's Lake and along the effluent wastewater ditch from the former Rollins facility. In January 1991, Rollins collected sediment samples from the upper part of the ditch during a Resource Conservation and Recovery Act (RCRA) facility investigation sampling event, and a follow-up sampling event in December 1992. Sediment samples collected from 16.5 feet upstream to 825 feet downstream of the outfalls contained PCBs at concentrations as high as 105 parts per million (ppm). The contamination in Devil's Swamp Lake and the southern part of Devil's Swamp includes PCBs attributable to the Rollins outfall ditch [1]. The extent and volume of contamination have not been established [2].

The Clean Harbors facility has a National Pollutant Discharge Elimination System (NPDES) permit allowing treated wastewater and storm water to be discharged since April 1970. The facility outfall historically discharged to the north end of Devil's Swamp Lake before the present discharge line of the treated wastewater to the Mississippi River was installed and permitted in June 1993. Currently, Clean Harbors is permitted under the RCRA and the Hazardous and Solid Waste Amendments (HSWA) [2].

In October 1987, the LDHH and LDEQ issued a fish-consumption advisory for Devil's Swamp Lake. The perimeter of the advisory was expanded through an advisory update to include Devil's Swamp and Bayou Baton Rouge in July 1993. The current advisory recommends that fish be consumed during no more than two meals per month in the areas of Devil's Swamp, Devil's Swamp Lake, and Bayou Baton Rouge. The contaminants in the state's fish consumption advisory update include hexachlorobenzene (HCB) and hexachlorobutadiene (HCBD) [4].

Several Preliminary Assessments and Site Inspections were completed by the Environmental Protection Agency (EPA). In 1995, the EPA completed a Screening Level Risk Assessment (SLRA). This screening report indicated a potential for adverse risk. Based on the limited information available in 1995, contaminants could be posing adverse effects to biota at the site; therefore, EPA initiated a comprehensive risk assessment to collect more information, and further evaluate the site as well as the potential risk. In 1997, EPA conducted sampling activities during high and low flow conditions. Data collected were analyzed and validated by EPA in 1998. A Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment were completed in early 1999 by the EPA. Both assessments state that concentrations of PCBs can produce unacceptable risks to human health and to the environment [2].

In April 2000, at the request of the EPA, SEET and ATSDR completed a health consultation to evaluate the EPA HHRA and determine whether it is protective of public health. SEET concurred that the predominant contaminants of concern are, HCB, HCBD, and PCBs [5].

On January 27, 2005, SEET visited the Devil's Swamp Lake site, accompanied by a representative from LDEQ. The inspection revealed a private hunting club trail extending several miles along the perimeter of Devil's Swamp Lake. There were multiple foot paths and boat launch paths over the embankment along the trail, with fresh mud tracks from all-terrain vehicles (ATVs) and trailer hitches carrying boats and canoes along the trail itself. SEET staff encountered several boats, canoes, ATVs and trailer hitches along the trail, as well as an animal slaughtering waste catchall, a barbecue pit, a toilet, and a map posting station for recreationists to post their location in the area. There were several deer hunting blinds in the lake itself as well as in the trees. There were fresh deer and muskrat tracks along the trail, and there was excessive littering in the lake. The site was obviously accessed by recreational users for hunting, fishing and leisure. These areas along Devil's Swamp Lake are not fenced, and can be accessed by foot or by ATV. There is an area located near Agway Industries where a boat trailer hitch was parked. Recreationists may park their vehicles in this area and then use their ATVs for transporting boats and canoes into the Devil's Swamp Hunting Club (DSHC) trail.

Additionally, along the Kansas City Southern Railroad, there were several areas where the fencing was plowed down, possibly by ATVs trying to reach the DSHC trail, thereby providing additional access to the site. Warning signs that the site is a hazardous waste site and to stay off of the property, were downed in at least two different areas along the railway.

On April 29, 2005, SEET visited the Devil's Swamp Lake site, accompanied by two representatives from the Louisiana Department of Wildlife and Fisheries (LDWF). The visit was conducted by motor boat to investigate the lake and its adjoining swamp areas. SEET and LDWF were unable to reach Devil's Swamp Lake, due to insufficient water levels. We were able to access areas of Bayou Baton Rouge, which is included in the fish consumption advisory, and found only two remaining advisory placards posted by LDHH. Both placards were faded and worn with a significant amount of water damage, due to a fluctuation of water levels in the area. The placement of the advisory placards only accounts for low water conditions.

Devil's Swamp Lake was proposed to the National Priorities List in the Federal Register on March 8, 2004. The EPA established a public comment period that was fulfilled and will make a final listing decision after considering the relevant comments if the site continues to meet the requirements for listing. The EPA and LDEQ are preparing a response to comments and continue enforcement activities to identify Potentially Responsible Parties (PRPs) before commencing a Remedial Investigation/Feasibility Study (RI/FS) at this site. As of July 2006, a final decision regarding the NPL site listing has yet to be released.

Demographics

The Devil's Swamp Lake site lies within a large plain area near the city of Scotlandville (U.S. Census Bureau 2000 population 22,106), in East Baton Rouge Parish, (U.S. Census Bureau 2000 population 412,952) Louisiana. The coordinates of the Devil's Swamp site are 30:33:43 north latitude and -91:13:14 west longitude. According to 2000 census data, fifty-six percent (56%) of the parish population is Caucasian; forty-four percent (44%) are non-Caucasian. The average annual income for East Baton Rouge Parish is above the average for the state. The number of

people in the parish that are considered below poverty level is 17.9%, compared to the yearly average for Louisiana of 19.6%.

The nearest community to the Devil's Swamp Lake site is Alsen, Louisiana, approximately $\frac{3}{4}$ of a mile away. The total population of Alsen is 22,106 people, with 94% non-Caucasian. According to census data, the average household income is \$19,868, with 18,245 persons below poverty level.

The largest community in the area of the site is the city of Scotlandville, about ten miles north of the city of Baton Rouge. The community is predominately rural with a few houses located about 800 to 1000 feet from the Bayou Baton Rouge, near the northern portion of the swamp and the crossing of Bayou Baton Rouge under Scenic Highway.

Discussion

Environmental Data

EPA contractors collected catfish and largemouth bass from five sampling stations at Devil's Lake (DL-1, DL-3, DL-4, DL-5, DL-6) and from three sampling stations at the South Swamp (SB-2, SS-2, SS-5). The sample collections took place during three separate events in March, June and November 1997, and were analyzed for arsenic, pesticides, polychlorinated biphenyls (PCBs) and chlorinated hydrocarbons. SEET attempted to analyze the data from these three sampling events, but was unsuccessful due to the following data limitations.

The variations in fillet concentrations from March to November 1997 would be addressed by averaging the data and treating it as one data set. However, SEET found inconsistencies in the data, as catfish samples from 8 sampling stations at Devil's Lake and the South Swamp were mislabeled as duplicate samples and/or the primary samples were missing. Also, fourteen primary and duplicate samples had largely different concentrations, which would require rejection of the samples under the Louisiana Fish Consumption Advisory Program. Several attempts to reconcile the data inconsistencies were unsuccessful. In addition to the data inconsistencies, the limited size and age of the data set would not accurately reflect current site conditions at the Devil's Swamp Lake site. It is SEET's recommendation that LDEQ conduct additional sampling from Devil's Lake and the South Swamp. SEET will evaluate new data as it becomes available.

Exposure Pathways

To determine whether nearby residents are exposed to site-related contaminants, SEET and ATSDR evaluate the environmental and human components that lead to human exposure. This pathway analysis consists of five elements: a source of contamination, transport through an environmental medium, a point of exposure, a route of human exposure, and a receptor population.

ATSDR categorizes an exposure pathway 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 currently occurring, or will occur in the future. Potential pathways, however, require that at least one of the five

elements is missing, but could exist. Potential pathways 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 Devil's Swamp Lake site is separated into two subareas identified for human health exposures. These subareas include Devil's Lake, and the South Swamp.

Devil's Lake

Catfish and Largemouth Bass

A completed exposure pathway existed in the past and is presently occurring via ingestion for recreational fishers in the Devil's Lake area. Historical and current evidence notes fishing activities throughout the area. Access generally occurs by walking across private, partially fenced lands or by boating across Baton Rouge Barge Harbor, with a short portage to the lake. Due to both physical and legal access constraints, recreational activities are limited to a small population of individuals. The swamp and bayou are privately owned and access is controlled by the landowners. Boats, ATVs, barbeque pits and hunting/fishing supplies were seen cached along the shore during the January 2005 site visit conducted by SEET. Future exposures are likely. Until new data become available, SEET recommends that individuals adhere to the current consumption advisory of no more than two 8-ounce fish meals per month.

South Swamp

Catfish and Largemouth Bass

In the past, a completed exposure pathway existed via ingestion for recreational fishers in the South Swamp. Historical field observations note evidence of fishing activities throughout the area. Potential exposures may occur in the future. Trot lines are observed throughout this area, suggesting ongoing exposures. Access to the south swamp occurs by boat from the Mississippi River, either by entering the mouth of the Bayou Baton Rouge when water levels permit, or by temporarily mooring a boat into the swamp. The south swamp may also be accessed from devil's lake. There is a maintained floating fishing and hunting camp located in the channel of the south bayou. These are private lands and permission to access is required. Exposures are limited to local residents/landowners and their guests. The size of the population is unknown, but is likely to be a few dozen people. Until new data become available, SEET recommends that individuals adhere to the current consumption advisory of no more than two 8-ounce fish meals per month.

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.

While it is not expected that children would recreate at the Devil's Swamp Lake site, it is feasible that they may ingest fish from the site. SEET recommends that children adhere to the current consumption advisory of no more than two 4-ounce fish meals per month.

Conclusions

SEET attempted to analyze catfish and largemouth bass data from the March, June and November 1997 sampling event, but was unsuccessful due to data quality limitations. Exposures to catfish and largemouth bass are occurring at Devil's Lake and the South Swamp. SEET recommends that adults and children adhere to the current consumption advisory of no more than two 8-ounce or 4-ounce fish meals per month, respectively. If the current fish consumption advisory is followed, SEET concludes that there is no apparent public health hazard via ingestion of catfish and largemouth bass from the Devil's Swamp Lake site. However, based on historical data, if the advisory is not followed, a public health hazard could exist from consumption of fish.

Recommendations

1. SEET recommends that adults and children adhere to the current consumption advisory of no more than two 8-ounce or 4-ounce fish meals per month, respectively.
2. SEET recommends that LDEQ conduct additional sampling at the Devil's Swamp Lake site.

Public Health Action Plan

The following describes the actions to be taken by SEET at the Devil's Swamp Lake site and surrounding areas. The purpose is to ensure that this health consultation not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. The public health actions which have been implemented by ATSDR/SEET are as follows:

Actions Planned

1. SEET will analyze new fish data when it becomes available and present the findings to the community in the form of a health consultation.
2. SEET will conduct additional health education to inform area landowners/residents of the current fish consumption advisory for the Devil's Swamp Lake site.
3. SEET will continue to work with LDEQ and LDWF to (re)post warning signs and

advisory placards.

4. The information produced within this health consultation will be disseminated to the community surrounding the Devil's Swamp Lake site.

Actions Taken

1. In October 1987, LDHH and LDEQ issued a fish-consumption advisory for Devil's Swamp Lake. The perimeter of the advisory was expanded through an advisory update to include Devil's Swamp and Bayou Baton Rouge in July 1993 [4].
2. In April 2000, at the request of the EPA, SEET and ATSDR completed a health consultation to evaluate the 1999 HHRA and determine whether it is protective of public health. SEET concurred with the predominant contaminants of concern, HCB, HCBd, and PCBs, and the area of investigation covered in the EPA HHRA [5].
3. In January 2005, SEET and LDEQ conducted a site visit to make observations for pathways and exposure analyses.
4. In April 2005, SEET and LDWF conducted a site visit by boat to examine Fish and Recreation Advisory postings and to make observations for exposure and pathways analyses.
5. SEET has collaborated with EPA, LDWF and LDEQ in efforts to evaluate the public health impact of the Devil's Swamp Lake site.

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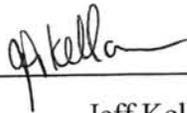
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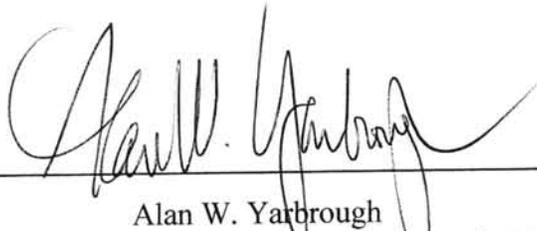
Certification

This health consultation for Devil's Swamp Lake was prepared by Louisiana Department of Health and Hospitals under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodology and procedure existing at the time the health consultation was initiated. Editorial review was completed by the Cooperative Agreement Partners.



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The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.



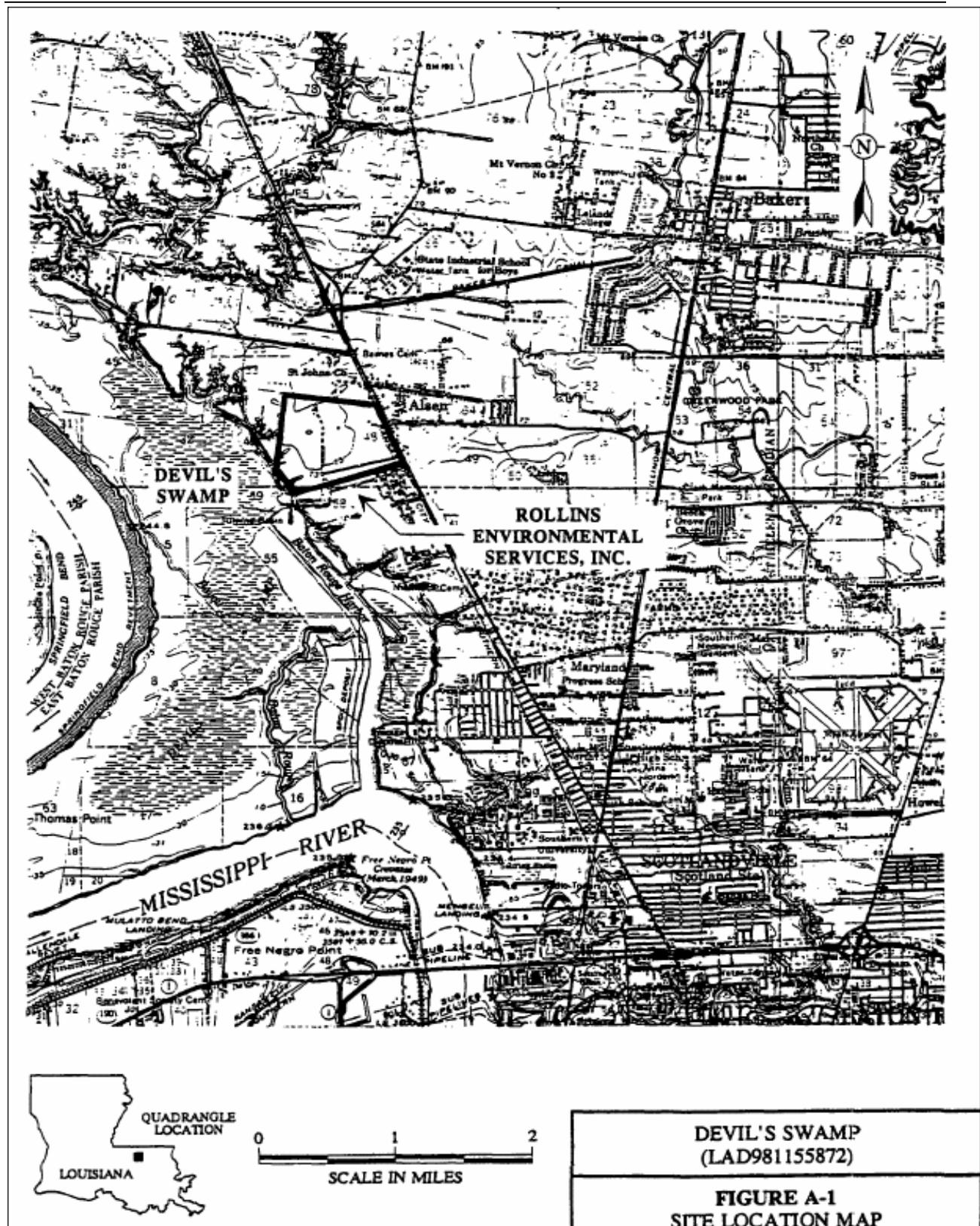
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5. Louisiana Department of Health and Hospitals. Health Consultation Devil's Swamp Lake, Baton Rouge, East Baton Rouge Parish, Louisiana. New Orleans: Office of Public Health. April 2000.

Figures

Devil's Swamp Lake, A Review of Fish Data
East Baton Rouge Parish, Louisiana



Source: Attachment A: US EPA Hazard Ranking System Documentation Record for Devil's Swamp Lake, February 2004.