Health Consultation

HURRICANE RESPONSE SAMPLING ASSESSMENT FOR
GULF STATES UTILITIES COMPANY
(A/K/A NORTH RYAN STREET FACILITY)

LAKE CHARLES, CALCASIEU PARISH, LOUISIANA

EPA Facility ID: LAD985169317

December 11, 2017

Preparation of this report was supported by funds from a
Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR),
U.S. Department of Health and Human Services.

This document was prepared by the
Louisiana Department of Health's Section of Environmental Epidemiology & Toxicology.
This document has not been formally reviewed and cleared by ATSDR.

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 Partners which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR Toll Free at
1-800-CDC-INFO
or
Visit our Home Page at: http://www.atsdr.cdc.gov

HEALTH CONSULATION

HURRICAN RESPONSE SAMPLING ASSESSMENT FOR GULF STATES UTILITIES COMPANY (A/K/A NORTH RYAN STREET FACILITY)

LAKE CHARLES, CALCASIEU PARISH, LOUISIANA

EPA Facility ID: LAD985169317

Prepared By:

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

Table of Contents

List of Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
EPA	Environmental Protection Agency
FYR	Five Year Review Report
GC/MS	Gas Chromatography-Mass Spectrometry
GSU	Gulf State Utilities
LDH	Louisiana Department of Health and Hospitals
LDEQ	Louisiana Department of Environmental Quality
NPL	National Priorities Listing
OPH	Office of Public Health
PHILIS	Portable High-Throughput Integrated Laboratory Identification System
ROD	Record of Decision
SEET	Section of Environmental Epidemiology and Toxicology
SVOCs	Semi-Volatile Organic Compounds
VOCs	Volatile Organic Compounds

Executive Summary

INTRODUCTION

On August 26, 2017, Hurricane Harvey made landfall on the Texas coast, which caused massive damages and flooding in broad areas of the state. After losing energy and weakening to a Tropical Storm, Harvey made a second landfall on the southwest coast of Louisiana and continued traveling northeast across the U.S. Environmental Protection Agency (EPA) Region 6, which includes the states of Texas and Louisiana. EPA dispatched personnel and resources to the region to assess hurricane damage, including possible damage to National Priorities Listing (NPL) sites.

Beginning on September 6, 2017, the EPA Region 6 Superfund Division directed potentially responsible parties to start collecting samples at 9 Louisiana Superfund Sites to confirm no contaminants were released with the passing storm. If a potentially responsible party had not yet been identified, EPA conducted independent sampling. This sampling event is part of a longer-term assessment that will be used to transition sites to their normal cleanup operations [1]. (Appendix A)

Through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), the Louisiana Department of Health/Office of Public Health/Section of Environmental Epidemiology and Toxicology (LDH/OPH/SEET) has developed the following health consultation to review the groundwater samples collected at the Gulf State Utilities (GSU)-North Ryan Street facility. The primary goal of this document is to determine whether the GSU-North Ryan St. site groundwater monitoring wells contained any contaminants at levels that would pose a threat to human health following Hurricane Harvey, and if such levels are found, to establish what public health actions, if any, are needed.

CONCLUSION

The physical damage Hurricane Harvey caused at the GSU-North Ryan Street site did not compromise the remedy instituted to protect the public against site-related health hazards. A post-hurricane evaluation of site groundwater detected no contaminants. Groundwater from the GSU-North Ryan Street site poses no apparent public health hazard to the community surrounding the site. Groundwater from the GSU-North Ryan Street site poses no apparent public health hazard to the community surrounding the site.

BASIS FOR DECISION	Exposure to on-site groundwater is **not a completed exposure pathway** because the water does not come into contact with humans or other biological organisms, does not feed the deep aquifers from which drinking water is obtained, and does not degrade surface water in the Calcasieu River. The public would therefore not be exposed to groundwater from the GSU-North Ryan Street site
NEXT STEPS	LDH/OPH/SEET will be available to assess any additional samples collected from the GSU-North Ryan Street 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 community members and stakeholders in Calcasieu Parish, Louisiana.
FOR MORE INFORMATION	If you have further concerns about the site, you can call SEET at 1-888-293-7020 or ATSDR at 1-800-CDC-INFO and ask for information about the GSU-North Ryan Street site.

Background and Site History

The 19-acre GSU-North Ryan Street facility is located at 303 North Ryan Street, Lake Charles, Calcasieu Parish, Louisiana, 70601. The site is bounded to the north by River Road and the Calcasieu River, to the east by North Ryan Street and land zoned for industrial use, and to the south by commercial businesses. A wastewater treatment plant and holding ponds are located southwest of the facility, and the City of Lake Charles owns cypress wetland near the facility's western border [2]. Prior to 1926, a manufactured gas plant operated at the site. Coal tar byproducts generated during gas plant activities were reportedly discharged into marshlands west of the gas plant. Additionally, a 6-acre wetland area was used as a landfill for the disposal of electric equipment, poles, appliances, and other waste. Historical operations and disposal practices contaminated soil, sediment, surface water, and groundwater with hazardous chemicals. EPA has selected and implemented cleanups of the contaminated soils, sediment, and groundwater at the site.

EPA issued a Record of Decision (ROD) for groundwater (referred to as operable unit 1) in 2000, which selected monitored natural attenuation as the groundwater remedy. The responsible party continues to perform annual groundwater monitoring and post-removal site control inspections. GSU, with oversight from EPA, performed a removal action from 2000-2003 to address on-site contaminate oil and contaminated Calcasieu River sediment [3]. In 2004, the EPA issued a ROD addressing the soil contamination (referred to as operable unit 2) at the site. EPA selected "no further action" for soil at the site based on the low-level risks remaining after the removal actions [4]. The EPA issued the second Five Year Review Report (FYR) for the

GSU-North Ryan Street Superfund site in August 2015 and determined that the remedy is protective in the short term. The next site evaluation will be during the Superfund Five-Year Review.

Demographics

The GSU-North Ryan Street site is located in the northwestern region of Lake Charles, LA, within the 70601 zip code and census tract 0002. Approximately 1,535 people live within a 1-mile radius of the GSU-North Ryan Street site [5]. Census 2015 estimates report a total population of 1,667 within the census block that encompassed the site. The largest ethnic group in this census block at that time was African American (87.8%), followed by Caucasian (6.4%), and those identifying themselves as belonging to 2 or more races (4.0%). Less than two percent (1.14%) of the population identified themselves as Hispanic or Latino. Twenty point six percent (20.6%) of the population age 25 years and over in 2015 had earned at least a high school diploma. The median household income was $25,843 [6].

Discussion

Data Used

On September 13, 2017, the CH2M HILL, Inc. (CH2M) environmental consulting company conducted a site inspection of the GSU-North Ryan Street site at EPA's request. The team was accompanied by representatives from EPA, Louisiana Department of Environmental Quality (LDEQ), and Entergy Corporation. The site visit was performed to determine whether remedial actions at the site had been compromised by Hurricane Harvey.

Groundwater samples were collected from two monitoring wells (MW-1 and MW-7) at the site on September 13, 2017, and analyzed for target volatile organic compounds (VOCs) and target semi-volatile organic compounds (SVOCs) to evaluate the potential effects from Hurricane Harvey. Appendix B shows the location of the two wells sampled at the site. Groundwater samples for VOC and SVOC analysis were submitted to EPA's Portable High-Throughput Integrated Laboratory System (PHILIS) mobile laboratory. The VOCs were analyzed using gas chromatography-mass spectrometry (GC/MS) by EPA Method 8260C, and the SVOCs were analyzed using GC/MS by EPA Method 8270D. Laboratory results were submitted directly to the EPA. At the direction of the EPA, no soil samples were collected at this site for analysis [7]. The site inspection team noted no visible issues on the property. Appendix C includes photographs taken during the site visit.

No VOCs or SVOCs were detected in the groundwater samples. The sample results indicated that the site remedy is operating as intended; it is protective of human health and the environment. Post-Hurricane Harvey condition of groundwater at GSU-North Ryan Street is consistent with historical site conditions that existed before the hurricane made landfall [1]. There should be no increased potential for exposure to site-related contaminants in the community around the GSU-North Ryan Street facility.

Exposure Pathways

To determine whether a child or adult would be exposed to contaminants detected in groundwater from the GSU-North Ryan site, LDH/OPH/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 some kind of environmental medium, a point of exposure, a route of 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 all 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.

Monitoring well 1 (MW-1) monitors water in the pocket of sand (the "granular unit") under the site, and monitoring well 7 (MW-7) monitors shallow portions of the clay layer (the "cohesive unit"). The continuous clay layer under the shallow aquifers onsite and the very low hydraulic conductivity measured in these aquifers make it unlikely that groundwater contaminants from the site will migrate into the public water supply or offsite into the Calcasieu River [2, 8]. Exposure to on-site groundwater is **not a completed pathway** because the water does not come into contact with humans or other biological organisms, does not feed the deep aquifers from which drinking water is obtained, and does not degrade surface water in the Calcasieu River. The public would therefore not be exposed to groundwater from the GSU site.

Health Effects Evaluation

There are no completed or potential exposure pathways at the GSU-North Ryan Street site. Also, no VOCs or SVOCs were detected in the groundwater samples retrieved from monitoring wells 1 and 7 (MW-1 and MW-7) on the GSU-North Ryan Street site. Therefore, groundwater at the GSU-North Ryan Street site should pose no apparent public health hazard to residents.

Child Health Considerations

A child's lower body weight and higher intake rate results in a greater does of hazardous substance per unit of body weight. If exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Children are more susceptible to the toxic effects of contaminants than the general population because their bodies' detoxification mechanisms have not yet matured. Children are also dependent on adults for access to housing and medical care, as well as risk identification. Adults need as much information as possible to make informed decisions regarding their children's health.

Children will not be exposed to groundwater from the GSU-North Ryan Street site since there is no potential for a completed pathway of exposure at the facility.

Conclusions

The physical damage Hurricane Harvey caused at the GSU-North Ryan Street site did not compromise the remedy instituted to protect the public against site-related health hazards. A post-hurricane evaluation of site groundwater detected no contaminants. Groundwater from the GSU-North Ryan Street site poses no apparent public health hazard to the community surrounding the site.

Recommendations

There are no recommendations to be made at this time regarding the groundwater at the GSU-North Ryan Street site. LDH/OPH/SEET will examine future GSU-North Ryan Street site data as needed or requested.

Public Health Action Plan

The information produced within this health consultation should be disseminated to the community members and stakeholders within Calcasieu Parish, Louisiana.

Preparers of this Report

Louisiana Department of Health
Office of Public Health
Section of Environmental Epidemiology and Toxicology
Telephone Number: toll-free (888) 293-7020

Author:
Matthew Spence, M.P.H.
Environmental Health Scientist Coordinator

State Reviewers:
Kathleen Aubin, M.S.P.H.
Environmental Health Scientist Supervisor
Louisiana APPLETREE PI

Shannon Soileau, M.S.
Environmental Health Scientist Manager

Luann White, Ph.D., D.A.B.T., Toxicology Consultant, Tulane School of Public Health and Tropical Medicine

References

1. United States Environmental Protection Agency Region 6 Superfund Division. Hurricane Harvey Evaluation Report: Gulf State Utilities North Ryan Street Superfund Site, Lake Charles, Louisiana. 11 Oct 2017.

2. United States Environmental Protection Agency Region 6. Action Memorandum: North Ryan Street Site, Lake Charles, Calcasieu Parish, Louisiana. Accessed 11 Oct 2017 at: https://semspub.epa.gov/work/06/141034.pdf.

3. United States Environmental Protection Agency Region 6. Record of Decision – Gulf State Utilities – North Ryan Street Site, Ground Water Operable Unit. Sep 2000. Accessed 16 Oct 2017 at: https://semspub.epa.gov/work/06/923261.pdf.

4. United States Environmental Protection Agency Region 6. Record of Decision Summary – Gulf State Utilities – North Ryan Street Superfund Site, Operable Unit 2 – Residual Soil Contamination. Aug 2004. Accessed 16 Oct 2017 at: https://semspub.epa.gov/work/06/173491.pdf.

5. EJSCREEN Census 2010 Summary Report. (2010). Retrieved October 11, 2017, from https://ejscreen.epa.gov/mapper/demogreportpdf.aspx?report=census2010sf1&coords=-93.21916%2C30.24083&feattype=point&radius=1.0.

6. United States Census Bureau. Total Population, Race, Hispanic or Latino Origin, Educational Attainment for the Population 25 Years and Over, and Median Household Income in the Past 12 Months: 2015. Summary File. Block Group 1, Census Tract 2, Calcasieu Parish, Louisiana. Generated by Matthew C Spence, using US Census Bureau American FactFinder engine. Accessed 11 October 2017 at URL: https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t.

7. CH2M HILL, Inc. Hurricane Harvey Site Assessment: Trip Report for Gulf State Utilities (North Ryan Street), Louisiana, Site Inspection and Sampling Results. CH2M Technical Memorandum Project No. 697243.SS.36. 13 Oct 2017.

8. Black & Veatch. 2011 Ground Water Monitoring Report: North Ryan Street/Lake Charles Manufactured Gas Plant Site. Prepared for Entergy Gulf States Louisiana, LLC. Mar 2012.

APPENDIX A: VOC and SVOC Groundwater Monitoring Results

Sample ID: GSU-GW-001
Laboratory ID: C17I008-01 (Water)
Laboratory: PHILIS
Instrument ID: GC/MS #5
Method: Semi-Volatile Organic Compounds by EPA Method 8270D

Analyte	Result	Reportable Limit	Units
Phenol	ND	25.0	ug/L
Bis(2-chloroethyl)ether	ND	25.0	ug/L
2-Chlorophenol	ND	25.0	ug/L
2-Methylphenol	ND	25.0	ug/L
2,2'-Oxybis(1-chloropropane)	ND	25.0	ug/L
N-Nitroso-di-n-propylamine	ND	25.0	ug/L
Hexachloroethane	ND	25.0	ug/L
Nitrobenzene	ND	25.0	ug/L
Isophorone	ND	25.0	ug/L
2-Nitrophenol	ND	25.0	ug/L
2,4-Dimethylphenol	ND	25.0	ug/L
Bis(2-chloroethoxy)methane	ND	25.0	ug/L
2,4-Dichlorophenol	ND	25.0	ug/L
Naphthalene	ND	25.0	ug/L
4-Chloroaniline	ND	25.0	ug/L
Hexachlorobutadiene	ND	25.0	ug/L
4-Chloro-3-methylphenol	ND	25.0	ug/L
2-Methylnaphthalene	ND	25.0	ug/L
Hexachlorocyclopentadiene	ND	25.0	ug/L
2,4,6-Trichlorophenol	ND	25.0	ug/L
2,4,5-Trichlorophenol	ND	25.0	ug/L
2-Chloronaphthalene	ND	25.0	ug/L
2-Nitroaniline	ND	25.0	ug/L
Dimethylphthalate	ND	50.0	ug/L
2,6-Dinitrotoluene	ND	25.0	ug/L
Acenaphthylene	ND	25.0	ug/L
Acenaphthene	ND	25.0	ug/L
3-Nitroaniline	ND	25.0	ug/L
2,4-Dinitrophenol	ND	100.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
Dibenzofuran	ND	25.0	ug/L

2,4-Dinitrotoluene	ND	25.0	ug/L
Diethylphthalate	ND	50.0	ug/L
4-Chlorophenyl-phenylether	ND	25.0	ug/L
Fluorene	ND	25.0	ug/L
4-Nitroaniline	ND	50.0	ug/L
4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Bromophenyl-phenylether	ND	25.0	ug/L
Hexachlorobenzene	ND	25.0	ug/L
Pentachlorophenol	ND	50.0	ug/L
Phenanthrene	ND	25.0	ug/L
Anthracene	ND	25.0	ug/L
Carbazole	ND	25.0	ug/L
Di-n-butylphthalate	ND	50.0	ug/L
Fluoranthene	ND	25.0	ug/L
Pyrene	ND	25.0	ug/L
Butylbenzylphthalate	ND	50.0	ug/L
Benzo(a)anthracene	ND	25.0	ug/L
Bis(2-ethylhexyl)phthalate	ND	50.0	ug/L
Chrysene	ND	25.0	ug/L
Di-n-octylphthalate	ND	50.0	ug/L
Benzo(b)fluoranthene	ND	25.0	ug/L
Benzo(k)fluoranthene	ND	25.0	ug/L
Benzo(a)pyrene	ND	25.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	25.0	ug/L
Dibenzo(a,h)anthracene	ND	25.0	ug/L
Benzo(g,h,i)perylene	ND	25.0	ug/L

[1] **ND = non-detectable**

Sample ID: GSU-GW-001
Laboratory ID: C17I008-01 (Water)
Laboratory: PHILIS
Instrument ID: GC/MS #4
Method: Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Reportable Limit	Units
Dichlorodifluoromethane	ND	2.00	ug/L
Chloromethan	ND	2.00	ug/L
Vinyl Chloride	ND	2.00	ug/L
Bromomethane	ND	2.00	ug/L
Chloroethane	ND	2.00	ug/L
Trichlorofluoromethane	ND	2.00	ug/L
1,1-Dichloroethene	ND	2.00	ug/L
Methylene chloride	ND	5.00	ug/L
Methyl tert-butyl ether	ND	2.00	ug/L
Acetone	ND	10.0	ug/L
trans-1,2-Dichloroethene	ND	2.00	ug/L
1,1-Dichloroethane	ND	2.00	ug/L
cis-1,2-Dichloroethene	ND	2.00	ug/L
Bromochloromethane	ND	2.00	ug/L
Chloroform	ND	2.00	ug/L
Carbon tetrachloride	ND	2.00	ug/L
1,1,1-Trichloroethane	ND	2.00	ug/L
2-Butanone	ND	10.0	ug/L
Benzene	ND	2.00	ug/L
1,2-Dichloroethane	ND	2.00	ug/L
Trichloroethene	ND	2.00	ug/L
1,2-Dichloropropane	ND	2.00	ug/L
Bromodichloromethane	ND	2.00	ug/L
cis-1,3-Dichloropropene	ND	2.00	ug/L
Toluene	ND	2.00	ug/L
Tetrachloroethene	ND	2.00	ug/L
trans-1,3-Dichloropropene	ND	2.00	ug/L
4-Methyl-2-pentanone	ND	10.0	ug/L
1,1,2-Trichloroethane	ND	2.00	ug/L
Dibromochloromethane	ND	2.00	ug/L
1,2-Dibromoethane	ND	2.00	ug/L
2-Hexanone	ND	10.0	ug/L
Chlorobenzene	ND	2.00	ug/L

Ethylbenzene	ND	2.00	ug/L
m,p-Xylene	ND	6.00	ug/L
o-Xylene	ND	2.00	ug/L
Xylene (total)	ND	6.00	ug/L
Bromoform	ND	2.00	ug/L
Styrene	ND	2.00	ug/L
Isopropylbenzene	ND	2.00	ug/L
1,1,2,2-Tetrachloroethane	ND	2.00	ug/L
1,3-Dichlorobenzene	ND	2.00	ug/L
1,4-Dichlorobenzene	ND	2.00	ug/L
1,2-Dichlorobenzene	ND	2.00	ug/L
1,2-Dibromo-3-chloropropane	ND	5.00	ug/L
1,2,4-Trichlorobenzene	ND	2.00	ug/L
1,2,3-Trichlorobenzene	ND	2.00	ug/L

[1] ND = non-detectable

Sample ID: GSU-GW-002
Laboratory ID: C17I008-02 (Water)
Laboratory: PHILIS
Instrument ID: GC/MS #5
Method: Semi-volatile Organic Compounds by EPA Method 8270D

Analyte	Result	Reportable Limit	Units
Phenol	ND	25.0	ug/L
Bis(2-chloroethyl)ether	ND	25.0	ug/L
2-Chlorophenol	ND	25.0	ug/L
2-Methylphenol	ND	25.0	ug/L
2,2'-Oxybis(1-chloropropane)	ND	25.0	ug/L
N-Nitroso-di-n-propylamine	ND	25.0	ug/L
Hexachloroethane	ND	25.0	ug/L
Nitrobenzene	ND	25.0	ug/L
Isophorone	ND	25.0	ug/L
2-Nitrophenol	ND	25.0	ug/L
2,4-Dimethylphenol	ND	25.0	ug/L
Bis(2-chloroethoxy)methane	ND	25.0	ug/L
2,4-Dichlorophenol	ND	25.0	ug/L
Naphthalene	ND	25.0	ug/L
4-Chloroaniline	ND	25.0	ug/L
Hexachlorobutadiene	ND	25.0	ug/L
4-Chloro-3-methylphenol	ND	25.0	ug/L
2-Methylnaphthalene	ND	25.0	ug/L
Hexachlorocyclopentadiene	ND	25.0	ug/L
2,4,6-Trichlorophenol	ND	25.0	ug/L
2,4,5-Trichlorophenol	ND	25.0	ug/L
2-Chloronaphthalene	ND	25.0	ug/L
2-Nitroaniline	ND	25.0	ug/L
Dimethylphthalate	ND	50.0	ug/L
2,6-Dinitrotoluene	ND	25.0	ug/L
Acenaphthylene	ND	25.0	ug/L
Acenaphthene	ND	25.0	ug/L
3-Nitroaniline	ND	25.0	ug/L
2,4-Dinitrophenol	ND	100.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
Dibenzofuran	ND	25.0	ug/L
2,4-Dinitrotoluene	ND	25.0	ug/L

Diethylphthalate	ND	50.0	ug/L
4-Chlorophenyl-phenylether	ND	25.0	ug/L
Fluorene	ND	25.0	ug/L
4-Nitroaniline	ND	50.0	ug/L
4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Bromophenyl-phenylether	ND	25.0	ug/L
Hexachlorobenzene	ND	25.0	ug/L
Pentachlorophenol	ND	50.0	ug/L
Phenanthrene	ND	25.0	ug/L
Anthracene	ND	25.0	ug/L
Carbazole	ND	25.0	ug/L
Di-n-butylphthalate	ND	50.0	ug/L
Fluoranthene	ND	25.0	ug/L
Pyrene	ND	25.0	ug/L
Butylbenzylphthalate	ND	50.0	ug/L
Benzo(a)anthracene	ND	25.0	ug/L
Bis(2-ethylhexyl)phthalate	ND	50.0	ug/L
Chrysene	ND	25.0	ug/L
Di-n-octylphthalate	ND	50.0	ug/L
Benzo(b)fluoranthene	ND	25.0	ug/L
Benzo(k)fluoranthene	ND	25.0	ug/L
Benzo(a)pyrene	ND	25.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	25.0	ug/L
Dibenzo(a,h)anthracene	ND	25.0	ug/L
Benzo(g,h,i)perylene	ND	25.0	ug/L

[1] **ND = non-detectable**

Sample ID: GSU-GW-002
Laboratory ID: C17I008-02 (Water)
Laboratory: PHILIS
Instrument ID: GC/MS #4
Method: Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Reportable Limit	Units
Dichlorodifluoromethane	ND	2.0	ug/L
Chloromethane	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Bromomethane	ND	2.0	ug/L
Chloroethane	ND	2.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
1,1-Dichloroethene	ND	2.0	ug/L
Methylene chloride	ND	5.0	ug/L
Methyl tert-butyl ether	ND	2.0	ug/L
Acetone	ND	10.0	ug/L
trans-1,2-Dichloroethene	ND	2.0	ug/L
1,1-Dichloroethane	ND	2.0	ug/L
cis-1,2-Dichloroethene	ND	2.0	ug/L
Bromochloromethane	ND	2.0	ug/L
Chloroform	ND	2.0	ug/L
Carbon tetrachloride	ND	2.0	ug/L
1,1,1-Trichloroethane	ND	2.0	ug/L
2-Butanone	ND	10.0	ug/L
Benzene	ND	2.0	ug/L
1,2-Dichloroethane	ND	2.0	ug/L
Trichloroethene	ND	2.0	ug/L
1,2-Dichloropropane	ND	2.0	ug/L
Bromodichloromethane	ND	2.0	ug/L
cis-1,3-Dichloropropene	ND	2.0	ug/L
Toluene	ND	2.0	ug/L
Tetrachloroethene	ND	2.0	ug/L
trans-1,3-Dichloropropene	ND	2.0	ug/L
4-Methyl-2-pentanone	ND	10.0	ug/L
1,1,2-Trichloroethane	ND	2.0	ug/L
Dibromochloromethane	ND	2.0	ug/L
1,2-Dibromoethane	ND	2.0	ug/L
2-Hexanone	ND	10.0	ug/L
Chlorobenzene	ND	2.0	ug/L

Ethylbenzene	ND	2.0	ug/L
m,p-Xylene	ND	6.0	ug/L
o-Xylene	ND	2.0	ug/L
Xylene (total)	ND	6.0	ug/L
Bromoform	ND	2.0	ug/L
Styrene	ND	2.0	ug/L
Isopropylbenzene	ND	2.0	ug/L
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L
1,3-Dichlorobenzene	ND	2.0	ug/L
1,4-Dichlorobenzene	ND	2.0	ug/L
1,2-Dichlorobenzene	ND	2.0	ug/L
1,2-Dibromo-3-chloropropane	ND	5.0	ug/L
1,2,4-Trichlorobenzene	ND	2.0	ug/L
1,2,3-Trichlorobenzene	ND	2.0	ug/L

[1] ND = non-detectable

Sample ID: GSU-GW-001-FB
Laboratory ID: C17I008-03 (Water)
Laboratory: PHILIS
Instrument ID: GC/MS #4
Method: Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Reportable Limit	Units
Dichlorodifluoromethane	ND	2.00	ug/L
Chloromethane	ND	2.00	ug/L
Vinyl chloride	ND	2.00	ug/L
Bromomethane	ND	2.00	ug/L
Chloroethane	ND	2.00	ug/L
Trichlorofluoromethane	ND	2.00	ug/L
1,1-Dichloroethene	ND	2.00	ug/L
Methylene chloride	ND	5.00	ug/L
Methyl tert-butyl ether	ND	2.00	ug/L
Acetone	ND	10.0	ug/L
trans-1,2-Dichloroethene	ND	2.00	ug/L
1,1-Dichloroethane	ND	2.00	ug/L
cis-1,2-Dichloroethene	ND	2.00	ug/L
Bromochloromethane	ND	2.00	ug/L
Chloroform	ND	2.00	ug/L
Carbon tetrachloride	ND	2.00	ug/L
1,1,1-Trichloroethane	ND	2.00	ug/L
2-Butanone	ND	10.0	ug/L
Benzene	ND	2.00	ug/L
1,2-Dichloroethane	ND	2.00	ug/L
Trichloroethene	ND	2.00	ug/L
1,2-Dichloropropane	ND	2.00	ug/L
Bromodichloromethane	ND	2.00	ug/L
cis-1,3-Dichloropropene	ND	2.00	ug/L
Toluene	ND	2.00	ug/L
Tetrachloroethene	ND	2.00	ug/L
trans-1,3-Dichloropropene	ND	2.00	ug/L
4-Methyl-2-pentanone	ND	10.0	ug/L
1,1,2-Trichloroethane	ND	2.00	ug/L
Dibromochloromethane	ND	2.00	ug/L
1,2-Dibromoethane	ND	2.00	ug/L
2-Hexanone	ND	10.0	ug/L
Chlorobenzene	ND	2.00	ug/L

Ethylbenzene	ND	2.00	ug/L
m,p-Xylene	ND	6.00	ug/L
o-Xylene	ND	2.00	ug/L
Xylene (total)	ND	6.00	ug/L
Bromoform	ND	2.00	ug/L
Styrene	ND	2.00	ug/L
Isopropylbenzene	ND	2.00	ug/L
1,1,2,2-Tetrachloroethane	ND	2.00	ug/L
1,3-Dichlorobenzene	ND	2.00	ug/L
1,4-Dichlorobenzene	ND	2.00	ug/L
1,2-Dichlorobenzene	ND	2.00	ug/L
1,2-Dibromo-3-chloropropane	ND	5.00	ug/L
1,2,4-Trichlorobenzene	ND	2.00	ug/L
1,2,3-Trichlorobenzene	ND	2.00	ug/L

[1] ND = non-detectable

Adapted from: United Sates Environmental Protection Agency Region 6 Superfund Division. Hurricane Harvey Evaluation Report: Gulf State Utilities North Ryan Street Superfund Site, Lake Charles, Louisiana. 2017 Oct 11.

APPENDIX B: Gulf State Utilities-North Ryan Street Site Sample Locations

Adapted from: CH2M HILL, Inc. Hurricane Harvey Site Assessment: Trip Report for Gulf State Utilities (North Ryan Street), Louisiana, Site Inspection and Sampling Results. CH2M Technical Memorandum Project No. 697243.SS.36. 13 Oct 2017.

APPENDIX C: Photograph Log

View looking north toward two flush mount site monitoring wells in the foreground, the site road, and the river in the background. Monitoring well 7 (MW-7) on this right is where sample GSU-GW-001 was collected.
Date/Time: 09/13/2017 9:24 a.m.

Close view of monitoring well 7 (MW-7) showing the concrete surface completion; location of sample GSU-GW-001.
Date/Time: 09/13/2017 9:24 a.m.

Looking northeast across two flush mount monitoring wells. The sampled well MW-7 is the furthest well (near the center of the picture).
Date/Time: 09/13/2017 10:04 a.m.

Looking northeast with MW-7 in the foreground (from about 8 feet away).
Date/Time: 09/13/2017 10:04 a.m.

Opening monitoring well 1 (MW-1), looking northeast toward road and river; this is the well where sample GSU-GW-002 was collected.
Date/Time: 09/13/2017 10:09 a.m.

Looking south from MW-1 toward the rest of the GSU site.
Date/Time: 09/13/2017 10:14 a.m.

Looking east from MW-1 toward the remainder of the GSU site.
Date/Time: 09/13/2017 10:14 a.m.

Looking northwest from approximately 20 feet of MW-1 toward other wells near MW-1; MW-1 is at the furthest well pad (left of center in this picture).
Date/Time: 09/13/2017 10:14 a.m.

Looking west from MW-1 toward the remainder of the GSU site.
Date/Time: 09/13/2017 10:14 a.m.

Looking northwest across two site monitor wells toward the river. Sampled well MW-1 is the furthest well in this picture (closer to the river).
Date/Time: 09/13/2017 10:15 a.m.

Looking north at MW-1; river in background.
Date/Time: 09/13/2017 10:15 a.m.

Air monitoring at MW-1 at the start of sampling.
Date/Time: 09/13/2017 10:27 a.m.

Looking down well casing at MW-1.
Date/Time: 09/13/2017 10:27 a.m.

Adapted from: United Sates Environmental Protection Agency Region 6 Superfund Division. Hurricane Harvey Evaluation Report: Gulf State Utilities North Ryan Street Superfund Site, Lake Charles, Louisiana. 2017 Oct 11.