PROVIDENCE

April 13, 2016

original to JOA
copy to Petro 621 Taylor
Petro 10 Olmos
PER20150002

Ms. Lourdes Dugas
Air Permits Division
Office of Environmental Services
Louisiana Department of Environmental Quality
P.O. Box 4313
Baton Rouge, LA 70821-4313

RE: Response to March 30, 2016 Additional Information Request
Denka Performance Elastomer LLC
Pontchartrain Site, Laplace, St. John the Baptist Parish, Louisiana
Agency Interest No: 199310 ✓

Dear Ms. Dugas:

On behalf of Denka Performance Elastomer LLC (DPE), Providence herein submits for your review and approval the enclosed Air Quality Modeling Protocol for chloroprene emissions for DPE's Pontchartrain Site located in Laplace, St. John the Baptist Parish, Louisiana. This information is being submitted in response to the Additional Information Request dated March 30, 2016.

If you have any questions or comments, please call me at (225) 766-7400 or Mr. Patrick Walsh (DPE) at (985) 536-7573.

Sincerely,

Mindi H. Faubion

Mindi H. Faubion, PE
Manager – Air Quality

Enclosure

cc: Patrick Walsh – DPE
EPA Region VI

Certification of Compliance with Applicable Requirements

Responsible Official

I certify, under provisions in Louisiana and United States law which provide criminal penalties for false statements, that based on information and belief formed after reasonable inquiry, the statements and information attached and the compliance statement above, are true, accurate, and complete.

Signature

4-12-16
Date

Professional Engineer

I certify that the engineering calculations, drawings, and design are true and accurate to the best of my knowledge.

Signature

STATE OF LOUISIANA
MINDI HUGUET FAUBION
License No.40314
PROFESSIONAL ENGINEER IN ENVIRONMENTAL ENGINEERING

4/12/16
Date

APRIL 2016

DENKA PERFORMANCE ELASTOMER LLC
PONTCHARTRAIN SITE

AIR QUALITY MODELING PROTOCOL

AGENCY INTEREST NO. 199310

Prepared By:

Providence Engineering and Environmental Group LLC
1201 Main Street
Baton Rouge, Louisiana 70802
(225) 766-7400
www.providenceeng.com

Project Number 1132-001

PROVIDENCE

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

Denka Performance Elastomer LLC (DPE) submitted a Title V air permit minor modification application on December 8, 2015 for the HCl Recovery Unit, part of the DPE Pontchartrain Site, located in Laplace, St. John the Baptist Parish, Louisiana. This air quality dispersion modeling protocol is being submitted in response to an additional information request from the Louisiana Department of Environmental Quality (LDEQ) dated March 30, 2016 requesting that DPE submit a modeling protocol for chloroprene emissions at the DPE Pontchartrain Site.

Figure 1 shows the site location with respect to immediate surroundings and nearby populated areas.

2.0 PROCESS DESCRIPTION

The DPE Pontchartrain site includes the Neoprene Unit, Chloroprene Unit, and HCl Unit. The HCl Recovery Unit produces hydrochloric acid (HCl) by combustion of Neoprene-related process wastes. The hydrochloric acid production furnace consists primarily of two parallel independent combustion systems, each with a primary absorber, feeding a single common HCl absorption train. Each combustion system consists of a nominal 24 MMBtu/hr vortex burner, combustion chamber, spray cooling chamber, and primary absorber. Combined permitted capacity for both combustion chambers is approximately 3,853 lbs/hr of 52% chlorine feed.

Product gases leaving the combustion chamber are cooled in a quench chamber by spraying with recycled product acid. Gases exiting each spray cooing chamber enter primary absorbers to absorb HCl gas and water vapor. The process gases exit the two parallel primary absorbers and combine into one stream prior to entering the absorption train. This train consists of a secondary and tertiary absorber and a vent scrubber. HCl remaining in the cooled product gases leaving the primary absorber is absorbed in recirculating liquid flowing down the three packed absorption towers. Product acid from the primary and secondary absorber columns flows to the HCl products tanks. Gases leaving the vent scrubber enter the Dynawave unit for additional scrubbing to remove residual chlorine and HCl.

The Pontchartrain Site is a major source of Toxic Air Pollutants (TAP) as defined in LAC 33:III.Chapter 51.

3.0 POLLUTANTS TO BE MODELED

The LDEQ has requested that DPE submit an air quality dispersion modeling protocol for chloroprene in support of the Title V minor modification application submitted on December 8, 2015.

Table 3-1 presents estimated emission rates of chloroprene and the corresponding minimum emission rate (MER), TAP class, and ambient air

standard (AAS) as listed in LAC 33:III.Chapter 51. These emissions reflect the total proposed chloroprene emissions at the facility.

Table 3-1
Total TAP Emissions, MER, and AAS

Pollutant	Emission Rate[1] (lb/yr)	MER (lb/yr)	Class	Ambient Air Standard (µg/m³)	
				8-hour avg.	Annual avg.
Chloroprene	403,580	2,700	II	857	-

[1] Emission rate is for the Pontchartrain Site and includes chloroprene emissions from the HCl Recovery Unit as well as the Neoprene Unit and Chloroprene Unit.

4.0 EMISSION SOURCES

Pollutant emission rates, stack parameters, and operating scenarios will be consistent with the facility's existing permit and the application associated with the proposed modification. The AAS for chloroprene is a short term (8-hr) emission standard therefore all existing emission sources will be included at maximum hourly permitted emissions levels and all modified sources will be included at maximum proposed emission rates.

Fugitives will either be modeled as pseudo-point sources with a stack diameter of 1 meter (m), an exit velocity of 0.001 meters per second (m/s), an expected source temperature (i.e., 100°F), and an expected release height; or as area sources using a release height of 1 m and using dimensions consistent with the facility's existing permit.

Actual or proposed stack heights will be used for vertical stacks, as none of the stack heights exceed the Good Engineering Practice (GEP) stack height or 65 meters (213.3 feet). Non-regular stacks (*e.g.,* stacks with rain caps or horizontal discharge) will be modeled as pseudo-point sources using the parameters provided in the LDEQ modeling guidelines. Instead of using actual diameter and flow, a stack diameter of 1 m and an exit velocity of 0.001 m/s will be assigned.

5.0 AIR DISPERSION MODEL

The American Meteorological Society / Environmental Protection Agency Regulatory Model (AERMOD) model will be used for the TAP modeling. AERMOD is an EPA-approved steady-state Gaussian plume model capable of modeling multiple sources in complex terrain. The model is currently used for most industrial sources and is the appropriate model for this analysis. The analysis will use the regulatory default option.

The site location map, **Figure 1**, includes the topography of the surrounding area. Based on the site topography, flat terrain will be used. No flagpole receptors will be used (*i.e.,* receptor heights are set at zero).

AERMAP will be used to calculate the base elevations of emission sources, buildings, tanks, and receptors. USGS Digital Elevation Models (DEMs) will be used to process the elevation data.

6.0 BUILDING WAKE EFFECTS (DOWNWASH)

Source proximities will be evaluated with respect to nearby structures to determine whether or not the stack emissions might be affected by the turbulent wake of structures and leading to downwash of the plume. Although it is expected that the building wake will have no effect on dispersion from tall stacks, building wake effect is expected for the other sources at the plant. Therefore, building downwash will be included in this analysis.

EPA's Building Profile Input Processor (BPIP) program will be used to evaluate building downwash parameters and the dominant downwash structure associated with each emission source.

BPIP uses GEP stack heights to determine building downwash effects. Downwash effects are limited to stacks located within a 5L radius, where L is the lesser dimension of the structure (height or the maximum projected width), of a structure. The Schulman-Scire direction-specific downwash technique will be applied to stacks having a height less than or equal to H + 1.5L, where H is the structure height. The proper height and width dimensions will be determined using current EPA guidance.

7.0 RECEPTOR GRID

The receptors will be set on a Cartesian grid as follows:

- At 100 meter spacing from 0 to 1 kilometers
- At 250 meter spacing from 1 to 3 kilometers
- At 500 meter spacing from 3 to 5 kilometers
- At 1 kilometer spacing from 5 to 10 kilometers

8.0 METEOROLOGICAL DATA

The Pontchartrain Site is located near New Orleans, Louisiana. The New Orleans surface and Slidell upper air National Weather Service Station meteorological data for the years 2011 through 2015, as necessary, will be used for this analysis. The anemometer height is ten (10) meters.

9.0 MODELING ANALYSIS FOR TOXIC AIR POLLUTANTS

The applicable pollutants are shown in Table 3-1 and will be modeled using the AERMOD model with the appropriate meteorological data for corresponding averaging times. The modeling procedure is described as follows:

Step 1. Perform an analysis using the most recent meteorological data year (2015). If all receptors outside of the property line have modeled concentrations less than 7.5% of the AAS listed in LAC 33:III.5112 Table 51.2, no further analysis will be required. Otherwise, proceed to Step 2.

Step 2. Perform an analysis including other sources within the Area of Inclusion (AOI) emitting identical TAP. The AOI is defined as a circle with a radius of the most distant receptor with a concentration 7.5% of the AAS or greater. The AOI radius should not exceed 50 kilometers. Depending upon the radius length, the AOI may not include any additional sources.

If the Pontchartrain Site maximum impact is between 7.5% and 75% of the AAS, only the one year of meteorological data (2015) is required for modeling the facility and sources within the AOI. If the facility maximum impact exceeds 75% of the AAS, modeling the Pontchartrain Site and the sources within the AOI with four additional meteorological years of data (2011 through 2015) will be required.

Once the AOI is determined, a nearby source inventory will be requested from the LDEQ. For any sources missing stack parameter data or with data entered as zero, pseudo-point source parameters will be used. As provided in the provided inventory, mobile and other background sources may also be included. Per the LDEQ Modeling Guideline, actual emission rates will be modeled for sources within the AOI along with DPE's allowable emissions.

If all receptors within the AOI have modeled concentrations less than the AAS for every year, then further analysis is not required. If any receptor within the AOI has a modeled concentration greater than the AAS for any year, proceed to Step 3.

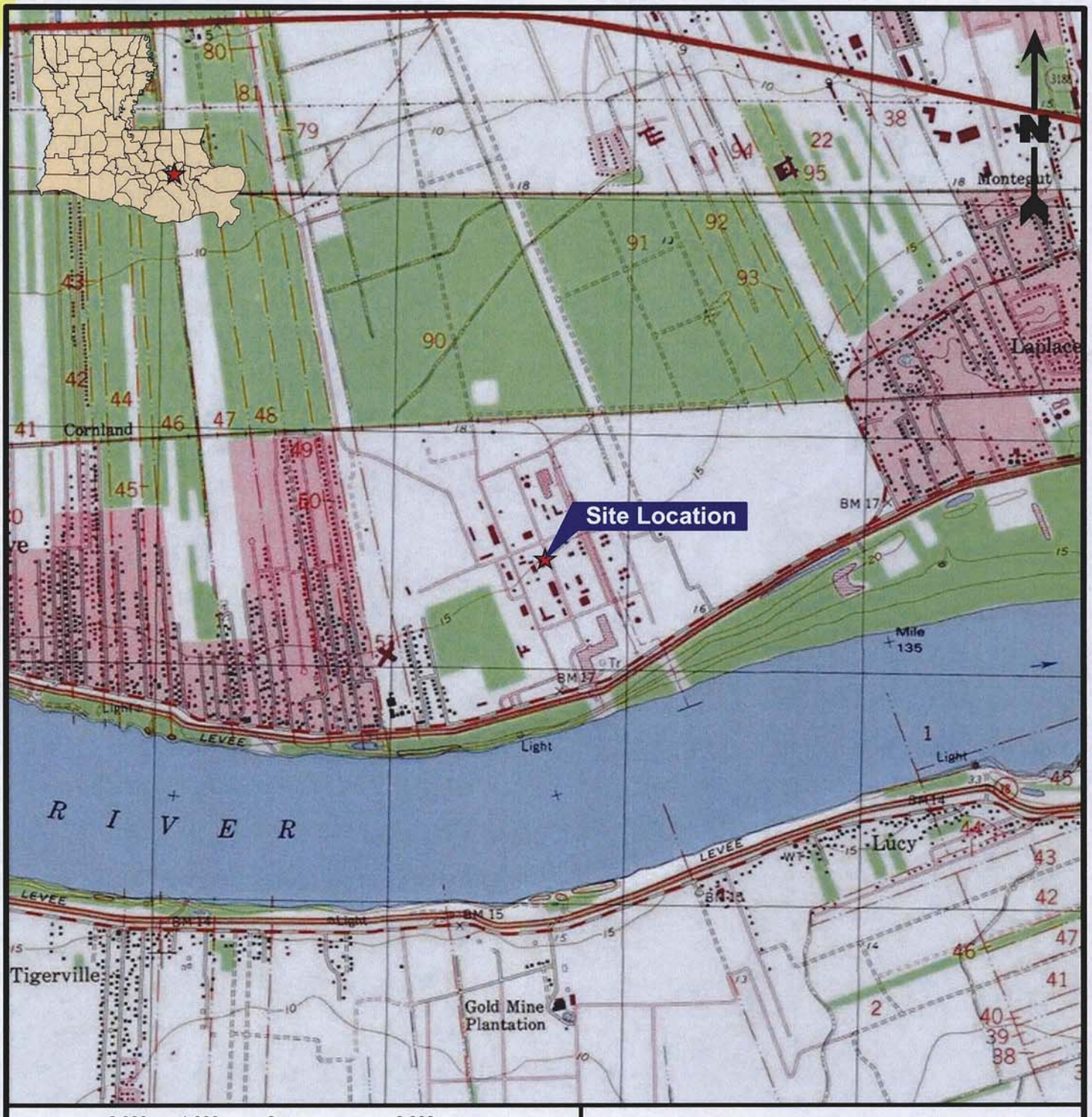
Step 3. A USGS map with isopleths demonstrating receptors at 75% and 100% of the AAS will be included with a modeling report summarizing the modeling approach and results.

10.0 MODELING RESULTS

A modeling report will be prepared to summarize the modeling approach and results. The report will include the results from the TAP analysis discussed in **Section 9.0**. Modeling computer files (input files, list files, and met files) will be copied to a compact disc and attached to the modeling report. Plots will be included to show the locations of the maximum ambient impacts relative to the plant, as appropriate.

FIGURE 1

SITE LOCATION MAP



2,000 1,000 0 2,000 Feet

Legend

★ Site Location

Reference

Base map comprised of U.S.G.S. 7.5 minute topographic map, "Reserve, LA".

Site Location Map

TAPs Modeling
LaPlace, St. John the Baptist Parish, Louisiana

Denka Performance Elastomers LLC
Pontchartrain Site

PROVIDENCE

Drawn By	LMM	04/12/16
Checked By	CMM	04/12/16
Approved By	MHF	04/12/16

Project Number: 1132-001

Drawing Number: 1132-001-A001

1 Figure