51025

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10 Patewood Drive, Bldg. 6, Ste. 500, Greenville, SC 29615

April 12, 2024

Hand Delivered to SCDHEC

Ms. Kim Kuhn
South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management, State Remediation Section
2600 Bull Street
Columbia, South Carolina 29201

Re: Feasibility Study Report
Former Shakespeare Composite Structures Site, Newberry County
Voluntary Cleanup Contract 14-6271-RP, Site ID # 51025

Dear Ms. Kuhn:

Signify North America (Signify) and AECOM Technical Services, Inc. (AECOM) are transmitting the enclosed Feasibility Study Report (FS Report) to SCDHEC. The FS Report is formatted in general accordance with the FS Work Plan (May 2019) and in accordance with USEPA CERCLA guidance, as discussed in our March 8, 2024 meeting with the Department. We also have incorporated into the document the comments we received from SCDHEC during the March 8 meeting.

Signify and AECOM wish to pursue Alternative 5 listed in the FS Report, and this is our preferred alternative, subject to SCDHEC concurrence. As stated in Chapter 6.0 of the FS Report, Alternative 5 is composed of the following:

- In situ chemical oxidation (ISCO) for the groundwater source area beneath the east end of the main building; in situ chemical reduction (ISCR) using zero valent iron (ZVI) and in situ adsorption (ISA) using colloidal activates carbon (CAC) beneath the west end of the main building and in several outside areas; monitored natural attenuation (MNA) for groundwater; institutional controls (ICs) onsite and offsite; and containment via concrete floor remain in place as a cover for impacted soils.

A more-detailed discussion of the components of Alternative 5 is contained in Section 6.3.5 of this FS Report.

It is still the Signify and AECOM intent to try to be in the field by about October 1, 2024 with our first injection event for Alternative 5, as we discussed on March 8, in order to take advantage of suitable fall weather and for other Signify reasons. The additional remedy monitoring well installations and baseline sampling would occur in mid- to late-September 2024.

AECOM and Signify personnel are available to address SCDHEC comments on this document and ready to answer questions the Department may have. Please let us know how we can assist you throughout the document review, public input, and remedy approval process.

Should you have any questions regarding the information included in this submittal package, please contact me at 864-380-6950, Tim Renn, P.E. at 864-561-3414, or Scott Ross, P.G. at 803-201-9662, at your convenience.

Sincerely,

David R Oliphant

David R. Oliphant, CHMM
Senior Project Manager

RECEIVED
APR 15 2024
SITE ASSESSMENT, REMEDIATION, & REVITALIZATION

cc: Mr. Emil Filc - Signify North America
Mr. Tim Renn - AECOM
Mr. Scott Ross - AECOM

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Feasibility Study Report Shakespeare Composite Structures Site Newberry, SC

RP-VCC-14-6271-RP

April 2024

Project # 60721186

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FEASIBILITY STUDY REPORT

SHAKESPEARE COMPOSITE STRUCTURES SITE
19845 US HIGHWAY 76, NEWBERRY, SC

VCC 14-6271-RP

PREPARED FOR:

SIGNIFY NORTH AMERICA CORPORATION

PREPARED BY:

AECOM, GREENVILLE SC

APRIL 2024

Quality Information

Prepared by	Checked by	Verified by	Approved by
Dave Oliphant, CHMM Project Manager	Scott Ross, P.G. Project Hydrogeologist	Tim Renn, P.E. Engineer of Record	Scott Ross, P.G. Project Manager

SOUTH CAROLINA PROFESSIONAL LICENSED ENGINEER No. 24284 TIMOTHY STEPHEN RENN

Prepared for:

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ATTACHMENTS

ACRONYMNS

µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
3-D	3 dimensional
ABC®	Anaerobic Biochem (proprietary chemical)
AC	activated carbon
ARAR	applicable or relevant and appropriate requirement
AS/SVE	Air sparging/soil vapor extraction
atm-m^3/mol	atmospheres-meters cubed per mole
bgs	below ground surface
BRA	baseline risk assessment
BSTS	bench scale treatability study
BTEX	benzene, toluene, ethylbenzene, xylene
CAC	colloidal activated carbon
CD	compact disc
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chemical of concern
CSM	conceptual site model
CVOC	chlorinated volatile organic compound
DCE	dichloroethene
DHC	*dehaloccoides*
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DPT	direct push technology
ERD	enhanced reductive dechlorination
ERH	electrical resistance heating
EVO	emulsified vegetable oil
FS	feasibility study
ft	feet or foot
ft/day	feet per day
ft/ft	feet per foot

ACRONYMNS (continued)

g/kg	grams per kilogram
GRA	general response action
HQ	hazard quotient
HSA	hollow stem auger
HW	horizontal well
IC	institutional control
IDW	investigation derived waste
ISA	in situ adsorption
ISAB	in situ anaerobic bioremediation
ISCO	in situ chemical oxidation
ISCR	in situ chemical reduction
ISERD	in situ enhanced reductive dichlorination
K	hydraulic conductivity
KMnO4	potassium permanganate
MCL	maximum contaminant level
mg/kg	milligram per kilogram
MNA	monitored natural attenuation
msl	mean sea level
MW	monitoring well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCWSA	Newberry County Water and Sewer Authority
ng	nanograms
O&M	operation and maintenance
ORP	oxidation reduction potential
PAC	powdered activated carbon
PCE	perchloroethylene or tetrachloroethene
PDB	passive diffusion bag
PENAC	Philips Electronics North America Corporation
PPE	personal protection equipment
PRB	permeable reactive barrier
PRG	preliminary remediation goal
psi	pounds per square inch

ACRONYMNS (continued)

PSWP	Pilot Study Work Plan
RAO	remedial action objective
RG	remedial goal
RI	remedial investigation
ROI	radius of influence
RSL	regional screening level
SARA	Superfund Amendments and Reauthorization Act
SCDHEC	South Carolina Department of Health and Environmental Control
SSL	soil screening level
SSV	subslab vapor
S.U.	standard units
SVE	soil vapor extraction
SVS	soil vapor sample
TBC	to be considered
TCE	trichloroethene
TCH	thermal conductive heating
TCL	target compound list
TMW	temporary monitoring well
TOD	total oxidant demand
UIC	underground injection control
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VCC	voluntary cleanup contract
VOC	volatile organic compound
ZVI	zero valent iron

1.0 INTRODUCTION

This is the Feasibility Study (FS) Report for the Shakespeare Composite Structures Site (the Site) located in Newberry, South Carolina. This FS Report has been formatted in general accordance with the FS Work Plan (**AECOM, 2019**). The FS Work Plan was submitted to the South Carolina Department of Health and Environmental Control (SCDHEC) on May 15, 2019. SCDHEC approved the FS Work Plan in correspondence dated June 4, 2019. This Introduction section addresses the FS objectives, site background, and FS Report organization.

1.1 Feasibility Study Objectives

The objectives of the FS, as stated in the FS Work Plan, include the following: (1) present the current conceptual site model (CSM); (2) summarize bench-scale treatability study and pilot study results; (3) develop remedial action objectives (RAOs), applicable or relevant and appropriate requirements (ARARs), and remedial goals (RGs); (4) identify and screen potentially applicable remedial technologies and process options, and (5) develop and evaluate remedial action alternatives. The locations in this FS Report where each of these objectives are addressed is discussed in Section 1.3 below.

1.2 Site Background

The facility description and location, and the facility operational background, are summarized below, along with a summary of the pre-FS site investigation activities. More detailed descriptions of the facility background, historical operation, and site topographic setting are included in the Remedial Investigation (RI) Report (**AECOM, 2018**).

1.2.1 Facility Description and Location

The Site is located at 19845 US Highway 76, approximately 1 mile northwest of Newberry, South Carolina **(Figure 1-1**). The Site is centered on the Valmont Composite Structures facility (the "Facility," formerly known as Shakespeare Composite Structures), and includes several surrounding properties (**Figure 1-2A**). General land use surrounding the facility consists of agricultural, residential, undeveloped, and commercial/light industrial properties (**AECOM, 2018**). The topography of the Site is generally flat or slightly sloping on the Facility property. Land surface elevations generally decrease to the southwest, west, and north moving away from the Facility property. Surface elevations range from approximately 562 feet (ft) mean sea level (msl) on the east side of the Facility to less than 520 ft msl along an unnamed intermittent stream located to the north of the Facility. Uses of adjacent properties are as follows:

North: The Facility property is bordered immediately to the north by a CSX rail line and undeveloped land planted with pine trees. The property bounding the facility to the north of the CSX rail line is owned by Mr. J.L. Dickert.

East: The Facility property is bordered immediately to the east by a residential parcel (owned by Mr. Jesse Stephens), beyond which is vacant land (pine trees) and vacant buildings formerly occupied by the Dickert Lumber Company. The property immediately east of the private residence up to Lumber Road is also owned by J.L. Dickert.

South: The Facility property is bordered to the south by U.S. Highway 76 and properties owned by the Newberry County Airport, Mr. Walter Shealy, and Ms. Cristal Rendon. The property owned by Mr. Shealy is primarily farmland with a few small residences (rental homes) located sporadically across more than 60 acres.

West: There are three properties located immediately to the west of the Facility property. The property that immediately bounds the facility to the west is owned by Ms. Edith and Mr. Steve Bedenbaugh. The properties to the west of the Bedenbaugh property are owned by Mr Josh Chapman and Ms. Kimberly Chapman.

Northwest: The property located to the north-northwest of the Chapman properties and west of the Dickert property is owned by Mr. Josh Chapman and Ms. Kimberly Chapman.

Some of these offsite properties have private water located on those parcels (see **Figure 1-2B**).

1.2.2 Facility Operational Background

The Facility was originally opened to produce fiberglass products, and it has continued to be used for this manufacturing process. Operations at the facility include the design and manufacture of large fiberglass utility poles and cross arms and a variety of other fiberglass outdoor products such as posts, signs, sheet piling, and signposts. Manufacturing is conducted inside two separate buildings – the Main Building (nearest to US Highway 76) and the Pole Winder Building (near the railroad tracks).

1.2.3 Site Investigation History/FS Activities

Several phases of investigative efforts have been performed at the Site, as discussed below.

1.2.3.1 Pre-Voluntary Cleanup Contract (VCC)

The pre-VCC investigative efforts that were conducted include:

- Phase II Environmental Site Assessment – Collection of initial soil and groundwater samples from the Shakespeare facility (February through April 2014);
- Site Investigation – Collection of additional soil and groundwater samples from the Shakespeare facility along with several groundwater samples from surrounding private parcels (May 2014 through August 2014); and
- Expanded Investigation - Collection of additional shallow groundwater samples and evaluation of shallow bedrock for impacted groundwater on surrounding properties (August through September 2014).

Results of these studies are included in the RI Report (**AECOM, 2018**).