

From: Ross, Scott (Columbia) <Scott.Ross@aecom.com>
Sent: Thursday, July 8, 2021 4:50 PM
To: Kuhn, Kimberly M. <kuhnkm@dhec.sc.gov>
Cc: Dean Weeks <dean.weeks@signify.com>
Subject: Monitoring Well Permit Application - Shakespeare Composite Structures Site

***** Caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. *****
Good afternoon Kim –

I hope you are doing well.

Please find attached the monitoring well permit application package for the Shakespeare Composite Structures Site in Newberry, SC. The permit application is for 3 observation wells that are to be installed in advance of the Pilot Study Signify intends to implement later this summer.

Please review the attached and let us know if you have any questions or if you need any additional information.

Sincerely,

Scott E. Ross, P.G.
Project Manager II, Environment, Midsoutheast Region
T (803)740-1921
C (803)201-9662
Jabber X2381921
scott.ross@aecom.com

AECOM
101 Research Drive
Columbia, SC 29203
T 803-254-4400
www.aecom.com

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AECOM
101 Research Drive
Columbia, S.C. 29223

803.254-4400 tel
803.771-6676 fax

July 8, 2021

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: Monitoring Well Installation Permit Request
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 preparing to implement a Pilot Study (PS) evaluating multiple groundwater remediation methodologies at the former Shakespeare Composite Structures site (Site). The Site is centered on what is now known as the Valmont Composite Structures (Valmont) facility in Newberry, South Carolina (**Figure 1**). The PS will include evaluation of an in-situ chemical oxidation (ISCO) process and an in-situ enhanced reductive dechlorination (ISERD) process at specific locations on the Site. Both processes will include injection of a specific group of chemical compounds in the vicinity of existing and newly installed monitoring wells. In November 2020, AECOM and Signify obtained an Underground Injection Control (UIC) permit (#SCHE0320600) from the South Carolina Department of Health and Environmental Control (SCDHEC). Prior to implementing the in-situ treatment efforts, three new observation/monitoring wells will be installed at locations in the proposed treatment areas. This document serves as a monitoring well permit application package for the upcoming PS.

Pilot Study

As indicated above the PS will include treatment of multiple areas at the site impacted by elevated concentrations of chlorinated volatile organic compounds (CVOCs). The ISCO treatment area is located within the eastern portion of the Valmont facility's main manufacturing building (**Figure 2**). Treatment in this area will include injection of a potassium permanganate (KMnO₄) solution within the water table (10 – 20 ft below ground surface - bgs).

To enhance and sustain the world's built, natural and social environments

The ISERD treatment area is located on property that borders the north side of the Valmont facility. ISERD treatment will be performed in two depth intervals – shallow and intermediate. This area will be treated using the ISERD process which will include injection of an emulsified vegetable oil (EVO) and zero valent iron based solution. The ISERD treatment will be performed within the water table (shallow zone 10 – 20 ft bgs) and within an intermediate depth interval (30 – 40 ft bgs). **Figures 3 and 4** depict the ISERD treatment areas.

The PS treatment process is detailed in the UIC permit application package that was submitted to SCDHEC in September 2020.

Well Installation

The scope for the PS well installation efforts includes the following:

- installation of one shallow observation well downgradient of the proposed ISCO treatment area
- installation of one shallow observation well downgradient of the ISERD treatment area, and
- installation of one intermediate observation well downgradient of the ISERD treatment area.

AECOM will utilize Geoprobe™ sonic drilling technology to install the three new wells. Sonic drilling technology allows collection of continuous soil cores utilizing a 10 ft long, 4-inch inside diameter (ID) core barrel with a 6-inch ID temporary (over-ride) casing. Once the core barrel is advanced through a desired depth interval, the outer over-ride casing is advanced over the core barrel to the same depth. The core barrel is then removed from within the over-ride casing, creating a temporarily cased borehole. This process is continued until the desired target depth is reached.

Use of sonic drilling technology will allow continuous collection of soil cores from land surface to the target depth using the 4-inch ID core barrel. Soil cores will be examined by an AECOM geologist who will document lithologic information and use the information to determine depths at which to set well screens. The shallow observation wells will be installed to depths between 10 and 20 feet bgs (ISCO treatment area) and 20 and 30 feet bgs (ISERD treatment area), The intermediate observation well for the ISERD treatment area will be installed to approximately 40 feet bgs.

Well boring cuttings generated during the drilling processes will be containerized in 55-gallon Department of Transportation (DOT) approved drums and staged at a central location until disposal options can be determined.

Once a boring is advanced to its desired depth, a monitoring well will be constructed within the temporary override casing. Each well will consist of two inch diameter, schedule 40 polyvinyl chloride (PVC) riser with a ten foot long 0.010-inch slotted screen.

After the well pipe materials are placed in the over-ride casing appropriately sized filter pack material is then placed in the annulus between the well pipe and over-ride casing. Once the filter placement process is started, the over-ride casing is periodically “back-pulled” allowing the well pipe and filter pack materials to settle into the newly created borehole. This process is continued while a bentonite seal is added to the over-ride casing. Once the bentonite seal has hydrated, cement grout is placed in the annulus. Back-pulling the over-ride casing is then continued until it is completely removed from the borehole.

Each monitoring well will be completed at land surface with a bolt down, 8 inch diameter steel cover, set in a two foot by two foot by four inch thick concrete pad. A diagram depicting the typical construction of these wells is included as **Figure 5**.

Well Development

Each new monitoring well will be developed using a submersible pump. The submersible pump will be used to surge and purge the screened interval, removing fine particles that had accumulated in the well during installation. Water quality parameters including pH, specific conductance (SC), temperature, and turbidity will be monitored and recorded during the development process. Well development will be considered complete when water quality parameters have stabilized to within 10%.

All well development water will be containerized in 55 gallon drums and staged at a central location on Valmont property until disposal determination.

Well Sampling

Following development of the wells, AECOM personnel will sample each (along with a limited number of other existing wells) as part of the PS baseline and post treatment monitoring efforts. Groundwater sampling will be performed in accordance with procedures described in the Phase II RI Work Plan for this site, submitted to SCDHEC in April 2017.

Well development and groundwater sampling efforts will be documented on appropriate field forms. Copies of the forms will be submitted to SCDHEC in the PS Report (to be completed after all post treatment monitoring efforts have been completed). The groundwater samples collected from the new wells will be analyzed for Target Compound List-Volatile Organic Compounds (TCL-VOCs) using SW-846 Method 8260c. Soil vapor samples will also be analyzed for VOCs using EPA Air Toxics Method TO-15.

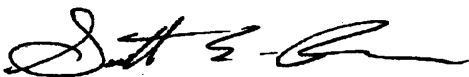
Reporting

Data collected during these additional activities will be included in the PS Report that will be generated at the completion of the post treatment sampling efforts as indicated above. Copies of field logs (soil boring reports, well construction diagrams, well development logs, and groundwater sampling logs) along with analytical data reports for the samples to be collected during this additional round of efforts will also be included in the PS Report.

We have also attached two monitoring well permit applications for your review. One is for the well to be installed in the ISCO treatment area. The second is for the wells to be installed in the ISERD treatment area.

Should you have any questions regarding the information included in this package, please contact me at (803) 254-4400 at your convenience.

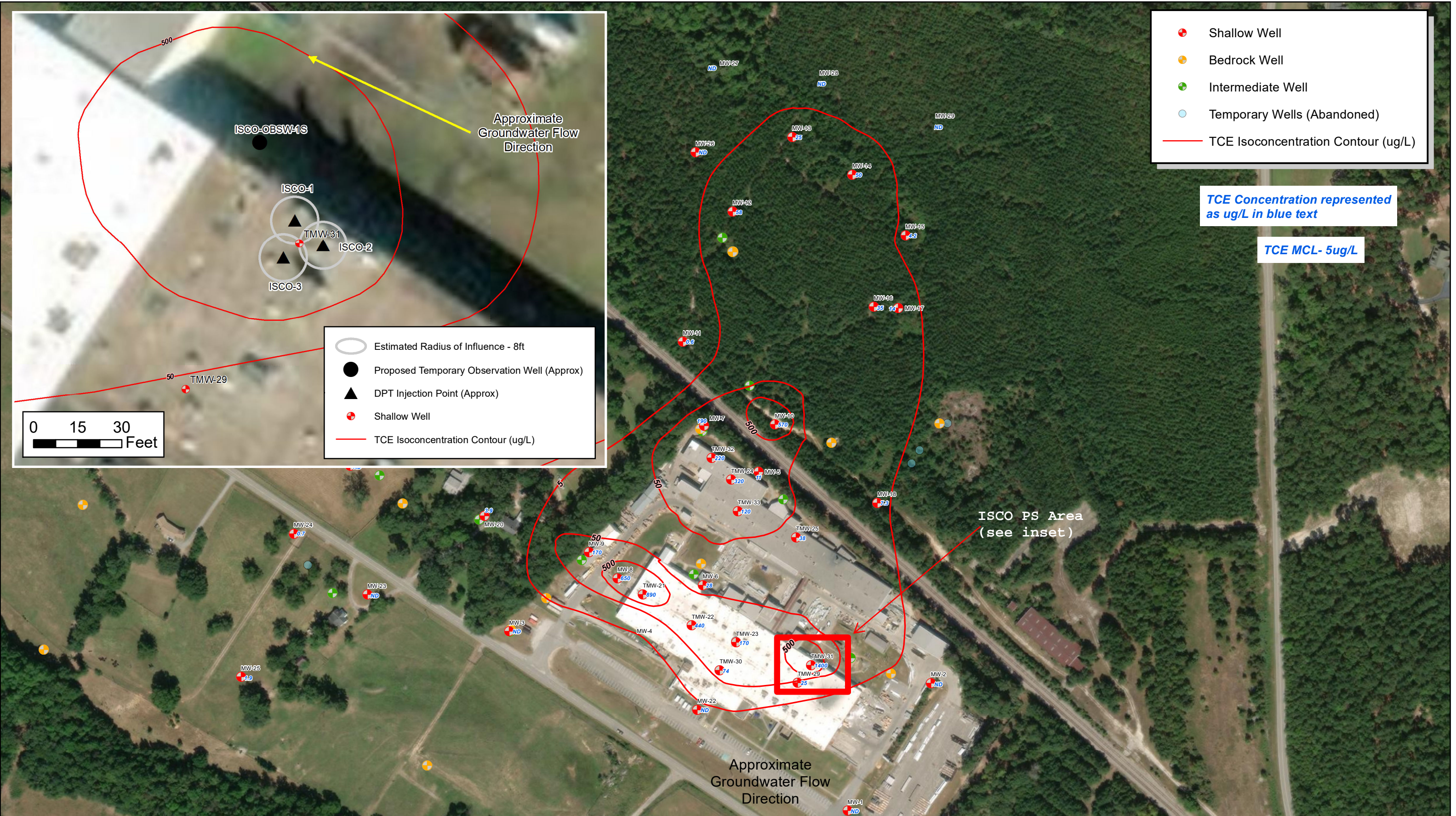
Sincerely,



Scott E. Ross, P.G.
Senior Project Manager

cc: Mr. Dean Weeks - Signify

FIGURES



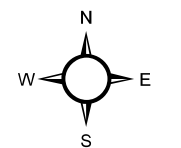
101 Research Drive
Columbia, SC 29203-9389
T: (803) 254-4400 F: (803) 771-6676

Figure 2 : ISCO Pilot Study Area - Shallow Zone

Shakespeare Composition Structures
Newberry, South Carolina

Project No.: 60635197; Prepared by: KA; Date: 09/11/20.

Notes:
ISCO - In Situ Chemical Oxidation



0 125 250 500 Feet