



June 2, 2023

Mr. Craig Zeller
Superfund Remedial and Site Evaluation Branch
U.S. Environmental Protection Agency
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-8960
zeller.craig@epa.gov

Subject: **In-Situ Chemical Oxidation Remedial Action Work Plan Addendum #1
CTS of Asheville, Inc. Superfund Site
235 Mills Gap Road, Asheville, Buncombe County, North Carolina
EPA ID: NCD003149556
Consent Decree – Civil Action No. 1:16-cv-380
NCDEQ UIC Tracking No. WI0100571
WSP Project 6252-16-2004**

Dear Mr. Zeller:

WSP USA Environment & Infrastructure Inc. (WSP) has prepared this In-Situ Chemical Oxidation Remedial Action Work Plan Addendum #1 (ISCO RAWP Addendum #1) for implementation of additional ISCO interim remedial activities at the CTS of Asheville, Inc. Superfund Site (Site) located at 235 Mills Gap Road in Asheville, Buncombe County, North Carolina (Figure 1). This ISCO RAWP Addendum #1 has been prepared to comply with Paragraph 4.1 of the Statement of Work (SOW) of the Consent Decree for Interim Remedial Design/Remedial Action (CD) at the Site between the United States of America and CTS Corporation, Mills Gap Road Associates, and Northrop Grumman Systems Corporation. This ISCO RAWP Addendum #1 is a supplement to the ISCO RAWP dated August 19, 2019.

The ISCO Remedial Action Report (RA Report) was submitted to the USEPA on May 19, 2020, and describes implementation/construction activities performed during the initial, full-scale ISCO interim remedial action in the Northern Area of the Site. As documented in the RA Report, full-scale remedial action construction activities occurred from October 2019 to March 2020 and included the installation of 76 emplacement wells and 380 emplacements, containing approximately 350,200 pounds of potassium permanganate in approximately 82,050 gallons of slurry. With the exception of the design modifications documented in the RA Report, the emplacement wells were installed in accordance with the Final Remedial Design for In-Situ Chemical Oxidation (ISCO Final Remedial Design), submitted on July 12, 2019, and approved by the USEPA on July 22, 2019, and the ISCO RAWP.

An Interim Northern Area ISCO Remedial Action Objective Value Technical Memorandum (ISCO RAO Tech Memo) was submitted to USEPA on December 19, 2019. The Northern Area ISCO RAO value was accepted by USEPA in a letter dated January 9, 2020. The ISCO RAO Tech Memo presented the methodology for

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determining successful achievement of the RAO. Using a 'population of data approach', the arithmetic average TCE groundwater concentration in the treatment area was determined to be 21,390 micrograms per liter ($\mu\text{g/L}$) from the baseline groundwater samples collected. The target groundwater concentration, 5 percent of the arithmetic average TCE concentration, was calculated to be 1,070 $\mu\text{g/L}$ (i.e., 95 percent TCE removal) in the treatment area.

In accordance with the ISCO Final Remedial Design and RAWP, semi-annual RAO performance monitoring began in July 2020, after completion of the full-scale Remedial Action implementation. The RAO performance monitoring began with the 15 performance monitoring wells approved by the USEPA and used to determine the baseline TCE groundwater concentration in the treatment area. The January 2023 ISCO Performance Monitoring Report (sixth RAO performance monitoring event) was submitted to USEPA on March 23, 2023. The average reduction of TCE in groundwater in the ISCO treatment area as reported in the January 2023 ISCO Performance Monitoring Report is approximately 76 percent.

As described in Section 3.7.3 of the ISCO Final Remedial Design, additional potassium permanganate emplacements (i.e., a 'polishing event') were contemplated to be required to achieve the RAO of a 95 percent TCE reduction. This RAWP Addendum #1 addresses the activities to be performed for this polishing event. The polishing event will occur at existing emplacement well locations and is not considered a design modification. The emplacements will be constructed/performed in accordance with the elements described in the USEPA-approved ISCO Final Remedial Design and the ISCO RAWP. The waste management, performance monitoring, protection of human health and the environment, Field Sampling and Analysis Plan, and Quality Assurance Project Plan as included in the ISCO RAWP, including drilling contractor and oxidant supplier, will be applicable to this ISCO RAWP Addendum #1, with the exception of the attached updated organizational chart. The proposed polishing event is anticipated to occur in late August or early September 2023. A schedule for Interim Remedial Action activities proposed for 2023, which includes items related to this polishing event, was submitted to USEPA with the Fourth Quarter Progress Report on January 20, 2023.

The proposed polishing event includes 46 potassium permanganate emplacements in 12 existing emplacement wells. Both the saprolite and partially weathered rock (PWR) zones will be targeted at three existing ISCO emplacement well locations, while just the saprolite zone will be targeted at five locations and just the PWR zone will be targeted at four locations. Figures depicting the proposed emplacement strategy at the existing emplacement wells are attached. A total of 40,000 pounds of potassium permanganate will be purchased and the majority of the emplacements will be completed using 1,000 pounds of potassium permanganate each, with a limited number of emplacements using approximately 650 pounds of potassium permanganate each. A single delivery of potassium permanganate will be required and the product will be secured and stored at the Site in a shipping container until its emplacement. Note that the number and distribution of emplacements might be modified upon receipt of preliminary results for the July 2023 ISCO performance monitoring event. USEPA will be notified if the proposed emplacement strategy is modified.

Based on the emplacement production rate from the full scale ISCO implementation, field work is estimated to take approximately 15 working days for this ISCO polishing event. After completion of the ISCO polishing event field activities/construction, WSP will coordinate and attend a USEPA inspection of the constructed remedy and an ISCO Remedial Action Report requesting USEPA's determination that Remedial Action Construction has been completed will be prepared.

As instructed by the North Carolina Department of Environmental Quality (NCDEQ) Division of Water Resources Underground Injection Control (UIC) Well Program, documentation for the polishing event will be submitted in the form of an *Injection Event Record* (Form UIC-IER) which will be appended to the ISCO Remedial Action Report. Completion and submittal of an *Application for Permit to Construction and/or Use a Well(s) for Injection* (Form GW-22MR), or modification of the existing Site *Application*, is not necessary for this polishing event.

If you have questions regarding this In-Situ Chemical Oxidation Remedial Action Work Plan Addendum #1, please contact us at (828) 252-8130.

Sincerely,

WSP USA Environment & Infrastructure Inc.




Gregory L. Hutchins, P.G.
Project Geologist


GLH/MEW:glh

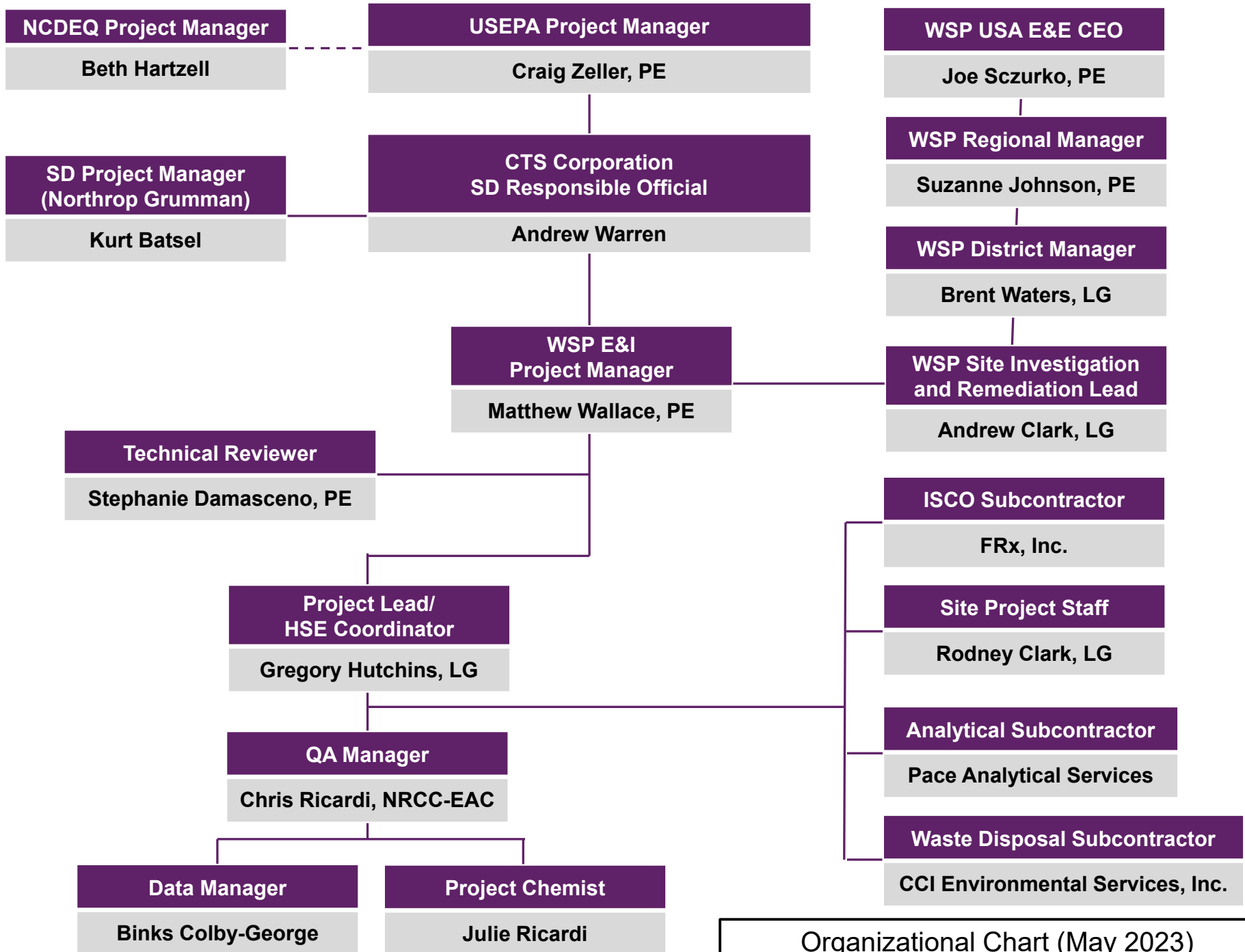
cc: Andrew Warren, CTS Corporation
Beth Hartzell, NCDEQ
Michael Rogers, NCDEQ-UIC
Kurt Batsel, Northrop Grumman
June Yi, Northrop Grumman
William Clarke, Roberts & Stevens, P.A.

attachments: Organization Chart (May 2023)
Figure 1: Proposed Sapolite Emplacement Locations
Figure 2: Proposed Partially Weathered Rock Emplacement Locations



Matthew E. Wallace, P.E.
Principal Engineer





Organizational Chart (May 2023)
ISCO Remedial Action Work Plan
Addendum #1



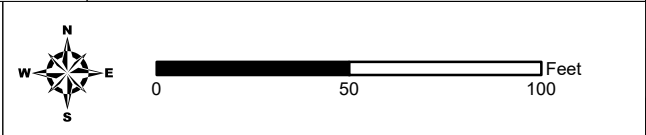
Proposed Saprolite Emplacements
 8 EPW Locations
 4 Emplacements per location
 32 Total Emplacements

TITLE:
**PROPOSED SAPROLITE
 EMPLACEMENT LOCATIONS
 CTS OF ASHEVILLE, INC.
 SUPERFUND SITE
 ASHEVILLE, NORTH CAROLINA**

**NOTE: THIS MAP IS FOR
 REFERENCE ONLY!**
 Although every effort has been made to ensure the accuracy of
 information, errors and conditions originating from
 the physical sources used to develop the database
 may be reflected in the data supplied.
 The requestor must be aware of data conditions and
 ultimately bear responsibility for the appropriate
 use of the information with respect to possible
 errors, original map scale, collection methodology,
 currency of data, and other conditions specific to certain data.

Legend

- ISCO Performance Monitoring Well Location
- Existing Emplacement Well (EPW) Location
- Proposed Polishing Event Emplacement
- Fence
- Property Line
- ISCO Treatment Area (Northern Area)
- Additional ISCO Treatment Area



PREPARED BY: G. HUTCHINS 5/30/2023	PROJECT NUMBER: 6252-16-2012	Figure No. 1
CHECKED: M. WALLACE 5/30/2023	MAP PROJECTION: NC State Plane (NAD83)	
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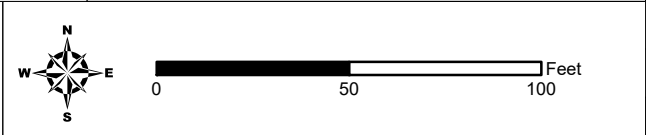
Proposed PWR Emplacements
 7 EPW Locations
 2 Emplacements per location
 14 Total Emplacements

TITLE:
PROPOSED PARTIALLY WEATHERED ROCK EMPLACEMENT LOCATIONS
CTS OF ASHEVILLE, INC.
SUPERFUND SITE
ASHEVILLE, NORTH CAROLINA

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PREPARED BY: G. HUTCHINS 5/30/2023	PROJECT NUMBER: 6252-16-2012	Figure No. 2
CHECKED: M. WALLACE 5/30/2023	MAP PROJECTION: NC State Plane (NAD83)	

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