U.S. Environmental Protection Agency
Superfund Proposed Plan for Interim Remedial Action
CTS of Asheville, Inc. Superfund Site
Asheville, Buncombe County, North Carolina

October 2015

INTRODUCTION

The Region 4 office of the U.S. Environmental Protection Agency (EPA) is issuing this Proposed Plan about the Interim Remedial Action at the CTS of Asheville, Inc. Superfund Site (CTS site). This Proposed Plan presents the alternatives considered in the Focused Feasibility Study (FFS) to address the Non-Aqueous Phase Liquid (NAPL) and trichloroethene (TCE) underneath the former CTS plant. The FFS and Proposed Plan are available for review and the public is invited to comment on the documents during a 30 day public comment period.

SITE BACKGROUND

The CTS site is located at 235 Mills Gap Road in Asheville, NC 28803. International Resistance Company, (now Northrop Grumman Systems Corporation as the result of a series of mergers) owned and operated the site from 1952 to 1959, when CTS of Asheville, Inc. purchased the real property, building and equipment. Arden Electroplating, Inc. leased a portion of the building from December 1985 until December 1986, when it was sold to Mills Gap Road Associates (MGRA). The site has been vacant/unoccupied since the mid-1990s.

CTS manufactured electronic components used in auto parts and hearing aids from 1959 to April 1986 when plant operations ceased. Small electronic components were electroplated with tin, nickel, zinc and silver as one step in the process. Solvents, including TCE were used to clean, or degrease, the parts before

Community Involvement Opportunities

Public Comment Period

Dates: October 1, 2015 – October 30, 2015
Purpose: To solicit comments on the Proposed Plan for Interim Remedial Action

Public Meeting

Date: October 13, 2015
Time: 6:00 PM
Place: T.C. Roberson High School Auditorium located at 250 Overlook Road in Asheville
Purpose: To discuss details of the Proposed Plan for Interim Remedial Action

EPA Contacts

Direct your comments to:
Craig Zeller, EPA Remedial Project Manager via email zeller.craig@epa.gov or U.S. mail to: US EPA Region 4, Superfund Division – 11th Floor, 61 Forsyth Street, SW, Atlanta, GA 30303

Further questions, please contact:
Angela Miller, EPA Community Involvement Coordinator, miller.angela@epa.gov or (678) 575-8132.

electroplating. Disposal and/or recycling activities at the facility prior to 1959 are unknown. From 1959 to 1980, metal-bearing rinse waters and alkaline cleaners that could not be reclaimed from the electroplating process were reportedly disposed of through the municipal sewer system, while concentrated metals and solvent wastes were placed in drums for off-site disposal/recycling. After 1980, wastes were accumulated in drums on-site prior to off-site disposal/recycling.

Numerous environmental investigations have been conducted at the CTS site since the late 1980s. The Site was proposed to the National Priorities List (NPL) in March 2011, and became Final on the NPL in March 2012.

PREVIOUS CLEANUP ACTIONS

Three removal actions have been conducted at the Site under a 2004 Administrative Order on Consent between EPA, CTS and MGRA. From July 2006 to July 2010, a Soil Vapor Extraction (SVE) system operated at the site to remove volatile organic compounds (VOCs) from the subsurface, above the groundwater table. An estimated 6,473 pounds of VOCs were removed from the unsaturated zone over that four year period. The former building was demolished in December 2011.

From September 2012 to August 2014, CTS installed 101 water supply filtration systems in residences located within a one mile radius of the Site who relied on groundwater as their drinking water supply. The filtration systems were installed as a precautionary measure. In 2014 and 2015, municipal water supply lines were installed in the vicinity of the Site by Buncombe County. Eighty-seven residences with filtration systems elected to connect to the municipal water line. The remaining water filtration systems will continue to be maintained by CTS until they are no longer warranted.

In September 2014, a springs vapor removal system was installed by CTS on property immediately to the east of the Site, to reduce TCE concentrations in outdoor/indoor air. The remediation system includes a combination of air sparging and vapor extraction. Air sparging pumps air into the surface water and subsurface at seven locations. Vapors are extracted using a vacuum connected to extraction points at 12 locations and then treated by carbon in canisters. The area was covered with a low density polyethylene liner to increase the system's efficiency. Construction began on September 10, 2014 and the system has been in continuous operation since October 21, 2014. Monitoring indicates the system has been very effective at reducing TCE concentrations in the air and spring water. As of mid-April 2015, the vapor system removed approximately 42 lbs. of VOCs from the environment.

CTS also committed to conduct a site-wide Remedial Investigation/Feasibility Study under the terms of an Administrative Settlement Agreement and Order on Consent, which took effect on January 26, 2012. The FFS that lays the foundation for this Proposed Plan was developed by CTS according to that agreement.

SITE CHARACTERISTICS

The area surrounding the Site is rural and contains residential and light industrial properties. The Site is relatively flat and is situated on a "saddle" between Busbee Mountain to the north and Brown Mountain to the south-southwest. The geology under the site consists of fill material, residual soil (overburden) and bedrock. The depth to the groundwater table generally fluctuates from

15 to 49 feet below ground surface (bgs), depending on rainfall. The depth to bedrock ranges from 28 to 81 feet bgs.

Groundwater velocity is in the 10 to 100 feet per year range. Groundwater in the overburden generally flows two directions; towards the eastern springs remediation area, and to another springs area to the west of the Site. There is an approximate one acre plume of light NAPL that is weathered fuel oil. This one acre NAPL plume is mixed with high concentrations of TCE. There is a dissolved phase VOC (only) plume extending north of the NAPL area that moves east and west towards the springs discharge zones. Please see figure on page 7.

SCOPE AND ROLE OF THE INTERIM REMEDIAL ACTION

The scope of this Proposed Plan is an interim NAPL/TCE source control action that will be followed up later with a Final Site-wide cleanup decision. The area to be addressed with this interim action is the one acre source area illustrated on the attached figure. This source control action addresses approximately 40,500 cubic yards (CYs) of material in the saturated zone between the observed water table and top of bedrock.

At present, the treatment area of this Proposed Plan does not include the high levels of TCE (only) in groundwater north of the designated one acre source area, near monitoring well clusters MW6 and MW7. This area is also shown on the attached figure. Under this Proposed Plan, any residual NAPL/TCE mass in the subsurface that was not treated with this Interim Remedial Action, as well as TCE in the deep (bedrock) aquifer, will be addressed with a Final Site-wide cleanup decision.

However, the EPA is evaluating the feasibility of expanding the Interim Remedial Action treatment area to include the TCE mass in groundwater near MW6/MW7. Expanding the treatment area now would require more resources in the short-term, but would be more cost-effective long-term from a Final Site-wide cleanup perspective.

SUMMARY OF SITE RISKS

Groundwater at the Site is contaminated with chlorinated solvents, such as TCE, cis-1,2-dichloroethene (cis-DCE), and 1,1,1-trichloroethane (TCA). These chemicals are considered hazardous substances under Superfund. TCE was detected in groundwater at levels which exceed the EPA drinking water standard of 5 parts per billion. These contaminants pose a potential risk to human health and the environment, particularly through air inhalation and/or drinking water.

INTERIM REMEDIAL ACTION OBJECTIVES

The general Interim Remedial Action Objective (RAO) for this Proposed Plan is to significantly reduce the mass of NAPL and TCE that is the source of the dissolved-phase VOC groundwater plume. Over time, while the Final Site-wide cleanup plan is developed, the dissolved-phase VOC plume is expected to decrease in size and concentration. The specific RAO for this Proposed Plan is:

- Reduce the TCE concentrations in saturated soil, NAPL and groundwater by 95%.

Ninety-five percent reduction will be determined by pre-treatment and post-treatment verification sampling and analysis

of saturated soil, NAPL and groundwater within the one acre source zone.

SUMMARY OF ALTERNATIVES

The FFS Report evaluated four proven remediation technologies to address the NAPL/TCE source area. As required by EPA guidance, a "No-Action" alternative was retained to serve as a baseline when comparing to the other alternatives. A description of the alternatives is summarized below.

Alternative 1: No Action
This "status quo" alternative assumes nothing would be done in the short term to address the NAPL/TCE source area. The No Action alternative defers all required cleanup work to the Final site-wide cleanup plan that is not expected for several years.

Alternative 2: Multi-Phase Extraction
Multi-phase extraction (MPE) removes NAPL, groundwater, and soil vapor from the subsurface using vacuum well(s). MPE would involve installation of extraction wells and a system to recover the NAPL. The extracted fluids and vapor would be treated in an aboveground treatment system on-site. After separation, the groundwater would be treated and disposed on-site, while the NAPL would be containerized and disposed off-site. It was assumed that the MPE system would have to operate for a 10 year period. The estimated cost to implement the MPE alternative is $2,670,000.

Alternative 3: Electrical Resistance Heating
Electrical resistance heating (ERH) involves heating the subsurface using electrodes installed in the zone of contamination. The electric current passed between the electrodes heats the saturated zone where there is sufficient moisture to conduct electricity. The heat "boils" the NAPL/TCE and vent wells are used to recover the vapors. The vapors are treated aboveground and discharged to the air. Any NAPL accumulation in the vent wells would be recovered and transported off-site for disposal. It was assumed that 19 months would be required to design, install and fully operate the ERH system to meet the RAO. The estimated cost to implement the ERH alternative is $4,150,000.

Alternative 4: In-Situ Chemical Oxidation
In-situ chemical oxidation (ISCO) involves addition of chemicals into the zone of contamination via injection points. The chemicals oxidize the NAPL/TCE and break down the contaminants into harmless by-products like carbon dioxide and water. ISCO is typically implemented with a primary injection event and one or more polishing injections to reduce contaminant concentrations and mass to the desired level. Chemical oxidation using catalyzed hydrogen peroxide gives off heat, so vent wells would be required to recover vapor and any NAPL. ISCO would require installation of injection wells and an aboveground system to recover and treat vapors. It was assumed that ISCO would require three years to complete, including one primary injection event and two polishing steps. The estimated cost to implement the ISCO alternative is $3,820,000.

Alternative 5: Surfactant Flooding
Surfactant flooding involves injection of a substrate into the zone of contamination to increase the mobility of the NAPL phase. The NAPL and groundwater are then removed from the subsurface via extraction wells. After separation aboveground, the groundwater would be treated and discharged to the municipal sewer system,

while the NAPL would be containerized and disposed off-site. Surfactant flooding would require installation of injection/extraction wells, and an aboveground treatment system. It was assumed that surfactant flooding would require two years to complete, including a primary flooding event and one follow-up step. The estimated cost to implement the surfactant flooding alternative is $3,520,000.

EVALUATION OF ALTERNATIVES

Remedy selection under Superfund requires that each alternative be evaluated by nine criteria. The first two criteria are known as Threshold Criteria. These two criteria must be met for a cleanup alternative to be selected:

1) ***Overall Protection of Human Health and the Environment:*** How the alternatives achieve protection and how risks are eliminated, reduced or controlled.
2) ***Compliance with Applicable, or Relevant and Appropriate Requirements (ARARs):*** Comply with other Federal and State environmental laws or regulations that apply to the cleanup action.

The next five criteria are referred to as Balancing Criteria. This set of criteria serves as the primary basis upon which each alternative is compared and analyzed to understand the trade-offs and distinct advantages/disadvantages.

3) ***Long-Term Effectiveness and Permanence:*** Ability of each alternative to meet the RAOs and stay protective over the long-term.
4) ***Reduction of Toxicity, Mobility and Volume (TMV):*** Addresses Superfund's preference for treatment as a principal element of the site cleanup.
5) ***Short-Term Effectiveness:*** Management of remedy construction activities to ensure adequate protection of on-site workers, adjacent communities and the environment.
6) ***Implementability:*** The availability of services, access to property, construction equipment and other administrative/ technical factors associated with the cleanup.
7) ***Cost:*** The Net Present Value of the alternative, including operation/maintenance activities, over the assumed lifetime of the cleanup project.

The final two criteria are called Modifying Criteria.

8) ***State Acceptance***
9) ***Community Acceptance***

EPA will issue a final cleanup decision only after consulting with the State of North Carolina and after considering comments received from the community during the public comment period.

EPA's PREFERRED ALTERNATIVE

EPA has selected Alternative 3, Electrical Resistance Heating (ERH), as the preferred alternative to address the NAPL/TCE source area. ERH was the most aggressive and effective source control remedy evaluated in the FFS. ERH provides the highest level of certainty to meet the RAO, as the technology has demonstrated greater than 95% TCE removal efficiencies. ERH can be implemented in the least amount of time, and provides the greatest long-term

permanence. Although ERH has a slightly higher total cost, it is a one-time source control and treatment event with no longer term operation and maintenance costs.

COMMUNITY PARTICIPATION

EPA encourages the public to provide comments on the Proposed Plan during the 30 day public comment period which begins on October 1st and extends through October 30, 2015. Documents supporting the Preferred Alternative can be found on line at http://semspub.epa.gov/src/collection/04/AR63944. Upon timely request, EPA will extend the comment period for an additional 30 days. Comments may be emailed to: Zeller.Craig@epa.gov. Hard copies may be sent via U.S. Mail, to Craig Zeller, US EPA Region 4, Superfund Division – 11th Floor, 61 Forsyth Street, SW, Atlanta, GA 30303.

PUBLIC MEETING

EPA will host a public meeting on Tuesday, October 13, 2015, at 6:00pm in the auditorium of the T.C. Roberson High School located at 250 Overlook Road in Asheville. Representatives from EPA will present the rationale behind the Proposed Plan for the NAPL/TCE Interim Remedial Action at the CTS of Asheville, Inc. Superfund site, and answer any questions the public may have regarding the interim proposed plan.

CONTACT INFORMATION

EPA

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Information Repository

EPA has established an information repository for the public to review some of the documents related to the Site and the Superfund program. The local repository does not include all documents related to the Site. Additional documents may be made available by EPA upon request. The local information repository is located at the:

Pack Memorial Library
67 Haywood Street
Asheville, North Carolina 28801-2834

EPA Website

EPA has a website specifically for the CTS of Asheville, Inc. Superfund Site. The website address is:
http://www.epa.gov/region4/superfund/sites/npl/northcarolina/millsgapnc.html

NCDEQ

Nile Testerman
919.707.8339
NILE.TESTERMAN@NCDENR.GOV

NCDHHS Website

The State Center for Health Statistics of the N.C. Department of Health and Human Services has completed an updated cancer study for the community within 1-mile radius of the CTS NPL site. The report will be available soon at http://epi.publichealth.nc.gov/oee/hace/by_site.html#cts .

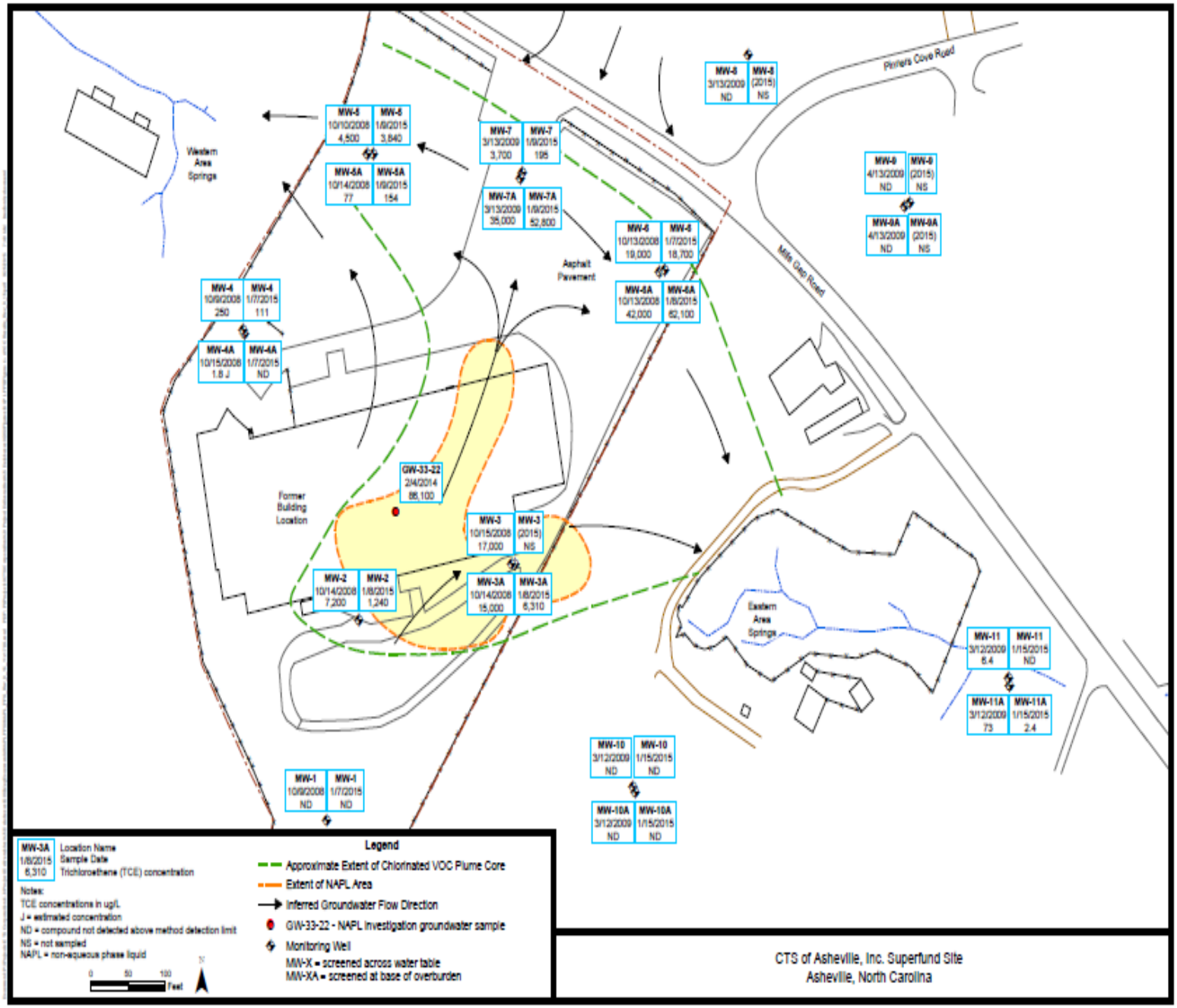
Websites created by community members

- Clean Asheville: http://cleanasheville.info
- POWER Action Group: http://poweractiongroup.org

Community Groups

Concerned Citizens for Mills Gap Cleanup
Glen Horecky
GEH4@MSN.COM

TAG Recipient:
POWER Action Group
Lee Ann Smith
UPTHISHILL@GMAIL.COM


Pinners Cove Road
Mills Gap Road
Asphalt Pavement
Western Area Springs
Eastern Area Springs
Former Building Location
MW-8 3/13/2009 ND
MW-8 (2015) NS
MW-8 10/10/2008 4,500
MW-8 1/8/2015 3,840
MW-8A 10/14/2008 77
MW-8A 1/8/2015 154
MW-7 3/13/2009 3,700
MW-7 1/9/2015 195
MW-7A 3/13/2009 35,000
MW-7A 1/9/2015 52,800
MW-6 10/13/2008 19,000
MW-6 1/7/2015 18,700
MW-6A 10/13/2008 42,000
MW-6A 1/8/2015 52,100
MW-9 4/13/2009 ND
MW-9 (2015) NS
MW-9A 4/13/2009 ND
MW-9A (2015) NS
MW-4 10/9/2008 250
MW-4 1/7/2015 111
MW-4A 10/15/2008 1.8 J
MW-4A 1/7/2015 ND
GW-33-22 2/4/2014 88,100
MW-3 10/15/2008 17,000
MW-3 (2015) NS
MW-2 10/14/2008 7,200
MW-2 1/8/2015 1,240
MW-3A 10/14/2008 15,000
MW-3A 1/8/2015 6,310
MW-11 3/12/2009 6.4
MW-11 1/15/2015 ND
MW-11A 3/12/2009 73
MW-11A 1/15/2015 2.4
MW-10 3/12/2009 ND
MW-10 1/15/2015 ND
MW-10A 3/12/2009 ND
MW-10A 1/15/2015 ND
MW-1 10/9/2008 ND
MW-1 1/7/2015 ND
MW-3A 1/8/2015 6,310
Location Name
Sample Date
Trichloroethene (TCE) concentration
Notes:
TCE concentrations in ug/L
J = estimated concentration
ND = compound not detected above method detection limit
NS = not sampled
NAPL = non-aqueous phase liquid
0 50 100 Feet
N
Legend
Approximate Extent of Chlorinated VOC Plume Core
Extent of NAPL Area
Inferred Groundwater Flow Direction
GW-33-22 - NAPL investigation groundwater sample
Monitoring Well
MW-X = screened across water table
MW-XA = screened at base of overburden
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Asheville, North Carolina