

Status Update – CTS of Asheville Superfund Site Source Area Remedial Action October 10, 2018

The following information summarizes the status of the Electrical Resistance Heating (ERH) remedial action at the on-site 1.2-acre Source Area as of early October 2018. Some of this information was conveyed orally to Frank Anastasi, PG, POWER's Technical Advisor, in an on-site briefing with EPA Remedial Project Manager Craig Zeller and the ERH contractor on October 2. Additional details were obtained from the most recent weekly reports posted on the CTS website, and further discussion with Mr. Zeller on October 10.

- Approximately 4,746 pounds of Trichloroethylene (TCE) have been recovered from the subsurface in the treatment zone (the water-saturated zone extending from the ground water surface to the top of bedrock)
- Approximately 5,000 gallons of light, non-aqueous phase liquid (LNAPL) have been recovered also during the remedial action (recovered by the vapor recovery system in the liquid phase). The LNAPL is weathered fuel oil.
- Samples of soil, ground water, and LNAPL were taken before remediation began to establish baseline TCE levels in these media so remedial progress could be measured. The Remedial Action Objective (RAO) for the project is to reduce TCE levels in these media by ninety-five percent (June 1, 2018 Technical Memorandum from Amec Foster Wheeler, now Wood Environmental).
 - Soil – TCE measured in 38 soil samples ranged from 7.2 ug/kg (parts per billion, or ppb) to 741,000 ppb. The average baseline TCE concentration was calculated to be 59,496 ppb. The RAO for soil was set at 2,975 ppb TCE (five percent of the baseline average concentration).
 - Ground Water – TCE measured in 20 ground water samples ranged from 772 ug/L (parts per billion, or ppb) to 51,300 ppb. The average baseline TCE concentration was calculated to be 16,523 ppb. The RAO for ground water was set at 826 ppb TCE (five percent of the baseline average concentration).
 - LNAPL – TCE measured in three LNAPL samples ranged from 6,270 mg/kg (parts per million, or ppm) to 10,200 ppm. The average baseline TCE concentration was calculated to be 8,080 ppm. The RAO for LNAPL was set at 404 ppm TCE (five percent of the baseline average concentration).
- Samples of soil and ground water were collected in late September from the treatment zone to observe reductions in TCE. LNAPL could not be sampled as it was not present in any well in the treatment zone. Based on oral reports from the remediation contractor and Craig Zeller, the average TCE concentrations in the soil had been reduced by about 98%, and in ground water an approximate 83% reduction was observed. A second round of ground water samples were collected in early October, with results due to be available

by October 15. Written reports will then confirm and document the effectiveness of the remedial action as ERH operations wind down.

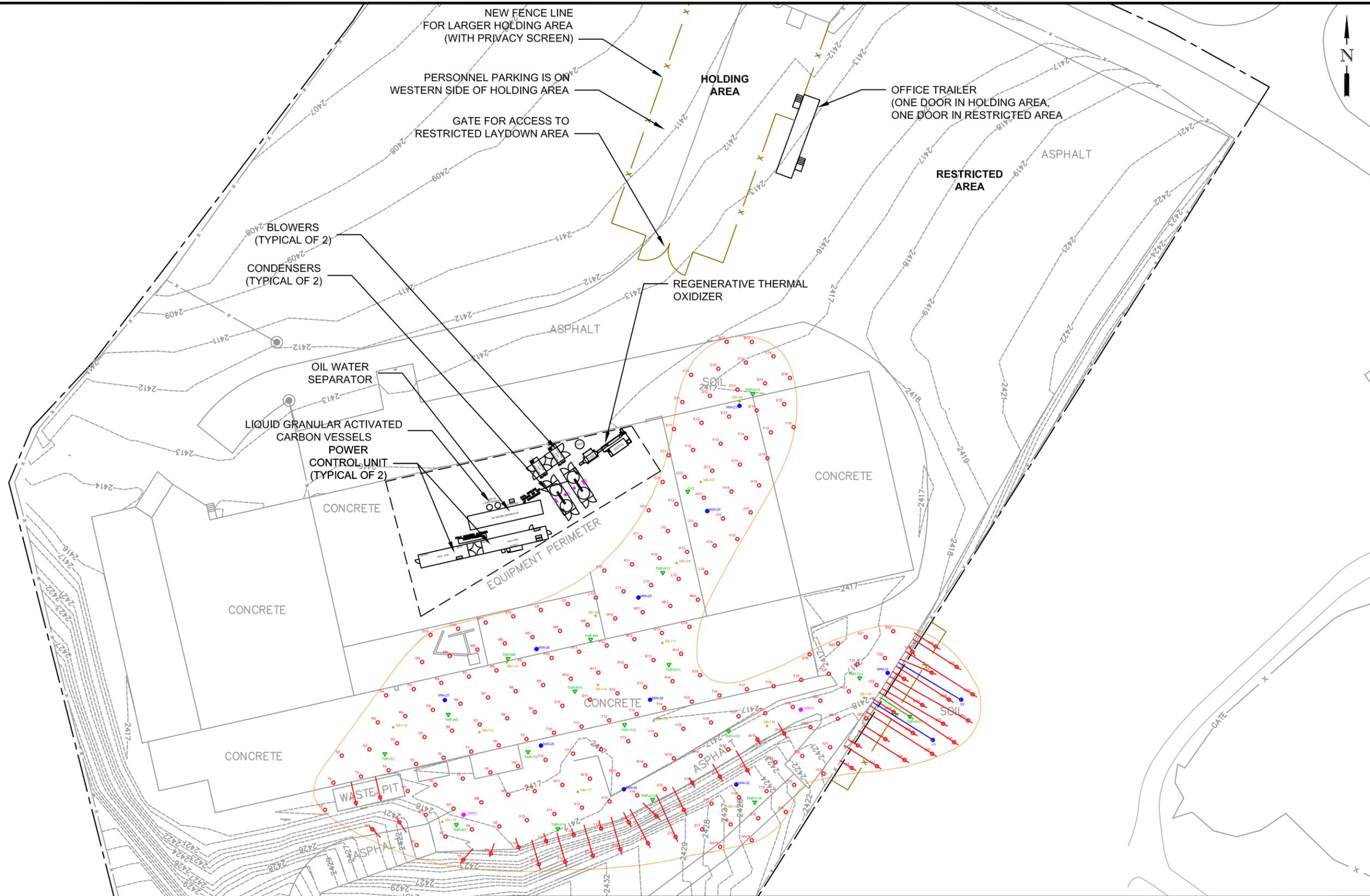
- The remediation contractor has begun to reduce power to certain areas of the treatment zone, and focus final cleanup efforts to a small area where ground water still contains relatively higher levels of TCE. This area encompasses the monitor wells MW-29, MW-30, and MW-31. The subsurface reportedly remains heated to approximately 100 degrees C throughout the treatment zone, so TCE will continue to be volatilized and recovered in the vapor phase. Smaller volumes of LNAPL continue to be recovered as well.
- Mr. Zeller reported that as of October 10, power to about 40% of the heating electrodes has been turned off. Power to the rest of the heating electrodes is expected to be shut down over the next couple of weeks, but vapor recovery operations will continue beyond that (remember, the subsurface will remain very hot for some time so TCE will continue to vaporize). EPA will review the recent soil and ground water sampling data to confirm that project goals have been met before allowing full shut down.
- After ERH is fully shut down and above-ground facilities can be decommissioned, additional remedial action will be performed using in-situ chemical oxidation (ISCO) at the 1.9 acre Northern Source Area (adjacent to the ERH treatment area).
- EPA notes that its initial estimate that about 20,000 pounds of TCE would be removed by ERH appears to have been inaccurate, as approximately 5,000 pounds of TCE have been actually removed to date and RAOs apparently met or almost met. The many uncertainties involved in estimating amounts of contaminant mass in the subsurface render such estimates highly variable, and the established RAO of 95% reduction in measured TCE concentrations after ERH concludes is the appropriate measure of remediation effectiveness. The lack of measurable LNAPL in the treatment zone after collecting so much more than was expected is another measure of success – if there is no LNAPL, the goal of removing 95% of the TCE in the LNAPL would also have been met.

APPROVED

For Construction



ENGINEER SIGNATURE / DATE



LEGEND

- VERTICAL ELECTRODE (QTY. 186)
- ANGLED ELECTRODE (QTY. 43)
- TEMPERATURE MONITORING POINT (18)
- SOIL BORING (15)
- MONITORING WELL CLUSTER (10)
- EXISTING MONITORING WELLS (2)
- ANGLED VAPOR RECOVERY WELL (2)

0 30 60 120
SCALE IN FEET

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

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DESIGNED BY E. CROWNOVER	SITE LOCATION CLIENT	CTS OF ASHEVILLE SUPERFUND SITE ASHEVILLE, NORTH CAROLINA CTS CORPORATION	
DRAWN BY A. PEABODY	SITE PLAN WITH ELECTRODE LAYOUT		
CHECKED BY D. OBERLE			
PROJECT MANAGER C. BLUNDY	APPROVED FOR CONSTRUCTION	DATE 2017.NOV.20	PROJECT NC.ASH.1821
QSAT REVIEW 2017.NOV.27	BY _____	SHEET Y-1	
	DATE _____		