


**FIRST FIVE-YEAR REVIEW REPORT FOR  
SIGMON'S SEPTIC TANK SERVICE SUPERFUND SITE  
IREDELL COUNTY, NORTH CAROLINA**



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**Prepared by**

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## LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
ARRA	American Recovery and Reinvestment Act
BHHRA	Baseline Human Health Risk Assessment
bls	Below Land Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
HI	Hazard Index
IC	Institutional Control
MCL	Maximum Contaminant Level
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
MNA	Monitored Natural Attenuation
NCDEQ	North Carolina Department of Environmental Quality
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource and Conservation Recovery Act
RGO	Remedial Goal Option
ROD	Record of Decision
RPM	Remedial Project Manager
SESD	Science and Ecosystem Support Division
SSTS	Sigmon's Septic Tank Service
SVOC	Semi-volatile Organic Compound
UU/UE	Unlimited Use and Unrestricted Exposure
VOC	Volatile Organic Compound

## **I. INTRODUCTION**

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the first FYR for the Sigmon's Septic Tank Service Superfund site (the Site). The triggering action for this policy review is the construction completion date of 9/30/2009. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two operable units (OUs). This FYR addresses both OUs. OU1 addresses contaminated soil. OU2 addresses groundwater.

EPA Remedial Project Manager (RPM) Beverly Stepter led the FYR. Participants included EPA community involvement coordinator (CIC) Ronald Tolliver, Beth Hartzell with the North Carolina Department of Environmental Quality (NCDEQ) and Ryan Burdge from Skeo (EPA FYR support contractor). The review began on 8/1/2017.

### **Site Background**

The 15-acre Site is located in a residential area on Eufola Road, five miles southwest of Statesville in Iredell County, North Carolina (Figure 1). The Sigmon's Septic Tank Service (SSTS), a wholly owned subsidiary of AAA Enterprises, pumped septic tank wastes and heavy sludge from residential, commercial and industrial customers, installed and repaired septic tanks, and provided a variety of industrial waste removal services. From 1978 to 1992, SSTS disposed of septic wastes in eight unlined lagoons on the south section of the 15-acre property (Figure 1). There was also a waste stockpile on the south side of the site property, consisting of the pile, pile fingers and a blanketed area.

The Site was historically a single parcel where SSTS operated. The Site now consists of three parcels; the northern and middle parcels include private residences. Waste disposal and subsequent remedial action occurred on what is now the southernmost parcel. The southern parcel can only be accessed from the privately owned northern and middle parcels.

The Site is in the southeast quadrant of Iredell County within the Catawba River basin. Surface drainage generally flows southwest, channeled by two intermittent streams (North Tributary and South Tributary) that converge with the Catawba River approximately 1.5 miles to the southwest. The intermittent streams are conceptualized as hydraulic barriers to groundwater flow and define the probable limit of groundwater contamination.

The principal geological units at the Site are identified as residual soil (regolith), including saprolite,

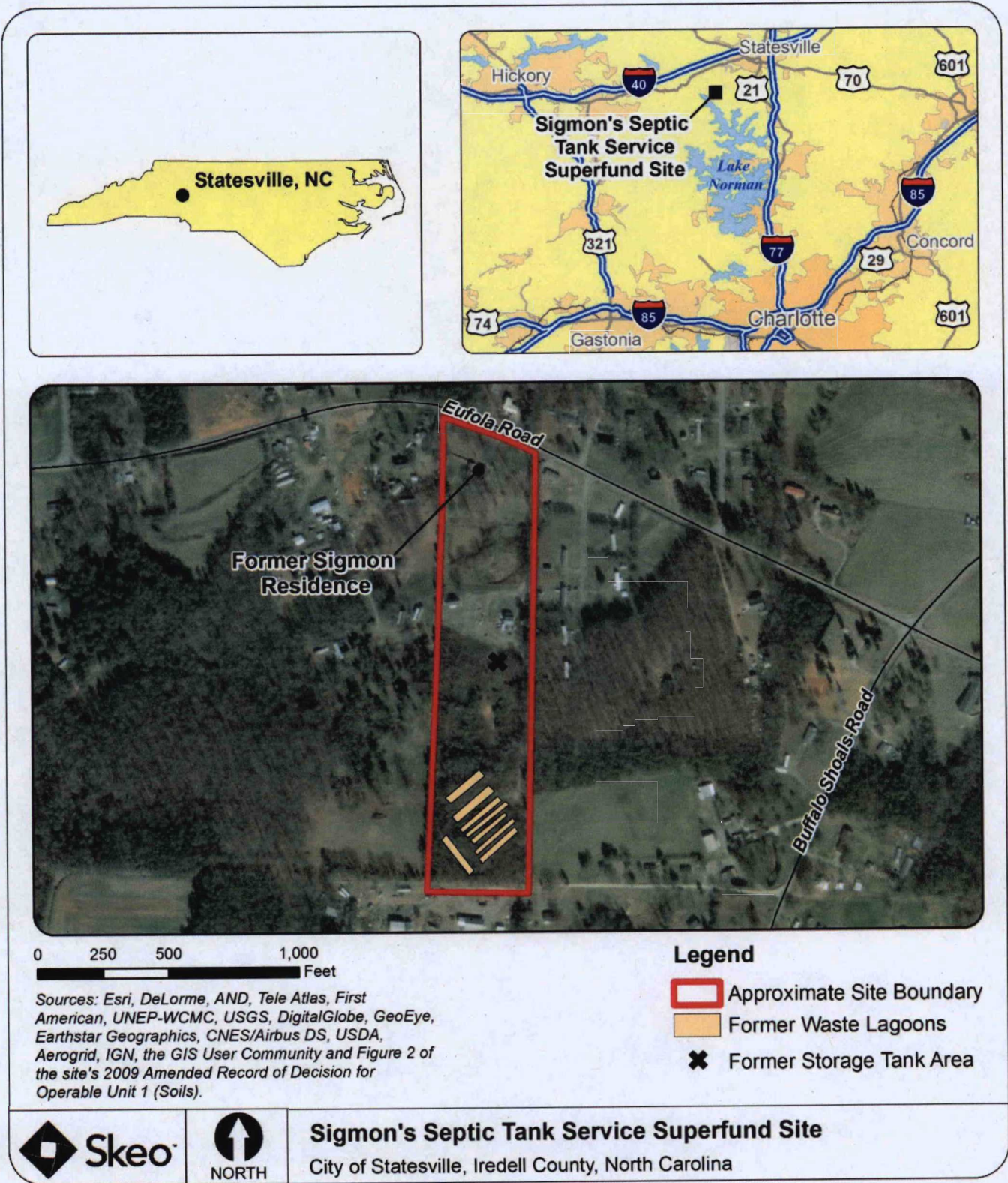
partially weathered rock and bedrock. The Site is located on a ridge between the two streams. Groundwater occurs in two zones – the surficial zone (which occurs in the regolith and partially weathered rock) and the bedrock zone. The primary direction of groundwater flow in the surficial aquifer near the ridge is likely vertical downward and areas away from the ridge flow toward the streams.

There is no confining layer between the surficial and bedrock aquifers. Groundwater generally occurs under unconfined (water table) conditions within the surficial and bedrock units. Numerous potable water wells are located on or near the site (Appendix D). Private water supply wells draw water primarily from the fractured bedrock and the partially weathered rock unit. Five community wells within the 4-mile radius of the site provide drinking water to subdivisions and mobile home parks. The remaining population relies on private potable water wells for drinking.

Appendix A provides a list of key site documents. Appendix B provides site status information. Appendix C provides the Site's chronology of events.



**Figure 1: Site Vicinity Map**



*Disclaimer:* This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

## FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Sigmon's Septic Tank Service		
EPA ID: NCD062555792		
Region: 4	State: NC	City/County: Statesville/Iredell
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the Site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Beverly Stepter (EPA) and Ryan Burdge (Skeo)		
Author affiliation: EPA and Skeo		
Review period: 12/1/2017 – 7/1/2018		
Date of site inspection: 2/21/2018		
Type of review: Policy		
Review number: 1		
Triggering action date: 9/30/2009		
Due date (five years after triggering action date): 9/30/2014		

## II. RESPONSE ACTION SUMMARY

### Basis for Taking Action

From 1980 through 2002, federal, state and local agencies and their consultants performed investigations at the Site. These investigations identified volatile organic compounds (VOCs) and metals in surface and subsurface soils, on-site stockpiled soil groundwater, surface water and sediment. The EPA placed the Site on the National Priorities List (NPL) in 2005.

The 2006 remedial investigation (RI) identified groundwater, surface and subsurface soil contaminated with metals, VOCs and semi-volatile organic compounds (SVOCs). Vanadium was found at concentrations above 73 milligrams per kilogram (mg/kg), the site-specific risk-based cleanup levels concentration for the child resident with a hazard index (HI) of 1. At that time, the EPA and NCDEQ concluded that, based on human health risk to a child, vanadium in on-site and off-site surface soils is the only soil contaminant of concern (COC) requiring remediation. The EPA later performed additional evaluation of human risk with an updated toxicity assessment, and concluded that vanadium did not pose unacceptable risk (see Response Actions section below). In June 2008, the EPA completed an RI for



groundwater (OU2). The OU2 RI Report confirmed the presence of site contaminants in groundwater, including manganese, iron, arsenic and 1,4-dichlorobenzene.

### **Response Actions**

In 2002 and 2004, eight private potable wells were sampled. Several potable wells near the Site were contaminated with inorganic and organic contaminants. In 2006, the EPA conducted a non-time-critical removal action at the Site. Activities included installing temporary filters on private drinking water wells and providing bottled water to residents potentially affected by contaminated groundwater. In December 2008, Science and Ecosystem Support Division (SESD) conducted additional sampling of the offsite residential potable wells. The samples were collected from residential potable wells located to the northeast of the Site in the Big Tree Subdivision. A total of 18 residential potable wells were sampled for target analyte list metal analysis. No COCs were detected above the cleanup levels in any of the samples.

### **OU1**

In 2006, the EPA issued a Record of Decision (ROD) for OU1 to address contaminated soil and a stockpile of soil excavated from on-site lagoons. The remedial action objectives (RAOs) identified in the 2006 OU1 ROD are:

- Eliminate future migration of COCs in excess of the remedial goal options (RGOs) from soil to groundwater and surface water.
- Eliminate or reduce future migration of surface soil COCs in excess of the RGOs to other surface media (surface water or sediment).
- Protect health of human receptors near the Site. Specifically, the proposed action would:
  - Prevent exposure to contaminated groundwater in excess of the RGOs.
  - Reduce migration of the contaminant plume.
  - Reduce migration of contaminants in excess of the RGOs from sources.
  - Provide additional site data to assess restoration potential.
  - Prevent direct exposure to contaminated surface and subsurface soils and sediments in excess of the RGOs.

The major components of the 2006 remedy for OU1 included:

- Excavation of surface and subsurface soil containing vanadium above site-specific remedial goal concentrations.
- Treatment of contaminated soil that fails the Toxicity Characteristic Leaching Procedure to meet applicable treatment standards under 40 CFR 268 using solidification/stabilization technologies.
- Off-site transportation and disposal of the treated and/or untreated soil at a Resource Conservation and Recovery Act (RCRA) Subtitle D Landfill.
- Backfilling of the excavated area with clean borrow material obtained from a local source.
- Re-vegetation and restoration of site to safe and usable conditions.

In 2009, the EPA issued a ROD Amendment to remove vanadium as a soil COC and reduce the scope of the soil remedy to include only the stockpile. In May 2009, a Baseline Human Health Risk Assessment (BHHRA) Addendum was prepared for OU1 to address an update to the toxicity value for vanadium. The BHHRA Addendum determined that none of the individual concentrations for vanadium in soil

exceeded the revised child resident cleanup levels of 365 milligrams per kilogram (mg/kg). In addition, soil analysis conducted in April 2009 at the Site indicated that vanadium is naturally occurring. Therefore, vanadium is no longer a COC in surface and subsurface soil.

Based on the hypothetical future residential scenario that was evaluated, the EPA identified arsenic and benzo[a]pyrene in the soil as the major contributors to the estimated health risks. The ROD Amendment identified the cleanup levels as background for arsenic (3-10 mg/kg) and 60 micrograms per kilogram (µg/kg) for benzo(a)pyrene equivalent. Cleanup would result in UU/UE of the southern parcel.

**OU2**

In 2009, the EPA issued a ROD for OU2 to address groundwater. The RAOs identified in the 2009 OU2 ROD are:

- Monitor human exposure to site COCs in residential potable wells and site groundwater.
- Prevent or minimize human exposure to contaminated groundwater at concentrations above the cleanup levels.
- Remediate and control human exposure to groundwater at the Site with COC concentrations greater than cleanup levels.

The major components of the OU2 remedy include:

- Implementing institutional controls for the Site. Groundwater will be suitable for use as a drinking water resource once cleanup goals are met (Table 1).
- Installing streamside wells screened in the shallow aquifer (alluvium) at depths ranging approximately 2-to-5 feet below the water table and not greater than 10 feet below land surface (bls) along the North and South Tributaries.
- Conducting groundwater analyses to evaluate possible formation of complexes and precipitates.
- Implementing a groundwater monitoring program consisting of sampling and analysis to track the effectiveness and trends in concentrations over time for monitored natural attenuation (MNA).

**Table 1: Groundwater Cleanup Goals**

<b>COC</b>	<b>Historical Cleanup Goal</b>	<b>Basis</b>	<b>RSL Screening Levels</b>	<b>Basis</b>
Arsenic	10 µg/L	MCL		
Iron	11,000 µg/L	Hazard Index	14,000 µg/L	Tapwater <sup>A</sup>
Manganese	300 µg/L	Health Advisory	430 µg/L	Tapwater <sup>A</sup>
1,4-Dichlorobenzene	1.4 µg/L	North Carolina 2L Standard	75 µg/L	MCL <sup>A</sup>
MCL = maximum contaminant level    µg/L = micrograms per liter				
A= Regional Screening Levels (RSLs) values presented with Target Cancer Risk of 1E-06 and Target Hazard Quotient of 1.0. (May 2018)				

## Status of Implementation

### OUI

Appendix D shows the soil excavation area. The removal addressed the stockpile, pile fingers and the blanketed area. During soil removal in the blanketed area to the southwest of the stockpile, workers encountered below-grade, shallow, lined pits that contained residual waste materials. These materials were excavated to the underlying native soils during the stockpile consolidation process. The total depth of the excavation varied between 2 to 4 feet below land surface (ft bls).

EPA contractors removed 2,699 tons of contaminated soil from the Site and disposed of it in a RCRA Subtitle D landfill. Excavation and load-out finished on September 17, 2009. After excavation and removal, EPA's Region 4 SESD collected 24 soil samples from 13 locations within the excavation footprint to verify that the vertical extent of the soil removal was sufficient and in compliance with OUI Amended ROD cleanup goals. Confirmatory arsenic concentrations were below the background cleanup level of 3 to 10 mg/kg. One sample (65 µg/kg) exceeded the cleanup level of 60 µg/kg for benzo(a)pyrene equivalents.

The EPA began restoration activities on September 28, 2009, adding approximately 500 cubic yards of backfill to excavated areas. A bulldozer compacted the soil as it pushed backfill into the excavated areas. Revegetation took place during the week of September 28, 2009. The bulldozer regraded the site access road to address any damage caused by trucks and excavation equipment.

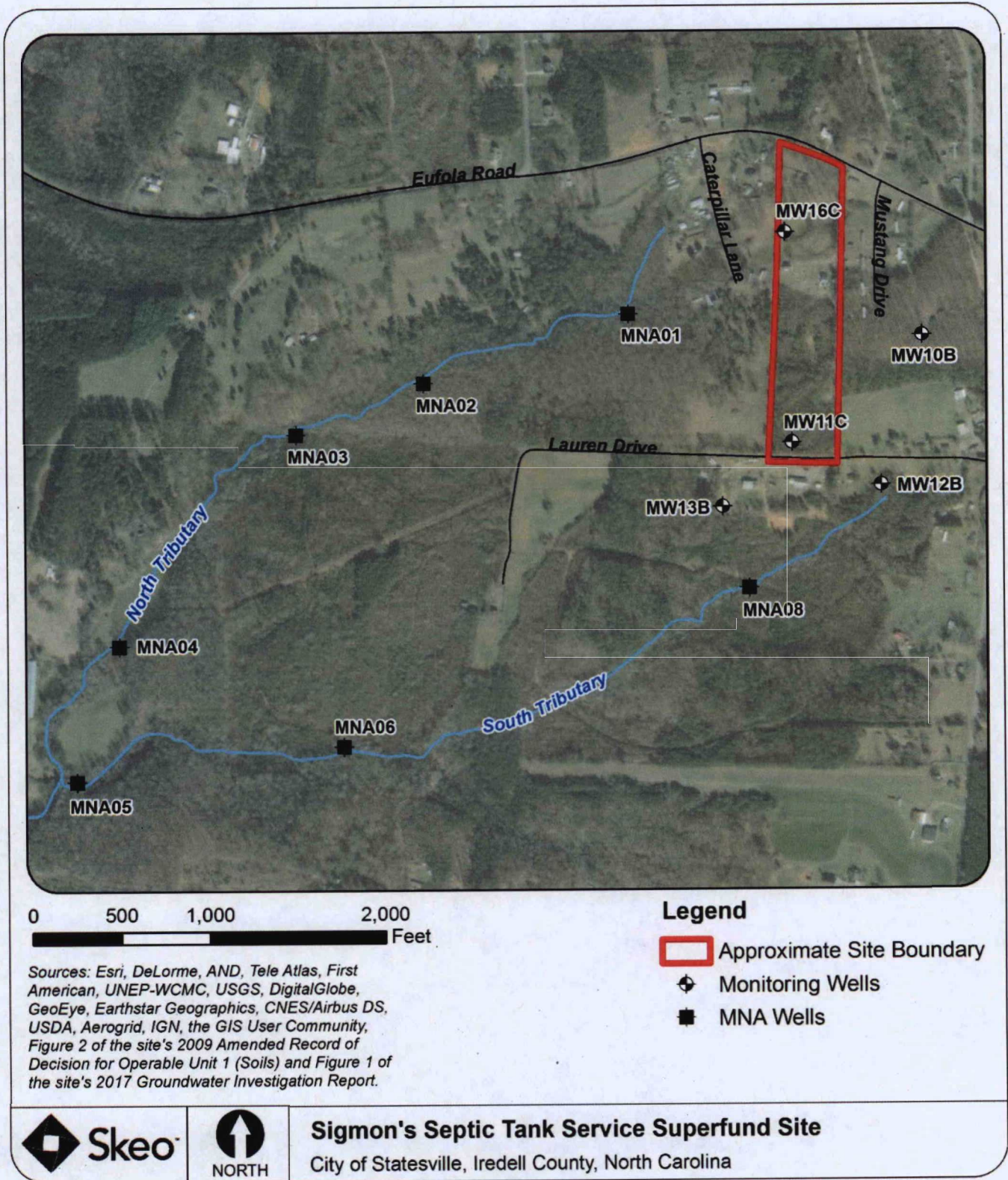
The EPA received \$902,000 in American Recovery and Reinvestment Act (ARRA) funds to complete site cleanup activities. The use of ARRA funds provided investment in the local community, supplying short-term work to an estimated 125 dump-truck operators. In 2010, the EPA recognized the Site as the first Superfund site with cleanup activities completed using ARRA funds.

### OU2

Monitoring for natural attenuation at the Site consisted of installation of additional monitoring wells, sampling and analysis, and MNA assessment (Figure 2). From August 31 to September 4, 2009, SESD installed eight 1-inch diameter PVC permanent monitoring wells (MNA series) along the North and South Tributary streams forming the hydrologic boundary west and south of the Site. These wells monitor natural attenuation progress and provide additional information on groundwater and surface water interactions at the two unnamed intermittent streams that bound the Site to the north and south.

In 2009, the EPA began MNA groundwater monitoring to track concentration trends over time as well as MNA effectiveness. SESD sampled the following wells during each event: four existing on-site shallow monitoring wells (metals and natural attenuation parameters), four existing on-site deep wells (metals, VOCs and natural attenuation parameters), and the eight-new downgradient shallow monitoring wells (metals and natural attenuation parameters). Sampling included collection of field parameters (e.g., water levels, dissolved oxygen, pH, oxygen reduction potential, conductivity and turbidity). Natural attenuation parameters for metals contamination consisted of, but were not limited to, common anions, alkalinity and total dissolved carbon.

**Figure 2: Groundwater Monitoring Network**



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### **Institutional Control (IC) Review**

The OU2 ROD states that institutional controls, such as zoning restrictions or local groundwater use ordinances, would be applied to discourage receptor populations from inadvertent exposure to contaminated groundwater.

“The listed owner of record, Henry H. Sigmon, Jr., is deceased and the property has been abandoned. Under North Carolina law, there appears to be no mechanism by which a restrictive covenant can be placed on the property if the property has been abandoned. However, North Carolina statutes provide an alternative mechanism in the form of governmental controls. North Carolina G. S. 87-97, as implemented by the rules found at 15A NCAC 02C.0100, sets out standards for permitting and inspection of private drinking water wells. North Carolina G.S. 87-97 requires counties to have programs for permitting, inspecting, and testing of private drinking water wells, which are constructed, repaired, or abandoned, on or after July 1, 2008. As a result, county health departments enforce state statutes and rules and receive technical and legal assistance from the North Carolina Environmental Health Section. The program is designed to protect human health and groundwater quality by ensuring private drinking water wells are properly constructed, repaired, and abandoned.”

### **Systems Operations/Operation and Maintenance (O&M)**

EPA SESD conducts annual groundwater sampling at the Site. An O&M plan should be developed to better assess the remedy in the future.

## **III. PROGRESS SINCE THE PREVIOUS REVIEW**

This is the Site's first FYR.

## **IV. FIVE-YEAR REVIEW PROCESS**

### **Community Notification, Community Involvement and Site Interviews**

A public notice was made available by a newspaper posting in the Statesville Record, March 17, 2018. (Appendix E). It stated that the FYR was underway and invited the public to submit any comments to the EPA. The results of the review and the report will be made available at the Site's information repository, Iredell County Public Library, located at 201 North Tradd Street in Statesville, North Carolina.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. Following the site inspection, EPA CIC Ronald Tolliver led door-to-door community interviews. Interviewed residents were aware of the cleanup but reported no issues or concerns. Interviewed residents with private wells reported their wells are deep and that the EPA has previously deemed the wells to be unaffected by site contamination. The resident of the northern site parcel was not at home; a new well on the parcel was noted during the inspection.

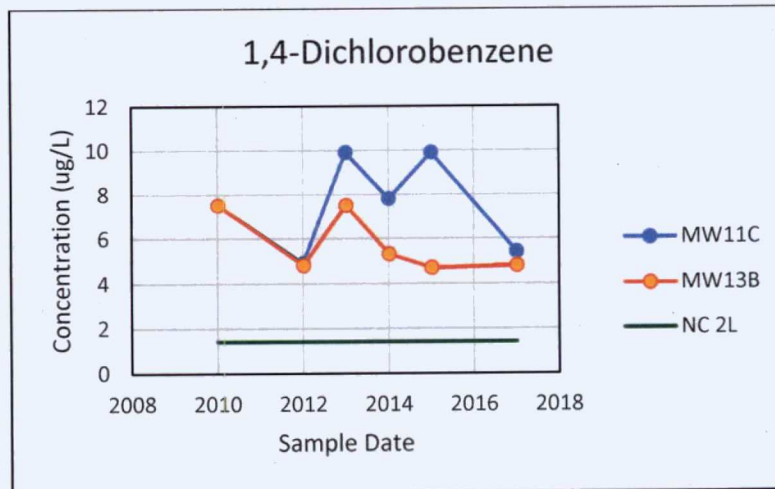
## Data Review

### Groundwater Monitoring

This FYR reviews SESD annual groundwater monitoring from 2013, 2014, 2015 and 2017, as well as an additional June 2018 SESD sampling event. Sampling includes seven MNA wells (MNA01, MNA02, MNA03, MNA04, MNA05, MNA06 and MNA08) and five RI monitoring wells (MW10B, MW11C, MW12B, MW13B and MW16C). MNA wells are screened in shallow alluvium along the intermittent streams; they have short well screens (2 to 5 feet) no more than 10 ft bls. RI monitoring wells are screened between 50 to 80 feet bls. Samples are analyzed for arsenic, iron, manganese, VOCs, ammonia, nitrate/nitrite and total nitrogen.

In 2017, ROD action level exceedances for 1,4-dichlorobenzene occurred in MW11C and MW13B. These wells have historically had the highest concentrations of 1,4-dichlorobenzene. The 2017 concentration in MW11C was almost half the 2015 concentration; the concentration stayed essentially the same in MW13B. No overall trend was noted for 1,4-dichlorobenzene since MNA began in 2009 concentrations have declined from historical levels but remained between 4 µg/L and 10 µg/L over the past eight years. In June 2018, 1,4-dichlorobenzene levels were below ROD action levels in MW11C and MW13B.

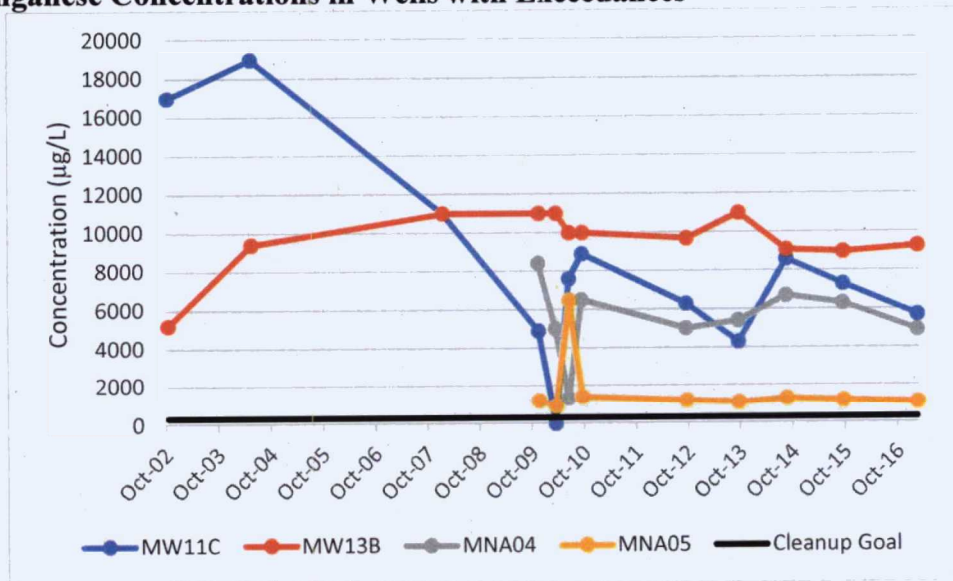
**Figure 4: 1,4-Dichlorobenzene in MW11C and MW-13B**



In 2017, manganese was detected above the ROD action level (300 µg/L) in MNA04, MNA05, MW11C and MW13B; concentrations ranged from 1,100 µg/L to 9,300 µg/L (Figure 5). Iron was below the ROD action level (11,000 µg/L) in 2014, but above the ROD action level in MNA05 during 2015 (13,000 µg/L) and 2017 (12,000 µg/L). Arsenic was detected in three wells during 2017 (MNA05, MW11C and MW16C) but concentrations were below the ROD action level of 10 µg/L. In June 2018, manganese, iron and arsenic were detected below ROD action levels in wells.



**Figure 5: Manganese Concentrations in Wells with Exceedances**



SESD also sampled six potable wells in June 2018: PW43, PW44, PW45, PW46, PW66 and PW69A (mapped in Appendix D). MCLs were not exceeded in this sampling event in the six potable wells.

**Groundwater Surface Levels**

SESD collects groundwater elevation data annually during sampling events. SESD determined the plume extent to non-contaminated areas is not defined vertically or horizontally. The 2017 annual report from SESD noted the groundwater generally slopes toward the southwest, in the direction of the North and South Tributaries downstream. Although the water table was previously shown as one solid surface, the MNA wells are screened in a surficial aquifer at the general level of the two tributaries and the RI monitoring wells are screened deeper. It is unknown whether the two aquifers directly connect.

Samples from MW11C and MW13B show contaminant concentrations above ROD-specified levels. This likely indicates contaminant migration at that depth further to the southwest, past the existing deeper wells (MW11C and MW13B). A more detailed groundwater flow map could be generated if water levels were all measured the same day, and if more points were available for the two different depth ranges.

**Site Inspection**

The site inspection took place on 2/21/2018. Participants included EPA RPM Beverly Stepter, NCDEQ project manager Beth Hartzell, and Ryan Burdge and Johnny Zimmerman-Ward from Skeo (EPA FYR support contractor). The purpose of the inspection was to assess the protectiveness of the remedy. The site inspection checklist and photographs are in Appendix G and Appendix H, respectively.

Site inspection participants met at the Site to discuss the status of the property and conduct the site inspection. Participants accessed the southern removal area via the northern and middle private properties, which were formerly part of the Sigmon’s parcel. Several vehicles were parked at the northern end of the southern parcel; they appeared to be abandoned. On the Sigmon’s parcel, participants noted four large septic tanks; a large tree was growing through one tank, indicating the tanks might remain from historical operations. There was no evidence of trespassing or dumping in the soil stockpile area of the southern parcel. Observed monitoring wells were locked and labelled.

Site inspection participants noted a newly drilled well on the northern site property. The adjacent neighbor reported the property owner had the new well drilled due to their pre-existing well no longer producing water. The property owner was not at home and could not be interviewed during the FYR. Skeo staff visited the site repository at the Iredell County Library and found all site-related documents.

## **V. TECHNICAL ASSESSMENT**

**QUESTION A:** Is the remedy functioning as intended by the decision documents?

### **Question A Summary:**

#### **OU1**

The review of documents, applicable or relevant and appropriate requirements (ARARs), and risk assumptions and the site inspection indicate that the Site's remedy was constructed in accordance with decision documents. All areas were excavated to required depths. The migration of residual COCs in the stockpile area to surface water and groundwater receptors should have been significantly reduced, greatly reducing the potential future ingestion or other risks to human health and the environment associated with the stockpile area.

During the site inspection, four large septic tanks were noted on the southern parcel, north of the delineated soil excavation area. The RA Completion Report does not mention observation or removal of tanks.

#### **OU2**

MNA monitoring of groundwater is ongoing. ROD exceedances of 1,4-dichlorobenzene continue in MW-11C and MW-13B; manganese exceedances were observed in four wells. An O&M plan with MNA goals should be developed to better assess the remedy in the future.

There are many private wells near the Site. In 2006, the EPA installed temporary filters on private drinking water wells impacted from the Site. After 2008, these residents would be responsible for maintaining the filter systems. During potable well sampling in 2008, COCs did not exceed preliminary cleanup levels in any potable well sampled. Six private wells were sampled in June 2018 including a newly identified well drilled on the northern site property. The sampling results found that there were no exceedances of MCLs.

**QUESTION B:** Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

### **Question B Summary:**

The exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection has changed. The default exposure assumptions used in Superfund human health risk assessments were updated in 2014, even though there is not a large net effect on the estimated risks or on the risk-based remedial levels. According to Table 1, the groundwater cleanup listed for 1,4-Dichlorobenzene is based on the 2L standard for 1,4-Dichlorobenzene (listed as 1.4 µg/L). The current 2L standard for 1,4-Dichlorobenzene is 6 µg/L (North Carolina 2L Groundwater Standards, updated

2013). It can also be noted that the federal MCL (drinking water standard used for public drinking water systems in North Carolina) for 1,4-dichlorobenzene is 75 µg/L (EPA 2018). Federal MCLs, North Carolina 2L standards and toxicity data for groundwater COCs are unchanged. Private wells are located near the Site, but previous EPA sampling determined they are screened deeper than site contamination and are not located downgradient.

**QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

## VI. ISSUES/RECOMMENDATIONS

One recommendation was identified during the FYR. These recommendations do not affect current and/or future protectiveness.

- An O&M plan should be developed to better assess the remedy in the future.

## VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
<i>Operable Unit: 1</i>	<i>Protectiveness Determination:</i> Protective
<i>Protectiveness Statement:</i> The remedy at OU1 is protective of human health and the environment. All contamination identified in the OU1 ROD amendment has been removed from the Site.	

Protectiveness Statement(s)	
<i>Operable Unit: 2</i>	<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy is protective because construction activities are complete, the remedy is functioning as intended, and all human and ecological risks are currently under control and are anticipated to be under control in the future through use of governmental institutional controls. North Carolina's statutes governing private groundwater use and well construction provide sufficient protections to prevent inadvertent ingestion of and exposure to contaminated groundwater.	

**Sitewide Protectiveness Statement**

*Protectiveness Determination:*

Short-term Protective

*Protectiveness Statement:*

The remedy is protective because construction activities are complete, the remedy is functioning as intended, and all human and ecological risks are currently under control and are anticipated to be under control in the future through use of governmental institutional controls. North Carolina's statutes governing private groundwater use and well construction provide sufficient protections to prevent inadvertent ingestion of and exposure to contaminated groundwater.

## **VIII. NEXT REVIEW**

The next FYR Report for the Sigmon's Septic Tank Service Superfund site is required five years from the completion date of this review.

## APPENDIX A – REFERENCE LIST

EPA, 2006 Record of Decision, Summary of Remedial Alternative Selection, Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, EPA Region 4, Atlanta Georgia, EPA/ROD/R2006040001281, September 19.

EPA, 2009, Amended Record of Decision, Operable Unit 1 (Soils), Sigmon's Septic Tank Site Statesville, Iredell County, North Carolina, EPA Region 4, Atlanta, Georgia, August 24.

EPA, 2009, Record of Decision Operable Unit 2 (Ground Water), Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, EPA Region 4, Atlanta, Georgia, August 31.

EPA, 2010, Final Remedial Action Report Operable Unit 1 (Soils) Sigmon's Septic Tank Site Statesville, Iredell County, North Carolina EPA CERCLIS ID NUMBER: NCD062555792.

EPA, 2012, Final Remedial Action Report Operable Unit 2 (Groundwater) Sigmon's Septic Tank Site Statesville, Iredell County, North Carolina EPA CERCLIS ID NUMBER: NCD062555792.

SESD, 2009, Sigmon's Septic Tank Superfund Site, Vanadium Background Study and Pile Characterization, Statesville, Iredell County, North Carolina, April 27 – 29, 2009, EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 09-0433, Athens, Georgia, June.

SESD, 2009b, Pile Removal Confirmation Sampling, Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, September 17; 200, EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 09-0715, Athens, Georgia, September.

SESD, 2010, First Quarter MNA Sampling Results, Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, November 2-4, 2009 EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 10-0026, Athens, Georgia, January.

SESD, 2013, Groundwater Sampling Investigation for Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 10-0026, Athens, Georgia.

North Carolina 2013. Groundwater Standards, Effective April 1, 2013. North Carolina Environmental Quality. [<https://deq.nc.gov/about/divisions/water-resources/planning/classification-standards/groundwater-standards>]

EPA 2014. *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors*. Office of Superfund Remediation and Technology Innovation. OSWER Directive 9200.1-120, February 6, 2014. [[https://www.epa.gov/sites/production/files/2015-11/documents/oswer\\_directive\\_9200.1-120\\_exposurefactors\\_corrected2.pdf](https://www.epa.gov/sites/production/files/2015-11/documents/oswer_directive_9200.1-120_exposurefactors_corrected2.pdf)]

SESD, 2014, Groundwater Sampling Investigation for Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 10-0026, Athens, Georgia.

SESD, 2015, Groundwater Sampling Investigation for Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 10-0026, Athens, Georgia.

SESD, 2016, Groundwater Sampling Investigation for Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 10-0026, Athens, Georgia.

SESD, 2017, Groundwater Sampling Investigation for Sigmon's Septic Tank Site, Statesville, Iredell County, North Carolina, EPA Region 4 Science and Ecosystem Support Division, SESD Project Identification Number: 10-0026, Athens, Georgia.

EPA 2018. *2018 Edition of the Drinking Water Standards and Health Advisories Tables*, Office of Water, U.S. Environmental Protection Agency, March 2018, EPA/822-F-18-001  
[<https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>]



## APPENDIX B – CURRENT SITE STATUS

### Environmental Indicators

- *Current human exposures at the Site are under control.*
- *Current groundwater migration is under control.*

### Are Necessary Institutional Controls in Place?

All  Some  None

### Has EPA Designated the Site as Sitewide Ready for Anticipated Use?

Yes  No

### Has the Site Been Put into Reuse?

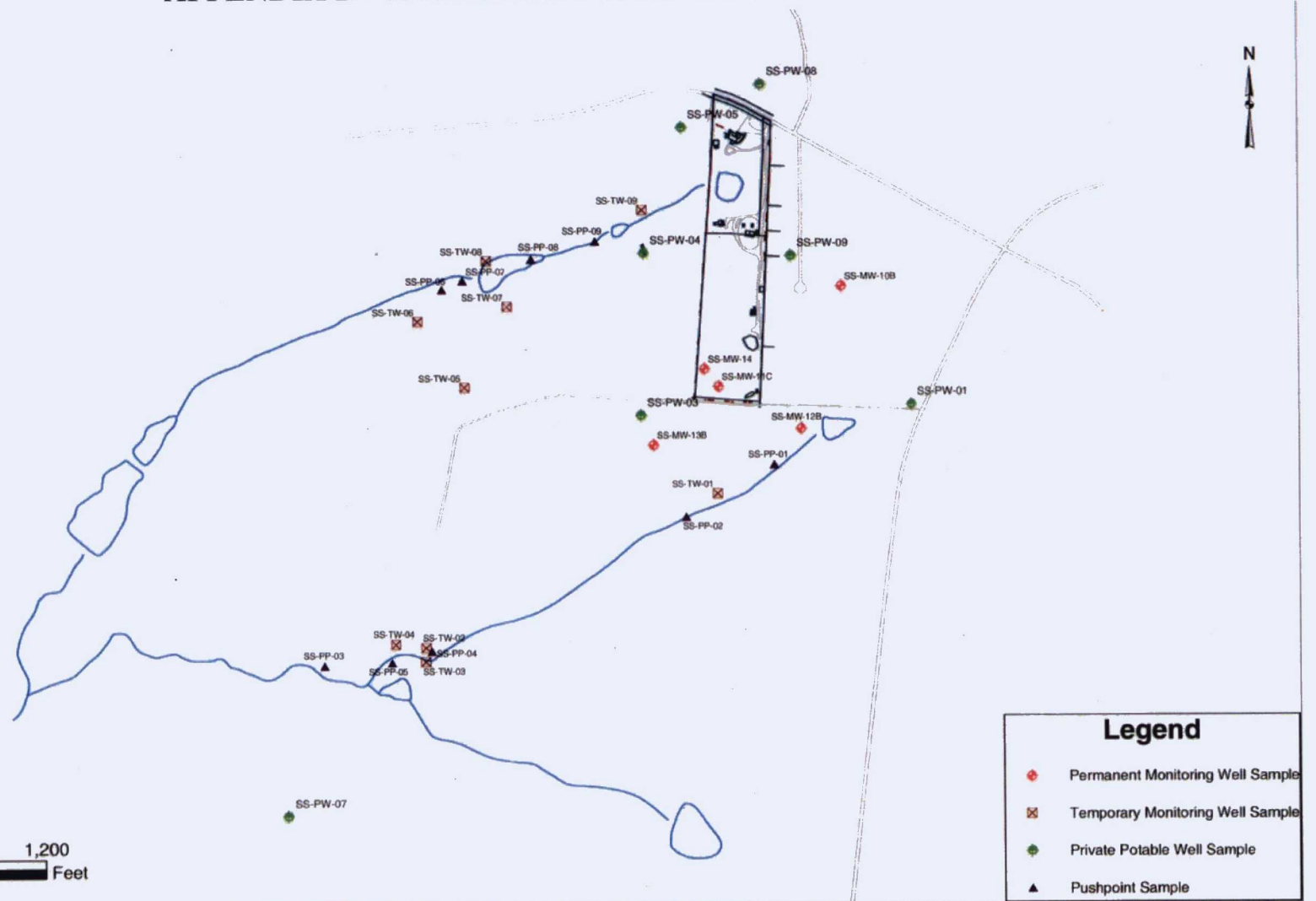
Yes  No

## APPENDIX C – SITE CHRONOLOGY

**Table C-1: Site Chronology**

<b>Event</b>	<b>Date</b>
The EPA completed the preliminary assessment and site investigation	1/26/1999
The EPA listed the Site on the NPL	4/27/2005
The EPA conducted a time-critical removal action and installed filters on seven residential wells	4/2006
The EPA completed the Site's remedial investigation/feasibility study	3/14/2006
The EPA signed the OUI ROD	9/16/2006
EPA contractors initiated the OUI remedial design start	3/27/2007
EPA contractors completed the OUI remedial design	9/19/2007
The EPA conducted additional sampling of the soil stockpile	4/29/2009
The EPA completed the BHHRA Addendum for OUI that determined vanadium is not a site COC	5/15/2009
The EPA signed the ROD Amendment for OUI	8/24/2009
EPA contractors began the remedial action	8/31/2009
The EPA signed the OU2 ROD	9/13/2009
The EPA declared the Site achieved construction complete status	9/30/2009

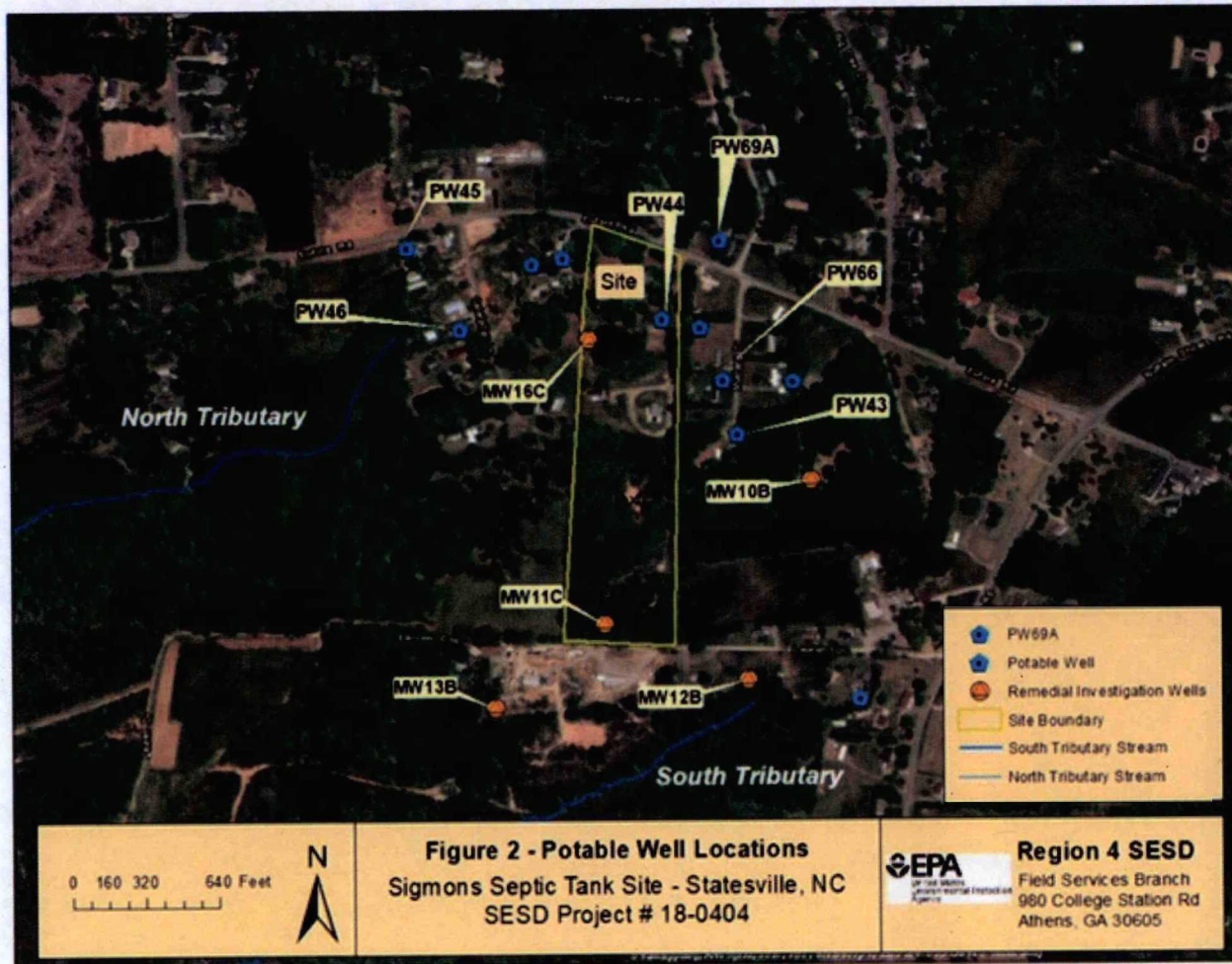
# APPENDIX D – ADDITIONAL SITE MAPS



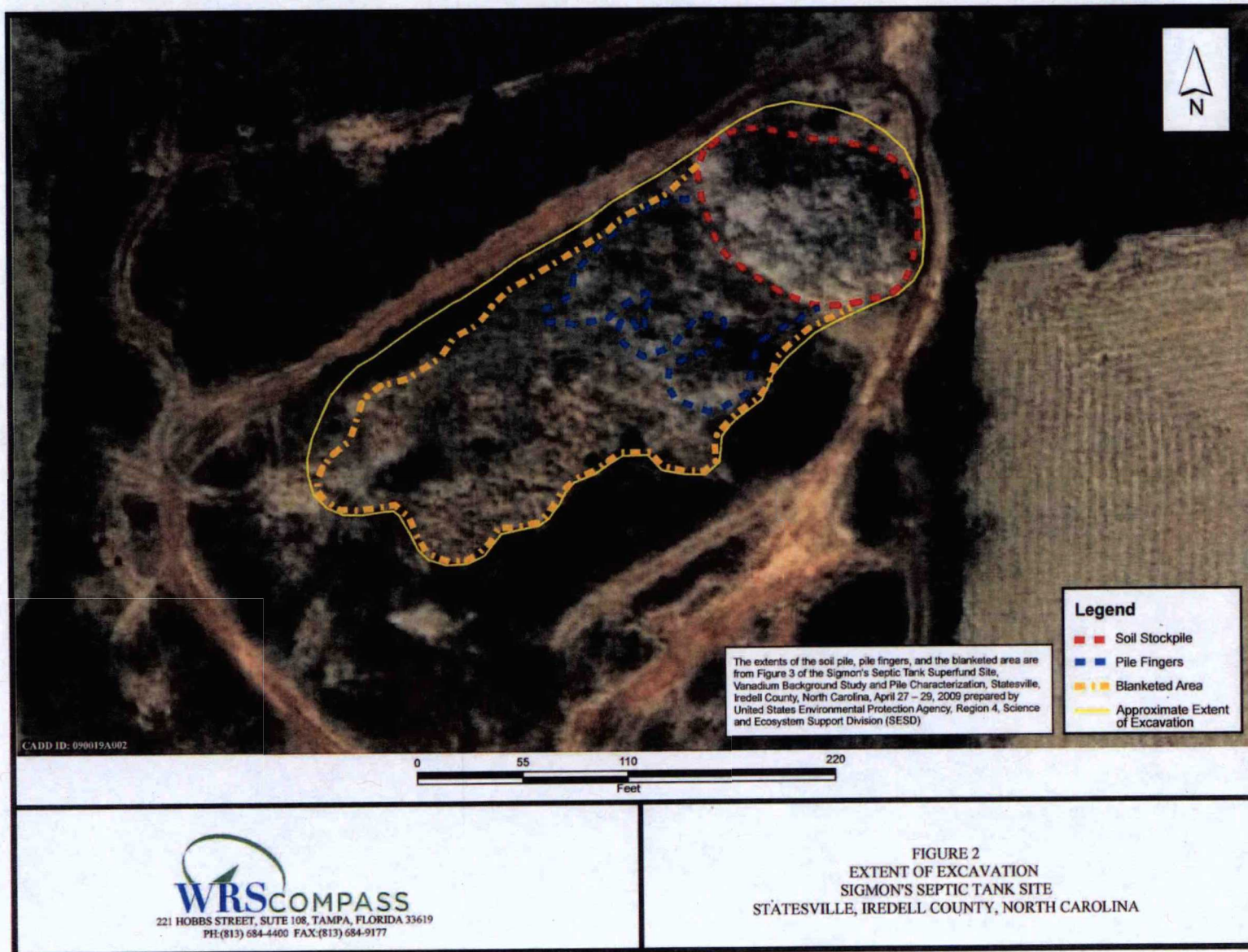
Permanent Monitoring Well, Private Potable Well, Temporary Monitoring Well, and Pushpoint Sample Locations  
 Sigmon's Septic Tank Site  
 Statesville, Iredell County, North Carolina

Figure  
 3-2









## APPENDIX E – PRESS NOTICE



### **The U.S. Environmental Protection Agency, Region 4 Announces the First Five-Year Review for the Sigmon's Septic Tank Service Superfund Site, Statesville, Iredell County, NC**

**Purpose/Objective:** EPA is conducting a Five-Year Review of the remedy for the Sigmon's Septic Tank Service Superfund site (the Site) in Statesville, NC. The purpose of the Five-Year Review is to make sure the selected cleanup actions effectively protect human health and the environment.

**Site Background:** The 15-acre area is located on Eufola Road, 5 miles southwest of Statesville in Iredell County, North Carolina. A septic waste storage facility operated on site from 1978 to 1992. Operations disposed of septic waste in unlined lagoons. These operations resulted in soil and groundwater contamination. After investigations by EPA and the North Carolina Department of Environmental Quality (NCDEQ), EPA listed the Site on the Superfund Program's National Priorities List (NPL) in 2005. Major contaminants at the Site included arsenic and benzo[a]pyrene in soil and 1,4-dichlorobenzene, arsenic, iron and manganese in groundwater. The Site is not currently in use; it can support industrial uses.

**Cleanup Actions:** EPA conducted two short-term cleanup actions at the Site. In 1995, EPA dug up septic wastes and placed them in a stockpile. In 2006, EPA installed filters on private drinking water wells and provided bottled water to residents potentially affected by contaminated groundwater. For the long-term remedy, EPA designated two operable units (OUs) to address the Site's soil and groundwater contamination. EPA selected the remedy to address soil contamination in the Site's 2006 Record of Decision (ROD) and updated it in an Amended ROD in 2009. It included the removal of stockpiled soils and disposal of the material at an off-site landfill. EPA selected the remedy to address groundwater contamination in the Site's 2009 ROD. It included monitored natural attenuation. Natural attenuation relies on natural processes to lower concentrations of contaminants. EPA monitors these conditions to make sure natural attenuation is working. In 2009, EPA removed 2,700 tons of contaminated soil and began the Site's monitored natural attenuation program.

**Five-Year Review Schedule:** The National Contingency Plan requires review of remedial actions that result in any hazardous substances, pollutants or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure every five years to ensure the protection of human health and the environment. The first of the Five-Year Reviews for the Site will be completed by July 2018.

**EPA Invites Community Participation in the Five-Year Review Process:** EPA is conducting this Five-Year Review to evaluate the effectiveness of the Site's remedy and to ensure that the remedy remains protective of human health and the environment. As part of the Five-Year Review process, EPA staff is available to answer any questions about the Site. Community members who have questions about the Site or the Five-Year Review process, or who would like to participate in a community interview, are asked to contact:



Beverly Stepter, EPA Remedial Project Manager  
Involvement Coordinator  
Phone: (404) 562-8816  
(toll-free)  
Email: [stepter.beverly@epa.gov](mailto:stepter.beverly@epa.gov)

Ronald Tolliver, EPA Community  
Phone: 404-562- 9591 | (877) 718-3752  
Email: [tolliver.ronald@epa.gov](mailto:tolliver.ronald@epa.gov)

Mailing Address: U.S. EPA Region 4, 61 Forsyth Street, S.W., 11th Floor, Atlanta, GA 30303-8960

Additional information is available at the Site's local document repository, Iredell County Public Library, located at 201 North Tradd Street, Statesville, North Carolina 28677, and online at:  
<http://www.epa.gov/superfund/sigmon-septic-tank>.

**APPENDIX F – INTERVIEW FORMS**

**Sigmon's Septic Tank Service  
Superfund Site**

**Five-Year Review Interview Form**

**Site Name:** Sigmon's Septic Tank Service

**EPA ID No.:** NCD062555792

**Interviewer Name:** Beverly Stepter

**Affiliation:** EPA

**Subject Name:** Resident 1

**Affiliation:** N/A

**Time:** 11:00 a.m.

**Date:** 02/21/2018

**Interview Location:** Residence

**Interview Format (circle one):**  **In Person**     **Phone**     **Mail**     **Other:**

**Interview Category:** **Residents**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?  
Yes, I am aware.
2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?  
It has taken a long time, nearly 15 years. There used to be a big hill that was hauled away. I remember the well drilling.
3. What have been the effects of this Site on the surrounding community, if any?  
My neighbor is not on public water. His well in front dried up, so he put in a new water well.
4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?  
No. There is no easy access back there.
5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?  
Yes, there were meetings.
6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?  
No.
7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?  
I would like to purchase the southern parcel.

**Sigmon's Septic Tank Service  
Superfund Site**

**Five-Year Review Interview Form**

**Site Name:** Sigmon's Septic Tank Service **EPA ID No.:** NCD062555792

**Interviewer Name:** Ronald Tolliver **Affiliation:** EPA

**Subject Name:** Resident 2 **Affiliation:** N/A

**Time:** 11:15 a.m. **Date:** 02/21/2018

**Interview Location:** Residence

**Interview Format (circle one):**  **In Person**  **Phone**  **Mail**  **Other:** \_\_\_\_\_

**Interview Category:** Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?  
Yes. My neighbor and I had cancer. A lot of folks did. When I first moved here 28 years ago, we smelled it all the time and there were always trucks going in and out.
2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?  
It seems okay now. There are no more smells.
3. What have been the effects of this Site on the surrounding community, if any?  
None.
4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?  
There is a lot of car traffic to the house, but not trespassing.
5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?  
I was notified about the cleanup when it was happening.
6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?  
Yes, we are on well water.
7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?  
No.

**Sigmon's Septic Tank Service  
Superfund Site**

**Five-Year Review Interview Form**

**Site Name:** Sigmon's Septic Tank Service **EPA ID No.:** NCD062555792

**Interviewer Name:** Ronald Tolliver **Affiliation:** EPA

**Subject Name:** Resident 3 **Affiliation:** N/A

**Time:** 11:30 a.m. **Date:** 02/21/2018

**Interview Location:** Residence

**Interview Format (circle one):**  **In Person**  **Phone**  **Mail**  **Other:** \_\_\_\_\_

**Interview Category:** **Residents**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?  
Yes, I know about it.
2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?  
As far as I know our well is deep and not contaminated. I believe the well is 510 feet deep.
3. What have been the effects of this Site on the surrounding community, if any?  
No issues now.
4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?  
No.
5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?  
Yes, I feel informed.
6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?  
Yes, I am on well water.
7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?  
None.

**Sigmon's Septic Tank Service  
Superfund Site**

**Five-Year Review Interview Form**

---

**Site Name:** Sigmon's Septic Tank Service      **EPA ID No.:** NCD062555792

**Interviewer Name:** Ronald Tolliver      **Affiliation:** EPA

**Subject Name:** Resident 4      **Affiliation:** N/A

**Time:** 11:45 a.m.      **Date:** 02/21/2018

**Interview Location:** Residence

---

**Interview Format (circle one):**  **In Person**       **Phone**       **Mail**       **Other:**

**Interview Category:** Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?  
Yes, I am aware.
2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?  
We all heard about it. We have a well 700 feet deep and a charcoal filter.
3. What have been the effects of this Site on the surrounding community, if any?  
None.
4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?  
No.
5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?  
We have been kept informed.
6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?  
Yes, we are on well water.
7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?  
No.



## APPENDIX G – SITE INSPECTION CHECKLIST

<b>FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST</b>																																																																																					
<b>I. SITE INFORMATION</b>																																																																																					
<b>Site Name:</b> Sigmon's Septic Tank Service	<b>Date of Inspection:</b> <u>02/21/2018</u>																																																																																				
<b>Location and Region:</b> Statesville, NC 4	<b>EPA ID:</b> NCD062555792																																																																																				
<b>Agency, Office or Company Leading the Five-Year Review:</b> <u>EPA Region 4</u>	<b>Weather/Temperature:</b> <u>65 degrees</u>																																																																																				
<b>Remedy Includes: (Check all that apply)</b> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment  <input type="checkbox"/> Access controls  <input checked="" type="checkbox"/> Institutional controls  <input type="checkbox"/> Groundwater pump and treatment  <input type="checkbox"/> Surface water collection and treatment  <input checked="" type="checkbox"/> Other: <u>Soil removal</u> </td> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Monitored natural attenuation  <input type="checkbox"/> Groundwater containment  <input type="checkbox"/> Vertical barrier walls                 </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other: <u>Soil removal</u>	<input checked="" type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls																																																																																		
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<b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached																																																																																					
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<b>1. O&amp;M Site Manager</b> <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 40%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____</td> </tr> <tr> <td colspan="3">Problems, suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>		_____	_____	_____	Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____			Problems, suggestions <input type="checkbox"/> Report attached: _____																																																																										
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<b>3. Local Regulatory Authorities and Response Agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.</b> <table style="width: 100%; border: none; margin-top: 10px;"> <tr> <td style="width: 15%;">Agency _____</td> <td style="width: 15%;">Contact _____</td> <td style="width: 15%;">Name _____</td> <td style="width: 15%;">Title _____</td> <td style="width: 15%;">Date _____</td> <td style="width: 20%;">Phone No. _____</td> </tr> <tr> <td colspan="6">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="6"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____</td> <td>Name _____</td> <td>Title _____</td> <td>Date _____</td> <td>Phone No. _____</td> </tr> <tr> <td colspan="6">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="6"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____</td> <td>Name _____</td> <td>Title _____</td> <td>Date _____</td> <td>Phone No. _____</td> </tr> <tr> <td colspan="6">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="6"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____</td> <td>Name _____</td> <td>Title _____</td> <td>Date _____</td> <td>Phone No. _____</td> </tr> <tr> <td colspan="6">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="6"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____</td> <td>Name _____</td> <td>Title _____</td> <td>Date _____</td> <td>Phone No. _____</td> </tr> <tr> <td colspan="6">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>		Agency _____	Contact _____	Name _____	Title _____	Date _____	Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____												Agency _____	Contact _____	Name _____	Title _____	Date _____	Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____												Agency _____	Contact _____	Name _____	Title _____	Date _____	Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____												Agency _____	Contact _____	Name _____	Title _____	Date _____	Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____												Agency _____	Contact _____	Name _____	Title _____	Date _____	Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____					
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Contact	Name	Title	Date	Phone No.
Problems/suggestions <input type="checkbox"/> Report attached: _____				
4. <b>Other Interviews (optional)</b> <input type="checkbox"/> Report attached: _____				
<b>III. ON-SITE DOCUMENTS AND RECORDS VERIFIED</b> (check all that apply)				
<b>1. O&amp;M Documents</b>				
<input type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
Remarks: _____				
<b>2. Site-Specific Health and Safety Plan</b>				
<input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
Remarks: _____				
<b>3. O&amp;M and OSHA Training Records</b>				
<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A		
Remarks: _____				
<b>4. Permits and Service Agreements</b>				
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Other permits: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
Remarks: _____				
<b>5. Gas Generation Records</b>				
<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A		
Remarks: _____				
<b>6. Settlement Monument Records</b>				
<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A		
Remarks: _____				
<b>7. Groundwater Monitoring Records</b>				
<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A		
Remarks: _____				
<b>8. Leachate Extraction Records</b>				
<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A		
Remarks: _____				
<b>9. Discharge Compliance Records</b>				
<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
Remarks: _____				
<b>10. Daily Access/Security Logs</b>				
<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A		

Remarks: _____			
<b>IV. O&amp;M COSTS</b>			
1.	<b>O&amp;M Organization</b>		
	<input type="checkbox"/> State in-house	<input type="checkbox"/> Contractor for state	
	<input type="checkbox"/> PRP in-house	<input type="checkbox"/> Contractor for PRP	
	<input type="checkbox"/> Federal facility in-house	<input type="checkbox"/> Contractor for Federal facility	
	<input checked="" type="checkbox"/> EPA		
2.	<b>O&amp;M Cost Records</b>		
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	
	<input type="checkbox"/> Funding mechanism/agreement in place	<input checked="" type="checkbox"/> Unavailable	
	Original O&M cost estimate: _____ <input type="checkbox"/> Breakdown attached		
	Total annual cost by year for review period if available		
	From: _____	To: _____	_____ <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
	From: _____	To: _____	_____ <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
	From: _____	To: _____	_____ <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
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	Date	Date	Total cost
	From: _____	To: _____	_____ <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
3.	<b>Unanticipated or Unusually High O&amp;M Costs during Review Period</b>		
	Describe costs and reasons: _____		
<b>V. ACCESS AND INSTITUTIONAL CONTROLS</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Fencing</b>			
1.	<b>Fencing Damaged</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Gates secured <input checked="" type="checkbox"/> N/A
	Remarks: _____		
<b>B. Other Access Restrictions</b>			
1.	<b>Signs and Other Security Measures</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A
	Remarks: _____		
<b>C. Institutional Controls (ICs)</b>			

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented  Yes  No  N/A

Site conditions imply ICs not being fully enforced  Yes  No  N/A

Type of monitoring (e.g., self-reporting, drive by): \_\_\_\_\_

Frequency: \_\_\_\_\_

Responsible party/agency: \_\_\_\_\_

Contact \_\_\_\_\_

Name	Title	Date	Phone no.

Reporting is up to date  Yes  No  N/A

Reports are verified by the lead agency  Yes  No  N/A

Specific requirements in deed or decision documents have been met  Yes  No  N/A

Violations have been reported  Yes  No  N/A

Other problems or suggestions:  Report attached

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2. **Adequacy**  ICs are adequate  ICs are inadequate  N/A

Remarks: Well restrictions are not yet in place. A new potable well was observed during the site inspection.

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**D. General**

1. **Vandalism/Trespassing**  Location shown on site map  No vandalism evident

Remarks: \_\_\_\_\_

2. **Land Use Changes On Site**  N/A

Remarks: \_\_\_\_\_

3. **Land Use Changes Off Site**  N/A

Remarks: \_\_\_\_\_

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**VI. GENERAL SITE CONDITIONS**

**A. Roads**  Applicable  N/A

1. **Roads Damaged**  Location shown on site map  Roads adequate  N/A

Remarks: \_\_\_\_\_

**B. Other Site Conditions**

Remarks: \_\_\_\_\_

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**VII. LANDFILL COVERS**  Applicable  N/A

**A. Landfill Surface**

1. **Settlement (low spots)**  Location shown on site map  Settlement not evident

Area extent: \_\_\_\_\_ Depth: \_\_\_\_\_

Remarks: \_\_\_\_\_

2. **Cracks**  Location shown on site map  Cracking not evident

Lengths: \_\_\_\_\_ Widths: \_\_\_\_\_ Depths: \_\_\_\_\_

Remarks: _____		
3.	<b>Erosion</b> Area extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Depth: _____
4.	<b>Holes</b> Area extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Holes not evident Depth: _____
5.	<b>Vegetative Cover</b> <input type="checkbox"/> No signs of stress Remarks: _____	<input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input type="checkbox"/> Trees/shrubs (indicate size and locations on a diagram)
6.	<b>Alternative Cover</b> (e.g., armored rock, concrete) Remarks: _____	<input type="checkbox"/> N/A
7.	<b>Bulges</b> Area extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Bulges not evident Height: _____
8.	<b>Wet Areas/Water Damage</b> <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks: _____	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map Area extent: _____ <input type="checkbox"/> Location shown on site map Area extent: _____ <input type="checkbox"/> Location shown on site map Area extent: _____ <input type="checkbox"/> Location shown on site map Area extent: _____
9.	<b>Slope Instability</b> <input type="checkbox"/> No evidence of slope instability Area extent: _____ Remarks: _____	<input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map
<b>B. Benches</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	<b>Flows Bypass Bench</b> Remarks: _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay
2.	<b>Bench Breached</b> Remarks: _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay
3.	<b>Bench Overtopped</b> Remarks: _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay
<b>C. Letdown Channels</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side		



slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	<b>Settlement (Low spots)</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of settlement
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	<b>Material Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of degradation
	Material type: _____		Area extent: _____
	Remarks: _____		
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of erosion
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	<b>Undercutting</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
	Area extent: _____		Depth: _____
	Remarks: _____		
5.	<b>Obstructions</b>	Type: _____	<input type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Area extent: _____	
	Size: _____		
	Remarks: _____		
6.	<b>Excessive Vegetative Growth</b>	Type: _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Area extent: _____	
	Remarks: _____		
<b>D. Cover Penetrations</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
	Remarks: _____		
2.	<b>Gas Monitoring Probes</b>		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
	Remarks: _____		
3.	<b>Monitoring Wells (within surface area of landfill)</b>		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
	Remarks: _____		

<b>4. Extraction Wells Leachate</b>			
<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A	
Remarks: _____			
<b>5. Settlement Monuments</b>			
<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed	<input type="checkbox"/> N/A	
Remarks: _____			
<b>E. Gas Collection and Treatment</b>			
<input type="checkbox"/> Applicable		<input type="checkbox"/> N/A	
<b>1. Gas Treatment Facilities</b>			
<input type="checkbox"/> Flaring	<input type="checkbox"/> Thermal destruction	<input type="checkbox"/> Collection for reuse	
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance		
Remarks: _____			
<b>2. Gas Collection Wells, Manifolds and Piping</b>			
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance		
Remarks: _____			
<b>3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)</b>			
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A	
Remarks: _____			
<b>F. Cover Drainage Layer</b>			
<input type="checkbox"/> Applicable		<input type="checkbox"/> N/A	
<b>1. Outlet Pipes Inspected</b>			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			
<b>2. Outlet Rock Inspected</b>			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			
<b>G. Detention/Sedimentation Ponds</b>			
<input type="checkbox"/> Applicable		<input type="checkbox"/> N/A	
<b>1. Siltation</b>	Area extent: _____	Depth: _____	<input type="checkbox"/> N/A
<input type="checkbox"/> Siltation not evident			
Remarks: _____			
<b>2. Erosion</b>	Area extent: _____	Depth: _____	
<input type="checkbox"/> Erosion not evident			
Remarks: _____			
<b>3. Outlet Works</b>			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			
<b>4. Dam</b>			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			
<b>H. Retaining Walls</b>			
<input type="checkbox"/> Applicable		<input type="checkbox"/> N/A	
<b>1. Deformations</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident	
Horizontal displacement: _____		Vertical displacement: _____	

Rotational displacement: _____			
Remarks: _____			
2.	<b>Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
Remarks: _____			
<b>I. Perimeter Ditches/Off-Site Discharge</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Siltation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
Area extent: _____		Depth: _____	
Remarks: _____			
2.	<b>Vegetative Growth</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
<input type="checkbox"/> Vegetation does not impede flow			
Area extent: _____		Type: _____	
Remarks: _____			
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
Area extent: _____		Depth: _____	
Remarks: _____			
4.	<b>Discharge Structure</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks: _____			
<b>VIII. VERTICAL BARRIER WALLS</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Settlement</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
Area extent: _____		Depth: _____	
Remarks: _____			
2.	<b>Performance Monitoring</b>	Type of monitoring: _____	
<input type="checkbox"/> Performance not monitored			
Frequency: _____		<input type="checkbox"/> Evidence of breaching	
Head differential: _____			
Remarks: _____			
<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Groundwater Extraction Wells, Pumps and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	<b>Pumps, Wellhead Plumbing and Electrical</b>		
<input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs maintenance <input checked="" type="checkbox"/> N/A			
Remarks: _____			
2.	<b>Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances</b>		
<input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance			
Remarks: _____			
3.	<b>Spare Parts and Equipment</b>		
<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided			

Remarks: _____	
<b>B. Surface Water Collection Structures, Pumps and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1. <b>Collection Structures, Pumps and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____	
2. <b>Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____	
3. <b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks: _____	
<b>C. Treatment System</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1. <b>Treatment Train (check components that apply)</b> <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters: _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent): _____ <input type="checkbox"/> Others: _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified. <input type="checkbox"/> Quantity of groundwater treated annually: _____ <input type="checkbox"/> Quantity of surface water treated annually: _____ Remarks: _____	
2. <b>Electrical Enclosures and Panels (properly rated and functional)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____	
3. <b>Tanks, Vaults, Storage Vessels</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs maintenance Remarks: _____	
4. <b>Discharge Structure and Appurtenances</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____	
5. <b>Treatment Building(s)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair	

<input type="checkbox"/> Chemicals and equipment properly stored Remarks: _____
<b>6. Monitoring Wells (pump and treatment remedy)</b> <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A Remarks: _____
<b>D. Monitoring Data</b>
<b>1. Monitoring Data</b> <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
<b>2. Monitoring Data Suggests:</b> <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
<b>E. Monitored Natural Attenuation</b>
<b>1. Monitoring Wells (natural attenuation remedy)</b> <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A Remarks: _____
<p style="text-align: center;"><b>X. OTHER REMEDIES</b></p> If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.
<p style="text-align: center;"><b>XI. OVERALL OBSERVATIONS</b></p>
<b>A. Implementation of the Remedy</b> Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). <u>Groundwater monitoring is ongoing. Institutional controls to restrict well use are not yet in place.</u>
<b>B. Adequacy of O&amp;M</b> Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>No issues noted.</u>
<b>C. Early Indicators of Potential Remedy Problems</b> Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>None noted.</u>
<b>D. Opportunities for Optimization</b> Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>None noted.</u>

## APPENDIX H – SITE INSPECTION PHOTOS



MW-11c



Area of former waste pile on the southern end of the site property





Northern portion of the site property with pond and wells



Dumping on the eastern edge of the Site





Cars stored on the eastern side of the Site, with private garage on middle parcel in background



Tanks left on the southern parcel