

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Bennett Landfill Fire - Removal Polrep
Final Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV

Subject: POLREP #27
Final POLREP
Bennett Landfill Fire
B44Y
Chester, SC
Latitude: 34.7874300 Longitude: -81.4502500

To:
From: Matthew Huyser, OSC
Date: 7/14/2016
Reporting Period: December 2015 to July 2016

1. Introduction

1.1 Background

Site Number:	B44Y	Contract Number:	EP-S4-07-02
D.O. Number:	0134	Action Memo Date:	9/10/2015
Response Authority:	CERCLA	Response Type:	Time-Critical
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	5/26/2015	Start Date:	5/26/2015
Demob Date:	4/22/2016	Completion Date:	4/21/2016
CERCLIS ID:	SCN000402727	RCRIS ID:	
ERNS No.:	1100014	State Notification:	11/2/2014
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Time-critical removal action.

1.1.2 Site Description

The Bennett Landfill Fire Site is a former construction debris and nonhazardous industrial waste landfill (defined by state regulations as a Class II landfill) that was additionally permitted to accept certain types of asbestos waste.

The landfill ceased accepting waste in 2014. On November 2, 2014, the landfill was found to be on fire and was believed to have been extinguished by November 7th. Due to increasing smoke concentrations in January 2015, SCDHEC requested that the EPA conduct a Removal Site Evaluation (RSE). EPA signed an Action Memorandum on April 30, 2015 to conduct a Time-Critical Removal Evaluation and mobilized to the Site to begin removal activities on May 26.

Additional information for this section is available in POLREP #4 from 6/5/2015.

1.1.2.1 Location

The Site is located at 4399 Pinkney Road, Chester, Chester County, South Carolina. The geographic coordinates of the Site are 34.7874300 degrees north and 81.4502500 degrees west.

Additional information for this section is available in POLREP #4 from 6/5/2015.

1.1.2.2 Description of Threat

The fire at the Bennett Industrial Landfill is actively releasing chemical compounds into the air, including benzene and formaldehyde, which are measured near the fire at concentrations exceeding industrial RMLs for air and concentrations within the surrounding community that are greater than three times the residential RSL. Conditions at the Site, if not addressed, will continue to deteriorate over time and resulting in increasing quantities of exposed asbestos which are susceptible to transport by wind and other weather conditions to the nearby population.

Additional information for this section is available in POLREP #4 from 6/5/2015.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Additional information for this section is available in POLREP #4 from 6/5/2015.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

From December 12 to December 16 in 2015, ERRS crews completed grading of the borrow area on the west border of the Site and installation of seeding, straw, and straw matting. The main construction road was scored, seeded, and covered with straw matting. Vegetation will not easily root in the road, so silt check dams were installed in the steepest stretch of the road, along the southern perimeter of the asbestos cell, to prevent washout of the soil. Boulders were placed in front of the gate prior to demobilization on December 18 as a passive security measure and deter vehicle access to the Site.

OSC Huyser visited the Site on 1/14/2016. Grass was found to be successfully growing on the east and west slopes of the landfill with comparatively less growth on the top and the bottom of the west side, both the toe of the face and the sediment slope near the borrow area. Grass matting on the construction road had been washed out in two areas, around the south side of the asbestos cell and on the north side near the main landfill. Soil in the bottom sediment slope near the borrow area was found to be washing out. Stability of the landfill and the asbestos cell, where waste is buried, appeared stable.

OSC Huyser visited the Site again on 3/30/2016. Clover was found to be the most dominant species successfully growing on the landfill across all areas. Damaged areas identified on 1/14/2016 were slightly more deteriorated but no new damaged areas were found. Yellowed and dry growth was found throughout the construction area, suggesting low nutrient availability and/or low pH. value in the soil.

OSC Huyser mobilized ERRS to conduct stabilization, seeding, and fertilization from 4/18/2016 to 4/22/2016. A mixture of fescue, rye, and crimson clover was again spread at the Site along with fertilizer (19-19-19 and 0-49-0) in areas of lowest growth success (top of landfill, construction road, bottom and borrow pit). Straw matting was reapplied in areas where it had become dislodged. Straw bales were installed and staked where rutting had been found on sloped surfaces. Washed-out areas near the bottom were rebuilt and reseeded.

OSC Huyser visited the Site on 7/7/2016. Grasses which had been seeded and grown following construction reached a length of more than 12 inches but had dried and become dormant under dry and hot conditions. Sparse broad leaf weed growth was found throughout the Site. Areas which had been stabilized in April of 2016 were found to be secure and no additional damage was noted around the Site.

2.1.2 Response Actions to Date

- May 25-29: ERRS mobilization, site preparation (access roads, entrance, trailer, work zones)
- June 1-2: Grading and wetting burned area
- June 3: First record of no morning smoke observed
- June 3-5: Continue grading and wetting burned area. Moved cover soils from borrow area to burned area
- June 5-26: Continue grading and covering operations.
- June 16: Exhausted stockpile of cover soil at top center of Site
- June 26 Initial cover soil installation completed.
- June 29 Initial six inches of clay cap begun. Completed on July 3rd.
- July 2nd Three additional gas monitoring wells installed to monitor landfill carbon monoxide and temperatures near former burn area.
- July 13-17: Began removal of trees and topsoil from West Ridge Borrow Zone
- July 14: Exhausted Old Yard Stockpile at the south side of the Site
- July 14-17: Begin installation of second 6" clay layer on burn area
- July 20-22: Complete second 6" clay lift on burn area
- July 22: Conducted compaction testing by PSI Inc - 30 of 34 grids passed
- July 23: Begin installation of third clay layer on landfill face area
- July 28: Complete excavation of 3 vertical feet of sediment from detention pond
- July 29: Consultation with Clemson University Extension Office for Soil quality and vegetation
- July 27-31: Continue installation of third clay layer on landfilled face area reaching 90% completion
- Aug 6: Conducted round 2 of compaction testing, 27 of 28 grids passed.
- Aug 14: Completed fourth and final clay layer on the face area
- Aug 12: Begin removal of Knoll Borrow Zone
- Aug 12: Begin initial cover installation on Asbestos Cell
- Aug 17 Initial cover of Asbestos Cell completed
- Aug 29 Final cover of Asbestos Cell completed
- Aug 25 Begin installation of topsoil on former burn area
- Aug 29 Begin installation of vegetative cover on former burn area
- Aug 29 Complete stormwater protection measures on detention pond.
- Aug 31 Begin grading northeast debris cell
- Sep 17 Complete initial 12-inch soil layer on northeast debris cell
- Sep 18 Complete construction of dams above retention pond and in west stormwater channel
- Sep 25 Clay capping of North Debris Cell 50% complete
- Sep 28 Temporary demobilization due to weather and ground conditions
- Oct 07 ERRS contractors remobilized after significant rain event and flooding in South Carolina
- Oct 17 60 percent of landfill face covered with topsoil, seeded and fertilized.
- Oct 19 Landfill face covered with topsoil
- Oct 22 Landfill face covered with seed, fertilizer, straw matting, and erosion control devices
- Oct 21 Berm at top of landfill face completed to redirect storm water from top
- Nov 2-12 Temporary demobilization due to weather and ground conditions
- Nov 18 Landfill top soil cap completed
- Nov 18 Landfill top covered with seed, fertilizer, and straw
- Dec 4 Complete diversion berm on silt slope under southwest toe of Landfill face
- Dec 9 Complete vegetation and erosion controls on silt slope
- Dec 9 Complete diversion berms and vegetation on north side of asbestos cell

- Dec 9 Complete erosion controls and vegetation on west channel
- Dec 16 Complete all seeding and cover
- Dec 18 Install boulders at front gate

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

Information for this section is available in POLREP #4 from 6/5/2015.

2.1.4 Progress Metrics

<i>Waste Stream</i>	<i>Medium</i>	<i>Quantity</i>	<i>Start Date</i>	<i>Treatment</i>	<i>Est. % Complete</i>
Burning Area	Debris	Approx 3.0 acres	6/1/2015	Cover	18" of cover soils completed on 6/26. Initial clay cap completed 7/3. Final clay cap completed 8/14. Topsoil completed 10/19. Erosion Control completed 10/22.
Asbestos Cell	Debris	Approx 19,500 CY	n/a	Regrade & Cover	Initial cover completed 8/17/15. Final clay cap completed 8/29/2015. Vegetation installed 9/23.

2.2 Planning Section

2.2.1 Anticipated Activities

The first priority of the removal action has been to address the burning debris pile by installing a soil cover. Isolation of the burning material and reduction of oxygen supply will significantly reduce emissions from the smoldering fire. The second priority of the removal action has been to address the eroding asbestos disposal cell by re-grading and covering the area.

Air sampling and monitoring activities have been completed.

2.2.1.1 Planned Response Activities

- Isolation of burning material by removal and relocation of available fuel path and installation of earthen cover; **(COMPLETE)**
- Isolation of designated asbestos disposal cell through the installation of earthen cover; **(COMPLETE)**
- Re-grading waste materials and native soils for purpose of cover installation; **(COMPLETE)**
- Installation of temporary measures to prevent off-site migration of dust or contaminants as removal operations are conducted; and, **(COMPLETE)**
- Continue sampling and monitoring, as needed, for site safety purposes and to further delineate or identify contaminants. **(COMPLETE)**

2.2.1.2 Next Steps

There are no further removal action activities planned for the Site.

A final overflight for post construction aerial imagery collection may be scheduled if START funds are available following completion of final reporting requirements.

2.2.2 Issues

On the morning of December 14, ERRS observed an emission of steam or smoke on the south edge of the top of the landfill, located less than 200 feet east of a February 2015 boundary describing the "100-foot buffer" beyond where burning debris had been observed. This specific area was not heavily worked, graded, or covered, during the removal action. In order to inspect the source and nature of the emission, an excavator was used to dig a trench approximately 30 feet long, 4 feet deep, and 4 feet wide. Buried construction debris was found at a shallow depth of six inches in some places. No smell of burning debris or combustion was observed but elevated temperatures from 80 degrees Fahrenheit to a maximum of 120 degrees were measured (guidance material suggests 167 degrees Fahrenheit is indicative of a landfill fire).

OSC Huyser immediately deployed START to the Site to collect air monitoring values and collect samples for laboratory analysis. Oxygen levels were found to be within ambient range at 21.5% while Methane, Carbon Monoxide, and Hydrogen Sulfide were not detected. No positive lower explosive limit (LEL) readings were found. Carbon Dioxide was measured at 0.1%. Grab samples using vacuum canisters were collected. A 24-hour sampling run was initiated but several units failed.

Successful samples yielded results for 1,2-Dichloroethane, 1,4-Dichlorobenzene, Benzene, Chloroform, Ethyl Benzene, Trichloroethane, and Vinyl Chloride which slightly exceeded EPA Residential Air Regional Screening Levels (RSLs). Only the 24-hour sample yield of Vinyl Chloride (36 µg/m3) exceeded the corresponding Residential RSL (0.17 µg/m3) by an order of magnitude or more. Other detections above Residential RSLs were slightly elevated but within the same order of magnitude.

Successful samples also yielded results for Oxygen at 15 - 18%, Methane at 2.7 - 0.7%, and Carbon Dioxide at 4.1 - 8.0%. Carbon Monoxide, which would be indicative of combustion, was not found above detection limit levels.

Sampling units for Hydrogen Cyanide, Mercury, and Formaldehyde failed, but analysis found 0.19 µg of Formaldehyde in the sample unit but no concentration relevant to the air could be derived. Formaldehyde

may be present in the air within the trench.

Sampling units for particulates failed resulting in light loading to the filter media. Analysts found a small number of particles which were consistent with combustion by-products but no information on its origin, age, or concentration could be provided.

A shallow gas monitoring "well" was installed in the trench before it was filled and covered. The well was constructed in a similar manner to the previous three wells which were used to monitor landfill gas during the removal action. A five foot schedule 40 PVC pipe was used; the lower half was perforated and wrapped with silt fencing. The top was covered with a PVC end cap. No odors or temperatures noticeably above ambient levels were observed in the shallow well during follow-up inspections on 1/14/2016, 3/30/2016, 4/7/2016, and 7/7/2016.

2.3 Logistics Section

There are no further logistics needs at the Site.

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

OSC Matthew Huyser

OSC Perry Gaughan

3. Participating Entities

South Carolina DHEC has provided technical assistance and information throughout this project

South Carolina Forestry Commission has inspected the Site and confirmed that no unacceptable forest fire hazard is present.

Chester County EMA and Union County EMA has provided technical assistance and information, as needed, throughout this project

Clemson Chester County Extension Office has provided technical assistance for soil amendment and seeding needs regarding final cover and vegetation

3.1 Participating Entity Activities

The Site will be inspected according to South Carolina DHEC's standard inspection schedule for closed or non-operating landfills.

4. Personnel On Site

None

5. Definition of Terms

µg/m3	Micrograms per cubic meter (= 0.001 mg/m3)
AEGL	Acute Exposure Guideline Levels
AQI	Air Quality Index
C	Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Conc	Concentration
ConcHR	Hourly (HR) average value recorded by an EBAM instrument
ConcRT	Real time (RT) concentration recorded by an EBAM instrument based on a rolling four-minute average
DHEC	South Carolina Department of Health and Environmental Control
EMA	Emergency Management Agency
EPA	U.S. Environmental Protection Agency
ERRS	Emergency and Rapid Response Services
mg/kg	Milligram per kilogram (= 1 ppm)
mg/L	Milligram per liter
mg/m3	Milligram per cubic meter (= 1000 µg/m3)
NAAQS	National Ambient Air Quality Standard (primary and secondary NAAQS for PM2.5 24-hour average is 35 µg/m3)
NPL	National Priorities List
OAQPS	EPA Office of Air Quality Planning and Standards
OSC	On-Scene Coordinator
PM2.5	Airborne particulate matter with particle diameters below 2.5 microns
ppb	Part per billion (cannot be used to describe a mass per volume unit such as µg/m3)

ppm	Part per million (cannot be used to describe a mass per volume unit such as mg/m3)
RML	Removal Management Level
RSL	Regional Screening Level
SCDHEC	South Carolina Department of Health and Environmental Control
START	Superfund Technical Assessment and Response Team
TWA	Time-weighted average

5.1 Regional Screening Levels (RSL) and Removal Management Levels (RML)

Regional Screening Levels (RSL) are conservative risk-based screening values developed by the U.S. EPA to help identify contaminants of potential concern. Contaminants that exceeded a RSL in at least one sample are then screened against industrial air Removal Management Levels (RML) that were calculated for this evaluation. RMLs are risk-based screening values developed by the U.S. EPA to determine whether sample concentrations are sufficiently elevated that they may warrant a removal action. Exceedance of a RML by itself does not require a removal action, nor does it imply that adverse health effects will occur.

6. Additional sources of information

6.1 Internet location of additional information/report

Site updates will be provided to the "[Bulletins](#)" section of epaosc.org/bennettlandfill

Documents, reports, and videos for public release will be posted to the "[Documents](#)" section of epaosc.org/bennettlandfill

6.2 Reporting Schedule

No new POLREPs are anticipated. Final reporting documentation will continue to be posted in the the "[Documents](#)" section of epaosc.org/bennettlandfill as such materials become available.

Daily photos of site conditions and progress are being posted to the "[Images](#)" section of epaosc.org/bennettlandfill. These photos are collected from the same general locations each day.

7. Situational Reference Materials

No pertinent information to report at this time.