ATSF ALBUQUERQUE SUPERFUND SITE

Bernalillo County, South Valley Area
New Mexico

EPA Region 6
State Congressional District: 1

EPA ID# NMD980622864
Site ID: 0600879

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Current Status

The Final Remedial Design Amendment and the Final Remedial Action Work Plan were accepted by the U.S. Environmental Protection Agency and the New Mexico Environmental Department (NMED) on June 6, 2008. BNSF completed contracting activities and remedial action construction began on September 29, 2008. The Final inspection was held on January 12, 2011, and the Preliminary Close Out Report was signed on February 10, 2011. This report documents the completion of remedial action construction.

BNSF submitted the Final Remedy Construction Report dated September 2012, and the Agencies determined that the report adequately addressed the Agencies' comments and satisfied the requirements under the Record of Decision, Consent Decree, and the Statement of Work, and is consistent with the Final Remedial Design documents and Final Remedial Action Work Plan documents. The Final Remedy Construction Report documents the completion of all construction activities related to the soil and ground water cleanup activities, documents that the remedy is functioning properly and operating as designed, and signifies the completion of the remedial action phase of the project and the beginning of long-term response action cleanup under the Operation and Maintenance phase.

Under the Operation and Maintenance phase, the capped area will be inspected routinely and issues/repairs will be addressed as necessary. No major cap repairs have been necessary to date. The treatment plant is operational and is currently running 5 days per week extracting DNAPL and contaminated water, treating the water, and then re-injecting the treated water. All DNAPL is shipped offsite for disposal. Ground water monitoring is ongoing and currently conducted quarterly. The current Operation and Maintenance Plan and Ground Water Monitoring Plan was revised in 2014 and addresses the sampling, maintenance, reporting, and data evaluation activities that will be conducted during the operation and maintenance phase of the cleanup.

The New Mexico Environment Department completed the first Five-Year Review in July 2013. The review was signed by EPA on September 6, 2013, and has been made available at the site repository. EPA and NMED are working to address the reports recommendations.

Background

The AT&SF Albuquerque site is located at 3300 Second Street, SW, in the South Valley area of the City of Albuquerque, Bernalillo County, New Mexico. The facility is a part of the plant property that totaled more than 85 acres in 1907, and was constructed from 1907 to 1908. The facility operated as a wood pressure treatment plant from March 1908 to January 1972, and primarily used creosote and oil mixtures for the manufacture of pressure treated wood products. In 1972, the plant was totally dismantled, and the only physical feature remaining on-site is the wastewater reservoir/wastewater sump.

Most of the organic contamination found at the site occurs as a dense non-aqueous phase liquid (DNAPL) with organic compounds that slowly dissolve into the ground water. The soil contaminants consist of Polynuclear Aromatic Hydrocarbons (PAHs) and zinc.

The closest residential area is about 0.5 miles to the southwest and a single residence (mobile home) is located about 600 feet west of the site. Two major residential areas are located about 2 miles north and 1.5 miles south of the site. Major population centers are located either west of the Rio Grande, north of Woodward Drive or east of Interstate 25.

Benefits

Several Cleanup and Removal Actions were completed from 1990 through 2000. These actions eliminated unacceptable health risks associated with soil, sludge and waste.

In July and August of 1990, BNSF removed and disposed of approximately 8,250 tons of creosote-tainted debris in connection with a state enforcement action. This debris was comprised of plant demolition wreckage that had been placed into the east end of the wastewater reservoir. Approximately 45,000 square feet of wastewater reservoir soils were excavated to a depth of 2 to 5 feet.

In 1996, tie storage areas with total semivolatile organic concentrations above 41.1 mg/kg were excavated and backfilled with clean soil after confirmation testing was performed to ensure that the contaminated soil had been excavated.

In April 1999, sludge and process residue from the wastewater reservoir was excavated in response to an EPA Unilateral Administrative Order (UAO), which specifically called for BNSF to remove process residues located within the old wastewater reservoir. Because of the fluid nature of this material and a lack of a well-defined contact between process residues and soil, up to 2 feet of underlying soil was removed, and at some locations, excavations were as deep as 6 feet. A total of approximately 83 gondola cars (approximately 6,012 tons) were filled and transported offsite for disposal. As a direct result of this removal action, the most highly contaminated soil and sludge was removed.

In 1999, three recovery trenches were installed to collect dense non-aqueous phase liquid (DNAPL) through a gravity feed system. In 2000, five recovery pumps were installed to extract DNAPL from the Shallow and Intermediate Aquifers. These pumps continue to extract DNAPL from the aquifer.

Reuse: At the completion of the remedial action, the 89-acre site will be available for future industrial use.

Environmental Indicators: Human health exposure has been controlled with the removal of contamination during the removal action and maintenance of the site fence. Currently, the ground water migration and exposure pathways will not be controlled until completion of the remedial action and installation of the ground water extraction system. The site is currently in the remedial action phase.

National Priorities List

Proposal Date: October 14, 1992
Final Listing Date: December 16, 1994
Partial Delisting: March 2, 2011 Northern 62 acres
Location: The site is located at 3300 Second Street, SW, in the South Valley area of the City of Albuquerque, Bernalillo County, New Mexico.

Population: The closest residential area is about 0.5 miles to the southwest and a single residence (mobile home) is located about 600 feet west of the site. Two major residential areas are located about 2 miles north and 1.5 miles south of the site. Major population centers are located either west of the Rio Grande, north of Woodward Drive or east of Interstate 25.

Setting: The facility was a part of the plant property that totaled more than 85 acres in 1907, and was constructed from 1907 to 1908. The facility operated as a wood pressure treatment plant from March 1908 to January 1972, and primarily used creosote and oil mixtures for the manufacture of pressure treated wood products, including railroad cross ties, bridge ties, switch ties, bridge timbers, road crossing materials, bridge piling materials, lumber, stock pen posts and fence posts. In 1972, the plant was totally dismantled, and the only physical feature remaining on-site is the wastewater reservoir/wastewater sump.

Hydrology: The site is located in the inner Rio Grande Valley, which is incised into the sedimentary basin fill of the Albuquerque basin. The sedimentary basin fill consists largely of the Santa Fe Formation with some overlying recent deposits represented by the Rio Grande Alluvium. At the site, the Rio Grande Alluvium is about 53 to 82 feet thick and consists of two water-bearing zones: the Shallow Aquifer which extends to an average depth of 20 feet and the Intermediate Aquifer which extends to an average depth of around 60 feet. A discontinuous silty clay layer separates these two aquifers. The underlying Santa Fe Formation has been divided into three parts (upper, middle and lower) that are inter-connected. In the vicinity of the site, the Santa Fe Formation is approximately 4,750 feet thick, with the upper Santa Fe Formation estimated to be about 650 feet thick. At the site, ground water flow for the Shallow and Intermediate Aquifers is generally in the east-southeast direction.

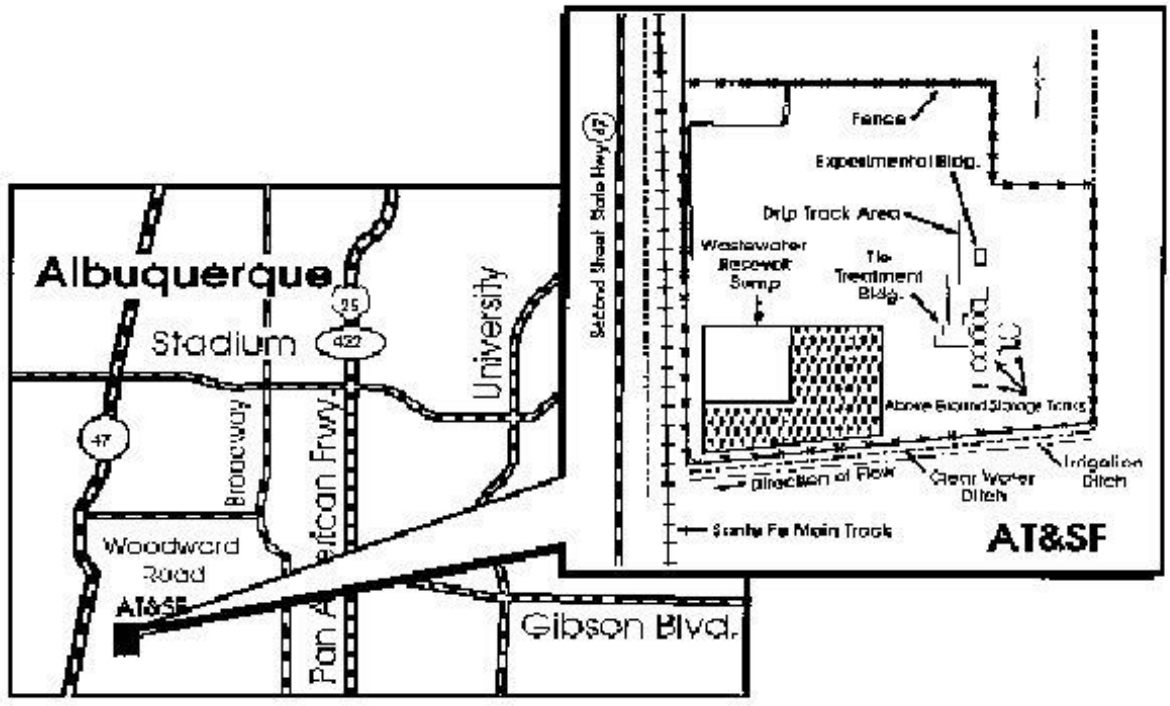
Principal Pollutants: The Cleanup and Removal Actions addressed the contaminated soil, sludge and waste. Ground Water cleanup is ongoing.

Groundwater: Most of the organic contamination found at the site occurs as a dense non-aqueous phase liquid (DNAPL) with organic compounds that slowly dissolve into the ground water followed by some preferential sorption to soil particles in the aquifer matrix. The DNAPLs are present in the subsurface as either "free phase" or "residual phase." The free phase is that portion of the DNAPL that can continue to migrate and sink into the aquifer, whereas the residual phase is that portion of the DNAPL that is trapped in pore spaces by capillary forces and cannot generally migrate as a separate liquid. Both occurrences of the DNAPL act as continuing sources of contamination to ground water. It is estimated that there are between 59,300 and 70,000 gallons of DNAPL at the Site, and it has been found down to depths of 65 feet.

Soil: The soil contaminants consist of Polynuclear Aromatic Hydrocarbons (PAHs) and zinc. In the treatment process area, concentrations were as high as 1,356 mg/kg and in the drip track area, concentrations were as high as 7,000 mg/kg. These maximum concentrations were typically near the

points of release, e.g., the tank car unloading area, the above ground storage tanks and the weighing station for treated ties.

Site Map



Human Health and Ecological Risk Assessment

The numerical cleanup goals for the ground water are the Primary Drinking Water Maximum Contaminant Level Goals and the Maximum Contaminant Levels (MCL) per Section 300.400(g)(2) of 40 CFR. The numerical cleanup goals for the soil include 200 milligrams per kilogram zinc and 7.8 milligrams per kilogram Benzo(a)pyrene equivalent.

Community Involvement

NMED and EPA held an open house on March 10, 2009, to discuss and present site constructional activities and future work at the site. A factsheet was also mailed to the surrounding community.

NMED and EPA held an open house on February 2, 2010, to discuss remedy changes, and present site constructional activities and future work at the site.

Record of Decision

Soil, DNAPL, and Ground Water: The Record of Decision was signed on June 27, 2002.

The major elements of the remedy include:

Soil Remediation: The selected remedy consists of elements of alternative S-8, modified to require elements of alternative S-6 for areas of the Site where dense non-aqueous phase liquid (DNAPL) contaminated soil is encountered. This modified soils remedy adopts the approach utilized by EPA for dealing with DNAPL hot spots that is incorporated in the selected ground water remedy below.

Alternative S-8, in-situ solidification/stabilization, capping, and run-off/run-on management are the selected remedy for contaminated soils above the remediation goals that do not contain DNAPL.

Alternative S-6, off-site incineration is the selected remedy for those portions of the Site where DNAPL-contaminated soil is encountered during the excavation of soil. This will consist of the excavation of DNAPL-contaminated soils, transportation to an off-site hazardous waste incinerator facility, and incineration of the DNAPL-contaminated soil at such facility.

Ground Water Remediation: The selected remedy for ground water is an aggressive performance-based approach for remediation of contaminated Site ground water. This performance-based approach consists of the following major components

Ground water restoration through pumping and treatment and re-injection alternatives GW-2, UV-oxidation treatment, filtration, carbon adsorption and disposal of ground water, GW-3, Biological treatment, clarification, filtration and disposal of ground water, or GW-4, Filtration, clay adsorption, carbon adsorption and disposal of ground water will be accomplished through a performance based approach. Depending upon the outcome of operational performance review and evaluation during the remedial design phase, any one of these alternatives or a combination thereof will actually be implemented during remedial construction. The performance criteria that will determine which of these alternatives will actually be implemented is their ability to meet ground water remediation goals for both the aquifer and the treated ground water.

DNAPL source removal and hot spot treatment will be accomplished through operational performance based evaluation and review of alternatives GW-5, Steam Flushing, GW-6, Co-solvent alcohol flushing, and GW-7, Oxidation during remedial design, followed by implementation of one of these approaches or a combination thereof with conventional DNAPL recovery methods during remedial construction. The performance criteria that will determine which of these alternatives will actually be implemented is their ability to attain DNAPL mass reduction so that ground water remediation goals for the aquifer are met.

Explanation of Significant Differences (ESD)

Soil: The ESD was signed on February 26, 2010.
Open house was held on February 2, 2010.

The ESD documents significant changes to the ROD that (1) address the expanded areal extent of zinc-contaminated soil to be excavated, treated, and capped, by decreasing the required depth of excavation for the zinc-contaminated soil; (2) revise the performance criteria for the treated contaminated soil; and (3) remove phytoremediation as a soil remediation component. This ESD does not change or affect any component of the Site Ground Water Remedy as specified in the ROD.

Ground Water Remediation: The 2002 ROD selected remedy remains unchanged.

Soil Remediation:

1. Zinc-contaminated Soil Volume and Excavation Depth: During implementation of the soil remedy, soil exceeding the ecological soil remediation goal (SRG) of 200 milligrams per kilogram (mg/kg) for zinc has been found on the Site in areas not previously identified during the Site remedial investigation and has led to a greater than 50% increase in the volume of soil that requires excavation, treatment, and capping. In order to keep excavated soil volumes at a manageable level for in-situ treatment and capping, the excavation depth is reduced to a maximum of 2 ft. for soil that only exceeds the SRG for zinc. Where soil exceeds the benzo(a)pyrene (BAP) equivalent SRG, excavation to a

maximum depth of 3 ft., as specified in the ROD, will be conducted in order to be protective of human health.

Based on the review of Site-specific circumstances and data, the potential that the zinc concentrations left in place, at a depth of 2 ft., would pose a threat to human receptors, ecological receptors, or ground water is low. The potential exposure pathway to ecological receptors is interrupted through the process of soil removal and backfill with clean fill meeting the SRG, and both soil leachate data and ground water monitoring data indicate that the New Mexico Water Quality Control Commission ground water quality zinc standard is not likely to be exceeded. Therefore, excavation of zinc contaminated soil to a depth of 2 ft. (3 ft. for BAP equivalents contaminated soil) is protective of human health and the environment.

2. Performance Criteria for Treated Soil Capped Onsite: As described in the ROD (Section 12.2), BNSF had plans to expand existing rail tracks on the western portion of the Site; therefore, the ROD specified that the excavated soil would be in-situ solidified/stabilized to meet a permeability of 10^{-6} centimeters per second (cm/sec) and a compressive strength of 20 pounds per square inch (psi) in support of this expected future reuse. Since the signing of the ROD, this land use has changed and institutional controls affecting future Site development (including the provisions of the Consent Decree governing Site development) have been put in place. In addition, soil excavated to date has been in-situ solidified/stabilized across the bottom of the onsite repository to meet the permeability and compressive strength criteria specified in the ROD.

   Because the proposed expansion of the rail tracks in the western area of the site is no longer being considered, the potential for leachate concentrations exceeding the ground water quality standard is low, the requirements for permeability and compressive strength for the underlying in-situ solidified/stabilized soil are met, and the permeability requirement for an overlying repository cap is met, the additional soil requiring excavation will not be treated to the permeability or compressive strength performance standard provided in the ROD. The additional excavated soil will be treated through in-situ solidification/stabilization to further limit the leaching potential, and then will be compacted to meet a 10 psi compressive strength criterion to provide a stable base for the cap, limit subsidence, and minimize future maintenance activity. As a final step, a cap meeting a permeability requirement of 1×10^{-7} cm/sec will be placed over the entire in-situ solidified/stabilized soil repository.

3. Phytoremediation Removal: The ROD identifies the use of phytoremediation in areas of low-level contamination (Sections 7.0 and 10.1), which were not further defined. Pursuant to the ROD, contaminated soil exceeding the excess lifetime cancer risk range or the non-cancer hazard index for an industrial future use scenario and/or the ecological risk will be excavated, treated, and capped. The excavation areas will then be backfilled with clean soil meeting the Site-specific SRGs. No identified areas of soil exceeding the SRGs will be left in place. All identified areas will be excavated to either a maximum depth of 2 ft. for zinc contaminated soil as specified in this ESD or to a maximum of 3 ft. for BAP Equivalent contaminated soil as specified in the ROD. Since impacted soil in all identified areas exceeding the SRGs will be excavated, in-situ solidified/stabilized, and capped, the use of phytoremediation as a remedial component is considered to be superfluous and not cost effective. Therefore, it is no longer deemed a part of the Site remedy by the EPA.

Institutional Controls as Specified in the ROD: In support of the remedial action described above and as a secondary level of protection for human health and the environment, an institutional control was put in place as a requirement of the Consent Decree and the ROD. This requirement reflected the fact that the remedial action would not result in the Site being available for unlimited use and unrestricted exposure because Site contaminants in the soil will only be addressed to levels protective of future industrial or

commercial use. On February 27, 2008, an Environmental Protection Easement and Declaration of Restrictive Covenants was filed by BNSF, after approval by EPA and NMED, and recorded by the County Clerk of Bernalillo County, New Mexico. This institutional control runs with the land and restricts the use or development of the Site property and the use or development of ground water on or underlying the property. Specifically this institutional control prevents any use or development that would threaten or damage remedial components on the Site, which would include potential damage to the cap or underlying in-situ solidified/stabilized contaminated soil. Further, any development within the 27.28 acre southern part of the Site requires prior EPA review and written approval of development, along with certification that remediation goals have been met. At the conclusion of the remedial action construction, an Interim Remedial Action report will document actions taken at the site including maps showing the excavation areas, soil concentrations at the base and sides of excavation areas, quality control performance data, and as-built details of the soil repository.

In conjunction with the Environmental Protection Easement and Declaration of Restrictive Covenants, the New Mexico Office of the State Engineer instituted a temporary institutional control in the form of a moratorium on new permits for ground water wells within a 200-ft buffer zone of the currently identified ground water plume surface area while remedial action is being performed. This moratorium was filed on January 29, 2009, to protect human health and minimize interference with the ground water remediation activities until all ground water remediation goals have been met. The revised soil compressive strength and performance criteria, taken in conjunction with the existing Site institutional controls (including the Site development restrictions of the Consent Decree) will ensure that remedial protectiveness of human health and the environment is maintained at the Site. Five-year reviews will be conducted by the Agencies to evaluate the protectiveness of the remedial action, including the integrity of the soil repository and the fill in the excavated areas, review of ground water data (including zinc), and the overall operation of the ground water treatment system. In addition, annual operation and maintenance reviews will be conducted by BNSF.

Site Contacts

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