

# Wayne Interim Storage Site

## New Jersey

EPA ID#: NJ1891837980

### EPA REGION 2

Congressional District(s): 08

Passaic  
Wayne Township

#### NPL LISTING HISTORY

Proposed Date: 9/1/1983

Final Date: 9/1/1984

## Site Description

From 1948 until 1971, site operators extracted thorium and other elements from monazite ore at the 6 1/2-acre W.R. Grace & Co. facility in Wayne Township. In 1971, W.R. Grace ceased processing monazite ore and amended its Nuclear Regulatory Commission (NRC) license to cover only the storage of radioactive materials. The company decontaminated the property (burying much of the material) in 1974 to the criteria established at that time. In 1975, the NRC released the land for unrestricted use, with the condition that the deed indicate the presence of radioactive material beneath the facility's surface.

In 1980, the State conducted an aerial survey that showed elevated radiation levels at the plant site, an adjacent school bus maintenance facility, a township park, the banks of Sheffield Brook, and the Pompton Plains railroad spur. Much of the off-site contamination was spread by runoff and water discharges from the site. Additional surveys were conducted in 1982 and 1983. Based on this information, the Wayne site was placed on the National Priorities List in 1984. From 1985 through 1987, the U.S. Department of Energy (DOE), acting under its authority through the 1984 Energy and Water Appropriations Act (PL 98-50) which specifically addressed the Wayne Site, investigated and removed soils contaminated with radionuclides from the school bus maintenance facility, township park, and the banks of Sheffield Brook. The contaminated soils were then stockpiled at the W.R. Grace & Co. facility. This facility, now known as the Wayne Interim Storage Site (WISS), was acquired by the federal government for this purpose. Radioactive process wastes, process equipment, and building rubble were buried beneath the WISS.

The Energy and Water Appropriations Act of 1998 (PL 105-62) provided appropriations for the U.S. Army Corps of Engineers (USACE) to administer and execute the DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). The purpose of the FUSRAP program was to cleanup contaminated sites where work was performed as part of the Nation's early atomic energy program. Because environmental concerns at the Wayne site were similar to those of FUSRAP sites, DOE had assigned the site to FUSRAP. Responsibility for cleanup of the Wayne site transferred from DOE to the USACE in October, 1997.

An active agricultural area is located within 200 feet of the site, and there are homes located to the east and along Sheffield Brook. Many commercial businesses lie within 3 miles of the site. Residents within 3 miles of the site rely on groundwater for drinking, household, and irrigation purposes. The municipal well system serves 51,000 people, and the nearest well is 3,200 feet from the site. Local surface water is used for recreation. Information from the Remedial Investigation suggests the site is not adversely affecting groundwater in the area.

Site Responsibility: This site is being addressed by the U.S. Army Corps of Engineers (USACE) through Federal actions, with EPA oversight.

## Threat and Contaminants

The contaminants identified at the WISS are radioactive particles in the thorium and uranium decay series as well as various metals and organics which were part of previous industrial processes at the site. The cleanup and stockpiling of waste has substantially decreased the health risk to the surrounding community. Radionuclide contamination in soil and sediment, which was a concern at the Pompton Plains railroad spur, was remediated in 1993.

## Cleanup Approach

The site was addressed in two stages: Removal actions by DOE and the USACE which reduced immediate health risks and a long-term remedial phase focusing on cleanup of the remainder of the site including the buried waste at the WISS.

The investigation and cleanup were conducted in accordance with an Interagency Agreement signed by DOE and EPA in 1990.

#### Response Action Status

**Initial Actions:** Cleanup activities began in 1985 under the DOE's "Formerly Utilized Sites Remedial Action Program" (FUSRAP). The DOE excavated and contained (stockpiled at the interim storage site) about 38,500 cubic yards of contaminated soil from all areas except the railroad spur area. Another 70,000 cubic yards of contaminated wastes exist below-grade at the site. The USACE is continuing to maintain and monitor the site and is complying with State permit requirements. In late summer, 1993 DOE conducted another removal action to cleanup contaminated soil at the Pompton Plains railroad spur (where monazite sand ores were offloaded prior to processing at the Wayne site) and adjacent residential properties.

**Entire Site:** In late 1989, the DOE began an intensive study of remaining contamination at and around the Site. The objective of this investigation was to determine the nature and extent of remaining contamination, and provide information necessary to develop recommendations for cleanup of any residual contamination as well as final disposition of waste in the WISS and buried beneath it. As part of the remedial investigation, the DOE sampled the storage pile, the railroad spur area, and the material buried on site below the storage pile. Field work was completed in December, 1991 and an investigation report was finalized October, 1993. A feasibility study and proposed plan evaluating cleanup alternatives were released to the public in June, 1999. The Record of Decision identifying "Excavation to Residential Use and Disposal" was signed on May 15, 2000.

## Cleanup Progress

Removal actions at the railroad spur were completed in 1993. Waste from this action was transported offsite to a commercial disposal facility. Because of community opposition, a soil washing pilot-scale study that DOE was planning to conduct at the site in late summer, 1994, did not take place. Operational studies of soil washing equipment, using clean soils, began in May 1995 and were conducted in Oak Ridge, Tennessee.

In July, 1995, DOE released a final Engineering Evaluation/Cost Analysis for a non-time critical removal of the interim storage pile. The waste storage pile contained contaminated soils and materials generated during previous removal actions. Pile removal activities began in the fall of 1995. Removal of the soils to the permanent disposal facility (Envirocare, Utah) was completed in 1997. In November, 1997 the USACE issued an Engineering Evaluation/Cost Analysis to remove an additional 40,000 cy of subsurface contamination. This removal was completed in winter, 1999. The remaining subsurface contamination and onsite building was addressed through the Record of Decision. In May 2000, the EPA and USACE issued a ROD with the selected remedy to address the remaining radioactive waste, chemical waste, operations building demolition, and groundwater at the WISS. The major components of the selected remedy and remedial actions performed at the Wayne Site are summarized below: Excavation and disposal of the remaining contaminated subsurface materials to an average concentration of 5 picoCuries/gram (pCi/g) of Ra-226 and thorium-232 (Th-232) combined, above naturally occurring background concentrations at the WISS, and an average concentration of 100 pCi/g of total uranium above naturally occurring background as determined by surveys consistent with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).

Excavation and disposal of chemically contaminated soils above levels calculated to be protective of groundwater or above levels protective for unrestricted uses of the property (with regard to chemicals of concern) as specified in the ROD.

Decontamination and demolition of the site operations building on the WISS, removal and offsite disposal of demolition debris, and removal and offsite disposal of contaminated materials under this building.

Removal and treatment of groundwater encountered during excavation to meet pretreatment discharge standards of the receiving Publicly Owned Treatment Works prior to release.

Implementation of a five-year groundwater monitoring program to establish groundwater quality after contaminated soil has been removed.

Maintenance of the integrity of the subsurface clay layer that acts as a hydraulic barrier protecting the lower aquifer at the WISS.

Site restoration activities that will allow for beneficial unrestricted use in the future.

The primary radiological contaminants at the WISS are Ra-226, Th-232, and U-238, and associated daughter products. The chemical contaminants of concern are antimony, arsenic, chromium, lead, mercury, molybdenum, and thallium. The Final Remedial Design / Implementation Plan was approved by the EPA and the State prior to being issued in February 2001. Under the May 2000 ROD an additional 55,410 cubic yards of contaminated material and building debris was

remediated and disposed of in an off-site licensed disposal facility.

The elements of the remedial construction activities and construction quality control and quality assurance are detailed in the Draft Final Post Remedial Action Report (PRAR) for the WISS (Sept. 2003). The USACE managed and supervised all construction activities to ensure compliance with the remedial design, work plans and construction specifications. The EPA provided oversight of the cleanup actions.

#### Remedial Actions (Vicinity Properties)

Following the remedial actions at the WISS, USACE reviewed the cleanup actions previously taken by the DOE at the vicinity properties. The review consisted of comparing DOE radiological screening and sampling data from the vicinity properties against the unrestricted release criteria applied by the DOE to the cleanup values established in the WISS ROD, and as appropriate, the State of New Jersey Code.

On the basis of this paper review, USACE conducted additional subsurface soil sampling at four VPs in May and June 2003. Following the review and sampling, USACE determined that prior DOE actions were sufficient to meet the ROD cleanup criteria at all vicinity properties with the exception of the Wayne Township (Sheffield) Park and a small right-of-way (ROW) area adjacent to the Pompton Plains Crossroad (Fig. 1). The WISS Vicinity Property Technical Memorandum (USACE 2003) documents the evaluation of the VPs and specifically identifies and lists each property previously remediated by DOE.

USACE conducted additional excavation and off-site disposal of contaminated residual soils in July and August 2003 at the Wayne Township Park and road ROW property consistent with the selected remedy in the ROD. Final Status Surveys performed in compliance with MARSSIM demonstrate that ROD cleanup levels were achieved for radiological and chemical constituents of concern. Approximately 2,300 cubic yards of additional soil was excavated from the two VPs.

The elements of the remedial construction activities including construction quality control requirements, USACE inspections, post-excavation final status surveys, and final as-built drawings were described in the Post Remedial Action Reports (PRARs). These reports were prepared for the Right-of-Way Property and the Wayne Township Park (January 2008). USACE managed and supervised all construction activities at the VPs to ensure compliance with the remedial action work plans and construction specifications and prepared a ROD ESD for the WISS VPs in December 2003. The EPA provided oversight of the cleanup actions.

#### Construction Completion

The U.S. Environmental Protection Agency (EPA) determined that the Department of Energy (DOE) and the U.S. Army Corps of Engineers (USACE), had completed all construction activities at the Wayne Interim Storage Superfund Site (WISS) and the Vicinity Properties (VPs) associated with the WISS. The construction activities were completed in accordance with Close Out Procedures for National Priorities List Sites (OSWER Directive 9320.2-09 A-P, January, 2000). The EPA conducted a pre-final inspection of the WISS and VPs on September 16, 2003 and observed that the remedy was completed in accordance with the approved WISS Remedial Design / Implementation Plan and specifications (February 2001), and the WISS Contractor Quality Control Plan (June, 2001). The site achieved construction completion with the signing of the Preliminary Close-Out Report (PCOR) by EPA on September 16, 2003.

#### Groundwater Treatment / Monitoring

Baseline groundwater sampling was initially conducted at the WISS to establish groundwater conditions prior to remedial activities. During remedial actions, groundwater was sampled semi-annually each June and December as part of the Environmental Surveillance Program. A wastewater treatment plant was constructed on-site to treat groundwater from dewatering operations and water that came in contact with contaminated soils in the excavations. The treatment plant was operated from May 2000 to December 2001. A total of 20 million gallons of wastewater was treated to groundwater criteria in the ROD and shipped to a local POTW for disposal.

In accordance with the ROD, a 5-year Long Term Groundwater Monitoring Program was initiated near the completion of remedial actions in April 2002. Long Term Groundwater monitoring was conducted on a semi-annual basis in June and December for the first two years, and then on an annual basis for three years through June 2006. Groundwater was not encountered at the two VPs during the remedial or restoration activities due to the shallow depths of the excavations, which did not exceed four feet below the surface. Groundwater monitoring has demonstrated the protectiveness of the remedial action and contaminants of concern are not present above levels established in the ROD. The groundwater monitoring events indicate that the soil cleanup actions were successful, and the monitoring program has been discontinued.

#### Five-Year Review

A policy Five-Year Review of the Wayne site was conducted by EPA in the summer and fall of 2008. The five-year review

was conducted in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of five-year reviews is to assure that implemented remedies are protective of public health and the environment and that they function as intended by the decision document(s). The assessment of the five-year review was that the selected remedy is functioning as intended by the decision documents and the implemented remedy protects human health and the environment in the short-term. The Five-Year Review Report was signed by EPA on September 30, 2008.

The original remedy set forth in the May 13, 2000 Record of Decision (ROD) required cleanup to allow for unlimited use without restriction. The implemented remedy left all groundwater and soils suitable for use without restriction, except for a small area of subsurface soils that had been inaccessible (located beneath Black Oak Ridge Road along the western boundary of the WISS near Pompton Plains Cross Road). The Explanation of Significant Difference (ESD), dated December 10, 2003, determined that the original remedy set forth in the ROD applied to any contaminated soils located beneath this area. The ESD stated that if these inaccessible soils were made accessible in the future, USACE would conduct an investigation to determine whether or not they contained contaminants above the ROD cleanup levels. The USACE worked with Passaic County to implement institutional controls to prohibit road work without prior notification to the USACE. In the interim all work performed by the County in the affected area is being coordinated with the USACE. The Five-Year Review determined that during this interim period, the land use of the Road does not present a risk to the public, but stated that in order for the remedy to be protective in the long term, any remaining hazardous contamination in this area would need to be removed, or a permanent institutional control to address the area would need to be implemented.

#### Inaccessible Soils

In anticipation of planned road and storm sewer improvement work, USACE returned to the WISS in August 2009 to characterize the inaccessible soils located underneath Black Oak Ridge Road (BORR). A series of daily test pits were dug, creating a test trench running the length of the western boundary of the former WISS property along BORR. The trench, which ranged from 4 to 8 ft in depth, was located between the curb and storm sewer pipe, and was backfilled daily. Samples were collected for offsite analysis from beneath the storm sewer pipe, trench spoils, backfill, and trench sidewalls and floor areas. Gamma detectors were used to identify additional bias samples for contaminants. The Draft Construction Close-Out Report was received on March 29, 2011 and it has been circulated for review and comment.

The findings of all field activities have been, and will continue to be, reviewed by the USACE, EPA and the NJDEP.

## Site Repositories

Wayne Public Library, 475 Valley Road, Wayne, New Jersey

EPA Superfund Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866