



Newmark

Groundwater Contamination

Superfund Project

United States Environmental Protection Agency • Region 9 • San Francisco, California

U.S. EPA Completes Construction of Treatment Facilities for Newmark Groundwater Contamination

INTRODUCTION

In cooperation and partnership with the City of San Bernardino Municipal Water Department (SBMWD), the California Environmental Protection Agency (CalEPA) and the California Department of Health Services (DoHS), the United States Environmental Protection Agency (EPA) has completed construction of a cleanup system for the groundwater contamination plume at the Newmark Superfund Project in San Bernardino, California. The Newmark plume operable unit (*OU*)¹ is one of the three areas of contaminated groundwater at the Newmark Superfund Site, the other two are the Muscoy plume and the Source area. Design of a treatment system for the Muscoy *OU* is currently underway, and EPA continues to investigate the Source area to determine the need for additional cleanup action.

The Newmark and Muscoy groundwater contamination is located within the San Bernardino portion of the Bunker Hill Basin, near the Shandin Hills. The Source investigation covers the area northwest of the Shandin Hills (see site map in Figure 1). These areas cover

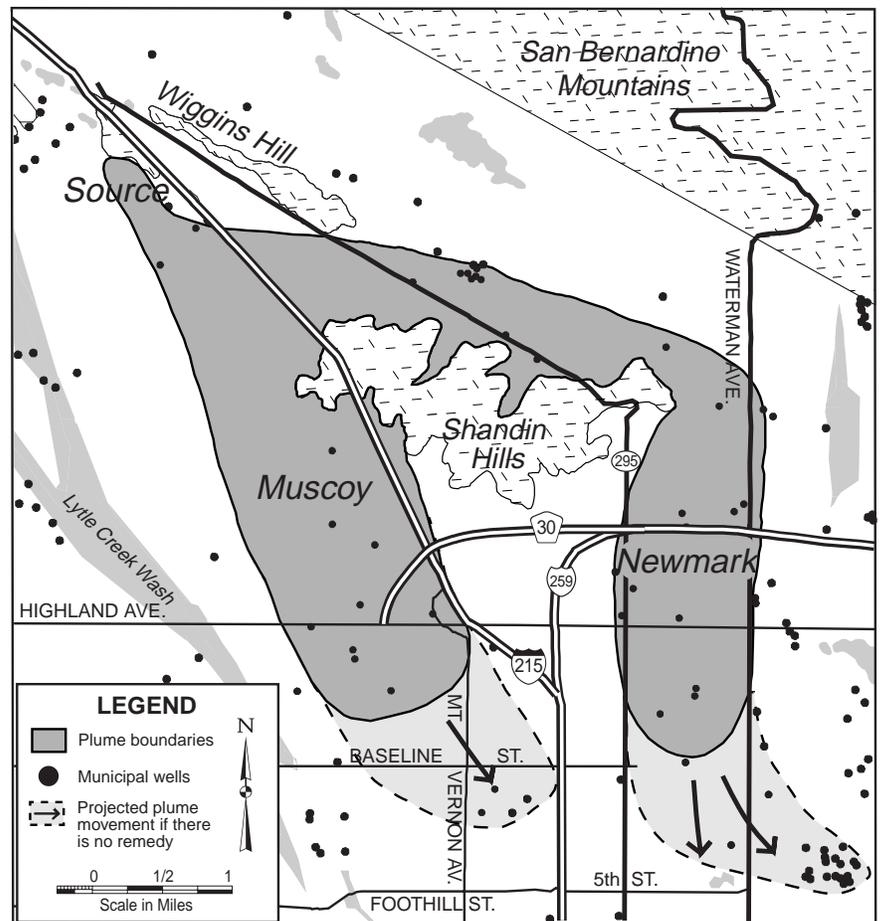


Figure 1: Newmark Superfund Site Map

¹Italicized terms are defined in the Glossary on pg. 6.

approximately eight square miles of groundwater contaminated with volatile organic compounds (VOCs) **perchloroethylene (PCE)** and **trichloroethylene (TCE)**. These chemicals are industrial solvents which have been commonly used for a variety of purposes including dry cleaning, metal plating and machinery degreasing.

The U.S. EPA's primary objective for this project is to stop any future spread of contamination to clean areas of groundwater. (Figure 1 shows the potential migration path of the plume if no remedial action takes place.) This is being accomplished for the Newmark plume with the completion of the construction of the water treatment plants and the barrier wells which are expected to remove 11,500 pounds of contaminants and produce more than 69 billion gallons of clean water over the next 10 years. This timely intervention will ensure that public and private wells in the path of the migrating groundwater contamination will continue to meet safe drinking water standards in the future.

THE PAST

In 1980, DoHS began a monitoring program in San Bernardino to test for the presence of industrial chemicals in the public drinking water supply wells. The results of early tests and follow-up testing showed PCE and TCE contamination in a large portion of the groundwater supply in the Bunker Hill Basin.

Fourteen wells operated by the SBMWD in the North San Bernardino/Muscoy area contained concentrations of PCE and TCE above state and federal Safe Drinking Water Standards (*MCLs*) of 5 parts per billion (ppb) each, and were removed from service. By 1990, the contamination had spread to three additional municipal wells which were also removed from service. The affected wells had supplied more than one-third of the drinking water supply for the City of San Bernardino. At present, this contamination threatens another one-third of San Bernardino's water supply.

Prior to any federal involvement, SBMWD and CalEPA took steps to guarantee that the public water supply was, and is, free from contamination. Following an investigation, the State provided over \$5 million from the State Superfund to construct the first phase of groundwater treatment in San Bernardino from 1986 to 1992. To date, these four wellhead treatment plants have removed 3,924 pounds of contaminants, producing

for San Bernardino nearly 20.5 billion gallons of clean drinking water at a non-detect contaminant level.

EPA placed the Newmark site on the National Priorities List (*NPL*) in March 1989 to support the expanded required remedial actions.

Newmark Operable Unit

In 1990, EPA began the Remedial Investigation (*RI*) and the Feasibility Study (*FS*) of the Newmark plume. For the *RI*, monitoring wells were drilled and sampled in the Newmark *OU*, and nearby city and state wells were also sampled by EPA. PCE and TCE were the most common contaminants found in all of the affected wells. The *FS* evaluated a range of cleanup alternatives for addressing the five-mile long groundwater contamination. The *RI/FS* report for the Newmark groundwater contamination was finalized in March 1993.

On August 4, 1993, EPA issued a Record of Decision (ROD) that identified the methods that EPA would use to contain and clean up the Newmark groundwater contamination. The remedy for the Newmark plume is an **interim action** which addresses the potential public health threats from the groundwater contamination. It consists of the following features: 1) groundwater extraction (pumping) and treatment at two locations in the aquifer, 2) removal of contaminants from groundwater using liquid phase granular activated carbon (*GAC*) filtration and 3) the final use of treated water.

Muscoy Operable Unit

Additional investigation in the summer of 1992 traced the direction of the groundwater contamination flow into the western side of the valley. Based on this finding, the Newmark Superfund site was officially expanded in September 1992 to include the Muscoy groundwater plume, located west of the Shandin Hills, as an *OU* in the project.

EPA completed the remedial investigation and analysis of possible treatment alternatives for the Muscoy groundwater contamination, and the *RI/FS* report for the Muscoy Groundwater contamination was made public in December 1994. The ROD was signed on March 24, 1995. The remedy for the Muscoy groundwater contamination is an **interim action** focusing on stopping contamination from spreading to clean parts of the underground water supply south and west of the

Shandin Hills. Much of the analysis for selecting a cleanup plan for the Newmark groundwater contamination was directly applicable to the Muscoy plume.

Source Operable Unit

A Technical Memorandum describing the results of EPA's search for the source of the contamination (Source Operable Unit Technical Memorandum) was finalized in

February 1996. This memorandum documents the technical evidence which suggests that a former Army depot may be one source of the Newmark groundwater contamination.

THE PRESENT

Newmark Treatment Facilities Opens

Due to the remarkable level of cooperation between EPA, SBMWD and the State of California, the second phase of the Newmark groundwater contamination construction effort is now completed, with formal agreements developed between EPA and SBMWD to share the cost of operating the treatment plants over the next thirty years. With continued monitoring, this will provide safe and high quality drinking water to the region. Figure 2 shows the location of the pipelines, the wells and the treatment plants for the Newmark groundwater contamination.

With EPA assistance, the SBMWD obtained the property for the seven extraction well sites in September 1995. Project construction began in June 1996. Construction of the South Plant includes those at the Waterman Plant and at the 17th Street Plant. Five groundwater extraction wells were drilled, and pumps were installed along 11th Street (the leading edge of the plume) to halt the spread of the contamination. Pipelines have been constructed to connect these extraction wells to treatment facilities at 17th and Sierra Way and Waterman near Marshall Street. Modifications to the 17th Street treatment plant

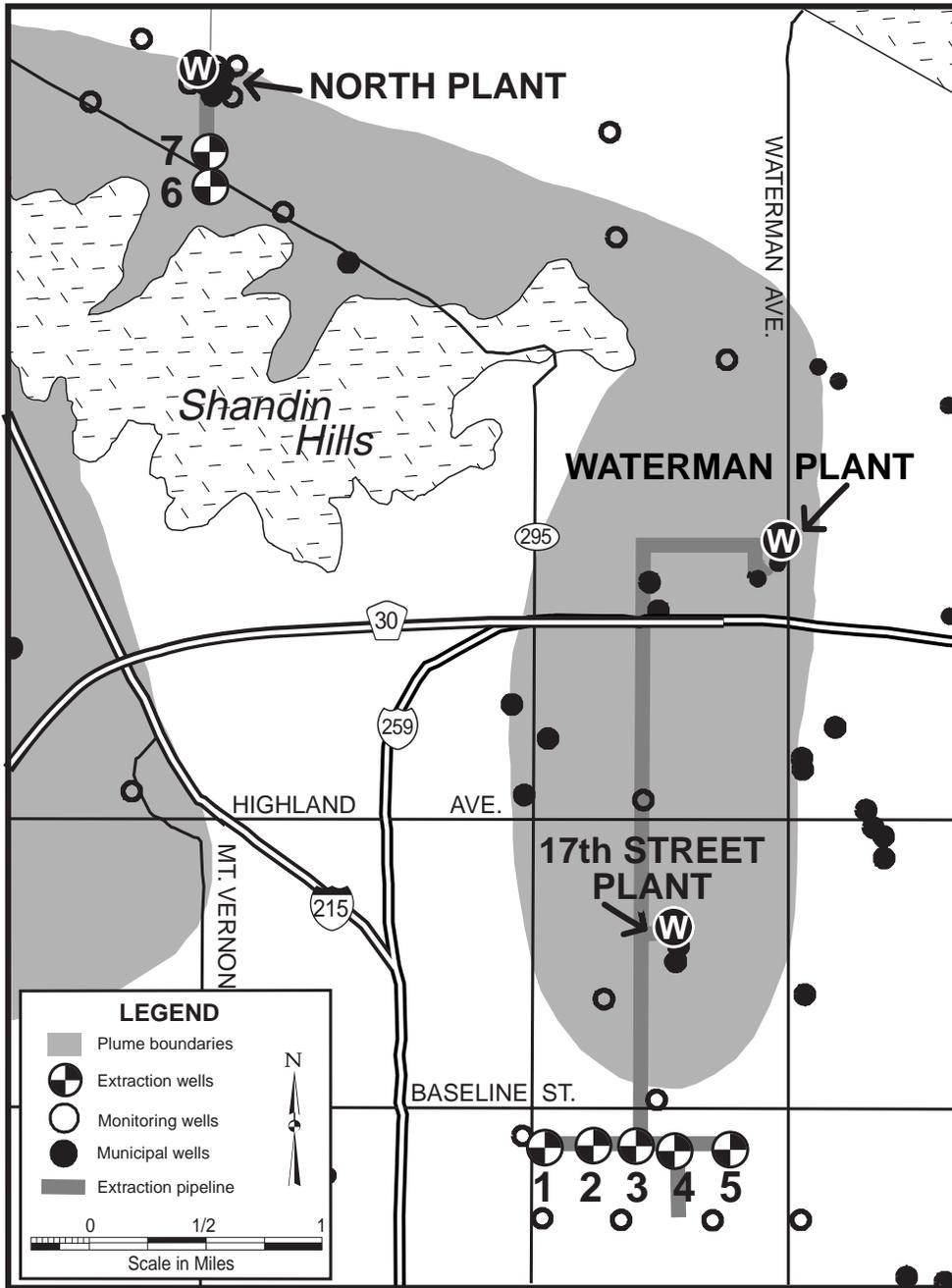


Figure 2: Newmark groundwater treatment facilities

have been completed and construction of the new *GAC* treatment system was completed at the Waterman treatment plant. Four new monitoring wells were installed along 10th Street to assure that the extraction wells are capturing the contaminated water as intended.

Construction has also been completed at the Newmark Wellfield (North Plant). These facilities will stop further migration of the contamination from the source area. Two new groundwater extraction wells have been drilled and pumps installed in this area. These two wells will operate in conjunction with one existing well from the Newmark Wellfield. Pipelines have been installed to connect the extraction wells to the completed *GAC* treatment plant. Two monitoring wells have also been installed from which groundwater samples will be periodically collected and analyzed to ensure the performance of the extraction system.

After treatment to remove the contaminants, the City of SBMWD will use the water in its domestic water system. More than 17 million gallons of high quality water will be produced by the Newmark groundwater contamination treatment systems each day. The treatment technology has a long record of

reliability for safe public water supply. Continuous monitoring will ensure that water piped to the public water supply system meets or exceeds drinking water standards. The construction and operation costs of this site have totaled over \$17 millions of federal funds, \$5 millions of state funds and \$4 millions of SBMWD funds.

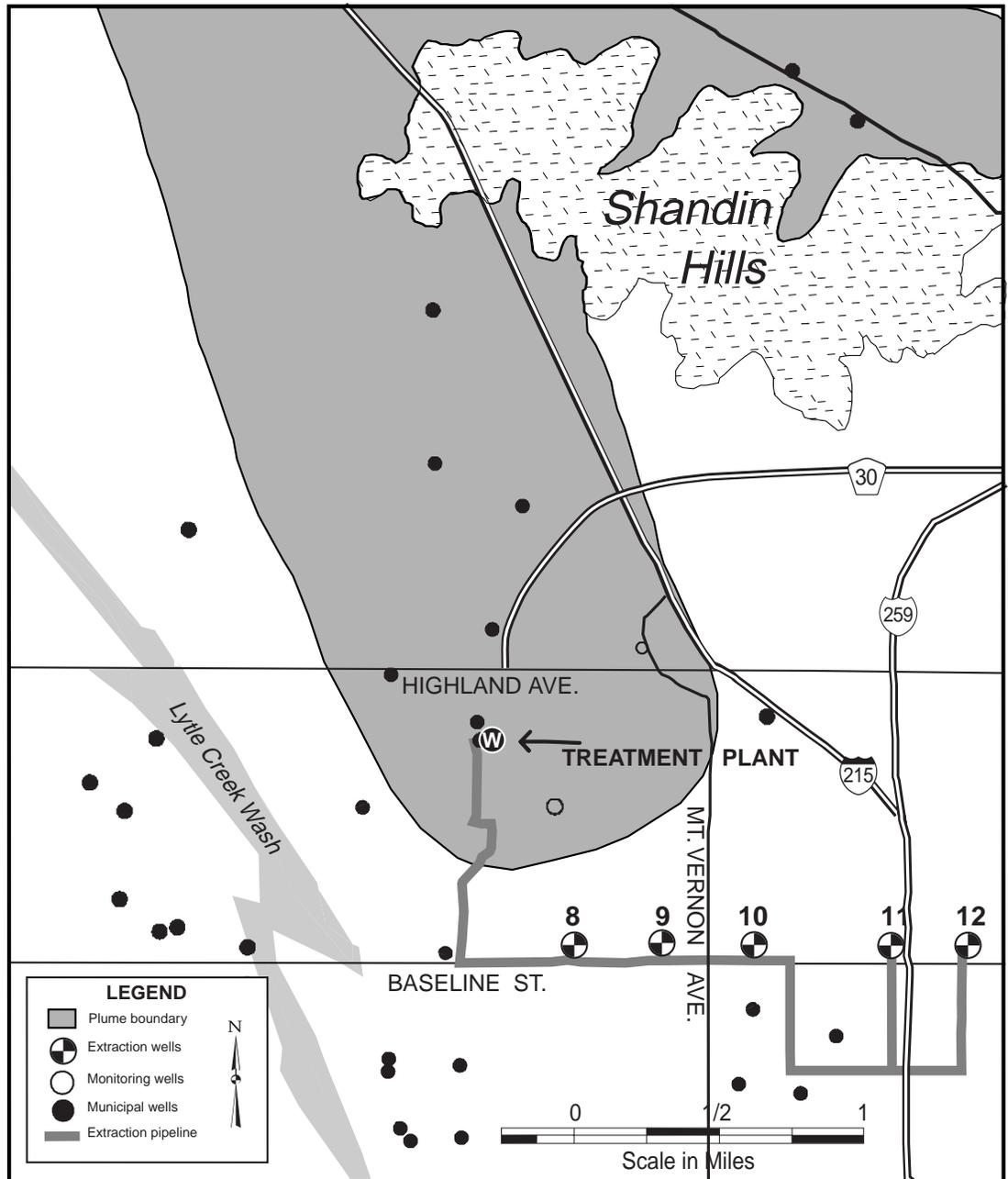


Figure 3: Planned Remedial Design on Muscoy Operable Unit

Present Status of Muscoy Cleanup

EPA estimates that the Muscoy groundwater contamination has already reached the vicinity of 16th Street between the 215 Freeway and Mt. Vernon Avenue in eastern San Bernardino. Five new extraction wells are planned to halt the spread of the groundwater contamination and stop further contamination of groundwater supplies. As with the Newmark groundwater contamination extraction system, the effectiveness of these extraction wells will also be confirmed by monitoring wells. The City of SBMWD currently operates a large liquid phase *GAC* plant for its regular water treatment, which will be expanded to treat all the water generated by the Muscoy groundwater contamination. The extraction wells will be connected to the expanded treatment plant by new pipelines (see Figure 3).

Site Source Investigation Continues

Pinpointing the source of contamination has been an ongoing effort in the Newmark Superfund Project. EPA's investigation indicates that the source of the contamination is the same for both the Newmark and Muscoy OUs. EPA believes the source may be the World War II Army base which was on 1600 acres of leased land from 1942 until it was closed in 1947. The U.S. Army has initiated an investigation of the former base. The source investigation has been complicated by very difficult geological conditions and the lack of good

records of the Army's activities. EPA has been working with State and San Bernardino County authorities to thoroughly investigate other potential sources of the Newmark groundwater contamination.

THE FUTURE

EPA is continuing the systematic monitoring program to measure groundwater quality and movement throughout the Newmark Superfund site. The performance of the Newmark Groundwater contamination treatment system will be closely monitored during the next year to ensure capture of the contaminated water and prevent it from migrating into the clean groundwater in the area.

For the Muscoy OU, the Muscoy Remedial Design (*RD*) is planned to be completed by June 1999. Construction will start during the summer of 1999. Completion of this construction will provide containment and treatment of the entire eight-square-mile groundwater contamination in the Newmark Superfund site.

EPA has reached formal agreements with the State of California and with the SBMWD on the terms and conditions for the delivery of treated water from the Newmark and Muscoy treatment plants to the public drinking water supply.

EPA is continuing to work toward isolation of the source of this contamination and to develop a comprehensive final cleanup plan for the entire Newmark Superfund Site. ■

COMMUNITY INVOLVEMENT

Community involvement activities in the next year will include:

- Issuing fact sheets when new information is available
- Holding informal public meetings or open houses to discuss project issues and ways to minimize the impacts of construction on surrounding neighborhoods.

GLOSSARY

Feasibility Study (FS): 1. Analysis of the practicability of a proposal; e.g., a description and analysis of potential cleanup alternatives for a site such as one on the National Priorities List. The feasibility study usually recommends selection of a cost-effective alternative. It usually starts as soon as the remedial investigation is underway; together, they are commonly referred to as the "RI/FS". 2. A small-scale investigation of a problem to ascertain whether a proposed research approach is likely to provide useful data.

Granular Activated Carbon (GAC) Treatment: A filtering system often used in small water systems and individual homes to remove organics. Also used by municipal water treatment plants.

Maximum Contaminant Level (MCL): The maximum permissible level of a contaminant in water delivered to any user of a public system. MCLs are enforceable standards.

National Priorities List (NPL): EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. The list is based primarily on the score a site receives from the Hazard Ranking System. EPA is required to update the NPL at least once a year. A site must be on the NPL to receive money from the Trust Fund for remedial action.

Operable Unit: A term for an area where separate activities are undertaken as part of an overall Superfund site cleanup. A typical operable unit could be the removal of drums and tanks from the surface of a site.

Plume: 1. A visible or measurable discharge of a contaminant from a given point of origin. Can be visible or thermal in water.

Remedial Investigation (RI): An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site; establish site cleanup criteria; identify preliminary alternatives for remedial action; and support technical and cost analysis of alternatives. The remedial investigation is usually done with the feasibility study. Together they are usually referred to as the "RI/FS".

Remedial Design (RD): A phase of remedial action that follows the remedial investigation/feasibility study and includes development of engineering drawings and specifications for a site cleanup.

NEWMARK GROUNDWATER CONTAMINATION SUPERFUND PROJECT INFORMATION REPOSITORIES

EPA maintains information site repositories at the San Bernardino County Public Library and the San Bernardino Valley Municipal Water District Office. These repositories contain project documents, fact sheets and other reference materials, and include the Administrative Record for the site which contains the documents EPA relied on to select the cleanup plans for the site. EPA encourages you to review these documents to gain a more complete understanding of activities at the site.

San Bernardino County Library
Administration Office
104 W. Fourth Street
San Bernardino, CA 92415
(909) 387-5718
Hours: M-F 8:00 a.m. to 5:00 p.m.

San Bernardino Valley Municipal Water District Office
1350 S. "E" Street
San Bernardino, CA 92412
(909) 387-9211
Call for Appointment -
Hours: M-F 8:00 a.m.-Noon and 1:00 p.m. - 5:00 p.m.

United States EPA Superfund Records Center
95 Hawthorne Street, 4th Floor
San Francisco, CA 94105
(415) 536-2000
Call for Appointments - Hours: M-F 8:00 a.m. - 4:30 p.m.



NEWMARK GROUNDWATER CONTAMINATION PROJECT SUPERFUND SITE

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FOR MORE INFORMATION

If you would like to get a copy of this fact sheet or any previous ones, or if you need other information about the site, please call or write:

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