VANCOUVER WATER STATION #4
PRELIMINARY CLOSE OUT REPORT

PURPOSE

This Preliminary Close Out Report documents that the U.S. Environmental Protection Agency (EPA) completed construction activities at the Vancouver Water Station #4 (WS4) site in accordance with *Procedures for Completion and Deletion of National Priorities List Sites* (OSWER Directive 9320.2-09). EPA and the Washington Department of Ecology (Ecology) have determined that the City of Vancouver has constructed and is operating the remedy in accordance with plans and specifications, and no further response is anticipated. The remedial action taken at this site was completed prior to the site's listing on the National Priorities List (NPL). Subsequent investigation by EPA determined that no additional remedial action could be taken and therefore no further response under Superfund was necessary. The Record of Decision (ROD) for WS4 required no further remediation or construction beyond what the City constructed prior to NPL listing, therefore there was no prefinal inspection. EPA and the City of Vancouver have initiated the activities necessary to achieve performance standards and site completion.

SUMMARY OF SITE CONDITIONS

Site Location and Description

Water Station 4 (WS4) is a public water supply wellfield in the city of Vancouver, Washington. It encompasses approximately ½ acre and includes several support buildings, six production wells, two air stripping towers, and one capped well. WS4 is located approximately ½ mile north of the Columbia River at the intersection of East Fifth Street and Blandford Drive, on a river terrace north of Lewis and Clark Highway adjacent to a commercial district and residential areas.

Site History

The wellfield at WS4 has been owned by the City of Vancouver for over 50 years. The production wells at WS4 were installed during World War II to provide water for workers at the Vancouver Shipyards. Water from WS4 is blended together with water from several other wellfields to provide drinking water to the Vancouver region. The combined water supply system provides drinking water to approximately 150,000 people throughout the Vancouver area. Most drinking water for the city of Vancouver is supplied by other wellfields. Water from WS4 is primarily used to meet peak demands for water with the largest volumes pumped during the summer.

As a public drinking water supplier, the City of Vancouver is required under the federal Safe Drinking Water Act (SDWA) and associated regulations to monitor the quality of its drinking water. The City began monitoring water from WS4 and its other wellfields for volatile organic compounds (VOCs) in March, 1988. Results of the monitoring indicated a persistent presence of tetrachloroethene (PCE) in the groundwater.

Several investigations into the source or sources of PCE at WS4 have been conducted by the City of Vancouver and EPA since PCE was detected at WS4 in 1988. The investigations began in 1989 by sampling private wells, surface water sources, and industrial sumps in the vicinity of WS4. Samples collected from the production wells in the spring of 1989 showed concentrations of PCE ranging from approximately 3 to 10 ppb (EPA issued the final MCL for PCE of 5ppb in 1991). Early investigations focused on dry cleaning operations on the Mill Plain plateau upgradient of WS4 (PCE is commonly used as a solvent in dry cleaning, and dry cleaners are routinely considered in most investigations of an unknown source of PCE in groundwater). Investigations of potential sources of PCE at WS4 included conducting soil gas surveys; installation of a total of 25 monitoring wells; and sampling of monitoring, production and private wells.

While the earlier investigations were underway, the City continued to monitor the water at each of the six wells at WS4. In November, 1989, the city removed WS4 from service and decided to install an air stripping system to remove PCE from the groundwater pumped by the station. The treatment system was put into operation in January, 1992. Only two of the six wells at the water station–the two with the lowest average concentrations of PCE–have been used since the station resumed service in 1992. Although the air stripping system was effectively removing PCE from water that the City was distributing for drinking water, Vancouver WS4 was listed on the NPL in October, 1992 because of the presence of PCE in the groundwater.

The groundwater data clearly indicate that a pulse, or concentrated volume of PCE passed through the wellfield over a period of several years beginning in 1992. PCE concentrations suddenly increased in 1992, peaked in about 1993, and then decreased over the next several years. The maximum concentration detected in a production well was 520 ppb; current levels are in the range of 20 to 40 ppb.

After the installation of the air stripping treatment system in 1992, EPA's funding constraints led to a decision by EPA to postpone further investigation of WS4. At the time that decision was made, the air stripping treatment system was reducing levels of PCE to below detection limits, thus the immediate threat to human health had been eliminated. EPA was then able to direct its limited funds to sites with greater risks.

In November, 1997, EPA resumed work on the investigation of WS4. In March, 1998, EPA collected samples from existing monitoring wells and a nearby private well where PCE levels had previously been quite high. Then in September, 1998, EPA installed two additional monitoring wells and again collected samples from all the existing monitoring wells and several

private wells in the vicinity of WS4. All wells showed a significant decrease in PCE concentrations from previous sampling events in 1992 and 1993 (concentrations ranged from 1.1 to 25.6 ug/l).

The RI/FS was finalized in May, 1999. The available data indicate that multiple sources of PCE may be present in the area around WS4. However, no source has been identified that is primarily responsible for the sustained high concentrations of PCE measured at WS4. The results of the remedial investigation led to the conclusion that while the dry cleaners on the plateau may have contributed to some PCE in groundwater, there was a strong likelihood that there were other sources that were responsible for the big increase in PCE levels detected in 1992/93. The investigation was unable to locate an ongoing source of PCE for which any additional source control cleanup action can be taken.

RECORD OF DECISION

The extent of the high-concentration PCE plume is not known, but there has been a significant reduction in concentrations of PCE in production, monitoring and private wells over the last several years. This indicates that there is not an on-going source of PCE contamination in the area. While there is no suspected ongoing PCE souce for which additional cleanup action can be taken, the PCE contamination at WS4 is persistent and present at levels that require continuing treatment of groundwater to protect human health.

The scope of the response action for WS4 is the following:

- ensure that human health is protected by reducing levels of PCE in drinking water produced by WS4 to meet federal and state drinking water standards; and

- reduce concentrations of PCE in grounwater to below the MCL of 5ug/l.

The ROD was signed on September 1, 1999, more than seven years after the installation of the air stripping treatment system. The continued operation of the existing treatment system along with monitoring is the selected final remedial action for this site. The system has been proven to be efficient and effective in removing VOCs including PCE from the drinking water. By extracting and treating large volumes of groundwater for drinking water, WS4 acts as a pump and treat system for removing contamination from the aquifer near WS4. Eventually it is anticipated that the extraction of groundwater will flush out residual contamination in the wellfield, although the time to achieve the remedial action objectives is not known.

COSTS

WS4 is a Fund-lead site, however, the costs to design, build and operate the air stripping treatment system were paid for using both state and city money. According to the City of

Vancouver, the air stripping system cost five million dollars to design and build in 1991, while operation and maintenance costs are estimated to be approximately $230,000 per year.

SCHEDULE FOR SITE COMPLETION

EPA and the City of Vancouver plan to enter into a Memorandum of Agreement (MOA) in order to implement the requirements of the RODs for both WS4 and WS1. It is expected that the MOA will document a commitment by the City of Vancouver to continue to operate the air stripping treatment systems at both sites into the foreseeable future and to conduct the necessary monitoring. The MOA will be completed by no later than December 31, 1999.

In accordance with the requirements of the federal Safe Drinking Water Act and other regulations, the City is required to monitor its drinking water. On-going monitoring data will be submitted to EPA, at a minimum, on a yearly basis.

A Final Close Out Report will have to be prepared upon completion of this remedy. Since it was not possible to do a source control remedy and the sources of contamination continue to be unknown, it is difficult to estimate when groundwater cleanup levels will be attained. Therefore, the assumption is that the treatment system will have to operate for 30 years. Final deletion of the site is then anticipated in 2029.

FIVE YEAR REVIEW

The air stripping treatment system began operating in January, 1992. The remedial investigation conducted in 1998/1999 confirmed the continuing presence of PCE in the groundwater above health-based levels. In accordance with CERCLA Section 121(c) and as provided in OSWER Directive 9355.7-02, *Structure and Components of Five-Year Reviews,* May 23, 1991, and OSWER Directive 9355.702A, *Supplemental Five-Year Review Guidance,* July 26, 1994, EPA will conduct a statutory five-year review at WS4. Since the remedial investigation also served to document the fact that the remedy remains protective, the next five-year review will be completed prior to September 2004 (five years after completion of the RI/FS and the ROD).

Michael F. Gearheard for
Director
Environmental Cleanup Office

9/8/99
Date

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CONCURRENCE SHEET

CONCURRENCE						
INITIAL	NAA	mhv				
NAME:	N. HARNEY	M. VOYTILLA				
DATE	9/7/99	9/8/99				

Vancouver Wellfield #4
Tower Mall Property