



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII  
901 NORTH 5TH STREET  
KANSAS CITY, KANSAS 66101

April 9, 2001

Site:	11111111111111111111
ID #:	11111111111111111111
Break:	2.5
Other:	11111111111111111111

**ACTION MEMORANDUM**

SUBJECT: Request for an Approval of a Removal Action and Emergency Exemption of the 12-Month Statutory Limit for the Oak Grove Village Well Site, Oak Grove Village, Missouri

FROM: DeAndré Singletary, On-Scene Coordinator  
ELFR/SUPR

THRU: Kenneth S. Buchholz, Chief  
EFLR/SUPR

TO: Michael J. Sanderson, Director  
SUPR

Site ID#: 07PZ  
Operable Unit: 01  
Category of Removal: Time-Critical  
CERCLIS ID#: MO D981717036  
Nationally Significant/Precedent Setting: NO



S00204897  
SUPERFUND RECORDS

**I. PURPOSE**

The purpose of this Action Memorandum is to request approval and funding for a time-critical removal action and to request a 12-month emergency exemption for the Oak Grove Village Well Site (Site), in Oak Grove Village, Franklin County, Missouri. Under this removal action, whole-house water treatment units will be installed and maintained at certain residential properties where private drinking wells exceed the maximum contaminant level of 5 parts per billion (ppb) for trichloroethylene (TCE). The total project costs to implement this removal action are \$169,731.



## II. SITE CONDITIONS AND BACKGROUND

### A. Site Description

#### 1. Removal Evaluation

Several private wells in the Oak Grove Village vicinity have been found to exceed the Federal Safe Drinking Water Act maximum contaminant levels (MCLs) for TCE. In 1986, the Missouri Department of Natural Resources (MDNR) encountered levels of TCE in the Oak Grove Village city well at 6 ppb. The MCL for TCE is 5 ppb. Following the original detection of TCE, MDNR continued to sample the Oak Grove Village well on a quarterly basis from June 1986 through October 1990, with levels ranging from 6 to 25 ppb.

In December 1990, MDNR issued Oak Grove Village a Notice of Violation due to the TCE levels in the city well exceeding the MCL. In July 1991, Oak Grove Village closed the well and began purchasing water from the city of Sullivan. In September 1992, Oak Grove Village reopened the well and disconnected from the Sullivan water supply. MDNR reinstated sampling of the well. TCE was again detected above the MCL and continued to be detected above the MCL through February 1994, when the well was closed again and capped.

MDNR conducted a Preliminary Assessment (PA) and a Site Inspection (SI) at the site. The PA was completed in June 1987, and the SI was completed in October 1988. Several potential sources of TCE were identified during the MDNR investigations and during environmental inspections conducted for private companies. These potential sources include the Sullivan Landfill, the TRW Automotive Products Inc., a former Ramsey Division facility (TRW), the Sohn property, and the Blanton property. TCE was detected in soil and/or groundwater samples collected at three of these sites. However, existing information was not adequate to sufficiently document attribution to any of these areas as the source of the TCE detected in the Oak Grove Village well.

The Environmental Protection Agency (EPA) completed an Expanded Site Inspection (ESI) in September 1994 to identify possible source(s) of TCE contamination, to establish quantities for the source(s), and to provide hazard ranking system (HRS) quality sampling and

analytical data. The analytical data from the ESI field sampling did not result in data sufficient to meet the HRS project objective of documenting a source of the TCE contamination and an associated hazardous waste quantity.

TRW, one of the potential sources identified in the PA/SI, entered into a Resource Conservation and Recovery Act (RCRA) 3008(h) corrective action order with the EPA on March 29, 1993. TRW implemented an EPA/MDNR approved RCRA groundwater monitoring plan which included hydrogeologic assessment and groundwater sampling of private, city, and TRW wells. Reports from this work document the presence of the karst setting and releases of TCE



and its breakdown products into soil and the groundwater. EPA and MDNR have approved a RCRA Facility Investigation Report which defines the vertical and horizontal extent of releases from the former Ramsey facility. The work by TRW to date has not shown a direct hydrologic or chemical relationship to the Oak Grove Village well. At present, the EPA and the MDNR, under RCRA authority, are developing a final decision with regard to public comments received during the public comment period in 2000.

A Remedial Investigation/Feasibility Study (RI/FS) has been initiated under a cooperative agreement between the EPA and the MDNR's Superfund programs. Since TCE is present in the Oak Grove Village well, the RI will center on this well and work its way out through the surrounding vicinity. Investigative techniques such as sampling public and private water wells, surface water sampling, spring sinkhole sampling, installation of monitoring wells, and possibly dye traces will be completed both within and outside Oak Grove Village to further define the TCE groundwater plume in three dimensions.

The MDNR (in a letter dated August 4, 2000) asked the EPA to provide an alternate water source to two homes with levels of TCE exceeding the MCL. Groundwater sampling indicated TCE contamination in private wells at the homes at 12.8 and 16.4 ppb.

## 2. Physical Location

The Site is approximately 60 miles southwest of St. Louis and adjacent to the city of Sullivan in Franklin County, along Interstate 44. The legal location of the Site is Section 4, Township 40 North, Range 2 West. The total population within four miles of the Site is estimated to be 6,800 persons.

## 3. Site Characteristics

The Site is an uncontrolled plume of TCE initially detected in a municipal drinking water well. The Oak Grove Village well drew water from an aquifer that can best be described as karst limestone and dolomite, which are highly soluble and characterized by features such as caves, springs, and solution conduits. Groundwater flow direction at the site is uncertain due to the karst feature throughout the area; the flow is to the northeast, but it could be to the north or to the east. There are over 100 private wells around Oak Grove Village that draw water from the same contaminated aquifer as the municipal well. Two of these are known to have TCE contamination above the MCL. Because it is unknown how many other wells are contaminated with TCE at levels of health concern, the MDNR is currently locating and testing private wells for TCE.



4. Release or Threatened Release of a Hazardous Substance, or Pollutant, or Contaminant

TCE, a hazardous substance as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), was found in drinking water wells above the MCL of 5 micrograms per liter for drinking water.

5. National Priority List Status (NPL)

This site is currently not proposed for the NPL. However, the Site Assessment Program has conducted an ESI which indicated that a score greater than the cutoff score of 28.5 could be calculated, which is an indication of the relative threat posed by contaminants at this site. The EPA is finalizing its preparation of a HRS package.

6. Maps, Pictures and Other Graphic Representations

The attached map shows the general location of the three private wells that have tested above the MCL for TCE.

B. Other Actions to Date

1. Previous Actions

Previous MDNR activities include private drinking water well sampling conducted during June to August 2000.

2. Current Actions

Samples of known residences whose private wells exceed the MCL of TCE have been collected by MDNR and EPA. The state has requested that a removal action be performed at these residences. MDNR, under a cooperative agreement with the EPA is planning a RI/FS to further address the TCE plume in the groundwater.

C. State and Local Authorities' Role

The MDNR completed an integrated PA/SI in October 1988. The EPA completed an ESI in September 1994. The MDNR has not requested that the lead at the Site be transferred from the MDNR to the EPA, but it has requested the EPA to perform a time-critical removal action to address those private wells that are contaminated with TCE above the MCL.

In conjunction with EPA sampling activities, MDNR will continue to sample private drinking water wells on properties around the Site. The data collected will be utilized as part of the on-going RI/FS.





### III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

Section 300.415(b) of the National Contingency Plan (NCP) provides that the EPA may conduct a removal action when it determines there is a threat to human health or the environment based on one or more of the eight factors listed in Section 300.415(b). The factors which justify a removal action at this Site are outlined below:

#### A. Threats to Public Health or Welfare

1. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants

Completed exposure pathways exist for wells near the Site. The source of TCE contamination has yet to be pinpointed, but the groundwater aquifer is contaminated. The routes of exposure include ingestion, inhalation, and skin contact. The exposure pathway is completed when residents use contaminated private wells as their household water supply. Until the source of contamination and the groundwater are remediated, or use of contaminated water well is discontinued, future exposures will occur.<sup>1</sup>

During some preliminary sampling in the Oak Grove Village/Sullivan area, three private drinking water wells were detected to have TCE above the MCL of 5 ppb. Since the original sampling, one well has fallen below the MCL and maintained a decreasing level of TCE-contamination. Children reside in both of the homes on a full-time or part-time basis. It is not known how long the TCE contamination has been in the wells; however, municipal wells in the area have shown the presence of TCE since as early as 1986. TCE has also been detected in groundwater within 3 to 4 miles of the private wells as high as 29,000 ppb.

2. Actual or potential contamination of drinking water supplies or sensitive ecosystems

The primary threat to public health or welfare is from the ingestion, dermal contact, and inhalation of the contaminants. Numerous private wells that exist in the same general vicinity may also exceed established MCLs. These residences are outside areas currently served by public water supply systems, and the private wells supply the source of drinking water for the residences. Due to the karst geology in this area, the TCE-contaminated groundwater at this Site is prone to migrate to other drinking water wells in the vicinity of the Site.

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<sup>1</sup> Health Consultation, Oak Grove Village Wells, December 21, 2000.



TCE, which is a constituent of F001 hazardous waste, is a colorless gas used as a solvent for oils, fats, waxes, resins, rubber, paints, and varnishes. It is used for solvent extraction in many industries. It is a metal de-greaser and a dry-cleaning agent. Exposure to TCE vapor may cause burning, irritation, and damage. Repeated or prolonged skin contact with the liquid may cause dermatitis. Acute exposure to TCE depresses the central nervous system exhibiting such symptoms as headache, dizziness, vertigo, tremors, nausea and vomiting, irregular heartbeat, sleepiness, fatigue, blurred vision, and intoxication similar to that of alcohol. TCE is a degradation product of PCE. TCE is practically insoluble in water. The MCL for TCE is 5 micrograms/liter ( $\mu\text{g/L}$ ) and its EPA carcinogenicity classification is B2 (probable human carcinogen). TCE has a specific gravity of 1.46 and will tend to sink in water.

3. The availability of other appropriate federal or state response mechanisms to respond to the release

Neither the state of Missouri nor other federal agencies have access to resources or mechanisms to conduct this response action. MDNR has requested EPA assistance in performing removal actions at the homes whose private wells are contaminated with TCE above the MCL. At this time the EPA is the only avenue for undertaking this action.

#### B. Threats to the Environment

Contaminants found at this Site may have adverse effects on animal populations. However, the specific objective of this removal action is to mitigate the threat of exposure to private drinking water well users whose well water exceeds MCL's. The on-going RI/FS will further evaluate the nature and extent of contamination and the need for future response actions addressing contamination below the MCL's.

### IV. EXEMPTION FROM STATUTORY LIMITS

#### A. Emergency Exemption

1. There is an immediate risk to public health and welfare or the environment.

The affected residences utilize private water wells for all household use. Carbon filtration systems provide an immediate elimination of the threat of inhalation, ingestion and dermal contact of TCE. Bottled water only addresses the ingestion route of exposure to these contaminants. The 12-month emergency exemption is necessary for the EPA to maintain the whole-house treatment units and to change the carbon filters when they are spent.



2. Continued response actions are immediately required to prevent, limit, or mitigate an emergency.

Concentrations of TCE have been repeatedly detected above MCLs in two drinking water wells. Periodically the filters within the system become ineffective and need to be changed, therefore, requiring an exemption to the one-year removal limitation.

3. Assistance will not otherwise be provided on a timely basis.

Private wells threaten to expose residents to concentrations of TCE above the MCL. No other federal, state, or local agencies are capable of mitigating the threat of TCE in the private wells at this time.

## **V. PROPOSED ACTIONS AND ESTIMATED COSTS**

### **A. Proposed Action**

#### **1. Proposed Action Description**

Whole-house treatment units will be made available and maintained for those property owners whose private drinking wells exceed the MCL of 5 ppb for TCE. Provision of the treatment units will remain available until:

- a. Concentration levels of hazardous substances, or pollutants, or contaminants, fall below the MCL. This determination may be based on two separate sampling events, at least 6 months apart, indicating that contaminants are below the MCL.
- b. December 31, 2005, notwithstanding the TCE concentration level at that time.

#### **2. Contribution to Remedial Performance**

This removal action will mitigate the immediate threat to human health while subsequent investigations conducted by the MDNR and the EPA can determine the source of contamination and/or long-term solution to the contamination problem. This action should be consistent with any long-term remedial action taken in the future at the Site.

#### **3. Description of Alternative Technologies**

The following options were considered

Bottled water, used primarily for drinking and cooking, would cost an estimated \$500 per residence for the first and subsequent years. Bottled water, however, will only address the ingestion exposure route. Though TCE does have the potential to cause liver



damage from chronic exposure through the ingestion pathway at levels above the MCL, serious health effects can result from both acute and chronic inhalation and dermal exposure.

Community water well – This area currently has a municipal well contaminated with TCE above MCLs and is in the process of purchasing water from the city of Sullivan. The city of Sullivan has also had municipal water wells contaminated with TCE. A community water well is not an option at this time.

Carbon filtration systems would cost approximately \$3,500 per residence for the first year and approximately \$650 per residence for each subsequent year. An estimated additional 10 residences are expected to be added to the project, raising the total number of homes needing carbon filters to 12 homes.

4. Engineering Evaluation/Cost Analysis (EE/CA)

An EE/CA has not been performed and is not planned.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

Section 300.415(j) of the NCP provides that fund-financed removal actions under Section 104 of CERCLA shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental, state environmental or facility-siting laws. Federal and state drinking water standards have been identified as the ARARs for this removal action.

6. Project Schedule

Response activities can begin within 48 hours of the signing of this action memorandum. Completion of the installation of relevant systems would require approximately two weeks; however, maintenance of the systems would continue as proposed.

B. Estimated Costs

The following cost estimates are based upon 12 whole-house carbon filtration units at those residences which exceed the MCL for TCE. Additional affected residences may be discovered through continued EPA sampling. The current number of known residences requiring a treatment system is two. The future number estimated to be provided a treatment system is 10.





Extramural Costs

Regional Removal Allowance Costs	\$ 81,000
START Costs	9,000
Contingency	<u>10,000</u>
Removal Project Ceiling	\$100,000

Intramural Costs

EPA Direct Costs	\$ 8,600
EPA Indirect Costs	<u>61,131</u>
Subtotal, Intramural Costs	\$ 69,731

TOTAL EXTRAMURAL AND INTRAMURAL COSTS      \$169,731

The EPA direct and indirect costs, although cost recoverable, do not count toward the total Removal Project Ceiling for this removal action.

**VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

Without implementation of this action, occupants of affected residences will continue to be exposed to TCE and other contaminants through ingestion, inhalation and/or dermal contact.

**VII. OUTSTANDING POLICY ISSUES**

None.

**VIII. ENFORCEMENT**

See the attached Confidential Enforcement Addendum. For NCP consistency purposes it is not part of this Action Memorandum.

**IX. RECOMMENDATION**

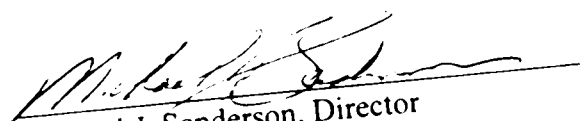
This decision document represents the selected removal action for the Site, in Oak Grove Village, Missouri, developed in accordance with CERCLA as amended, and not inconsistent with the NCP.

An Administrative Record for the Site will be developed and placed at a nearby repository within 60 days of the start of the removal action.



Conditions at this Site meet NCP Section 300.415(b) criteria for a removal action and the CERCLA Section 104(c) emergency exemption from the 12-month limitation, and I recommend your approval of the proposed removal action and 12-month exemption. The Removal Project Ceiling, if approved, will be \$100,000. This amount will be funded by the Regional Removal Allowance.

Approved:

  
Michael J. Sanderson, Director  
Superfund Division

4-09-01  
Date

Attachments



