



EPA

VALLEY WOOD PRESERVING SUPERFUND SITE

U.S. Environmental Protection Agency \$ Region 9 \$ San Francisco, CA \$ January 2007

EPA ANNOUNCES PROPOSED PLAN FOR FINAL GROUNDWATER REMEDY

This Proposed Plan identifies the United States Environmental Protection Agency's (EPA's) Preferred Alternative for cleaning up residual contaminated groundwater at the Valley Wood Preserving Superfund Site located in Turlock, California (see Figure 1) and provides the rationale for this preference. In addition, this Plan includes summaries of other cleanup alternatives evaluated for use at this site. The U.S. Environmental Protection Agency (EPA), the lead agency for site activities, and the California Department of Toxic Substances Control (DTSC), the support agency, together are issuing this plan. EPA, in consultation with

DTSC, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with DTSC, may modify the Preferred Alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under the Comprehensive

Environmental Response, Compensation, and Liability Act (CERCLA Section 117a) and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study, dated January 19, 2007 and other documents contained in the Administrative Record file for this site. EPA and DTSC encourage the public to review these documents to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted at the site. Copies of the documents are available for review at the Information Repositories listed on this page.

SITE BACKGROUND

The Valley Wood Preserving, Inc. (VWP) Superfund site, a former wood preserving facility, is located at 2237 South Golden State Boulevard on the southeast side of Turlock, California (see Figure 1). In 1973, VWP began operations that involved pressure-treating wood with a water-based

Mark Your Calendar – Dates to Remember

PUBLIC COMMENT PERIOD

February 7, 2007 – March 8, 2007

U.S. EPA will accept written comments on the Proposed Plan during the public comment period. Written comments must be postmarked or emailed no later than March 8, 2007. See contact information on page 10.

PUBLIC MEETING ON PROPOSED PLAN

EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Focused Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held on Tuesday, February 13, 2007 at 7 pm at the Veterans of Foreign Wars Building located at 1405 East Linwood Avenue in Turlock, CA.

For more information, selected documents are located at the following locations:

Stanislaus County Library

Turlock Branch	Hours:
550 Minaret Avenue	Monday - Thursday 10 am - 9 pm
Turlock, CA 95380	Friday - Saturday 10 am - 5 pm
Phone (209) 667-1666	Sunday 12(noon) - 5 pm

U.S. EPA Superfund Records Center

95 Hawthorne St., Suite 403S	Hours:
San Francisco, CA. 94104	Monday-Friday 8am to 5 p.m.
Phone (415) 536-2000	

solution containing chromium, copper and arsenic. Wood preserving operations at the site ceased in 1979 because these activities had resulted in on-site soil and groundwater contamination and off-site groundwater contamination. The contaminants of concern at the site include hexavalent chromium and arsenic.

In 1989, EPA added the site to the **National Priorities List**¹ and became the lead regulatory agency for cleanup of the site. On September 27, 1991, EPA issued a Record of Decision (ROD) identifying cleanup remedies for contaminated soil and groundwater. This cleanup plan was updated in 1994 and again in 2003. VWP has implemented soil and groundwater cleanup activities at the site, including excavation and off-site disposal of contaminated soil. Currently, only residual levels of groundwater contamination remain at the site.

SITE CHARACTERISTICS

In 1990 and 1991, VWP conducted a Remedial Investigation/Feasibility Study (RI/FS) under EPA's oversight. The RI/FS identified the types, quantities and locations of contaminants and developed ways to address the contamination problems. The RI indicated that:

- \$ Hexavalent chromium and arsenic were the primary contaminants of concern detected in subsurface soil and groundwater at the VWP facility
- \$ Hexavalent chromium was also detected in groundwater **downgradient** of the facility
- \$ Technologies were available to remediate these contaminants

¹ Words in **bold** are defined in the glossary on page 9.

PRIOR REMEDIAL ACTIONS AT THE SITE

EPA selected cleanup plans for soil and groundwater in the September 1991 ROD. The groundwater cleanup plan involved extracting contaminated groundwater, treating it above-ground with an electrochemical process to reduce the hexavalent chromium to trivalent chromium (a non-toxic, less mobile form of chromium), followed by additional treatment using activated alumina to remove residual arsenic. The treated groundwater was discharged into an infiltration pond on the VWP property where the water eventually seeped back into the subsurface.

EPA modified the groundwater remedial action on December 9, 1994 in an Explanation of Significant Differences (ESD). The ESD modified the groundwater cleanup plan by allowing an *in-situ* groundwater treatment through a site-wide pilot study. The ESD also proposed adding the technology to the groundwater remedy if the desired results of the pilot study were achieved. The *in-situ* treatment pilot study consisted of reinjecting treated groundwater into the aquifer and saturated soil in order to reduce hexavalent chromium concentrations in subsurface soil and groundwater. During the pilot study, VWP continued to operate the pump and treat system for groundwater consistent with the

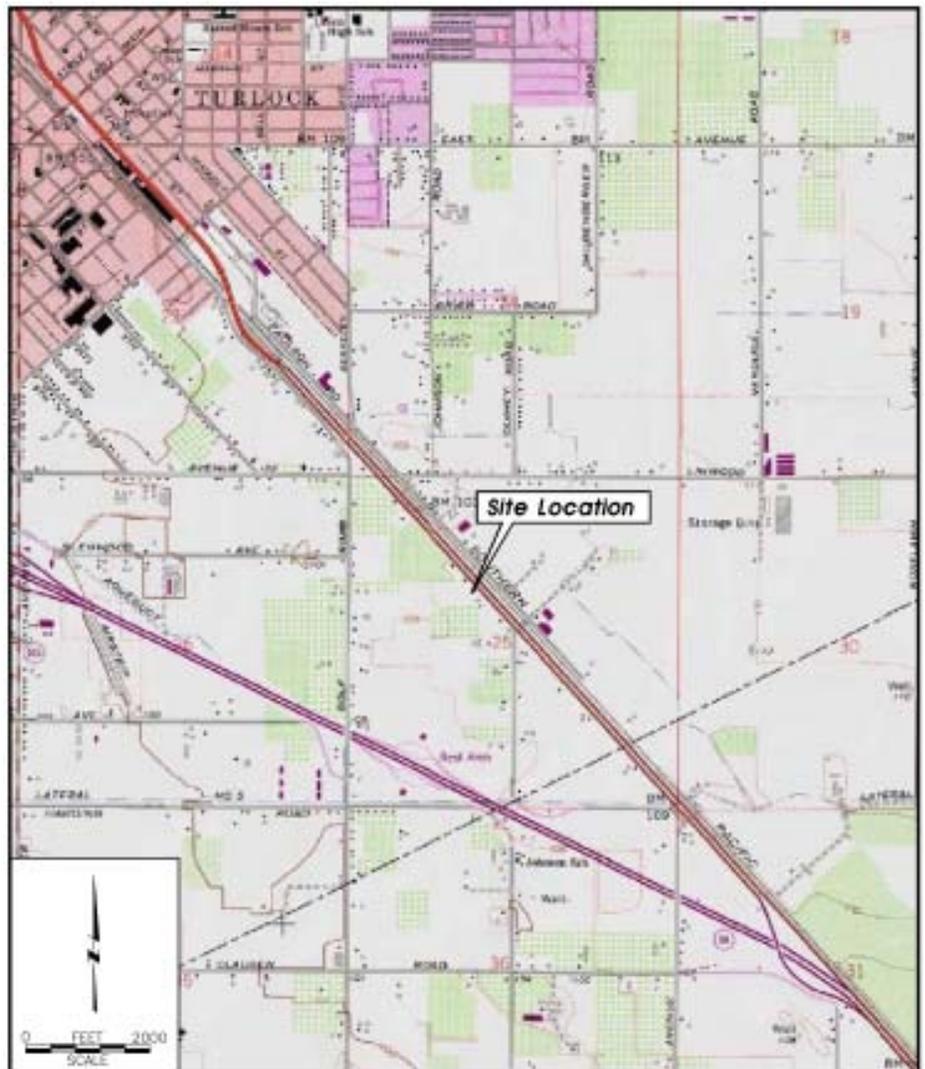


Figure 1: Site Location Map

initial cleanup plan, but rather than discharging the treated water into the infiltration ponds, VWP amended the treated water with calcium polysulfide (an ionic reductant) and also reinjected it into the groundwater through a series of injection wells. The added calcium polysulfide reductant reacted with the hexavalent chromium, *in-situ*, reducing it to trivalent chromium, the less toxic and less soluble form of chromium. Trivalent chromium precipitated out of the groundwater onto subsurface soil particles and remains in the subsurface at the site where it no longer poses a threat to groundwater quality.

During the pilot study, residual calcium polysulfide from the *in-situ* treatment locally mobilized arsenic and manganese, and also generated sulfate, temporarily and locally causing increased concentrations of these contaminants in groundwater beneath the site and down gradient of the VWP property. These temporary and localized concentration increases were expected as part of the pilot study.

The *in-situ* treatment of hexavalent chromium effectively reduced concentrations in groundwater such that EPA determined that the groundwater extraction system could be shut down. The groundwater treatment system has been dismantled and removed from the site. Currently, low levels of hexavalent chromium and arsenic remain in groundwater at levels above cleanup goals and warrant consideration of additional remedial action (see Figures 2 and 3).

On September 29, 2003, EPA issued a ROD Amendment modifying the cleanup plan for soil. The soil remedy initially selected in the ROD was to excavate the contaminated soil, fix and stabilize the hazardous substances with a stabilizing agent and backfill the fixed soils into the excavated areas. The ROD Amendment revised the cleanup standards for soil consistent with the expected future industrial use of the property. It also revised the cleanup plan to require excavation and off-site disposal of contaminated soil that exceeded the revised cleanup standards. A deed restriction was also required to restrict the land use activities on the VWP property to industrial use.

SCOPE AND ROLE OF THE PROPOSED ACTION

This proposed remedial action will be the final remedial action for the site. The Remedial Action Objective for groundwater for the site is to restore groundwater to its beneficial use within a reasonable time frame. The proposed remedial action will address residual hexavalent chromium and arsenic in groundwater beneath the site.

Contaminated soil and most of the off-property contaminated groundwater have been addressed through prior remedial actions.

The remedial action will meet final site cleanup goals for groundwater that are consistent with federal and state **Maximum Contaminant Levels (MCLs)** for drinking water. The cleanup standard for hexavalent chromium is 50 parts per billion (**ppb**), which corresponds to the California MCL for total chromium in water. EPA is proposing to revise the site cleanup goal for arsenic to 10 ppb for shallow groundwater where site impacts have been observed, which is consistent with the revised federal MCL for arsenic. The cleanup goal for arsenic would thus be lowered from the original 1991 cleanup plan. There is a deeper groundwater zone where no facility contamination has migrated but where naturally-occurring arsenic concentrations are higher than the revised federal MCL, in the range of 20 to 25 ppb. This zone is not addressed by the proposed cleanup plan.

Through the use of continued *in-situ* treatment technology and **monitored natural attenuation**, the groundwater is expected to meet remedial action goals in approximately four years.

SUMMARY OF SITE RISKS

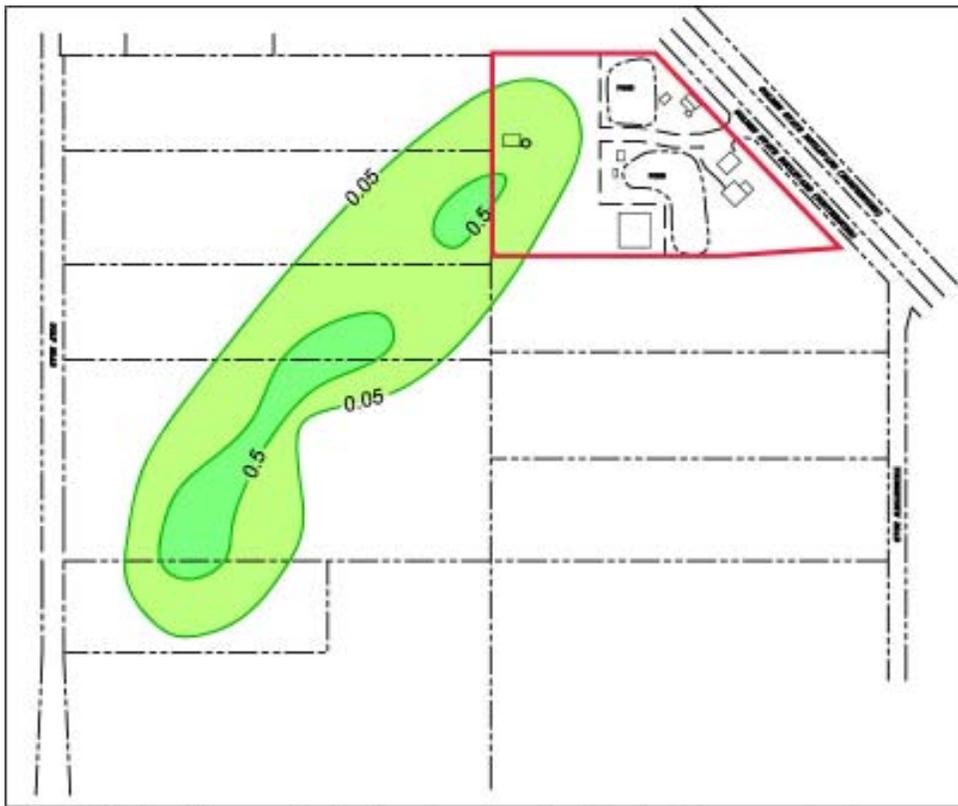
Contaminated groundwater represents the primary remaining source of risk at the site. The proposed response action will return groundwater to its beneficial uses within a reasonable period of time. Soil contamination has been addressed through prior remedial actions. The remaining groundwater contamination is not widespread and the concentrations are not significantly above cleanup goals. No domestic wells are contaminated and no one is exposed to contaminated groundwater.

REMEDIAL ACTION OBJECTIVES

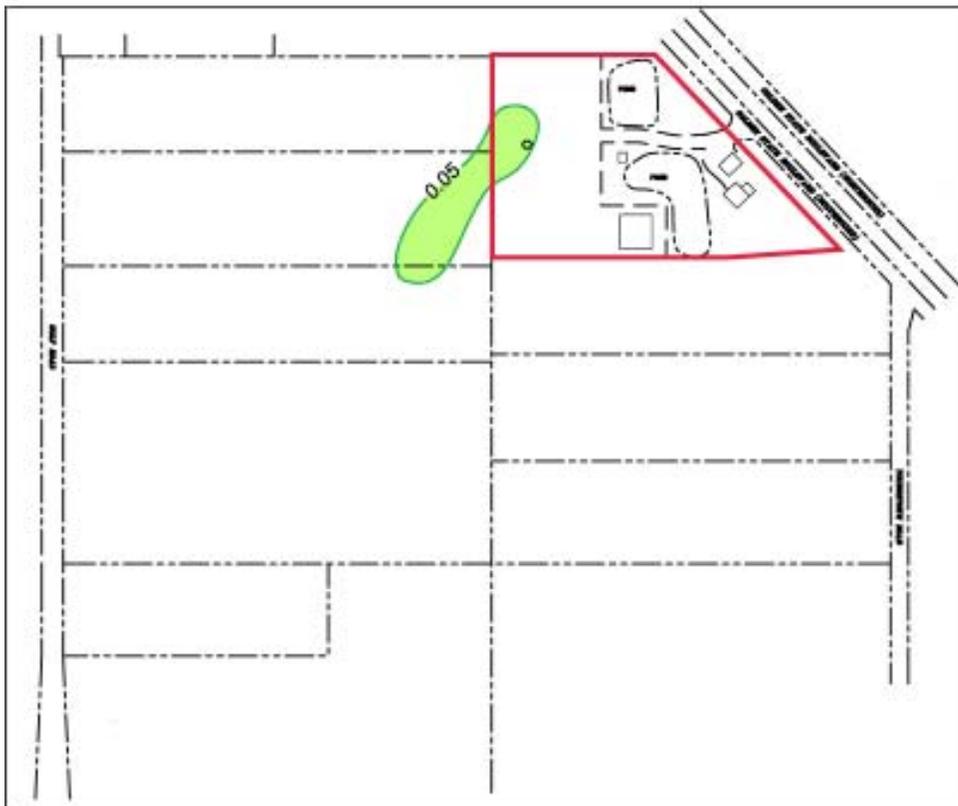
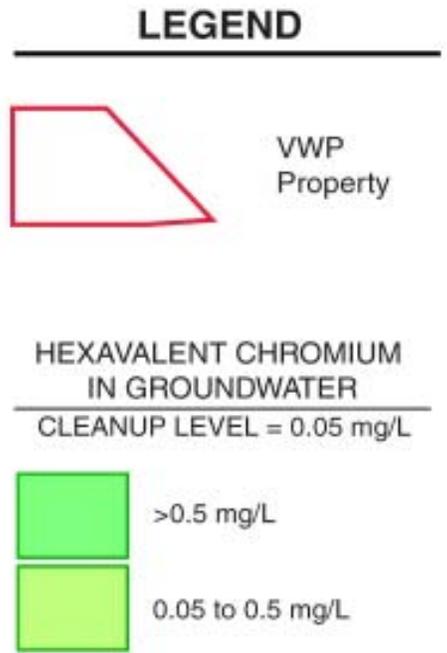
The Remedial Action Objectives outlined in the original 1989 Record of Decision for the site were to:

- \$ Restore the groundwater to its beneficial uses within a reasonable time frame
- \$ Prevent contaminants in soil from leaching into the groundwater

This proposed action continues to address the first objective by proposing to remediate residual concentrations of hexavalent chromium and arsenic in groundwater. The *in-situ* treatment of hexavalent chromium has effectively reduced contaminant concentrations in groundwater.



Original hexavalent chromium contamination in groundwater
January 1998



Remaining hexavalent chromium contamination in groundwater
February 2006

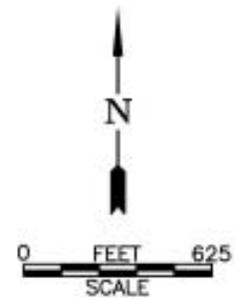


Figure 2: Hexavalent chromium concentrations in groundwater before and after *In-Situ* treatment

SUMMARY OF ALTERNATIVES

The following remedial alternatives are evaluated in the Focused Feasibility Study:

Remedial Alternatives Evaluated for Continued Groundwater	
1. No Action	Under this alternative, no further action would be taken.
2. Monitored Natural Attenuation	This alternative relies on natural processes (biological or geochemical) to clean-up contamination in groundwater. This alternative includes a monitoring program to verify that the natural attenuation is occurring according to predictions.
3. In-Situ Treatment and Monitored Natural Attenuation	This alternative involves an active underground treatment to reduce concentrations of remaining contamination. This alternative also relies on natural processes (biological or geochemical) in addition to the <i>in-situ</i> treatment to cleanup residual contamination in groundwater. This alternative includes a monitoring program assess progress towards cleanup goals.

Table 1: Remedial alternatives evaluated for continued groundwater

Very low concentrations of hexavalent chromium remain in groundwater beneath the site and trend analyses conducted during the Focused Feasibility Study indicate that these levels will naturally decrease within the next few years to concentrations below the chromium MCL. Arsenic concentrations remain at levels that warrant consideration of additional groundwater remedial action to achieve Remedial Action Objectives within a reasonable time frame.

As described in the Focused Feasibility Study, VWP proposes to reduce concentrations of arsenic in groundwater through *in-situ* treatment followed by monitored natural attenuation. The proposed *in-situ* treatment will result in the arsenic chemically adsorbing to the soil matrix thereby reducing concentrations in groundwater. The soil Remedial Action Objectives have been met through prior cleanup work completed at the site.

EVALUATION OF ALTERNATIVES

Nine criteria are used by EPA to evaluate and compare remediation alternatives in order to select a remedy (See Tables 2 and 3). This Proposed Plan summarizes the performance of each alternative against the nine criteria noting how each alternative compares to the other options under consideration. The “Detailed Analysis of Alternatives” can be found in the Focused Feasibility Study dated January 19, 2007 which is available for review at the Turlock Branch of the Stanislaus County Library and at the EPA’s Superfund Records Center.

EPA’s preferred alternative for cleanup of the residual groundwater contamination at the Valley Wood Preserving, Inc. site is Alternative 3: In-Situ Treatment and Monitored Natural Attenuation. The alternatives evaluated are:

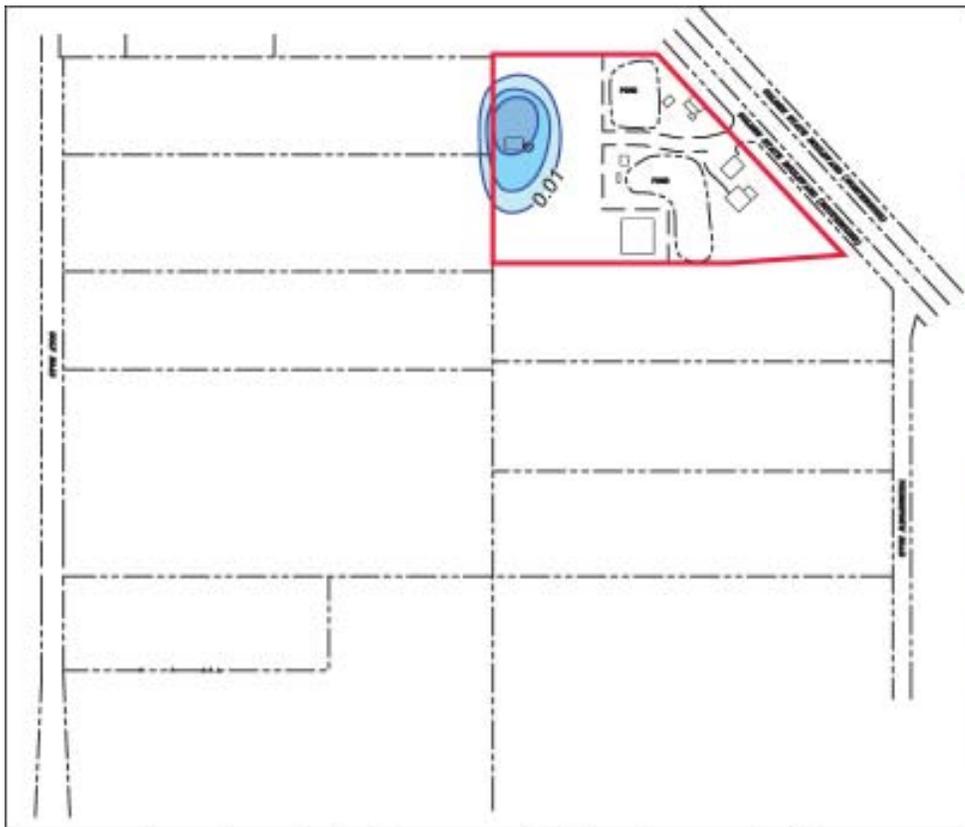
Alternative 1 – No Action

EPA’s guidance requires this alternative to be evaluated to establish a baseline for comparison. Under this Alternative, no further action would be taken to clean up or monitor contaminated groundwater.

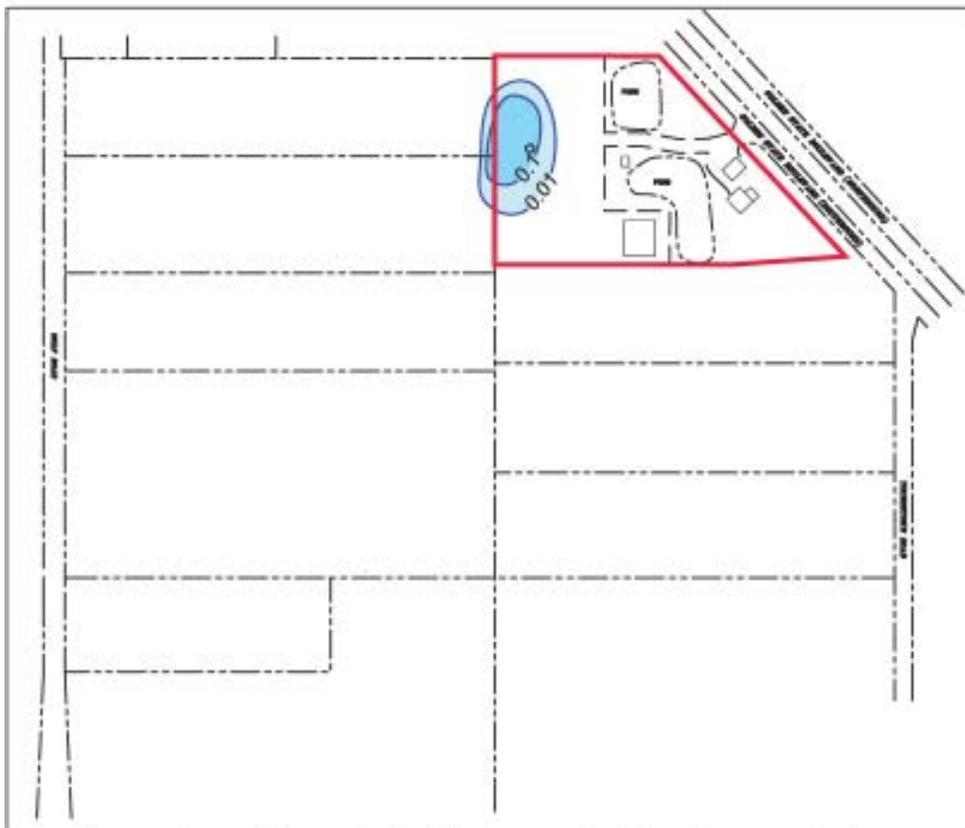
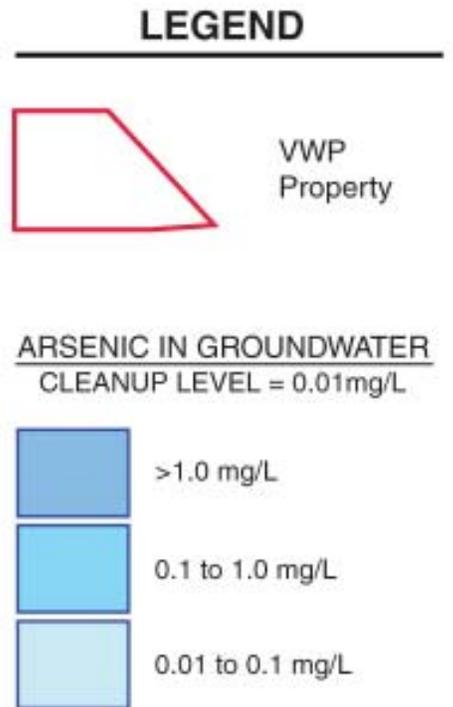
Alternative 2 – Monitored Natural Attenuation

This remedial alternative relies on natural processes (biological and geochemical) to clean up or attenuate contamination in groundwater. There are several requisite conditions that must be in effect for Monitored Natural Attenuation to be effective at the site. These requisite conditions include: removal of contaminant sources and presence of natural attenuation capabilities in the subsurface.

VWP implemented the soil remedy in July 2004 which removed the source of arsenic and hexavalent chromium contamination through excavation and off-site disposal of contaminated soil. Natural attenuation capabilities appear to be present at the site since hexavalent chromium and arsenic concentrations in groundwater have been declining with time (even after the termination of the pump and treat system in 2004).



Arsenic contamination concentrations in groundwater
January 1998



Present arsenic contamination concentrations in groundwater

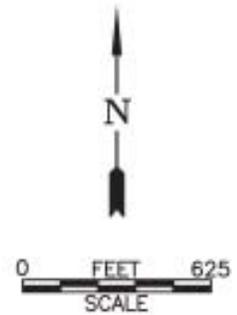


Figure 3: Arsenic concentrations in groundwater

This alternative requires continued groundwater monitoring to demonstrate that natural attenuation is occurring. The trend analysis included in the Focused Feasibility Study indicates that this alternative may take more than 10 years (with a maximum of 30 to 40 years) to achieve cleanup goals. The longer time period is associated with reaching arsenic cleanup goals in the western area of the VWP property.

Alternative 3 – *In-Situ* Treatment and Monitored Natural Attenuation

This alternative is the preferred alternative for the site and involves addressing residual concentrations of arsenic in groundwater with an *in-situ* treatment. There are several different *in-situ* treatment options that may be appropriate for addressing arsenic in groundwater at the site. Specific

in-situ treatment will be evaluated through a **Treatability Study** conducted in the Remedial Design phase of the project. *In-situ* treatment options may include introducing oxygen into the aquifer to promote the adsorption of arsenic onto soil particles. Oxygen can also be introduced by **air sparging** and/or the use of calcium peroxide or sodium persulfate, a time-release form of oxygen addition. Additionally, substances specifically designed for arsenic cleanup can be added to the groundwater to reduce the concentrations of arsenic.

The hexavalent chromium concentrations in groundwater are currently low enough that additional *in-situ* treatment is not necessary to achieve cleanup goals. The remaining hexavalent chromium concentrations will be addressed through Monitored Natural Attenuation.

Evaluation Criteria for Superfund Remedial Alternatives	
Overall Protection of Human Health and the Environment	determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls or treatment.
Compliance with ARARs	evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site or whether a waiver is justified.
Long-term Effectiveness and Permanence	considers the ability of an alternative to maintain protection of human health and the environment.
Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment	evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment and the amount of contamination present.
Short-term Effectiveness	considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents and the environment during implementation.
Implementability	considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost	includes estimated capital and annual operations and maintenance costs as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State Acceptance	considers whether the State concurs with, opposes or has no comment on the preferred alternative as described in the Focused Feasibility Study and Proposed Plan.
Community Acceptance	considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Table 2: Evaluation criteria for Superfund remedial alternatives

VALLEY WOOD PRESERVING RESIDUAL GROUNDWATER ALTERNATIVE EVALUATION TABLE

Evaluation Criteria	Alternative 1	Alternative 2	Alternative 3
	No Action	Monitored Natural Attenuation	PREFERRED <i>In-Situ</i> Treatment and Monitored Natural Attenuation
Overall Protection of Human Health and the Environment	Does not meet criteria	Fully meets criteria	Fully meets criteria
Compliance with ARARs	Does not meet criteria	Fully meets criteria	Fully meets criteria
Long-term Effectiveness and Permanence	Does not meet criteria	Fully meets criteria	Fully meets criteria
Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment	Does not meet criteria	Does not meet criteria as MNA relies on natural processes to reduce toxicity, mobility and volume, not treatment.	Fully meets criteria
Short-term Effectiveness	Does not meet criteria	Partially meets criteria	Fully meets criteria
Implementability	Does not meet criteria	Fully meets criteria	Fully meets criteria
Cost	\$0	\$414,995	\$299,740
State Acceptance	DTSC and Regional Water Quality Control Board have verbally concurred with EPA's preferred alternative.		
Community Acceptance	Community acceptance of the preferred alternative will be evaluated after the public comment period.		

Table 3: Valley Wood Preserving groundwater alternative evaluation table

This remedial alternative also relies on monitored natural attenuation (described above) following *in-situ* treatment to meet cleanup goals. The trend analysis included in the Focused Feasibility Study shows that this alternative is expected to take approximately four years to meet cleanup goals.

PREFERRED ALTERNATIVE

EPA's Preferred Alternative for completing the cleanup of residual groundwater contamination at the Valley Wood Preserving, Inc. site is Alternative 3 – In-Situ Treatment and Monitored Natural Attenuation. This alternative is expected to achieve cleanup goals sooner than the other alternatives and is also expected to cost less than Alternative 2. EPA believes the preferred alternative remedy is protective of human health and the environment and would result in meeting the groundwater remedial action objective for the site, which is to restore groundwater to its beneficial uses within a reasonable time period.

COMMUNITY PARTICIPATION

Community input is an important part of the Superfund decision-making process. You are encouraged to comment on the Proposed Plan either in person at the February 13, 2007 public meeting or in writing during the public comment period (February 7, 2007 – March 7, 2007). Please send written comments to Dana Barton (see contact information on page 10).



Glossary

Air sparging - Injecting air or oxygen into an aquifer.

ARARs - Applicable or relevant and appropriate requirements. ARARs are promulgated, or legally enforceable federal and state requirements.

Contaminants of Concern - Any contaminant that is expected to be present at the site ... Equivalent Term: regulated substance of concern.

Downgradient - The direction that groundwater flows; similar to “downstream” for surface water.

In-situ - Latin term meaning “in the original place.” In this case, it refers to a groundwater treatment component that promotes the chemical reactions of the treatment process to occur below ground rather than in an above-ground tank.

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water.

Monitored Natural Attenuation (MNA) - refers to the reliance on natural attenuation processes, within the context of a carefully controlled and monitored site cleanup, to achieve site-specific remedial objectives.

National Priorities List – A list of the most serious hazardous waste sites in the United States that require long-term cleanup. These sites have been evaluated according to the Hazard Ranking System criteria and qualify for expenditure of Superfund money if there is no party to pay for the cleanup.

Part per billion (ppb) – One part contaminant in one billion parts substance (soil, water, etc.) For water, it is equivalent to one microgram per liter.

Treatability Study - The testing and documentation activities to evaluate the effectiveness of a proposed remedial action prior to full scale design and implementation. Treatability study includes, but is not limited to, bench scale studies and pilot scale studies.

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Contact Information

If you have questions or concerns contact:

Lauren Berkman

Community Involvement Coordinator
U.S. Environmental Protection Agency
75 Hawthorne Street, SFD-3
San Francisco, CA 94105
(415) 972-3292
Or call toll-free 1-800-231-3075
Berkman.lauren@epa.gov



If you have specific questions about the proposed cleanup plan, contact:

Dana Barton

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75 Hawthorne Street, SFD-7-3
San Francisco, CA 94105
(415) 972- 3087
Barton.dana@epa.gov

The State of California point of contact is:

Sam Martinez

Department of Toxic Substances Control
Northern California Cleanup Operations Branch
8800 Cal Center Drive, Suite 3
Sacramento, CA 95826
SMartinez@dtsc.ca.gov

To learn more about the site refer to
EPA website: URL:
[www.epa.gov/region09/waste/
sfund](http://www.epa.gov/region09/waste/sfund)



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Attn: Lauren Berkman (VWP 1-07)

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