EXPLANATION OF SIGNIFICANT DIFFERENCES DECLARATION

SITE NAME AND LOCATION

Valley Wood Preserving Superfund Site
Turlock, California

STATEMENT OF BASIS AND PURPOSE

This declaration document presents this Explanation of Significant Differences ("ESD") to the remedial action selected in the Valley Wood Preserving Superfund Site Record of Decision signed on September 27, 1991 ("ROD"). It was developed in accordance with the Comprehensive Environmental Response, Compensation & Liability Act (42 U.S.C. Section 9601 et seq.)("CERCLA") and the National Contingency Plan (40 C.F.R. Section 300 et seq.)("NCP"). This decision is based on the administrative record for this site.

DESCRIPTION OF THE SELECTED REMEDY IN THE ROD

The Valley Wood ROD selected a remedy to address both contaminated soils and contaminated groundwater at the site. The cleanup of the contaminated groundwater was to be accomplished through the extraction of the contaminated groundwater, electrochemical treatment of the extracted groundwater to remove hexavalent chromium, followed by use of an activated alumina adsorption column to remove any residual dissolved arsenic. The remedy was estimated to cost $1,997,000 (in 1991 dollars) based on five years of operation to achieve cleanup levels and 30 years of operation and maintenance, including groundwater monitoring. The remedy selected to address the contaminated soils was excavation of the soils, fixation and stabilization of the hazardous substances in the soils with a stabilizing agent, and backfill of the fixed-soils into the excavated areas. The remedy was estimated to require 9 months to construct and to cost $1,853,000 (in 1991 dollars).

The ROD stated that the groundwater extraction would be approximately 360,000 gallons of water per day, that hexavalent chromium would be cleaned to 50 parts per billion ("ppb"), which corresponds to the California MCL for total chromium, and arsenic would be cleaned to 16 ppb, corresponding to a Hazard Index ("HI") of less than 1. Continued definition of the groundwater plume and compliance with the groundwater standards would be accomplished through a network of monitoring wells. The ROD also stated that EPA would allow one year from the initiation of Remedial Design ("RD") to modify the facility and treatment scheme to achieve the required performance standards for groundwater.

For the soil remedy, the ROD stated that the excavation would be performed using conventional earthmoving equipment. The

stabilization of the contaminated soils was to be accomplished through the use of commercially available stabilizing agents. The agents and the mix ratio are to be based on treatability studies to be performed using site soils. The fixed soil matrix was to backfill the excavation. In the event the fixed soils contained arsenic at levels higher than 500 parts per million ("ppm"), chromium at levels higher than 500 ppm, and copper at levels higher than 2,500 ppm, a liner would be required to be put in place prior to backfilling the soils. A liner would also be required if leachable arsenic and chromium exceeded 5 ppm and copper exceeded 25 ppm.

Collection and disposal of leachate and long-term monitoring were required to comply with all State and Federal regulations. Deed restrictions are also required for all areas where treated waste was to be deposited.

SUMMARY OF SIGNIFICANT DIFFERENCES

This ESD provides for the performance of a site-wide pilot study to evaluate the efficacy of an in-situ groundwater treatment component and, contingent on the success of the pilot study, potentially changes certain elements of the groundwater remedy set forth in EPA's September 27, 1991 ROD, and to the extent that the ESD differs from the ROD, the ESD supersedes the ROD. This ESD makes no changes to the soil remedy selected in the ROD. The ESD provides for the following changes to the ROD:

1. The ROD stated that the groundwater cleanup levels would be attained using above-ground electrochemical treatment. This ESD is providing for the performance of a site-wide, one-year pilot study of an in-situ treatment component as part of the remedial design for groundwater remediation. The in-situ component would consist of the reinjection of treated groundwater into the aquifer and saturated soils. The groundwater to be reinjected into the aquifer and saturated soils would be saturated with ionic reductants, which should react with the hexavalent chromium presently located in the aquifer and saturated soils and convert the hexavalent chromium into a less toxic, less mobile trivalent form, thereby reducing the volume of hexavalent chromium located in the groundwater and saturated soils. Contingent on the success of the pilot study, the in-situ treatment component would be added to the final groundwater remedy at the Site. Additionally, full remedial design/remedial action at the Site will be postponed during the performance of the pilot study to ensure that the pilot study is not interfered with.

Evaluation of data obtained after the ROD was signed indicates that the saturated soils are a potential source area of hexavalent chromium. Based on the data received since the signing of the ROD, including site specific soil and groundwater

data, and data relating to the in-situ treatment being utilized and partially tested at other sites, EPA has determined that a pilot study should be conducted as part of remedial design to further evaluate this remedial alternative. An in-situ remedial option determined in the Feasibility Study to be equally protective and acceptable as the selected remedy was rejected in the September 1991 ROD due to the absence of a pilot study.

2. Since this ESD requires the reinjection of treated groundwater in to the aquifer, this ESD also identifies all ARARs for this reinjected groundwater.

DECLARATION

The performance of the one-year pilot study as part of the remedial design for the groundwater remedy, and the selected groundwater remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. Based on the success of the pilot study, the remedy satisfies the statutory preference for remedies that employ treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances as a principal element. It also complies with the statutory preference for remedies that utilize permanent solutions and alternative technologies to the maximum extent practicable. As part of the pilot study, groundwater monitoring will be conducted to track the contaminant levels at the Valley Wood Preserving Site, monitor the performance of the treatment system, and monitor the success of reinjecting the treated groundwater in order to ensure adequate protection of human health and the environment.

Keith A. Takata — 12-9-94

John C. Wise
Deputy Regional Administrator

Date

EXPLANATION OF SIGNIFICANT DIFFERENCES

July 11, 1994

I. INTRODUCTION

On September 27, 1991, the U.S. Environmental Protection Agency ("EPA") signed a Record of Decision ("ROD") for the Valley Wood Preserving Superfund Site in Turlock, California. The purpose of this Explanation of Significant Differences ("ESD") is to explain the significant differences between the remedial action originally selected in the 1991 ROD and the remedial action which will be implemented at the Site.

Under Section 117 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), as amended, and pursuant to 40 C.F.R. § 300.435(c)(2)(i) (55 Fed. Reg. 8666, 8852 (March 8, 1990)), EPA is required to publish an Explanation of Significant Differences when significant (but not fundamental) changes are made to a final remedial action plan as described in a ROD.[1] This document provides a brief background of the site, a summary of the remedy selected in the ROD, a description of the changes EPA is making to the ROD (including how the changes affect and better define the originally selected remedy), and an explanation of why EPA is making these changes to the ROD.

EPA is making these changes to the ROD to take into account technical data received after the ROD was signed in September of

[1] If the changes made after the ROD was signed had fundamentally altered the nature of the selected remedial action, then a ROD amendment would have been required. 40 C.F.R. § 300.435(c)(2)(ii) (1990).

1991 and to clarify any ambiguities regarding the selected groundwater remedy. The changes are: 1) performance of a one-year, site-wide pilot study of an in-situ groundwater treatment component as part of the remedial design of the groundwater remedy; 2) contingent upon the success of the pilot study, adding an in-situ treatment component as part of the groundwater remedy, through the reinjection of treated groundwater to address the contaminated groundwater in-situ, and as a secondary benefit, to address the contamination in the saturated soils; and 3) the identification of additional ARARs required due to the reinjection of treated groundwater into the aquifer.

This ESD and the supporting documentation will become part of the Valley Wood Preserving Administrative Record.[2] Copies of the Administrative record have been placed at the following locations:

Stanislaus County Library
Turlock Branch
550 Minaret Avenue
Turlock, CA. 95380
(209) 667-1666

II. BACKGROUND

The following gives a brief background of the Valley Wood Site and a short summary of the selected remedy in the ROD. Further background information can be found in the September 27,

[2] EPA held a thirty day public comment period on this ESD. All comments received and EPA's responses to those comments have been included in the Valley Wood Preserving Administrative Record, consistent with 40 C.F.R. § 300.825(b). This additional public comment period is not required for an ESD. (Id.; see also, 40 C.F.R. § 300.435(c)(2)(i)). EPA provided this opportunity in order to encourage continuing public input into the decision process for this Site.

1991 ROD and the Administrative Record.

1. Site Background and Description

The Valley Wood Preserving site is a 14.4 acre, inactive wood preserving facility located at 2234 South Golden State Boulevard, Turlock, California. Figure 1 shows the location of the Site. A single-family residence is located in the northeast corner of the site. Subsurface features at the site include subsurface Turlock Irrigation District ("TID") drains and subsurface piping. In 1979, the California Central Valley Regional Water Quality Control Board ("CVRWQCB") identified toxic wood treating chemicals (chromium, arsenic, and copper) within the on-site storage pond and holding tanks located at the Site, and in on-site and off-site soils. Additionally, groundwater contamination with these same hazardous substances was detected in the shallow, unconfined aquifer beneath the Site.

On March, 1987, the California Department of Health Services ("DHS"), now known as the California Department of Toxic Substances Control ("DTSC"), issued a remedial action order to VWP directing VWP to conduct a remedial investigation/feasibility study ("RI/FS") and to develop a remedial action plan ("RAP") to address the contamination found at the Site. VWP submitted a draft RI report in January, 1989. This RI report has since been revised several times.

The Valley Wood Preserving Site was proposed for inclusion on the National Priorities List ("NPL") in June, 1988, and added to the NPL in March, 1989. The United States EPA ("EPA") became

the lead agency at the Site in September, 1989. In August, 1989, EPA directed VWP to conduct monthly domestic well sampling. In October, 1989, several domestic wells previously sampled revealed the presence of detectable concentrations of hexavalent chromium. In December, 1989, EPA and VWP entered into a Consent Order wherein VWP agreed to conduct two aquifer tests to determine the aquifer's hydrologic characteristics and to aid in the design of an interim groundwater extraction system. On May 4, 1990, Harold Logsdon signed a second Consent Order on behalf of VWP, Inc., wherein VWP agreed to conduct an RI/FS at the Site. In June, 1991, the RI/FS was completed, reaching the following conclusions: 1) the contaminants of concern in both the soils and the groundwater at the Site included arsenic and hexavalent chromium; 2) the groundwater plume was continuing to migrate towards the domestic wells; and 3) additional investigation of the vertical extent of the groundwater plume was required to successfully design and implement the extraction well field.

Additional sampling was conducted to evaluate the vertical migration of the groundwater contaminant plume in February, 1994. The results of this sampling indicated that the plume had migrated down into the saturated soils at the Site.

2. Selected Groundwater Remedy

The remedy selected for remediation of the groundwater was extraction of the contaminated groundwater, electrochemical treatment with ionic reductants to reduce the hexavalent chromium, use of activated alumina adsorption to remove any

residual arsenic, and discharge to one or more percolation ponds for infiltration or evaporation and/or underground injection through subsurface injection wells. The groundwater extraction system would consist of the current interim pump-and-treat system supplemented by additional extraction wells to be located near the leading edge of the plume. A minimum of six extraction wells would be needed, with the exact locations of these wells to be determined during the remedial design phase of the cleanup. The remedy was estimated to cost $1,997,000 (in 1991 dollars) based on five years of operation to achieve cleanup levels and 30 years of operation and maintenance, including groundwater monitoring.

Groundwater extraction would occur at a rate of 250 gallons per minute, corresponding to about 360,000 gallons per day, and would be transferred to a holding tank. Ferrous ions from a ferrous ion generator would be injected continuously into the water transfer piping where mixture with the contaminated groundwater would occur. The interaction of the ferrous ions with the hexavalent chromium would reduce the hexavalent chromium into a less toxic, less mobile trivalent form. The reduced chromium would precipitate out into the holding tank. The effluent from the electrochemical treatment process, if required, would then be transferred to an alumina-adsorption column for secondary treatment to remove residual arsenic. Groundwater treated to health based standards would be disposed of through one or both of the following ways: 1) infiltration and evaporation at one or more percolation ponds, and 2) underground

injection through subsurface injection wells.

The ROD stated that the groundwater would be cleaned to meet all health based standards and ARARs. The cleanup level set for chromium is 50 parts per billion ("ppb") and for arsenic is 16 ppb. The sludge generated by the treatment process will be disposed of at an off-site disposal facility in accordance with all applicable State and Federal regulations. Periodic groundwater, surface water runoff, and air quality monitoring and sampling of the leachate are expected to be performed to determine the effectiveness of the remedy and achievement of cleanup levels.

III. SUMMARY OF SIGNIFICANT DIFFERENCES

This ESD clarifies certain points set forth in EPA's September 1991 ROD, and to the extent that the ESD differs from the ROD, this ESD supersedes the ROD. The ESD provides for the following changes:

1) This ESD will provide for the performance of a one-year, site-wide pilot study utilizing in-situ treatment of the groundwater, and contingent upon the success of the pilot study, adding the tested in-situ technology as a component of the remedy that will be used to remediate the contaminated groundwater at the Site. Based on new information received concerning source areas at the Site and the efficacy of the alternative in-situ technology, EPA has determined that addition of a process whereby the treated groundwater will be saturated with ionic reductants at an appropriate dosage level and reinjected into the aquifer

will aid the groundwater remedy to allow for in-situ treatment of saturated soils at the Site with a corresponding reduction in contaminants in that source area. The saturated soils have been identified as a source area not specifically addressed by the groundwater remedy selected in the September 1991 ROD. In-situ treatment is expected to greatly reduce the duration of the operation and maintenance needed to remediate the groundwater, resulting in overall reduced remediation costs for implementation of the groundwater remedy.

2) To the extent that groundwater is to be reinjected as part of the final groundwater remedy, ARARs for this reinjection of the treated groundwater are identified in this ESD.

IV. EXPLANATION AND DETAILED DESCRIPTION OF CHANGES AND CLARIFICATIONS

Analysis of Changes Proposed by this ESD

Reasons for Changing Groundwater Remedy

The performance of the pilot study as part of the remedial design, and contingent addition of an in-situ treatment process to the groundwater remedy, is based on the evaluation of additional data obtained since the signing of the September 1991 ROD. A similar alternative was evaluated and rejected by EPA during the remedial selection process. The primary reason the in-situ remedial alternative was rejected was the absence of pilot-scale testing of the technology, and resulting uncertainties in the ability of the technology to remediate the entire aquifer. The recently evaluated data has satisfied EPA

that the proposed technology has been sufficiently tested to warrant further evaluation under a one-year, site-wide pilot study at the Site, and based on the success of the pilot study, selection for use at this Site.[3] During the implementation of the pilot study, administrative restrictions, including but not limited to, well restrictions and use restrictions within the area of the plume, may be required at the Site if EPA, after a reasonable opportunity for review and comment by the State, determines they are necessary to protect human health and the environment. If the technology is as effective as the recent data indicate, the cleanup of the groundwater at the Site should be achievable at an accelerated rate, should be initiated during the pilot study itself, and should result in the remediation of the groundwater at a significant overall cost savings.

Evaluation Under NCP Criteria

The contingent change to the groundwater remedy was evaluated under the criteria set forth in the National Contingency Plan ("NCP"), 40 C.F.R. § 300.430(e)(9)(iii). This evaluation was compared to the similar evaluation conducted for

[3] The additional data has been included as part of the administrative record. In summary, however, the data indicates that this technology has been implemented on a bench-scale level at the Marley Cooling Tower site in Stockton, California in 1985 and on a field-scale level at the Universal Forest Products Site in Indiana in 1993 and that it has been effective at reducing the contaminant concentrations to desired levels. EPA now believes that the technology has been demonstrated at a level equivalent to a pilot-scale test, and that it is capable of achieving the cleanup standards selected for the Valley Wood Site. The data does not guarantee that this technology will be effective at the Valley Wood Site, but it has been sufficiently developed to warrant its use on a site-wide basis.

the remedy originally selected in the September 1991 ROD. The nine criteria are as follows:

(1) compliance with applicable or relevant and appropriate requirements (ARARs);

(2) overall protectiveness of human health and the environment;

(3) short-term effectiveness in protecting human health and the environment;

(4) long-term effectiveness and permanence in protecting human health and the environment;

(5) reduction of toxicity, mobility, and volume of contaminants;

(6) technical and administrative feasibility of implementation;

(7) capital and operation and maintenance costs;

(8) state acceptance; and

(9) community acceptance.

The contingent change in the groundwater remedy, provided the pilot study proves successful, meets all of the criteria set forth above equally well as compared to the original remedy, and potentially will meet various criteria better than the originally selected remedy.

1) Compliance With ARARs

If the pilot study is successful in reducing contaminant levels during the remedial design, this ESD proposes to add a component to the groundwater remedy requiring the reinjection of

water into the aquifer. This reinjected water will be required to meet all action-specific ARARs for reinjection. The action-specific ARAR for reinjection is the State Water Resources Control Board Resolution 68-16, the "Statement of Policy With Respect to Maintaining High Quality of Waters in California," which requires that the reinjected water does not further degrade the existing quality of the water in the aquifer, or if it does, that the degradation is minimized using the best practicable treatment or control such that water quality results with the maximum benefit to the people of the State of California.

Currently, the groundwater at the Site has contaminant levels in excess of the primary Maximum Contaminant Levels. The water to be reinjected into the aquifer will not contain other contaminants, nor are the proposed ionic reductants to be mixed into the groundwater prior to reinjection hazardous substances. To further ensure that this ARAR is met, EPA will require that the extracted groundwater be fully treated to remove all contaminants of concern and that the treated groundwater will meet all required cleanup standards for all contaminants of concern at the Site prior to reinjection.

The only potential degradation of the groundwater which could result from the use of the proposed in-situ technology will be possible marginal increases in the concentrations of certain minerals, sulfate and/or chloride, in the aquifer. Such changes, however, are permitted under Resolution 68-16 if they "will be consistent with maximum benefit to the people of the State, will

not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than prescribed in the policies."

The potential increases in these minerals will not result in sulfate or chloride levels in the aquifer rising above the applicable secondary drinking water standards, or MCLs, for these minerals. At the same time, however, EPA expects that the in-situ treatment system will enable the groundwater to be cleaned to drinking water quality standards, potentially allowing the aquifer to be utilized in the future as a local drinking water source. The overall change to the groundwater which will potentially result from the use of the proposed technology, which EPA believes is the best practically available, would, therefore, be consistent with maximum benefit to the people of the State of California.

Therefore, the alternative in-situ groundwater remedy contingently selected by this ESD satisfies the reinjection ARAR, State Water Resources Control Board Resolution 68-16.

2) Overall Protection of Human Health and the Environment

The changes to the remedial actions selected in the September 1991 ROD required by this ESD are protective of human health and the environment. The modified groundwater cleanup technology should attain all ARARs. Therefore, the in-situ groundwater remedy selected contingently in this ESD is protective of human health and the environment.

3) Short-Term Effectiveness

There should be no adverse short-term impacts during the performance of the pilot study of the proposed alternative groundwater remedy as compared to the remedy selected in the ROD. In large measure, the activities required to construct and implement the proposed in-situ groundwater treatment system in this ESD are virtually identical to those required to construct the groundwater remedy originally selected in the September 1991 ROD. Both proposals contemplate the expansion of the current interim treatment system and the installation of several new wells. The pilot study treatment system will be designed and implemented to effectively and reliably treat the volume of water necessary to achieve control of the full plume. The in-situ proposal in this ESD could require the construction of a secondary treatment tank. Other than this, the short-term impacts at the Site due to the construction of the in-situ groundwater treatment system should be no different than those required to construct the originally selected groundwater remedy.

4) Long-Term Effectiveness and Permanence

Both the original groundwater remedy and the alternative remedy proposed in this ESD would maintain reliable protection of human health and the environment. It is likely, however, that the in-situ component proposed in this ESD will achieve the desire protectiveness levels in a shorter time-frame. The remedy originally selected would have required pumping and treating of the groundwater for approximately thirty (30) years to maintain

long-term effectiveness, with reduction in the contaminant levels in the saturated soils occurring by way of the continuous flushing of the soils. The in-situ component to be tested during remedial design, and potentially added to the originally selected groundwater remedy by this ESD, should achieve similar long-term protection by way of contaminant reduction through electrochemical treatment of the groundwater and additional in-situ chemical reactions within the saturated soils. These chemical reactions should convert the hexavalent chromium into a trivalent form in-situ, permanently removing the hexavalent chromium as a contaminant source.

5) Reduction of Toxicity, Mobility, and Volume ("TMV")

Both the groundwater remedy originally selected in the ROD and the in-situ component proposed in this ESD would reduce the toxicity, mobility, and volume ("TMV") of the contaminant of concern in the groundwater. The remedy originally selected would achieve this reduction through continuous pumping and treating of the aquifer for approximately thirty (30) years. The in-situ component to be potentially added by this ESD would achieve the desired reduction in TMV through the use of both above ground electrochemical treatment and additionally through the use of in-situ chemical reaction. These in-situ chemical reactions would be facilitated by saturating the treated groundwater with ionic reductants and reinjecting this saturated water into the saturated soils. The chemical reactions should permanently alter the nature of the hexavalent chromium, reducing it to a trivalent

form. This would result in a permanent reduction of the TMV of hexavalent chromium at the site.

6) Implementability

Since the implementation of the pilot study and the original remedy would both require the installation of the additional extraction and injection wells at the Site, there should be virtually no difference between the implementation of the originally selected groundwater remedy and the implementation of the pilot study and proposed contingent remedy.

7) Cost

The contingent groundwater remedy should result in a significant cost savings over the remedy originally selected. As the treated groundwater saturated with ionic reductants flows back through the aquifer, the additional treatment reagents should reduce the hexavalent chromium to a less toxic, less mobile trivalent form and allow it to precipitate onto, and hopefully bind with, the aquifer solids. The Site data shows that the trivalent chromium has very low mobility. In addition, any hexavalent chromium still attached to the saturated soils should also be reduced, thereby further restricting its mobility. This in-situ treatment should greatly reduce the time required to pump and treat the groundwater in order to achieve the stated cleanup standards in the ROD. There should also be less sludge generated in the holding tank if a substantial portion of the groundwater is treated in place. As such, the potential change to the groundwater remedy in this ESD should make implementation

of the remedy more cost efficient.

8) State Acceptance

The EPA and the State of California have had an extensive amount of discussions concerning the changes set forth in this ESD. The State of California has concurred with the changes to the remedy set forth herein.

9) Community Acceptance

EPA believes that the community will prefer the changes contained in this ESD, notwithstanding the postponement of the full RD/RA at the Site for one year, as the pilot study and the contingent remedy should address the hazardous substances of concern in a more permanent and efficient manner than would the originally selected remedy.

EPA held a thirty-day public comment period on the proposed ESD. (No individual comments were received.) or (All comments received have been responded to). None of the comments presented any data sufficient to warrant not going forward with the ESD.

V. SUPPORT AGENCY COMMENTS

See Section IV(c)(8), State Acceptance comments, page 17, above.

VI. SUMMARY OF SELECTED REMEDY

The proposed groundwater remedy at the Valley Wood Preserving Site has two components: 1) extraction and electrochemical fixation; and 2) reinjection of treated groundwater supersaturated with ionic reductants into the aquifer for further in-situ chemical fixation of the contaminated

saturated soils.

VII. STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes that have been contingently made to the selected groundwater remedy, the EPA believes that the groundwater remedy as modified by this ESD remains fully protective of human health and the environment, complies with all State and Federal requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the groundwater remedy satisfies the statutory preference for remedies that employ treatment that permanently and significantly reduces the toxicity, mobility, and volume of the hazardous substances located at the Site. It also complies with the statutory preference for remedies that utilize permanent solutions and alternative technologies to the maximum extent practicable. The changes in this ESD are significant but do not change the fundamental nature of the remedy originally selected in the September 1991 ROD. They do not include a change in the decision to implement a pump and treat system to address the groundwater contamination and will inhibit the further spread of the contaminant plume.

VIII. PUBLIC PARTICIPATION ACTIVITIES

EPA has presented these changes to the remedy in the form of an Explanation of Significant Differences because the changes are significant, but not fundamental, in nature. EPA held a thirty day public comment period on this ESD. All comments received and

EPA's response have been included in the administrative Record for the Site. These additional provisions for public comment are not required for an ESD (see, 40 C.F.R. § 300.435(c)(2)(i)). EPA provided this opportunity in order to encourage maximum public participation in the ESD process for the Valley Wood Preserving Site.

RESPONSE SUMMARY

The Explanation of Significant Differences ("ESD") addressing potential changes to the groundwater remedy at the Valley Wood Preserving ("VWP") site was issued to the public on July 22, 1994. This ESD described EPA's agreement to allow for the performance of a site-wide pilot study to evaluate the efficacy of a new treatment technology to address the groundwater contamination at the site and proposed changes to the groundwater remedy at the site based on the success of the pilot study. The public comment period extended from August 17, 1994 to September 22, 1994.

SUMMARY OF COMMENTS RECEIVED

During the public comment period, EPA received comment from Valley Wood Preserving, Inc., the California Department of Toxic Control Substances ("DTSC"), and the California Central Valley Regional Water Quality Control Board ("CVRWQCB"). Comments pertaining to the elements of the ESD and EPA's responses to the comments are summarized below.

A. COMMENTS FROM VALLEY WOOD PRESERVING

1. Comment:

The commenter noted that the electrochemical treatment will be required, but that the alumina-adsorption probably would not be, and requested that a language change be made to the ESD to reflect this.

1. Response:

EPA believes that the requested change is not necessary. The current language of the ESD does not mandate that alumina-adsorption be performed. It does, however, retain it as a possibility, as required by the original Record of Decision ("ROD"), and EPA believes it would be inappropriate to make this change.

2. Comment:

The commenter believes that the use of the term "supersaturated" is an inappropriate chemical term for the proposed treatment, potentially giving the impression that the treated groundwater will be dosed in excess of the solubility product.

2. Response:

EPA does not intend through the implementation of the pilot study to dose the treated groundwater in excess of the appropriate solubility product. During the formal design phase of the pilot study, EPA will determine the appropriate reductant

dosage to be placed into the treated groundwater. EPA will modify the ESD accordingly.

3. Comment:

The commenter states that the "saturated soils" are the aquifer, and hence will be remediated.

3. Response:

EPA believes that "saturated soils" are a source area for groundwater contamination not previously addressed by the ROD. The proposed pilot study is expected to reduce the leachability of the contaminants from this source area. The saturated soils, however, may require further remediation in the future. The purpose of the pilot study is to address the contaminated groundwater, and only secondarily the soils. To the extent the saturated soils require less remediation in the future as a result of the performance of the pilot study, EPA will take this into account during the performance of the soil remediation. EPA does not agree, however, that performance of the pilot study will, as a matter of course, fully remediate the saturated soils.

B. COMMENTS FROM DTSC

1. Comment:

The commenter believes that EPA's Fact Sheet schematic, figures 2 and 3, may give the public the wrong impression because it appears as if the new reinjection wells contemplated for the pilot study will be down-gradient of the contamination sources.

1. Response:

EPA appreciates the concern of the commenter and seeks to assure the public that no reinjection is to be done during the performance of the pilot study down-gradient of the groundwater contamination plume.

C. COMMENTS FROM THE CVRWQCB

1. Comment:

The commenter stated that the ESD needs to specify the chemical to be added to the reinjected groundwater; the potential effect such chemicals may have on the groundwater; and numerically what the resulting water quality will be and how the proposed pilot study maintains the existing water quality.

1. Response:

EPA appreciates the concern articulated by the commenter.

EPA has not fully determined which chemical will be used as the reductant, and believes that a final determination in this regard will be made during the design phase of the pilot study. EPA is currently evaluating the use of ferrous chloride ferrous sulfate, and sodium metabisulfite as the hexavalent chromium reductant. EPA recognizes that the reinjection of one or more of these chemicals into the aquifer may add a small, though likely insignificant, amount of salts, sulfates, or chlorides to the soils in the aquifer. The water quality in the aquifer currently is above applicable MCLs for primary contaminants, and between recommended and acceptable high levels for mineral secondary drinking water standards. The in-situ treatment is expected to lower all contaminants to all applicable MCLs. It may potentially raise insignificantly certain mineral levels as a byproduct of the treatment, though not above applicable MCLs for those minerals.

While not final numerical standards, based on current estimates (with hexavalent chromium concentrations estimated at 5 mg/l) EPA believes that if sodium metabisulfite is used as the reductant, approximately 13.8 mg/l of sulfate would be produced as a result of the in-situ technology, which would theoretically yield a sulfate concentration well below the applicable drinking water standard. If ferrous iron is the reductant, EPA estimates that approximately 27.7 mg/l of sulfate or 20.5 mg/l of chloride would be produced as a byproduct. Background sulfate concentrations measured at the Site in 1985, ranged from 22-40 mg/l in offsite well clusters and 22-210 mg/l in one onsite well. Background concentrations of chloride were reported in 1985 to be 4-10 mg/l in offsite well clusters GW-13, 69-400 in offsite well clusters GW-14, and 400 mg/l in onsite well GW-1. The overall estimated maximum concentrations of minerals the in-situ treatment could add to the groundwater regardless of which reductant is used is estimated to be 55 mg/l sulfate, or 41 mg/l chloride. The addition of either of these concentrations to the mineral concentrations that presently exist in the aquifer will not result in mineral levels in the aquifer exceeding the applicable secondary drinking water standards found in the California Code of Regulations, Title 22, Division 4, Chapter 15, or in water quality less than that prescribed by applicable California regulations. EPA will endeavor to reinject the treated groundwater at points with mineral concentrations currently at or higher than those expected to result from the in-situ treatment process.

EPA believes, based on available data, that the performance of the pilot study will not significantly degrade the groundwater quality further than the site contamination already has. To the extent the increased mineral levels represent a change to the existing quality of the groundwater, such a change will enable the groundwater to be cleaned to drinking water quality standards, potentially allowing the aquifer to be utilized in the

future as a local drinking water source. EPA will certainly evaluate which chemical will leave the smallest, if any, concentration of byproduct in the aquifer, and endeavor to select, with other factors, the chemical that minimizes any mineral byproduct concentrations.

If the pilot study does not succeed, the reductants will no longer be reinjected in to the source area, and EPA will implement, or have implemented, the original groundwater remedy selected in the ROD, which will presumably rectify any minor change to the water quality which may otherwise have occurred during the performance of the pilot study.

2. Comment:

The commenter believes that EPA's explanation of how the pilot study meets the requirements of Resolution 68-16 is faulty, including the fact that EPA failed to discuss how any possible degradation would be minimized through the use of best practicable treatment or control ("BPTC").

2. Response:

EPA disagrees with this comment. EPA believes that the reinjected groundwater will not further degrade the existing groundwater quality by ensuring that reinjected groundwater will meet the primary drinking water standards for all contaminants of concern at the site. EPA also disagrees that the technology to be implemented during the pilot study will not comply with the BPTC requirement.

EPA believes that the commenter misstates this requirement of 68-16. The requirement to employ BPTC exists for situations where;

> any activity which produces or may produce a <u>waste</u> or increases volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters . . .

"Waste" is defined in Section 13050(d) of the Porter-Cologne Act as:

> sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation * * *, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

The reductant to be reinjected into the aquifer is not a "waste" as defined by the Porter-Cologne Act. It is not,

therefore, a waste for the purposes of Resolution 68-16.

As discussed in response to Comment #1 above, the proposed reinjection point will be in the source area itself, not into "existing high quality waters," which do not presently exist at the Site. The only potential change or degradation of the groundwater will be possible marginal increases in the concentrations of certain minerals in the aquifer. As discussed above, these increases will not result in mineral levels above MCLs the applicable secondary drinking water standards, and will enable the aquifer to be restored to a potential drinking water source. EPA also believes that the proposed technology is the best practicable as it should expedite the cleanup rate and lower the overall cleanup costs. The change to the water quality, therefore, would be consistent with maximum benefit to the people of the State of California.

3. Comment:

The commenter states that EPA's evaluation all of the applicable or relevant and appropriate requirements ("ARARs") is too limited. The commenter proposes that in addition to Resolution 68-16, several other ARARs are applicable to the proposed pilot study, including the Porter-Cologne Water Quality Control Act, the Central Valley Region Water Quality Control Plan, the California Safe Drinking Water Act, and State Water Resources Control Board Resolution 92-49 ("Resolution 92-49").

3. Response:

EPA has reviewed the statutory and regulatory provisions cited by the commenter and does not agree as to the applicability of the cited provisions. The cited provisions address situations which are different than contemplated by the ESD, primarily the remediation of waste management units. As such, EPA does not believe that the suggested statutory and regulatory provisions are ARARs in this context.

4. Comment:

The commenter believes the objectives of the pilot study need to be clarified, and raises concerns as to the appropriateness of implementing the pilot study on a site-wide basis.

4. Response:

EPA believes the commenter may misunderstand the purpose of the proposed technology. As currently envisioned, reinjection will only occur on-site, upgradient from the bulk of the contaminated groundwater plume. As the treated water mixes with the aquifer flow, the excess treatment reagent will reduce the

hexavalent chromium encountered in either the contaminant source (the saturated soils) or the groundwater (mobile contaminants not previously captured by the extraction system). In contrast to the originally selected above-ground treatment remedy, the proposed technology has the potential to treat both a substantial portion of the groundwater without extraction and, secondarily, the contaminant source material. Based on the evaluation of the data regarding the site, and the data concerning the efficacy of the technology based prior tests and use at other sites, EPA believes it is appropriate to implement the pilot study on a site-wide basis.

5. Comment:

The commenter states that the ESD does not adequately address the monitoring that will be required to evaluate whether the technology is working, and that EPA must show through a capture zone analysis and plume capture map that hydraulic control will be maintained.

5. Response:

EPA agrees with the commenter that capture zone analysis and monitoring are essential for the proper design and evaluation of the proposed technology to be implemented during the pilot study. It is EPA's intention to address both of these requirements during the design phase of the pilot project, and EPA will condition approval of the final design of the proposed technology, in part, based on technical adequacy of these two requirements.