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IN THE UNITED STATES DISTRICT COURT

FOR THE CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

UNITED STATES OF AMERICA, and STATE OF CALIFORNIA, on behalf of the California Department of Toxic Substances Control, Plaintiffs, v. ITT INDUSTRIES, INC; LOCKHEED MARTIN CORPORATION; A.G. Layne, Inc.; Access Controls, Inc. of California; Admiral Controls, Inc.;	No. CV 99-00552 MRP (ANx) CONSENT DECREE

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Aeroquip. Corp.;)
Joseph F. Bangs, d/b/a Bangs)
Manufacturing Co.;)
Buckeye Steel Castings Company;)
Max Cohen;)
Coltec Industries, Inc.;)
Commercial Inspection Service,)
Cosmic Investments, Inc.;)
Inc.;)
Credit Managers Association of)
California;)
Serge Dadone;)
Datron, Inc.;)
Excello Plating Co., Inc.;)
Foto-Kem Industries, Inc.;)
GCG Corporation;)
Grant Management, Inc.;)
Grant Products, Inc.;)
Grant Products, LLC;)
Grant Products, LP;)
Glen Harleman;)
Haskel International, Inc.;)
David Higgins;)
International Electronic)
Research Corporation;)
Elder Kree Kofford;)
Lawrence Engineering & Supply,)
Inc.;)
Lester C. Lawrence;)
Daniel Lee;)
Michael Lee;)
Ronald S. Lee;)
Ronald S. Lee, as Executor of)
the Lee Living Trust;)
Theodore M. Lee;)
Theodore M. Lee, as Executor)
of the Estate of Marlene)
Ann Lee;)
Theodore R. Lee, Jr.;)
Charles Carter Litchfield;)
Lockheed Martin Librascope)
Corporation;)
MAG Investments, Ltd.;)
Pacific Bell Telephone Company;)
Melvin S. Pechter;)
Peterson Baby Products Co.;)
Margaret R. Peterson, as)
Executrix of the Estate)
of Arnold E. Peterson;)
Margaret R. Peterson, as)
Trustee of the Peterson)
Family Trust;)

Philips Electronics North America Corporation;
PRC-DeSoto International, Inc.;
The Prudential Insurance Company of America;
Ralphs Grocery Co.;
Ranchito Allegra LLC;
S.A.I. Industries;
Sunland Chemical & Research Corporation;
Richard Toshima;
Union Pacific Railroad Company;
Vickers, Incorporated;
Volkswagen of America, Inc.;
Edward L. Wallen;
Walt Disney Pictures and Television;
Walt Disney World Co.;
Whittaker Corporation;
W&W Manufacturing Co., Inc.;
Anthony Zambas; and
ZERO Corporation,

Defendants.

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I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), and the State of California, on behalf of the California Department of Toxic Substances Control ("DTSC"), have filed complaints in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9606, 9607, prior to the lodging of this Consent Decree.

B. The United States and DTSC in their complaints seek inter alia: (1) reimbursement of costs incurred by EPA, DTSC and the United States Department of Justice for response actions at the San Fernando Valley Crystal Springs (Area 2) Superfund Site - Glendale North and South Operable Units ("Site") in and around Glendale, California, together with accrued interest; and (2) performance of studies and response work by the defendants at the Site consistent with the National Contingency Plan, 40 C.F.R. Part 300 (as amended) ("NCP").

C. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified DTSC and the Los Angeles Regional Water Quality Control Board ("RWQCB") on December 20, 1995 of negotiations with potentially responsible parties regarding the implementation of the remedial design and remedial action for the Site, and EPA has provided the State agencies with an opportunity to participate in such negotiations and be a party to this Consent Decree.

D. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the Department of the Interior and the National Oceanic and Atmospheric Administration on

December 20, 1995 of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee(s) to participate in the negotiation of this Consent Decree.

E. The defendants that have entered into this Consent Decree ("Settling Defendants") do not admit any liability to the Plaintiffs arising out of the transactions or occurrences alleged in the complaints or in this Consent Decree, nor do they acknowledge that the release or threatened release of hazardous substance(s) at or from the Site constitutes an imminent or substantial endangerment to the public health or welfare or the environment.

F. San Fernando Valley Sites Background.

1. Tests conducted in the early 1980's on San Fernando Valley Basin ("Basin") groundwater revealed extensive contamination by volatile organic compounds ("VOCs") to the Basin groundwater. The primary VOCs found in the Basin groundwater are trichloroethylene ("TCE") and perchloroethylene ("PCE"), which were widely used solvents in machinery degreasing, metal plating and other industrial processes. Groundwater from a majority of the drinking water wells in the San Fernando Valley was found to contain VOC contamination exceeding the federal Maximum Contaminant Levels ("MCLs") for TCE and PCE, leading to the closure of such drinking water wells. MCLs are safe drinking water standards established under the Safe Drinking Water Act of 1974, as amended, 42 U.S.C. § 300f, et seq. The federal MCL for TCE and PCE is 5 parts per billion ("ppb" or "μg/l").

2. Based on these early investigations of Basin

groundwater, pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, in June 1986 EPA placed four well field sites in the San Fernando Valley on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register (see 51 Fed. Reg. 21054): (1) the North Hollywood Superfund site (Area 1); (2) the Crystal Springs Superfund site (Area 2); (3) the Verdugo Superfund site (Area 3); and (4) the Pollock Superfund site (Area 4).

G. San Fernando Valley Sites Investigation. In response to a release or a substantial threat of a release of a hazardous substance(s) at or from these four well field sites, which EPA manages as one site, EPA is conducting a Basin-wide Remedial Investigation and Feasibility Study ("RI/FS") pursuant to 40 C.F.R. § 300.430. EPA has also entered into a multi-site cooperative agreement with the California Department of Health Services ("DHS") to fund DHS participation in remedial activities at the San Fernando Valley well field sites, among other California Superfund site areas. In September of 1989, EPA entered into a cooperative agreement with the California State Water Resources Control Board ("SWRCB"). Under that cooperative agreement, SWRCB funds the RWQCB's ongoing source investigation and source control work in the Basin.

H. Designation of Operable Units and Interim Remedial Action. EPA has designated four operable units ("OUs") within the San Fernando Valley Superfund sites, known as the North Hollywood, Burbank, Glendale North and Glendale South OUs. To control the migration of the contaminant plumes and to begin to treat the most seriously contaminated areas in the Basin groundwater pending completion of the Basin-wide RI/FS, EPA

decided to issue Records of Decision ("RODs") prescribing interim remedies for each of the OUs.

1. EPA's first interim ROD was issued for the North Hollywood OU in 1987. In December 1989, construction of the North Hollywood Aeration Facility to address contamination at the North Hollywood OU was completed.

2. EPA's second interim ROD was issued for the Burbank OU in 1989. Under a Consent Decree entered by this Court on March 25, 1992, in the action United States of America v. Lockheed Corporation, City of Burbank, California, and Weber Aircraft, Inc., Civil Action No. 91-4527 MRP (Tx), the Burbank treatment facility was completed in the year 1998, and will be operated and maintained for two years. On June 23, 1998, this Court entered a second consent decree for the Burbank OU, which provides for the long-term operation and maintenance of the Burbank OU for an additional eighteen years.

3. In 1990, EPA commenced a Remedial Investigation of the Glendale Study Area ("Glendale RI"), which includes the Glendale North and South OUs. In the Glendale RI, EPA identified two distinct plumes of VOC contamination in the Glendale Study Area, referred to as the Glendale North Plume and the Glendale South Plume. EPA determined that these two VOC plumes should be addressed as distinct OU remedies and that separate Glendale Feasibility Studies ("FS's") should be conducted to evaluate interim remedial alternatives for each plume. EPA completed an RI Report on the Glendale Study Area in January 1992. EPA completed an FS Report in April 1992 for the Glendale North OU and released a Proposed Plan for the Glendale North OU to the public in June 1992. For the Glendale South OU, EPA completed

the FS Report in August 1992 and released a Proposed Plan to the public in September 1992.

I. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the Glendale North and South FS Reports and of the Proposed Plans for remedial action in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the Proposed Plans for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative records upon which the Regional Administrator based the selection of the interim response actions selected for the Glendale North and South OUs.

J. The Site RODs. EPA's decisions on the interim remedial actions to be implemented at the Site are embodied in separate interim RODs for the Glendale North and South OUs, each executed on June 18, 1993 (hereinafter "Glendale RODs"), on which the State had a reasonable opportunity to review and comment. The Glendale RODs each include EPA's explanation of significant differences between the Final Plans and the Proposed Plans as well as responsiveness summaries to the public comments. Notice of the Final Plans was published in accordance with Section 117(b) of CERCLA. 42 U.S.C. § 9617(b).

1. The Glendale RODs require a combined treatment facility that will treat groundwater extracted from each of the separate Glendale OUs to remove VOC contamination, and a combined blending facility that will be used to blend the treated groundwater to reduce nitrate levels before delivering the water to the City of Glendale's or another public water supply.

2. On October 19, 1993, EPA issued Special Notice for

Remedial Design of the Remedial Action to potentially responsible parties EPA had identified for the Site. On March 30, 1994, EPA entered into Administrative Order on Consent ("AOC") No. 94-11 with twenty-five of the parties who had received Special Notice. The parties to the AOC ("the AOC Parties") agreed to conduct, and have conducted, the Remedial Design for the Remedial Action described in the Glendale RODs. The Remedial Design was approved by EPA on November 11, 1996. On November 26, 1996, EPA issued Unilateral Administrative Order No. 97-06 ("UAO No. 97-06") to forty-two parties, including the AOC Parties ("the UAO Parties"). In UAO No. 97-06, EPA required the first nine months of activities necessary to implement the Remedial Design. On September 30, 1997, EPA issued Unilateral Administrative Order No. 97-18 ("UAO No. 97-18") to the same parties, requiring the construction, operation and maintenance of the Remedial Action. This Consent Decree provides for the continued construction, operation and maintenance of the Remedial Action, and supersedes UAO No. 97-18 with respect to the Settling Defendants.

3.

(a) The City of Glendale (hereinafter sometimes "the City") is not a defendant in this action. The Glendale RODs provide that the extracted, treated groundwater shall be delivered to the City of Glendale provided the City is willing to accept the water. EPA and the City of Glendale executed a Memorandum of Agreement dated March 30, 1994, which provided for the City of Glendale to coordinate and cooperate with the parties to the AOC in the design of the interim remedies. The City of Glendale and EPA have executed a second Memorandum of Agreement dated July 2, 1998, a copy of which is attached to this Consent

Decree as Appendix I, that provides for the City of Glendale to continue to coordinate and cooperate with the parties to UAO No. 97-18 in the construction, operation and maintenance of the interim remedies. This Consent Decree supersedes the Memorandum of Agreement dated July 2, 1998 with respect to the City.

(b) The United States and DTSC acknowledge that those Settling Cash Defendants (as defined in Section IV (Definitions)), identified in Appendix G.1, have funded, in whole or in part, the Second Consent Decree Trust Account described in Section XIV (Funding of Response Activities) of the consent decree entered for the Burbank Operable Unit by this Court on June 23, 1998 in the action titled United States v. Lockheed Martin, Case No. CV 91-4527 (MRP)(TX) via a settlement with Lockheed Martin in the action Lockheed Martin Corporation v. Crane Company et al., United States District Court, Central District of California, Case No. CV 94-2717 (MRP)(TX).

K. Based on the information presently available to EPA and DTSC, EPA and DTSC believe that the Work will be properly and promptly conducted by the Settling Defendants and the City if conducted in accordance with the requirements of this Consent Decree and its appendices.

L. Solely for the purposes of Section 113(j) of CERCLA, 42 U.S.C. § 9613(j), the interim Remedial Action selected by the Glendale RODs and the Work to be performed by the Settling Defendants and the City shall constitute a response action taken or ordered by the President.

M. The parties to this Consent Decree ("Parties") recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in

good faith, that implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331, 1345, and 1651, and 42 U.S.C. §§ 9606, 9607, and 9613(b). Venue is proper in this district pursuant to 42 U.S.C. § 9613(b) and 28 U.S.C. § 1391 (b), (c). This Court also has personal jurisdiction over the Settling Defendants. The City of Glendale voluntarily submits to the Court's jurisdiction for the limited purposes of its participation in this Consent Decree. Solely for the purposes of this Consent Decree and the underlying complaints, Settling Defendants and the City waive all objections and defenses that they may have to jurisdiction of the Court or to venue in this district. Settling Defendants and the City shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree applies to and is binding upon the United States and DTSC, the City of Glendale, Settling Defendants and any legal entity that Settling Defendants may establish to perform the Work, and their heirs, successors and assigns. Any change in ownership or corporate status including, but not limited to, any transfer of assets or real or personal property, shall in no way alter a Settling Defendant's or the City's responsibilities under this Consent Decree.

3. Settling Work Defendants and the City shall provide a copy of this Consent Decree to each contractor hired to perform the Work (as defined below) required by this Consent Decree and to each person representing any Settling Work Defendant or the City with respect to the Site or the Work, and shall provide in all contracts entered into hereunder that the Work, or the portion thereof being performed under the contract, be performed in conformity with the terms of this Consent Decree. Settling Work Defendants, the City or their contractors shall provide written notice of this Consent Decree to all subcontractors hired to perform any portion of the Work required by this Consent Decree. Settling Defendants and the City shall nonetheless be responsible for ensuring that their respective contractors and subcontractors perform the Work contemplated herein in accordance with this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Settling Defendants or the City within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meanings assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated herein, the following definitions shall apply:

"Basin-Wide Response Costs" shall mean those response costs incurred for Basin-wide groundwater investigation and other

Basin-wide activities that are allocated by EPA or DTSC to the Site, including, but not limited to, direct and indirect costs incurred in reviewing or developing plans or reports, verifying work, or otherwise implementing, overseeing, or enforcing Basin-wide activities, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to remedy review or the necessity to obtain access to any property (including, but not limited to, attorneys fees and any monies paid to secure access and/or to secure institutional controls, including the amount of just compensation), and the costs incurred to conduct emergency response actions. "Basin-Wide Past Response Costs" shall refer to Basin-Wide Response Costs paid by EPA prior to December 30, 1997 or by DTSC prior to December 31, 1996. "Basin-Wide Future Response Costs" shall refer to Basin-Wide Response Costs incurred and/or paid by EPA or DTSC subsequent to December 30, 1997 or by DTSC after December 31, 1996.

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

"City" or "City of Glendale" shall mean the City of Glendale, California, a charter city, and any of its divisions, departments and other subdivisions.

"Consent Decree" shall mean this decree and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this decree and any appendix, this decree shall control.

"Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a

Saturday, Sunday, or federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next working day.

"Department of Toxic Substances Control" and "DTSC" shall mean DTSC and any of its successor departments or agencies.

"Downstream Facilities" shall mean the transmission pipeline from the Point of Delivery to the Grandview Pumping Station Reservoir inlet chamber, the nitrate blending water facility and pipeline, and associated improvements to the Grandview Pumping Station, as depicted in Appendix K.

"EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies.

"Future Response Costs" shall mean all costs incurred and/or paid by the United States after December 30, 1997 or DTSC after December 31, 1998, including, but not limited to, direct and indirect costs incurred in reviewing or developing plans, reports and other items pursuant to this Consent Decree, verifying Work, or otherwise implementing, overseeing, or enforcing this Consent Decree, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Sections VII (Remedy Review), IX (Access) (including, but not limited to, attorneys fees and any monies paid to secure access and/or to secure institutional controls, including the amount of just compensation), XV (Emergency Response), and Paragraph 85 (Work Takeover) of Section XXI. "Future Response Costs" shall not include Basin-Wide Future Response Costs.

"Glendale Records of Decision" or "Glendale RODs" shall mean the EPA Records of Decision relating to the Glendale North and

South OUs signed on June 18, 1993 by the Regional Administrator, EPA Region IX, or her delegate, and all attachments thereto. The Glendale North and South RODs are attached to this Consent Decree respectively as Appendices A and B.

"Interest" shall mean interest at the rate specified for interest on investments of the Hazardous Substance Superfund established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a).

"Memorandum of Agreement" or "MOA" shall mean the Memorandum of Agreement Between EPA and the City of Glendale dated July 2, 1998, attached as Appendix I to this Consent Decree, which sets forth the City's responsibilities to construct, operate and maintain certain facilities necessary to implement the Glendale North and South OU interim remedies.

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

"Operation and Maintenance" or "O&M" shall mean all activities required to maintain the effectiveness of the Remedial Action as required under the Operation and Maintenance Plan approved or developed by EPA pursuant to this Consent Decree and the Statement of Work ("SOW").

"Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral or an upper case letter.

"Parties" shall mean the United States, DTSC, the City of Glendale, and the Settling Defendants.

"Past Response Costs" shall mean all costs, including, but

not limited to, direct and indirect costs, that the United States paid at or in connection with the Site through December 30, 1997, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a), or that DTSC paid at or in connection with the Site through December 31, 1998, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a). Past Response Costs shall also include Basin-Wide Past Response Costs.

"Performance Standards" shall mean the operational standards and other measures of control and achievement of the goals of the Remedial Action, as set forth in the Glendale RODs, the SOW and this Consent Decree.

"Plaintiffs" shall mean the United States and DTSC.

"Point of Delivery" shall mean the physical point of acceptance of the treated groundwater from the water treatment plant into the City of Glendale water blending and distribution system, as depicted in attached Appendix K.

"RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

"Released Parties" shall mean the City, the Settling Defendants, and their officers, directors, employees and agents; where the Settling Defendant or other Released Party is a trust, Released Party also shall mean its trustees and successor trustees appointed to carry out the purposes of said trust; where the Settling Defendant or other Released Party is a corporate entity, Released Party also shall mean its corporate successors to potential liability for the Site; and where the Settling Defendant or other Released Party is a partnership, Released Party also shall mean its partners. However, Released Parties

shall not include any person or entity with liability for the Site independent of that person's or entity's association with a Settling Defendant.

"Remedial Action" shall mean those activities, except for Operation and Maintenance, to be undertaken by the Settling Work Defendants or the City to implement the Glendale RODs, in accordance with the SOW and the final Remedial Design and Remedial Action Work Plans and other plans approved by EPA.

"Remedial Action Work Plan" shall mean the document developed pursuant to UAO No. 97-06 and approved by EPA, and any amendments thereto.

"Remedial Design" shall mean those activities undertaken by the AOC Parties to develop the final plans and specifications for the Remedial Action pursuant to the Remedial Design Work Plan.

"Remedial Design Work Plan" shall mean the document developed pursuant to the AOC and approved by EPA, and any amendments thereto.

"Section" shall mean a portion of this Consent Decree identified by a Roman numeral.

"Settlement Agreement" shall mean the Settlement Agreement between the City of Glendale, certain Unilateral Order No. 97-18 respondents as defined therein and Glendale Respondents Group, LLC, attached as Appendix J to this Consent Decree.

"Settling Cash Defendants" shall mean those Parties, identified in Appendices G and G.1, who will participate in this Consent Decree with the United States, DTSC, all other Settling Defendants and the City of Glendale primarily through cash payments, and are not involved in performing the Work under this Consent Decree. However, Settling Cash Defendants may have

obligations under this Consent Decree that are the joint and several obligation of the Settling Defendants (i.e., Paragraph 18, Remedy Review).

"Settling Defendants" shall mean those Parties identified in Appendices D ("Non-Owner Settling Defendants"), E ("Owner Settling Defendants"), and G-1.

"Settling Work Defendants" shall mean those Parties, identified in Appendix F, who are required to construct and initially to operate the Upstream Facilities, and who are to fund the City's Operation and Maintenance of the Upstream Facilities as required by this Consent Decree, whether they perform such Work by themselves or through any legal entity that they may establish to perform such Work. If Settling Cash Defendants are required to perform Work pursuant to, inter alia, Paragraph 15 (Modification of the SOW and Related Work Plans) or Section VII (Remedy Review), Settling Work Defendants shall mean those Settling Defendants who perform such Work.

"Site" shall mean the Glendale North and South OUs of the Crystal Springs (Area 2) Superfund Site and the areal extent of groundwater contamination at or from those OUs.

"State" shall mean the State of California.

"Statement of Work" or "SOW" shall mean the statement of work for implementation of the Remedial Action and the Operation and Maintenance at the Site, as set forth in Appendix C to this Consent Decree, and any modifications made in accordance with this Consent Decree.

"Supervising Contractor" shall mean the principal contractor(s) retained by the Settling Work Defendants or the City to supervise and direct the portion of the Work to be

performed by that Party under this Consent Decree.

"System Operation Date" shall mean the date after the completion of system shakedown upon which the Settling Work Defendants begin extracting and treating groundwater using the facilities constructed pursuant to the Remedial Action Work Plan and delivering such treated groundwater to the Point of Delivery.

"United States" shall mean the United States of America.

"Upstream Facilities" shall mean the groundwater extraction wells, the groundwater treatment plant, and the collection and transmission pipelines connecting the wells and the treatment plant and from the plant to the Point of Delivery, as depicted in attached Appendix K.

"Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (4) any "hazardous material" under California law.

"Work" shall mean all activities Settling Work Defendants or the City are required to perform under this Consent Decree, except those activities required by Section XVI (Reimbursement of Response Costs) and Section XXV (Retention of Records).

V. GENERAL PROVISIONS

5. Objectives of the Parties

The objectives of the Parties in entering into this Consent Decree are to protect public health or welfare or the environment at the Site by the implementation of response actions at the Site, to reimburse response costs of the Plaintiffs, and to resolve the claims of Plaintiffs against Settling Defendants as

provided in this Consent Decree. It is the objective of the City to receive the processed water into its potable water supply system.

6. Commitments by Settling Defendants and the City

a. Settling Defendants and the City shall fund and Settling Work Defendants and the City shall perform the Work in accordance with this Consent Decree, the Glendale RODs, the SOW, and all work plans and other plans, standards, specifications, and schedules set forth herein or developed by Settling Work Defendants or the City and approved by EPA pursuant to this Consent Decree. Settling Defendants shall also reimburse the United States and DTSC for Past Response Costs and Future Response Costs as provided in this Consent Decree.

b. The obligations of Settling Defendants to pay amounts owed the United States and DTSC under this Consent Decree are joint and several. The respective obligations of the Settling Work Defendants and the City to fund and perform portions of the Work under this Consent Decree are joint and several as among the Settling Work Defendants and several as between the City and the Settling Work Defendants. In the event of insolvency or other failure of any one or more of the Settling Defendants or Settling Work Defendants to implement the requirements of this Consent Decree, the remaining Settling Defendants or Settling Work Defendants, as appropriate, shall complete all such requirements.

7. Compliance With Applicable Law

All activities undertaken by Settling Work Defendants or the City pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal, state and local laws and regulations. Settling Work Defendants and the

City must also comply with all applicable or relevant and appropriate requirements of all federal and state environmental laws as set forth in the Glendale RODs and the SOW. The activities conducted pursuant to this Consent Decree, if approved by EPA, shall be considered to be consistent with the NCP.

8. Permits

a. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e) and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Settling Work Defendants or the City, whichever is required to perform that portion of the Work, shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. Settling Work Defendants or the City shall coordinate and cooperate with the Party required to perform the portion of the Work for which a permit is required to obtain such permit. The Settling Defendants or the City may seek relief under the provisions of Section XVIII (Force Majeure) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

b. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

9. Notice of Obligations to Successors-in-Title

a. The properties owned by a Settling Defendant as to which

EPA issued special notice for remedial action are listed in Appendix E to this Consent Decree. The obligations under this Consent Decree of each Owner Settling Defendant with respect to the properties that it owns and that are identified in Appendix E to this Consent Decree, the obligations of the City with respect to the property that it owns at 800 Flower Street, Glendale, California, where the groundwater treatment plant and related facilities will be located ("800 Flower Street"), and the obligations with respect to the provision of access under Section IX (Access) shall be binding upon each such Owner Settling Defendant or the City, as applicable, and any and all persons who subsequently acquire any interest in such properties or any portion thereof (hereinafter "Successors-in-Title"). The obligations imposed by this section of the Consent Decree are limited to the properties identified in Appendix E and 800 Flower Street.

b. Any Owner Settling Defendant and any Successor-in-Title, at least 30 (thirty) days prior to the conveyance of any fee ownership interest in a property or portion thereof identified in Appendix E, and the City and any Successor-in-Title, at least 30 (thirty) days prior to the conveyance of any interest in the real property it owns at 800 Flower Street in the City of Glendale, shall give written notice of this Consent Decree to the grantee. No later than thirty (30) days after the conveyance of any such interest, such Owner Settling Defendant, the City, or conveying Successor-in-Title, shall give written notice to EPA and DTSC of the conveyance, including the name and address of the grantee, and the date on which notice of the Consent Decree was given to the grantee, and shall provide to EPA a copy of its notice to the

grantee. In the event of any such conveyance, the Owner Settling Defendants' and the City's obligations under this Consent Decree, including their obligations to provide or secure access pursuant to Section IX (Access), shall continue to be met by the Owner Settling Defendants or the City. In no event shall the conveyance of an interest in property identified in Appendix E or of an interest in 800 Flower Street release or otherwise affect the liability of the Settling Defendants or the City to comply with this Consent Decree.

c. The obligation to provide notice pursuant to this Section shall terminate upon issuance of the Certification pursuant to Section XIV, Paragraph 51 (Completion of the Work) of this Consent Decree.

VI. PERFORMANCE OF THE WORK BY SETTLING WORK DEFENDANTS AND THE CITY

10. Selection of Supervising Contractor.

a. All aspects of the Work to be performed by Settling Work Defendants or the City pursuant to Sections VI (Performance of the Work by Settling Work Defendants and the City), VII (Remedy Review), VIII (Quality Assurance, Sampling and Data Analysis), and XV (Emergency Response) of this Consent Decree shall be under the direction and supervision of the Supervising Contractor, the selection of which shall be subject to disapproval by EPA after a reasonable opportunity for review and comment by DTSC. Within 30 (thirty) days after the entry of this Consent Decree, Settling Work Defendants and the City, respectively, shall notify EPA and DTSC in writing of the name, title, and qualifications of any contractor proposed to be the Supervising Contractor. Subject to EPA's approval, Settling Work Defendants or the City may

designate a member of their own staffs as the Supervising Contractor. EPA will issue either a notice of disapproval or an authorization to proceed. If, at any time after a notice to proceed is issued, Settling Work Defendants or the City propose to change a Supervising Contractor, Settling Work Defendants or the City shall give notice of such intent to EPA and DTSC and must obtain a new authorization to proceed from EPA, after a reasonable opportunity for review and comment by DTSC, before the new Supervising Contractor performs, directs, or supervises any Work under this Consent Decree.

b. If EPA disapproves a proposed Supervising Contractor, EPA will notify Settling Work Defendants or the City in writing. Settling Work Defendants or the City shall submit to EPA and DTSC a list of contractors, including the qualifications of each contractor, that would be acceptable to them within 30 (thirty) days of receipt of EPA's disapproval of the contractor previously proposed. EPA will provide written notice of the names of any contractor(s) that it disapproves and an authorization to proceed with respect to any of the other contractors. Settling Work Defendants or the City may select any contractor from the list of contractors that is not disapproved and shall notify EPA and DTSC of the name of the contractor selected within 21 (twenty-one) days of EPA's authorization to proceed.

c. If EPA fails to provide written notice of its authorization to proceed or disapproval as provided in this Paragraph and this failure prevents the Settling Work Defendants or the City from meeting one or more deadlines in a plan approved by the EPA pursuant to this Consent Decree, Settling Work Defendants or the City may seek relief under the provisions of

Section XVIII (Force Majeure) hereof.

11. Remedial Action.

a. Pursuant to UAO No. 97-06, the UAO Parties submitted a work plan for the performance of the Remedial Action at the Site ("Remedial Action Work Plan"). The Remedial Action Work Plan provides for construction and implementation of the interim remedies set forth in the Glendale RODs, achievement of the Performance Standards, and implementation of the design plans and specifications developed in accordance with the Remedial Design Work Plan and approved by EPA. The Remedial Action Work Plan is hereby incorporated into and is enforceable under this Consent Decree. The UAO Parties also submitted to EPA and DTSC a Health and Safety Plan for field activities required by the Remedial Action Work Plan which conforms to the applicable Occupational Safety and Health Administration and EPA requirements, including, but not limited to, 29 C.F.R. § 1910.120.

b. Pursuant to EPA's approval of the Remedial Action Work Plan on August 22, 1997, after a reasonable opportunity for review and comment by DTSC, the UAO Parties are implementing the Remedial Action Work Plan. Pursuant to this Consent Decree, Settling Work Defendants shall complete the implementation of the Remedial Action Work Plan to the extent that implementation has not been completed at the time of entry of this Consent Decree. The City has agreed to design and construct the blending facility that will blend the extracted, treated groundwater with another source of water to reduce nitrate concentrations, and related appurtenances. Pursuant to the MOA attached as Appendix I to this Consent Decree, the City and EPA have developed a statement of work for this portion of the Work. Commencing with the entry

of this Consent Decree, the Settling Work Defendants and the City shall submit to EPA and DTSC all plans, submittals, or other deliverables required under the approved Remedial Action Work Plan or the statement of work pursuant to the MOA in accordance with the approved schedule for review and approval set forth in the SOW attached as Appendix C to this Consent Decree or established pursuant to the MOA, as applicable, and pursuant to Section XI (EPA Approval of Plans and Other Submissions).

c. More specifically, the Settling Work Defendants shall complete the construction of groundwater extraction wells, a 5000 gallon-per-minute ("gpm") capacity groundwater treatment plant to remove VOCs from the extracted groundwater with the capability to chlorinate the treated groundwater, the collection pipelines from the extraction wells to the treatment plant, and the transmission pipeline from the treatment plant to the Point of Delivery in accordance with the Remedial Action Work Plan.

d. Settling Work Defendants shall also repair or rehabilitate the existing transmission pipeline or construct a new transmission pipeline from the Point of Delivery to the City's Grandview Pumping Station Reservoir; provided, however, that if the City performs such repair or rehabilitation pursuant to the Settlement Agreement (Appendix J to this Consent Decree), this obligation may be satisfied by the City. The City shall design and construct the blending water facility and a 16" diameter pipeline, ammonia feed system and related improvements to the Grandview Pumping Station.

12. <u>Operation and Maintenance</u>

a. Settling Work Defendants shall be responsible for Operation and Maintenance of the Upstream Facilities, in

accordance with the Operation and Maintenance Plan, so that the Performance Standards are achieved, commencing with the System Operation Date until the date which is four months after the System Operation Date, provided that Settling Work Defendants meet their obligations under this Paragraph to fund the City's Operation and Maintenance of the Upstream Facilities thereafter. If Settling Work Defendants do not meet their obligations under this Paragraph to fund the City's Operation and Maintenance of the Upstream Facilities, Settling Work Defendants and not the City shall be responsible for Operation and Maintenance of the Upstream Facilities.

b. Except as provided in Paragraph 12.a, the City shall be responsible for Operation and Maintenance of the Upstream Facilities in accordance with the Operation and Maintenance Plan, so that the Performance Standards are achieved, until EPA has issued a Certification of Completion of the Work pursuant to Paragraph 51 of this Consent Decree. The City shall also be responsible for operating and maintaining the facilities it has constructed pursuant to the MOA or this Consent Decree until EPA has issued a Certification of Completion of the Work pursuant to Paragraph 51 of this Consent Decree.

c. Funding Obligations

i. Except as set forth below, Section 10 of the Settlement Agreement (Appendix J to this Consent Decree) is hereby incorporated in this Consent Decree as if fully set forth. For the purposes of this Consent Decree, Settling Work Defendants shall be responsible for ensuring that the LLC, as defined in the Settlement Agreement, fulfills the LLC's obligations under Section 10 of the Settlement Agreement to fund the Operation and

Maintenance by the City of the Upstream Facilities. If the LLC fails to fulfill its obligations under Section 10 of the Settlement Agreement, Settling Work Defendants shall be responsible for fulfilling those obligations. The City shall be responsible for funding the remainder of costs associated with the Operation and Maintenance of the Upstream Facilities and for the costs of funding the Operation and Maintenance of the Downstream Facilities.

ii. It is hereby agreed by and between the Settling Defendants, on behalf of the LLC, and the City that Section 10.10 of the Settlement Agreement (Appendix J to this Consent Decree) is clarified to provide, in addition to other matters stated therein, that, in the event it is determined by EPA that, notwithstanding compliance with the other requirements of the Settlement Agreement, operation and maintenance of the facilities constructed pursuant to this Consent Decree is likely to terminate due to the absence of adequate funding, EPA may require that the Settling Work Defendants, on behalf of the LLC, provide funding relative to the Upstream Facilities and that the City provide funding relative to the Downstream Facilities in an amount EPA determines is adequate to assure continuation of the operation and maintenance activities required by the Decree. If such funding is to be provided by the Settling Work Defendants, the funding shall be added to the Annual Budget and the O&M Trust Account on the schedule required by EPA. The City, the Settling

Work Defendants or both may, pursuant to Section XIX (Dispute Resolution) of this Decree, challenge the reasonableness of the schedule or amount of funding required by EPA, and the LLC or the City may submit the issue of whether the non-funding party should be required to reimburse such expense to dispute resolution under Section 10.18 of the Settlement Agreement. During the pendency of any such challenge or dispute resolution proceeding, the City and the Settling Work Defendants, on behalf of the LLC, shall continue to fund operation and maintenance in the manner directed by EPA pursuant to this Paragraph. Nothing in this clarification is intended to relieve the LLC or the City of any other funding obligation set forth in the Settlement Agreement.

d. Settling Work Defendants or the City may discharge extracted water to any off-site conveyance(s) leading to any Publicly Owned Treatment Works (POTW), or to any offsite conveyance(s) leading to any water(s) of the United States, for a period of up to five (not necessarily consecutive) days during any month, if the water is not accepted by the City at the Point of Delivery, provided that the following requirements are met for such discharge:

i. All substantive and procedural requirements applicable to such discharge at the time of such discharge shall be met, including any limits on the quantity of water to be discharged;

ii. The total combined amount of any discharge(s) of extracted water to any off-site conveyance(s) leading to any POTWs at any time shall not exceed 5000 gpm; and

iii. The total combined amount of extracted water discharged to any off-site conveyance(s) leading to any water(s)

of the United States at any time shall not exceed 5000 gpm.

e. Settling Work Defendants or the City may discharge development and purge water from wells to any off-site conveyance(s) leading to any POTWs or any water(s) of the United States, provided that any such discharge is in compliance with all substantive and procedural requirements applicable to such discharge at the time of such discharge. Water discharged pursuant to this Paragraph shall not be included in the limits on the amount of water allowed to be discharged pursuant to Paragraph 12.d.

13. Performance Standards

a. The Upstream Facilities shall achieve the following standards during Operation and Maintenance: As specified in the Glendale RODs and the Final Design Report, and as set forth in the SOW, 5000 gpm of groundwater shall be extracted and treated to meet federal or State MCLs (whichever are more stringent) for VOCs in effect on June 1, 1999 and all other treatment standards specified in the Glendale RODs except for nitrates.

b. The treated groundwater shall be chlorinated and delivered to the Point of Delivery, and the City shall accept the treated groundwater at the Point of Delivery, disinfect the treated groundwater with ammonia or another suitable disinfectant in accordance with accepted practice, blend the treated groundwater to meet the MCL for nitrates, and deliver the blended water into the City's potable water supply system.

c. Acceptance of the groundwater by the City shall consist of ensuring the physical movement of treated groundwater that is delivered to the Point of Delivery to the first measurable point beyond the Point of Delivery.

d. During shakedown and the first four months after the System Operation Date, the Settling Work Defendants shall be responsible for assuring that the Upstream Facilities meet the applicable Performance Standards, and the City shall be responsible for assuring that the Downstream Facilities meet the applicable Performance Standards. After the first four months after the System Operation Date, and subject to the Settling Work Defendants meeting their obligations under Paragraph 12.c, the City shall be responsible for assuring that both the Upstream Facilities and Downstream Facilities meet such Performance Standards.

e. Operation and Maintenance of the Upstream Facilities shall be conducted in such a way as to ensure that failure to attain all primary and secondary drinking water standards in effect at the time (other than the MCL for nitrates) at the Point of Delivery, regardless of when any such standards were promulgated, shall result in the immediate and, in all cases where possible, automatic shut-down of the Upstream Facilities, unless EPA authorizes otherwise. Such a shut-down shall not, in and of itself, release Settling Work Defendants or the City from any other requirement of this Consent Decree.

f. Unless otherwise excused by this Consent Decree, the City shall accept all treated groundwater delivered to the Point of Delivery that satisfies the requirements set forth in Paragraph 13.e.

(1) If the treated groundwater delivered to the Point of Delivery does not meet the requirements of Paragraph 13.e and cannot be made to meet those requirements without modifying the Upstream Facilities or changing their operation, Settling Work

Defendants and the City shall not be obligated to deliver and the City shall not be obligated to accept the treated groundwater until and unless such modifications or changes are made and the treated groundwater meets the standards set forth in Paragraph 13.e.

(2) If the treated groundwater delivered to the Point of Delivery cannot be blended by the City to attain the MCL for nitrates without modifying the Downstream Facilities or changing their operation, the Settling Work Defendants and the City shall not be obligated to deliver and the City shall not be obligated to accept the treated groundwater until and unless such modifications or changes are made and the treated groundwater meets the MCL for nitrates.

g. The Parties anticipate that the City will continue with operation and maintenance of all or some of the Upstream Facilities, blending facility and related appurtenances after the Work required by the Glendale RODs is completed. If the City decides not to continue such operation and maintenance, in whole or in part, and if required by EPA, the City shall dismantle and de-commission the Upstream Facilities and/or the blending facility and related appurtenances, or the portion of such facilities that the City decides not to continue to operate and maintain upon issuance by EPA of a Certification of Completion of the Work pursuant to Paragraph 51 of this Consent Decree.

14. <u>New Standards</u>

Subject to EPA's rights pursuant to Paragraph 15 (Modification of the SOW or Related Work Plans) and Plaintiffs' rights pursuant to Section XXI of this Consent Decree (Covenants Not to Sue By Plaintiffs -- Reservation of Rights), Settling Work

Defendants and the City shall not be obligated to meet the requirements of Paragraph 13, except for the requirements of Paragraph 13.e, if a new drinking water standard is promulgated after June 1, 1999, EPA has identified such standard as relevant and appropriate for the treated groundwater and necessary to protect public health or the environment, and such standard cannot be met without modifying the Upstream Facilities or changing their operation.

15. Modification of the SOW or Related Work Plans

a. If EPA determines that modification to the work specified in the SOW or in work plans developed pursuant to the SOW or the MOA is necessary to achieve and maintain the Performance Standards or to carry out and maintain the effectiveness of the interim remedies set forth in the Glendale RODs, EPA may require that such modification be incorporated in the SOW and/or such work plans. Provided, however, that a modification may only be required pursuant to this Paragraph to the extent that it is consistent with the scope of the remedies selected in the Glendale RODs.

b. For the purposes of this Paragraph and Paragraphs 50.a and 51.a only, the "scope of the remedies selected in the RODs" is the implementation of the Glendale North and South OUs selected interim remedies as set forth in the Glendale RODs.

c. If Settling Defendants or the City object to any modification determined by EPA to be necessary pursuant to this Paragraph, they may seek dispute resolution pursuant to Section XIX (Dispute Resolution), Paragraph 68 (Record Review). The SOW and/or related work plans shall be modified in accordance with final resolution of the dispute.

d. Settling Defendants or the City shall implement any work required by any modifications incorporated in the SOW and/or in work plans developed pursuant to the SOW or the MOA in accordance with this Paragraph; provided, however, that the City shall not be required pursuant to this Paragraph to fund or perform any work on the Upstream Facilities.

e. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions as otherwise provided in this Consent Decree.

16. Settling Defendants and the City acknowledge and agree that nothing in this Consent Decree, the SOW, the MOA or the Remedial Design or Remedial Action Work Plans constitutes a warranty or representation of any kind by Plaintiffs that compliance with the work requirements set forth in those documents will achieve the Performance Standards.

17. Whichever is performing the Work, Settling Work Defendants or the City shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator of such shipment of Waste Material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. The Settling Work Defendants or the City shall include in the written notification the following information, where available: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for

the shipment of the Waste Material; and (4) the method of transportation. The Settling Work Defendants or the City shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by the Settling Work Defendants or the City following the award of the contract for Remedial Action construction. The Settling Work Defendants or the City shall provide the information required by Paragraph 15.a as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

VII. REMEDY REVIEW

18. Periodic Review. Settling Defendants shall conduct any studies and investigations requested by EPA, in order to permit EPA to conduct reviews of whether the Remedial Action is protective of human health and the environment, at least every five years as required by Section 121(c) of CERCLA and any applicable regulations. The City and Settling Defendants shall coordinate and cooperate with each other in connection with any such studies or investigations.

19. EPA Selection of Further Response Actions. If EPA determines, at any time, that the Remedial Action is not protective of human health and the environment, EPA may select further response actions for the Site in accordance with the requirements of CERCLA and the NCP.

20. Opportunity To Comment. Settling Defendants and the City, and, if required by Sections 113(k)(2) or 117 of CERCLA, 42

U.S.C. §§ 9613(k)(2), 9617, the public, will be provided with an opportunity to comment on any further response actions proposed by EPA as a result of the review conducted pursuant to Section 121(c), 42 U.S.C. § 9621(c) of CERCLA and to submit written comments for the record during the comment period.

21. Settling Defendants' and the City's Obligation To Perform Further Response Actions. If EPA selects further response actions for the Site, the Settling Defendants or the City shall, if requested by EPA to do so, undertake such further response actions to the extent that the reopener conditions in Paragraph 81 or Paragraph 82 (United States' Reservations of Rights Based on Unknown Conditions or New Information) are satisfied; provided, however, that the City's obligations, if any, pursuant to this Paragraph, shall be limited to further response actions with respect to the Downstream Facilities. Settling Defendants or the City may invoke the procedures set forth in Section XIX (Dispute Resolution) to dispute (1) EPA's determination that the reopener conditions of Paragraph 81 or Paragraph 82 of Section XXI (Covenants Not To Sue by Plaintiffs) are satisfied, (2) EPA's determination that the Remedial Action is not protective of human health and the environment, or (3) EPA's selection of such further response actions at the Site. Disputes pertaining to whether the Remedial Action is protective or to EPA's selection of such further response actions shall be resolved pursuant to Paragraph 68 (Record Review).

22. Submissions of Plans. If Settling Defendants or the City is required to perform the further response actions pursuant to Paragraph 21, that Party shall submit a plan for such work to EPA for approval in accordance with the procedures set forth in

Section VI (Performance of the Work by Settling Work Defendants and the City) and shall implement the plan approved by EPA in accordance with the provisions of this Decree.

VIII. QUALITY ASSURANCE, SAMPLING, and DATA ANALYSIS

23. Settling Work Defendants and the City shall use quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance and monitoring samples in accordance with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operation," (EPA QA/R5), "Preparing Perfect Project Plans," (EPA /600/9-88/087), and subsequent amendments to such guidelines upon notification by EPA to Settling Work Defendants and the City of such amendments. Amended guidelines shall apply only to procedures conducted after such notification. Prior to the commencement of any monitoring project under this Consent Decree, Settling Work Defendants and the City shall submit to EPA for approval, after a reasonable opportunity for review and comment by DTSC, a Quality Assurance Project Plan ("QAPP") that is consistent with the SOW, the NCP and applicable guidance documents. With respect to the Downstream Facilities, the City may address the requirements for the QAPP in its OSAP. These requirements include the relevant information with respect to nitrates and sampling for all other constituents, which shall comply with DHS regulations. If relevant to the proceeding, the Parties agree that validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Consent Decree. Settling Work Defendants and the City shall ensure that EPA and DTSC personnel and their authorized representatives are allowed

access at reasonable times to all laboratories utilized by Settling Work Defendants and the City in implementing this Consent Decree. In addition, Settling Work Defendants and the City shall ensure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring. Settling Work Defendants and the City shall ensure that the laboratories they utilize for the analysis of samples taken pursuant to this Decree perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods that are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic Analysis," dated February 1988, and any amendments made thereto during the course of the implementation of this Consent Decree. Settling Work Defendants and the City shall ensure that all laboratories they use for analysis of samples taken pursuant to this Consent Decree participate in an EPA or EPA-equivalent QA/QC program. Settling Work Defendants and the City shall ensure that all field methodologies utilized in collecting samples for subsequent analysis pursuant to this Consent Decree will be conducted in accordance with the procedures set forth in the QAPP approved by EPA.

24. Upon request, the Settling Work Defendants and the City shall allow split or duplicate samples to be taken by EPA and DTSC or their authorized representatives. Settling Work Defendants and the City shall notify EPA and DTSC not less than 28 (twenty-eight) days in advance of any sample collection activity unless shorter notice is agreed to by EPA. In addition, EPA and DTSC shall have the right to take any additional samples

that EPA or DTSC deems necessary. Upon request, EPA and DTSC shall allow the Settling Work Defendants and the City to take split or duplicate samples of any samples they take as part of the Plaintiffs' oversight of the Settling Work Defendants and the City's implementation of the Work.

25. Settling Work Defendants and the City shall submit to EPA and DTSC two (2) copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Settling Work Defendants or the City with respect to the Site and/or the implementation of this Consent Decree unless EPA agrees otherwise. At their request, EPA will provide to the Settling Work Defendants and the City results of analyses conducted by EPA pursuant to Section VII (Remedy Review).

26. Notwithstanding any provision of this Consent Decree, the United States and DTSC hereby retain all of their information gathering and inspection authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

IX. ACCESS

27. Commencing upon the date of entry of this Consent Decree, the Settling Defendants and the City agree to provide the United States, DTSC, and their representatives, including EPA and its contractors, access at all reasonable times to the Site and any other property to which access is required for the implementation of this Consent Decree, to the extent access to such property is controlled by Settling Defendants or the City, for the purposes of conducting any activity related to this Consent Decree including, but not limited to:

a. Monitoring the Work;

b. Verifying any data or information submitted to EPA, DTSC or any other State agency;

c. Conducting investigations relating to contamination at or near the Site;

d. Obtaining samples;

e. Assessing the need for, planning, or implementing additional response actions at or near the Site;

f. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Settling Defendants, the City, or their agents, consistent with Section XXIV (Access to Information); and

g. Assessing Settling Defendants' or the City's compliance with this Consent Decree.

28. Except to the extent Plaintiffs deem necessary to protect human health or the environment, Plaintiffs will provide the affected Settling Defendants and the City with twenty-four (24) hours' notice prior to entry to properties accessed pursuant to this Consent Decree. In exercising their rights to access under this Paragraph, Plaintiffs shall to the extent practicable not unreasonably interfere with the Settling Defendants' or the City's business activities. However, nothing in this Paragraph shall provide Settling Defendants, or any of them, or the City with any claim or cause of action whatsoever against Plaintiffs, including without limitation any claim for injunctive relief. In addition, it shall not constitute an unreasonable interference for Plaintiffs to take any action they deem necessary to avoid endangerment to human health or the environment or to respond to an emergency.

29. To the extent that the Site or any other property to which

access is required for the implementation of this Consent Decree is owned or controlled by persons other than Settling Defendants or the City, Settling Defendants shall use best efforts to secure from such persons access for Settling Work Defendants or the City, as well as for EPA and DTSC and their representatives, including, but not limited to, their contractors, as necessary to effectuate this Consent Decree. For purposes of this Paragraph, "best efforts" include the payment of reasonable sums of money in consideration of access. The City shall coordinate and cooperate with Settling Defendants in such efforts. If any access required to complete the Work is not obtained by the date of entry of this Consent Decree, or within 45 (forty-five) days of the date EPA notifies the Settling Defendants in writing that additional access beyond that previously secured is necessary, Settling Work Defendants shall promptly notify the United States in writing and shall include in that notification a summary of the steps Settling Defendants or the City has taken to attempt to obtain access. The United States or DTSC may, as they deem appropriate, assist Settling Defendants in obtaining access. Settling Defendants shall reimburse the United States or DTSC, in accordance with the procedures in Section XVI (Reimbursement of Response Costs), for all costs incurred by the United States or DTSC in obtaining access.

30. Notwithstanding any provision of this Consent Decree, the United States and DTSC retain all of their access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

X. REPORTING REQUIREMENTS

31. In addition to any other requirement of this Consent Decree,

Settling Work Defendants and the City, when they are operating and maintaining the Upstream Facilities or the Downstream Facilities during the applicable reporting period, shall submit to EPA, DTSC, DHS and the RWQCB two (2) copies of written progress reports that:

a. describe the actions that have been taken toward achieving compliance with this Consent Decree during the current reporting period;

b. include all results of sampling and tests and all other data received or generated pursuant to this Consent Decree by Settling Work Defendants, the City, or their contractors or agents in the current reporting period;

c. identify all work plans, plans and other deliverables required by this Consent Decree and completed and submitted during the current reporting period;

d. describe all actions, including, but not limited to, data collection and implementation of work plans that are scheduled for the next reporting period, and provide other information relating to the progress of construction, including, but not limited to, critical path diagrams, Gantt charts and Pert charts;

e. include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays;

f. include any modifications to the work plans or other schedules that Settling Work Defendants or the City has proposed to EPA or that have been approved by EPA pursuant to this Consent Decree; and

g. describe all activities undertaken in support of the Community Relations Plan during the current reporting period and those to be undertaken in the next reporting period.

h. Settling Work Defendants and the City shall submit these progress reports to EPA, DTSC, DHS and the RWQCB with the frequency described in Paragraph 31.i, following the entry of this Consent Decree until EPA notifies the Settling Work Defendants and the City pursuant to Paragraph 51.b of Section XIV (Certification of Completion of the Work). If requested by EPA or DTSC, Settling Work Defendants and the City shall also provide briefings for EPA, DTSC or other state agencies to discuss the progress of the Work. The City and Settling Work Defendants shall coordinate and cooperate with each other in the preparation and submission of such reports and briefings.

i. The Progress Reports shall be submitted with the following frequency:

(a) Monthly from the entry of this Consent Decree until the Remedial Action and two years of Operation and Maintenance are complete;

(b) Quarterly from completion of the first two years of Operation and Maintenance. However, EPA may change quarterly reporting to monthly reporting during this period as EPA deems appropriate;

(c) Monthly during the last year of Operation and Maintenance.

32. The Settling Work Defendants or the City shall notify EPA of any change in schedule described in a progress report for the performance of any activity, including, but not limited to, data collection and implementation of work plans, no later than seven

days prior to the performance of the activity.

33. Upon the occurrence of any event during performance of the Work that Settling Work Defendants or the City is required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. § 11004, Settling Work Defendants or the City shall within 24 (twenty-four) hours of the onset of such event orally notify the EPA Project Coordinator or the Alternate EPA Project Coordinator (in the event of the unavailability of the EPA Project Coordinator), or, in the event that neither the EPA Project Coordinator nor the Alternate EPA Project Coordinator is available, the Emergency Response Section, Region IX, United States Environmental Protection Agency. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304.

34. Within 20 (twenty) days of the onset of such an event, Settling Work Defendants or the City shall furnish to EPA and DTSC a written report, signed by the Settling Work Defendants' or the City's Project Coordinator, setting forth the events that occurred and the measures taken, and to be taken, in response thereto. Within 30 (thirty) days of the conclusion of such an event, Settling Work Defendants or the City shall submit a report setting forth all actions taken in response thereto.

35. Settling Work Defendants or the City shall submit two (2) copies of all plans, reports, and data required by the SOW, the Remedial Action Work Plan, or any other approved plans to EPA in accordance with the schedules set forth in such plans. Settling Work Defendants and the City shall simultaneously submit two (2) copies of all such plans, reports and data to DTSC, DHS and the

RWQCB.

36. All reports and other documents submitted by Settling Work Defendants or the City to EPA (other than the progress reports referred to above) that purport to document Settling Work Defendants' or the City's compliance with the terms of this Consent Decree shall be signed by an authorized representative of the Settling Work Defendants or the City, as applicable.

XI. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

37. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Consent Decree, EPA, after reasonable opportunity for review and comment by DTSC, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that the Settling Work Defendants or the City modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing Settling Work Defendants or the City at least one notice of deficiency and an opportunity to cure within 30 (thirty) days, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects and the deficiencies in the submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

38. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Paragraph 37(a), (b), or (c), Settling Work Defendants or the City shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to their right to invoke the

Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the modifications or conditions made by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Paragraph 37(c) and the submission has a material defect, EPA retains its right to seek stipulated penalties, as provided in Section XX (Stipulated Penalties).

39.

a. Upon receipt of a notice of disapproval pursuant to Paragraph 37(d), Settling Work Defendants or the City shall, within 30 (thirty) days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XX (Stipulated Penalties), shall accrue during the 30-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 40-42.

b. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph 37(d), Settling Work Defendants or the City shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve Settling Work Defendants or the City of any liability for stipulated penalties under Section XX (Stipulated Penalties).

40. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require the Settling Work Defendants or the City to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to modify or develop the resubmitted plan,

report or other item. Settling Work Defendants or the City shall implement any such plan, report, or item as modified or developed by EPA, subject only to their right to invoke the procedures set forth in Section XIX (Dispute Resolution).

41. If upon resubmission, a plan, report, or item is disapproved or modified by EPA due to a material defect, Settling Work Defendants or the City shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Settling Work Defendants or the City invokes the dispute resolution procedures set forth in Section XIX (Dispute Resolution) and EPA's action is overturned pursuant to that Section. The provisions of Section XIX (Dispute Resolution) and Section XX (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XX (Stipulated Penalties).

42. All plans, reports, and other items required to be submitted to EPA under this Consent Decree shall, upon approval or modification by EPA, be enforceable under this Consent Decree. In the event EPA approves or modifies a portion of a plan, report, or other item required to be submitted to EPA under this Consent Decree, the approved or modified portion shall be enforceable under this Consent Decree.

XII. PROJECT COORDINATORS

43. Within 20 (twenty) days of entry of this Consent Decree, Settling Work Defendants, the City, DTSC and EPA will notify each other, in writing, of the name, address and telephone number of

their respective designated Project Coordinators and Alternate Project Coordinators if their respective designated Project Coordinators and/or Alternate Project Coordinators have changed. If a Project Coordinator or Alternate Project Coordinator initially designated subsequently is changed, the identity of the successor will be given to the other Parties at least 5 (five) working days before the changes occur, unless impracticable, but in no event later than the actual day the change is made. The Settling Work Defendants' Project Coordinator and the City's Project Coordinator shall be subject to disapproval by EPA and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. The Settling Work Defendants' and the City's Project Coordinators shall not be an attorney representing any of the Settling Defendants or the City in this matter. He or she may assign other representatives, including other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities.

44. Plaintiffs may designate other representatives, including, but not limited to, EPA and State employees, and federal and State contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. EPA's Project Coordinator and Alternate Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager (RPM) and an On-Scene Coordinator (OSC) by the NCP. In addition, EPA's Project Coordinator or Alternate Project Coordinator shall have authority, consistent with the NCP, to halt any Work required by this Consent Decree and to take any necessary response action when he or she determines that

conditions at the Site constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to release or threatened release of Waste Material.

45. EPA's Project Coordinator, the Settling Work Defendants' Project Coordinator, and the City's Project Coordinator will meet, at a minimum, on a monthly basis, or as otherwise determined appropriate by EPA's Project Coordinator.

XIII. ASSURANCE OF ABILITY TO COMPLETE WORK

46. Within 30 (thirty) days of entry of this Consent Decree, Settling Work Defendants shall establish and maintain financial security in the amount of $ 85 million dollars in one or more of the following forms:

a. A surety bond guaranteeing performance of the Work;

b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;

c. A trust fund;

d. A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of the Settling Work Defendants;

e. A demonstration that one or more of the Settling Work Defendants satisfy the requirements of 40 C.F.R. Part 264.143(f); or

f. A demonstration by one or more of the Settling Work Defendants through submittal of its annual report on Form 10-K filed with the Securities and Exchange Commission, that it possesses the requisite financial ability to assure completion of the Work.

47. If the Settling Work Defendants seek to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 46.d of this Consent Decree, Settling Work Defendants shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Settling Work Defendants seek to demonstrate their ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 46.d or e, they shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the effective date of this Consent Decree. If Settling Work Defendants seek to demonstrate their ability to complete the work by means of the information submitted pursuant to Paragraph 46.f, they shall re-submit such information annually, on the anniversary of this Consent Decree, if EPA so requests. In the event that EPA, after a reasonable opportunity for review and comment by DTSC, determines at any time that the financial assurances provided pursuant to this Section are inadequate, Settling Work Defendants shall, within 30 (thirty) days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 46 of this Consent Decree. Settling Work Defendants' inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Consent Decree.

48. If Settling Work Defendants can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 46, above, after entry of this Consent Decree, Settling Work Defendants may, on any anniversary date of

entry of this Consent Decree, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Settling Work Defendants shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Settling Work Defendants may reduce the amount of the security in accordance with the final administrative or judicial decision resolving the dispute.

49. Settling Work Defendants may change the form of financial assurance provided under this Section at any time, upon notice to and written approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Settling Work Defendants may change the form of the financial assurance only in accordance with the final administrative or judicial decision resolving the dispute.

XIV. CERTIFICATION OF COMPLETION

50. Completion of the Remedial Action

a. Within 90 (ninety) days after Settling Work Defendants and the City conclude that the Remedial Action has been fully performed and the Performance Standards for the Remedial Action have been attained, Settling Work Defendants and the City shall schedule and conduct a pre-certification inspection to be attended by Settling Work Defendants, EPA, the City and DTSC. If, after the pre-certification inspection, the Settling Work Defendants and the City still believe that the Remedial Action has been fully performed and the Performance Standards have been attained, they shall submit a written report requesting

certification to EPA for approval, with a copy to DTSC, pursuant to Section XI (EPA Approval of Plans and Other Submissions) within 30 (thirty) days of the inspection. In the report, a registered professional engineer and the Settling Work Defendants' and the City's Project Coordinators shall state that the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The written report shall include as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by a responsible corporate official of a Settling Work Defendant and a municipal official of the City, or by the Settling Work Defendants' and the City's Project Coordinators:

> To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If, after completion of the pre-certification inspection and receipt and review of the written report, EPA, after reasonable opportunity for review and comment by DTSC, determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree or that the Performance Standards have not been achieved, EPA will notify Settling Work Defendants and the City in writing of the activities that must be undertaken by Settling Work Defendants or the City, as applicable, pursuant to this Consent Decree, to complete the Remedial Action and achieve the Performance Standards. Provided, however, that EPA may only require Settling Work Defendants or the City to perform activities pursuant to this Paragraph to the

extent that such activities are consistent with the "scope of the remedies selected in the RODs," as that term is defined in Paragraph 15.b, or if the remedy has been modified pursuant to Paragraph 15 (Modification of the SOW or Related Work Plans) or Section VII (Remedy Review) of this Consent Decree, consistent with the scope of the remedy as modified. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Settling Work Defendants or the City to submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Settling Work Defendants or the City, as directed by EPA, shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent report requesting Certification of Completion, and after a reasonable opportunity for review and comment by DTSC, that the Remedial Action has been performed in accordance with this Consent Decree and that the Performance Standards for the Remedial Action have been achieved, EPA will so certify in writing to Settling Work Defendants and the City. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXI (Covenants Not to Sue by Plaintiffs). Certification of Completion of the Remedial Action shall not affect Settling Work Defendants' or the City's other obligations under this Consent Decree.

51. Completion of the Work

a. Within 90 (ninety) days after Settling Work Defendants conclude that all phases of the Work (including O&M) have been fully performed, which is anticipated to occur approximately twelve (12) years after the System Operation Date, Settling Work Defendants and the City shall schedule and conduct a pre-certification inspection to be attended by Settling Work Defendants, EPA, the City and DTSC. If, after the pre-certification inspection, the Settling Work Defendants and the City still believe that the Work has been fully performed, Settling Work Defendants and the City shall submit a written report by a registered professional engineer stating that the Work has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of a Settling Work Defendant and municipal official of the City, or by the Settling Work Defendants' and the City's Project Coordinators:

> To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If, after review of the written report, EPA, after reasonable opportunity for review and comment by DTSC, determines that any portion of the Work has not been completed in accordance with this Consent Decree, EPA will notify Settling Work Defendants and the City in writing of the activities that must be undertaken by Settling Work Defendants or the City pursuant to this Consent Decree to complete the Work. Provided, however, that EPA may

only require Settling Work Defendants or the City to perform such activities pursuant to this Paragraph to the extent that such activities are consistent with the "scope of the remedies selected in the RODs," as that term is defined in Paragraph 15.b, or if the remedy has been modified pursuant to Paragraph 15 (Modification of the SOW or Related Work Plans) or Section VII (Remedy Review) of this Consent Decree, consistent with the scope of the remedy as modified. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Settling Work Defendants or the City to submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Settling Work Defendants or the City shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent request for Certification of Completion by Settling Work Defendants and the City, and after a reasonable opportunity for review and comment by DTSC, that the Work has been performed in accordance with this Consent Decree, EPA will so notify the Settling Work Defendants and the City in writing. Settling Work Defendants' and the City's obligations for performance of the Work, except decommissioning of the Upstream Facilities, blending facility and related appurtenances, if required, shall be deemed to be satisfied upon issuance of the Certificate of Completion.

XV. EMERGENCY RESPONSE

52. In the event of any action or occurrence during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, Settling Work Defendants or the City, depending on which is performing the affected portion of the Work at the time, shall, subject to Paragraph 53, immediately take all appropriate action to prevent, abate, or minimize such release or threat of release and shall immediately notify the EPA's Project Coordinator, or, if the Project Coordinator is unavailable, EPA's Alternate Project Coordinator. If neither of these persons is available, the Settling Work Defendants or the City shall notify the EPA Emergency Response Unit, Region IX. Settling Work Defendants or the City shall take such actions in consultation with EPA's Project Coordinator or other available authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Settling Work Defendants or the City fails to take appropriate response action as required by this Section, and EPA or, as appropriate, DTSC takes such action instead, Settling Work Defendants or the City shall reimburse EPA and DTSC all costs of the response action not inconsistent with the NCP pursuant to Section XVI (Reimbursement of Response Costs).

53. Nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States, DTSC or the City: (a) to take all appropriate action to protect human

health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site; or (b) to direct or order such action, or seek an order from the Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, subject to Section XXI (Covenants Not to Sue by Plaintiffs).

XVI. REIMBURSEMENT OF RESPONSE COSTS

54. Within 30 (thirty) days of the effective date of this Consent Decree, Settling Defendants shall:

a. Pay to the EPA Hazardous Substance Superfund in full and complete settlement of any claim for Past Response Costs $ 5,202,839 (Site 09-1G, Glendale North OU), $ 2,460,798 (Site 09-1H, Glendale South OU), $ 1,664,875 (Site N2, Glendale North and South OUs), $ 3,938,437 (Site 59, Basin-Wide) and $ 38,053.24 (DOJ case number 90-11-2-442A) by FedWire Electronic Funds Transfer ("EFT" or wire transfer) to the U.S. Department of Justice account in accordance with current electronic funds transfer procedures, referencing U.S.A.O. file number 9702231, the EPA Region and Site/Spill ID #s 09-1G, 1H, N2, and 59, as applicable, and DOJ case number 90-11-2-442A. Payment shall be made in accordance with instructions provided to the Settling Defendants by the Financial Litigation Unit of the United States Attorney's Office for the Central District of California following entry of the Consent Decree. Any payments received by the Department of Justice after 4:00 P.M. (Eastern Time) will be credited on the next business day. Settling Defendants shall send notice that such payment has been made to the United States

as specified in Section XXVI (Notices and Submissions).

b. Pay to DTSC $ 83,550 in the form of a certified check or checks or cashier's check or checks made payable to "Cashier, Department of Toxic Substances Control," in full and complete settlement of any claim for Past Response Costs. Such payments shall be forwarded to:

Department of Toxic Substances Control
State of California
Accounting Office
400 P Street
Sacramento, California 95814

Each payor shall send a transmittal letter with the check referencing the Glendale North and South Operable Units and the San Fernando Valley Area 2 Site. Each payor shall also send a copy of its check and transmittal letter to DTSC as specified in Section XXVI (Notices and Submissions).

55.

a. Settling Defendants shall reimburse the EPA Hazardous Substance Superfund for all Future Response Costs not inconsistent with the National Contingency Plan. The United States will send Settling Defendants a bill requiring payment that includes an Agency Financial Management System summary data (SCORES Report or the equivalent) and a summary of DOJ costs with similar documentation no more often than annually. Settling Defendants shall make all payments within 60 (sixty) days of Settling Defendants' receipt of each bill requiring payment, except as otherwise provided in Paragraph 56. The Settling Defendants shall make all payments required by this Paragraph in the form of a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund" and referencing the EPA Region and Site/Spill ID # 09-1G, 1H, N2 or 59 as applicable, the

DOJ case number 90-11-2-442A, and the name and address of the Parties making payment. The Settling Defendants shall send the check(s) to

U.S. Environmental Protection Agency
Region IX, Attn: Superfund Accounting
P.O. Box 360863M
Pittsburgh, PA 15251

and shall send copies of the check(s) to the United States as specified in Section XXVI (Notices and Submissions). Future Response Costs paid to EPA shall be placed in the Glendale Operable Units Special Account and used to conduct or finance the response actions at or in connection with the Glendale North and South OUs. Any balance remaining in the Glendale Operable Units Special Account at the completion of the response at or in connection with the Glendale North and South OUs shall be deposited in the EPA Hazardous Substance Superfund.

b. Settling Defendants shall reimburse DTSC for all State Future Response Costs not inconsistent with the NCP. DTSC will send Settling Defendants a bill requiring payment that includes an itemized cost summary on an annual basis. Settling Defendants shall make all payments within 60 (sixty) days of Settling Defendants' receipt of each bill requiring payment, except as otherwise provided in Paragraph 56. Settling Defendants shall make all payments to DTSC required by this Paragraph in the manner described in Paragraph 54.b.

56. Settling Defendants may contest payment of any Future Response Costs under Paragraph 55 if they determine that the United States or DTSC has made an accounting error or if they allege that a cost item that is included seeks costs that are inconsistent with the NCP. Such objection shall be made in writing within 60 (sixty) days of receipt of the bill and must be

sent to the United States (if the United States' accounting is being disputed) or DTSC (if DTSC's accounting is being disputed) pursuant to Section XXVI (Notices and Submissions). Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, the Settling Defendants shall within the 60 (sixty) day period pay all uncontested Future Response Costs to the United States or DTSC in the manner described in Paragraph 55.a with respect to the United States or 54.b with respect to DTSC. Simultaneously, the Settling Defendants shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of California and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. The Settling Defendants shall send to the United States and DTSC, as provided in Section XXVI (Notices and Submissions), a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, the Settling Defendants shall initiate the Dispute Resolution procedures in Section XIX (Dispute Resolution). If the United States or DTSC prevails in the dispute, within 5 (five) days of the resolution of the dispute, the Settling Defendants shall pay the sums due (with accrued Interest) to the United States, or DTSC, if DTSC costs are disputed, in the manner described in Paragraph 55. If the

Settling Defendants prevail concerning any aspect of the contested costs, the Settling Defendants shall within 5 (five) days of the resolution of the dispute pay that portion of the costs (plus associated accrued Interest) owing to the United States, or to DTSC, if DTSC costs are disputed; Settling Defendants shall be disbursed any balance of the escrow account. Settling Defendants shall maintain the escrow account in accordance with the requirements of this Paragraph until all amounts owed to the United States or DTSC under this Paragraph are paid. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XIX (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding the Settling Defendants' obligation to reimburse the United States and DTSC for their Future Response Costs.

57. In the event that the payments required by Paragraph 54 are not made within 30 (thirty) days of the Effective Date of this Consent Decree or the payments required by Paragraph 55 are not made within 60 (sixty) days of the Settling Defendants' receipt of the bill, or within 5 (five) days after resolution of a dispute pursuant to Paragraph 56 that results in a final determination that Settling Defendants owe costs to the United States or DTSC, Settling Defendants shall pay Interest on the unpaid balance. The Interest to be paid on Past Response Costs under this Paragraph shall begin to accrue 30 (thirty) days after the Effective Date of this Consent Decree. The Interest on Future Response Costs shall begin to accrue on the date the bill is due to be paid. The Interest shall accrue through the date of the Settling Defendants' payment. Payments of Interest made

under this Paragraph shall be in addition to such other remedies or sanctions as are available to Plaintiffs by virtue of Settling Defendants' failure to make timely payments under this Section. The Settling Defendants shall make all payments required by this Paragraph in the manner described in Paragraph 54 or 55, or as otherwise directed by the United States or DTSC, as applicable.

XVII. INDEMNIFICATION AND INSURANCE

58.

a. The United States and DTSC do not assume any liability by entering into this agreement or by virtue of any designation of Settling Defendants or the City as EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). As described in Paragraphs 58.b and 58.c, Settling Defendants and the City shall indemnify, save and hold harmless the United States, DTSC, and their officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Settling Defendants or the City, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Settling Defendants or the City as EPA's authorized representatives under Section 104(e) of CERCLA. Further, as described in Paragraph 58.b and 58.c, the Settling Defendants and the City agree to pay the United States and DTSC all costs they incur including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United

States or DTSC based on negligent or other wrongful acts or omissions of Settling Defendants or the City, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree. Neither the United States nor DTSC shall be held out as a party to any contract entered into by or on behalf of Settling Defendants or the City in carrying out activities pursuant to this Consent Decree. Neither the Settling Defendants, the City nor any such contractor shall be considered an agent of the United States or DTSC.

b.

(1) Settling Defendants agree to indemnify and hold harmless the United States, DTSC, their officials, agents, employees, contractors, subcontractors or representatives for or from claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of the Settling Defendants or the City, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities with respect to the Upstream Facilities pursuant to the Consent Decree, and

(2) The City agrees to indemnify and hold harmless the United States, DTSC, their officials, agents, employees, contractors, subcontractors or representatives for or from claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of the Settling Defendants or the City, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their

behalf or under their control, in carrying out activities with respect to the Downstream Facilities pursuant to the Consent Decree.

c. The United States and DTSC shall give Settling Defendants and the City notice of any claim for which the United States or DTSC plans to seek indemnification pursuant to Paragraph 58.a or b and shall consult with Settling Defendants or the City, as applicable, prior to settling such claim.

59. Settling Defendants and the City waive all claims against the United States and DTSC for damages or reimbursement or for set-off of any payments made or to be made to the United States or DTSC, arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants and any person, including, but not limited to the City, for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Settling Defendants or the City shall indemnify and hold harmless the United States and DTSC with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants or the City and any person, including, but not limited to the City, for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

60. <u>Insurance</u>

a. With respect to the Upstream Facilities, within 30 (thirty) days of the Effective Date of this Consent Decree, Settling Work Defendants shall secure, and shall maintain until the first anniversary of EPA's Certification of Completion of the

Remedial Action pursuant to Paragraph 51.b. of Section XIV (Certification of Completion), comprehensive general liability insurance with limits of $ 15 (fifteen) million dollars, combined single limit, and automobile liability insurance with limits of $ 15 (fifteen) million dollars, combined single limit, naming the United States and DTSC as additional insureds. Such insurance shall be extended to include the blending facility and related appurtenances, upon completion of construction of those facilities. Settling Work Defendants may satisfy this obligation by causing the City or Settling Work Defendants' contractor to obtain such insurances. In addition, for the duration of this Consent Decree, Settling Work Defendants and the City, whenever performing the Remedial Action or Operation and Maintenance of the interim remedies, shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing any portion of the Work on behalf of Settling Work Defendants or the City in furtherance of this Consent Decree.

b. Except with respect to those matters as to which the City intends to insure the United States and DTSC pursuant to Paragraph 60.c, within 10 (ten) days of the Effective Date of this Consent Decree, Settling Work Defendants shall provide, or shall cause to be provided, to EPA and DTSC, certificates of such insurance and a copy of each insurance policy. Settling Work Defendants shall resubmit or cause to be resubmitted such certificates and copies of policies each year on the anniversary of the effective date of this Consent Decree. If Settling Work Defendants demonstrate by evidence satisfactory to EPA and DTSC

that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Settling Work Defendants need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

c. With respect to the City's construction of the blending facility and related appurtenances, and modifications to the Grandview Pump Station, the City shall include the United States and DTSC as additional insureds on the insurance vehicle chosen by the City for that portion of the Work.

XVIII. FORCE MAJEURE

61. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of the Settling Defendants or the City, of any entity controlled by Settling Defendants or the City, or of Settling Work Defendants' or the City's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Settling Defendants' or the City's best efforts to fulfill the obligation. The requirement that the Settling Defendants or the City exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any force majeure event and best efforts to address the effects of any force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the Work or a failure to attain the Performance Standards.

62. If any event occurs or has occurred that may delay the

performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, the Settling Defendants, Settling Work Defendants or the City, as appropriate, shall orally notify EPA's Project Coordinator or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Superfund Division, EPA Region IX, within forty-eight hours (48 hours) after such Settling Defendants or the City first knew that the event might cause a delay. Within 10 (ten) days thereafter, Settling Defendants, Settling Work Defendants or the City shall provide in writing to EPA and DTSC an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Party's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of the Party, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Party shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure event. Failure to comply with the above requirements shall preclude the Party from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. The Party shall be deemed to know of any circumstance of which such Party, any entity controlled by such Party, or such Party's contractors knew or should have known.

63. If EPA, after a reasonable opportunity for review and comment by DTSC, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA, after a reasonable opportunity for review and comment by DTSC, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If EPA, after a reasonable opportunity for review and comment by DTSC, does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify the affected Party in writing of its decision. If EPA, after a reasonable opportunity for review and comment by DTSC, agrees that the delay is attributable to a force majeure event, EPA will notify the affected Party in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

64. If the affected Party elects to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution), it shall do so no later than 15 (fifteen) days after receipt of EPA's notice. In any such proceeding, the affected Party shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that the affected Party

complied with the requirements of Paragraphs 62 and 63, above. If the affected Party carries this burden, the delay at issue shall be deemed not to be a violation by such Party of the affected obligation of this Consent Decree.

XIX. DISPUTE RESOLUTION

65. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising among EPA, DTSC, the City and the Settling Defendants under or with respect to this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of the Settling Defendants or the City that have not been disputed in accordance with this Section. These procedures also shall not apply to disputes arising between the United States and DTSC that do not involve the City or any of the Settling Defendants.

66. Any dispute that arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the Parties to the dispute. The period for informal negotiations shall not exceed 20 (twenty) days from the time the dispute arises, unless the time is modified by written agreement of the Parties to the dispute. The dispute shall be considered to have arisen when one Party sends the other Parties a written Notice of Dispute.

67.

a. In the event that the Parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within 14 (fourteen) days after the conclusion of the informal

negotiation period, a Settling Defendant or the City invokes the formal dispute resolution procedures of this Section by serving on EPA a written statement of position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by the Settling Defendant or the City. The statement of position shall specify the Settling Defendant's or the City's position as to whether formal dispute resolution should proceed under Paragraph 68 or Paragraph 69.

b. Within 21 (twenty-one) days after the receipt of the Settling Defendant's or the City's statement of position, EPA will serve on the Settling Defendant or the City its statement of position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA. EPA's statement of position shall include a statement as to whether formal dispute resolution should proceed under Paragraph 68 or 69. Within 14 (fourteen) days after receipt of EPA's statement of position, the Settling Defendant or the City may submit a Reply.

c. If there is disagreement between EPA and the Settling Defendant or the City as to whether dispute resolution should proceed under Paragraph 68 or 69, the Parties to the dispute shall follow the procedures set forth in the Paragraph determined by EPA to be applicable. However, if the Settling Defendant or the City ultimately appeals to the Court to resolve the dispute, the Court shall determine which Paragraph is applicable in accordance with the standards of applicability set forth in Paragraphs 68 and 69.

68. Formal dispute resolution for disputes pertaining to the

selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (1) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this Consent Decree; and (2) the adequacy of the performance of response actions taken pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by a Settling Defendant or the City regarding the validity of the Glendale RODs' provisions.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, EPA may allow submission of supplemental statements of position by the Parties to the dispute.

b. The Director of the Superfund Division, EPA Region IX, will issue a final administrative decision resolving the dispute based on the administrative record described in Paragraph 68.a. This decision shall be binding upon the Settling Defendant or the City, subject only to the right to seek judicial review pursuant to Paragraph 68.c and d.

c. Any administrative decision made by EPA pursuant to Paragraph 68.b shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by the Settling Defendant or the City with the Court and served on all

Parties within 10 (ten) days of receipt of EPA's decision. The motion shall include a description of the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may file a response to the Settling Defendant's or the City's motion.

d. In proceedings on any dispute governed by this Paragraph, the Settling Defendant or the City shall have the burden of demonstrating that the decision of the Superfund Division Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to Paragraph 68.a.

69. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

a. Following receipt of the Settling Defendant's or the City's statement of position submitted pursuant to Paragraph 67.a, the Director of the Superfund Division, EPA Region IX, will issue a final decision resolving the dispute. The Superfund Division Director's decision shall be binding on the Settling Defendant or the City unless, within fourteen (14) days of receipt of the decision, the Settling Defendant or the City files with the Court and serves on the Parties a motion for judicial review of the decision setting forth the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be

resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to the Settling Defendant's or the City's motion.

b. Notwithstanding Paragraph L of Section I (Background) of this Consent Decree, judicial review of any dispute governed by this Paragraph shall be governed by applicable principles of law.

70. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone or affect in any way any obligation of the Settling Defendants or the City under this Consent Decree, not directly in dispute, unless EPA or the Court agrees otherwise. However, if a Settling Defendant or the City prevails in the dispute resolution process, the deadlines for any requirements which it could not practicably meet because of the dispute resolution proceedings shall be extended to account for any delays because of such proceedings, and it shall pay no stipulated penalties for failing to meet the original deadlines. Stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 77. Notwithstanding the stay of payment, stipulated penalties, if applicable, shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that the Settling Defendant or the City does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XX (Stipulated Penalties).

XX. STIPULATED PENALTIES

71. Settling Defendants and the City shall be liable to the United States for stipulated penalties in the amounts set forth in Paragraphs 72 and 73 for failure to comply with the requirements of this Consent Decree specified below, unless excused by EPA or under Section XVIII (Force Majeure). Settling Defendants shall be liable to DTSC for stipulated penalties in the amounts set forth in Paragraph 73.a for failure to make payments to DTSC pursuant to Section XVI (Reimbursement of Response Costs) of this Consent Decree, unless excused by DTSC or under Section XVIII (Force Majeure). "Compliance" by Settling Defendants or the City shall include completion of the activities under this Consent Decree or any work plan or other plan approved under this Consent Decree identified below in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans or other documents approved by EPA pursuant to this Consent Decree and within the specified time schedules established by and approved under this Consent Decree; provided, however, that a Party to this Consent Decree shall not be liable for stipulated penalties for any requirements of this Decree that are solely the obligations of another Party to this Consent Decree and no Party shall be liable for stipulated penalties based solely on a failure to comply with the requirements of the Settlement Agreement attached to this Consent Decree as Appendix J.

72. With respect to the City, the following stipulated penalties shall accrue per violation per day for any noncompliance identified below:

a. Class I Violations

Each failure to comply in a timely and adequate manner with the terms of this Consent Decree and any documents incorporated into this Consent Decree pursuant to its terms that are not specifically listed in Paragraph 72.b (Class II Violations), including, but not limited to, failure to submit timely and adequate Progress Reports and Quarterly Quality Assurance Reports.

Penalty Per Violation	Period of Non-Compliance Per Day
$ 750	Days 1-5
$ 2,250	Days 6-30
$ 3,750	After 30 days

b. Class II Violations

i. Failure to accept at the Point of Delivery treated groundwater in the amounts specified under this Consent Decree that meets the Performance Standards.

ii. Failure to operate the Upstream Facilities and/or Downstream Facilities so as to extract, treat and deliver the quantity of treated groundwater required by this Consent Decree.

iii. Failure to submit deliverables required under this Consent Decree, including, but not limited to:

Quality Assurance Project Plan

Operational Sampling and Analysis Plan

Operation and Maintenance Plan

Designation of Supervising and O&M Contractor(s)

iv. Failure to comply with any of the following: EPA-approved deliverables under the AOC or UAO No. 97-06 or 97-18, including, but not limited to:

Contingency Plan

Operational Sampling and Analysis Plan

Operation and Maintenance Plan

Performance Standards Assessment Plan

Penalty Per Violation Per Day	Period of Non-Compliance
$ 1,500	Days 1-5
$ 3,500	Days 6-30
$ 10,000	After 30 days

73. With respect to the Settling Defendants, or the Settling Work Defendants, as appropriate, the following stipulated penalties shall accrue per violation per day for any noncompliance identified below. Payment of those penalties shall be the joint and several obligation of the Settling Defendants, or the Settling Work Defendants, as appropriate.

a. Class I Violations

Each failure to comply in a timely and adequate manner with the terms of this Consent Decree, including the SOW, and any documents incorporated into this Consent Decree pursuant to its terms that are not specifically listed under Paragraph 73.b (Class II Violations), including, but not limited to, failure to submit timely and adequate Progress Reports and Quarterly Quality Assurance Reports, and failure to make any payment required under Section XVI (Reimbursement of Response Costs). In the event of a failure to make payment to DTSC as required under Section XVI, the Settling Defendants shall be liable to DTSC for any stipulated penalty.

Penalty Per Violation Per Day	Period of Non-Compliance
$ 1,000	Days 1-5
$ 2,500	Days 6-30

$ 5,000	After 30 days

b. Class II Violations

i. Any failure to perform or fund Work.

ii. Failure to submit any deliverable required to be submitted under this Consent Decree, including, but not limited to:

Operation and Maintenance Plan
Health and Safety Plan
Designation of Supervising and O&M Contractor(s)
Designation of Cost Consultant
Quality Assurance Project Plan

iii. Failure to comply with any of the following: EPA-approved deliverables under the AOC or UAO No. 97-06 or 97-18, including, but not limited to:

Remedial Action Work Plan
Focused Remedial Action Work Plan
Construction Quality Assurance Project Plan
Health & Safety Plan
Contingency Plan
Operational Sampling and Analysis Plan
Operation and Maintenance Plans
Performance Standards Assessment Plan

Penalty Per Violation Per Day	Period of Non-Compliance
$ 2,000	Days 1-5
$ 4,000	Days 6-30
$ 10,000	After 30 days

74. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction

of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section XI (EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 31st (thirty-first) day after EPA's receipt of such submission until the date that EPA notifies the Settling Defendant or the City of any deficiency; (2) with respect to a decision by the Director of the Superfund Division, EPA Region IX, under Section XIX (Dispute Resolution), during the period, if any, beginning on the 21st (twenty-first) day after the date that the Settling Defendant's or the City's reply to EPA's statement of position is received by EPA until the date that the Director issues a final decision regarding such dispute; or (3) with respect to judicial review by this Court of any dispute under Section XIX (Dispute Resolution), during the period, if any, beginning on the 31st (thirty-first) day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

75. Following EPA's determination that a Settling Defendant or the City has failed to comply with a requirement of this Consent Decree, EPA may give the Settling Defendant or the City written notification of the same and describe the noncompliance. Following DTSC's determination that the Settling Defendants have failed to pay amounts due to DTSC under Section XVI (Reimbursement of Response Costs) of this Consent Decree, DTSC may give the Settling Defendants notification of the same and describe the noncompliance. EPA may send the Settling

Defendant(s) or the City a written demand for the payment of the penalties. DTSC may send the Settling Defendants a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified the Settling Defendant(s) or the City, or DTSC has notified the Settling Defendants of a violation.

76. All penalties accruing under this Section shall be due and payable to the United States or DTSC within 30 (thirty) days of the Settling Defendant's or the City's receipt from EPA or the Settling Defendants' receipt from DTSC of a demand for payment of the penalties, unless the Settling Defendant(s) or the City invokes the Dispute Resolution procedures under Section XIX (Dispute Resolution). All payments to the United States under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund" and shall be mailed to:

U.S. Environmental Protection Agency
Region IX, Attn: Superfund Accounting
P.O. Box 360863M
Pittsburgh, PA 15251

The transmittal accompanying the check shall indicate that the payment is for stipulated penalties and shall reference the EPA Region and Site/Spill ID # 09-N2, the DOJ Case Number 90-11-2-442A, and the name and address of the Party making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to the United States as provided in Section XXVI (Notices and Submissions). All payments to DTSC under this Section shall be made in the manner specified in Paragraph 54.b. The payment of penalties shall not alter in any way any Settling Defendant's or the City's obligation to complete the performance of the Work required under

this Consent Decree.

77. Penalties shall continue to accrue as provided in Paragraph 74 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to this Court, accrued penalties determined to be owing shall be paid to EPA within thirty (30) days of the agreement or receipt of EPA's decision;

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, the Settling Defendant(s) or the City shall pay all accrued penalties determined by the Court to be owed to EPA within 60 (sixty) days of receipt of the Court's decision or order, except as provided in Paragraph 78.c below.

c. If the District Court's decision is appealed by any Party, the Settling Defendant(s) or the City shall pay all accrued penalties determined by the District Court to be owing to the United States into an interest-bearing escrow account within 60 (sixty) days of receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every 60 (sixty) days. Within 15 (fifteen) days of receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to EPA or to the Settling Defendant(s) or the City to the extent that such Party prevails.

d. If Settling Defendant(s) or the City fails to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties, as well as interest calculated in the same manner as Interest. Settling Defendant(s)

or the City shall pay such interest on the unpaid balance, which shall begin to accrue on the date of receipt of demand made pursuant to Paragraph 76.

e. Nothing in this Consent Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the United States or DTSC to seek any other remedies or sanctions available by virtue of a Settling Defendant's violation of this Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l). Provided, however, that the United States shall not seek civil penalties pursuant to Section 122(l) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of the Consent Decree.

78. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that has accrued pursuant to this Consent Decree.

XXI. COVENANTS NOT TO SUE BY PLAINTIFFS

79. In consideration of the actions that will be performed and the payments that will be made by the Settling Defendants and the actions that will be performed by the City under the terms of the Consent Decree, and except as specifically provided in Paragraphs 81-85 of this Section, the United States and DTSC covenant not to sue or to take administrative action against the Released Parties pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606, 9607(a), and Section 7003 of RCRA, 42 U.S.C. § 6973, and their respective state law counterparts, for performance of the Work and for recovery of Past Response Costs and Future Response

Costs. These covenants not to sue shall take effect as to the City, upon the entry of this Consent Decree, and as to the Settling Defendants, upon the receipt by EPA and DTSC of the payments required by Paragraph 54 of Section XVI (Reimbursement of Response Costs). As to each Settling Defendant and the City, these covenants not to sue are conditioned upon the continued satisfactory performance by each such Party of its obligations under this Consent Decree. These covenants not to sue extend only to the Released Parties and the City and do not extend to any other person, including, but not limited to, any person or entity with liability for the Site independent of that person's or entity's association with a Settling Defendant.

80. United States' Pre-certification reservations.

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel the Released Parties or any of them (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response if, prior to Certification of Completion of the Remedial Action:

i. conditions at the Site, previously unknown to EPA, are discovered, or

ii. information, previously unknown to EPA, is received, in whole or in part,

and EPA determines that these previously unknown conditions or this information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

81. United States' Post-certification reservations.

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel the Released Parties or any of them (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response if, subsequent to Certification of Completion of the Remedial Action:

i. conditions at the Site, previously unknown to EPA, are discovered, or

ii. information, previously unknown to EPA, is received, in whole or in part,

and EPA determines that these previously unknown conditions or this information together with other relevant information indicates that the Remedial Action is not protective of human health or the environment.

82. For purposes of Paragraph 80, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date the Glendale RODs were signed, set forth in the Glendale RODs for the Site and the administrative records supporting the Glendale RODs, or information required to be and actually submitted to EPA pursuant to the AOC, UAO No. 97-06 or UAO No. 97-18 prior to the date of lodging of this Consent Decree. For purposes of Paragraph 81, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date of Certification of Completion of the Remedial Action and set forth in the Glendale RODs, the administrative records

supporting the Glendale RODs, the post-Glendale RODs administrative records, or in any information received by EPA pursuant to the requirements of the AOC, UAO No. 97-06, UAO No. 97-18 or this Consent Decree prior to Certification of Completion of the Remedial Action.

83. General reservations of rights. The covenants not to sue set forth above do not pertain to any matters other than those expressly specified in Paragraph 79.

a. The United States and DTSC reserve, and this Consent Decree is without prejudice to, all rights against the Released Parties with respect to all other matters, including, but not limited to, the following:

i. claims based on a failure by any Released Party to meet a requirement of this Consent Decree;

ii. liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site;

iii. liability for future disposal of Waste Material at the Site, other than as provided in the Glendale RODs, the Work, or otherwise ordered by EPA;

iv. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

v. criminal liability;

vi. liability for violations of federal or state law that occur during or after implementation of the Remedial Action;

vii. liability, prior to Certification of Completion of the Remedial Action, for additional response actions that EPA determines are necessary to achieve Performance Standards, but

that cannot be required pursuant to Paragraph 15 (Modification of the SOW or Related Work Plans);

viii. liability for additional OUs at the Site or the final response action; and

ix. liability for costs that the United States or DTSC will incur related to the Basin that are not within the definition of Future Response Costs.

b. The United States, Settling Defendants and the City acknowledge and agree that this Consent Decree does not require or provide for the reimbursement to the United States of 100% of its response costs at the Site. The United States reserves its rights to recover any such unrecovered response costs from potentially responsible parties who did not participate in this Consent Decree or otherwise resolve their liability to the United States and the State for the Site ("Non-Settlors"). In addition, the United States reserves its rights to seek to have certain tasks provided for in this Consent Decree, that may be required under this Consent Decree, or that are related to the Site but not expressly provided for by this Consent Decree performed through administrative or judicial enforcement actions or settlements with Non-Settlors. In the event that the United States requires any Non-Settlor to perform tasks related to the Work, Settling Defendants and the City agree to coordinate performance of their respective portions of the Work with any tasks being performed by any such Non-Settlor to accomplish timely and satisfactory completion of the Work and ensure the protectiveness to human health and the environment of the interim remedies. Nothing in this Paragraph shall preclude the United States or the State from instituting proceedings in this action

or in a new action, or issuing an order, pursuant to the United States' reservations of rights in this Consent Decree.

84. Work Takeover. In the event EPA determines that the City or Settling Work Defendants have ceased implementation of any portion of the Work, are seriously or repeatedly deficient or late in their performance of the Work, or are implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portions of the Work as EPA determines necessary. Settling Work Defendants or the City may invoke the procedures set forth in Section XIX (Dispute Resolution), Paragraph 69, to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs that are the Settling Defendants' responsibility under this Consent Decree and which are incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Settling Defendants shall pay pursuant to Section XVI (Reimbursement of Response Costs).

85. Notwithstanding any other provision of this Consent Decree, the United States and DTSC retain all authority and reserve all rights to take any and all response actions authorized by law.

XXII. COVENANTS BY SETTLING DEFENDANTS AND THE CITY

86. Covenant Not to Sue. Subject to the reservations in Paragraph 87, Settling Defendants and the City hereby covenant not to sue and agree not to assert any claims or causes of action against the United States or DTSC with respect to the Work, past response actions, Past and Future Response Costs as defined herein or this Consent Decree, including, but not limited to:

a. any direct or indirect claim for reimbursement from the

Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, 9613, or any other provision of law;

b. any claims against the United States, including any department, agency or instrumentality of the United States under CERCLA Sections 107 or 113 related to the Site, or

c. any claims arising out of response activities at the Site, including claims based on EPA's and DTSC's selection of response actions, oversight of response activities or approval of plans for such activities.

87. The Settling Defendants and the City reserve, and this Consent Decree is without prejudice to, the following:

a. any claim or cause of action that a Settling Defendant or the City has or may have based on:

i. the ownership or operation of a facility at which a release of a hazardous substance occurs or has occurred, or

ii. the transportation or arrangement for disposal or treatment of a hazardous substance by a department, agency or instrumentality of the United States or of the State;

iii. provided, however, that this reservation shall not encompass claims based on the exercise by the United States or by the State of general regulatory authority or control over any portion of the Site or over activities of other persons within the Site.

b. any claims that any Settling Defendant or the City has or may have with respect to the Site against the United States pursuant to any contract between any Settling Defendant and any government contractor(s) related to the Site; or

c. any claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States while acting within the scope of his office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of the Settling Defendants' plans or activities. The foregoing applies only to claims that are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA.

88. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXIII. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

89. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Consent Decree. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Consent Decree may have under applicable law. Each of the Parties expressly reserves any and all rights

(including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action that such Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto.

90. The Parties agree, and by entering this Consent Decree this Court finds, that the Released Parties are entitled, as of the Effective Date of this Consent Decree, to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2), for matters addressed in this Consent Decree, as defined below.

91. The matters addressed in this Consent Decree are:

a. EPA's and DTSC's Past Response Costs;

b. EPA's and DTSC's Future Response Costs;

c. all matters addressed in AOC No. 94-11 and UAO Nos. 97-06 and 97-18; and

d. all costs of implementing the Work performed under this Consent Decree.

92. The Settling Defendants and the City agree that with respect to any suit or claim for contribution brought by them for matters related to this Consent Decree they will notify the United States and DTSC in writing no later than 60 (sixty) days prior to the initiation of such suit or claim.

93. The Settling Defendants and the City also agree that with respect to any suit or claim for contribution brought against them for matters related to this Consent Decree they will notify in writing the United States and DTSC within 30 (thirty) days of service of the complaint on them. In addition, Settling Defendants and the City shall notify the United States and DTSC

within 10 (ten) days of service or receipt of any Motion for Summary Judgment in such a case and within 10 (ten) days of receipt of any order from a court setting such a case for trial.

94. In any subsequent administrative or judicial proceeding initiated by the United States or DTSC for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Defendants and the City shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or DTSC in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXI (Covenants Not to Sue by Plaintiffs).

XXIV. ACCESS TO INFORMATION

95. Settling Defendants and the City shall provide to EPA and DTSC, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to the implementation of this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Settling Defendants and the City shall also make available to EPA and DTSC, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

96.

a. Settling Defendants and the City may assert business confidentiality claims covering part or all of the documents or information submitted to Plaintiffs under this Consent Decree to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when submitted to EPA and DTSC, or if EPA has notified Settling Defendants or the City that the documents or information is not confidential under the standards of Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), the public may be given access to such documents or information without further notice to Settling Defendants or the City.

b. The Settling Defendants and the City may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If a Settling Defendant or the City asserts such a privilege in lieu of providing documents, such Party shall provide the Plaintiffs with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information: and (6) the privilege asserted by the Party. However, no document, report or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that it is privileged.

97. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XXV. RETENTION OF RECORDS

98. Until 10 (ten) years after the Settling Defendants' and the City's receipt of EPA's notification pursuant to Paragraph 51.b of Section XIV (Certification of Completion of the Work), each Settling Defendant and the City shall preserve and retain all records and documents now in their possession or control or which come into their possession or control that relate in any manner to the performance of the Work or liability of any person for response actions conducted and to be conducted at the Site, regardless of any corporate or municipal retention policy to the contrary. Until 10 (ten) years after the Settling Defendants' and the City's receipt of EPA's notification pursuant to Paragraph 50.b of Section XIV (Certification of Completion of the Remedial Action), Settling Defendants and the City shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to the performance of the Work.

99. At the conclusion of this document retention period, Settling Defendants and the City shall notify the United States and DTSC at least 90 (ninety) days prior to the destruction of any such records or documents, and, upon request by the United States or DTSC, Settling Defendants or the City shall deliver any such records or documents to EPA or DTSC. The Settling Defendants or the City may assert that certain documents, records

and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If a Settling Defendant or the City asserts such a privilege, such Party shall provide the Plaintiffs with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by the Party. However, no documents, reports or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on the grounds that it is privileged.

100. Each Settling Defendant hereby certifies individually that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information relating to its potential liability regarding the Site since being notified of potential liability by the United States or DTSC and that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XXVI. NOTICES AND SUBMISSIONS

101. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the

other Parties in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, EPA, DTSC, DHS, the City and the Settling Defendants, respectively.

<u>As to the United States:</u>

David B. Glazer
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
301 Howard Street, Suite 870
San Francisco, CA 94105
Re: DOJ # 90-11-2-442A

and

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Box 7611, Ben Franklin Station
Washington, D.C. 20044-442A
Re: DOJ # 90-11-2-442A

Director, Superfund Division
United States Environmental Protection Agency
Region IX
75 Hawthorne St.
San Francisco, CA 94105

<u>As to EPA:</u>

Marie M. Rongone
Assistant Regional Counsel -- Glendale OUs
Environmental Protection Agency
Region IX
75 Hawthorne St., ORC-3
San Francisco, CA 94105

Bob Fitzgerald
EPA Project Coordinator -- Glendale OUs
United States Environmental Protection Agency
Region IX
75 Hawthorne St., SFD-7-4
San Francisco, CA 94105

<u>As to DTSC</u>:

Hamid Saebfar
Chief, Site Mitigation Branch
Department of Toxic Substances Control

Region 3
1011 North Grandview Avenue
Glendale, CA 91201

Ann Rushton
Deputy Attorney General
Environment Section
California Department of Justice
300 South Spring Street, # 500
Los Angeles, CA 90013

As to DHS:

Gary Yamamoto
Chief, South Coastal Region
California Department of
Health Services
Drinking Water Field Operations Branch
1449 West Temple St., Rm. 224
Los Angeles, CA 90026

As to the RWQCB

Arthur Heath
Los Angeles Regional Water
Quality Control Board
320 West 4th Street
Suite 200
Los Angeles, CA 90013

As to the City:

Vivien Cienfuegos Ide
Assistant City Attorney
City of Glendale
613 E. Broadway, Suite 220
Glendale, CA 91206-4394

Donald Froelich
Project Coordinator
City of Glendale
141 N. Glendale Ave., Level 4
Glendale, CA 91206-4496

As to the Settling Defendants:

James H. O'Brien, P.E.
Vice President
Corporate Environment, Health & Safety
Lockheed Martin Corporation
7921 Southpark Plaza, Suite 210
Littleton, CO 80120

XXVII. EFFECTIVE DATE

102. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court, except as otherwise provided herein.

XXVIII. RETENTION OF JURISDICTION

103. This Court retains jurisdiction over both the subject matter of this Consent Decree and the Parties for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XIX (Dispute Resolution) hereof.

XXIX. APPENDICES

104. The following appendices are attached to and incorporated into this Consent Decree:

"Appendix A" is the Glendale North OU ROD.

"Appendix B" is the Glendale South OU ROD.

"Appendix C" is the SOW.

"Appendix D" is the complete list of the Non-Owner Settling Defendants.

"Appendix E" is the complete list of the Owner Settling Defendants and the properties within the Site that are covered by Paragraph 9 of this Consent Decree.

"Appendix F" is the complete list of Settling Work Defendants.

"Appendix G," including Appendix G.1, is the complete list

of Settling Cash Defendants. Appendix G.1 is the complete list of the parties to the Burbank Consent Decree who are Settling Cash Defendants.

"Appendix H" is the description and/or map of the Site.

"Appendix I" is the Memorandum of Agreement between the City and EPA.

"Appendix J" is the Settlement Agreement between the Settling Defendants and the City.

"Appendix K" is the figure depicting Upstream and Downstream Facilities.

XXX. COMMUNITY RELATIONS

Settling Work Defendants and the City shall cooperate with EPA and DTSC in providing information regarding the Work to the public. As requested by EPA or DTSC, Settling Work Defendants and the City shall participate in the preparation of such information for dissemination to the public and in public meetings that may be held or sponsored by EPA or DTSC to explain activities at or relating to the Site.

XXXI. MODIFICATION

105. Schedules specified in this Consent Decree for completion of the Work may be modified by agreement of EPA and the Settling Work Defendants or the City as applicable. All such modifications shall be made in writing.

106. Except as provided in Paragraphs 15 ("Modification of the SOW or Related Work Plans"), 105 and this Paragraph, no material modifications shall be made to the SOW without written notification to, and written approval of, the United States and the agreement of the Settling Work Defendants and the City. Prior to providing its approval to any such modification, the

United States will provide DTSC with a reasonable opportunity to review and comment on the proposed modification. Modifications to the SOW that do not materially alter that document may be made by written agreement between EPA, after providing DTSC with a reasonable opportunity to review and comment on the proposed modification, and the Settling Work Defendants or the City, whichever is affected by the modification.

107. Nothing in this Consent Decree shall be deemed to alter EPA's authority to make changes to the interim remedies for the North and South OUs in compliance with CERCLA, the National Contingency Plan and any other applicable laws or regulations, or to require court approval of such changes.

108. Nothing in this Decree shall be deemed to alter the Court's power to enforce, supervise or approve modifications to this Consent Decree.

XXXII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

109. This Consent Decree shall be lodged with the Court for a period of not less than 30 (thirty) days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States also shall publish notice of the proposed settlement described in this Consent Decree in the Federal Register pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l). The United States hereby gives notice and opportunity to the public for a public meeting in the affected area and a reasonable opportunity to comment on the proposed settlement prior to its final entry, pursuant to Section 6973(d) of RCRA, 42 U.S.C. § 7003(d). The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations

that indicate that the Consent Decree is inappropriate, improper, or inadequate. Settling Defendants and the City consent to the entry of this Consent Decree in its current form without further notice.

110. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party with respect to that Party and the terms of the agreement may not be used as evidence in any litigation between the Parties with respect to that Party.

XXXIII. SIGNATORIES/SERVICE

111. Each undersigned representative of a Settling Defendant to this Consent Decree and the City and the Assistant Attorneys General for Environment and Natural Resources of the Department of Justice and the California Department of Justice certify that they are fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind each such represented Party to this document.

112. Each Settling Defendant and the City hereby agrees not to oppose entry of this Consent Decree in its current form by this Court or to challenge any provision of this Consent Decree unless the United States has notified the Settling Defendants and the City in writing that it no longer supports entry of the Consent Decree.

113. Each Settling Defendant and the City shall identify, on the attached signature page, the name, address and telephone number of an agent who is authorized to accept service of process by mail on behalf of that Party with respect to all matters arising under or relating to this Consent Decree. With respect to any action to enforce the terms of this Consent Decree, Settling

Defendants and the City hereby agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons. With respect to the lodging and entry of this Consent Decree, Settling Defendants and the City agree to accept in lieu of service by mail or the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure, service by the United States and DTSC by mail of one (1) copy of any document(s), motions or related matters upon the following persons:

For Settling Defendants:

Gregory McClintock, Esq.
Mayer, Brown & Platt
350 South Grand Avenue
25th floor
Los Angeles, CA 90071-1503

For the City of Glendale:

Vivien Cienfuegos Ide
Assistant City Attorney
613 E. Broadway, Suite 220
Glendale, CA 91206-4394

SO ORDERED THIS 1 DAY OF August, 2000

Mariana R. Pfaelzer
United States District Judge

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al. relating to the San Fernando Valley Crystal Springs Superfund Site, Area 2, Glendale North and South OUs.

FOR THE UNITED STATES OF AMERICA

Date: 5/28/00

Lois J. Schiffer
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

David B. Glazer
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Felicia Marcus
Regional Administrator, Region IX
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Marie M. Rongone
Senior Counsel
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

United States v. ITT Industries, Inc.
Consent Decree Signature Page

FOR THE STATE OF CALIFORNIA
DEPARTMENT OF TOXIC SUBSTANCES
CONTROL

Date: 3/27/00

Hamid Saebfar
Chief, Site Mitigation Branch
Department of Toxic Substances
Control
Region 3
1011 North Grandview Avenue
Glendale, CA 91201

Date: April 5, 2000

Ann Rushton
California Department of Justice
State of California
300 South Spring Street, # 500
Los Angeles, CA 90013

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR: **PETERSON BABY PRODUCTS**

Dated this 27th day of March, 2000

Dale T. Brinkman
1205 Dearborn Drive
Columbus, OH 43085

Agent Authorized to accept Service on Behalf of Above-signed Party:

Name: Dale T. Brinkman

Title General Counsel

Address: 1205 Dearborn Drive, Columbus, OH 43085

Tel. No.: 614-840-3210

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Philips Electronics North America Corporation
[Company Name]
[Please Type]

Date: March 9, 2000

[Name -- Please Type]
[Title -- Please Type]
[Address -- Please Type]
William E. Curran, President
1251 Avenue of the Americas
New York, New York 10020-1104

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type] Warren T. Oates, Jr.
Title: Assistant Secretary
Address: 1251 Avenue of the Americas, New York, NY 10020-1104
Tel. Number: 212-536-0620

---

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

For: PRC-DeSoto International, Inc.
(Formerly Courtaulds Aerospace, Inc.)

Date: 2/17/00

Dennis Kovalsky
General Manager
5430 San Fernando Road
Glendale, CA 91209

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name:	Dennis Kovalsky
Title:	General Manager
Address:	5430 San Fernando Road
Tel. Number:	Glendale, CA 91209

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Prudential
[Company Name]
[Please Type]

Date: 2/8/00

Gregg Meyer, Vice President
[Name -- Please Type]
[Title -- Please Type]
[Address -- Please Type]

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type] Gregg A. Meyer
Title: VP Prudential Real Estate Investors
Address: 4 Embarcadero Ctr Ste 2700
Tel. Number: 415 291 5012

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Sunland Chemical & Research Co.
[Company Name]
[Please Type]

Date: 3-1-2000

[Name -- Please Type]
[Title -- Please Type]
[Address -- Please Type]

Serge Dadone - President
5447 San Fernando Road West
Los Angeles, CA 90039

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type] Serge Dadone
Title: President
Address: 5447 San Fernando Road West, LA, CA 90039
Tel. Number: (818) 244-9600

A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR RICHARD TOSHIMA
[Company Name]
[Please Type]

Date: 3/1/2000

Richard Toshima
RICHARD TOSHIMA, FORMER OWNER &
[Name -- Please Type] VICE PRESIDENT
[Title -- Please Type] 4578 BRAZIL ST
[Address -- Please Type] LOS ANGELES CA 90039

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type]
Title:
Address:
Tel. Number:

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR _____
Edward L. Wallen

Date: 2-10-00

_____
Edward L. Wallen
President
426 W. Magnolia Ave.
Glendale, CA 9124

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name:	Aaron Rosen, Esq.
Title:	Attorney
Address:	5225 Ethel Avenue Sherman Oaks, California 91401

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Whittaker Corporation

Date: February 16, 2000

Bennett F. Moore
President
1955 North Surveyor Avenue
Simi Valley, California 93063

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name:	CT Corporation System
Address:	818 West Seventh Street Los Angeles, California 90017
Tel. Number:	213-627-8252 800-888-9207

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR W & W MFG. CO.
W&W Mfg. Co., Inc.

Date: 6-7-99

Edward L. Wallen
President
426 W. Magnolia Ave.
Glendale, CA 91204

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name:	Aaron Rosen, Esq.
Title:	Attorney
Address:	5225 Ethel Avenue Sherman Oaks, California 91401

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR ANTHONY ZAMBAS
[Company Name]
[Please Type]

Date: 3-7-2000

ANTHONY ZAMBAS, FORMER OWNER& PRESIDENT
[Name -- Please Type]& C.E.O.
[Title -- Please Type]4578 BRAZIL ST
[Address -- Please Type]LOS ANGELES CA 90039

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type]
Title:
Address:
Tel. Number:

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR ZERO Corporation */
[Company Name]
[Please Type]

Date: June 18 1999

[Name -- Please Type]
[Title -- Please Type]
[Address -- Please Type]
Robert C. Arzbaecher, Vice President
P.O. Box 325
Milwaukee, WI 53007

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type] Nancy K. Peterson
Title: Quarles & Brady LLP
Address: 411 East Wisconsin Ave., Milwaukee, WI 53202
Tel. Number: 414-277-5515

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Admiral Controls, Inc.
[Company Name]
[Please Type]

Date: February 10, 2000

David J. Higgins, President
[Name -- Please Type]
[Title -- Please Type]
4516 Cutter St.
[Address -- Please Type] Los Angeles, CA 90039

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type] David J. Higgins
Title: President
Address:
Tel. Number: 4516 Cutter St., L.A. CA 90039
323 245-3711

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

COSMIC INVESTMENTS, INC.

Date: 3/27/2000

Eugene Cockran
President
608 Ruberta Avenue
Glendale, CA 91201

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Eugene Cockran
President
608 Ruberta Avenue
Glendale, CA 91201

---

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR CREDIT MANAGERS ASSOCIATION OF CALIFORNIA
[Company Name]
[Please Type]

Date: 2/29/2000

DAVID L MACOMBER, VP/CFO
[Name -- Please Type]
[Title -- Please Type]
[Address -- Please Type]
40 EAST VERDUGO AVENUE
BURBANK, CALIFORNIA 91502

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: [Please Type] RICHARD KAUFMAN, CAE, PRESIDENT
Title:
Address:
Tel. Number: (818) 972-5318

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Datron Inc._____

By: Patrick W Calhoun 2-25-00

Patrick W. Calhoun
President
1200 North Glenbrook
Garland, Texas 75040-5095

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: CT Corporation System
Title: _____
Address: Los Angeles, California
Tel. Number: _____

---

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR FOTO-KEM IND., INC.
[Company Name]
[Please Type]

Date: MARCH 9, 2000

[Name -- Please Type]
[Title -- Please Type]
[Address -- Please Type]
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR HASKEL INTERNATIONAL, INC.
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Date: March 10, 2000

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR International Electronic Research Corporation

Date: March 1, 2000

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FOR ITT Industries, Inc.
[Company Name]
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Jane Dobson

Date: 2/10/2000

Jane Dobson, Environmental Counsel
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

Date: 24 MARCH 2000

Charles Carter Litchfield

Charles Carter Litchfield
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

Barton B. Davis

FOR Lockheed Martin Librascope Corporation
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Barton B. Davis
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Date: 3/3/2000

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al, relating to the Crystal Springs Area 2 Superfund Site, Glendale North and South OUs.

FOR: MAG Investments, Ltd.

Date: 3-8-00

Mel Squires, General Partner
156 West Providencia Avenue
Burbank, CA 91502

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Attorneys for MAG Investments LTD
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Pacific Bell Telephone Company, a California Corporation
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Date: 2/21/00

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

DATE Feb. 20- 2000 FOR THE PETERSON FAMILY TRUST

Margaret R. Peterson
Margaret R. Peterson, Trustee

Agent Authorized to Accept Service on Behalf of Above-signed Party:

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

DATE Feb. 20 - 2000 FOR Margaret R. Peterson
Margaret R. Peterson

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South Ous.

FOR: RALPHS GROCERY COMPANY

Date: March 10, 2000

Roger A. Cooke
Vice President & Assistant Secretary
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v ITT Industries, Inc , et al , relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Ranchito Allegra, LLC

DATE: March 9, 2000

By _____
Eli Meshulam, Partner
3316 Mapu Place
Kihei, Maui, Hawaii 96753-9454

Agent Authorized to Accept Service on Behalf of Above-signed Party

Clara Saul
Partner
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Ranchito Allegra, LLC

DATE: March 10, 2000

By Clara Saul, Partner
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR SAI Industries, Inc.
[Company Name]
[Please Type]

Date: February 11, 2000

Curtis Correll, President
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Union Pacific Railroad Company
[Company Name]
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Date: March 10, 1999

Lawrence E. Wzorek
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR VICKERS, INCORPORATED

Date: 3/13/00

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Tel. Number: 216/523-4515

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR VOLKSWAGEN OF AMERICA, INC.

Date: 2/24/00

Gerhard P. Riechel
Associate General Counsel & Secretary

Agent Authorized to Accept Service on Behalf of Above-signed Party:

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Walt Disney Pictures and Television

Date: May 27, 1999

Diane Marx

Diane Marx
Assistant Secretary
500 S. Buena Vista St.
Burbank, CA 91521-0580

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THE UNDERSIDNGED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc., et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR: Walt Disney World Co.
640 Paula Avenue, Glendale, California
and
1733 South Flower Street, Glendale, California

Date: February 16, 2000

Marsha L. Reed
Assistant Secretary
500 S. Buena Vista St.
Burbank, CA 91521-0105

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Tel. Number: _____

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR AEROQUIP CORPORATION

Date: 3/13/00

Camille A. Corbin

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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ITT Industries, Inc. et al., relating to the Crystal Springs, Area Superfund Site, Glendale North and South OUs.

FOR Joseph F. Bangs, dba Bangs Manufacturing Co.
[Company Name]
[Please Type]

Date: March 1, 2000

Doris B. Bangs
[Name -- Please Type]
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Joseph F. Bangs, by Doris B. Bangs under power of attorney - Owner
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RECORD OF DECISION

GLENDALE NORTH OPERABLE UNIT INTERIM REMEDY

PART I. DECLARATION

SITE NAME AND LOCATION

San Fernando Valley Area 2
Glendale North Operable Unit
Los Angeles County, California

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Glendale North Operable Unit, San Fernando Valley Area 2 Superfund site, chosen in accordance with CERCLA as amended by SARA and, to the extent practicable, the National Contingency Plan. This decision is based on the Administrative Record for this operable unit.

In a letter to EPA dated March 29, 1993, the State of California agreed with the selected remedy for the Glendale North OU.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE REMEDY

EPA has selected an interim remedy for the North plume of groundwater contamination in the Glendale Study Area. This interim remedy is referred to as the Glendale North Operable Unit (OU). An OU is a discrete action that comprises an incremental step toward comprehensively addressing Superfund site problems. The remedy and all of the alternatives presented in the feasibility study were developed to meet the following specific cleanup objectives for the Glendale North OU:

- To inhibit vertical and horizontal migration of groundwater contamination in the North Plume of the Glendale Study Area; and

- To begin to remove contaminant mass from the upper zone of the aquifer in the North Plume of the Glendale Study Area.

The remedy involves groundwater extraction and treatment for the shallow aquifer system in the Glendale area of the San Fernando Valley. Under this remedy, contaminated groundwater would be extracted at a rate of 3,000 gallons per minute (gpm) for 12 years from new wells to be installed in the Glendale Study Area. The extracted contaminated groundwater will be filtered to remove any suspended solids, if necessary, and then treated by air stripping (single or dual-stage) and/or liquid phase granular activated carbon (GAC) to remove volatile organic compounds (VOCs). After treatment, the water shall meet drinking water standards (maximum contaminant levels or MCLs) for VOCs. If air stripping treatment is selected, air emissions will be treated using vapor phase GAC to ensure that all air emissions meet applicable or relevant and appropriate requirements. The exact number, location and other design specifics of these new extraction wells and air stripping/liquid phase GAC units will be determined during the remedial design phase of the project. After treatment to remove VOCs, to meet the nitrate MCL, the water will be blended with an alternative water of a quality such that the resulting water treated, blended water will meet all drinking water MCLs. All or part of the extracted treated water will then be conveyed to the City of Glendale or another San Fernando Valley water purveyor for distribution through its public water supply system.

As a result of comments by the City of Glendale on the Glendale North OU Proposed Plan (July 1992) and Glendale South OU Proposed Plan (September 1992) which indicated that the City had sufficient water credits to accept the treated water from both the Glendale North and Glendale South OUs, and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The Glendale South OU Record of Decision will also reflect this decision to combine the treatment plants.

However, if the City of Glendale does not agree to accept the treated water from both OUs or if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale North OU, the treatment plants will not be combined. Furthermore, if the City of Glendale does not accept any or all of the treated water (possibly due to water supply needs), any remaining portion of the water will be 1) offered to another San Fernando Valley water purveyor or 2) reinjected into the aquifer.

The total duration of the Glendale North OU interim remedy will be 12 years. EPA will determine the need for and scope of any further actions every five years throughout this interim remedy period and again at the conclusion of this period.

The remedial action for the Glendale North OU represents a discrete element in the overall long-term remediation of groundwater in the eastern portion of the San Fernando Valley. The objectives of this interim action; inhibition of migration and restoration of groundwater quality to meet drinking water standards for VOCs to the extent practicable, would not be inconsistent with nor preclude implementation of any final, overall remedial action or actions selected by EPA in the future for the San Fernando Valley Areas 1, 2, 3 and 4.

EPA is the lead agency for this project and the Department of Toxic Substances Control of the State of California Environmental Protection Agency Department of Toxic Substances Control (DTSC) is the support agency.

DECLARATION

This interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements directly associated with this action and is cost effective. This action utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, given the limited scope of the action. Because this action does not constitute the final remedy for the site, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed at the time of the final response action. Subsequent actions are planned to fully address the principal threats at these sites.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, EPA shall conduct a review, pursuant to CERCLA Section 121, 42 U.S.C. Section 9621, at least once every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

John C. Wise

John C. Wise
Acting Regional Administrator

6.18.93

Date

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PART II. DECISION SUMMARY

This Decision Summary provides an overview of the Glendale North OU interim remedy, including the nature and extent of contamination to be addressed, a description of the remedial alternatives, the comparative analysis of the remedial alternatives, a description of the selected remedy and the rationale for remedy selection

1.0 SITE LOCATION AND DESCRIPTION

The Glendale Study Area is located within the San Fernando Basin. The following sections present a basin description, regulatory history, and a summary of the Remedial Investigation and Feasibility Study (RI/FS) activities within the San Fernando Valley and the Glendale Study Area.

1.1 Description of the San Fernando Basin

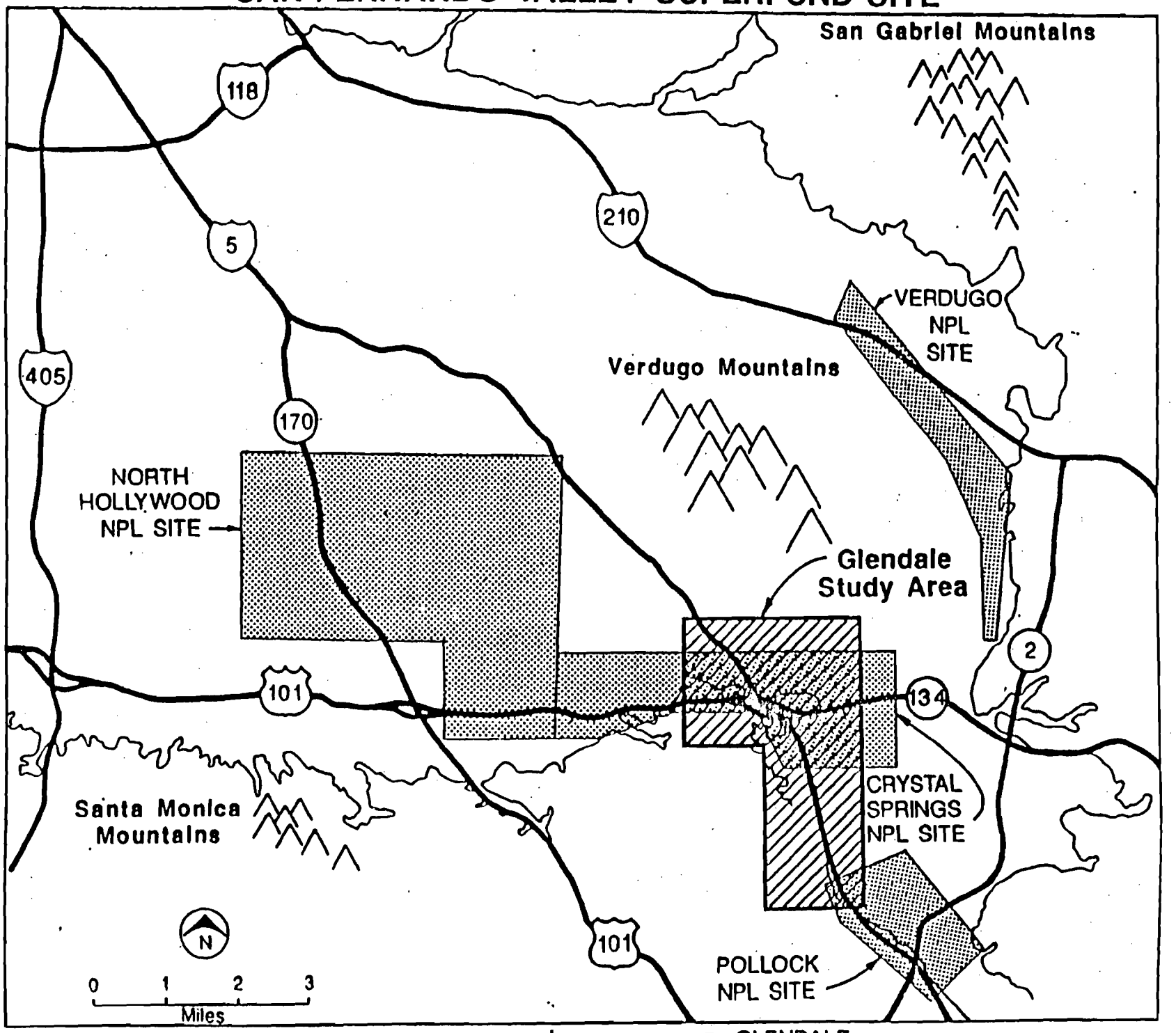
The San Fernando Basin is located within the Upper Los Angeles River Area (ULARA), which consists of the entire watershed of the Los Angeles River and its various tributaries. The San Fernando Basin covers approximately 122,800 acres and comprises 91.2 percent of the ULARA alluvial fill. It is bounded on the north and northwest by the Santa Susana Mountains, on the northeast by the San Gabriel Mountains, on the west by the Simi Hills, and on the south by the Santa Monica Mountains.

The San Fernando Basin is a significant source of drinking water, with an estimated total volume of 3 million acre-feet of groundwater stored in aquifers within the alluvial fill of the basin. The groundwater of the San Fernando Basin has been used as a source of drinking water for more than 800,000 residents within the cities of Los Angeles, Burbank, Glendale, and San Fernando. Groundwater extractions within the San Fernando Basin typically provide 15 percent of Los Angeles' annual average water supply and historically have accounted for between 50 and 100 percent of the water needs of the other cities.

1.2 Description and Background of the Glendale Study Area

The Glendale Study Area is in the vicinity of the Crystal Springs National Priorities List (NPL) Site, one of the four San Fernando Valley Superfund NPL sites, and is adjacent to the Los Angeles River (Figure 1). The Glendale Study Area includes two portions of the aquifer where high concentrations of contaminants have been identified: the North Plume and the South Plume (Figure 2). Although contamination has been detected throughout the Glendale Study Area in an apparently contiguous plume, differences exist between the North Plume and South Plume, including the types of contaminants detected and the concentrations of the

SAN FERNANDO VALLEY SUPERFUND SITE



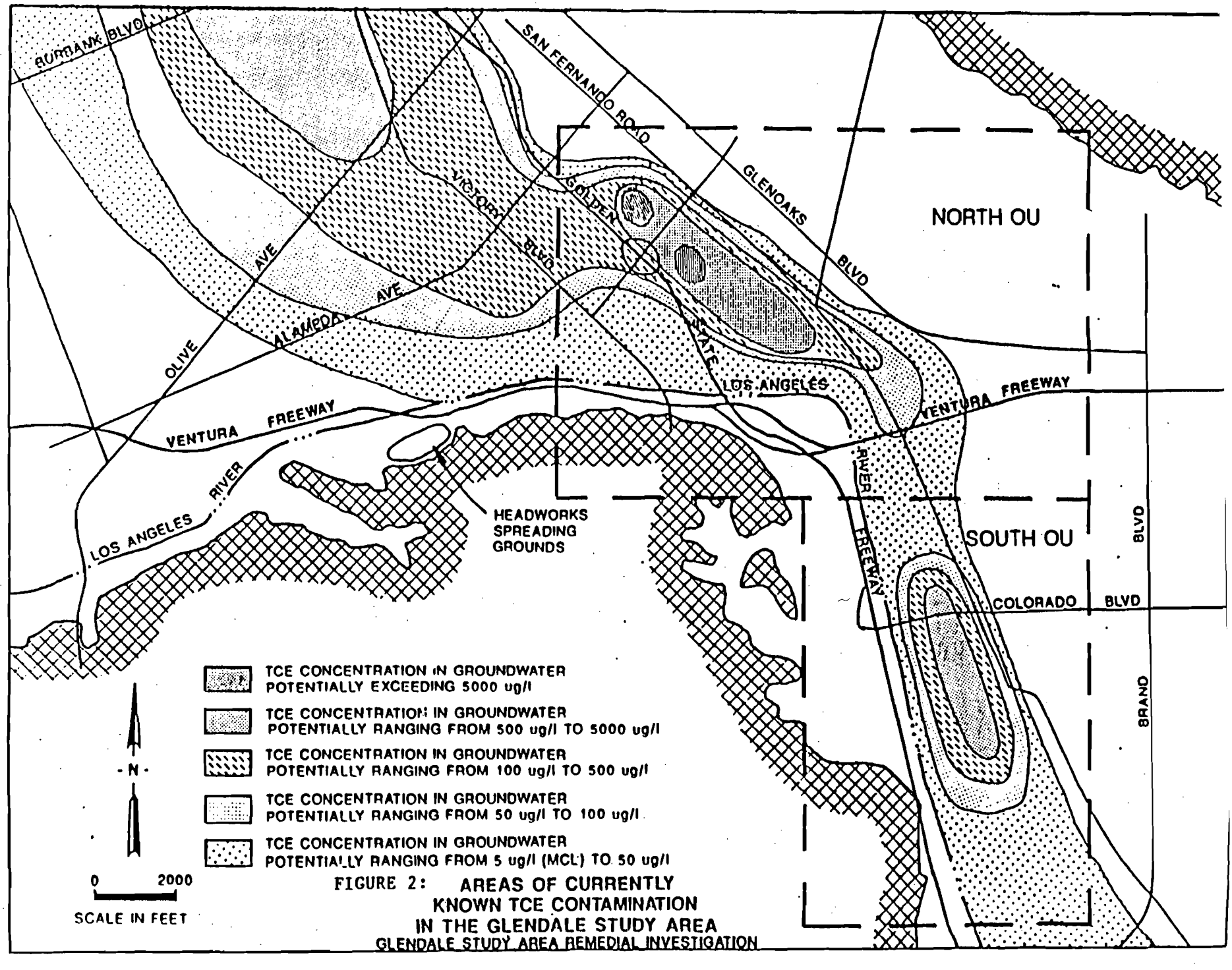


FIGURE 2: AREAS OF CURRENTLY KNOWN TCE CONTAMINATION IN THE GLENDALE STUDY AREA

GLENDALE STUDY AREA REMEDIAL INVESTIGATION

contaminants. The Glendale North and South Plumes are separated by an area of lower-level groundwater contamination. The Glendale North OU includes the North Plume of VOC contamination and adjacent areas where contamination is known or believed to have migrated.

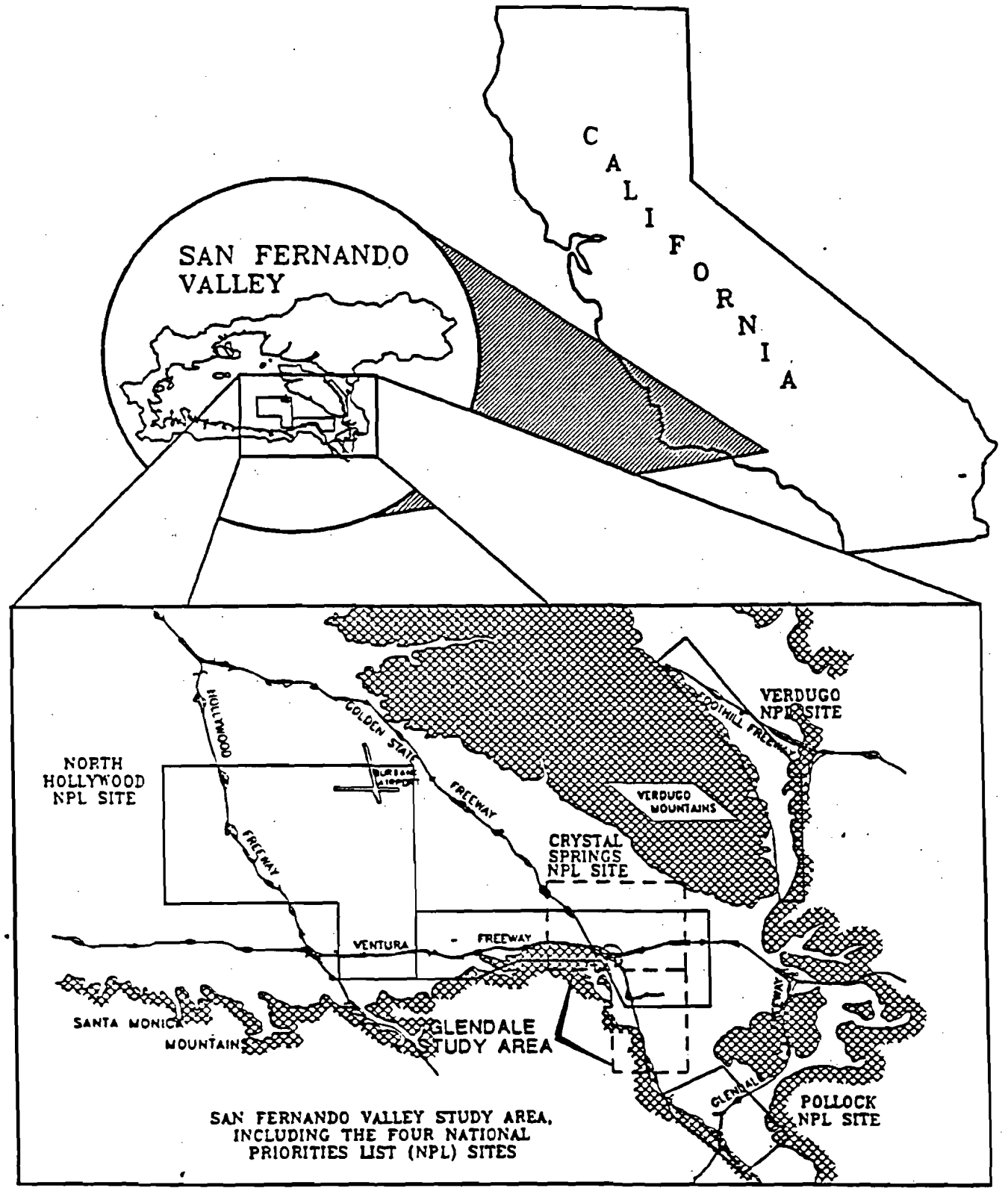
In 1990, an analysis was performed to evaluate the need for an OU within the Crystal Springs NPL site (CH2M Hill, 1990). This analysis included a qualitative comparison based on known groundwater contamination, potential downgradient impacts and water supply. This analysis concluded that there was a need for an OU within the Crystal Springs NPL site because: 1) high concentrations of TCE and PCE were present in groundwater, 2) the critical loss of groundwater production in the Glendale area and 3) the potential for contaminating groundwater downgradient from the Crystal Springs NPL site. Additional data collection was recommended to more adequately characterize the horizontal and vertical distribution of contamination in the aquifer, and also to improve the definition of the hydrogeology of the area.

EPA conducted a remedial investigation (RI) that characterized the nature and extent of contamination in the Glendale Study Area. Upon completion of the Remedial Investigation Report for the Glendale Study Area (January 1992), a feasibility study (FS) was undertaken for the Glendale North OU which evaluated a range of cleanup alternatives for addressing the contaminated groundwater. The FS report entitled Feasibility Study for the Glendale Study Area North Plume Operable Unit was completed in April 1992.

2.0 SITE HISTORY

In 1980, after finding organic chemical contamination in the groundwater of the San Gabriel Valley, the California Department of Health Services (DHS) requested that all major water purveyors in the San Fernando Valley using groundwater conduct tests for the presence of certain industrial chemicals in the water they were serving. The results of initial tests and of subsequent testing revealed the presence of volatile organic compound (VOC) contamination in the groundwater of the San Fernando Valley. These findings resulted in a number of municipal supply wells for the cities of Los Angeles, Burbank, and Glendale being taken out of service. The primary contaminants of concern were and are the solvents trichloroethylene (TCE) and perchloroethylene (PCE), widely used in a variety of industries including metal plating, machinery degreasing and dry cleaning.

In 1984, EPA proposed four sites within the San Fernando Valley for inclusion on the NPL and in 1986 the sites were added to the list (Figure 3). Each site boundary encompasses an area in which production wells produced groundwater containing concentrations of TCE and PCE above State and Federal standards in 1984. The four NPL sites in the San Fernando Valley are the North



GLENDALE STUDY AREA

FIGURE 3
SITE LOCATION MAP

Hollywood, Crystal Springs, Verdugo, and Pollock sites, also referred to as San Fernando Valley Areas 1, 2, 3, and 4, respectively. EPA is managing the four sites as one large site. The San Fernando Valley Study Area includes the four sites as listed on the NPL and adjacent areas where contamination has or may have migrated. A basinwide groundwater RI report for the San Fernando Valley Study Area was completed in December 1992. Groundwater wells installed by EPA as part of the basinwide groundwater RI are routinely sampled to continue to monitor the nature and extent of the groundwater contamination in the San Fernando Valley.

EPA has previously signed Record of Decision (ROD) documents for two OUs in the San Fernando Valley: the North Hollywood OU (1987) and the Burbank OU (1989). The North Hollywood OU interim remedy is currently operating and the Burbank OU is in the remedial design phase. In the Glendale Study Area, EPA has identified two OUs: the Glendale North Plume OU and the Glendale South Plume OU. In addition, EPA has recently initiated an RI/FS for an OU in the Pollock area of the San Fernando Valley. All of these OUs represent interim cleanups currently in progress throughout the eastern portion of the San Fernando Valley. All remedial actions established by EPA thus far in the Record of Decision for each OU have been interim measures. EPA has not yet selected a final remedy for the entire San Fernando Valley.

TCE and PCE have been detected in the majority of the City of Glendale's wells at levels that are above the Federal Maximum Contaminant Level (MCL), which is 5 parts per billion (ppb) for each of these VOCs. The State of California MCL is also 5 ppb for both TCE and PCE. Other VOC contaminants have been detected above State and/or Federal MCLs in the Glendale area. As a result of the groundwater contamination, the majority of the City of Glendale's wells have been taken out of service. The most prevalent contaminants are TCE and PCE. In 1992, the highest concentrations of TCE and PCE detected in EPA monitoring wells in the San Fernando Valley were 7100 ppb and 160 ppb, respectively. Groundwater samples from wells installed at industrial facilities in the San Fernando Valley near potential sources of contamination have shown concentrations greater than 30,000 ppb for TCE and over 15,000 ppb for PCE. The maximum of 30,000 ppb for TCE was detected in a facility well located in the north plume portion of the Glendale Study Area.

Nitrate, an inorganic contaminant, has been detected consistently at levels in excess of the MCL (45 mg/l as nitrate or 10 mg/l nitrate as nitrogen) in the groundwater of the Glendale Study Area. The nitrate contamination is likely to be the result of past agricultural practices and/or septic systems in the San Fernando Valley.

It should be noted that the City of Glendale closely monitors the quality of drinking water delivered to residents. The water the City serves to its residents must meet all Federal and State drinking water requirements. Currently, nearly all of the water delivered by the City of Glendale is purchased from the Metropolitan Water District (MWD) of Southern California. The City uses a limited amount of groundwater from a small percentage of its nine production wells in the San Fernando Valley. If the levels of VOCs and other contaminants detected in the groundwater of production wells are equal to or less than 10 times MCLs, the State of California Department of Health Services, Office of Drinking Water permits the City to extract the water, blend it with MWD water to meet all drinking water standards, and convey the extracted, blended water to its public distribution system.

As described briefly in Section 1 above, the Glendale Study Area includes two portions of the aquifer where high concentrations of contaminants have been identified: the north plume and the south plume. A remedial investigation (RI) that characterized the nature and extent of contamination in the Glendale Study Area was completed in (January 1992). The Glendale Study Area RI included a characterization of the nature and extent of contamination, baseline risk assessments, and other RI data for both the north and south plumes. However, separate FS reports evaluating a range of cleanup alternatives for the contaminated groundwater were prepared for each plume. The Glendale North OU FS report and subsequent Proposed Plan were finalized in April 1992 and July 1992, respectively. The Glendale South OU FS report was completed in August 1992 and the Proposed Plan was completed in September 1992.

EPA's preferred alternatives as described in the Proposed Plans were: extraction of 3000 gallons per minute (gpm) of contaminated groundwater for Glendale North and 2000 gpm for Glendale South, treatment of VOCs by air stripping or liquid phase GAC, and conveyance of the treated water to a water purveyor, where it would be blended with water of a quality such that the treated, blended water would meet all drinking water standards, for eventual distribution through a public water system. As a contingency, if all or part of the treated water was not accepted by the purveyors (possibly due to water supply needs), the treated water from Glendale North would be reinjected and for Glendale South would be recharged at the Headworks Spreading Grounds (see Figure 1-2).

In response to comments by the City of Glendale on the Glendale North and South OU Proposed Plans and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined and the total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase

of the project. The Glendale South OU Record of Decision also reflects this decision to combine the treatment plants.

However, if the City of Glendale does not agree to accept the treated water from both OUs or if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale North OU, the treatment plants will not be combined and only the extracted treated water from the Glendale North OU will be conveyed to the City of Glendale for distribution to its public water supply system. As a further contingency, if the City of Glendale does not accept any or all of the treated water (possibly due to water supply needs), any remaining portion of water will be 1) offered to another San Fernando Valley water purveyor or 2) reinjected/recharged into the aquifer.

3.0 ENFORCEMENT ACTIVITIES

In September 1989, EPA signed a cooperative agreement with the State Water Resources Control Board (SWRCB) providing funds for the Regional Water Quality Control Board, Los Angeles Region (RWQCB) to expand its capability to conduct source reduction, identification, and enforcement activities at individual facilities in the San Fernando Valley. Activities include conducting surveys and inspections, and overseeing investigations and remedial activities. The cooperative agreement has been renewed annually since 1989. If RWQCB investigations confirm soil or groundwater contamination at a specific facility, then that facility is referred to EPA. EPA is using the RWQCB's facility specific information in conjunction with RI data, groundwater and vadose zone modeling results and information gathered from other sources including California Environmental Protection Agency (CAL-EPA) investigations, South Coast Air Quality Management District (SCAQMD) investigations and responses to information request letters, to build enforcement cases.

EPA is and will be using its investigatory resources, enforcement resources and authority under CERCLA in conjunction with the work of the Los Angeles Region (Region 4) of the RWQCB to:

- Identify individuals and companies who are responsible for the historic and current contamination.

- Compel responsible parties to design, construct and operate treatment facilities and reimburse EPA for prior and any future expenditures at the site.

EPA issued preliminary notices of potential liability (General Notice) for the Glendale North OU to 35 parties on August 27, 1992 and to two additional parties on August 31, 1992. The list of General Notice parties was updated in February 1993 when one owner was deleted and three others added. These parties have

been preliminarily identified as owners and operators of 22 facilities located in the vicinity of the north plume portion of groundwater contamination in the Glendale Study Area of the San Fernando Valley. EPA anticipates that additional parties will be notified of potential liability. Special notice pursuant to CERCLA §122 has not yet been issued for the Glendale North OU.

4.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA's preferred alternative, as well as six other alternatives were described in EPA's Proposed Plan for the Glendale North OU (July 1992). The Proposed Plan was in the form of a fact sheet and was distributed to all parties on EPA's mailing list for the San Fernando Valley Superfund sites. The original 30 day public comment period was extended an additional 30 days after EPA received requests for extensions from members of the public. The public comment period closed on September 8, 1992. EPA received over 150 comments. These comments and EPA's responses to these comments are summarized in Part III (the Responsiveness Summary) of this ROD.

A public meeting was held in the City of Glendale on July 23, 1992, to discuss EPA's preferred alternative and the other alternatives. At this meeting EPA gave a brief presentation regarding the Proposed Plan, answered questions, and accepted comments from members of the public.

At the public meeting and in a subsequent letter, the City of Glendale emphasized that it would like to receive greater than 3,000 gpm of extracted, treated groundwater. The City also indicated that it had stored water credits and water rights sufficient to accept greater than 5,000 gpm of extracted, treated groundwater from the San Fernando Valley. As a result of the City's oral and written comments on the Glendale North OU, EPA has determined that the treatment plants for the Glendale North and South OUs will be combined and the total 5,000 gpm of treated water will be conveyed to the City of Glendale.

Notice of the public meeting as well as the availability of the Proposed Plan was published in the Los Angeles Daily News on July 8, 1992. In addition, several newspaper articles were written about the remedial investigation, the feasibility study and the Proposed Plan for the Glendale North OU including: Los Angeles Times - June 19, 1992; Los Angeles Daily News - June 19, 1992; Los Angeles Times - July 23, 1992; Los Angeles Daily News - July 24, 1992 and the Glendale News Press - July 24, 1992. A map of the Glendale North OU was provided in the Proposed Plan and the various newspaper articles described the area that would be impacted by the Glendale North OU.

Prior to mailing out the Proposed Plan fact sheet and conducting the public meeting for the Glendale North OU, EPA

conducted an outreach program specifically aimed at the Glendale community. EPA placed inserts describing the proposed interim cleanup of groundwater in the Glendale area in utility bills delivered to over 127,000 community members. The insert not only explained the project but offered an opportunity to be added to EPA's mailing list for the San Fernando Valley project by filling out and returning an attached coupon. As a result of this utility bill insert project, EPA was able to double its mailing list for the San Fernando Valley project and to educate community members likely to be impacted by the Glendale North OU project.

In general, the purpose of EPA's community relations program for the San Fernando Valley project is to inform community members and other interested parties about the Federal process for addressing contamination at hazardous waste sites, as well as to encourage two way communication between the concerned public and EPA and/or other local agencies.

From March 1987 through December 1991, EPA and LADWP attended quarterly meetings of the Community Work Group (CWG) to discuss technical issues and management strategies involving the San Fernando Valley Superfund project including the interim groundwater cleanup for the Glendale area. The CWG consisted of interested San Fernando Valley community residents, elected officials, agency representatives, and environmental and business leaders. The CWG provided input to EPA on the various components of the Superfund project, including the interim groundwater cleanup of the Glendale area.

The community relations plan for the San Fernando Valley Superfund sites was most recently updated and issued in April 1990. The plan will be revised again in 1993 to address community relations during the remedial design phase of the Glendale North OU interim action and other changes in the community relations program.

5.0 SCOPE AND ROLE OF THE OPERABLE UNIT

The interim remedial action for the Glendale North OU represents a discrete element in the overall long-term remediation of groundwater in the eastern portion of the San Fernando Valley. While the final overall plan for the remediation of the San Fernando Valley Sites has not yet been determined, the objectives of the Glendale North OU are:

- To inhibit vertical and horizontal migration of groundwater contamination in the North Plume of the Glendale Study Area

- To begin to remove contaminant mass from the upper zone of the aquifer in the North Plume of the Glendale Study Area.

EPA does not expect these objectives to be inconsistent with, nor preclude, any final action for San Fernando Valley Areas 1, 2, 3, and 4.

The Glendale North OU interim remedy is intended to address the immediate and significant groundwater contamination problem in and beyond a portion of San Fernando Valley Area 2 (also known as the Crystal Springs NPL site) and includes a large section of the City of Glendale. A more complete investigation of the overall groundwater problem in the San Fernando Valley is being conducted through the basinwide remedial investigation and feasibility study process.

The basinwide groundwater RI Report for the San Fernando Valley Study Area was completed in December 1992. Groundwater wells installed by EPA as part of the basinwide RI are routinely sampled to continue to monitor the nature and extent of the groundwater contamination in the San Fernando Valley.

EPA is currently using the results of the remedial investigation in basinwide feasibility studies to address VOC contamination in both the groundwater and vadose zone of the eastern portion of the San Fernando Valley.

As part of the basinwide groundwater FS, EPA is revising and recalibrating the basinwide groundwater flow model to incorporate the most recent data. The updated version of the model will be complete in early 1993. EPA will then review and evaluate various groundwater remediation options for the basin including: regional pump and treat, well-head treatment, use of innovative technologies and no-action alternatives.

During 1993, EPA will also initiate work on a vadose zone FS to examine ways to protect the groundwater from contaminants that could reach the groundwater in the future. This FS will review and evaluate options for cleanup of VOC contamination in the vadose zone of the San Fernando Valley.

EPA will continue to gather and analyze information important to the project. EPA has been working with the San Fernando Valley water purveyors and the Upper Los Angeles River Area (ULARA) Watermaster to summarize past and future groundwater management in the San Fernando Valley, including an overall water balance for the San Fernando Valley. EPA's interim actions to remove contaminants and inhibit migration from the most contaminated areas in North Hollywood, Burbank, Glendale North, Glendale South and Pollock OUs will also provide information useful for the basinwide FS.

6.0 SUMMARY OF GLENDALE NORTH OU SITE CHARACTERISTICS

Results of LADWP's groundwater monitoring programs conducted from 1981 through 1987 revealed that TCE and PCE had contaminated

approximately 50 percent of the water supply wells in the eastern portion of the San Fernando Valley groundwater basin at concentrations exceeding State and Federal drinking water standards.

The results of recent (1989-1992) EPA sampling of groundwater monitoring wells installed by EPA throughout the San Fernando Valley indicate that TCE and PCE continue to be the principal contaminants of concern. TCE and PCE are industrial solvents commonly used in the metal degreasing and dry-cleaning industries. Both are known animal carcinogens and probable human carcinogens. The Federal MCL for both TCE and PCE is 5 ug/l (ppb). The State MCLs for TCE and PCE are also 5 ug/l (ppb).

There are ten EPA monitoring wells located in the north plume portion of the Glendale Study Area. In these ten wells, nine VOCs have been detected above Federal and/or State MCLs: benzene; carbon tetrachloride; 1,1-dichloroethane (1,1-DCA); 1,2-DCA; 1,1-dichloroethene (1,1-DCE); total 1,2-DCE; 1,1,2,2-tetrachloroethane; PCE; and TCE (See Tables 6-1 and 6-2). As reported in the RI Report for the Glendale Study Area, TCE was detected in eight of ten EPA monitoring wells in the north plume at a maximum concentration of 12,000 ppb. PCE was detected in seven of the ten wells at a maximum of 120 ppb. Groundwater samples from wells installed at industry facilities in the Glendale north plume portion of the Glendale Study Area, near potential sources of contamination, have shown concentrations greater than 30,000 ppb for TCE and greater than 500 ppb for PCE (See Figures 6-1 and 6-2).

Nitrate has been detected consistently at levels in excess of the MCL in the groundwater of the Glendale Study Area. The highest level detected in groundwater from a shallow monitoring well in the Glendale Study Area is 16 mg/l as nitrogen (See Figure 6-3). The Federal MCL is 10 mg/l for nitrate as nitrogen. The nitrate contamination is likely the result of past agricultural practices and/or septic systems in the San Fernando Valley. Nitrate is not a CERCLA hazardous substance. However, the interim OU remedies in the San Fernando Valley involve the distribution of treated water to public water supply systems and therefore, EPA has been compelled to address the nitrate contamination in developing remedial alternatives.

Some metals have been detected at levels above the Federal and/or State MCLs in groundwater monitoring wells located in the Glendale Study Area. These metals include: arsenic, cadmium, chromium, lead and mercury. MCL exceedances occurred in early (1989) sampling rounds when field filtering of samples was not performed. Subsequent sampling and current sampling protocol require field filtering. As a result, only chromium and mercury have been found to exceed their MCLs since the initial sampling and only in a small number of wells. An analysis of these data to examine the likelihood that the metals are waterborne contaminants

TABLE 6-1

MAXIMUM VALUES OF VOLATILE AND SEMIVOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER FROM THE CRYSTAL SPRINGS CLUSTER WELLS WITHIN THE NORTH PLUME OU

Constituent	MCL[a] (µg/l)	Shallow Cluster Wells[b] Maximum Concentration (µg/l)	Shallow Cluster Wells[b] Number of Wells With Detects out of 9	Shallow Cluster Wells[b] Number of Wells Which Exceed MCL	Lower Cluster Wells[b] Maximum Concentration (µg/l)	Lower Cluster Wells[b] Number of Wells With Detects out of 12	Lower Cluster Wells[b] Number of Wells Which Exceed MCL
Volatile Organics (µg/l)							
Acetone	---[c]	6[e]	4	---	22	5	---
Benzene	1.0	0.8	1	0	ND	0	0
2-Butanone (MEK)	---[c]	22	1	---	ND	---	---
Carbon Tetrachloride	0.5	42	4	4	1.0	2	2
Chloroform	100[d]	23	4	0	2.0	1	0
1,1-Dichloroethane	5.0	39	3	2	ND	0	0
1,2-Dichloroethane	0.5	2	1	1	ND	0	0
1,1-Dichloroethene	6.0	100	3	2	ND	0	0
1,2-Dichloroethene (total)	6.0[f]	17	3	1	ND	---	---
Ethylbenzene	680	ND	0	0	0.2	1	0
Methylene Chloride	---[c]	0.5[e]	2	0	5.0[e]	7	0
1,1,2,2-Tetrachloroethane	1.0	8.0	2	2	2.0	1	1
Tetrachloroethene (PCE)	5.0	120	8	6	130	9	6
Toluene	1,000	0.4[e]	1	0	3[e]	3	0
1,1,1-Trichloroethane (TCA)	200	26	3	0	ND	0	0
Trichloroethene (TCE)	5.0	3,100	9	8	220	8	6
Xylene (total)	1,750	ND	0	0	1	2	0
Semivolatile Organics (µg/l)							
Bis(2-ethylhexyl)phthalate	4	ND	---	---	140	1	---
Di-n-octylphthalate	---[c]	ND	---	---	11[e]	1	---

Note: Samples collected May 1990 and October 1990

ND = Not Detected

[a] Promulgated federal or state MCL, whichever is more stringent.

[b] Shallow cluster wells include CS-CO1-105, CS-CO2-62, CS-CO2-180, CS-CO3-100, CS-VPB-04, CS-VPB-05, CS-VPB-06, CS-CO5-160 and CS-C06-185. Lower cluster wells include all remaining cluster wells.

[c] No state or federal MCL promulgated.

[d] MCL is for the sum of trihalomethanes.

[e] Detected in laboratory blanks; may be considered a lab contaminant.

[f] For sum of cis- and trans-isomers, use the MCL for cis-; this isomer is more prevalent and its MCL is lower.

Source: Remedial Investigation for the Glendale Study Area (January 1992

TABLE 6-2

MAXIMUM VALUES OF VOLATILE AND SEMIVOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER FROM THE CRYSTAL SPRINGS VERTICAL PROFILE BORINGS WITHIN THE NORTH PLUME OU

		Initial Sampling - September 1989[b]			Resampling - September 1990[b]		
Constituent	MCL[a] (µg/l)	Maximum Concentration (µg/l)	Number of VPBs With Detects out of 10	Number of VPBs which are at or Exceed MCL	Maximum Concentration (µg/l)	Number of VPBs With Detects out of 11	Number of VPBs Which are at or Exceed MCL
Volatile Organics (µg/l)							
Acetone	—[c]	51[e]	3	—	690[e]	5	—
Benzene	1.0	1	1	1	2	1	1
Bromoform	100	8	1	0	ND	0	0
2-Butanone (MEK)	—[c]	5,400	2	—	ND	0	—
Carbon Tetrachloride	0.5	100	5	5	69	2	2
Chloroform	100[d]	32	5	0	30	4	0
Dibromochloromethane	100[d]	2	1	0	ND	0	0
1,1-Dichloroethane	5.0	49	2	2	46	2	2
1,2-Dichloroethane	0.5	3	1	1	2	1	1
1,1-Dichloroethene	6.0	620	4	3	440	3	3
1,2-Dichloroethene (total)	6.0[f]	25	3	2[f]	23	3	1[f]
2-Hexanone	—[c]	19	1	---	ND	0	--
4-Methyl-2-pentanone (MIK)	—[c]	30	1	---	ND	0	--
Methylene Chloride	—[c]	1	1	0	ND	0	0
Styrene	5.0	2	1	0	ND	0	0
1,1,2,2-Tetrachloroethane	1.0	24	4	4	3	1	1
Tetrachloroethene (PCE)	5.0	77	7	5	120	6	5
1,1,2-Trichloroethane	32	8	3	0	ND	0	0
1,1,1-Trichloroethane (TCA)	200	27	2	0	26	2	0
Trichloroethene (TCE)	5.0	12,000	8	8	5,700	9	7
Vinyl Acetate	—[c]	22	1	—	ND	0	—
Semivolatile Organics (µg/l)							
Bis(2-ethylhexyl)phthalate	4	—	—	—	38	1	1

NA = Not Analyzed
ND = Not Detected
[a] Promulgated federal or state MCL, whichever is more stringent.
[b] Initially sampled wells include CS-VPB-01, CS-VPB-02, and CS-VPB-04 through CS-VPB-11; Resampled wells include CS-VPB-01 through CS-VPB-11.
[c] No state or federal MCL promulgated.
[d] MCL is for the sum of trihalomethanes.
[e] Detected in laboratory blanks; considered a lab contaminant.
[f] For sum of cis- and trans-isomers, use the MCL for cis-; this isomer is more prevalent and its MCL is lower.

Source: Remedial Investigation for the Glendale Study Area (January 1992)

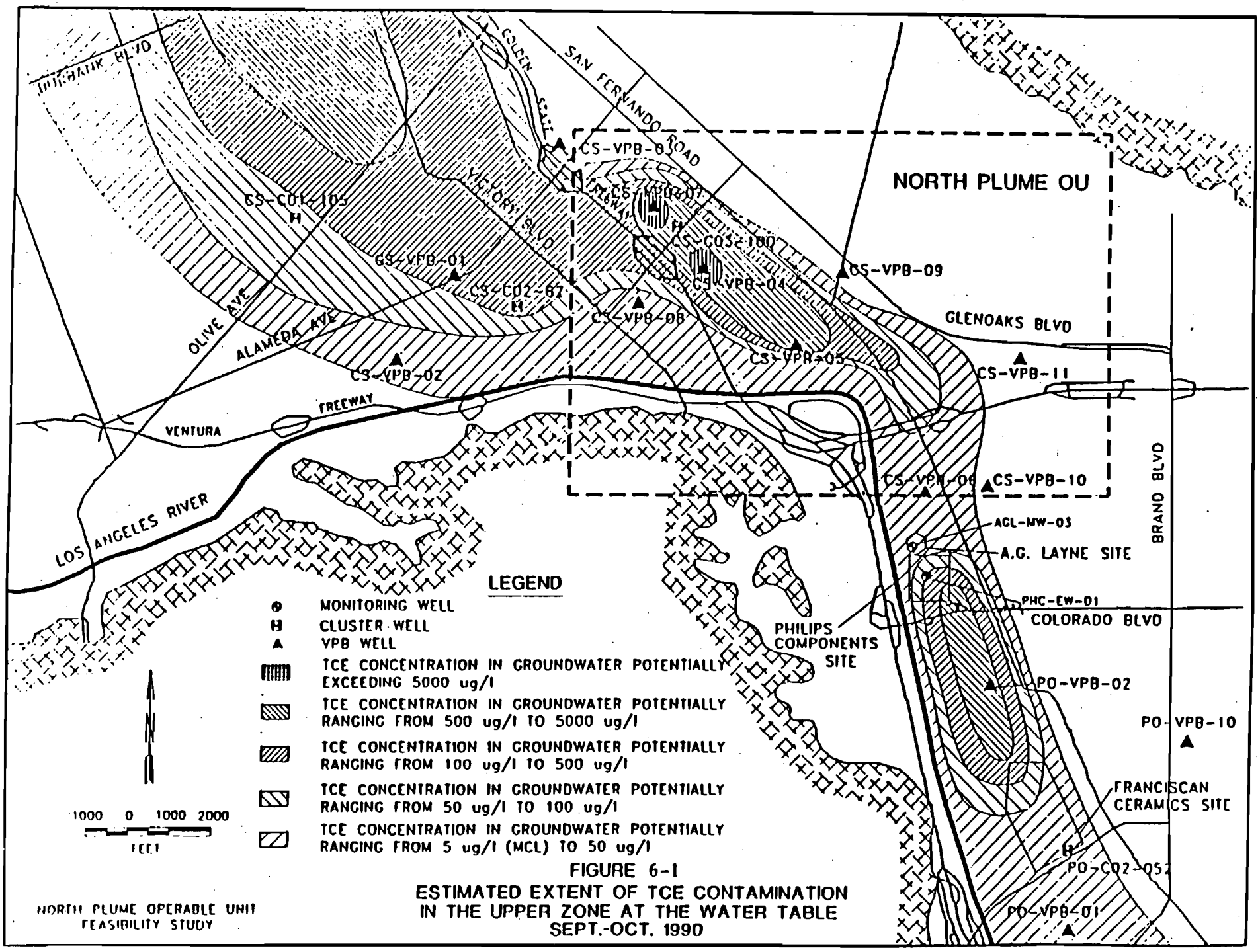


FIGURE 6-1
ESTIMATED EXTENT OF TCE CONTAMINATION IN THE UPPER ZONE AT THE WATER TABLE SEPT.-OCT. 1990

NORTH PLUME OPERABLE UNIT FEASIBILITY STUDY

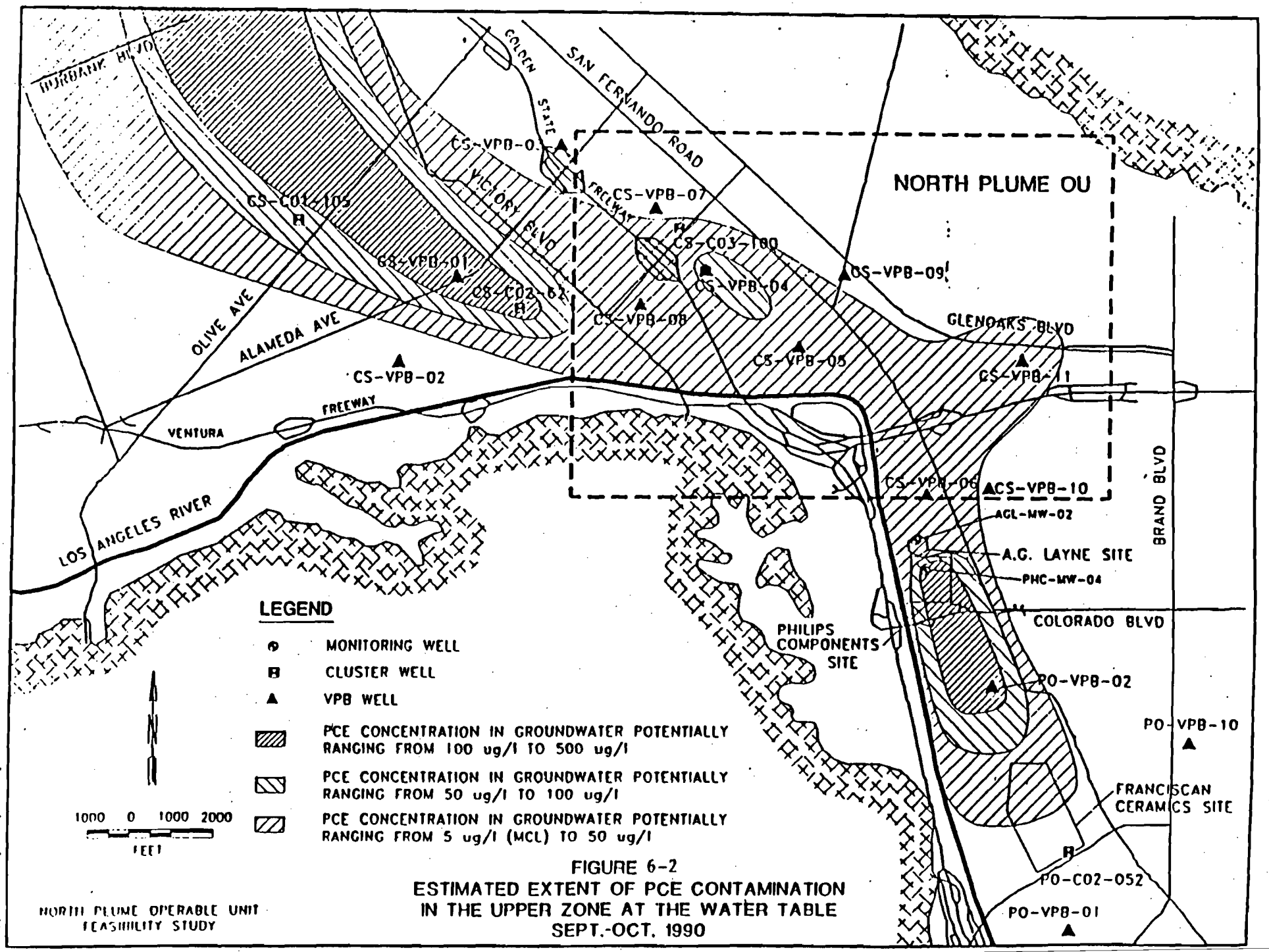


FIGURE 6-2
ESTIMATED EXTENT OF PCE CONTAMINATION
IN THE UPPER ZONE AT THE WATER TABLE
SEPT.-OCT. 1990

NORTH PLUME OPERABLE UNIT
FEASIBILITY STUDY

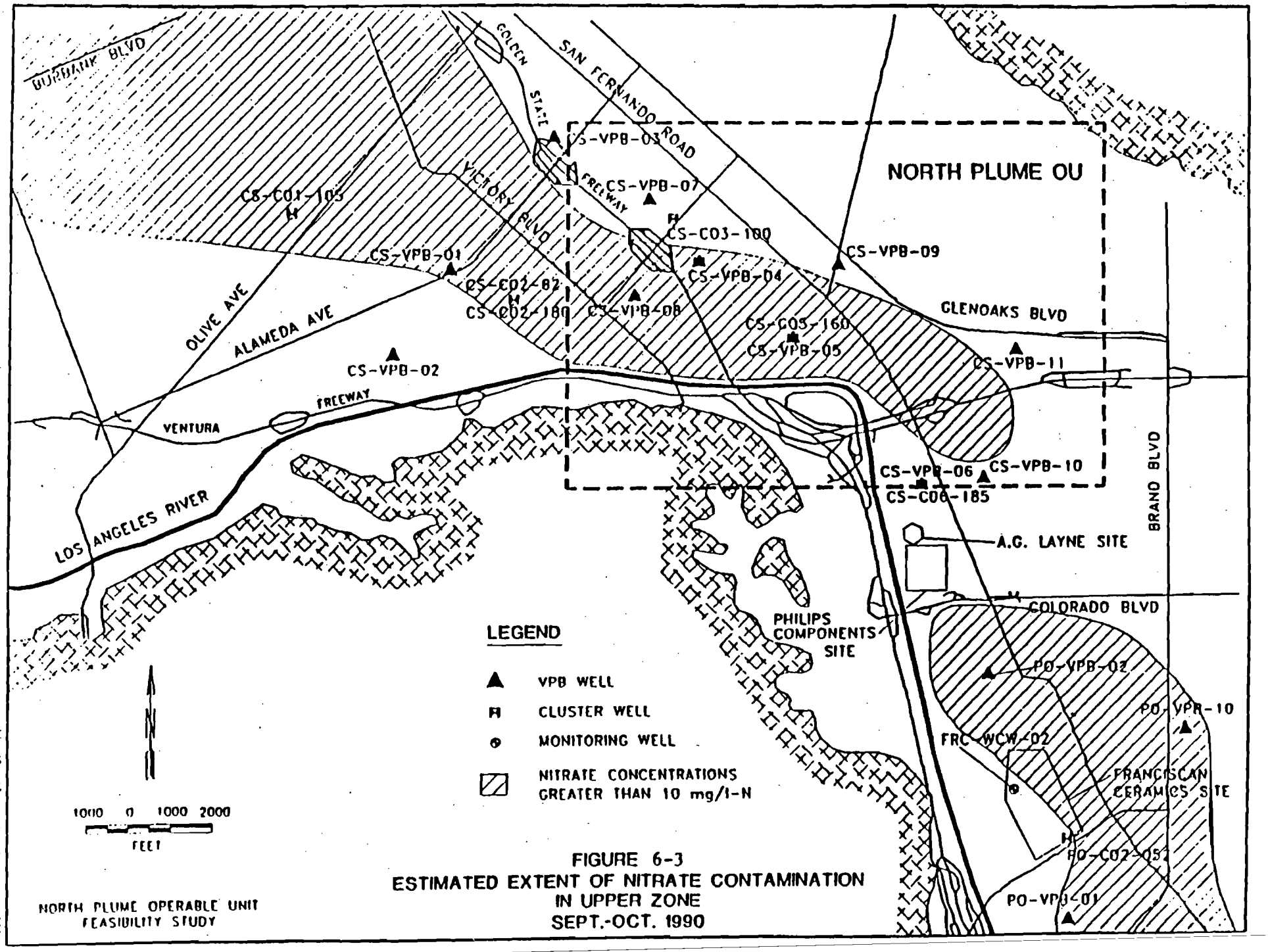


FIGURE 6-3
ESTIMATED EXTENT OF NITRATE CONTAMINATION
IN UPPER ZONE
SEPT.-OCT. 1990

NORTH PLUME OPERABLE UNIT
FEASIBILITY STUDY

rather than sampling artifacts (i.e., residual particulates from well construction and development) was conducted by EPA's contractor and presented in a technical memorandum entitled: Review of Metals Data from Monitoring Wells located in the Glendale Study Area, North Operable Unit (June 16, 1992). This memorandum, available for review in the Administrative Record for the Glendale North OU, concluded that the metals exceedances were most likely the result of sampling artifacts. EPA continues to analyze groundwater samples collected under the quarterly monitoring program for priority pollutant metals.

Thirty-one wells in the Glendale Study Area were sampled for naturally-occurring radionuclides as part of EPA's quarterly monitoring program. The samples were taken during the period of July 31 to August 7, 1992. The results of this third quarter 1992 groundwater sampling for radionuclides indicate that all EPA groundwater monitoring wells in the Glendale Study Area are in compliance with current MCLs for radionuclides (gross alpha, gross beta, gross radium, radium-226, strontium-89, strontium-90, gross uranium, tritium, and radon). In addition, the samples were also in compliance with all proposed radionuclide MCLs, except radon. The proposed MCL for Radon is 300 pCi/l. Most of the groundwater samples from the 31 monitoring wells exceeded the proposed MCL for radon. If necessary, this factor will be taken into account for remedial design. Radionuclides in the groundwater of the Glendale Study Area and their potential impacts on the design of the Glendale North OU are discussed in greater detail in: Technical Memorandum San Fernando Valley Superfund Site, Radionuclides in the Glendale Study Area, dated March 2, 1993. This memorandum is available for review in EPA's Administrative Record Supplement 1 for the Glendale North OU.

In addition, during the RI for the Glendale Study Area, EPA confirmed through modeling that the groundwater in the area is a source of recharge for the Los Angeles River.

7.0 SUMMARY OF SITE RISKS

Data regarding contaminants in the north plume of groundwater contamination in the Glendale Study Area obtained by EPA during the remedial investigation was used to estimate the health risks associated with exposure to the groundwater. This estimate, called a risk assessment, was then used to identify which contaminants pose risks to human health. The data used for the Glendale North OU risk assessment is presented in the Remedial Investigation Report for the Glendale Study Area (January 1992) and in other documents include in the Glendale North OU Administrative Record file.

Baseline risk assessments are conducted at Superfund sites to fulfill one of the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The NCP (40 CFR Part

300) requires development of a baseline risk assessment at sites listed on the National Priorities List (NPL) under CERCLA. The CERCLA process for baseline risk assessments is intended to address both human health and the environment. However, due to the highly urbanized setting of the Glendale Study Area, the focus of the baseline risk assessment for the Glendale North OU was focused on human health issues, rather than environmental issues.

The objective of the baseline risk assessment for the Glendale North OU was to evaluate the human health and environmental risks posed by the contaminated groundwater beneath the north plume portion of the Glendale Study Area if it were to be used as a source of drinking water without treatment. The baseline risk assessment incorporated the water quality information generated during the basinwide groundwater RI field investigation and sampling program to estimate current and future human health and environmental risks. The groundwater data used for the Glendale North OU risk assessment included sampling results from the 1990 Crystal Springs initial cluster well sampling, and the 1991 resampling of the Crystal Springs Vertical Profile Borings/shallow monitoring wells (VPBs). In cases where more than one sample event was recorded for a single well, the most recent data were used. If a compound was not detected in a particular well, half the value of the lowest detection limit was used from the most recent sampling event. The current public health risk calculations were based on estimates of concentrations at points of exposure from these sampling efforts.

The risk assessment for the Glendale North OU was conducted in accordance with EPA guidance including: Guidance for Conducting Remedial Investigation and Feasibility Studies under CERCLA (USEPA, 1988), Risk Assessment Guidance for Superfund, Vol. I Health Evaluation Manual (Part A) and Vol. 2 Ecological Assessment (USEPA, 1989), The Exposure Factors Handbook (USEPA, 1989), and Risk Assessment Guidance for Superfund Human Health Risk Assessment, USEPA Region IX Recommendations (USEPA, 1989).

A risk assessment involves the qualitative or quantitative characterization of potential health effects of specific chemicals on individuals or populations. The risk assessment process comprises four basic steps: 1) hazard identification, 2) dose-response assessment, 3) exposure assessment, and 4) risk characterization. The purpose of each element is as follows:

- Hazard identification characterizes the potential threat to human health and the environment posed by the detected constituents.

- Dose response assessment critically examines the toxicological data used to determine the relationship between the experimentally administered animal dose and

the predicted response (e.g., cancer incidence) in a receptor.

- Exposure assessment estimates the magnitude, frequency, and duration of human exposures to chemicals.

- Risk characterization estimates the incidence of or potential for an adverse health or environmental effect under the conditions of exposure defined in the exposure assessment.

Human Health Risk Assessment

Risk assessments estimate the possibility that one additional occurrence of cancer will result from exposure to contamination. A risk of 1 in 1,000,000 (one million) means that one person in one million exposed could develop cancer as a result of the exposure. EPA considers risks greater than one in ten thousand (10^{-4}) "unacceptable."

In preparing risk assessments, EPA uses very conservative assumptions that weigh in favor of protecting public health. For example, EPA may assume that individuals consume two liters of drinking water per day from wells situated within a contaminant plume, over a 70-year lifetime or that a person is exposed to a chemical, 24 hours a day, 365 days a year, for a 30-year period, even though typical exposure to the chemical would be far less.

The baseline risk assessment for the Glendale North OU is presented in Section 7.0 of the Remedial Investigation Report for the Glendale Study Area (January 1992). The risk assessment estimated the potential risks to public health under current situations and potential future situations. The risk assessment examined the potential health effects if individuals were exposed to contaminated groundwater from the upper and lower zones of the aquifer for the Glendale north plume groundwater contamination in the Glendale Study Area.

Chemicals of potential concern for the Glendale North OU used in the risk assessment calculations included: TCE; PCE; carbon tetrachloride; 1,1-DCA; 1,2-DCA; total 1,1-DCE; 1,2-DCE; nitrate and others including some metals. A list of all potential compounds of concern for both the upper and lower aquifer zones included in the quantitative risk assessment for the Glendale North OU are presented in Table 7-1. Due to the potential for adverse health effects to infants from consumption of water with high nitrate levels, a quantitative evaluation of this compound for chronic non-carcinogenic risks was calculated. The maximum value and an average value were used for exposure point concentrations in the calculations.

TABLE 7-1

COMPOUNDS OF POTENTIAL CONCERN INCLUDED IN THE QUANTITATIVE RISK ASSESSMENT FOR THE GLENDALE NORTH PLUME OU

Constituent	Upper Zone (Yes/No)	Lower Zone (Yes/No)
VOCs		
Benzene	Y	N
Carbon Tetrachloride	Y	Y
1,1-Dichloroethane	Y	N
1,2-Dichloroethane	Y	N
Tetrachloroethene	Y	Y
Trichloroethene	Y	Y
1,1-Dichloroethene	Y	N
1,1,2,2-Tetrachloroethene	Y	Y
2-Butanone (MEK)	Y	N
1,2-Dichloroethene (total)	Y	N
BNAs		
Bis(2-ethylhexyl)phthalate	N	Y
Inorganics		
Arsenic	Y	N
Nickel	Y	N
Lead	N	Y
Mercury	Y	Y
Zinc	Y	Y
Nitrate	Y	Y

As indicated by the table, fewer compounds of potential concern were identified in samples from wells installed in the deep aquifer. Therefore, a separate characterization of risk was performed for the upper and lower groundwater zones.

An exposure assessment was conducted to identify potential transport pathways (e.g., groundwater, surface water, air); routes of exposures (e.g., ingestion, inhalation, dermal contact); and potential on-site and off-site receptor populations. Exposure assessment involves the consideration of particular transport pathways and routes of exposure to potential receptors which may include current users of the site as well as adjacent populations that may be exposed to chemicals that have been transported off site. Receptors may also include aquatic and terrestrial biota.

A critical step in assessing the potential risk to public health is to identify the pathways through which exposure could occur. The major transport pathway considered in the Glendale North OU baseline risk assessment was the use of contaminated groundwater. The point of potential contact with the contaminated groundwater is through water use from the upper or lower zone.

EPA evaluated four potential methods of exposure to water from the upper and lower zones of the aquifer: (1) exposure during residential use, (2) worker exposure during operations at the Glendale Grayson Steam Plant (3) exposure from discharge into the Los Angeles River, or (4) exposure in various other commercial uses. Other commercial users of groundwater in the Glendale Study Area include Walt Disney; Sears, Roebuck & Co.; and the Los Angeles City Zoo. The residential use of the contaminated groundwater as well as exposure from Glendale Grayson Steam Plant operations were carried into the quantitative risk assessment.

EPA included three potential exposure routes in the Glendale North OU risk assessment: (1) drinking the groundwater during residential use, (2) inhaling the chemicals in groundwater vapors during showering, and (3) inhaling groundwater vapors during steam plant operations. Dermal contact was also considered but was found by EPA not to pose a significant risk.

In accordance with current scientific opinion concerning carcinogens, it is assumed that any dose, no matter how small, has some associated response. This is called a nonthreshold effect. In the risk assessment for the Glendale North OU, the non-threshold effect was applied to all probable carcinogens. EPA has classified carcinogens with regard to the epidemiologic and toxicologic data available. The assessment of noncarcinogenic effects is complex. There is a broad interaction of time scales (acute, subchronic, and chronic) with varying kinds of effects. In addition, there are various levels of "severity" of effect. The Hazard Index is used to determine the potential for adverse health effects resulting from exposure to non-carcinogenic chemicals.

The Hazard Quotient is defined as the ratio of a single exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period. A reference dose (RfD) is EPA's preferred toxicity value for evaluating non-carcinogenic effects resulting from exposures at Superfund sites. The Hazard Index is the sum of more than one Hazard Quotient for multiple substances or multiple pathways. The Hazard Index is calculated separately for chronic, sub-chronic and shorter-duration exposures. A Hazard Index greater than 1.0 indicates the potential for adverse health effects. However, it should be noted that a Hazard Index value of 1.0 or greater does not mean that an adverse health effect is certain. It is a benchmark value indicating a greater probability for a possible adverse effect.

The results of the baseline risk characterization for the upper and lower zones of the aquifer are summarized in Tables 7-2 and 7-3. A detailed discussion of the data presented in these tables is included in Section 7.0 of the Remedial Investigation Report for the Glendale Study Area (January 1992).

The risk associated with ingestion of groundwater from the upper zone found that TCE, 1,1-DCE and arsenic were the primary contributors to the carcinogenic risk in the ingestion scenario. PCE and carbon tetrachloride were secondary contributors. Concentration levels of TCE and 1,1-DCE were several orders of magnitude above their respective MCLs, but concentrations of arsenic were detected below its MCL. For shower inhalation risks, TCE and 1,1-DCE were major contributors to risk for groundwater in the upper and lower zones.

The uncertainties associated with the Glendale North OU risk assessment are discussed in detail in Section 7.6 (page 7-24) of the Remedial Investigation Report for the Glendale Study Area (January 1992).

In summary, the results of the human health portion of the Glendale North OU risk assessment indicated that contaminant levels in the upper zone of the aquifer of the Glendale Study Area would pose an unacceptable (2×10^{-3}) risk to human health if this water were to be delivered directly to local residents, without being treated. This means that an estimated 1 in 500 persons would be more likely to develop cancer during their lifetimes.

Environmental Risk Assessment

An ecological risk assessment was also performed for the Glendale North OU to address the potential ecological risks to flora and fauna in the area. This assessment provided a qualitative evaluation of potential current and future risks represented by the present site conditions, assuming no remedial action is taken in the Glendale Study Area.

TABLE 7-2

SUMMARY OF RISK CHARACTERIZATION FOR THE UPPER ZONE AQUIFER FOR THE GLENDALE NORTH PLUME OU

Exposure Scenario	Arithmetic Mean[1]	RME[2]	Maximum[3]	Type of Risk
Adult Ingestion	8E-04	2E-03	5E-03	Cancer Risk
	4E+00	8E+00	2E+01	Hazard Index
Shower Inhalation	1E-03	2E-03	8E-03	Cancer Risk
	4E+00	8E+00	2E+01	Hazard Index
Steam Plant Inhalation	2E-05	---	5E-05	Cancer Risk
	4E-02	---	7E-02	Hazard Index

[1] Average Value

[2] Reasonable Maximum Exposure. The highest exposure that is reasonably expected to occur at a site (95% upper confidence limit of observed concentrations).

[3] The exposure scenario using the highest observed concentration in any monitoring well in the north plume of groundwater contamination in the Glendale Study Area. EPA considers this scenario to be unreasonably high.

TABLE 7-3

SUMMARY OF RISK CHARACTERIZATION FOR THE
LOWER ZONE AQUIFER
FOR THE GLENDALE NORTH PLUME OU

Exposure Scenario	Arithmetic Mean[1]	RME[2]	Maximum[3]	Type of Risk
Adult Ingestion	2E-05	5E-05	1E-04	Cancer Risk
	3E-01	7E-01	2E+00	Hazard Index
Shower Inhalation	1E-05	2E-05	6E-05	Cancer Risk
	2E-01	4E-01	1E+00	Hazard Index
Steam Plant Inhalation	---	---	1E-07	Cancer Risk
	---	---	2E-03	Hazard Index

[1] Average Value

[2] Reasonable Maximum Exposure. The highest exposure that is reasonably expected to occur at a site (95% upper confidence limit of observed concentrations).

[3] The exposure scenario using the highest observed concentration in any monitoring well in the north plume of groundwater contamination of the Glendale Study Area.

The Glendale Study Area is zoned for commercial and industrial establishments. The surrounding area is a mixture of residential and commercial zoning. Although an extensive ecological survey was not performed for the area, the presence of a significant wildlife population was not indicated. In addition, the developed condition of the site excludes the potential for significant natural vegetative cover.

The release pathway of primary concern at this site is contaminated groundwater. There is no information, at present, to indicate that this groundwater reaches the surface or that significant concentrations are discharged to a surface water source (i.e., canal, river, etc.). Discharges to the Los Angeles River are likely to occur but are not expected to be significant enough, in volume or frequency, to impact aquatic biota.

Given the present developed condition of the site and the major exposure pathway consideration of contaminated groundwater, there was no expectation for significant impact to potential environmental receptors. Urbanization has already replaced habitat potential; therefore, no significant number of receptors appeared to be present. There appeared to be no apparent mechanism for exposure to environmental receptors from contaminated groundwater. Also, there was no indication that future site plans would reinstate habitat and thereby recreate a potential for environmental receptors in the future.

8.0 DESCRIPTION OF ALTERNATIVES

Based on the results of the RI, EPA identified several cleanup alternatives for addressing groundwater contamination in the Glendale North Plume. The alternatives were developed to meet the following specific cleanup objectives for the Glendale North OU:

- To inhibit vertical and horizontal migration of groundwater contamination in the North Plume of the Glendale Study Area; and

- to begin to remove contaminant mass from the upper zone of the aquifer in the North Plume of the Glendale Study Area.

All of the alternatives, with the exception of the "no action" alternative (Alternative 1), involve groundwater extraction and treatment for the shallow aquifer system in the Glendale area of the San Fernando Valley. The upper zone or shallow-most portion of the aquifer is where the majority of the VOC contamination has been identified. Detailed descriptions of the various alternatives are presented in the Feasibility Study for the Glendale Study Area North Plume Operable Unit (April 1992).

Initially, all of the alternatives were screened for: 1) effectiveness at protecting public health and the environment, 2) technical feasibility (implementability), and 3) cost. As a result of this initial screening, seven alternatives were evaluated using nine specific criteria: 1) Overall Protection of Human Health and the Environment, 2) Compliance with Applicable or Relevant and Appropriate Requirements (ARARs), 3) Long-term Effectiveness and Permanence, 4) Reduction of Toxicity, Mobility or Volume through Treatment, 5) Short-term Effectiveness, 6) Implementability, 7) Cost, 8) State Acceptance, and 9) Community Acceptance. Each of EPA's nine evaluation criteria is summarized below.

Overall Protection of Human Health and the Environment: This criterion assesses whether each alternative provides for both short term and long term overall protection of human health and the environment from unacceptable risks posed by the hazardous substances, pollutants, or contaminants present in the North Plume. The assessment draws upon the evaluation of short-term effectiveness, long-term effectiveness, implementability, reduction of toxicity, mobility and/or volume through treatment, and compliance with ARARs.

Compliance with ARARs: This criterion is used to determine whether the alternative meets all of the chemical-, action- and location-specific ARARs identified in Section 10 of this ROD. Since the remedial action established by the Glendale North OU ROD is an interim action, chemical-specific requirements to be attained in the aquifer at the end of the final remedy are not ARARs for this action. Action-specific ARARs address the groundwater response actions that may be taken as part of this interim action for the Glendale North OU. All of the alternatives, except no action, include groundwater extraction followed by treatment and disposal or use as potable supply. Therefore, specific levels for treatment of the contaminated water prior to disposal or to delivery to the drinking water purveyor are chemical-specific and action-specific ARARs for the Glendale North OU.

Long-Term Effectiveness and Permanence: Long-term effectiveness refers to the period after the remedial action is complete. Each alternative is assessed for its long-term effectiveness and permanence in reducing the risk to human health and the environment at the end of the 12-year period. The long-term effectiveness evaluation focuses on how much total contaminant mass has been removed and contaminant concentrations remaining in the aquifer at the end of the 12-year period.

Reduction of Toxicity, Mobility, and/or Volume through Treatment: This criterion addresses how well the remediation technologies permanently and significantly reduce the toxicity, mobility and/or volume of the hazardous substances. The evaluation based on this criterion focuses on the quantity of hazardous materials destroyed or treated, the degree to which the remedial action is

irreversible, the type and quantity of residuals that are remaining after the remedial action is complete, and whether the alternative satisfies the statutory preference for treatment as a principal element of the remedy.

Short-Term Effectiveness: Each alternative is evaluated based on its effectiveness in protecting human health and the environment during the construction and implementation period. The short-term effectiveness evaluation for each alternative focuses on how well the alternative removes contaminant mass, inhibits the movement of the contaminant plume, and how well the treatment system meets the cleanup levels in the extracted and treated groundwater during the 12-year period. Short-term effectiveness also addresses the effectiveness of the alternative in reducing potential risks to people living in the vicinity of the Glendale North Plume and to workers' health and safety during construction of the proposed facilities and implementation of the interim remedy.

Implementability: The implementability criterion includes both the technical and administrative feasibility of implementing an alternative. The technical feasibility refers to the ability to construct, reliably operate and maintain, and meet cleanup levels for process options. Administrative feasibility refers to the ability to obtain approvals from other offices and agencies, the availability and capacity of treatment, storage, and disposal services, and the availability of specific equipment and technical specialists.

Cost: The NCP requires that the following types of costs be evaluated: 1) Capital costs, including both direct and indirect costs, 2) Annual operation and maintenance costs and 3) Net present value of capital and operations and maintenance (O&M) costs. Capital and O&M costs presented in the Glendale North OU FS report have an accuracy of +50 percent to -30 percent, as specified by the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (USEPA, 1988). Capital costs include a contingency of 20 percent of total field cost (TFC) and a contractor's overhead and profit (OH&P) at 30 percent of the sum of TFC and contingency. Evaluating present worth costs assumes an interest rate of 10 percent and operating period of 12 years. The O&M cost evaluation assumes an operating load factor of 90 percent.

State Acceptance: This criterion considers the concerns of the State (technical and administrative) regarding the alternatives.

Public Acceptance: This criterion assesses the components of alternatives that interested persons in the community support, have reservations about or oppose.

EPA's preferred alternative, as well as the other six alternatives were described in EPA's Proposed Plan for the Glendale North OU (July 1992).

The Glendale North OU is an interim action and is not the final remedy for cleanup of contaminated groundwater in the Glendale area. With the exception of the no action alternative, all of the alternatives involve the extraction of 3,000 gpm of groundwater for a period of 12 years. The total duration of the remedy is 15 years, but during the first three years the remedy will be in the remedial design and construction phases and no extraction or treatment of groundwater will be taking place. A computer model called a solute transport model was developed and used to determine that the extraction rate of 3,000 gpm over a 12 year period would result in the most effective inhibition of plume migration and effective contamination removal for this interim action. With the exception of Alternative 1 - No Action, all of the alternatives would involve the construction and operation of a VOC treatment system.

With the exception of Alternative 1 - No Action, the seven alternatives analyzed and compared during the FS and presented in the Glendale North OU FS report include three major elements: 1) extraction of contaminated groundwater at the rate of 3000 gpm, 2) treatment of the VOCs, and 3) one of four options for final use - distribution to a public water supply system, reinjection into the aquifer, spreading at an existing spreading grounds, or discharge to the Los Angeles River (See Table 8-1). The major elements of each of seven alternatives are listed below.

Alternative 1	No Action
Alternatives 2	Extract/Treat VOCs(air stripping or liquid phase GAC)/Public Water Supply
Alternative 3	Extract/Treat VOCs(perozone)/Public Water Supply and/or Reinject
Alternative 4	Extract/Treat VOCs/River
Alternative 5	Extract/Treat VOCs plus ion exchange for nitrate/Reinject
Alternative 6	Extract/Treat VOCs/Spreading Grounds
Alternative 7	Extract/Treat VOCs/Reinject

The highlights of the seven alternatives are summarized briefly below. More detailed descriptions of the alternatives are presented in the Feasibility Study for the Glendale Study Area North Plume Operable Unit (April 1992).

Table 8-1: Summary of Alternatives—Glendale North OU

Components	Alternative 1	Alternative 2	Alternative 3
Groundwater Extraction	• None	• Extract 3000 gpm groundwater from 12 wells	• Same as Alternative 2
Treatment	• None	• Treat VOCs with dual-stage air stripping and vapor-phase GAC • Meet nitrate MCL by blending	• Treat VOCs with perozone oxidation, airstripping, and vapor-phase GAC • Same as Alternative 2
Final Use	• Monitor groundwater quality	• Convey treated, blended water to City of Glendale's Public Distribution System	• Same as Alternative 2
CRITERIA	**EVALUATION**		
Effectiveness and Permanence	• Not effective in the short or long-term	• Inhibit vertical and lateral migration of contaminant plume • No contaminated groundwater discharged to Los Angeles River • Remove contaminant mass from aquifer • Treated groundwater would meet drinking water standards	• Same as Alternative 2 • Same as Alternative 2 • Same as Alternative 2 • Same as Alternative 2
Reduction of Toxicity, Mobility, Volume, and Treatment	• No reduction of toxicity, mobility, or volume	• Estimated to reduce TCE concentrations in the aquifer from 600 ppb to less than 100 ppb after 12 years • Removes 82% of the initial mass of TCE in the aquifer	• Same as Alternative 2 • Same as Alternative 2
Compliance with ARARs	• Will not meet ARARs	• Will meet ARARs	• Same as Alternative 2
Overall Protection of Human Health and Environment (Human Health) (Environment)	• Assuming no institutional controls, increased lifetime cancer risk of ingesting contaminated groundwater is estimated to be 1 in 500 • Not protective of environment	• Protective of human health • Environmental degradation will be reduced because migration of groundwater containing TCE concentrations inhibited and TCE mass removed	• Same as Alternative 2 • Same as Alternative 2
Implementability (Technical)	• Monitoring wells easy to construct. Spread of groundwater plume could make future remediation difficult	• Can be implemented	• Same as Alternative 2, except perozone oxidation treatment proven at pilot scale only
ESTIMATED COSTS			
Total Capital Cost Annual O&M Total Present Worth	$230,000 $110,000 $791,000	$19,800,000 $3,240,000 $36,400,000	$17,800,000 $2,610,000 $31,200,000

☐ • EPA's Preferred alternatives.

• Alternative #5 presented here in this Proposed Plan was formerly Alternative #8 in the Feasibility Study for the Glendale Study Area: North Plume Operable Unit (April 1992).

•• Alternative #7 presented here in this Proposed Plan was formerly Alternative #10 in the Feasibility Study for the Glendale Study Area: North Plume Operable Unit (April 1992).

able 8-1 (cont.): Summary of Alternatives—Glendale North OU

Alternative 4	Alternative 5*	Alternative 6	Alternative 7**
• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2
• Same as Alternative 2	• Same as Alternative 2, plus treatment of nitrate with ion exchange	• Same as Alternative 2	• Same as Alternative 2
• Discharge treated water to Los Angeles River	• Inject 3,000 gpm treated water into 12 wells	• Discharge treated water to Headworks Spreading Ground	• Same as Alternative 5
EVALUATION			
• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2
• Same as Alternative 2	• Groundwater discharge to Los Angeles River may be greater than Alternative 2 (but TCE concentrations lower)	• Same as Alternative 2	• Same as Alternative 5
• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 5
• Treated groundwater would meet drinking water standards for VOCs and surface water discharge standards for nitrates	• Same as Alternative 2	• Treated groundwater would meet drinking water standards for VOCs and groundwater recharge standards for nitrates	• Same as Alternative 5
• Same as Alternative 2	• Estimated to reduce TCE concentrations from 800 ppb to less than 100 ppb after 12 years	• Same as Alternative 2	• Same as Alternative 5
• Same as Alternative 2	• Removes 89% of initial mass of TCE in the plume	• Removes 86% of the initial mass of TCE in the plume	• Same as Alternative 5
• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2
• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2	• Same as Alternative 2
• Same as Alternative 2	• Same as Alternative 6, except greater mass of TCE removed	• Same as Alternative 2, except greater mass of TCE removed	• Same as Alternative 5
• Same as Alternative 2	• Same as Alternative 2; issues associated with waste brine disposal (from ion exchange) and with injection (e.g., potential for clogging) will have to be addressed	• Same as Alternative 2; one administrative issue may be the availability of the Headworks Spreading Grounds for recharge	• Same as Alternative 2, except issues associated with injection (e.g., clogging), which will have to be pilot-tested prior to full-scale implementation
$17,700,000 $3,050,000 $33,300,000	$37,000,000 $4,760,000 $61,400,000	$19,600,000 $3,300,000 $36,500,000	$21,800,000 $3,300,000 $38,700,000

Alternative 1: No Action

The No Action alternative serves as a "baseline" against which other alternatives are compared. This alternative is evaluated to determine the risks that would be posed to public health and the environment if no action were taken to treat or contain the contamination. The no action alternative would involve only groundwater monitoring; no additional cleanup activities would be conducted.

Alternative 2: EPA's Preferred Alternative
Extract/Treat(Air Stripping or Liquid Phase GAC)/Public Water System

Alternative 2 involves the extraction of 3,000 gpm of contaminated groundwater for 12 years. The extraction wells would be located to inhibit most effectively the migration of the contaminant plume. Various locations and scenarios for extraction wells and rates of extraction are proposed in the feasibility study report for the Glendale North OU. However, all design decisions for this interim remedy will be made during the remedial design phase. At that time, one of the locations proposed for extraction wells and scenarios for rates of extraction at individual wells may be selected or new ones may be selected.

The extracted groundwater will be filtered to remove any suspended solids, if necessary, and then treated for VOCs using dual-stage or single-stage air stripping with vapor-phase GAC adsorption for emissions control or liquid phase GAC. Whether air-stripping (dual versus single) or liquid phase GAC will be used will be determined during remedial design as will the exact location for the treatment plant (note that four possible locations were proposed in the Glendale North OU FS report). The treated water will be blended with water which does not contain nitrate in excess of the nitrate MCL to reduce nitrate levels to meet the nitrate MCL. The treated water shall meet all ARARs identified in Section 10 of this ROD and will be conveyed to the City of Glendale and/or another San Fernando Valley water purveyor for blending and distribution through the public supply system. The treated, blended water will have to meet all applicable drinking water requirements for drinking water in existence at the time that the water is served prior to distribution through the public drinking water supply system.

In response to comments by the City of Glendale on the Glendale North and South OU Proposed Plans and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined and the total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact location of the combined treatment plant will be determined during the remedial design phase of the

project. The Glendale South OU Record of Decision will also reflect this decision to combine the treatment plants.

However, if the City of Glendale does not agree to accept the treated water from both OUs (possibly due to water supply needs) or if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale North OU, the treatment plants will not be combined. Furthermore, if the City of Glendale does not accept any or all of the treated water, any remaining portion of water will be 1) offered to another San Fernando Valley water purveyor or 2) reinjected into the aquifer, per Alternative 7 (see description below).

Existing production wells that may provide pathways for vertical migration of contamination will be abandoned or rehabilitated, if required. Final determinations regarding which production wells will be abandoned and/or rehabilitated will be made during remedial design. Groundwater monitoring wells will be installed to evaluate the effectiveness of the remedial action. More specifically, groundwater monitoring shall be conducted no less frequently than quarterly to: 1) evaluate influent and effluent water quality, 2) determine and evaluate the capture zone of the extraction wells, 3) evaluate the vertical and lateral (including downgradient) migration of contaminants, 4) evaluate the effectiveness of the reinjection well system, if necessary and 5) monitor any other factors associated with the effectiveness of the interim remedy determined to be necessary during remedial design.

Alternative 3: Extract/Treat(Perozone Oxidation)/Public Water System

Alternative 3 also requires the extraction of 3,000 gpm of contaminated groundwater for 12 years, and the same final use of the treated water and the same groundwater monitoring requirements as Alternative 2. Alternative 3 only differs from Alternative 2 in that the extracted groundwater would be treated for VOCs using perozone oxidation, followed by air stripping with vapor-phase GAC adsorption for emissions control. Air stripping would be required to remove any carbon tetrachloride in the extracted groundwater because the perozone oxidation process alone does not effectively treat this VOC.

Alternative 4: Extract/Treat/River

Alternative 4 also involves the extraction of 3,000 gpm of contaminated groundwater for 12 years, and the same treatment methodology and the same groundwater monitoring requirements as Alternative 2. However, rather than providing the treated water to a public water purveyor, the treated water would be discharged to the Los Angeles River.

Alternative 5[1]: Extract/Treat plus Ion Exchange/Reinject

Alternative 5 also involves the extraction of 3,000 gpm of contaminated groundwater for 12 years, and the same monitoring requirements as Alternative 2. Alternative 5 differs from Alternative 2 in that the extracted groundwater would be treated for VOCs using dual-stage air stripping with vapor-phase GAC adsorption for emissions control and then would be treated using ion exchange to reduce the nitrate levels in the water to meet the nitrate MCL. The treated water would then be reinjected.

Alternative 6: Extract/Treat/Spreading Grounds

Alternative 6 also involves the extraction of 3,000 gpm of contaminated groundwater for 12 years, the same treatment approach as described in Alternative 2 and the same ground water monitoring requirements as Alternative 2. However, unlike Alternative 2, the treated water would be recharged to the aquifer at the Headworks Spreading Grounds.

Alternative 7[2]: Extract/Treat/Reinject

Alternative 7 also involves the extraction of 3,000 gpm of contaminated groundwater for 12 years, the same treatment system, the same groundwater monitoring requirements and provides for abandonment or rehabilitation of production wells as required for Alternative 2. However, the treated water would be reinjected. The reinjection shall occur where nitrate levels in the aquifer are equal to or greater than the nitrate levels in the water to be reinjected.

9.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

A comparative analysis of the alternatives against the nine evaluation criteria is presented in this section.

No Action versus the Nine Criteria. Clearly, Alternative 1 would not be effective in the short- and long-term in protecting human health and the environment as it does not provide for removing any contaminants from the upper zone of the aquifer, for inhibiting further downgradient and vertical contaminant plume migration, or for reducing the toxicity, mobility and volume of contaminants through treatment. Implementing the no-action alternative would be

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[1] Note: Alternative #5 presented here in this ROD was formerly Alternative #8 in the Feasibility Study for the Glendale Study Area: North Plume Operable Unit (April 1992).

[2] Note: Alternative #7 presented here in this ROD was formerly Alternative #10 in the Feasibility Study for the Glendale Study Area: North Plume Operable Unit (April 1992).

simple and inexpensive since it involves only groundwater monitoring. As indicated by the baseline risk assessment for the Glendale North OU presented in the RI Report for the Glendale Study Area (January 1992), Alternative 1 could pose both carcinogenic and non-carcinogenic risk if a person were exposed to the groundwater from the upper zone of the aquifer. Loss of a valuable water resource from continued degradation of the aquifer and discharge of valuable water to the river is a major concern.

Overall Protection of Human Health and the Environment, Short Term Effectiveness and Long Term Effectiveness. Alternatives 2 through 7 are effective in the short-term and long-term in reducing the risk to human health and the environment by removing contaminants from the upper zone of the aquifer, by inhibiting further downgradient and vertical contaminant plume migration, and by reducing the toxicity, mobility, and volume of contaminants in the aquifer. Alternatives 2 through 4 have the same effectiveness in inhibiting downward and downgradient migration of the contaminant plumes, in removing contaminant mass from the Upper Zone of the aquifer, and in reducing the discharge of contaminated groundwater to the Los Angeles River. During the first 12 years of operation, Alternatives 2 through 4 are estimated to remove approximately 82 percent of the total estimated initial TCE mass, and may reduce the maximum TCE concentration remaining in the upper zone of the aquifer by as much as 88 percent.

Alternative 6 is effective in inhibiting downward and downgradient migration of the contaminant plumes, in removing contaminant mass from the upper zone of the aquifer, and in reducing the discharge of contaminated groundwater to the Los Angeles River. Because Alternatives 6 involves recharge at the Headworks Spreading Grounds which would push a portion of the contaminant plume located upgradient of the extraction sites towards the extraction wells, this alternative may remove slightly more mass (86 percent of the estimated initial TCE mass) than Alternatives 2 through 4 (82 percent of the estimated initial TCE mass). Alternative 6 also reduces the maximum TCE concentration remaining in the Upper Zone of the aquifer by as much as 88 percent.

Alternatives 5 and 7 have the same effectiveness in inhibiting downward and downgradient migration of the contaminant plumes and in removing contaminant mass from the Upper Zone of the aquifer. The extraction well configuration proposed in the FS report for Alternative 5 is different from those proposed for Alternatives 2 through 6, in that three extraction sites are used instead of four, to accommodate injection downgradient of extraction. Reinjecting the treated groundwater may increase the discharge of contaminated groundwater to the river near the injection wells in excess of the discharge estimated in the no-action alternative. However, the injection of 3,000 gpm of treated water would dilute the contamination in the groundwater and decrease the contaminant

concentration levels in the groundwater discharged to the Los Angeles River. Other injection sites could be investigated during the remedial design phase. The model estimates that approximately 89 percent of the initial estimated mass of TCE in the groundwater would be removed during the first 12 years of operation.

Alternatives 5 and 7 reduce the maximum TCE concentration remaining in the Upper Zone of the aquifer by as much as 86 percent. Although slightly more contaminant mass (89 percent versus 82 and 86 percent for Extraction Scenarios 4 and 8, respectively) is removed in this scenario due to the effects of aquifer recharge, the TCE concentration remaining in the Upper Zone is slightly higher. The higher TCE concentration is due to the downgradient reinjection of the treated groundwater, which may tend to restrict the remaining contaminant mass to a slightly smaller area.

Reduction of Toxicity, Mobility and Volume through Treatment. The VOC treatment technologies used in Alternatives 2, 4, 5, 6, and 7 (dual-stage air stripping with vapor-phase GAC adsorption and/or liquid phase GAC adsorption) and used in Alternative 3 (perozone oxidation followed by air stripping with vapor-phase GAC adsorption) are technically feasible and effective in meeting ARARs for VOCs in the extracted and treated groundwater. Treatment of the extracted contaminated groundwater via dual-stage air stripping with vapor-phase GAC adsorption and/or liquid phase GAC adsorption would reduce substantially the toxicity and mobility of contaminants in the aqueous phase. The adsorption of contaminants onto the GAC would reduce the volume of contaminated media. However, a substantially larger quantity of contaminated GAC media would be generated with the dual-stage air stripping system compared to perozone oxidation (which is a destructive technology) followed by air stripping with vapor-phase GAC adsorption. This contaminated GAC would require disposal or regeneration.

Treatment of the extracted contaminated groundwater via perozone oxidation followed by air stripping with vapor-phase GAC adsorption would destroy greater than 90 percent of the VOCs, and generate a smaller quantity of contaminated GAC media compared to dual-stage air stripping. VOC treatment using perozone oxidation has only been tested and applied in pilot-scale/limited applications, and limited O&M data are available; however, a demonstration-scale (2,000-gpm) facility has begun operation in North Hollywood for treating TCE- and PCE-contaminated groundwater. This prototype facility should provide useful information regarding the long-term performance and O&M costs.

As a result of comments received during the public comment period, EPA further evaluated the use of perozone oxidation for the Glendale North OU. Additional research on perozone use and revised cost estimates based on a bench scale treatability study can be found in the following technical memorandum: <u>Applicability of</u>

Perozone Treatment Process for the Glendale North Operable Unit Groundwater Remediation (March 12, 1993) included in Supplement 1 of the Administrative Record for the Glendale North OU available at all five information repositories for the San Fernando Valley Superfund sites. Carbon tetrachloride, which is one of the contaminants found in the groundwater of the Glendale North plume, is not as readily treated using the perozone process and must be treated using air-stripping or liquid phase GAC to ensure that the treated water will meet all drinking water standards for VOCs. In addition, incomplete oxidation can lead to the formation of by-products such as formaldehyde which would also need to addressed. The bench scale treatability study found that the total present worth cost estimated in the FS report is underestimated and $500,000 or more could be added to the estimated $31,200,000. These factors coupled with the uncertainties associated with design, capital and operational costs and reliability, and finally the fact that a municipality will be receiving this water, all combine to make Alternative 3 less preferable than Alternatives 2 and 4 through 7 which propose using air stripping or liquid phase GAC for VOC treatment.

Compliance with ARARs. As discussed in the ARARs section (Section 10) of this ROD, since this remedial action is an interim action, there are no chemical-specific ARARs for aquifer cleanup for any of the alternatives. For Alternatives 2-7, the chemical-specific ARARs for the treated water from the VOC treatment plant at this site are Federal MCLs and more stringent State MCLs for VOCs. Alternatives 2, 4, 5, 6 and 7 are expected to meet these ARARs for the treated water. There is some uncertainty regarding the ability of Alternative 3 to meet these ARARs because perozone has not been used to treat such high concentrations of VOCs at such high flow rates. Therefore, there could be problems unless the air stripping unit proposed to follow the perozone system is a redundant treatment system which would add substantially to the cost.

For the Alternatives that involve distribution of the treated water to a public water supply system (Alternatives 2 and 3), secondary drinking water standards are ARARs and will be met prior to blending of the water for nitrate. For water that will be served at the tap, all applicable requirements will have to be met after blending, including the nitrate MCL. For Alternatives 6 and 7, the nitrate levels in the treated groundwater will meet ARARs by ensuring that recharge of the treated groundwater (Alternative 6) and reinjection of the treated water (Alternatives 5 and 7) occurs where levels of these substances in the receiving aquifer are similar to those in the treated water to be discharged, recharged or reinjected. EPA has confirmed that nitrate levels in the groundwater beneath the Headworks Spreading Grounds are similar to the nitrate levels observed in the vicinity of proposed extraction well sites. In Alternative 4, the treated water will meet MCLs for VOCs prior to discharge to the Los Angeles River (which is on-site).

For a more detailed discussion of ARARs please review Section 10 of this ROD .

Implementability. Technically and administratively, Alternatives 2, 3, 4 and 6 could be implemented. The technologies considered for groundwater monitoring, extraction, and conveyance are proven and have been applied extensively. For Alternative 6, the availability of the Headworks Spreading Grounds for discharge of extracted and treated groundwater would need to be addressed. Technically, Alternatives 5 and 7 could probably be implemented, but using ion exchange for nitrate treatment (Alternative 5) and reinjection for treated groundwater disposal may pose some technical and administrative feasibility issues. In particular, disposing of the waste brine generated from backwashing the ion exchange system may restrict the technical and administrative feasibility of using ion exchange for nitrate treatment. Several technical feasibility issues may arise when injecting treated groundwater. At the location of the proposed reinjection sites, the groundwater is approximately 30 feet below the ground surface; thus, only a limited hydraulic head could be applied to induce injection. Groundwater-injection pilot studies may be required prior to full-scale application. In addition, other possible locations for reinjection well placement can be proposed and reviewed during the design phase.

EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The City of Glendale has indicated that it has sufficient water credits and capacity in their existing water system to accept this amount of extracted treated water. Therefore, combining the treatment plants for the Glendale North and South OUs would be implementable.

State and Public Acceptance. Based on comments received during the public comment period, the State and the public generally expressed support for Alternatives 2 through 7. In a letter dated June 16, 1992, the State (DTSC) expressed its concurrence with EPA's preferred alternative presented in the Proposed Plan for the Glendale North OU which is now EPA's selected remedy for the Glendale North OU. In a letter dated March 29, 1993, after reviewing the Draft ROD for the Glendale North OU, DTSC stated that it agreed with EPA's selected remedy for the Glendale North OU. EPA received several comments from other State agencies, the City of Glendale and members of the Glendale community specifically in support of Alternatives 2 and 7. In a letter dated September 8, 1992, the Los Angeles Region of the Regional Water Quality Control Board offered support for EPA's preferred alternative presented in

the Proposed Plan for the Glendale North OU but requested to go "on record" as favoring the direct use of the treated water as opposed to reinjecting it.

One member of the public commented that he did not like Alternative 2 and asked that EPA not include distribution to a public water supply as a final use of the treated water. The State Water Resources Control Board, City of Glendale, and many other commenters did not support Alternative 4, involving discharge to the Los Angeles River. A few commenters including the City of Glendale had a preference for Alternative 3, which proposes perozone for VOC treatment. Comments received during the public comment period along with EPA responses are presented in Part III of this ROD, the Responsiveness Summary.

A public meeting was held in the City of Glendale on July 23, 1992, to discuss EPA's preferred alternative and the other alternatives. At this meeting EPA gave a brief presentation regarding the Proposed Plan, answered questions, and accepted comments from members of the public.

At the public meeting and in a subsequent letter, the City of Glendale emphasized that it would like to receive greater than 3,000 gpm of extracted, treated groundwater. The City also indicated that it had stored water credits and water rights sufficient to accept greater than 5,000 gpm of extracted, treated groundwater from the San Fernando Valley. As a result of the City's oral and written comments on the Glendale North OU, EPA has determined that the treatment plants for the Glendale North and South OUs shall be combined and the total 5,000 gpm of treated water will be conveyed to the City of Glendale.

Cost. The estimated total present worth of Alternatives 2, 3, 4, 6, and 7 ranges from $28,200,000 to $38,700,000. The total present worth costs for Alternative 2 fall within the middle of this range at $36,400,000. The total present worth for Alternative 5 which includes nitrate treatment using ion exchange is $61,400,000. Using ion exchange for nitrate treatment adds significantly to the cost of the alternatives.

EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The costs of the two separate OU projects is estimated to be $36,400,000 for Glendale North and $25,020,000 for Glendale South. Therefore, these two separate OU projects total $61,420,000. Recent EPA cost estimates (included in Supplement 1 to the Glendale North OU Administrative Record) indicate that combining the Glendale North and South OUs could result in a cost savings of $13,888,000.

Although the cost estimate for Alternative 2 is slightly higher than some of the other alternatives, the estimated costs presented here and in the FS do not take into account the value of utilizing the groundwater resource as opposed to disposing of the water in the Los Angeles River (Alternative 4) or reinjecting the water back into the aquifer (Alternative 7).

10.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

This section discusses Applicable or Relevant and Appropriate requirements (ARARs) for the Glendale North OU. Under Section 121(d)(1) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (collectively, CERCLA), 42 U.S.C. § 9621(d) remedial actions must attain a level or standard of control of hazardous substances which complies with ARARs of Federal environmental laws and more stringent state environmental and facility siting laws. Only state requirements that are more stringent than Federal ARARs, and are legally enforceable and consistently enforced statewide may be ARARs.

Pursuant to Section 121(d) of CERCLA, the on-site portion of a remedial action selected for a Superfund site must comply with all ARARs. Any portion of a remedial action which takes place off-site must comply with all laws legally applicable at the time of the off-site activity occurs, both administrative and substantive.

An ARAR may be either "applicable", or "relevant and appropriate", but not both. According to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300), "applicable" and "relevant and appropriate" are defined as follows:

- Applicable requirements are those cleanup standards, standards of control, or other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than Federal requirements may be applicable. "Applicability" implies that the remedial action or the circumstances at the site satisfy all of the jurisdictional prerequisites of a requirement.

- Relevant and appropriate requirements are those cleanup standards, standard of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal environmental or state environmental or facility siting laws that, while

not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and that are more stringent than Federal requirements may be relevant and appropriate.

Chemical-Specific ARARs. Chemical-specific ARARs are health- or risk-based concentration limits, numerical values, or methodologies for various environmental media (i.e., groundwater, surface water, air, and soil) that are established for a specific chemical that may be present in a specific media at the site, or that may be discharged to the site during remedial activities. These ARARs set limits on concentrations of specific hazardous substances, pollutants, and contaminants in the environment. Examples of this type of ARAR are ambient water quality criteria and drinking water standards.

Location-Specific ARARs. Location-specific requirements set restrictions on certain types of activities based on site characteristics. Federal and state location-specific ARARs are restrictions placed on the concentration of a contaminant or the activities to be conducted because they are in a specific location. Examples of special locations possibly requiring ARARs may include flood plains, wetlands, historic places, and sensitive ecosystems or habitats.

Action-Specific ARARs. Action-specific requirements are technology- or activity-based requirements which are triggered by the type of remedial activities under consideration. Examples are Resource, Conservation and Recovery Act (RCRA) regulations for waste treatment, storage or disposal.

Neither CERCLA nor the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (400 C.F.R. Part 300) provides across-the-board standards for determining whether a particular remedy will result in an adequate cleanup at a particular site. Rather, the process recognizes that each site will have unique characteristics that must be evaluated and compared to those requirements that apply under the given circumstances. Therefore, ARARs are identified on a site-specific basis from information about specific chemicals at the site, specific features of the site location, and actions that are being considered as remedies.

The following section outlines the Applicable or Relevant and Appropriate Requirements (ARARs) that apply to this site.

The substantive portions of SCAQMD Regulation XIII, comprising Rules 1301 through 1313, on new source review are also ARARs for the Glendale North OU.

The SCAQMD also has rules to limit the visible emissions from a point source (Rule 401), which prohibits discharge of material that is odorous or causes injury, nuisance or annoyance to the public (Rule 402), and limits down-wind particulate concentrations (Rule 403). EPA has determined that these rules are also ARARs for the Glendale North OU interim remedy.

10.3.2 Water Quality Standards for Reinjection and Discharges of Treated Water to Surface Waters or Land

Federal Standards

The Safe Drinking Water Act provides Federal authority over injection wells. The Federal Underground Injection Control Plan is codified in Part 144 of 40 C.F.R and prohibits injection wells such as those that would be located at the Site from (1) causing a violation of primary MCLs in the receiving waters and (2) adversely affecting the health of persons. 40 C.F.R. §144.12. Section 144.13 of the Federal Underground Injection Control Plan provides that contaminated ground water that has been treated may be reinjected into the formation from which it is withdrawn if such injection is conducted pursuant to a CERCLA cleanup and is approved by EPA. 40 C.F.R. §144.13. These regulations are applicable to any Glendale North OU treated water that is reinjected into the Glendale North groundwater.

The Resource Conservation and Recovery Act (RCRA) Section 3020 is also an action-specific ARAR. This section of RCRA provides that the ban on the disposal of hazardous waste into a formation which contains an underground source of drinking water (set forth in Section 3020(a)) shall not apply to the injection of contaminated groundwater into the aquifer if: (i) such injection is part of a response action under CERCLA; (ii) such contaminated groundwater is treated to substantially reduce hazardous constituents prior to such injection; and (iii) such response action will, upon completion, be sufficient to protect human health and the environment. RCRA Section 3020(b).

State Standards

For any reinjection to the basin, including spreading, or discharges to surface water that occur on-site, the reinjected or discharged water must meet all action-specific ARARs for such reinjection or discharge. The ARAR applicable to the recharged (Alternative 6) or reinjected (Alternative 5 or 7) water is:

- The Los Angeles Regional Water Quality Control Board's Water Quality Control Plan, which incorporates State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California." Resolution No. 68-16 requires maintenance of existing State water quality unless it is demonstrated that a change will benefit the people of California, will not unreasonably affect present or potential uses, and will not result in water quality less than that prescribed by other State policies.

EPA anticipates that there may be short-term discharges of treated water to the Los Angeles River during the initial operation of the VOC treatment plant and on certain other limited occasions. The ARAR for any treated water that is discharged, on a short term basis, to the Los Angeles River is the National Pollutant Discharge Elimination System (NPDES) Program which is implemented by the LARWQCB. In establishing effluent limitations for such discharges, the LARWQCB considers the Water Quality Control Plan for the Los Angeles River Basin (the "Basin Plan"), which incorporates Resolution 68-16, and the best available technology economically achievable (BAT). See, Cal. Water Code § 13263.

Since the RWQCB did not identify specific substantive discharge requirements or technology standards for such temporary discharges, EPA has reviewed the Basin Plan and considered BAT and has made certain determinations for the short-term discharges to the Los Angeles River. In order to comply with this ARAR, any treated groundwater that will be discharged, on a short-term basis, to the Los Angeles River on-site must be treated to meet Federal MCLs or State MCLs for VOCs, whichever is more stringent.

The treated water will also contain nitrate. The Basin Plan states that the level of nitrate shall not exceed 45 mg/l in water designated for use as domestic or municipal supply. According to the Basin Plan, the Los Angeles River is not designated for municipal or domestic water supply. Therefore, the 45 mg/l is not an ARAR for the short-term discharges associated with the Glendale North OU.

EPA has also considered what BAT could be for such short-term discharges. For on-site discharges, meeting the nitrate MCL through treatment by ion exchange would result in complex technical issues, such as disposal of waste brine, and would be very costly given the temporary nature of such discharges. Therefore, EPA has not identified ion exchange as the NPDES treatment standard for such short-term discharges.

EPA also considered the Mineral Quality Objective for the Los Angeles River of 36 mg/l (8 mg/l nitrate-N) established in the Basin Plan. Because the anticipated average concentration of

nitrate in the short-term discharge is likely to be close to the MCL, and any discharge would be short-term, there should not be any significant long-term effects on the mineral quality of the Los Angeles river associated with short-term discharges of VOC-treated water from the Glendale North OU.

It should also be noted that extractions of 3,000 gpm of groundwater per the Glendale North OU will result in decreased amounts of contaminated groundwater recharging to the Los Angeles River, thereby further protecting its beneficial uses.

Again, with respect to VOCs, any on-site discharge to the Los Angeles River must meet Federal MCLs or State MCLs for VOCs, whichever is more stringent. Since short-term discharges to the Los Angeles River would occur on-site, the procedural requirements for Federal National Pollution Discharge Elimination System (NPDES) as implemented in RWQCB Waste Discharge Requirements (WDRs) issued under Section 13263 of the California Water Code would not be ARARs.

10.3.3 Secondary Drinking Water Quality Standards

The State of California's Secondary Drinking Water Standards (SDWS) are ARARs for the Glendale North OU if the final use option involves serving treated groundwater as drinking water. 22 CCR §64471. The California SDWS are selected as ARARs because they are promulgated state standards and are relevant and appropriate to the action of supplying the treated water to a public water supplier. Although California SDWS are not applicable to non-public water system suppliers, the California SDWS are relevant and appropriate since the treated water under this action would be put into the City's drinking water system action. Since the Federal SDWS are not enforceable limits and are intended as guidelines, they are not ARARs for this action. Furthermore, since the State SDWS are more stringent than the Federal SDWS, EPA has not selected the Federal SDWS as requirements for this action. In summary, if the treated water is to be served as drinking water, the treated water prior at the point of delivery must meet the California SDWS. See Figure 10-1. If the treated water is reinjected or discharged to the river, the water will not be required to meet State SDWS.

10.3.4 Resource Conservation and Recovery Act (RCRA) and Hazardous Solid Waste Amendment (HSWA) Standards, 42 U.S.C. §§6901-6987.

RCRA, passed by Congress in 1976 and amended by the Hazardous and Solid Waste Amendments of 1984, contains several provisions that are ARARs for the Glendale North OU. The State of California has been authorized to enforce its own hazardous waste regulations (California Hazardous Waste Control Act) in lieu of the Federal RCRA Program administered by the EPA. Therefore, State regulations in the California Code of Regulations (CCR), Title 22, Division 4.5, Environmental Health Standards for the management of Hazardous

Wastes (hereinafter the State HWCL Regulations), are now cited as ARARs instead of the Federal RCRA Regulations.

Since the source of the contaminants in the groundwater is unclear, the contaminated groundwater is not a listed RCRA waste. However, the contaminants are sufficiently similar to RCRA wastes that EPA has determined that portions of the State's HWCL Regulations are relevant and appropriate. Specifically, the substantive requirements of the following general hazardous waste facility standards are relevant and appropriate to the VOC treatment plant for Alternatives 2 through 7: Section 66264.14 (security requirements), Section 66264.15 (location standards) and Section 66264.25 (precipitation standards).

In addition, the air stripper would qualify as a RCRA miscellaneous unit if the contaminated water constitutes RCRA hazardous waste. EPA has determined that the substantive requirements for miscellaneous units set forth in Sections 66264.601 - .603 and related substantive closure requirements set forth in 66264.111 - .115 are relevant and appropriate for the air stripper. The miscellaneous unit and related closure requirements are relevant and appropriate because the water is similar to RCRA hazardous waste, the air stripper appears to qualify as a miscellaneous unit, and the air stripper should be designed, operated, maintained and closed in a manner that will ensure the protection of human health or the environment.

The land disposal restrictions (LDR), 22 CCR Section 66268 are relevant and appropriate to discharges of contaminated groundwater to land. The remedial alternatives presented do not include land disposal of untreated groundwater. Because of the uncertainty in the levels of contamination and volumes of water to be derived from the development, purging and/or aquifer testing of monitoring and/or extraction wells at the Glendale North OU, these waters must be treated to meet Federal and State MCLs for VOCs, whichever is more stringent, prior to discharge to land.

The container storage requirements in 22 CCR Sections 66264.170 -.178 are relevant and appropriate for the storage of contaminated groundwater over 90 days.

On-site storage or disposal of the spent carbon from the treatment system could trigger the State HWCL requirements for storage and disposal if the spent carbon contains sufficient quantities of hazardous constituents that cause the spent carbon to be classified as a characteristic hazardous waste. If the spent carbon is determined to be a hazardous waste under HWCA, the requirements for handling such waste set forth in Sections 66262 and 66268 are applicable.

Certain other portions of the State's HWCL's regulations are considered to be relevant but not appropriate to the VOC treatment

plant. EPA has determined that the substantive requirements of Section 66264.15 (general inspection requirements), Section 66264.15 (personnel training) and Sections 66264.30-66264.56 (Preparedness and Prevention and Contingency Plan and Emergency Procedures) are relevant but not appropriate requirements for this treatment system. EPA has made this determination because the treatment plant will be required to have health and safety plans and operation and maintenance plans under CERCLA that are substantively equivalent to the requirements of Sections 66264.15, 66264.30-66264.56.

10.4 Summary of ARARs for the Glendale North OU Interim Remedy

EPA has determined a number of chemical-, and action-specific ARARs for the Glendale North OU interim remedy. All of the alternatives that involve groundwater extraction and treatment could achieve the chemical-specific treatment standards for the groundwater at the point of delivery (See Figure 10-1). However, Alternative 3 which uses perozone is a less certain technology than air stripping or liquid-phase GAC adsorption for such a large volume of water and therefore is somewhat less likely to achieve the chemical-specific ARARs.

11.0 THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, EPA has determined that Alternative 2: Extraction, Treatment of VOCs by air stripping (either single- or dual-stage) or liquid phase GAC, Blending to meet the nitrate standard and Conveyance to a public water distribution system, in combination with Alternative 7 (as a contingency): Extraction, Treatment of VOCs, and Reinjection, is the most appropriate interim remedy for the Glendale North OU.

Alternative 2 includes the extraction of 3,000 gpm of contaminated groundwater for 12 years. The extraction wells will be new and will be located to inhibit most effectively the migration of the contaminant plume while maximizing the extraction of the most contaminated groundwater. The most contaminated groundwater is located in the upper or shallowest zone of the aquifer. Various locations and scenarios for extraction wells and rates of extraction are proposed in the FS report for the Glendale North OU; however, all design decisions for this interim remedy will be made during the remedial design phase. During the remedial design phase one of the locations proposed for extraction wells and scenarios for rates of extraction per individual well may be selected or new ones may be selected.

The extracted groundwater will be filtered to remove any suspended solids, if necessary, and then treated for VOCs using dual-stage or single-stage air stripping with vapor-phase GAC adsorption for emissions control or liquid phase GAC may also be

used. Whether air-stripping (dual versus single) or liquid phase GAC will be used will be determined during remedial design as will the exact location for the treatment plant (note that four possible locations were proposed in the FS report). If air-stripping is used for VOC treatment, the air stream will be treated using a vapor-phase GAC adsorption system to ensure that air emissions meet Federal air quality standards as regulated by the South Coast Air Quality Management District and described in the ARARs section of this ROD.

After the extracted groundwater is treated for VOCs, the treated water exiting the treatment plant shall meet all MCLs and secondary drinking water standards with the exception of nitrate. The VOC-treated water will then be blended with water which does not contain nitrate in excess of the nitrate MCL to reduce nitrate levels to meet the nitrate MCL. The treated and blended water to be delivered to a public drinking water supply shall meet all legal requirements. The water will then be conveyed to the City of Glendale and/or another municipality for distribution through the public water supply system.

As a result of comments by the City of Glendale on the Glendale North OU Proposed Plan (July 1992) and Glendale South OU Proposed Plan (September 1992) which indicated that the City had sufficient water credits to accept the treated water from both of these OUs, and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The Glendale South OU Record of Decision will also reflect this decision to combine the treatment plants.

However, if the City of Glendale does not agree to accept the treated water from both OUs (possibly due to water supply needs) or if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale North OU, the treatment plants will not be combined.

EPA has selected Alternative 7, reinjection of the treated water, as a contingency if the City of Glendale or another San Fernando Valley water purveyor does not accept any or all of the treated water. As a result, any remaining portion of water not accepted by the City of Glendale will be: first, offered to another San Fernando Valley water purveyor or second, reinjected into the aquifer, per Alternative 7.

With the exception of blending to meet the nitrate MCL and final use of the treated water, Alternative 7 is identical to Alternative 2 above.

After the extracted groundwater is treated for VOCs, the treated water exiting the treatment plant shall meet all MCLs for VOCs but will not need to meet secondary drinking water standards. with the exception of nitrate. The VOC-treated water will then be reinjected into the aquifer. To comply with ARARs, nitrate concentrations in the water to be reinjected will have to be similar to or lower than the levels of nitrate in the area of the aquifer where the reinjection will occur.

Reinjection wells will be new wells and will be located such that the effectiveness of inhibition of further downgradient groundwater contamination migration and contaminant mass removal from the aquifer are optimized, to the maximum extent practicable. Locations and injection rates for injection wells are proposed in the FS report for the Glendale North OU, however, all design decisions for this interim remedy will be made during the remedial design phase. During the remedial design phase one of the locations proposed for reinjection wells may be selected or new ones may be selected.

Existing production wells that may provide pathways for vertical migration of contamination will be abandoned or rehabilitated, if required. While the Glendale North OU FS report proposed several production wells be abandoned or rehabilitated, these are only proposals. Again, final determinations regarding which production wells will be abandoned and/or rehabilitated, if any, will be made during remedial design.

Alternative 7 production well abandonment and/or rehabilitation and monitoring well requirements are identical to those discussed above for Alternative 2.

Groundwater monitoring wells shall be installed to evaluate the effectiveness of the Alternative 7 interim remedial action for the Glendale North OU. More specifically, groundwater monitoring will be conducted no less frequently than quarterly to: 1) evaluate influent and effluent water quality, 2) determine and evaluate the capture zone of the extraction wells, 3) evaluate the vertical and lateral (including downgradient) migration of contaminants, 4) to evaluate the effectiveness of the reinjection well system and its impact on the remedy and 5) to monitor any other factors associated with the effectiveness of the Alternative 7 interim remedy determined to be necessary during remedial design. Once the Glendale North OU remedial action has been operating for six years, monitoring frequency may be decreased to less than quarterly if conditions warrant.

The VOC treatment plant of the Glendale North OU interim remedy (whether it be Alternative 2, Alternative 7 or a combination thereof) shall be designed and operated so as to prevent the unknowing entry, and minimize the possible effect of unauthorized entry, of persons or livestock into the active portion of the

facility. One means of preventing unauthorized entry would be to erect a perimeter fence around the VOC treatment plant. This fence should be in place prior to initiation of the remedial action and should remain in place throughout the duration of the remedy. The VOC treatment plant shall also be designed and operated so as to prevent releases of contaminated groundwater from the plant.

The selected remedy for the Glendale North OU meets all of EPA's nine evaluation criteria. The selected remedy is equally effective as the other alternatives in the short-term and long term reduction of risk to human health and the environment by removing contaminants from the upper zone of the aquifer, by inhibiting further downgradient and vertical migration of the contaminant plume, and by reducing the toxicity, mobility, and volume of contaminants in the aquifer.

The selected remedy is estimated to remove approximately 82% (Alternative 2) to 89% (Alternative 7) of the total estimated initial TCE mass after 12 years of extraction, and may reduce the maximum TCE concentration remaining in the upper zone of the aquifer by 88% or more. Thus, at the end of the 12 year interim remedy, the maximum TCE concentration remaining in the upper zone of the aquifer would be approximately 250 ug/l. The selected remedy is estimated to significantly inhibit downgradient migration of contaminated groundwater as well as vertical migration from the upper to the lower zone of the aquifer. Vertical migration will be further curtailed with the rehabilitation and/or abandonment of inactive production wells screened in both the upper and lower zones. Furthermore, the modeling conducted as part of the FS indicated that the 3000 gpm extraction rate of the selected remedy would be effective in inhibiting the discharge of contaminated groundwater to the Los Angeles River by reducing groundwater levels to below river bottom elevations.

The VOC treatment technologies selected (dual- or single-stage air stripping with vapor phase GAC or liquid phase GAC) are technically feasible and proven effective at meeting ARARs for VOCs in the treated groundwater.

Alternative 2, in combination with alternative 7, could be implemented, both technically and administratively. Other alternatives which dispose of the water by spreading at the Headworks Spreading Grounds may not be implementable because Headworks is widely used and may not be available.

In a letter dated March 29, 1993, the State expressed agreement with EPA's selected remedy. EPA received several public comments during the sixty day public comment, the majority of which expressed support for Alternative 2, primarily because this alternative provides the treated water to a drinking water purveyor. EPA's preferred alternative. These comments, along with

EPA's responses are presented in Part III of this ROD, the Responsiveness Summary.

The selected remedy is protective of human health and the environment, meets ARARs, and unlike some other alternatives such as Alternative 4 which includes discharge of the treated water to the Los Angeles River, provides beneficial uses (distribution to a public water supply and/or reinjection) for the treated water. The selected remedy is cost-effective. The estimated cost of Alternative 2 has a total present worth of $36,400,000, which is in the middle of the range for all seven alternatives and this cost would be significantly reduced by combining the treatment plants for the OUs (based on a total cost savings of up to $13.8 million for both OUs). The estimated total cost of Alternative 7 is $38,700,000, which is higher than Alternative 2 but significantly less than Alternative 5, the most expensive alternative proposed. As discussed in Section 10 (ARARs), Alternative 5 exceeds the chemical-specific ARARs because it involves treatment of nitrate by ion exchange.

12.0 STATUTORY DETERMINATIONS

As required under Section 121 of CERCLA, the selected interim remedial action is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the interim remedial action, and is cost effective. The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment to reduce toxicity, mobility, and volume as a principal element.

The selected interim remedial action is protective of human health and the environment in that it removes a significant VOC contaminant mass from the upper zones of the aquifer and inhibits further downgradient and vertical migration of contaminated groundwater.

The VOC treatment technologies selected (dual- or single-stage air stripping with vapor phase GAC or liquid phase GAC) are technically feasible and proven effective at meeting ARARs for VOCs in the treated groundwater and the air.

The selected remedy permanently and significantly reduces the toxicity, mobility, and volume of hazardous substances in the aquifer as well as the extracted groundwater.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, EPA shall conduct a review, pursuant to CERCLA Section 121, 42 U.S.C. Section 9621, at least once every five years after commencement of remedial action

to ensure that the remedy continues to provide adequate protection of human health and the environment.

13.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The only significant change to the Glendale North OU interim remedy proposed in the Proposed Plan fact sheet dated July 1992 involves the volume of water to be conveyed to the City of Glendale.

As a result of oral comments at the Glendlae North OU Proposed Plan public meeting as well as written comments by the City of Glendale on the Glendale North OU Proposed Plan (July 1992) and Glendale South OU Proposed Plan (September 1992) which indicated that the City had sufficient water credits to accept the treated water from both the Glendale North and Glendale South OUs, and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The Glendale South OU Record of Decision will also reflect this decision to combine the treatment plants.

However, if the City of Glendale does not agree to accept the treated water from both OUs (possibly due to water supply needs) or if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale North OU, the treatment plants will not be combined and only the extracted treated water from the Glendale North OU will be conveyed to the City of Glendale for distribution to its public water supply system. As a further contingency, if the City of Glendale does not accept any or all of the treated water, any remaining portion of water will be 1) offered to another San Fernando Valley water purveyor or 2) reinjected/recharged into the aquifer.

The impact of this change is that an additional 2,000 gpm of treated water would be provided to the City. In its comments to EPA on both the Glendale North and South OU Proposed Plans, the City indicated that it would be able to accept the additional treated water. The cost of construction and operation and maintenance of the combined treatment plant is expected to be less than the cost of construction and operation and maintenance of individual treatment plants. Recent EPA cost estimates indicate that as much as $13,888,000 would be saved on the total present worth cost by combining the two treatment plants.

PART III. RESPONSIVENESS SUMMARY

For Public Comments received during the Public Comment Period for the Glendale North Operable Unit Interim Remedy at the San Fernando Valley Superfund Site Los Angeles County, California

EXECUTIVE SUMMARY

This Responsiveness Summary addresses comments received from the public, state agencies, and local agencies on EPA's proposed interim cleanup plan for the Glendale North OU. Comments from the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) on the RI report for the Glendale Study Area, the Glendale North FS Report, and the draft Proposed Plan for the Glendale North OU were received by EPA prior to issuing the Proposed Plan and initiating the public comment period. DTSC's comments and EPA's responses are available for review in the Administrative Record for the Glendale North OU and are not included in this responsiveness summary.

EPA held a sixty day public comment period on the RI and FS reports, Proposed Plan and other Glendale North OU Administrative Record documents between July 6, 1992 and September 8, 1992. A public meeting was held in Glendale on July 23, 1992. Approximately 30 representatives of the community, state and local agencies, and EPA attended the meeting. EPA staff made a presentation on the Glendale North OU alternatives, including EPA's preferred alternative, and answered questions. A transcript of the meeting is included in the Supplement 1 to the Administrative Record for the Glendale North OU.

EPA received comments orally from three members of the public during the July 23, 1992 public meeting. The first commenter was a representative of the City of Glendale. The City's comments included a request for additional water (up to 12,000 gpm) and their overall support of EPA's preferred alternative for the Glendale North OU. EPA responded to this comment by stating that the Glendale North OU remedy involves extractions of 3,000 gpm only. However, EPA has since determined that the Glendale North and South OUs will be combined and the extracted, treated water will be conveyed to the City of Glendale. If this is accomplished, an additional 2,000 gpm of extracted, treated water would be provided to the City, for a total of 5,000 gpm.

The second commenter expressed an interest in seeing EPA consider selecting Alternative 3 for the Glendale North OU interim remedy. Similar comments were also made by the City of Glendale. Alternative 3 involves treating VOC contamination using an innovative technology called perozone (hydrogen peroxide and

ozone). EPA explained that this VOC treatment is not proven at high flow rates (> 3,000 gpm), may be substantially more costly than estimated and is not effective at treating some of the Glendale North OU contaminants (e.g. carbon tetrachloride). Since the final use of the treated water is distribution to a public water supply system, EPA determined that selecting a proven technology (e.g., air stripping or liquid phase GAC) was preferable.

The third commenter expressed concern about using groundwater from the lower zone of the aquifer for blending to meet the nitrate MCL. The State also expressed this same concern to EPA in writing. EPA explained that it shares these concerns because this water is also likely to be contaminated and extracting it would likely result in vertical migration of both VOC and nitrate contamination. In addition, such extractions might interfere with the effectiveness of the Glendale North OU remedy.

EPA also received nine letters containing comments from interested community members, the City of Glendale, the California Department of Health Services Office of Drinking Water (ODW), and the Los Angeles Region of the California Regional Water Quality Control Board (RWQCB). A tenth letter was received one day after the close of the public comment period. The comments included in the tenth letter were similar to those of earlier commenters and thus EPA was able to address them. These letters are included in Supplement 1 of the Glendale North OU Administrative Record.

One member of the public was concerned that extracting 3000 gpm of groundwater over a 12-year period would result in subsidence and sink hole formation. EPA responded that subsidence is not likely to occur as a result of Glendale North OU extractions. Other commenters asked that EPA use the treated water only for reclaimed water purposes and not for drinking water. EPA explained that the treated water will be of a much higher quality than reclaimed water and will meet all drinking water standards prior to final use.

The City of Glendale's written comments were similar to those presented orally at the public meeting.

The RWQCB expressed support for EPA's preferred alternative and favors direct use of the treated water to reinjecting it. EPA also prefers direct use of the treated water but will reinject any remaining portion if a water purveyor cannot accept it. ODW stated that it considers the perozone treatment process an experimental one and that it should not be used for the Glendale North OU interim remedy. EPA agreed with this comment. ODW also stated that the City of Glendale must obtain a water supply permit. EPA responded that the City will receive the treated water at the point of delivery and thereafter the water will need to meet all offsite

legal requirements, including permits for offsite actions, before it is conveyed to the public water distribution system.

EPA also received numerous comments from ITT General Controls, Inc. on several issues relating to the RI and FS documents and the Proposed Plan for the Glendale North OU interim remedy. Most of these comments criticized EPA for not justifying its decisions including its preferred alternative selection, suggested that EPA did not provide the proper supporting documentation and stated that the interim remedy for Glendale North OU did not demonstrate consistency with a permanent remedy for the San Fernando Valley sites. EPA responded that the Glendale North OU is an interim action and not a permanent remedy, that the RI/FS and remedy selection were conducted in accordance with the NCP, applicable EPA guidance, that an entire Administrative Record with supporting documentation is available for review at the San Fernando Valley information repositories, and finally that the Glendale North OU interim remedy would not be inconsistent with nor preclude implementation of any final remedy for the San Fernando Valley sites.

The Responsiveness Summary is divided into two parts. Part I focuses on EPA's responses to the concerns and major issues raised by members of the local community including the City of Glendale. Part II includes detailed responses to the comments received that were more legal or technical in nature. Comments submitted by State agencies are included in Part II.

Appendix B: Glendale South OU ROD

GLENDALE SOUTH OPERABLE UNIT

RECORD OF DECISION

PART I: DECLARATION

PART II: DECISION SUMMARY

PART III: RESPONSIVENESS SUMMARY

SAN FERNANDO VALLEY AREA 2 SUPERFUND SITE

LOS ANGELES COUNTY, CALIFORNIA

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

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RECORD OF DECISION

GLENDALE SOUTH OPERABLE UNIT INTERIM REMEDY

PART I. DECLARATION

SITE NAME AND LOCATION

San Fernando Valley Area 2
Glendale South Operable Unit
Los Angeles County, California

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Glendale South Operable Unit, San Fernando Valley Area 2 Superfund site, chosen in accordance with CERCLA as amended by SARA and, to the extent practicable, the National Contingency Plan. This decision is based on the administrative record for this operable unit.

In a letter to EPA dated May 28, 1993 the State of California agreed with the selected remedy for the Glendale South OU.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE REMEDY

EPA has selected an interim remedy for the South plume of groundwater contamination in the Glendale Study Area. This interim remedy is referred to as the Glendale South Operable Unit (OU). An OU is a discrete action that comprises an incremental step toward comprehensively addressing Superfund site problems. The remedy and all of the alternatives presented in the feasibility study were developed to meet the following specific objectives for the Glendale South OU:

- To inhibit vertical and horizontal migration of groundwater contamination in the South Plume of the Glendale Study Area; and

- To begin to remove contaminant mass from the upper zone of the aquifer in the South Plume of the Glendale Study Area.

The remedy involves groundwater extraction and treatment for the shallow aquifer system in the Glendale area of the San Fernando Valley. Under this remedy, contaminated groundwater will be

extracted at a rate of 2,000 gallons per minute (gpm) for 12 years from new wells to be installed in the South Plume of the Glendale Study Area. The extracted contaminated groundwater will be filtered to remove any suspended solids, if necessary, and then treated by air stripping (single or dual-stage) and/or liquid phase granular activated carbon (GAC) to remove volatile organic compounds (VOCs). After treatment, the water shall meet drinking water standards (maximum contaminant levels or MCLs) for VOCs. If air stripping treatment is selected, air emissions will be treated using vapor phase GAC to ensure that all air emissions meet applicable or relevant and appropriate requirements. The exact number, location and other design specifics of these new extraction wells and air stripping/liquid phase GAC units will be determined during the remedial design phase of the project to best meet the objectives of the remedy. After treatment to remove VOCs, the water will be blended as necessary with an alternative water source of a quality such that the treated, blended water would meet all drinking water standards (including the nitrate MCL). All or part of the extracted treated water will then be conveyed to the City of Glendale or another San Fernando Valley water purveyor for distribution through its public water supply system. Groundwater monitoring wells will be installed and sampled regularly to help evaluate the effectiveness of the remedy.

As a result of comments by the City of Glendale on the Glendale North OU Proposed Plan (July 1992) and Glendale South OU Proposed Plan (September 1992) which indicated that the City had sufficient water credits to accept the treated water from both the Glendale North and Glendale South OUs, and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined at a single location. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The Glendale North OU Record of Decision will also reflect this decision to combine the treatment plants.

However, if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale South OU, the treatment plants will not be combined. Furthermore, if the City of Glendale does not accept any or all of the treated water (possibly due to water supply needs), any remaining portion of water will be: 1) offered to another San Fernando Valley water purveyor or 2) recharged into the aquifer at the Headworks Spreading Grounds.

The total duration of the Glendale South OU interim remedy will be 12 years. EPA will determine the need for and scope of any further actions every five years throughout this interim remedy period and again at the conclusion of this period.

The remedial action for the Glendale South OU represents a discrete element in the overall long-term remediation of

groundwater in the eastern portion of the San Fernando Valley. The objectives of this interim action (i.e. inhibiting vertical and horizontal migration of groundwater contamination and beginning to remove contaminant mass from the upper zone of the aquifer in the South Plume of the Glendale Study Area) would not be inconsistent with nor preclude implementation of any final, overall remedial action or actions selected by EPA in the future for the San Fernando Valley Areas 1, 2, 3 and 4.

EPA is the lead agency for this project and the Department of Toxic Substances Control of the State of California Environmental Protection Agency is the support agency.

DECLARATION

This interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements directly associated with this action and is cost effective. This action utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, given the limited scope of the action. Because this action does not constitute the final remedy for the site, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed at the time of the final response action. Subsequent actions are planned to fully address the principal threats at these sites.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, EPA shall conduct a review, pursuant to CERCLA Section 121, 42 U.S.C. Section 9621, at least once every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

John C. Wise

John C. Wise
Acting Regional Administrator

6.18.93
Date

PART II. DECISION SUMMARY

This Decision Summary provides an overview of the Glendale South OU interim remedy, including a description of the nature and extent of contamination to be addressed and the remedial alternatives, the comparative analysis of the remedial alternatives, a description of the selected remedy, and the rationale for remedy selection.

1.0 SITE LOCATION AND DESCRIPTION

The Glendale Study Area is located within the San Fernando Basin. The following sections present a basin description, regulatory history, and a summary of the Remedial Investigation and Feasibility Study (RI/FS) activities within the San Fernando Valley and the Glendale Study Area.

1.1 Description of the San Fernando Basin

The San Fernando Basin is located within the Upper Los Angeles River Area (ULARA), which consists of the entire watershed of the Los Angeles River and its various tributaries. The San Fernando Basin covers approximately 122,800 acres and comprises 91.2 percent of the ULARA alluvial fill. It is bounded on the north and northwest by the Santa Susana Mountains, on the northeast by the San Gabriel Mountains, on the west by the Simi Hills, and on the south by the Santa Monica Mountains.

The San Fernando Basin is a significant source of drinking water, with an estimated total volume of 3 million acre-feet of groundwater stored in aquifers within the alluvial fill of the basin. The groundwater of the San Fernando Basin has been used as a source of drinking water for more than 800,000 residents within the cities of Los Angeles, Burbank, Glendale, and San Fernando. Groundwater extractions within the San Fernando Basin typically provide 15 percent of Los Angeles' annual average water supply and historically have accounted for between 50 and 100 percent of the water needs of the other cities.

1.2 Description and Background of the Glendale Study Area

The Glendale Study Area is in the vicinity of the Crystal Springs National Priorities List (NPL) Site, one of the four San Fernando Valley Superfund NPL sites, and is adjacent to the Los Angeles River (Figure 1-1). The Glendale Study Area includes two portions of the aquifer where high concentrations of contaminants have been identified: the North Plume and the South Plume (Figure 1-2). Although contamination has been detected throughout the Glendale Study Area in an apparently contiguous plume, differences exist between the North Plume and South Plume, including the types of contaminants detected and the concentrations of the

contaminants. The Glendale North and South Plumes are separated by an area of groundwater with lower concentrations of contamination. The Glendale South OU includes the South Plume of VOC contamination and adjacent areas where contamination is known or believed to have migrated. The Glendale South OU extends south towards the Pollock Operable Unit. Some of the monitoring wells constructed to help define the extent of the Pollock Ou are located within the Glendale South OU.

In 1990, an analysis was performed to evaluate the need for an OU within the Crystal Springs NPL site (CH2M Hill, 1990). This analysis included a qualitative comparison based on known groundwater contamination, potential downgradient impacts and water supply. This analysis concluded that there was a need for an OU within the Crystal Springs NPL site because of the: 1) high concentrations of TCE and PCE present in groundwater, 2) critical loss of groundwater production in the Glendale area and 3) potential impact of contaminating groundwater downgradient from the Crystal Springs NPL site. Additional data collection was recommended to more adequately characterize the horizontal and vertical distribution of contamination in the aquifer, and also to improve the definition of the hydrogeology of the area.

EPA conducted a remedial investigation (RI) that characterized the nature and extent of contamination in the Glendale Study Area. Upon completion of the Remedial Investigation Report for the Glendale Study Area (January 1992,, a feasibility study (FS) was undertaken for the Glendale South OU which evaluated a range of cleanup alternatives for addressing the contaminated groundwater. The FS report entitled Feasibility Study for the Glendale Study Area South Plume Operable Unit was completed in August 1992.

2.0 SITE HISTORY

In 1980, after finding organic chemical contamination in the groundwater of the San Gabriel Valley, the California Department of Health Services (DHS) requested that all major water purveyors using groundwater in the San Fernando Valley conduct tests for the presence of certain industrial chemicals in the water they were serving. The results of initial tests and of subsequent testing revealed the presence of volatile organic compound (VOC) contamination in the groundwater of the San Fernando Valley. These findings resulted in a number of municipal supply wells for the cities of Los Angeles, Burbank, and Glendale being taken out of service. The primary contaminants of concern were and are the solvents trichloroethylene (TCE) and perchloroethylene (PCE), which have been widely used in a variety of industries including machinery degreasing, metal plating and dry cleaning.

In 1984, EPA proposed four sites within the San Fernando Valley for inclusion on the NPL and in 1986 the sites were added to

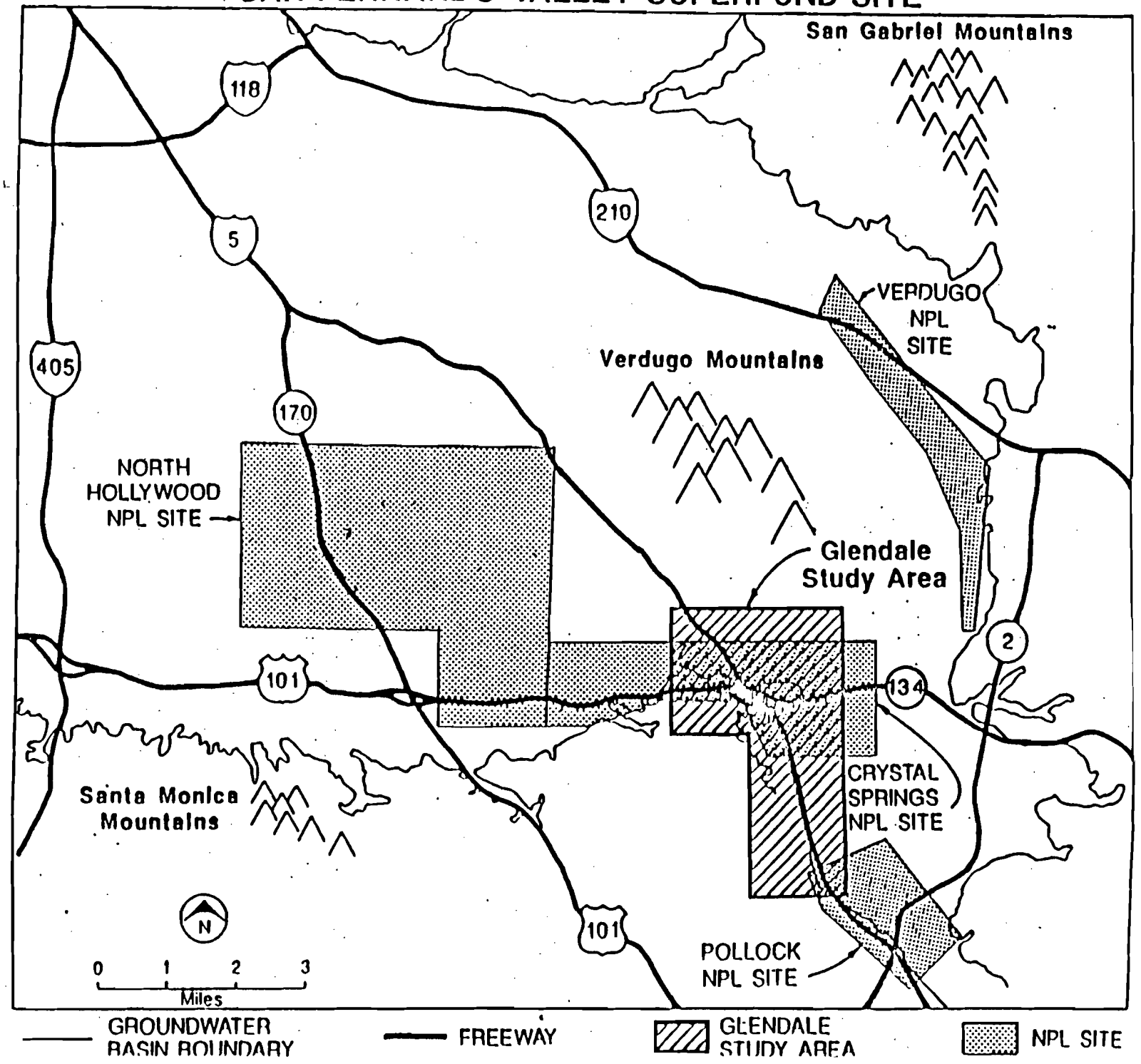
the list (Figure 2-1). Each site encompasses an area in which production wells produced groundwater containing concentrations of TCE and PCE above State and Federal standards in 1984. The four NPL sites in the San Fernando Valley are the North Hollywood, Crystal Springs, Verdugo, and Pollock sites, also referred to as San Fernando Valley Areas 1, 2, 3, and 4, respectively. The EPA has now shifted from defining the sites based on production wells to managing it as one large site defined by the extent of the contaminated plume of groundwater. The San Fernando Valley Study Area includes the four sites as listed on the NPL and adjacent areas where contamination has or may have migrated. A basinwide groundwater RI report for the San Fernando Valley Study Area was completed in December 1992. Groundwater wells installed by EPA as part of the basinwide groundwater RI are routinely sampled to continue to monitor the nature and extent of the groundwater contamination in the San Fernando Valley. In addition, monitoring well data gathered at individual facilities in the San Fernando are included in the EPA database which is used to generate plume maps of the basin.

EPA has previously signed Record of Decision (ROD) documents for two OUs in the San Fernando Valley: the North Hollywood OU (1987) and the Burbank OU (1989). The North Hollywood OU interim remedy is currently operating and the Burbank OU is in the remedial design phase. In the Glendale Study Area, EPA has identified two OUs: the Glendale North Plume OU and the Glendale South Plume OU. In addition, EPA has recently initiated an RI/FS for an OU in the Pollock area of the San Fernando Valley. All of these OUs represent interim cleanups currently in progress throughout the eastern portion of the San Fernando Valley. All remedial actions established by EPA thus far in the ROD for each OU have been interim measures. EPA has not yet selected a final remedy for the entire San Fernando Valley.

The most prevalent groundwater contaminants in the Glendale Study area are TCE and PCE. In 1992, the highest concentrations of TCE and PCE detected in EPA monitoring wells in the San Fernando Valley were 7100 ppb and 160 ppb, respectively. Groundwater samples from wells installed at industrial facilities in the San Fernando Valley near potential sources of contamination have shown concentrations greater than 30,000 ppb for TCE and over 15,000 ppb for PCE. The maximum levels of 820 ppb of TCE and 220 ppb of PCE were detected in shallow wells located in the south plume portion of the Glendale Study Area. The MCL for both TCE and PCE is 5 ppb.

Nitrate, an inorganic contaminant, has been detected consistently at levels in excess of the MCL (45 milligrams per liter (mg/l), also referred to as parts per million (ppm) as nitrate, or 10 mg/l nitrate as nitrogen) in the groundwater of the Glendale Study Area. The nitrate contamination is likely to be the result of past agricultural practices and/or septic systems in the San Fernando Valley.

SAN FERNANDO VALLEY SUPERFUND SITE



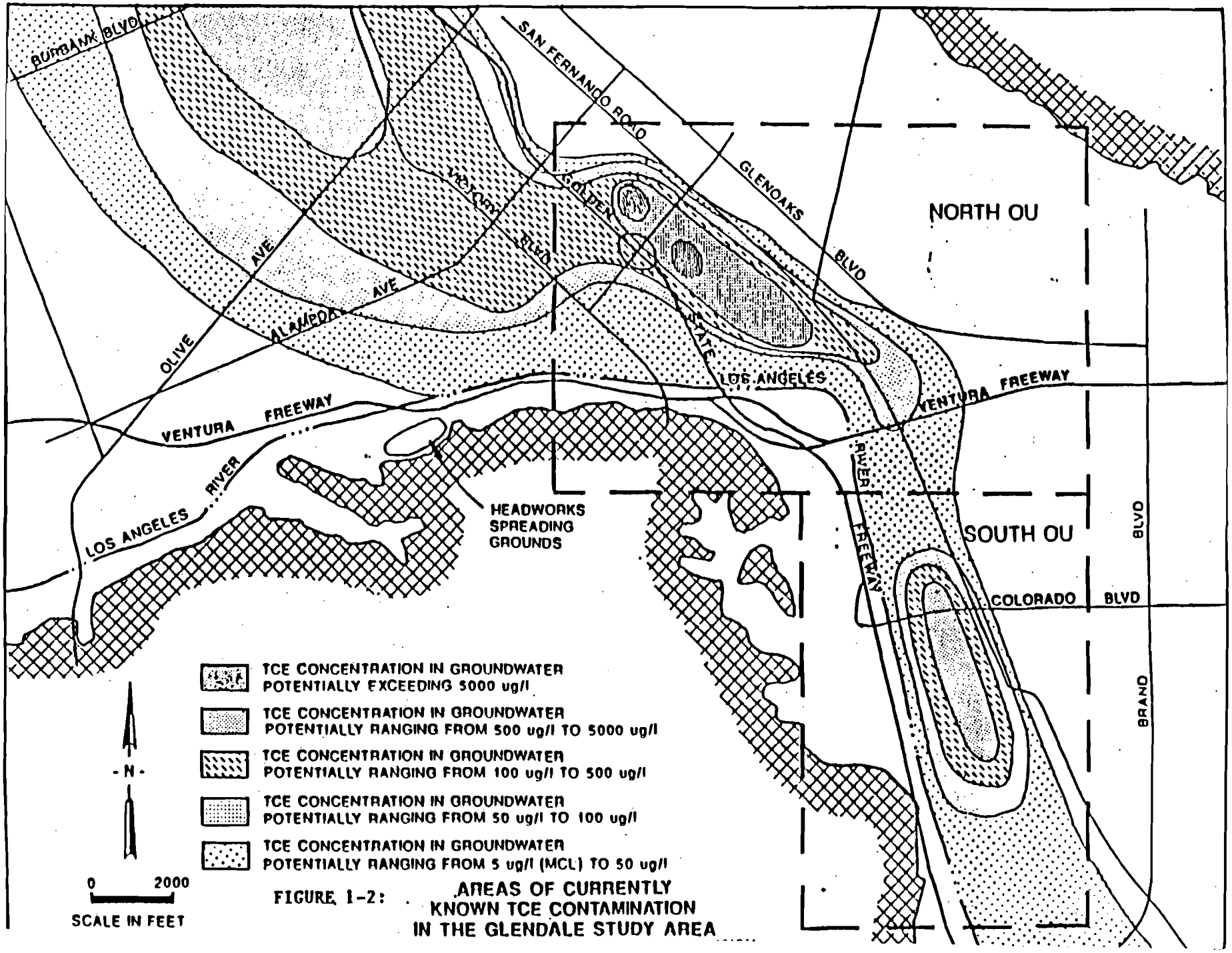
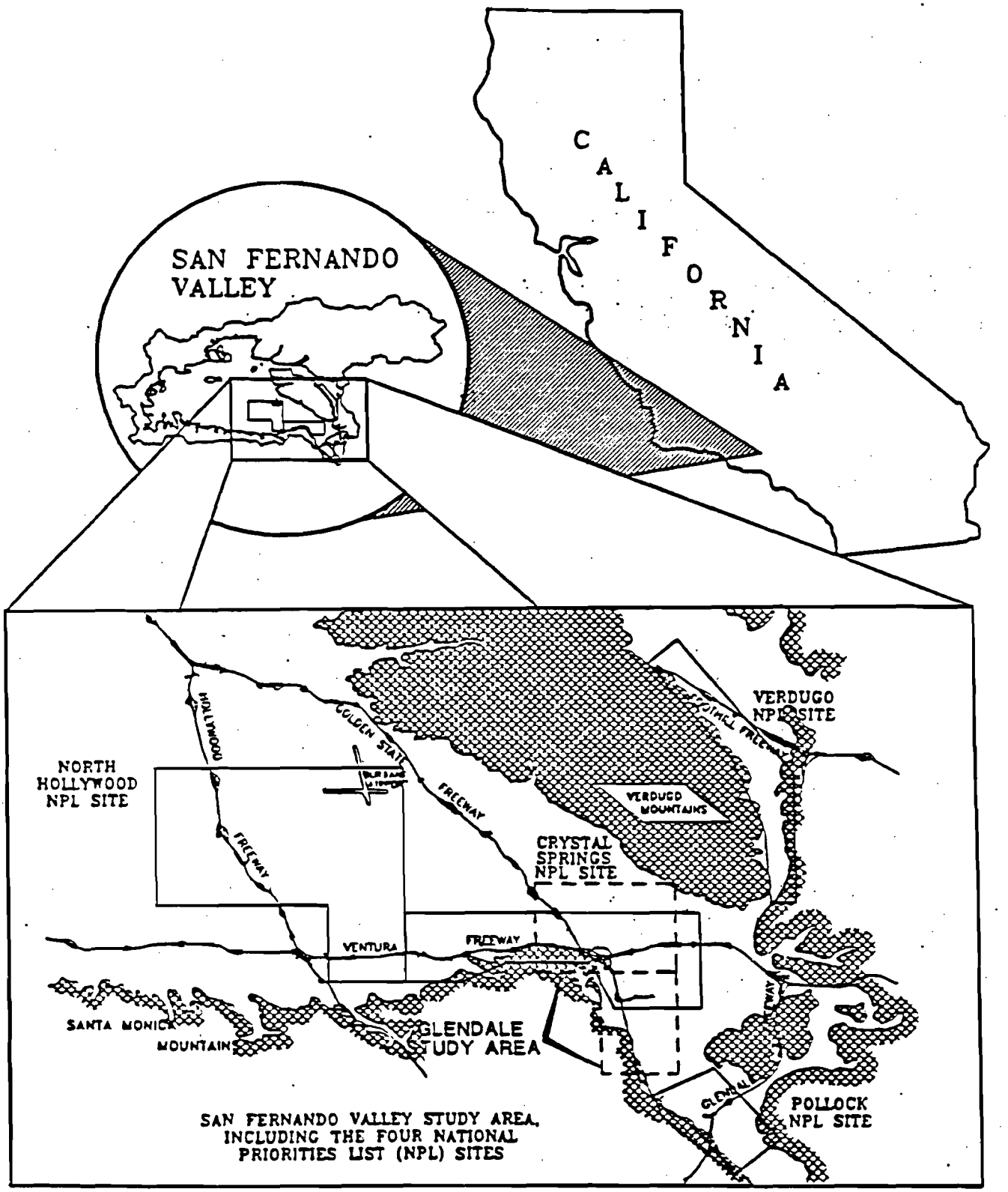


FIGURE 1-2: AREAS OF CURRENTLY KNOWN TCE CONTAMINATION IN THE GLENDALE STUDY AREA



GLENDALE STUDY AREA

FIGURE 2-1
SITE LOCATION MAP

It should be noted that the Cities of Glendale and Los Angeles closely monitor the quality of drinking water delivered to residents. The water served to residents must meet all Federal and state drinking water requirements. Currently, nearly all of the water delivered by the City of Glendale is purchased from the Metropolitan Water District (MWD) of Southern California. The City uses a limited amount of groundwater from a small percentage of its nine production wells in the San Fernando Valley. If the levels of VOCs and other contaminants detected in the groundwater of production wells are equal to or less than 10 times MCLs, the State of California Department of Health Services, Office of Drinking Water permits the City to extract the water, blend it with MWD water to meet all drinking water standards, and convey the extracted, blended water to its public distribution system.

As described briefly in Section 1 above, the Glendale Study Area includes two portions of the aquifer where high concentrations of contaminants have been identified: the north plume and the south plume. A remedial investigation (RI) that characterized the nature and extent of contamination in the Glendale Study Area was completed in (January 1992). The Glendale Study Area RI included a characterization of the nature and extent of contamination, baseline risk assessments, and other RI data for both the north and south plumes. However, separate FS reports evaluating a range of cleanup alternatives for the contaminated groundwater were prepared for each plume. The Glendale South OU FS report and subsequent Proposed Plan were finalized in August 1992 and September 1992, respectively. The Glendale North OU FS report was completed in April 1992 and the Proposed Plan was completed in June 1992.

EPA's preferred alternatives as described in the Proposed Plans were: extraction of 3000 gallons per minute (gpm) of contaminated groundwater for Glendale North and 2000 gpm for Glendale South, treatment of VOCs by air stripping or liquid phase GAC, and conveyance of the treated water to a water purveyor, where it would be blended with water of a quality such that the treated, blended water would meet all drinking water standards, for eventual distribution through a public water system. As a contingency, if all or part of the treated water was not accepted by the purveyors (possibly due to water supply needs), the treated water from Glendale North would be reinjected and for Glendale South would be recharged at the Headworks Spreading Grounds (see Figure 1-2).

In response to comments by the City of Glendale on the Glendale North and South OU Proposed Plans and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined at one location and the total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial

design phase of the project. The Glendale North OU Record of Decision also reflects this decision to combine the treatment plants.

However, if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale South OU, the treatment plants will not be combined. Furthermore, if the City of Glendale does not accept any or all of the treated water (possibly due to water supply needs), any remaining portion of water will be 1) offered to another San Fernando Valley water purveyor or 2) recharged into the aquifer at the Headworks Spreading Grounds.

3.0 ENFORCEMENT ACTIVITIES

In September 1989, EPA signed a cooperative agreement with the State Water Resources Control Board (SWRCB) providing funds for the Regional Water Quality Control Board, Los Angeles Region (RWQCB) to expand its capability to conduct source reduction, identification, and enforcement activities at individual facilities in the San Fernando Valley. Activities include conducting surveys and inspections, and overseeing investigations and remedial activities. The cooperative agreement has been renewed annually since 1989. If RWQCB investigations confirm soil or groundwater contamination at a specific facility, then that facility is referred to EPA. EPA is using the RWQCB's facility-specific information in conjunction with RI data, groundwater and vadose zone modeling results and information gathered from other sources including California Environmental Protection Agency (CAL-EPA) investigations, South Coast Air Quality Management District (SCAQMD) investigations and responses to information request letters, to build enforcement cases.

EPA is and will be using its investigatory resources, enforcement resources and authority under CERCLA in conjunction with the work of the RWQCB to:

- Identify individuals and companies who are responsible for the historic and current contamination.
- Compel responsible parties to design, construct and operate treatment facilities and reimburse EPA for prior and any future expenditures at the site.

EPA has issued preliminary notices of potential liability (General Notice) for the Glendale South OU to nineteen parties to date. These parties have been preliminarily identified as owners and operators of twelve facilities located in the vicinity of the South Plume of the Glendale Study area of the San Fernando Valley. EPA anticipates that additional parties will be notified of potential liability. Special notice pursuant to CERCLA §122 has not yet been issued for the Glendale South OU.

4.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA's preferred alternative, as well as five other alternatives were described in EPA's Proposed Plan for the Glendale South OU (September 1992). The Proposed Plan was in the form of a fact sheet and was distributed to all parties on EPA's mailing list for the San Fernando Valley Superfund sites. The original 30 day public comment period was extended several times for a total comment period of 15 weeks (107 days) after EPA received requests for extensions from members of the public. The public comment period closed on January 19, 1993. EPA received over 250 comments. These comments and EPA's responses to these comments are summarized in Part III (the Responsiveness Summary) of this ROD.

A public meeting was held in the City of Glendale on October 21, 1992, to discuss EPA's preferred alternative and the other alternatives. At this meeting EPA gave a brief presentation regarding the Proposed Plan, answered questions, and accepted comments from members of the public.

During the public comment periods for the Glendale North and Glendale South OUs, the City of Glendale provided comments emphasizing that it would like to receive more than the 3,000 gpm of extracted, treated groundwater proposed under the Glendale North Proposed Plan. The City also indicated that it had stored water credits and water rights sufficient to accept greater than 5,000 gpm of extracted, treated groundwater from the San Fernando Valley. As a result of the City's comments on the Glendale North and Glendale South OUs, and after evaluating the relative total cost of a combined plant versus separate plants, EPA has determined that the treatment plants for the Glendale North and South OUs will be combined and the total 5,000 gpm of treated water will be conveyed to the City of Glendale.

A press release to announce the release of the Proposed Plan was issued October 1, 1992. Notice of the public meeting as well as the availability of the Proposed Plan was published in the Los Angeles Daily News on November 4, 1992. An announcement of the extension of the public comment period was published in the Los Angeles Daily News on December 3, 1992. In addition, two newspaper articles were written about the remedial investigation, the feasibility study and the Proposed Plan for the Glendale South OU including: Los Angeles Times - October 8, 1992 and Los Angeles Daily News - October 22, 1992. A map of the Glendale South OU was provided in the Proposed Plan and the various newspaper articles described the area that would be impacted by the Glendale South OU.

In general, the purpose of EPA's community relations program for the San Fernando Valley project is to inform community members and other interested parties about the Federal activities to address contamination at the hazardous waste sites, as well as to encourage two way communication between the concerned public and

EPA and/or other local agencies.

From March 1987 through December 1991, EPA and LADWP attended quarterly meetings of the Community Work Group (CWG) to discuss technical issues and management strategies involving the San Fernando Valley Superfund project including the interim groundwater cleanup for the Glendale area. The CWG consisted of interested San Fernando Valley community residents, elected officials, agency representatives, and environmental and business leaders. The CWG provided input to EPA on the various components of the Superfund project, including the interim groundwater cleanup of the Glendale area.

The community relations plan for the San Fernando Valley Superfund sites was most recently updated and issued in April 1990. The plan will be revised again in 1993 to address community relations during the remedial design phase of the Glendale South OU interim action, and to document other changes in the community relations program.

5.0 SCOPE AND ROLE OF THE OPERABLE UNIT

The interim remedial action for the Glendale South OU represents a discrete element in the overall long-term remediation of groundwater in the eastern portion of the San Fernando Valley. While the final overall plan for the remediation of the San Fernando Valley Sites has not yet been determined, the objectives of the Glendale South OU are:

- To inhibit vertical and horizontal migration of groundwater contamination in the South Plume of the Glendale Study Area

- To begin to remove contaminant mass from the upper zone of the aquifer in the South Plume of the Glendale Study Area.

EPA does not expect these objectives to be inconsistent with, nor preclude, any final action for San Fernando Valley Areas 1, 2, 3 and 4.

The Glendale South OU interim remedy is intended to address the immediate and significant groundwater contamination problem in and beyond a portion of San Fernando Valley Area 2 (also known as the Crystal Springs NPL Site, see Figure 1-1). A more complete investigation of the overall groundwater problem in the San Fernando Valley is being conducted through the basinwide remedial investigation and feasibility study process.

The basinwide groundwater RI Report for the San Fernando Valley Study Area was completed in December 1992. Groundwater wells installed by EPA as part of the basinwide RI are routinely

sampled to continue to monitor the nature and extent of the groundwater contamination in the San Fernando Valley.

EPA is currently using the results of the remedial investigation in basinwide feasibility studies to address VOC contamination in both the groundwater and vadose zone of the eastern portion of the San Fernando Valley.

As part of the basinwide groundwater FS, EPA is revising and recalibrating the basinwide groundwater flow model to incorporate the most recent data. The updated version of the model will be complete in 1993. EPA will then review and evaluate various groundwater remediation options for the basin including: regional pump and treat, well-head treatment, use of innovative technologies and no-further-action alternatives.

EPA has also initiated work on a vadose zone FS to examine ways to protect the groundwater from contaminants that could reach the groundwater in the future. This FS will review and evaluate options for cleanup of VOC contamination in the vadose zone of the San Fernando Valley.

EPA will continue to gather and analyze information important to the project. EPA has been working with the San Fernando Valley water purveyors and the Upper Los Angeles River Area (ULARA) Watermaster to summarize past and future groundwater management in the San Fernando Valley, including an overall water balance for the San Fernando Valley. EPA's interim actions to remove contaminants and inhibit migration from the most contaminated areas in North Hollywood, Burbank, Glendale North, Glendale South and Pollock OUs will also provide information useful for the basinwide FS.

6.0 SUMMARY OF GLENDALE SOUTH OU SITE CHARACTERISTICS

Results of LADWP's groundwater monitoring programs conducted from 1981 through 1987 revealed that TCE and PCE had contaminated approximately 50 percent of the water supply wells in the eastern portion of the San Fernando Valley groundwater basin at concentrations exceeding State and Federal drinking water standards.

The results of recent (1989-1992) EPA sampling of groundwater monitoring wells installed by EPA throughout the San Fernando Valley indicate that TCE and PCE continue to be the principal contaminants of concern. TCE and PCE are industrial solvents commonly used in the metal degreasing and dry-cleaning industries. Both are known animal carcinogens and probable human carcinogens. The Federal MCL for both TCE and PCE is 5 ug/l (ppb). The State MCLs for TCE and PCE are also 5 ug/l (ppb).

There are seven EPA monitoring wells located in the south plume portion of the Glendale Study Area (vertical profile borings

and cluster wells). These wells are: PO-VPB-01, PO-VPB-02, PO-VPB-10, PO-C01-195, PO-C01-354, PO-C02-052, and PO-C02-205. Wells PO-VPB-01, PO-VPB-02 and PO-VPB-10 were sampled initially during November 1989 and PO-VPB-01 and PO-VPB-10 were resampled during August and September 1990. The cluster wells PO-C01 and PO-C02 and were sampled initially in September 1990, at the same time PO-VPB-02 was resampled. The following discussion summarizes the results of chemical analyses on the sampling events in August and September 1990.

In the four Upper Zone wells (the three PO-VPBs and PO-C02-052), six VOCs were detected above Federal and/or State MCLs: carbon tetrachloride; 1,2-Dichloroethane (1,2-DCA); 1,1-dichloroethene (1,1-DCE); 1,1,2,2-tetrachloroethane; PCE; and TCE (see Table 6-1). As reported in the FS Report for the Glendale South OU, TCE was detected in three of the four Upper Zone wells in the south plume at a maximum concentration of 820 ppb. PCE was also detected in three of the four Upper Zone wells at a maximum concentration of 140 ppb (see Table 6-1, Figure 6-1 and Figure 6-2).

In the three Lower Zone wells (PO-C01-195, PO-C01-354 and PO-C02-205), the only VOC detected was TCE at a maximum concentration of 4 ppb.

Monitoring wells have been installed at industry facilities in the Glendale south plume portion of the Glendale Study Area. These include three wells at the A.G. Layne facility, seventeen wells at the Philips Components facility and nine wells at the former Franciscan Ceramics facility. All of these wells are screened in shallow groundwater and are discussed as Upper Zone wells.

Nine VOCs (benzene, toluene, total xylenes, 1,1-DCA, 1,1-DCE, 1,1,1-TCA, methylene chloride, PCE and TCE were detected above MCLs at the A.G. Layne facility wells based on samples collected in July 1990. Samples collected in August 1990 at the Philips Components wells show PCE, TCE, methylene chloride and vinyl chloride above MCLs.

Four base, neutral, and acid extractable semi-volatile organic compounds (BNAs), 2-methylnaphthalene, naphthalene, 2,4-dimethylphenol, and 2-methylphenol, were detected in the A.G. Layne wells. Two BNAs, bis(2-ethylhexyl)phthalate and di-n-octylphthalate, were detected in one of the Lower Zone EPA wells (none in Upper Zone sampling). No State or Federal MCLs have been promulgated for these compounds. No chlorinated pesticides or PCBs were detected in the Upper or Lower Zones.

Nitrate has been detected at levels in excess of the MCL in the some of the groundwater samples collected in the South Plume of the Glendale Study Area (see Table 6-1, and Figure 6-3). Nitrate was detected in all of the VPB and cluster wells at concentrations ranging from 9.55 to 16.1 mg/l (as nitrogen). The Federal MCL is

TABLE 6-1

SUMMARY OF ALL DETECTED CONSTITUENTS IN THE UPPER ZONE RI WELLS
FOR THE SOUTH PLUME OU
(Page 1 of 2)

Constituent	MCL[a]	Minimum Concentration	Maximum Concentration	Number of Wells With Detects out of 4[d]
Volatile Organic Compounds (µg/l)				
Carbon Tetrachloride	0.5	--	1	1
Chloroform	100[c]	--	1	1
1,1-Dichloroethane	5.0	--	1	1
1,2-Dichloroethane	0.5	3	5	2
1,1-Dichloroethene	6.0	--	41	1
1,1,2,2-Tetrachloroethane	1.0	--	9	1
Tetrachloroethene (PCE)	5.0	3	140	3
1,1,1-Trichloroethane (TCA)	200	--	11	1
Trichloroethene (TCE)	5.0	23	820	3
Semivolatile Organics (µg/l)				
2-Methylnaphthalene	--[b]	--	110	1
Naphthalene	--[b]	--	160	1
2,4-Dimethylphenol	--[b]	--	16	1
2-Methylphenol	--[b]	--	16	1
Priority Pollutant Metals (mg/l)				
Arsenic	0.05	--	0.005	1
Chromium	0.05	--	1.2	1
Mercury	0.002	--	0.0004	1
Nickel	--[b]	--	0.06	1
Selenium	0.05	--	0.007	1
Silver	0.05	--	0.005	1
Zinc	--[b]	0.03	0.051	4
Inorganic Compounds (mg/l)				
Nitrate (as N)	10	9.55	16.1	4
Total Dissolved Solids (TDS) By Addition	500	458	693	4

TABLE 6-1

SUMMARY OF ALL DETECTED CONSTITUENTS IN THE UPPER ZONE RI WELLS
FOR THE SOUTH PLUME OU
(Page 2 of 2)

Constituent	MCL[a]	Minimum Concentration	Maximum Concentration	Number of Wells With Detects out of 4[d]
Radionuclides (pCi/l)				
Gross Alpha	15	2.2 ± 2.5	4.5 ± 4.8	4
Gross Beta	50	5.0 ± 2.0	8.2 ± 1.7	4
Radon	--[b]	66 ± 4.1	480 ± 5.4	4

Note: Samples collected August and September 1990.

[a] Promulgated federal or state MCL, whichever is more stringent.

[b] No state or federal MCL promulgated.

[c] MCL is for the sum of trihalomethanes.

[d] The shallow wells include PO-VPB-01, PO-VPB-02, PO-VPB-10, and PO-C02-52.

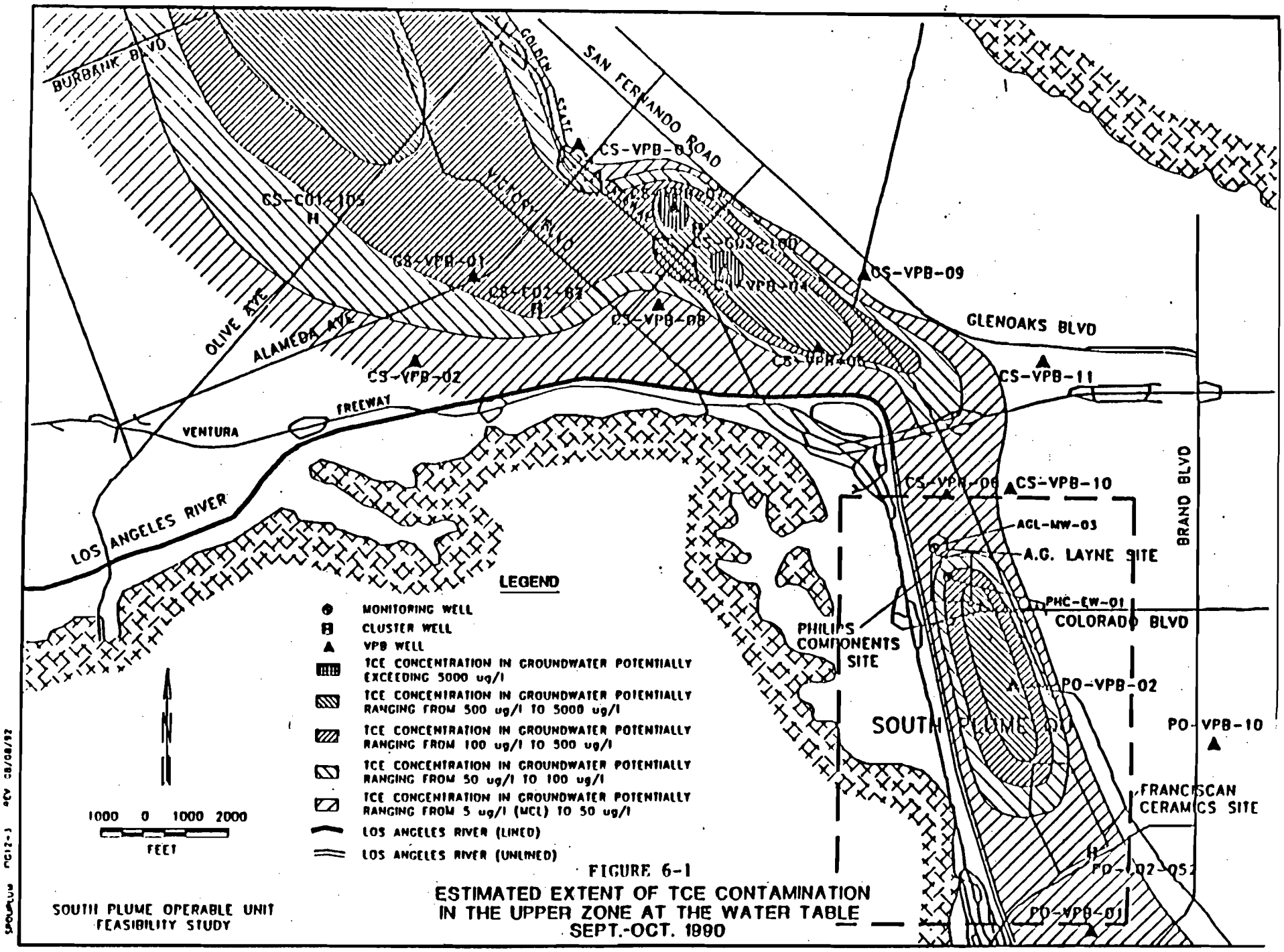


FIGURE 6-1
ESTIMATED EXTENT OF TCE CONTAMINATION IN THE UPPER ZONE AT THE WATER TABLE
SEPT.-OCT. 1990

SOUTH PLUME OPERABLE UNIT
FEASIBILITY STUDY

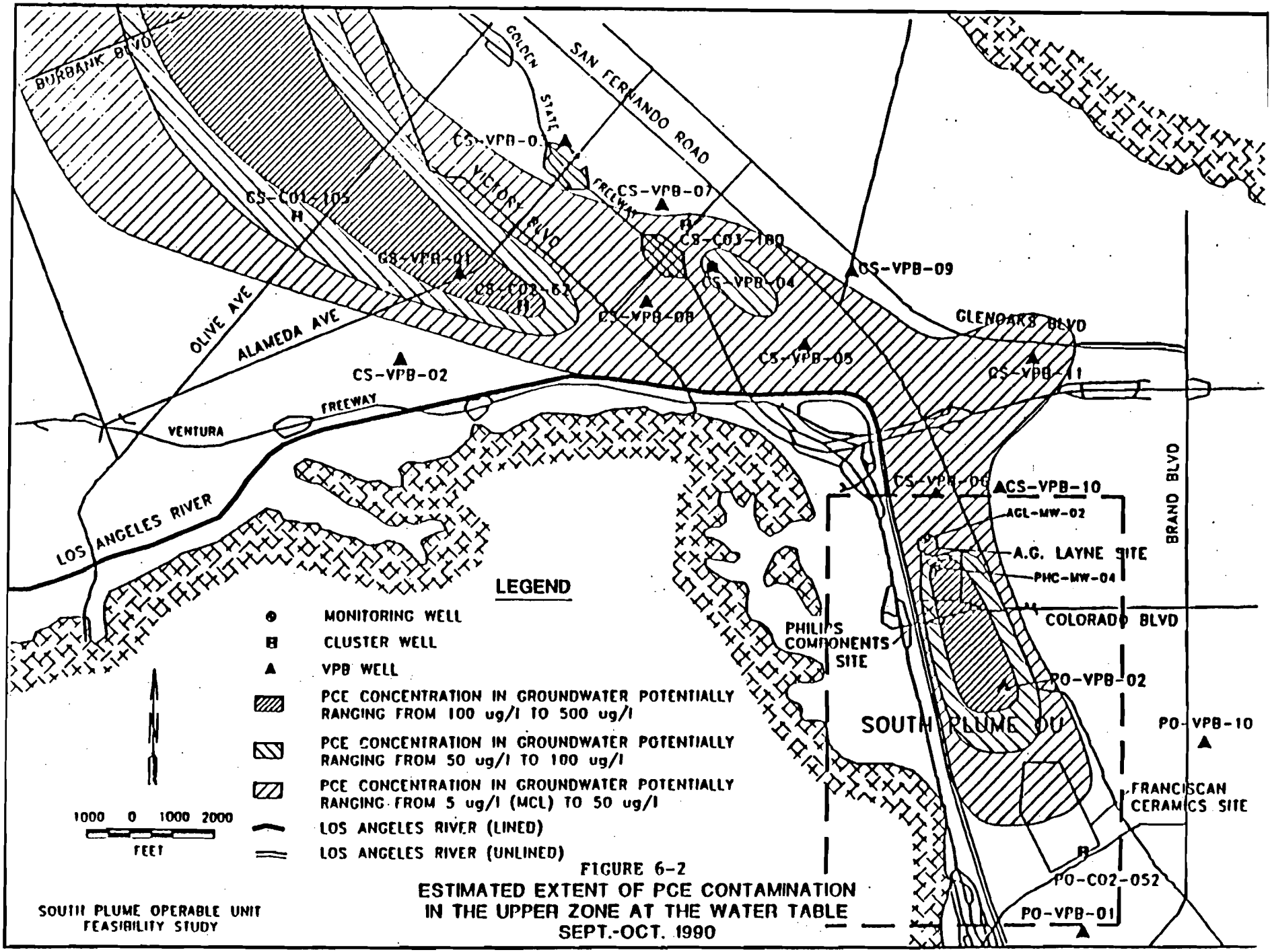


FIGURE 6-2
ESTIMATED EXTENT OF PCE CONTAMINATION
IN THE UPPER ZONE AT THE WATER TABLE
SEPT.-OCT. 1990

SOUTH PLUME OPERABLE UNIT
FEASIBILITY STUDY

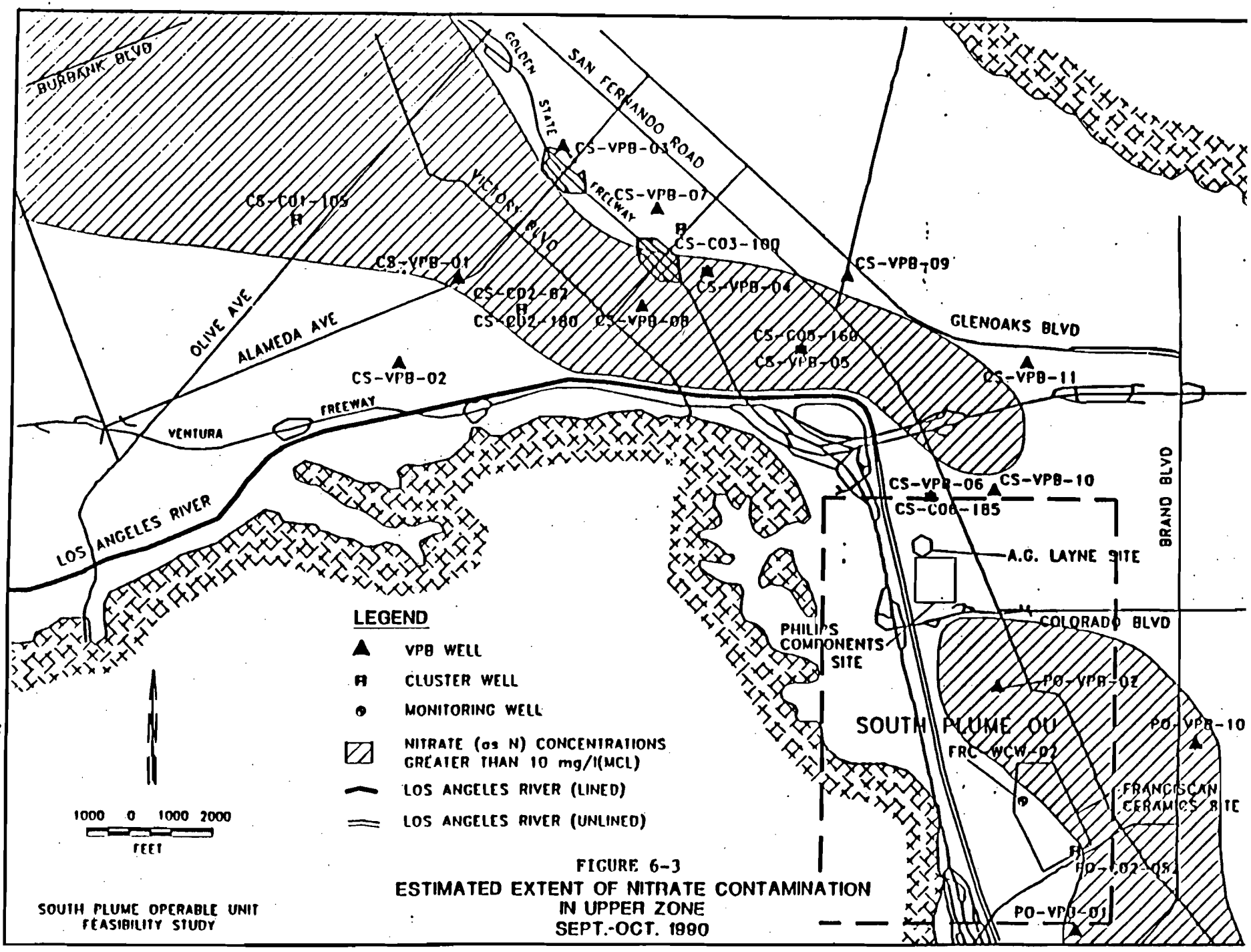


FIGURE 6-3
ESTIMATED EXTENT OF NITRATE CONTAMINATION
IN UPPER ZONE
SEPT.-OCT. 1990

10 mg/l for nitrate as nitrogen. Nitrate concentrations did not exceed MCLs in any of the Lower Zone wells. The nitrate contamination is likely the result of past agricultural practices and/or septic systems in the San Fernando Valley. Nitrate is not a CERCLA hazardous substance. However, the interim OU remedies in the San Fernando Valley involve the distribution of treated water to public water supply systems and therefore, EPA has been compelled to address the nitrate contamination in developing remedial alternatives.

From the sampling and analyses of the EPA wells, only one metal (chromium) has been detected above the MCL (when field filtering of samples occurred). No metals were detected in the Lower Zone above the MCL. An analysis of these data was performed by EPA's contractor to examine the likelihood that chromium was a waterborne contaminant rather than a sampling artifact (i.e., residual particulates from well construction and development) was presented in a technical memorandum entitled: Review of Metals Data from Monitoring Wells located in the Glendale Study Area, North Operable Unit (June 16, 1992). This memorandum, available for review in the administrative record for the Glendale South OU, concluded that the metal exceedances were most likely the result of sampling artifacts. EPA has continued to analyze groundwater samples collected under the quarterly monitoring program for priority pollutant metals. In a technical memorandum dated May 17, 1993 (available for review in the administrative record for Glendale South), recent sampling of monitoring wells for metals is summarized. Within the Glendale South OU, one well had chromium levels above MCLs; total chromium was reported as high as 733 ppb and hexavalent (dissolved) chromium as high as 182 ppb. This well likely represents contamination from a local source that would not impact extraction wells. However, if necessary, the extracted groundwater will be treated for chromium if this contaminant exceeds drinking water standard.

Thirty-one wells in the Glendale Study Area were sampled for naturally-occurring radionuclides as part of EPA's quarterly monitoring program. The samples were taken during the period of July 31 to August 7, 1992. The results of this third quarter 1992 groundwater sampling for radionuclides indicate that all EPA groundwater monitoring wells in the Glendale Study Area are in compliance with current MCLs for radionuclides (gross alpha, gross beta, gross radium, radium-226, strontium-89, strontium-90, gross uranium, tritium, and radon). In addition, the samples were also in compliance with all proposed radionuclide MCLs, except radon. The proposed MCL for Radon is 300 pCi/l. Most of the groundwater samples from the 31 monitoring wells exceeded the proposed MCL for radon. If necessary, this factor will be taken into account for remedial design. Radionuclides in the groundwater of the Glendale Study Area are discussed in greater detail in: Technical Memorandum San Fernando Valley Superfund Site, Radionuclides in the Glendale Study Area, dated March 2, 1993. This memorandum is

available for review in EPA's Administrative Record for the Glendale South OU.

In addition, analysis of hydrogeology and groundwater modeling conducted during the RI for the Glendale Study Area showed that the groundwater in the area is a source of recharge for the Los Angeles River.

7.0 SUMMARY OF SITE RISKS

Data regarding contaminants in the south plume of groundwater contamination in the Glendale Study Area obtained by EPA during the remedial investigation were used to estimate the health risks associated with exposure to the groundwater. This estimate, called a risk assessment, was then used to identify which contaminants pose risks to human health. The data used for the Glendale South OU risk assessment are presented in the Remedial Investigation Report for the Glendale Study Area (January 1992) and in other documents included in the Glendale South OU Administrative Record.

Baseline risk assessments are conducted at Superfund sites to fulfill one of the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The NCP (40 CFR Part 300) requires development of a baseline risk assessment at sites listed on the National Priorities List (NPL) under CERCLA. The CERCLA process for baseline risk assessments is intended to address both human health and the environment. However, due to the highly urbanized setting of the Glendale Study Area, the focus of the baseline risk assessment for the Glendale South OU was on human health issues, rather than environmental issues.

The objective of the baseline risk assessment for the Glendale South OU was to evaluate the human health and environmental risks posed by the contaminated groundwater beneath the south plume portion of the Glendale Study Area if it were to be used as a source of drinking water without treatment. The baseline risk assessment incorporated the water quality information generated during the basinwide groundwater RI field investigation and sampling program to estimate current and future human health and environmental risks. The groundwater data used for the Glendale South OU risk assessment included the water quality information from the PO-VPB wells (with the exception of PO-VPB-10 which is outside the plume area), cluster wells, Philips Components wells, Franciscan Ceramics wells, and A.G. Layne wells.

The risk assessment for the Glendale South OU was conducted in accordance with EPA guidance including: Guidance for Conducting Remedial Investigation and Feasibility Studies under CERCLA (USEPA, 1988), Risk Assessment Guidance for Superfund, Vol. I Health Evaluation Manual (Part A) and Vol. 2 Ecological Assessment (USEPA, 1989), The Exposure Factors Handbook (USEPA, 1989), and Risk Assessment Guidance for Superfund Human Health Risk Assessment,

USEPA Region IX Recommendations (USEPA, 1989).

A risk assessment involves the qualitative or quantitative characterization of potential health effects of specific chemicals on individuals or populations. The risk assessment process comprises four basic steps: 1) hazard identification, 2) dose-response assessment, 3) exposure assessment, and 4) risk characterization. The purpose of each element is as follows:

- Hazard identification characterizes the potential threat to human health and the environment posed by the detected constituents.
- Dose response assessment critically examines the toxicological data used to determine the relationship between the experimentally administered animal dose and the predicted response (e.g., cancer incidence) in a receptor.
- Exposure assessment estimates the magnitude, frequency, and duration of human exposures to chemicals.
- Risk characterization estimates the incidence of or potential for an adverse health or environmental effect under the conditions of exposure defined in the exposure assessment.

Human Health Risk Assessment

Risk assessments estimate the possibility that one additional occurrence of cancer will result from exposure to contamination. A risk of 1 in 1,000,000 (one million) means that one person in one million exposed could develop cancer as a result of the exposure. EPA considers risks greater than one in ten thousand (10^{-4}) "unacceptable."

In preparing risk assessments, EPA uses very conservative assumptions that weigh in favor of protecting public health. For example, EPA may assume that individuals consume two liters of drinking water per day from wells situated within a contaminant plume, over a 70-year lifetime or that a person is exposed to a chemical, 24 hours a day, 365 days a year, for a 30-year period, even though typical exposure to the chemical would be less.

The baseline risk assessment for the Glendale South OU is presented in Section 8.0 of the Remedial Investigation Report for the Glendale Study Area (January 1992). The risk assessment estimated the potential risks to public health under current situations and potential future situations. The risk assessment examined the potential health effects if individuals were exposed to contaminated groundwater from the upper and lower zones of the

aquifer of the Glendale South plume groundwater contamination in the Glendale Study Area. Although no production wellfields are located in the area encompassed by the South Plume OU, the potential exists for use of this groundwater as a source of drinking water in the future.

Chemicals of potential concern for the Glendale South OU used in the risk assessment calculations included: TCE; PCE; carbon tetrachloride; 1,1-DCA; 1,2-DCA; 1,1-DCE; nitrate and others including the metals arsenic and chromium. A list of all potential compounds of concern for both the upper and lower aquifer zones included in the quantitative risk assessment for the Glendale South OU are presented in Table 7-1. Due to the potential for adverse health effects to infants from consumption of water with high nitrate levels, a quantitative evaluation of this compound for chronic non-carcinogenic risks was calculated.

As indicated by the table, fewer compounds of potential concern were identified in samples from wells installed in the deep aquifer. Therefore, a separate characterization of risk was performed for the upper and lower groundwater zones.

Table 7-2 lists the wells in the Upper and Lower Zones that were incorporated in the risk assessment. The concentrations of contaminants in these wells used in the risk assessment are from the August and September 1990 sampling for EPA wells (PO-VPBs and PO-Cluster wells), from July 1990 sampling at A.G. Layne wells (AGLs), from August 1990 sampling at Phillips Components wells (PHCs), and March 1989 sampling at the Franciscan Ceramic wells (FRCs). A compound was totally excluded if it was not detected in any of these wells. Half of the detection limit was used if a compound was not detected in a particular well.

An exposure assessment was conducted to identify potential transport pathways (e.g., groundwater, surface water, air); routes of exposures (e.g., ingestion, inhalation, dermal contact); and potential on-site and off-site receptor populations. Exposure assessment involves the consideration of particular transport pathways and routes of exposure to potential receptors which may include current users of the site as well as adjacent populations that may be exposed to chemicals that have been transported off site. Receptors may also include aquatic and terrestrial biota.

A critical step in assessing the potential risk to public health is to identify the pathways through which exposure could occur. The major transport pathway considered in the Glendale South OU baseline risk assessment was the use of contaminated groundwater. The point of potential contact with the contaminated groundwater is through water use from the upper or lower zone.

EPA evaluated two potential methods of exposure to water from the upper and lower zones of the aquifer: (1) exposure during

TABLE 7-1

COMPOUNDS OF POTENTIAL CONCERN INCLUDED IN THE QUANTITATIVE RISK ASSESSMENT FOR THE GLENDALE SOUTH PLUME OU

Constituent	Upper Zone (YES/NO)	Lower Zone (YES/NO)
VOCs		
Benzene	Y	N
Carbon Tetrachloride	Y	N
1,1-Dichloroethane	Y	N
1,2-Dichloroethane	Y	N
1,1-Dichloroethene	Y	N
Ethylbenzene	N	N
Methylene Chloride	Y	N
1,1,2,2-Tetrachloroethane	Y	N
Tetrachloroethene	Y	N
Toluene	Y	N
1,1,1-Trichloroethane	Y	N
Trichloroethene	Y	Y
Vinyl Chloride	Y	N
Xylene, Total	Y	N
BNAs		
Bis(2-ethylhexyl)phthalate	N	Y
Di-n-octylphthalate	N	Y
2-Methylnaphthalene	Y	N
Naphthalene	Y	N
Priority Pollutant Metals		
Arsenic	Y	N
Chromium	Y	N
Inorganics		
Nitrate	Y	Y

TABLE 7-2

SUMMARY OF MONITORING WELLS USED
IN THE BASELINE RISK ASSESSMENT
FOR THE GLENDALE SOUTH PLUME OU

Aquifer Zone	Monitoring Wells Included in Quantitative Risk Evaluation	
Upper	PO-VPB-01	PHC-MW-11
	PO-VPB-02	PHC-MW-12
	PO-CO2-52	PHC-MW-13
	AGL-MW-1	PHC-MW-14
	AGL-MW-2	PHC-MW-15
	AGL-MW-3	PHC-OS-01
	PHC-MW-01	PHC-EW-01
	PHC-MW-02	FRC-OW-01[a]
	PHC-MW-03	FRC-OW-02[a]
	PHC-MW-04	FRC-OW-03[a]
	PHC-MW-05	FRC-OW-04[a]
	PHC-MW-06	FRC-OW-05[a]
	PHC-MW-07	FRC-WCW-01[a]
	PHC-MW-08	FRC-WCW-02[a]
	PHC-MW-09	FRC-WCW-03[a]
	PHC-MW-10	FRC-WCW-04[a]
Lower	PO-CO1-195	
	PO-CO1-354	
	PO-CO2-205	

[a] Results available only for priority pollutant metals and nitrate

residential use and (2) exposure from discharge into the Los Angeles River.

EPA included three potential exposure routes in the Glendale North OU risk assessment: (1) drinking the groundwater during residential use and (2) inhaling the chemicals in groundwater vapors during showering. Dermal contact was also considered but was found by EPA not to pose a significant risk.

In accordance with current scientific opinion concerning carcinogens, it is assumed that any dose, no matter how small, has some associated response. This is called a nonthreshold effect. In the risk assessment for the Glendale South OU, the non-threshold effect was applied to all probable carcinogens. EPA has classified carcinogens with regard to the epidemiologic and toxicologic data available. The assessment of noncarcinogenic effects is complex. There is a broad interaction of time scales (acute, subchronic, and chronic) with varying kinds of effects. In addition, there are various levels of "severity" of effect. The Hazard Index is used to determine the potential for adverse health effects resulting from exposure to non-carcinogenic chemicals.

The Hazard Quotient is defined as the ratio of a single exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period. A reference dose (RfD) is EPA's preferred toxicity value for evaluating non-carcinogenic effects resulting from exposures at Superfund sites. The Hazard Index is the sum of more than one Hazard Quotient for multiple substances or multiple pathways. The Hazard Index is calculated separately for chronic, sub-chronic and shorter-duration exposures. A Hazard Index greater than 1.0 indicates the potential for adverse health effects. However, it should be noted that a Hazard Index value of 1.0 or greater does not mean that an adverse health effect is certain. It is a benchmark value indicating a greater probability for a possible adverse effect.

A quantitative analysis for potential human exposures was performed during the remedial investigation of the Glendale Study Area. The groundwater quality data were used to calculate the arithmetic mean and upper confidence limit (95 percent) of the arithmetic mean for the upper zone and the lower zone of the South Plume OU.

The methods and equations used to calculate the exposure due to ingestion of drinking water and inhalation of vapors during showering are described in Section 7.3.4 of the Remedial Investigation Report for the Glendale Study Area (January 1992). The results of the baseline risk characterization for the upper and lower zones of the aquifer are summarized in Tables 7-3 and 7-4 of this ROD. A summary of hazard index calculations for nitrate in groundwater is included in Table 7-5 of this ROD. A detailed discussion of the data presented in these tables is included in

TABLE 7-3

SUMMARY OF RISK CHARACTERIZATION FOR THE
UPPER ZONE AQUIFER
FOR THE GLENDALE SOUTH PLUME OU

Exposure Scenario	Arithmetic Mean[1]	RME[2]	Maximum[3]	Type of Risk
Adult Ingestion	8.00E-04	2.00E-03	1.00E-02	Cancer Risk
	2.00E+01	7.00E+01	1.00E+02	Hazard Index
Shower Inhalation	1.00E-03	4.00E-03	2.00E-02	Cancer Risk
	2.00E+01	6.00E+01	9.00E+01	Hazard Index

1 Average Value

2 Reasonable Maximum Exposure. The highest exposure that is reasonable expected to occur at a site (95% upper confidence limit of observed concentrations).

3 The exposure scenario using the highest observed concentration in any monitoring well in the south plume of groundwater contamination in the Glendale Study Area. EPA considers this scenario to be unreasonably high.

TABLE 7-4

SUMMARY OF RISK CHARACTERIZATION FOR THE
LOWER ZONE AQUIFER
FOR THE GLENDALE SOUTH PLUME OU

Exposure Scenario	Arithmetic Mean[1]	Maximum[2]	Type of Risk
Adult Ingestion	2.00E-05	5.00E-05	Cancer Risk
	2.00E-01	4.00E-01	Hazard Index
Shower Inhalation	5.00E-07	8.00E-07	Cancer Risk
	1.00E-01	4.00E-01	Hazard Index

1 Average Value

2 The exposure scenario using the highest observed concentration in any monitoring well in the south plume of groundwater contamination in the Glendale Study Area. EPA considers this scenario to be unreasonably high.

TABLE 7-5

SUMMARY OF HAZARD INDEX CALCULATIONS
FOR NITRATE IN GROUNDWATER
FOR THE GLENDALE SOUTH PLUME OU

Aquifer Zone	Arithmetic Mean[1]	RME[2]	Maximum[3]
Upper	1E+00	2E+00	2E+00
Lower	4E-01	----[a]	8E-01

1 Average Value

2 Reasonable Maximum Exposure. The highest exposure that is reasonable expected to occur at a site (95% upper confidence limit of observed concentrations).

3 The exposure scenario using the highest observed concentration in any monitoring well in the south plume of groundwater contamination in the Glendale Study Area. EPA considers this scenario to be unreasonably high.

a Not calculated due to small sample set.

Section 8.0 of the RI Report.

The risk associated with ingestion of groundwater from the upper zone found that the major contributors to the total risk value are methylene chloride, arsenic, benzene, 1,1-DCE, vinyl chloride, PCE and TCE, in descending order of risk contribution. For shower inhalation risks, methylene chloride is the most significant contributor to the overall risk. Benzene, 1,1-DCE, and TCE are secondary contributors.

As can be seen from Table 7-3, the total cancer risk values for estimates of concentrations at point of exposure for this pathway (i.e., ingestion of groundwater from the upper zone) are 8E-04, 2E-03, and 1E-02 for the arithmetic mean, upper bound 95 percent confidence interval, and the maximum concentrations in groundwater, respectively. The total noncarcinogenic risk values for estimates of concentrations at point of exposure for this pathway are 2E+01, 7E+01, and 1E+02 for the arithmetic mean, upper bound 95 percent confidence interval, and the maximum concentrations in groundwater, respectively. The noncarcinogenic risk values for exposure to nitrate in the upper zone is 2E+00, for the upper bound 95 percent confidence interval, which exceeds the benchmark of 1.0.

Table 7-3 also contains a summary of risk characterization for inhalation of groundwater from the upper zone. The total carcinogenic risk values for estimates for concentrations at point of exposure for this pathway are 1E-03, 4E-03, and 2E-02 for the arithmetic mean, upper bound 95 percent confidence interval, and the maximum concentrations in groundwater, respectively. Methylene chloride is the most significant contributor to the overall risk. The total noncarcinogenic risk values for estimates of concentrations at point of exposure for this pathway are 2E+01, 6E+01, and 9E+01 for the arithmetic mean, upper bound 95 percent confidence interval, and the maximum concentrations in groundwater, respectively. Benzene is the single most significant contributor to the elevated hazard index.

Table 7-4 summarizes the risk characterization for the lower zone aquifer. The total carcinogenic risk values for estimates for concentrations at point of exposure for ingestions are 2E-05 and 5E-05 for the arithmetic mean and the maximum concentrations in groundwater, respectively. TCE and bis(2-ethylhexyl)phthalate were the only carcinogenic compounds detected in the lower zone carried into the quantitative assessment for risk through ingestion. Of these, bis(2-ethylhexyl)phthalate is the most significant contributor to risk levels above 1E-06. The total noncarcinogenic risk values for all three of the compounds quantified are below the benchmark of 1.0 for the arithmetic mean and maximum concentrations at point of exposure for ingestion of groundwater from the lower zone. The noncarcinogenic risk values calculated for nitrate were also below the benchmark of 1.0.

TCE was the only carcinogenic compound detected in the lower zone to be quantified for risk due to inhalation. The risk levels for the estimates of concentrations for this pathway are 5E-07 and 8E-07 for the arithmetic mean and maximum values, respectively. Both risk values are below 1E-06. The sum of noncarcinogenic risk values for all three of the compounds quantified are below the benchmark of 1.0 for the arithmetic mean and maximum concentrations at point of exposure for inhalation of groundwater from the lower zone.

The uncertainties associated with the Glendale South OU risk assessment are discussed in detail in Section 8.6 of the Remedial Investigation Report for the Glendale Study Area (January 1992).

In summary, the results of the human health portion of the Glendale South OU risk assessment indicated that contaminant levels in the upper zone of the aquifer of the Glendale Study Area would pose an unacceptable (2×10^{-3}) risk to human health if this water were to be delivered directly to local residents, without being treated. This means that an individual exposed to the conservatively high conditions used in the risk assessment (eg, consume two liters of untreated water every day over a 70-year lifetime) would have an increased chance (1 in 500) of developing cancer during their lifetime.

Environmental Risk Assessment

An ecological risk assessment was also performed for the Glendale South OU to address the potential ecological risks to flora and fauna in the area (see Section 8.7 of the Remedial Investigation Report for the Glendale Study Area, January 1992). This assessment provided a qualitative evaluation of potential current and future risks represented by the present site conditions, assuming no remedial action is taken in the Glendale Study Area.

The Glendale Study Area is zoned for commercial and industrial establishments. The surrounding area is a mixture of residential and commercial zoning. Although an extensive ecological survey was not performed for the area, the presence of a significant wildlife population was not indicated. In addition, the developed condition of the site excludes the potential for significant natural vegetative cover.

The release pathway of primary concern at this site is contaminated groundwater to the Los Angeles River. Discharge occurs under rising water conditions in the aquifer due to lack of production well pumping in this area. However, discharges are expected to be infrequent, seasonal, and localized.

Given the present developed condition of the site and the major exposure pathway consideration of contaminated groundwater,

there was no expectation for significant impact to potential environmental receptors. Urbanization has already replaced habitat potential; therefore, no significant number of receptors appeared to be present. There appeared to be no apparent mechanism for exposure to environmental receptors from contaminated groundwater. Also, there was no indication that future site plans would reinstate habitat and thereby recreate a potential for environmental receptors in the future.

8.0 DESCRIPTION OF ALTERNATIVES

Based on the results of the RI, EPA identified several cleanup alternatives for addressing groundwater contamination in the Glendale South Plume. The alternatives were developed to meet the following specific cleanup objectives for the Glendale South OU:

- To inhibit vertical and horizontal migration of groundwater contamination in the South Plume of the Glendale Study Area

- To begin to remove contaminant mass from the upper zone of the aquifer in the South Plume of the Glendale Study Area.

All of the alternatives, with the exception of the "no action" alternative (Alternative 1), involve groundwater extraction and treatment for the shallow aquifer system in the Glendale area of the San Fernando Valley. The upper zone or shallow-most portion of the aquifer is where the majority of the VOC contamination has been identified. Detailed descriptions of the various alternatives are presented in the Feasibility Study for the Glendale Study Area South Plume Operable Unit (August 1992).

Initially, all of the alternatives were screened for: 1) effectiveness at protecting public health and the environment, 2) technical feasibility (implementability), and 3) cost. As a result of this initial screening, six alternatives were evaluated using nine specific criteria: 1) Overall Protection of Human Health and the Environment, 2) Compliance with Applicable or Relevant and Appropriate Requirements (ARARs), 3) Long-term Effectiveness and Permanence, 4) Reduction of Toxicity, Mobility or Volume through Treatment, 5) Short-term Effectiveness, 6) Implementability, 7) Cost, 8) State Acceptance, and 9) Community Acceptance. Each of EPA's nine evaluation criteria is summarized below.

Overall Protection of Human Health and the Environment: This criterion assesses whether each alternative provides for both short term and long term overall protection of human health and the environment from unacceptable risks posed by the hazardous substances, pollutants, or contaminants present in the South Plume. The assessment draws upon the evaluation of short-term effectiveness, long-term effectiveness, implementability, reduction

of toxicity, mobility and/or volume through treatment, and compliance with ARARs.

Compliance with ARARs: This criterion is used to determine whether the alternative meets all of the chemical-, action- and location-specific ARARs identified in Section 10 of this ROD. Since the remedial action established by the Glendale South OU ROD is an interim action, chemical-specific requirements to be attained in the aquifer at the end of the final remedy are not ARARs for this action. Action-specific ARARs address the groundwater response actions that may be taken as part of this interim action for the Glendale South OU. All of the alternatives, except no action, include groundwater extraction followed by treatment and use as potable supply or disposal. Therefore, specific levels for treatment of the contaminated water prior to disposal or to delivery to the drinking water purveyor are chemical-specific and action-specific ARARs for the Glendale South OU.

Long-Term Effectiveness and Permanence: Long-term effectiveness refers to the period after the remedial action is complete. Each alternative is assessed for its long-term effectiveness and permanence in reducing the risk to human health and the environment at the end of the 12-year period. The long-term effectiveness evaluation focuses on how well the contamination has been contained by the remedial action and what are the contaminant concentrations remaining in the aquifer at the end of the 12-year period.

Reduction of Toxicity, Mobility, and/or Volume through Treatment: This criterion addresses how well the remediation technologies permanently and significantly reduce the toxicity, mobility and/or volume of the hazardous substances. The evaluation based on this criterion focuses on the quantity of hazardous materials destroyed or treated, the degree to which the remedial action is irreversible, the type and quantity of residuals that are remaining after the remedial action is complete, and whether the alternative satisfies the statutory preference for treatment as a principal element of the remedy.

Short-Term Effectiveness: Each alternative is evaluated based on its effectiveness in protecting human health and the environment during the construction and implementation period. The short-term effectiveness evaluation for each alternative focuses on how well the alternative removes contaminant mass, inhibits the movement of the contaminant plume, and how well the treatment system meets the cleanup levels in the extracted and treated groundwater during the 12-year period. Short-term effectiveness also addresses the effectiveness of the alternative in reducing potential risks to people living in the vicinity of the Glendale South Plume and to workers' health and safety during construction of the proposed facilities and implementation of the interim remedy.

Implementability: The implementability criterion includes both the technical and administrative feasibility of implementing an alternative. The technical feasibility refers to the ability to construct, reliably operate and maintain, and meet cleanup levels for process options. Administrative feasibility refers to the ability to obtain approvals from other offices and agencies, the availability and capacity of treatment, storage, and disposal services, and the availability of specific equipment and technical specialists.

Cost: The NCP requires that the following types of costs be evaluated: 1) Capital costs, including both direct and indirect costs, 2) Annual operation and maintenance costs and 3) Net present value of capital and operations and maintenance (O&M) costs. Capital and O&M costs presented in the Glendale South OU FS report have an accuracy of +50 percent to -30 percent, as specified by the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (USEPA, 1988). Capital costs include a contingency of 20 percent of total field costs (TFC) and a contractor's overhead and profit (OH&P) at 30 percent of the sum of TFC and contingency. Evaluating present worth costs assumes an interest rate of 10 percent and operating period of 12 years. The O&M cost evaluation assumes an operating load factor of 90 percent.

State Acceptance: This criterion considers the concerns of the State (technical and administrative) regarding the alternatives.

Public Acceptance: This criterion assesses the components of alternatives that interested persons in the community support, have reservations about or oppose.

EPA's preferred alternative, as well as the other five alternatives were described in EPA's Proposed Plan for the Glendale South OU (September 1992).

The Glendale South OU is an interim action and is not the final remedy for cleanup of contaminated groundwater in the Glendale area. With the exception of the no action alternative, all of the alternatives involve the extraction of 2,000 gpm of groundwater for a period of 12 years. The total duration of the remedy is 15 years, but during the first three years the remedy will be in the remedial design and construction phases and no extraction or treatment of groundwater will be taking place. A computer model called a solute transport model was developed and used to determine that the extraction rate of 2,000 gpm over a 12 year period would result in the most effective inhibition of plume migration and effective contamination removal for this interim action. With the exception of Alternative 1 - No Action, all of the alternatives would involve the construction and operation of a VOC treatment system.

With the exception of Alternative 1 - No Action, the six alternatives analyzed and compared during the FS and presented in the Glendale South OU FS report include four major elements: 1) extraction of contaminated groundwater at the rate of 2000 gpm, 2) treatment of the VOCs, 3) treat/blend/no action for nitrates, and 4) one of three options for final use - distribution to a public water supply system, spreading at an existing spreading grounds, or discharge to the Los Angeles River (See Table 8-1). The major elements of each of six alternatives are listed below.

Alternative 1	No Action
Alternative 2	Extract/Treat VOCs (either air stripping w/vapor-phase GAC or liquid-phase GAC)/Blending for Nitrate/Public Water Supply
Alternative 3	Extract/Treat VOCs (perozone)/ Blending for Nitrate/Public Water Supply
Alternative 4	Extract/Treat VOCs (either air stripping w/vapor-phase GAC or liquid-phase GAC)/No nitrate treatment/River
Alternative 5	Extract/Treat VOCs (either air stripping w/vapor-phase GAC or liquid-phase GAC)/Ion Exchange for nitrate/Recharge at Headworks Spreading Ground
Alternative 6	Extract/Treat VOCs (either air stripping w/vapor-phase GAC or liquid-phase GAC)/No nitrate treatment/Recharge at Headworks Spreading Grounds

The highlights of the six alternatives are summarized briefly below. More detailed descriptions of the alternatives are presented in the Feasibility Study for the Glendale Study Area South Plume Operable Unit (August 1992).

Alternative 1: No Action

The No Action alternative serves as a "baseline" against which other alternatives are compared. This alternative is evaluated to determine the risks that would be posed to public health and the environment if no action were taken to treat or contain the contamination. The no action alternative would involve only

groundwater monitoring; no additional cleanup activities would be conducted.

Alternative 2: EPA's Preferred Alternative: Extract/Treat(either Air Stripping w/Vapor-Phase GAC or Liquid-Phase GAC/Blend for nitrates/Public Water System

Alternative 2 involves the extraction of 2,000 gpm of contaminated groundwater for 12 years. The extraction wells would be located to inhibit most effectively the migration of the contaminant plume. Various locations and scenarios for extraction wells and rates of extraction are proposed in the feasibility study report for the Glendale South OU. However, all design decisions for this interim remedy will be made during the remedial design phase. At that time, one of the locations proposed for extraction wells and scenarios for rates of extraction at individual wells may be selected or new ones may be selected.

The extracted groundwater will be filtered to remove any suspended solids, if necessary, and then treated for VOCs using dual-stage or single-stage air stripping with vapor-phase GAC adsorption for emissions control or liquid-phase GAC. Whether air-stripping (dual versus single) or liquid phase GAC will be used will be determined during remedial design as will the exact location for the treatment plant. If necessary to meet drinking water standards, a chromium reduction and filtration unit will be added to the treatment train. The treated water will be blended with water of a quality such that the treated, blended water would meet all drinking water standards (including the nitrate MCL). The treated water shall meet all ARARs identified in Section 10 of this ROD and will be conveyed to the City of Glendale and/or another San Fernando Valley water purveyor for blending and distribution through the public water supply system. The blended water will have to meet all applicable drinking water requirements for drinking water in existence at the time that the water is served prior to distribution through the public drinking water supply system.

In response to comments by the City of Glendale on the Glendale North and South OU Proposed Plans and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined at a single location and the total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact location and configuration of the combined treatment plant will be determined during the remedial design phase of the project. The Glendale North OU Record of Decision will also reflect this decision to combine the treatment plants. However, if the City of Glendale does not accept any or all of the treated water (possibly due to water supply needs), any remaining portion of water will be: 1) offered to another San Fernando Valley water purveyor or 2)

recharged into the aquifer at the Headworks Spreading Grounds per Alternative 6 (see description below).

If EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale South OU, a separate Glendale South OU treatment plant will be constructed and the water will be conveyed to another San Fernando Valley water purveyor. Two of the possible locations for the treatment plant in the Glendale South OU are proposed in the Glendale South OUFS report. As a further contingency, if a municipality or municipalities do not accept all or part of the treated water from a separate Glendale South OU treatment plant (possibly due to water supply needs), the extracted treated water will be conveyed to the Headworks Spreading Grounds where it will be recharged to the aquifer.

Groundwater monitoring wells will be installed to evaluate the effectiveness of the remedial action. More specifically, groundwater monitoring shall be conducted no less frequently than quarterly to: 1) evaluate influent and effluent water quality, 2) determine and evaluate the capture zone of the extraction wells, 3) evaluate the vertical and lateral (including downgradient) migration of contaminants, 4) evaluate the effectiveness of the recharge system, if necessary and 5) monitor any other factors associated with the effectiveness of the interim remedy determined to be necessary during remedial design.

Alternative 3: Extract/Treat(Perozone Oxidation)/Blending for Nitrates/Public Water System

Alternative 3 also requires the extraction of 2,000 gpm of contaminated groundwater for 12 years, and the same final use of the treated water and the same groundwater monitoring requirements as Alternative 2. Alternative 3 only differs from Alternative 2 in that the extracted groundwater would be treated for VOCs using perozone oxidation, followed by either air stripping with vapor-phase GAC adsorption for emissions control or liquid phase GAC. Air stripping or liquid-phase GAC would be required to remove any carbon tetrachloride in the extracted groundwater because the perozone oxidation process alone does not effectively treat this VOC. If necessary to meet drinking water standards, a chromium reduction and filtration unit will be added to the treatment train.

Alternative 4: Extract/Treat (either Air Stripping w/Vapor-Phase GAC or Liquid-Phase GAC)/No Nitrate Treatment/River

Alternative 4 also involves the extraction of 2,000 gpm of contaminated groundwater for 12 years, and the same treatment methodology and the same groundwater monitoring requirements as Alternative 2. As with Alternative 2, if necessary to meet drinking water standards, a chromium reduction and filtration unit will be added to the treatment train. However, rather than

providing the treated water to a public water purveyor, the treated water would be discharged to the Los Angeles River.

Alternative 5[1]: Extract/Treat (either Air Stripping w/Vapor-Phase GAC or Liquid-Phase GAC)/Ion Exchange for Nitrates/Recharge at Spreading Grounds

Alternative 5 also involves the extraction of 2,000 gpm of contaminated groundwater for 12 years, and the same treatment and monitoring requirements as Alternative 2. As with Alternative 2, if necessary to meet drinking water standards, a chromium reduction and filtration unit will be added to the treatment train. Alternative 5 differs from Alternative 2 in that after treatment for VOCs, the water would be treated using ion exchange to reduce the nitrate levels in the water to meet the nitrate MCL. The treated water would then be recharged at a spreading ground.

Alternative 6: Extract/Treat (either Air Stripping w/Vapor-Phase GAC or Liquid-Phase GAC)/No Nitrate Treatment/Recharge at Spreading Grounds

Alternative 6 also involves the extraction of 2,000 gpm of contaminated groundwater for 12 years, the same treatment approach as described in Alternative 2 and the same ground water monitoring requirements as Alternative 2. As with Alternative 2, if necessary to meet drinking water standards, a chromium reduction and filtration unit will be added to the treatment train. However, unlike Alternative 2, the treated water would be recharged to the aquifer at the Headworks Spreading Grounds. No blending or treatment for nitrates would occur prior to recharge.

9.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

A comparative analysis of the alternatives against the nine evaluation criteria is presented in this section.

No Action versus the Nine Criteria. Clearly, Alternative 1 would not be effective in the short- and long-term in protecting human health and the environment as it does not provide for removing any contaminants from the upper zone of the aquifer, for inhibiting further downgradient and vertical contaminant plume migration, or for reducing the toxicity, mobility and volume of contaminants through treatment. Implementing the no-action alternative would be simple and inexpensive since it involves only groundwater monitoring. As indicated by the baseline risk assessment for the Glendale South OU presented in the RI Report for the Glendale Study Area (January 1992), Alternative 1 could pose both carcinogenic and

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[1] Note: Alternative #5 as presented in this ROD was formerly Alternative #8 in the Feasibility Study for the Glendale Study Area: South Plume Operable Unit (August 1992).

non-carcinogenic risk if a person were exposed to the groundwater from the upper zone of the aquifer. Loss of a valuable water resource from continued degradation of the aquifer and discharge of valuable water to the river is a major concern.

Overall Protection of Human Health and the Environment, Short Term Effectiveness and Long Term Effectiveness.

Alternatives 2, 3, 4, 5, and 6 have the same effectiveness in the short and long term in reducing the risk to human health and the environment by removing contaminants from the Upper Zone of the aquifer; by inhibiting further downgradient contaminant migration; and by reducing the toxicity, mobility, and volume of contaminants in the aquifer. During the first 12 years of operation, these alternatives are estimated to remove approximately 80 percent of the total estimated initial dissolved-phase TCE mass, with a peak TCE concentration of 10 ug/l remaining in the Upper Zone of the aquifer.

Reduction of Toxicity, Mobility and Volume through Treatment. The VOC treatment technologies used in Alternatives 2, 4, 5, and 6 (either air stripping with vapor-phase GAC adsorption or liquid phase GAC adsorption) and used in Alternative 3 (perozone oxidation followed by either air stripping with vapor-phase GAC adsorption or liquid-phase GAC) are technically feasible and effective in meeting ARARs for VOCs in the extracted and treated groundwater. Treatment of the extracted contaminated groundwater via air stripping with vapor-phase GAC adsorption or liquid phase GAC adsorption would reduce substantially the toxicity and mobility of contaminants in the aqueous phase. The adsorption of contaminants onto the GAC would reduce the volume of contaminated media. However, a substantially larger quantity of contaminated GAC media would be generated with either air stripping with vapor-phase GAC or liquid-phase GAC systems compared to perozone oxidation (which is a destructive technology) followed by either air stripping with vapor-phase GAC adsorption or liquid-phase GAC. This contaminated GAC would require disposal or regeneration.

Treatment of the extracted contaminated groundwater via perozone oxidation followed by either air stripping with vapor-phase GAC adsorption or liquid-phase GAC would destroy greater than 90 percent of the VOCs, and generate a smaller quantity of contaminated GAC media compared to air stripping with vapor-phase GAC alone. VOC treatment using perozone oxidation has only been tested and applied in pilot-scale/limited applications, and limited O&M data are available; however, a demonstration-scale (2,000-gpm) facility has begun operation in North Hollywood for treating TCE- and PCE-contaminated groundwater. This prototype facility should provide useful information regarding the long-term performance and O&M costs.

As a result of comments received during the public comment period for the Glendale North OU, EPA further evaluated the use of perozone oxidation for the Glendale South OU. Additional research on perozone use and revised cost estimates based on a bench scale treatability study can be found in the following technical memorandum: Applicability of Perozone Treatment Process for the Glendale North Operable Unit Groundwater Remediation (March 12, 1993) included in the Administrative Record for the Glendale South OU available at all five information repositories for the San Fernando Valley Superfund sites. Carbon tetrachloride, which is one of the contaminants found in the groundwater of the Glendale South plume, is not as readily treated using the perozone process and must be treated using air-stripping or liquid phase GAC to ensure that the treated water will meet all drinking water standards for VOCs. In addition, incomplete oxidation can lead to the formation of by-products such as formaldehyde which would also need to addressed. The bench scale treatability study found that the total present worth cost estimated in the FS report is underestimated and $500,000 or more could be added to the estimated $31,200,000. These factors coupled with the uncertainties associated with design, capital and operational costs and reliability, and finally the fact that a municipality will be receiving this water, all combine to make Alternative 3 less preferable than Alternatives 2 and 4 through 6 which propose using air stripping or liquid phase GAC for VOC treatment.

Compliance with ARARs. As discussed in the ARARs section (Section 10) of this ROD, since this remedial action is an interim action, there are no chemical-specific ARARs for aquifer cleanup for any of the alternatives. For Alternatives 2 through 6, the chemical-specific ARARs for the treated water from the VOC treatment plant at this site are Federal MCLs and more stringent State MCLs for VOCs. Alternatives 2, 4, 5, and 6 are expected to meet these ARARs for the treated water. There is some uncertainty regarding the ability of Alternative 3 to meet these ARARs because perozone has not been used to treat such high concentrations of VOCs at such high flow rates. Therefore, there is the potential for not meeting MCLs unless the air stripping or liquid-phase GAC unit following the perozone system is a redundant treatment system (which would add substantially to the cost).

For the Alternatives that involve distribution of the treated water to a public water supply system (Alternatives 2 and 3), secondary drinking water standards are ARARs and will be met prior to blending of the water for nitrate. For water that will be served at the tap, all applicable requirements will have to be met after blending, including the nitrate MCL. For Alternatives 5 and 6, the nitrate levels in the treated groundwater will meet ARARs by ensuring that recharge of the treated groundwater occurs where levels of these substances in the receiving aquifer are similar to those in the treated water to be recharged or that the water will be treated for nitrates prior to recharge. EPA has confirmed that

nitrate levels in the groundwater beneath the Headworks Spreading Grounds are similar to the nitrate levels observed in the vicinity of proposed extraction well sites. In Alternative 4, the treated water will meet MCLs for VOCs prior to discharge to the Los Angeles River (which is on-site).

Implementability. Technically and administratively, Alternatives 2, 3, 4 and 6 could be implemented. The technologies considered for groundwater monitoring, extraction, and conveyance are proven and have been applied extensively. For Alternative 6, the availability of the Headworks Spreading Grounds for discharge of extracted and treated groundwater would need to be addressed. Technically, Alternative 5 could probably be implemented, but using ion exchange for nitrate treatment poses some technical and administrative feasibility issues. In particular, disposing of the waste brine generated from backwashing the ion exchange system may restrict the technical and administrative feasibility of using ion exchange for nitrate treatment.

EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The City of Glendale has indicated that it has sufficient water credits and capacity in their existing water system to accept this amount of extracted treated water. Therefore, combining the treatment plants for the Glendale North and South OUs would be implementable.

State and Public Acceptance. Based on comments received during the public comment period, the public generally expressed support for Alternatives 2 through 6. EPA received comments from the City of Glendale and members of the Glendale community specifically in support of Alternatives 2 and 6. Comments received during the public comment period along with EPA responses are presented in Part III of this ROD, the Responsiveness Summary. In a letter dated May 28, 1993, the State (Cal-EPA) agreed with EPA's selected remedy for the Glendale South OU. The State Water Resources Control Board did not support Alternative 4 which involves discharge to the Los Angeles River because this alternative does not put the treated water "to beneficial use to the fullest extent of which they are capable."

A public meeting was held in the City of Glendale on October 21, 1992, to discuss EPA's preferred alternative and the other alternatives. At this meeting EPA gave a brief presentation regarding the Proposed Plan, answered questions, and accepted comments from members of the public.

In their written comments during the public comment period for the Glendale South Proposed Plan, the City of Glendale emphasized

TABLE 8-1
SUMMARY OF ALTERNATIVES

COMPONENTS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Groundwater Extraction	None	Extract 2000 gpm of groundwater.	Same as Alternative 2.
Treatment	None	Treat VOCs with either air stripping and vapor-phase GAC or liquid-phase GAC. Meet nitrate MCL by blending. Chromium treatment to be added if necessary.	Treat VOCs with perozone oxidation, airstripping and vapor-phase GAC. Same as Alternative 2. Same as Alternative 2.
Final Use	Monitor groundwater quality	Convey treated, blended water to water purveyor.	Same as Alternative 2.
CRITERIA	EVALUATION		
Effectiveness and Permanence	Not effective in the short- or long-term	Inhibit vertical and lateral migration of contaminant plume. Significantly reduced contaminated groundwater discharge to LA River. Remove contaminant mass from aquifer. Treated, blended groundwater would meet drinking water standards.	Same as Alternative 2. Same as Alternative 2. Same as Alternative 2. Same as Alternative 2.
Reduction of Toxicity, Mobility, Volume through Treatment	No reduction of toxicity, mobility, or volume	Estimated to reduce TCE concentrations in the aquifer from 200 ppb to less than 10 ppb after 12 years. Removes 80% of the initial mass of TCE in the aquifer.	Same as Alternative 2. Same as Alternative 2.
Compliance with ARARs	Will not meet ARARs	Will meet ARARs.	Same as Alternative 2.
Overall Protection of Human Health and Environment			
(Human Health)	Assuming no institutional controls, increased cancer risk of ingesting contaminated groundwater is estimated to be 1 in 500.	Protective of human health.	Same as Alternative 2.
(Environment)	Not protective of environment.	Environmental degradation will be reduced because migration of groundwater containing TCE concentrations inhibited and TCE mass removed.	Same as Alternative 2.
Implementability (Technical)	Monitoring wells easy to construct. Spread of groundwater plume could make future remediation difficult.	Can be implemented	Can be implemented. Perozone oxidation only proven in pilot-scale tests.
ESTIMATED COSTS			
Total Capital Cost Annual O&M Total Present Worth	$211,000* $109,000* $769,000*	$15,540,000* $1,852,000* $25,020,000*	$16,620,000* $1,729,000* $25,470,000*

* If chromium treatment is needed, additional capital costs are expected to be $2,950,000, additional annual O&M $611,000, and additional total present worth costs $6,750,000.

TABLE 8-1 (Continued)
SUMMARY OF ALTERNATIVES

ALTERNATIVE 4	ALTERNATIVE 5**	ALTERNATIVE 6
Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Same as Alternative 2. No nitrate treatment. Same as Alternative 2.	Same as Alternative 2. Treatment of nitrate with ion exchange. Same as Alternative 2.	Same as Alternative 2. No nitrate treatment. Same as Alternative 2.
Discharge treated water to Los Angeles River.	Discharge treated water to Headworks Spreading Grounds.	Same as Alternative 5.
Same as Alternative 2. Same as Alternative 2. Same as Alternative 2. Treated groundwater would meet drinking water standards for VOCs and surface discharge standards for nitrates.	Same as Alternative 2. Same as Alternative 2. Same as Alternative 2. Treated groundwater would meet drinking water standards for VOCs and nitrates.	Same as Alternative 2. Same as Alternative 2. Same as Alternative 2. Treated groundwater would meet drinking water standards for VOCs and recharge requirements.
Same as Alternative 2. Same as Alternative 2.	Same as Alternative 2. Same as Alternative 2.	Same as Alternative 2. Same as Alternative 2.
Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Same as Alternative 2. Same as Alternative 2.	Same as Alternative 2. Same as Alternative 2.	Same as Alternative 2. Same as Alternative 2.
Can be implemented. Administrative concerns associated with objection to non-beneficial use of water.	Can be implemented, except issues associated with waste brine disposal from nitrate treatment facility and availability of Headworks Spreading Grounds	Can be implemented; one administrati issue may be the availability of the Headworks Spreading Grounds for recharge.
$10,611,000* $1,384,000* $17,700,000*	$25,140,000* $2,464,000* $37,750,000*	$14,160,000* $1,613,000* $22,420,000*

** Alternative 5 was formerly Alternative 8 in the Feasibility Study for the Glendale Study Area: South Plume Operable Unit (August 1992)

that it would like to receive more than just the 3,000 gpm of extracted, treated groundwater proposed for Glendale North and that the City would accept the water from both North and South OUs. The City also indicated that it had stored water credits and water rights sufficient to accept greater than 5,000 gpm of extracted, treated groundwater from the San Fernando Valley. As a result of the City's comments on the Glendale North and South OUs and the cost analysis discussed below, EPA has determined that the treatment plants for the Glendale North and South OUs will be combined and the total 5,000 gpm of treated water will be conveyed to the City of Glendale.

Cost. The estimated total present worth of Alternatives 2, 3, 4, and 6 ranges from $17,700,000 to $25,470,000. The total present worth cost for Alternative 2 is $25,020,000 . The total present worth for Alternative 5 which includes nitrate treatment using ion exchange is $37,750,000. Using ion exchange for nitrate treatment adds significantly to the cost of the alternatives. If a chromium reduction and filtration unit is found to be necessary to meet drinking water standards this would add an estimated $6,750,000 to the total present worth of the alternatives.

EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The costs of the two separate OU projects is estimated to be $36,400,000 for Glendale North and $25,020,000 for Glendale South. Therefore, these two separate OU projects would total $61,420,000. Recent EPA cost estimates (included in the Glendale South OU Administrative Record) indicate that combining the Glendale North and South OUs could result in a total cost of $ 47,532,000, resulting in an estimated cost savings of $ 13,888,000.

Although the cost estimate for Alternative 2 is slightly higher than some of the other alternatives, these overall project costs do not take into account the value of utilizing the groundwater resource as opposed to disposing of the water in the Los Angeles River (Alternative 4) or recharging at the Headworks Spreading Ground (Alternatives 5 and 6).

10.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

This section discusses Applicable or Relevant and Appropriate requirements (ARARs) for the Glendale South OU. Under Section 121(d)(1) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (collectively, CERCLA), 42 U.S.C. § 9621(d) remedial actions must attain a level or standard of control of hazardous substances which complies with ARARs of

Federal environmental laws and more stringent state environmental and facility siting laws. Only state requirements that are more stringent than Federal ARARs, and are legally enforceable and consistently enforced may be ARARs.

Pursuant to Section 121(d) of CERCLA, the on-site portion of a remedial action selected for a Superfund site must comply with all ARARs. Any portion of a remedial action which takes place off-site must comply with all laws legally applicable at the time of the off-site activity occurs, both administrative and substantive.

An ARAR may be either "applicable", or "relevant and appropriate", but not both. According to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300), "applicable" and "relevant and appropriate" are defined as follows:

- Applicable requirements are those cleanup standards, standards of control, or other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than Federal requirements may be applicable. "Applicability" implies that the remedial action or the circumstances at the site satisfy all of the jurisdictional prerequisites of a requirement.

- Relevant and appropriate requirements are those cleanup standards, standard of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and that are more stringent than Federal requirements may be relevant and appropriate.

Chemical-Specific ARARs. Chemical-specific ARARs are health- or risk-based concentration limits, numerical values, or methodologies for various environmental media (i.e., groundwater, surface water, air, and soil) that are established for a specific chemical that may be present in a specific media at the site, or that may be discharged to the site during remedial activities. These ARARs set

limits on concentrations of specific hazardous substances, pollutants, and contaminants in the environment. Examples of this type of ARAR are ambient water quality criteria and drinking water standards.

Location-Specific ARARs. Location-specific requirements set restrictions on certain types of activities based on site characteristics. Federal and state location-specific ARARs are restrictions placed on the concentration of a contaminant or the activities to be conducted because they are in a specific location. Examples of special locations possibly requiring ARARs may include flood plains, wetlands, historic places, and sensitive ecosystems or habitats.

Action-Specific ARARs. Action-specific requirements are technology- or activity-based requirements which are triggered by the type of remedial activities under consideration. Examples are Resource, Conservation and Recovery Act (RCRA) regulations for waste treatment, storage or disposal.

Neither CERCLA nor the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (400 C.F.R. Part 300) provides across-the-board standards for determining whether a particular remedy will result in an adequate cleanup at a particular site. Rather, the process recognizes that each site will have unique characteristics that must be evaluated and compared to those requirements that apply under the given circumstances. Therefore, ARARs are identified on a site-specific basis from information about specific chemicals at the site, specific features of the site location, and actions that are being considered as remedies.

The following section outlines the Applicable or Relevant and Appropriate Requirements (ARARs) that apply to this site.

10.1 Chemical-Specific ARARs

10.1.1 Federal Drinking Water Standards

Section 1412 of the Safe Drinking Water Act (SDWA), 42 U.S.C. §300g-1, "National Water Regulations"; National Primary Drinking Water Regulations, 40 CFR Part 141.

EPA has established Maximum Contaminant Levels (MCLs) (40 CFR Part 141) under the Safe Drinking Water Act (SDWA) to protect public health from contaminants that may be found in drinking water sources. These requirements are applicable at the tap for water provided directly to 25 or more people or which will be supplied to 15 or more service connections. The MCLs are applicable to any water that would be served as drinking water. Under NCP Section 300.430(f)(5), remedial actions must generally attain MCLs and non-zero Maximum Contaminant Level Goals (MCLGs) for remedial actions where the groundwater is currently or potentially a source of

drinking water.

The Glendale South groundwater is a potential source of drinking water. However, since the Glendale South OU remedial action is an interim action, chemical-specific cleanup requirements for the aquifer such as attaining MCLs and non-zero MCLGs, which would be ARARs for a final remedy, are not ARARs for this interim action. (See 55 Fed. Reg. 8755.) Nevertheless, EPA has determined that for the treatment plant effluent from the Glendale South OU, the Federal Maximum Contaminant Levels (MCLs) for VOCs and any more stringent State of California MCLs for VOCs are relevant and appropriate and must be attained regardless of the end use or discharge method for the treated water.

For the treated and blended water which will be put into the public water supply, all applicable requirements for drinking water in existence at the time that the water is served will have to be met because EPA considers the blending facility and the serving of the water to the public (at the tap) to be off-site. Complying with all applicable requirements for drinking water at the tap will also require attainment of the MCL for nitrate prior to serving the water to the public. Since these are not ARARs, these requirements are not "frozen" as of the date of the ROD. Rather, they can change over time as new laws and regulations applicable to drinking water change. See 55 Fed. Reg. 8758 (March 8, 1990). Figure 10-1 provides a diagram of the treatment chain and blending process for the treated water prior to distribution of the treated and blended water to the public water supply for Alternatives 2 and 3.

10.1.2 State Drinking Water Standards

California Safe Drinking Water Act, Health and Safety Code, Division 5, Part 1, Chapter 7, §4010 et seq., California Domestic Water Quality Monitoring regulations, CCR Title 22, Division 4, Chapter 15, §64401 et seq.

California has also established drinking water standards for sources of public drinking water, under the California Safe Drinking Water Act of 1976, Health and Safety Code Sections 4010.1(b) and 4026(c). California has promulgated MCLs for primary VOCs. Several of the State MCLs are more stringent than Federal MCLs. In these cases, EPA has determined that the more stringent State MCLs for VOCs are relevant and appropriate for the treatment plant effluent from the Glendale South OU interim remedy. The VOCs for which there are more stringent State standards include: benzene; carbon tetrachloride; 1,2-dichloroethane (1,2-DCA); 1,1-dichloroethene (1,1-DCE); cis-1,2-DCE; trans-1,2-DCE; and xylene. There are also some chemicals where State MCLs exist but there are no Federal MCLs. EPA has determined that these State MCLs are relevant and appropriate for the treated water prior to discharge or delivery to the water purveyor. The VOCs for which there are no Federal MCLs but for which State MCLs exist include: 1,1-DCA;

1,1,2,2-tetrachloroethane; and 1,1,2-trichloroethane.

Water served as drinking water is required to meet MCLs at the tap, not MCLGs. Therefore, EPA would generally not expect a future change in an MCLG to affect the use of treated groundwater as a drinking water source. The cumulative hazard index is also not an ARAR. However, EPA does retain the authority to require changes in the remedy if necessary to protect human health and the environment, including changes to previously selected ARARS. See 40 C.F.R. Sections 300.430(f)(1)(ii)(B)(1) and 300.430(f)(5)(iii)(C). If EPA receives new information indicating the remedy is not protective of public health and the environment, EPA would review the remedy and make any changes necessary to ensure protectiveness.

EPA has also determined that the monitoring requirements found in CCR Title 22 Sections 64421-64445.2 are relevant and appropriate for any treated water which will be delivered to the City of Glendale's Public Water distribution system. However, the selection of these sections as ARARs involves only the requirements that specific monitoring be performed. It would not include any administrative requirements (such as reporting requirements) and would also not include meeting substantive standards set within these sections since no such standards have been identified by the State as being more stringent than Federal requirements. For the off-site portion of this remedy, including the treated water after blending, all applicable requirements would have to be satisfied including the monitoring requirements in CCR Title 22 Sections 64421-64445.2.

Accordingly, the chemical-specific standards for the groundwater extracted and treated under the Glendale South OU interim remedy are the current Federal or State MCLs for VOCs, whichever is more stringent.

10.2 Location-Specific ARARs

No special characteristics exist in the Glendale Study Area to warrant location-specific requirements. Therefore, EPA has determined that there are no location-specific ARARs for the Glendale South OU.

10.3 Action-Specific ARARs

10.3.1 Clean Air Act, 42 U.S.C. §7401 et seq.

Rules and Regulations of the South Coast Air Quality Management District

Glendale South OU treatment of VOCs by air stripping, whereby the volatiles are emitted to the atmosphere, triggers action-specific ARARs with respect to air quality.

The Clean Air Act regulates air emissions to protect human health and the environment, and is the enabling statute for air quality programs and standards. The substantive requirements of programs provided under the Clean Air Act are implemented primarily through Air Pollution Control Districts. The South Coast Air Quality Management District (SCAQMD) is the district regulating air quality in the San Fernando Valley.

The SCAQMD has adopted rules that limit air emissions of identified toxics and contaminants. The SCAQMD Regulation XIV, comprising Rules 1401, on new source review of carcinogenic air contaminants is applicable for the Glendale South OU. SCAQMD Rule 1401 also requires that best available control technology (T-BACT) be employed for new stationary operating equipment, so the cumulative carcinogenic impact from air toxics does not exceed the maximum individual cancer risk limit of ten in one million (1×10^{-5}). EPA has determined that this T-BACT rule is applicable for the Glendale South OU because compounds such as TCE and PCE are present in groundwater, and release of these compounds to the atmosphere may pose health risks exceeding SCAQMD requirements.

The substantive portions of SCAQMD Regulation XIII, comprising Rules 1301 through 1313, on new source review are also ARARs for the Glendale South OU.

The SCAQMD also has rules to limit the visible emissions from a point source (Rule 401), which prohibits discharge of material that is odorous or causes injury, nuisance or annoyance to the public (Rule 402), and limits down-wind particulate concentrations (Rule 403). EPA has determined that these rules are also ARARs for the Glendale South OU interim remedy.

10.3.2 Water Quality Standards for Discharges of Treated Water to Surface Waters or Land

State Standards

For any recharge to the basin, including spreading, or discharges to surface water that occur on-site, the recharged or discharged water must meet all action-specific ARARs for such recharge or discharge. The ARAR applicable to the recharged (Alternative 6) water is:

- The Los Angeles Regional Water Quality Control Board's Water Quality Control Plan, which incorporates State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California." Resolution No. 68-16 requires maintenance of existing State water quality unless it is demonstrated that a change will benefit the people of California, will not unreasonably affect

present or potential uses, and will not result in water quality less than that prescribed by other State policies.

In order to comply with this State ARAR, any treated groundwater that is recharged on-site will be treated to concentrations below Federal MCLs or State MCLs for VOCs, whichever is more stringent. In addition, any nitrate concentrations in the water to be recharged will have to be similar to or lower than the levels of these substances in the area of the aquifer where the recharge will occur. The quality and quantity of the water to be recharged, as well as the duration of the project, will be considered with respect to the existing water quality.

EPA anticipates that there may be short-term discharges of treated water to the Los Angeles River during the initial operation of the VOC treatment plant and on certain other limited occasions. The ARAR for any treated water that is discharged, on a short term basis, to the Los Angeles River is the National Pollutant Discharge Elimination System (NPDES) Program which is implemented by the LARWQCB. In establishing effluent limitations for such discharges, the LARWQCB considers the Water Quality Control Plan for the Los Angeles River Basin (the "Basin Plan"), which incorporates Resolution 68-16, and the best available technology economically achievable (BAT). See, Cal. Water Code § 13263.

Since the RWQCB did not identify specific substantive discharge requirements or technology standards for such temporary discharges, EPA has reviewed the Basin Plan and considered BAT and has made certain determinations for the short-term discharges to the Los Angeles River. In order to comply with this ARAR, any treated groundwater that will be discharged, on a short-term basis, to the Los Angeles River on-site must be treated to meet Federal MCLs or State MCLs for VOCs, whichever is more stringent.

The treated water will also contain nitrate. The Basin Plan states that the level of nitrate shall not exceed 45 mg/l in water designated for use as domestic or municipal supply. According to the Basin Plan, the Los Angeles River is not designated for municipal or domestic water supply. Therefore, the 45 mg/l is not an ARAR for the short-term discharges associated with the OU.

EPA has also considered what BAT could be for such short-term discharges. For on-site discharges, meeting the nitrate MCL through treatment by ion exchange would result in complex technical issues, such as disposal of waste brine, and would be very costly given the temporary nature of such discharges. Therefore, EPA has not identified ion exchange as the NPDES treatment standard for such short-term discharges.

EPA also considered the Mineral Quality Objective for the Los Angeles River of 36 mg/l (8 mg/l nitrate-N) established in the

Basin Plan. Because the anticipated average concentration of nitrate in the short-term discharge is likely to be close to the MCL, and any discharge would be short-term, there should not be any significant long-term effects on the mineral quality of the Los Angeles river associated with short-term discharges of VOC-treated water from the Glendale South OU.

It should also be noted that extractions of 2,000 gpm of groundwater per the Glendale South OU will result in decreased amounts of contaminated groundwater recharging to the Los Angeles River, thereby further protecting its beneficial uses.

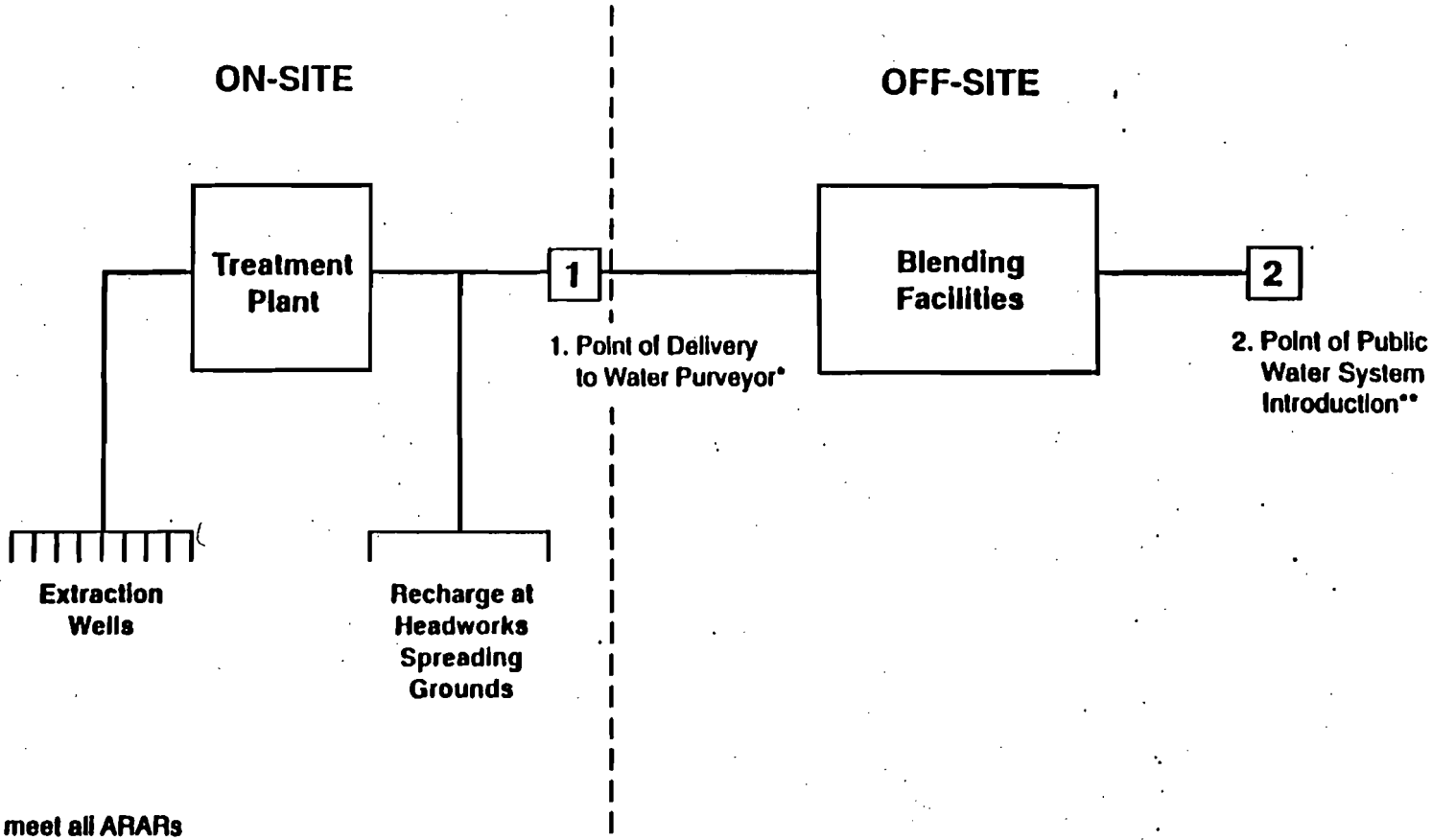
Again, with respect to VOCs, any on-site discharge to the Los Angeles River must meet Federal MCLs or State MCLs for VOCs, whichever is more stringent. Since short-term discharges to the Los Angeles River would occur on-site, the procedural requirements for Federal National Pollution Discharge Elimination System (NPDES) as implemented in RWQCB Waste Discharge Requirements (WDRs) issued under Section 13263 of the California Water Code would not be ARARs.

10.3.3 Secondary Drinking Water Quality Standards

The State of California's Secondary Drinking Water Standards (SDWS) which are more stringent than the Federal Secondary Drinking Water Standards shall be ARARs for the Glendale South OU if the final use option involves serving treated groundwater as drinking water. 22 CCR §64471. The California SDWS are selected as ARARs because they are promulgated State standards and are relevant and appropriate to the action of supplying the treated water to a public water supplier. Although California SDWS are not applicable to non-public water system suppliers, the California SDWS are relevant and appropriate since the treated water under this action would be put into the City's drinking water system. Since the Federal SDWS are not enforceable limits and are intended as guidelines only, they are not ARARs for this action. Furthermore, since the State SDWS are more stringent than the Federal SDWS, EPA has not selected the Federal SDWS as requirements for this action. In summary, if the treated water is to be served as drinking water, the treated water prior to the point of delivery must meet the California SDWS. See Figure 10-1. If the treated water is recharged or discharged to the river, the water will not be required to meet State SDWS.

10.3.4 Resource Conservation and Recovery Act (RCRA) and Hazardous Solid Waste Amendment (HSWA) Standards, 42 U.S.C. §§6901-6987.

RCRA, passed by Congress in 1976 and amended by the Hazardous and Solid Waste Amendments of 1984, contains several provisions that are ARARs for the Glendale South OU. The State of California has been authorized to enforce its own hazardous waste regulations (California Hazardous Waste Control Act) in lieu of the Federal



* Must meet all ARARs

** Must meet all legal requirements including MCL for nitrate

FIGURE 10-1: ON-SITE ARARS AND OFF-SITE LEGAL REQUIREMENTS FOR THE GLENDALE SOUTH OU INTERIM REMEDY

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RCRA Program administered by the EPA. Therefore, State regulations in the California Code of Regulations (CCR), Title 22, Division 4.5, Environmental Health Standards for the management of Hazardous Wastes (hereinafter the State HWCL Regulations), are now cited as ARARs instead of the Federal RCRA Regulations.

Since the source of the contaminants in the groundwater is unclear, the contaminated groundwater is not a listed RCRA waste. However, the contaminants are sufficiently similar to RCRA wastes that EPA has determined that portions of the State's HWCL Regulations are relevant and appropriate. Specifically, the substantive requirements of the following general hazardous waste facility standards are relevant and appropriate to the VOC treatment plant for Alternatives 2 through 6: Section 66264.14 (security requirements), Section 66264.15 (location standards) and Section 66264.25 (precipitation standards).

In addition, the air stripper would qualify as a RCRA miscellaneous unit if the contaminated water constitutes RCRA hazardous waste. EPA has determined that the substantive requirements for miscellaneous units set forth in Sections 66264.601 -.603 and related substantive closure requirements set forth in 66264.111-.115 are relevant and appropriate for the air stripper. The miscellaneous unit and related closure requirements are relevant and appropriate because the water is similar to RCRA hazardous waste, the air stripper appears to qualify as a miscellaneous unit, and the air stripper should be designed, operated, maintained and closed in a manner that will ensure the protection of human health or the environment.

The land disposal restrictions (LDR), 22 CCR Section 66268 are relevant and appropriate to discharges of contaminated or treated groundwater to land. The remedial alternatives presented do not include land disposal of untreated groundwater. Because of the uncertainty in the levels of contamination and volumes of water to be derived from monitoring and extraction wells at this site, these waters must be treated to meet Federal and State MCLs for VOCs, whichever is more stringent, prior to discharge to land. By meeting the Federal and State MCLs for VOCs before spreading at the Headworks Spreading Grounds, Alternative 6 will satisfy the RCRA LDRs because the groundwater will no longer contain the listed wastes when it is recharged.

The container storage requirements in 22 CCR Sections 66264.170 -.178 are relevant and appropriate for the storage of contaminated groundwater over 90 days.

On-site storage or disposal of the spent carbon from the treatment system could trigger the State HWCL requirements for storage and disposal if the spent carbon contains sufficient quantities of hazardous constituents that cause the spent carbon to be classified as a characteristic hazardous waste. If the spent

carbon is determined to be a hazardous waste under HWCA, the requirements for handling such waste set forth in Sections 66262 and 66268 are applicable.

Certain other portions of the State's HWCL's regulations are considered to be relevant but not appropriate to the VOC treatment plant. EPA has determined that the substantive requirements of Section 66264.15 (general inspection requirements), Section 66264.15 (personnel training) and Sections 66264.30-66264.56 (Preparedness and Prevention and Contingency Plan and Emergency Procedures) are relevant but not appropriate requirements for this treatment system. EPA has made this determination because the treatment plant will be required to have health and safety plans and operation and maintenance plans under CERCLA that are substantively equivalent to the requirements of Sections 66264.15, 66264.30-66264.56.

10.4 Summary of ARARs for the Glendale South OU Interim Remedy

EPA has determined a number of chemical-, and action-specific ARARs for the Glendale South OU interim remedy. All of the alternatives that involve groundwater extraction and treatment could achieve the chemical-specific treatment standards for the groundwater at the point of delivery (see Figure 10-1). However, Alternative 3 which uses perozone is a less certain technology than air stripping or liquid-phase GAC adsorption for such a large volume of water and therefore is somewhat less likely to achieve the chemical-specific ARARs.

11.0 THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, EPA has determined that Alternative 2: Extraction, Treatment of VOCs by air stripping (either single- or dual-stage) or liquid phase GAC, Blending to meet the nitrate standard and Conveyance to a public water distribution system, in combination with Alternative 6 (as a contingency): Extraction, Treatment of VOCs, and Recharge at a Spreading Ground, is the most appropriate interim remedy for the Glendale South OU.

Alternative 2 includes the extraction of 2,000 gpm of contaminated groundwater for 12 years. The extraction wells will be new and will be located to inhibit most effectively the migration of the contaminant plume while maximizing the extraction of the most contaminated groundwater. The most contaminated groundwater is located in the upper or shallowest zone of the aquifer. Various locations and scenarios for extraction wells and rates of extraction are proposed in the FS report for the Glendale South OU; however, all design decisions for this interim remedy will be made during the remedial design phase. During the remedial design phase one of the locations proposed for extraction wells and

scenarios for rates of extraction per individual well may be selected or new ones may be selected.

The extracted groundwater will be filtered to remove any suspended solids, if necessary, and then treated for VOCs using dual-stage or single-stage air stripping with vapor-phase GAC adsorption for emissions control (liquid phase GAC may also be used). Whether air-stripping (dual versus single) or liquid phase GAC will be used will be determined during remedial design as will the exact location for the treatment plant. If air-stripping is used for VOC treatment, the air stream will be treated using a vapor-phase GAC adsorption system to ensure that air emissions meet Federal air quality standards as regulated by the South Coast Air Quality Management District and described in the ARARs section of this ROD.

After the extracted groundwater is treated for VOCs, the treated water exiting the treatment plant shall meet all MCLs and secondary drinking water standards with the exception of nitrate. The VOC-treated water will then be blended with water of such a quality that the treated, blended water will meet all drinking water standards (including the nitrate MCL). The treated and blended water to be delivered to a public drinking water supply shall meet all legal requirements. The water will then be conveyed to the City of Glendale and/or another municipality for distribution through the public water supply system.

As a result of comments by the City of Glendale on the Glendale North OU Proposed Plan (July 1992) and Glendale South OU Proposed Plan (September 1992) which indicated that the City had sufficient water credits to accept the treated water from both of these OUs, and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The Glendale North OU Record of Decision also reflects this decision to combine the treatment plants.

However, if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale South OU, the treatment plants will not be combined.

EPA has selected Alternative 6, recharge of the treated water at the Headworks Spreading Ground, as a contingency if the City of Glendale or another San Fernando Valley water purveyor does not accept any or all of the treated water (possibly due to water supply needs). As a result, any remaining portion of water not accepted by the City of Glendale will be: first, offered to another San Fernando Valley water purveyor or, second, recharged into the

aquifer, per Alternative 6.

With the exception of blending to meet the nitrate MCL and final use of the treated water, Alternative 6 is identical to Alternative 2 above.

Under Alternative 6, after the extracted groundwater is treated for VOCs, the treated water exiting the treatment plant shall meet all MCLs for VOCs but will not need to meet secondary drinking water standards. The VOC-treated water will then be recharged into the aquifer at a Spreading Ground. To comply with ARARs, nitrate concentrations in the water to be recharged will have to be similar to or lower than the levels of nitrate in the area of the aquifer where the recharge will occur.

Groundwater monitoring wells shall be installed to evaluate the effectiveness of the Alternative 2 or 6 interim remedial action for the Glendale South OU. More specifically, groundwater monitoring will be conducted no less frequently than quarterly to: 1) evaluate influent and effluent water quality, 2) determine and evaluate the capture zone of the extraction wells, 3) evaluate the vertical and lateral (including downgradient) migration of contaminants, 4) to evaluate the effectiveness of the recharge well system and its impact on the remedy and 5) to monitor any other factors associated with the effectiveness of the interim remedy determined to be necessary during remedial design. Monitoring frequency may be decreased to less than quarterly if EPA determines that conditions warrant such a decrease.

The VOC treatment plant of the Glendale South OU interim remedy (whether it be Alternative 2, Alternative 6 or a combination thereof) shall be designed and operated so as to prevent the unknowing entry, and minimize the possible effect of unauthorized entry, of persons or livestock into the active portion of the facility. One means of preventing unauthorized entry would be to erect a perimeter fence around the VOC treatment plant. This fence should be in place prior to initiation of the remedial action and should remain in place throughout the duration of the remedy. The VOC treatment plant shall also be designed and operated so as to prevent releases of contaminated groundwater from the plant.

The selected remedy for the Glendale South OU meets all of EPA's nine evaluation criteria. The selected remedy is equally effective as the other alternatives in the short-term and long term reduction of risk to human health and the environment by removing contaminants from the upper zone of the aquifer, by inhibiting further downgradient and vertical migration of the contaminant plume, and by reducing the toxicity, mobility, and volume of contaminants in the aquifer.

The selected remedy is estimated to remove approximately 80% of the total estimated initial TCE mass after 12 years of

extraction. Thus, at the end of the 12 year interim remedy, a maximum TCE concentration of remaining in the upper zone of the aquifer would be approximately 10 ug/l. The selected remedy is estimated to significantly inhibit downgradient migration of contaminated groundwater as well as vertical migration from the upper to the lower zone of the aquifer. Furthermore, the modeling conducted as part of the FS indicated that the 2000 gpm extraction rate of the selected remedy would be effective in inhibiting the discharge of contaminated groundwater to the Los Angeles River by reducing groundwater levels to below river bottom elevations.

The VOC treatment technologies selected (dual- or single-stage air stripping with vapor phase GAC or liquid phase GAC) are technically feasible and proven effective at meeting ARARs for VOCs in the treated groundwater.

Alternative 2, in combination with Alternative 6, could be implemented, both technically and administratively.

In a letter dated May 28, 1993, the State agreed with EPA's selected remedy. EPA received several public comments during the public comment period, the majority of which expressed support for Alternative 2 primarily because Alternative 2 provides the treated water to a drinking water purveyor. These comments, along with EPA's responses are presented in Part III of this ROD, the Responsiveness Summary.

The selected remedy is protective of human health and the environment, meets ARARs, and unlike some other alternatives such as Alternative 4 which includes discharge of the treated water to the Los Angeles River, provides beneficial uses (distribution to a public water supply and/or recharge) for the treated water. The selected remedy is cost-effective. The estimated cost of Alternative 2 has a total present worth of $25,020,000, which is in the middle of the range for all six alternatives but this cost would be significantly reduced by combining the treatment plants for the two OUs (total cost savings of up to $13.8 million for both OUs). The estimated total cost of Alternative 6 is $22,420,000.

12.0 STATUTORY DETERMINATIONS

As required under Section 121 of CERCLA, the selected interim remedial action is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the interim remedial action, and is cost effective. The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment to reduce toxicity, mobility, and volume as a principal element.

The selected interim remedial action is protective of human health and the environment in that it removes significant VOC contaminant mass from the upper zones of the aquifer and inhibits further downgradient and vertical migration of contaminated groundwater.

The VOC treatment technologies selected (dual- or single-stage air stripping with vapor phase GAC or liquid phase GAC) are technically feasible and proven effective at meeting ARARs for VOCs in the treated groundwater and the air.

The selected remedy permanently and significantly reduces the toxicity, mobility, and volume of hazardous substances in the aquifer as well as the extracted groundwater.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, EPA shall conduct a review, pursuant to CERCLA Section 121, 42 U.S.C. Section 9621, at least once every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

13.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The only significant change to the Glendale South OU interim remedy proposed in the Proposed Plan fact dated September 1992 involves the volume of water to be conveyed to the City of Glendale.

As a result of oral comments at the public meetings and written comments by the City of Glendale on the Glendale North OU Proposed Plan (July 1992) and Glendale South OU Proposed Plan (September 1992) which indicated that the City had sufficient water credits to accept the treated water from both the Glendale North and Glendale South OUs, and in order to decrease overall costs associated with the OUs, EPA has determined that the treatment plants for the Glendale North and Glendale South OUs will be combined. The total 5,000 gpm of treated water will be conveyed to the City of Glendale for distribution to its public water supply system. The exact configuration of the combined treatment plant will be determined during the remedial design phase of the project. The Glendale North OU Record of Decision will also reflect this decision to combine the treatment plants.

However, if EPA determines that combining the treatment plants will significantly delay or hinder the implementation of the Glendale South OU, the treatment plants will not be combined. Also, if the City of Glendale does not accept any or all of the treated water (possibly due to water supply needs), any remaining portion of water will be 1) offered to another San Fernando Valley water purveyor or 2) recharged into the aquifer.

The impact of this change is that the City of Glendale will be receiving 5,000 gpm of treated water. In its comments to EPA on both the Glendale North and South OU Proposed Plans, the City indicated that it would be able to accept the additional treated water. The cost of construction and operation and maintenance of the combined treatment plant is expected to be less than the cost of construction and operation and maintenance of individual treatment plants. Recent EPA cost estimates indicate that as much as $13,888,000 would be saved on the total present worth cost by combining the two treatment plants.

PART III. RESPONSIVENESS SUMMARY

For Public Comments received during the Public Comment Period for the Glendale South Operable Unit Interim Remedy at the San Fernando Valley Superfund Site Los Angeles County, California

EXECUTIVE SUMMARY

This Responsiveness Summary addresses comments received from the public, State agencies, and local agencies on EPA's proposed interim cleanup plan for the Glendale South OU. Comments from the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) on the RI report for the Glendale Study Area, the Glendale South FS Report, and the draft Proposed Plan for the Glendale South OU were received by EPA prior to issuing the Proposed Plan and initiating the public comment period. DTSC's comments and EPA's responses are available for review in the Administrative Record for the Glendale South OU and are not included in this responsiveness summary.

EPA held a 107-day public comment period on the RI and FS reports, Proposed Plan and other Glendale South OU administrative record documents between October 5, 1992 and January 19, 1993. A public meeting was held in Glendale on October 21, 1992. Approximately 25 representatives of the community, local agencies, and EPA attended the meeting. EPA staff made a presentation on the Glendale South OU alternatives, including EPA's preferred alternative, and answered questions. A transcript of the meeting is included in the Administrative Record for the Glendale South OU.

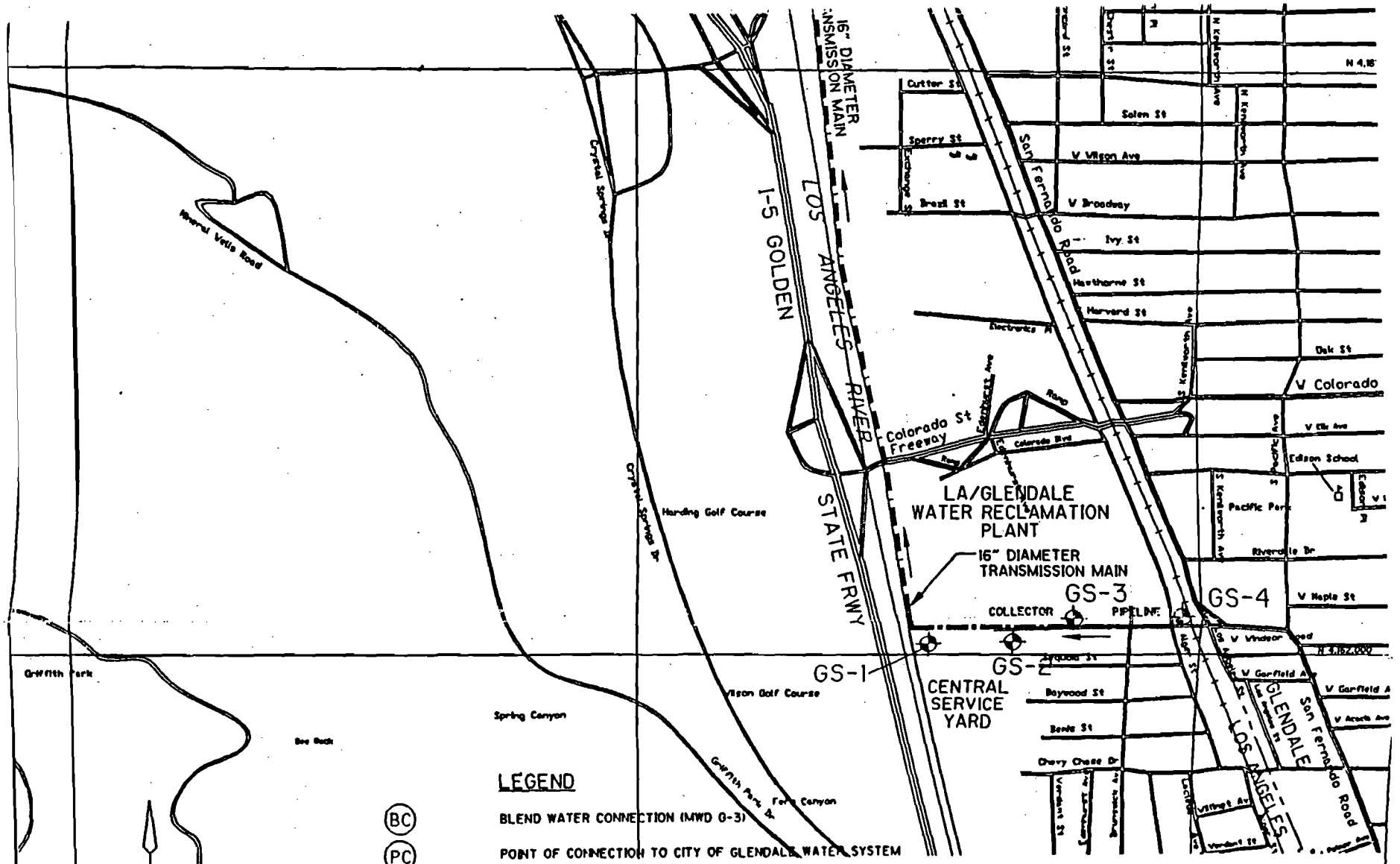
EPA received comments orally from three members of the public during the October 21, 1992 public meeting.

EPA also received approximately 10 letters containing comments from interested community members, the City of Glendale, and the Los Angeles Department of Water and Power (LADWP). These letters are included in the Glendale South OU Administrative Record.

EPA received numerous comments from ITT General Controls, Inc. on several issues relating to the RI and FS documents and the Proposed Plan for the Glendale South OU interim remedy. Most of these comments criticized EPA for not justifying its decisions including its preferred alternative selection, suggested that EPA did not provide the proper supporting documentation and stated that the interim remedy for Glendale South OU did not demonstrate consistency with a permanent remedy for the San Fernando Valley sites. EPA responded that the Glendale South OU is an interim action and not a permanent remedy, that the RI/FS and remedy selection were conducted in accordance with the NCP, applicable EPA

guidance, that an entire Administrative Record with supporting documentation is available for review at the San Fernando Valley information repositories, and finally that the Glendale South OU interim remedy would not be inconsistent with nor preclude implementation of any final remedy for the San Fernando Valley sites.

The Responsiveness Summary is divided into two parts. Part I focuses on EPA's responses to the concerns and major issues raised by members of the local community including the City of Glendale. Part II includes detailed responses to the comments received (by ITT) that were more legal or technical in nature.

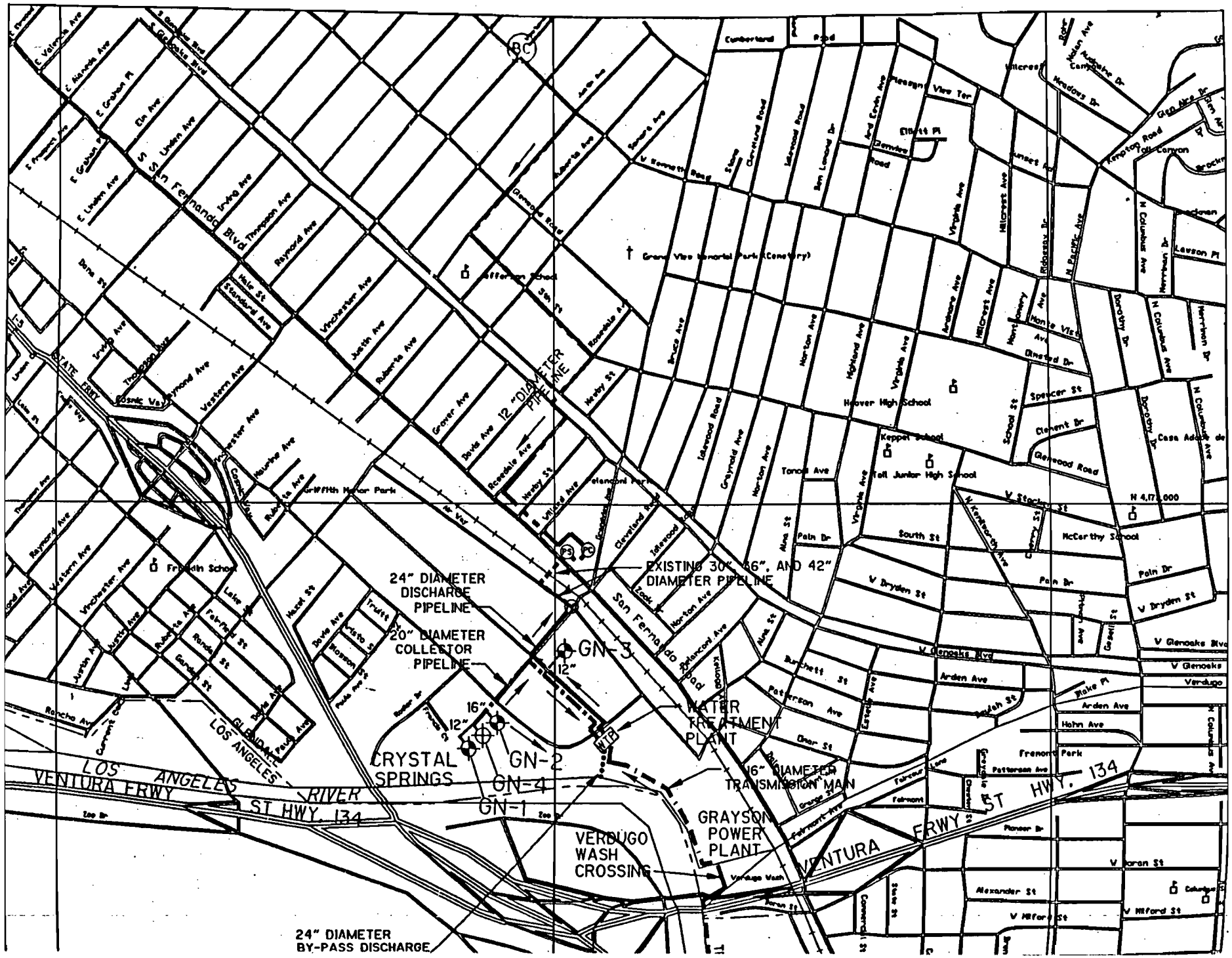


GLENDALE NORTH AND SOUTH OUs
INTERIM REMEDIAL ACTION

PROJECT FACILITIES
LOCATION MAP

Figure 2-1

CDM Camp Dresser & McKee


24" DIAMETER DISCHARGE PIPELINE
20" DIAMETER COLLECTOR PIPELINE
EXISTING 30", 36", AND 42" DIAMETER PIPELINE
12" DIAMETER PIPELINE
WATER TREATMENT PLANT
16" DIAMETER TRANSMISSION MAIN
CRYSTAL SPRINGS
GN-1
GN-2
GN-3
GN-4
GN-5
VERDUGO WASH CROSSING
GRAYSON POWER PLANT
24" DIAMETER BY-PASS DISCHARGE
LOS ANGELES RIVER
VENTURA FRWY
ST HWY. 134
San Fernando Rd
Grand View Memorial Park (Cemetery)
Hoover High School
Toll Junior High School
McCarthy School
Franklin School
Griffith Motor Park
Fremont Park
Jefferson School
Keppel School
Case Adult de
N 4,177,000

Appendix C: Statement of Work

Appendix C

GLENDALE NORTH AND SOUTH OPERABLE UNITS STATEMENT OF WORK

I. General Provisions

A. Definitions: All words, as defined in the Consent Decree, have the same meaning when used herein.

B. Warranty: EPA has exercised its best efforts to include in this Statement of Work ("SOW") all activities necessary to fulfill the Remedial Action Work and Operation and Maintenance ("O&M") requirements for the Glendale Operable Units. However, the Settling Work Defendants and the City acknowledge and agree that nothing in this SOW or any deliverable approved by EPA pursuant hereto constitutes a warranty or representation, either express or implied, by the United States that compliance with this document and/or deliverables approved pursuant to this document will result in the achievement of the Performance Standards that the Settling Work Defendants and the City are required to meet under the Consent Decree. Nothing in this Statement of Work or deliverables approved pursuant hereto shall be deemed to limit EPA's right pursuant to Paragraphs 80-85 of Section XXI (Covenants Not to Sue by Plaintiffs) of the Consent Decree.

C. Site Description: See Consent Decree.

D. **Remedial Action Work:** See Consent Decree.

E. **EPA Approval:** EPA approval of any submittal by the Settling Work Defendants or the City, or any person who will perform Work on behalf of the Settling Work Defendants or the City within the context of the Consent Decree, including but not limited to, plans, specifications, reports, and contractors, is administrative in nature and designed to allow the Settling Work Defendants and the City to proceed. The Settling Work Defendants and the City acknowledge and agree that EPA's approval of deliverables does not constitute a warranty or representation, as discussed in Paragraph B above, and shall not, in and of itself, excuse Settling Work Defendants or the City from stipulated penalties for failure to meet such Performance Standards.

F. **Operator:** Operator shall mean the Party conducting at the relevant time O&M of the Upstream Facilities.

G. **Reporting Period:** The Reporting Period is defined in Paragraph 31.i. of the Consent Decree.

H. **Extraction Requirements:** The Upstream Facilities are designed to extract and treat 2.376×10^9 gallons per year at 5,000 gpm for 330 days per year, with a 35-day allowance for routine maintenance per year. This extraction requirement is necessary to meet the hydraulic containment and mass removal

Extraction Req'mts

requirements of the Glendale RODs. The Operator shall demonstrate compliance with this extraction requirement on each anniversary of the System Operation Date, which is defined in Section II.B.16 of this SOW. However, for each Reporting Period leading up to and including each anniversary of the System Operation Date, the Operator shall demonstrate that the Upstream Facilities have extracted at least 3,400 gpm, to ensure that the hydraulic containment requirement of the Glendale RODs is continuously met throughout the year. (See Section III of this SOW for the compliance calculations.) The Operator does not have to meet the extraction requirements during the Start-up and Shake-down Periods, which are defined in Section II.B.14 and II.B.15 of this SOW.

II. Schedule

A. <u>Dates</u>: The schedule of deliverables for this Statement of Work is presented in Attachments 1 and 2 (for the Settling Work Defendants and the City, respectively) and shall be referred to as the Work Schedules. These Work Schedules include EPA's independent approximations of its review times; however, failure by EPA to review a deliverable within the estimated time shall not constitute a violation of the Consent Decree by the United States or, in and of itself, provide the Settling Work Defendants

or the City with any claim or defense whatsoever. The Settling Work Defendants and the City are required to submit deliverables within the time periods stated, and failure to do so constitutes a violation of the Consent Decree. See Consent Decree, Section XI (EPA Approval of Plans and Other Submissions).

B. Items:

1. Designation of Project Coordinators: Unless already submitted to EPA pursuant to the UAOs and the MOA, within 20 days of the entry of the Consent Decree, the Settling Work Defendants and the City shall submit to EPA, in writing, the name, title, address and telephone number, and qualifications of their proposed Project Coordinators. See Consent Decree, Section XII (Project Coordinators).

2. Progress Reports: The Settling Work Defendants and the City shall provide written progress reports to EPA pursuant to the schedule in the Consent Decree, Section X (Reporting Requirements). The Settling Work Defendants and the City shall include any data required by the Consent Decree in the Progress Reports for the period between the last Reporting Period and the current Reporting Period in which the Settling Work Defendants and the City generated or acquired such data, as well as any required information generated prior to the submittal of the last Reporting Period, but not included in that Progress Report.

These progress reports shall be submitted to EPA by the 10th day of each month they are due for Work done the preceding Reporting Period and describe planned Work for the next Reporting Period or two, if the Reporting Period is monthly.

a. **Remedial Action Progress Reports:** The Settling Work Defendants and the City shall submit Remedial Action Progress Reports beginning in the month immediately following the month of the date of entry of the Consent Decree, and they shall include, at a minimum, the requirements of Paragraph 31.a-g of the Consent Decree. These reports shall end in the month of the System Operation Date.

b. **O&M Progress Reports for the Upstream Facilities:** Beginning in the month immediately following the month of the System Operation Date, the Operator of the Upstream Facilities shall submit O&M Progress Reports, which shall include at a minimum:

i. A narrative describing any noteworthy accomplishments or problems encountered at the Upstream Facilities during the reporting period (including, but not limited to, the implementation of process improvements; routine maintenance, maintenance days claimed and credits used (see Section III.B. of this SOW); and a summary of any deviations from

the operational requirements of the Consent Decree, the cause of such deviations, and the steps taken to mitigate such circumstances);

ii. The System Operation Date and the current year of O&M;

iii. The quantity of water pumped by each Glendale North and South OU extraction well;

iv. A compliance calculation showing that at least 3,400 gpm of groundwater are being extracted (see Section III.E. and G. of this SOW);

v. The cumulative quantity of water pumped toward the 2.376×10^9 gallon extraction requirement for each year of O&M (see Section III.G. of this SOW);

vi. The amount of water discharged in accordance with the requirements of Paragraph 12.d of the Consent Decree, if applicable;

vii. Pumping credits earned and accumulated, if applicable;

viii. The levels at each extraction well and in the treatment plant's influent and effluent of the following:

trichloroethylene

perchloroethylene

benzene

carbon tetrachloride

1,1-dichloroethane (1,1-DCA)

1,2-dichloroethane (1,2-DCA)

1,1-dichloroethene (1,1-DCE)

cis-1,2-dichloroethene (*cis*-1,2-DCE)

trans-1,2-dichloroethene (*trans*-1,2-DCE)

1,1,2,2-tetrachloroethane

1,1,2-trichloroethane

xylenes

chromium;

ix. The treatment plant's effluent for the following:

nitrates

bacterial analysis;

x. An estimate of the mass of VOCs removed for the Reporting Period and the cumulative mass of VOCs removed since the System Operation Date; and

xi. The results of any sampling, test, or other data required by the Consent Decree or this SOW; and, in accordance with the Quality Assurance Project Plan, quality assurance documentation that demonstrates compliance with Section VIII

(Quality Assurance, Sampling and Data Analysis) of the Consent Decree.

The Operator shall submit O&M Progress Reports according to the schedule in Section X (Reporting Requirements) of the Consent Decree.

c. **O&M Progress Reports for the Downstream Facilities:** The City shall submit O&M Progress Reports for the Downstream Facilities that provide a narrative describing any noteworthy accomplishments or problems encountered at the Downstream Facilities during the reporting period (including, but not limited to, the implementation of process improvements; routine maintenance; refusals to accept treated groundwater that did not satisfy the requirements of Paragraph 13.e of the Consent Decree; and a summary of any deviations from the operational requirements of the Consent Decree, the cause of such deviations, and the steps taken to mitigate such circumstances).

The City shall also provide the results of nitrate levels in the blending water and the product water, bacterial results in the product water, and any other data required by the Consent Decree or this SOW; and, in accordance with the Operational Sampling and Analysis Plan, quality assurance documentation that demonstrates compliance with Section VIII (Quality Assurance, Sampling and Data Analysis) of the Consent Decree.

The City shall submit O&M Progress Reports according to the schedule in Section X (Reporting Requirements) of the Consent Decree. The City may combine the O&M Progress Report for the Downstream Facilities with the O&M Progress Report for the Upstream Facilities when it is the Operator.

d. **Other Reporting:**

i. EPA may require the Settling Work Defendants or the City to report verbally or in writing the requirements of Section II.B.2 of this SOW more frequently than in the Progress Reports.

ii. EPA may require the Settling Work Defendants or the City to report additional relevant information, as necessary, in the Progress Reports or separately.

iii. The Operator shall submit to EPA copies or summaries of compliance data submitted monthly or otherwise to the California Department of Health Services ("DHS").

3. **Quarterly Quality Assurance Reports:** These reports shall be prepared by the Settling Work Defendants and/or the City pursuant to the Consent Decree, Section VIII (Quality Assurance, Sampling, and Data Analysis).

4. **Quality Assurance Project Plan:** Pursuant to UAOs 97-06 and 97-18, the Settling Work Defendants submitted a Quality

Assurance Project Plan addressing analytical and data quality methods and objectives to be applied in support of O&M activities at the Upstream Facilities. Addenda to the Quality Assurance Project Plan shall be prepared by the Settling Work Defendants or the City, as appropriate, on an as-needed basis to reflect major changes in analytical methods as determined by EPA.

The City shall address its analytical and data quality methods and objectives to be applied in support of O&M activities at the Downstream Facilities in its Operational Sampling and Analysis Plan.

5. **O&M Plans:** Unless already submitted to EPA pursuant to the UAOs and the MOA, the Settling Work Defendants and the City shall submit O&M Plans for the Upstream and Downstream Facilities, respectively. These O&M Plans shall incorporate O&M activities to be performed on all portions of the facilities to ensure that the facilities continue to run according to specification.

a. The O&M Plans shall include detailed descriptions, including drawings, of the facilities; manufacturer specifications for the facilities and equipment; easily understood, stepwise standard operating procedures for the facilities at all foreseeable flow rates; startup and shutdown procedures for all facilities, including emergency shutdown

procedures; a detailed description of manual and electronic control systems; and any other elements pertaining to efficient and safe operation of the facilities.

b. The O&M Plans shall describe in detail the routine maintenance activities to be performed on each element of the facilities; a schedule for these routine maintenance activities; a schedule of visual inspection of the facilities; a schedule of equipment overhauling per manufacturers' specifications; a description and schedule of cleaning and backflushing; detailed chemical handling procedures; and any other elements pertaining to efficient and safe maintenance of the facilities.

c. The O&M Plan for the Upstream Facilities shall incorporate by reference the Operator's Staffing Plan, Health and Safety Plan, Operational Sampling and Analysis Plan, Quality Assurance Project Plan, and Contingency Plan. The O&M Plan for the Downstream Facilities shall incorporate by reference the City's Health and Safety Plan and the Operational Sampling and Analysis Plan.

d. The O&M Plan for the Upstream Facilities in conjunction with the Staffing Plan shall delineate clear lines of responsibility for performing the activities referenced within the plan, designating which activities are the responsibility of

O+M Plan

the O&M Contractor, especially with respect to emergency shut downs and implementation of the Contingency Plan if it becomes necessary.

6. **Health and Safety Plan:** Unless already submitted to EPA pursuant to the UAOs and the MOA, the Settling Work Defendants and the City shall each submit Health and Safety Plans that describe the minimum health, safety, and emergency response requirements for the O&M activities at the Upstream and Downstream Facilities, respectively. These plans shall be prepared in accordance with U.S. Occupational Health and Safety Administration ("OSHA") requirements and any other applicable requirements.

7. **Operational Sampling and Analysis Plan:** The Settling Work Defendants submitted an Operational Sampling and Analysis Plan for the Upstream Facilities pursuant to UAOs 97-06 and 97-18.

The City shall submit an Operational Sampling and Analysis Plan for the Downstream Facilities that defines the data gathering methods to be used during O&M. This plan shall contain sufficient information to enable EPA to determine the effectiveness of the Work the City is required to perform and whether the facilities are meeting the Performance Standards. The plan shall cover sampling for inorganics and other drinking

water standards as required by the City's domestic water permit from DHS. The plan shall provide monitoring schedules for any chemical contaminant monitoring to be performed during O&M, consistent with the Consent Decree and the SOW.

To address the requirements of Section VIII (Quality Assurance, Sampling, and Data Analysis) of the Consent Decree, at a minimum, the plan shall include a description of the City's role in the project and its responsibilities, a discussion on the sampling points and who takes samples, standard operating procedures (SOPs) for sampling, the laboratory's analytical SOPs (includes QC and corrective actions, preservation of samples), and target detection limits versus maximum contaminant levels.

8. **Contingency Plan:** The Settling Work Defendants submitted a Contingency Plan which is written for the locally affected population in the event of an accident or emergency at the Site, pursuant to UAOs 97-06 and 97-18. It shall incorporate an Air Monitoring Plan and a Spill Prevention, Control, and Countermeasures Plan. The following is a suggested and non-exclusive list of items that shall be considered for inclusion in the Contingency Plan:

a. Name of the person responsible for responding in the event of an emergency incident;

b. List of key contacts in the local community and

the State and Federal agencies to be involved in the cleanup, as well as local emergency squads and hospitals with phone numbers and addresses;

c. First aid and medical information, including names of personnel trained in first aid, a clearly marked map with the location of medical facilities and all necessary emergency phone numbers for fire, rescue, and local hazardous material teams;

d. An air monitoring plan to assure that the VOC treatment system is meeting the substantive requirements of the South Coast Air Quality Management District ("SCAQMD"). Air monitoring may include personnel monitoring, on-site and/or off-site area monitoring. Trigger concentrations to implement the Contingency Plan shall be specified; and

e. A Spill Prevention, Control, and Countermeasures Plan which shall specify actions to be taken in the event of spills from material handling and/or transportation. The plan shall describe methods, means and facilities required to prevent contamination of soil; water; atmosphere; and uncontaminated structures, equipment, or material. It shall specify provisions for equipment and personnel to perform emergency measures required to contain any spillage; to remove and properly dispose of any material that becomes contaminated due to spills; and to

decontaminate affected structures, equipment, or material.

9. **Construction Oversight:** During implementation of the Work, the Settling Work Defendants and the City shall be responsible for providing access for the EPA Project Coordinator and/or EPA's designated representative to the extent they are required to provide access pursuant to Section IX (Access) of the Consent Decree. The Settling Work Defendants shall provide access to accommodations or office trailer space sufficient for the EPA Project Coordinator and/or designated representative to accomplish oversight duties with respect to the Settling Work Defendants' activities, such as review of documents and reports.

The City shall provide access to accommodations sufficient for the EPA Project Coordinator and/or designated representative to accomplish oversight duties with respect to the City's activities, such as review of documents and reports.

10. **Designation of Supervising Contractor:** Unless already submitted to EPA pursuant to the UAOs and the MOA, within thirty (30) days of the entry of the Consent Decree, the Settling Work Defendants and the City shall submit to EPA, in writing, the name, title, and qualifications of their proposed Supervising Contractors. See Consent Decree, Section VI (Performance of the Work by Settling Work Defendants and the City). The Settling Work Defendants and the City may submit to EPA a list of

contractors for pre-qualification. It is the Settling Work Defendants and the City's responsibility to provide any pre-qualification information to EPA in a time frame that allows for timely designation of the Supervising Contractors. The Supervising Contractors may come from within the ranks of the Settling Work Defendants and the City's staff.

The factors to be considered in approving or disapproving the Supervising Contractor shall include professional and ethical reputation; professional registration; demonstrated project management experience; experience and qualifications in the field of water treatment and supply; sufficient capacity (professional, technical and support staff) to accomplish the project tasks according to the Work Schedule; and sufficient business background and financial resources to provide uninterrupted services throughout the life of the project.

11. **Staffing Plan:** Pursuant to the MOA, the City submitted a Staffing Plan for the Downstream Facilities. This Staffing Plan for the Downstream Facilities shall identify the supervisory chain of command for O&M; shall provide an organizational chart identifying specific individuals in the chain of command where possible; and shall define the roles of the City, the Supervising Contractor, and the O&M Contractor. The position of the City's Project Coordinator in the chain of command shall be made clear.

The plan shall also estimate staffing levels required to implement the O&M activities, including the levels of expertise required. The City's Staffing Plan shall incorporate by reference the Settling Work Defendants' Staffing Plan for the Upstream Facilities.

12. <u>Time Line and Schedule</u>: Unless already submitted to EPA pursuant to the MOA, the City shall submit a Time Line and Schedule that shall list the major milestones to be accomplished in order for the City to efficiently perform long term O&M of the Upstream and Downstream Facilities. It shall include the items listed in the Work Schedule, and also intermediate milestone activities such as the City's projected bidding schedule for hiring the O&M Contractor, and any other items relevant to orderly implementation of O&M Activities. The identification in the Time Line and Schedule of intermediate milestones, which are defined as those milestones not specified in the Work Schedule, is solely for planning purposes. Any failure by the City to meet the Time Line's intermediate milestones shall not be deemed a violation of the Consent Decree.

13. <u>Designation of O&M Contractor</u>: Unless already submitted to EPA pursuant to the MOA, the City shall submit to EPA, in writing, the name, title, and qualifications of its proposed O&M Contractor. The City shall submit to EPA a list of

contractors for pre-qualification in advance. It is the City's responsibility to provide any pre-qualification information to EPA in a time frame that allows for timely designation of the O&M Contractor. The factors to be considered in approving or disapproving the O&M Contractor shall include professional and ethical reputation; professional certification and/or registration; demonstrated experience in the field of water treatment; ability to meet the requirements of the Staffing Plan to accomplish the O&M tasks in accordance with the O&M Plan; sufficient business background and financial resources to provide uninterrupted services throughout the life of the project; and ability to provide insurance.

14. **Start-Up Period:** At the completion of construction of the Upstream Facilities, the Settling Work Defendants shall initiate a period of operation to identify any operational issues which may exist with the facilities ("Start-Up Period"). Any water produced during this period shall be discharged to the POTW, the storm drain, or the Los Angeles River. The Settling Work Defendants' Start-Up Period shall be completed during the first 60-day period following completion of construction. EPA may require additional performance testing beyond sixty (60) days if EPA deems such tests necessary.

At the completion of construction of the Downstream

Facilities, the City shall initiate a period of operation to identify any operational issues which may exist with the facilities ("Start-Up Period"). The City's Start-Up Period shall be completed during the first 20-day period following completion of construction. EPA may require additional performance testing beyond twenty (20) days if EPA deems such tests necessary.

15. **Shake-Down Period:** Following the completion of the Start-Up Periods for the Upstream and Downstream Facilities, the Settling Work Defendants and the City shall initiate a Shake-Down Period for the facilities. The water produced by the Upstream Facilities during this period shall be delivered to the City. This period shall not exceed sixty (60) days, and shall be utilized by the Settling Work Defendants and the City to fine-tune and integrate the Upstream and Downstream Facilities' operations. EPA may extend the Shake-Down Period beyond sixty (60) days if EPA deems this extension necessary. The Settling Work Defendants shall submit written notice to EPA at the start of this period.

16. **System Operation Date:** The System Operation Date is defined as the first day the Upstream Facilities, after completion of the Shake-Down Period, are ready to begin full operation delivering water to the City of Glendale. The Settling Work Defendants shall submit written notification to EPA of that

date, which, subject to EPA approval, shall be the System Operation Date for the purpose of calculating the Settling Work Defendants' compliance with the Consent Decree.

17. **Transition Activities:** Within three months after the System Operation Date, the Settling Work Defendants and the City shall jointly complete any necessary planning and begin to implement a series of transition activities under which the City shall assume O&M of the Upstream Facilities.

18. **Commencement Date:** The Date of Commencement shall mean the date that the City becomes the Operator of the Upstream Facilities. This date is anticipated to be four months after the System Operation Date.

C. **Other Items:**

1. **Selection of Cost Consultant:** Pursuant to Section VI (Performance of the Work by Settling Work Defendants and the City) of the Consent Decree, the Settling Work Defendants and the City shall jointly notify EPA, in writing, of the name, title, and qualifications of their proposed Cost Consultant. The Settling Work Defendants and the City may submit to EPA a list of consultants for pre-qualification. It is the joint responsibility of the Settling Work Defendants and the City to provide any pre-qualification information to EPA in a time frame

that allows timely designation of the Cost Consultant. The factors to be considered in approving or disapproving the Cost Consultant shall be based on professional and ethical reputation; professional registration; experience in the type of cost estimating and budgeting activities to be performed; sufficient capacity (professional, technical, and support staff) to accomplish the project tasks according to the Work Schedules; and sufficient business background and financial resources to provide uninterrupted services.

2. **Pre-Certification Inspection of Remedial Action:** Upon completion of construction of the Upstream Facilities, the Settling Work Defendants shall conduct a pre-certification inspection of the completed work. At a minimum, the invitees shall include the Settling Work Defendants and/or their representatives, including the Settling Work Defendants' Project Coordinator; the EPA's Project Coordinator and any designated EPA representative; the Settling Work Defendants' Remedial Design Engineer; the Settling Work Defendants' Resident Engineer; the Independent Quality Assurance Team; the City's Project Coordinator; and representatives of DTSC, DHS, the Los Angeles Regional Water Quality Control Board ("RWQCB"), and SCAQMD.

Upon completion of construction of the Downstream Facilities, the City shall conduct a pre-certification inspection

of the completed work. At a minimum, the invitees shall include the City and/or their representatives, including the City's Project Coordinator; the EPA's Project Coordinator and any designated EPA representative; the City's Design Engineer; the City's Resident Engineer; the Settling Work Defendants' Project Coordinator; and representatives of DTSC, DHS, RWQCB, and SCAQMD.

The purpose of the inspections is to determine if all aspects of the plans and specifications for the Upstream and Downstream Facilities have been implemented at the Site and whether the remedy is operational and functional. The draft final O&M Plans and the final Operational Sampling and Analysis Plans shall be presented for review sufficiently in advance of the pre-certification inspection to allow for comments on these plans to coincide with inspection comments.

If any items have not been completed, the Settling Work Defendants and the City shall develop a punch list which details the outstanding items still requiring completion or correction before completion of the work. A final inspection shall be conducted when all the items on the punch list have been completed. All items indicated as requiring correction on the punch list shall be reinspected, and all tests that were originally unsatisfactory shall be conducted again. A final punch list shall be developed for any outstanding deficiencies

still requiring correction, and implemented accordingly.

3. **Pre-Certification Inspection of O&M:** At the end of the time period for which the Settling Work Defendants and the City are required to perform O&M activities pursuant to the Consent Decree, the Settling Work Defendants and the City shall schedule and conduct a pre-certification inspection to be attended by EPA. EPA shall conduct a final review of records and inspection of the Upstream Facilities. The inspection shall be a necessary part of approving or disapproving the Work in accordance with Paragraph 51 of the Consent Decree.

4. **Certification of Completion Reports:**

a. **Remedial Action:** Pursuant to Paragraph 50 of the Consent Decree, the Settling Work Defendants shall submit a report certifying that the Upstream Facilities have been constructed in accordance with the Consent Decree, all punch list deficiencies have been corrected, and the Upstream Facilities are operational and functional. The report shall include documentation (e.g., test results) substantiating that the relevant Performance Standards have been met.

Pursuant to Paragraph 50 of the Consent Decree, the City shall submit a report certifying that the Downstream Facilities have been constructed in accordance with the Consent Decree, all punch list deficiencies have been corrected, and the Downstream

Facilities are operational and functional. The report shall include documentation (e.g., test results) substantiating that the relevant Performance Standards have been met.

b. **O&M:** Pursuant to Paragraph 51 of the Consent Decree, the Settling Work Defendants and the City shall jointly submit a report certifying that all activities of O&M have been fully performed. The report shall include documentation (e.g., test results) substantiating that the relevant Performance Standards have been met.

5. **Determination of Decommissioning/Dismantling of Upstream Facilities:** In conjunction with the process of reviewing the written report that follows the pre-certification inspection of O&M, EPA will make a determination as to whether all or a portion of the Upstream Facilities shall be decommissioned/dismantled. At least ninety (90) days prior to the date that the Settling Defendants and the City anticipate that the Work will have been fully performed, the Settling Work Defendants may submit to EPA and the City a statement of position on whether all or a portion of the Upstream Facilities shall be decommissioned/dismantled.

6. **Submittals:** The Settling Work Defendants and the City shall submit two (2) copies of each deliverable to the EPA

Project Coordinator designated in Section XXVI (Notices and Submissions) of the Consent Decree, one copy to EPA's designated remedial action oversight contractor, DTSC, DHS, and RWQCB, and one copy of each deliverable transmittal letter to the EPA Office of Regional Counsel as designated in the Consent Decree, Section XXVI (Notices and Submissions).

III. Operation of Upstream Facilities

A. <u>Period of Operation and Maintenance</u>: The Operator shall perform O&M activities on the Upstream Facilities as required under Section VI (Performance of the Work by Settling Work Defendants and the City) of the Consent Decree and Section III of this SOW, for a period of twelve years. This period of O&M shall commence on the System Operation Date.

B. <u>Annual Maintenance Allowance</u>: The Annual Maintenance Allowance shall be measured in units of gallons and shall be used as a means for the Operator to perform a certain amount of routine maintenance on the Upstream Facilities without violating the Consent Decree's extraction requirements. The Annual Maintenance Allowance will also be used as a means of measuring compliance with the limits set on suspension of operations (see below). On the System Operation Date, and at one year anniversaries from the System Operation Date, the Operator will

Annual Maintenance Allow-ance

be credited with an Annual Maintenance Allowance of 252,000,000 gallons.[1] There shall be no carryover of unused maintenance credits from year to year. For any full day or a portion thereof that the Operator designates as a maintenance outage, the Annual Maintenance Allowance, expressed in gallons, will decrease as follows:

$$AMA' = AMA - AMC$$

where

AMA' = new annual maintenance allowance

AMA = old annual maintenance allowance

AMC = annual maintenance credits used that day (up to the maximum of 7,200,000)

C. **<u>Suspension of Operations</u>:** The Operator may suspend operation of the Upstream Facilities subject to the following conditions:

1. If the treated water does not meet or it is anticipated that it will not meet the requirements of Paragraph 13.e of the Consent Decree, the Operator shall immediately shut down the Upstream Facilities, unless EPA authorizes otherwise. In the

[1] Each O&M year, the Operator may shut down the Upstream Facilities for routine maintenance no more than 35 days. At an annual extraction rate of 5,000 gpm, the Upstream Facilities would not pump 252,000,000 gallons over this 35-day period.

case of a shutdown, the Operator shall verbally inform the EPA Project Coordinator (and the City, if applicable) within 24 hours of the shutdown, and shall submit written notification to EPA (and the City, if applicable) within 7 days of the shutdown. The written notification shall describe the cause for the shutdown, list the primary and secondary drinking water standards, if any, that were exceeded or could not be met, shall describe the cause of any actual or anticipated deviations, and shall outline any corrective actions necessary for the Upstream Facilities to meet the Performance Standards. The Operator shall not resume operation of the Upstream Facilities until directed by EPA.

2. The Operator may suspend operations by designating a maintenance outage (e.g., a full day or a portion thereof). The maximum maintenance credits that can be used in any given day shall not exceed 7,200,000 gallons. Maintenance outages during the operating year shall not exceed the Annual Maintenance Allowance, or the Operator shall be considered in violation of the Consent Decree. Maintenance outages may not be designated for reasons other than maintenance. The Operator shall notify the EPA Project Coordinator in advance of a planned maintenance outage, and within 24 hours of an unplanned maintenance outage. Maintenance outages shall be specifically accounted for in the O&M Progress Reports required in Section II.B.2. of this SOW.

3. The Operator may suspend operations during the Shake-Down Period without being in violation of the Consent Decree.

D. **<u>Non-Routine Maintenance</u>:** "Non-routine maintenance," as used in this paragraph, shall include unplanned maintenance events which could not reasonably be anticipated by the Operator, or the timing of which could not reasonably be anticipated by the Operator in the ordinary course of operations.

1. At the outset of an event that the Operator believes requires non-routine maintenance, the Operator shall notify EPA of the event, the projected maintenance requirements, and the projected timing for completion of such requirements.

2. EPA shall determine whether the event requires non-routine maintenance, and if applicable, a reasonable time period for the maintenance to be completed based on, but not limited to, information provided by vendors and submitted to EPA by the Operator. EPA shall notify the Operator of the deadline for completion of the non-routine maintenance.

3. EPA's determination and EPA's established deadline for completion of the non-routine maintenance shall be binding upon the Operator unless the Operator invokes the Dispute Resolution process of Section XIX of the Consent Decree. The deadline for completion of the non-routine maintenance may also

N-R Maintenance

be extended by EPA.

4. Invocation of the Dispute Resolution process, by itself, will not postpone any maintenance activities.

5. Non-routine maintenance shall neither increase nor decrease the Annual Maintenance Allowance.

6. The Extraction Volume Requirement (see Sections III.F. and G. of this SOW) shall decrease for the current year of O&M according to the number of days the Upstream Facilities were fully or partially non-operational due to non-routine maintenance.

E. **<u>Extraction Rate Calculation</u>:** The Operator shall calculate the extraction rate for the Reporting Period as follows:

$$ER = \frac{GE}{(ND)(24\ hr/day)(60\ min/hr)}$$

where

ER = extraction rate

GE = total gallons extracted in the Reporting Period

ND = number of days in the Reporting Period

F. **<u>Cumulative Pumping Credit</u>:** The Cumulative Pumping Credit shall be measured in units of gallons and shall be used as a means for the Operator to demonstrate compliance with the Extraction Volume Requirement (see Section III.G.2. below). However, the Cumulative Pumping Credit shall not be used by the Settling Work Defendants or the City as a basis for shortening the 12-year period of O&M that begins on the System Operation Date. On the System Operation Date, and on the day following each one year anniversary from the System Operation date, the Cumulative Pumping Credit shall be set to zero. There shall be no carryover of pumping credits. The Operator shall accumulate pumping credits within the year under the following conditions:

1. For any full day or a portion thereof that the City refuses to accept, in whole or in part, treated groundwater delivered to the Point of Delivery that satisfies the requirements set forth in Paragraph 13.e of the Consent Decree, the Settling Work Defendants as Operator shall earn a pumping credit calculated as follows:

$$CPC' = CPC + 7{,}200{,}000 - GED - MC$$

where

CPC′ = new Cumulative Pumping Credit

CPC = old Cumulative Pumping Credit

Pumping Credits

7,200,000 = total gallons extracted daily at a rate of 5,000 gpm

GED = total gallons extracted for each full day or a portion thereof that the City refuses to accept water

MC = maintenance credits used that day (up to the maximum of 7,200,000)

2. On each anniversary of the System Operation Date, the Cumulative Pumping Credit shall be adjusted as follows:

$$CPC' = CPC + CWP - 2{,}376{,}000{,}000$$

where

CPC' = new Cumulative Pumping Credit

CPC = old Cumulative Pumping Credit

CWP = cumulative water pumped for the past year of O&M (see Section II.B.2.b.v. of this SOW)

2,376,000,000 = total gallons extracted daily at a rate of 5,000 gpm for 330 days

The Cumulative Pumping Credit may be a positive or a negative number.

G. **<u>Compliance Calculations</u>:** For each Reporting Period,

the Operator shall demonstrate compliance with the Minimum Extraction Rate Check. For the Reporting Period in which the anniversary of the System Operation Date occurs, the Operator shall also demonstrate compliance with the Extraction Volume Requirement. The Operator shall be deemed in violation of the Consent Decree for failure to demonstrate compliance with either calculation, whenever required.

The Operator shall be deemed to be out of compliance with the Consent Decree for the number of days calculated as described below. The Days Out of Compliance ("DOC") number calculated shall be rounded down to the nearest whole number of days. A zero or negative value for DOC indicates compliance.

1. **Minimum Extraction Rate Check:** Whenever the ER calculated for a Reporting Period is less than 3,400 gpm, DOC shall be calculated as follows:

$$DOC = ND - \frac{(GE + MA)}{4,896,000} - NW$$

where

DOC = number of Days Out of Compliance

ND = number of days in the Reporting Period

GE = total gallons extracted in the Reporting Period

MA = maintenance credits used in the Reporting Period,

based on a rate of 3,400 gpm

4,896,000 = total gallons extracted daily at a rate of 3,400 gpm

NW = the number of days in the reporting period during which the City refuses to accept, in whole or in part, treated groundwater delivered to the Point of Delivery that satisfies the requirements set forth in Paragraph 13.e of the Consent Decree

2. **Extraction Volume Requirement:** On each anniversary of the System Operation Date, if the Upstream Facilities have not extracted and treated at least 2.376×10^9 gallons of water during the past year of O&M (i.e., CWP < 2.376×10^9), DOC shall be calculated as follows:

$$DOC = \frac{-CPC}{7,200,000} - MDOC$$

where

DOC = number of Days Out of Compliance

CPC = Cumulative Pumping Credit, as calculated using Sections III.F.1. and III.F.2. of this Statement of Work

7,200,000 = total gallons extracted daily at a rate of

5,000 gpm

MDOC = number of days since the previous System Operation anniversary date for which the Operator was out of compliance with the Minimum Extraction Rate Check and for which stipulated penalties were assessed and collected or were assessed and are not overdue

ATTACHMENT 1
Settling Work Defendants

		Due Date or Date Completed Under UAOs
I.	**CONSTRUCTION OF REMEDIAL ACTION**	
A.	**Submit Selection of Project Coordinator**	08/21/97
	EPA Review and Approval	08/22/97
B.	**Submit Selection of Supervising Contractor**	10/12/98
	EPA Review and Approval	10/27/98
	Finalize Contracts	11/11/98
C.	**Submit O&M Plan**	
	Draft	05/27/99
	EPA Review and Comment	+ 60 days
	Interim Final O&M Plan	+ 45 days
	EPA Review and Comment	+ 30 days
	Final O&M Plan	+ 30 days
D.	**Submit Health and Safety Plan**	
	Draft	05/28/99
	EPA Review and Comment	+ 60 days
	Interim Final Health & Safety Plan	+ 30 days
	EPA Review and Comment	+ 30 days
	Final HASP	+ 30 days
E.	**Submit Quality Assurance Project Plan**	
	Draft	04/29/99
	EPA Review and Comment	+ 60 days
	Interim Final Quality Assurance Project Plan	+ 45 days
	EPA Review and Comment	+ 30 days
	Final Quality Assurance Project Plan	+ 30 days
F.	**Submit Contingency Plan**	
	Draft	05/11/99
	EPA Review and Comment	+ 60 days
	Interim Contingency Plan	+ 30 days
	EPA Review and Comment	+ 30 days
	Final Contingency Plan	+ 30 days

G.	**Complete Construction of Upstream Facilities**	08/13/99
H.	**Issuance of California DHS Permit (PMT)**	PMT
I.	**Pre-certification Inspection of Construction**	PMT + 30 days
J.	**Final Inspection of Construction**	PMT + 60 days
K.	**Begin Start-Up of Upstream Facilities**	PMT + 1 day
L.	**Begin Shakedown of Upstream Facilities**	PMT + 60 days
M.	**Submit Certificate of Completion Report**	
	Draft	PMT + 90 days
	EPA Review and Comment	+ 60 days
	Interim Final Certificate of Completion Report	+ 30 days
	Final Certificate of Completion Report	+ 30 days

II. **OPERATION AND MAINTENANCE**

A.	**System Operation Date (SOD)**	PMT + 120 days
B.	**Submit Selection of Cost Consultant***	12/10/99
	EPA Review and Approval	+ 60 days
	Finalize contracts	01/10/00
C.	**Complete Transition Activities***	PMT + 210 days
D.	**Commencement Date***	PMT + 240 days
E.	**Pre-certification Inspection (PCI)***	SOD + 12 years
F.	**Certificate of Completion Report***	
	Draft	PCI + 30 days
	EPA Review and Comment	+ 60 days
	Interim Final Certificate of Completion Report	+ 30 days
	Final Certificate of Completion Report	+ 30 days

* Denotes a joint activity between the Settling Work Defendants and the City.

ATTACHMENT 2
City of Glendale Schedule

		Due Date or Date Completed Under the MOA
I.	CONSTRUCTION OF REMEDIAL ACTION	
A.	**Submit Selection of Project Coordinator**	01/07/99
	EPA Review and Approval	+ 60 days
B.	**Submit Selection of Supervising Contractor**	01/07/99
	EPA Review and Approval	+ 60 days
	Finalize Contracts	+ 30 days
C.	**Submit O&M Plan**	
	Draft	05/27/99
	EPA Review and Comment	+ 60 days
	Interim Final O&M Plan	+ 45 days
	EPA Review and Comment	+ 30 days
	Final O&M Plan	+ 30 days
D.	**Submit Health and Safety Plan**	
	Draft	05/28/99
	EPA Review and Comment	+ 60 days
	Interim Final Health & Safety Plan	+ 30 days
	EPA Review and Comment	+ 30 days
	Final Health & Safety Plan	+ 30 days
E.	**Submit Sampling and Analysis Plan**	
	Draft	07/15/99
	EPA Review and Comment	+ 60 days
	Interim Final Sampling and Analysis Plan	+ 45 days
	EPA Review and Comment	+ 30 days
	Final Sampling and Analysis Plan	+ 30 days
F.	**Complete Construction of Downstream Facilities**	08/31/99
G.	**Issuance of California DHS Permit (PMT)**	PMT
H.	**Pre-certification Inspection of Construction**	PMT + 30 days
I.	**Final Inspection of Construction**	PMT + 60 days

J.	**Begin Start-Up of Downstream Facilities**	PMT + 1 day
K.	**Begin Shakedown of Downstream Facilities**	PMT + 60 days
L.	**Submit Certificate of Completion Report**	
	Draft	PMT + 90 days
	EPA Review and Comment	+ 60 days
	Interim Final Certificate of Completion Report	+ 30 days
	Final	+ 30 days

II. **OPERATION AND MAINTENANCE**

A.	**Submit Staffing Plan**	02/02/99
	EPA Review and Approval	+ 60 days
B.	**Submit Time Line and Schedule**	10/11/99
	EPA Review and Approval	+ 60 days
C.	**Submit Selection of O&M Contractor**	12/10/99
	EPA Review and Approval	+ 60 days
	Finalize Contracts	01/10/00
D.	**Submit Selection of Cost Consultant***	12/10/99
	EPA Review and Approval	+ 60 days
	Finalize contracts	01/10/00
E.	**System Operation Date (SOD)**	PMT + 120 days
F.	**Complete Transition Activities***	PMT + 210 days
G.	**Commencement Date***	PMT + 240 days
H.	**Pre-certification Inspection (PCI)***	SOD + 12 years
I.	**Certificate of Completion Report***	
	Draft	PCI + 30 days
	EPA Review and Comment	+ 60 days
	Interim Final Certificate of Completion Report	+ 30 days
	Final	+ 30 days

* Denotes a joint activity between the City and the Settling Work Defendants.

Appendix D: Non-Owner Settling Defendants

Appendix E: Owner Settling Defendants and Properties

Appendix E

Owner Settling Defendants[1]

Admiral Controls, Inc.:
4516 Cutter Street, Los Angeles, California

Credit Managers Association of California:
70 East Verdugo, Burbank, California

Datron, Inc.:
4585 Electronics Place, Los Angeles, California

Foto-Kem Industries, Inc.:
2800 West Olive Avenue, Burbank, California

Haskel International, Inc.:
100 East Graham Place, Burbank, California

International Electronic Research Corporation:
135 West Magnolia Boulevard, Burbank, California

ITT Industries, Inc.
801 Allen Avenue, Burbank, California
and
1200 Flower Street, Burbank, California

Litchfield, Charles Carter:
4578 and 4600 Brazil Street, Los Angeles, California

Lockheed Martin Librascope Corporation:
801 Western Avenue, Glendale, California
727, 811 and 833 Sonora Avenue, Glendale, California
and
1607 and 1625 Flower Street, Glendale, California

Pacific Bell Telephone Company (formerly Pacific Bell, formerly The Pacific Telephone & Telegraph Company):
720 Western Avenue, Glendale, California

Margaret R. Peterson, Trustee of the Peterson Family Trust, dated August 2, 1988:
700 Allen Avenue/1840 Dana Street, Glendale, California

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[1] Settling Defendants that as of the time this Consent Decree is executed own the respective facilities indicated, with regard to which the Environmental Protection Agency issued special notice letters.

Ralphs Grocery Co.:
4841 San Fernando Road, Los Angeles, California

Ranchito Allegra LLC:
171-177 West Magnolia Boulevard

Union Pacific Railroad Company (formerly Southern Pacific Transportation Co.):
201 North Front Street, Burbank, California

Vickers, Incorporated:
4690 Colorado Boulevard, Los Angeles, California

Vorelco, Inc.:
825 North Victory Boulevard, Burbank, California

Walt Disney Pictures and Television, a subsidiary of The Walt Disney Company:
500 South Buena Vista Street, Burbank, California

Walt Disney World Co.:
640 Paula Avenue, Glendale, California
and
1733 South Flower Street, Glendale, California

Appendix F: Settling Work Defendants

Appendix F

Settling Work Defendants

Coltec Industries, Inc., Menasco Aerosystems Division

Credit Managers Association of California

Foto-Kem Industries, Inc.

Haskel International, Inc.

International Electronic Research Corporation

ITT Industries, Inc.

Lockheed Martin Corporation

Lockheed Martin Librascope Corporation

Pacific Bell Telephone Company (formerly Pacific Bell, formerly The Pacific Telephone & Telegraph Company)

Philips Components, a Division of Philips Electronics North America Corporation

PRC-DeSoto International, Inc. (formerly Courtaulds Aerospace, Inc.)

The Prudential Insurance Company of America

Ralphs Grocery Co.

Union Pacific Railroad Company (formerly Southern Pacific Transportation Co.)

Vickers, Incorporated

Vorelco, Inc.

Walt Disney Pictures and Television, a subsidiary of The Walt Disney Company

ZERO Corporation

Appendices G and G.1: Settling Cash Defendants

Appendix G

Settling Cash Defendants

Access Controls, Inc. of California

Admiral Controls, Inc.

A.G. Layne, Inc.

Max Cohen (affiliated with Sunland Chemical & Research Corporation)

Commercial Inspection Services, Inc.

Cosmic Investments, Inc.

Serge Dadone (affiliated with Sunland Chemical & Research Corporation)

Datron Inc.

Estate of Arnold E. Peterson (Margaret R. Peterson Executor)

Estate of Marlene Ann Lee (Theodore M. Lee executor) (affiliated with A.G. Layne, Inc.)

Excello Plating Company, Inc.

GCG Corporation

Glen Harleman (affiliated with Excello Plating Co., Inc.)

David Higgins (affiliated with Admiral Controls, Inc.)

Elder Kree Kofford (affiliated with Access Controls, Inc. Of California)

Lawrence Engineering & Supply, Inc. and Mr. Lester C. Lawrence

Daniel Lee (affiliated with A.G. Layne, Inc.)

Lee Living Trust (affiliated with A.G. Layne, Inc.)

Michael Lee (affiliated with A.G. Layne, Inc.)

Ronald Lee (affiliated with A.G. Layne, Inc.)

Theodore M. Lee (affiliated with A.G. Layne, Inc.)

Theodore R. Lee, Jr. (affiliated with A.G. Layne, Inc.)

Litchfield, Charles Carter

MAG Investments

Melvin S. Pechter (affiliated with W & W Manufacturing Co.)

Mrs. Margaret R. Peterson; The Peterson Family Trust; Estate of Arnold E. Peterson (Margaret R. Peterson Executor); Grant Products, LLC; Grant Products, Inc.; Grant Management, Inc.; Grant Products, L.P.; Whittaker Corporation; Peterson Baby Products Co.; and Buckeye Steel Castings Company (collectively the "700 Allen Avenue Parties").

Ranchito Allegra LLC

S.A.I. Industries

Sunland Chemical & Research Corporation

Richard Toshima (affiliated with A.G. Layne, Inc.)

Edward L. Wallen (affiliated with W&W Mfg. Co.)

W&W Mfg. Co.

Anthony Zambas (affiliated with A.G. Layne, Inc.)

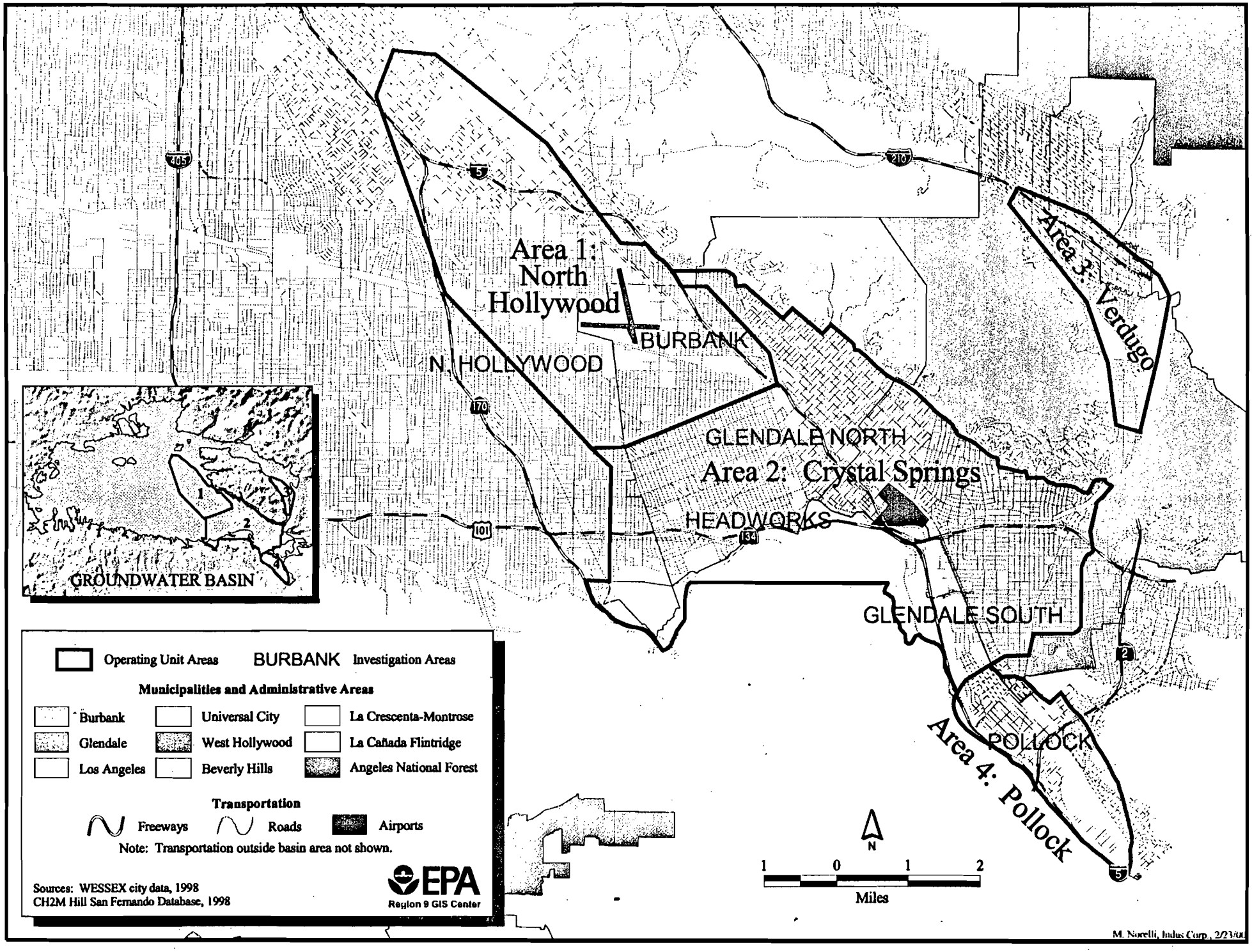
Appendix G.1

Aeroquip Corporation

Joseph F. Bangs, dba Bangs Manufacturing Company

Appendix H: Map of the Site

SAN FERNANDO VALLEY SUPERFUND AREA



Appendix I -- Memorandum of Agreement Between City and EPA

SECOND MEMORANDUM OF AGREEMENT

between the

U.S. ENVIRONMENTAL PROTECTION AGENCY

and the

CITY OF GLENDALE

regarding the

INTERIM REMEDIAL ACTION

AT THE GLENDALE OPERABLE UNITS

SAN FERNANDO SUPERFUND SITE

AREA 2 (CRYSTAL SPRINGS)

This Second Memorandum of Agreement ("MOA2") is entered into between the United States Environmental Protection Agency ("EPA") and the City of Glendale, California (the "City"). EPA and the City are hereinafter referred to as the "Parties."

WHEREAS, EPA, in Records of Decision issued June 18, 1993 ("RODs") selected interim remedies for the Glendale North and South Operable Units ("Operable Units" or "OUs") of the San Fernando Valley Superfund Site Area 2 (the "Site") which include design, construction, and operation and maintenance of a combined groundwater treatment system for both Operable Units.

WHEREAS, the RODs provide that after treatment to remove volatile organic compounds and blending to reduce the nitrate levels in the treated water, the treated water will be conveyed to the City and distributed to the public water supply provided the City agrees to accept the water under conditions acceptable to EPA.

WHEREAS, the City remains committed in principle to accepting the water from both of the Operable Units for distribution in the City's public drinking water system as previously indicated in the City's Resolution No. 22,892 dated July 1, 1993 and the City's letters to EPA dated July 12, 1993 and June 18, 1992.

WHEREAS, on March 30, 1994, EPA entered into an Administrative Order on Consent for Remedial Design for the Operable Units ("AOC") with certain parties which EPA had identified as potentially responsible parties ("PRPs") for the actual or threatened releases of hazardous substances at the Site.

Site.

WHEREAS, additional parties joined the parties signatory to the AOC to implement the AOC work ("AOC Respondents").

WHEREAS, the AOC provided that the AOC Respondents would complete the remedial design work necessary for implementing the selected remedies, including design of a system for delivering the treated and blended water to the City.

WHEREAS, on March 30, 1994, EPA and the City entered into a Memorandum of Agreement for the Remedial Design of the Glendale Operable Units ("MOA1"). In MOA1, the City agreed to coordinate with and participate with the AOC Respondents in the performance of the remedial design for the Glendale Operable Units by performing certain tasks, including but not limited to the review of draft deliverables developed during the remedial design.

WHEREAS, the City participated in certain phases of the remedial design as provided by MOA1, and performed portions of the remedial design, including the design of the blending water pipelines and upgrades to the City's Grandview Pump Station.

WHEREAS, the AOC Respondents completed and on November 8, 1996, EPA approved the remedial design for the Glendale Operable Units.

WHEREAS, the approved remedial design provides for the extracted, treated groundwater to be delivered to the City for distribution to the public water supply.

WHEREAS, on November 26, 1996, EPA issued Unilateral Administrative Order No. 97-06 ("UAO") to the UAO Respondents and additional parties identified as PRPs for the Glendale Operable Units (the "UAO Parties") which requires the UAO Parties to implement the initial stages (approximately the first nine months) of the remedial action work necessary to implement the interim remedies pursuant to the remedial design.

WHEREAS, the work required by UAO No. 97-06 was completed on September 8, 1997, and EPA intends to issue an additional UAO to PRPs for the Glendale Operable Units (hereinafter "Glendale PRPs") to provide for completion of the remedial action work and operation and maintenance of the interim remedies as required by the RODs.

WHEREAS, the Parties wish to memorialize the City's continued commitment to accept the extracted, treated water in quantities and under operational conditions which will comply with the requirements of the RODs, and to perform certain portions of the interim remedial action work.

WHEREAS, the Parties wish to memorialize other commitments in principle the City has made pursuant to MOA1.

WHEREAS, the City is continuing its efforts to reach agreement in principle with the Glendale PRPs on the following matters:

a. Payment for the blending and treated water and associated extraction and lifting costs, including responsibility for negotiating with the Metropolitan Water District ("MWD").

b. All other aspects of the funding, construction, operation and maintenance of the interim remedies.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL AGREEMENTS CONTAINED HEREIN, THE PARTIES AGREE AS FOLLOWS:

1. The City is committed in principle to accepting the extracted, treated groundwater in amounts and under operational conditions which comply with the requirements of the RODs, subject to (a) finalization of the City's agreements with the Glendale PRPs concerning funding and/or performance of the interim remedial action work, and (b) finalization of an agreement between the Parties concerning issues related to the City's acceptance of the water, including but not limited to the standards for operation of the interim remedial actions.

2. Subject to the items described in paragraph 1 above, the City agrees to fund and/or to perform the following work:

a. fund and perform work related to construction of the nitrate blending water pipeline and facilities;

b. fund and perform work related to construction of necessary Grandview Pump Station upgrades;

c. fund and perform work related to construction of an ammonia feed system at the Grandview Pump Station;

d. fund up to fifty per cent of capital upgrades to existing City conveyance pipes used by the UAO Parties in constructing the interim remedial actions;

e. provide assistance in obtaining easements as necessary for the implementation of the interim remedial actions;

f. otherwise coordinate, cooperate and participate with the Glendale PRPs, EPA, and California or local authorities as necessary to implement the interim remedial actions.

3. The City agrees, within fifteen (15) days of the execution by the City and the Glendale PRPs of a global agreement memorializing their agreement on the funding, construction, operation and maintenance of the interim remedies and any and all related issues ("Global Agreement"), to submit to EPA a proposed schedule and list of tasks the City proposes to perform concerning the work described in paragraph 2.

4. EPA shall consider and approve, disapprove, or request modifications to the City's proposed schedule and list of tasks. In consultation with the City and if appropriate, with the Glendale PRPs, EPA will develop a Statement of Work concerning such tasks, which shall be incorporated in and become a part of this MOA.

5. The City agrees to implement the tasks described in such Statement of Work as approved by EPA. Upon submittal by the City, EPA shall consider and approve, disapprove, or request modifications to any task or deliverable (if any) contained in the Statement of Work developed pursuant to this MOA.

6. The City agrees to review all draft deliverables which the Glendale PRPs are required to provide to the City and EPA pursuant to the UAO or any subsequent UAO. Unless EPA agrees in writing to a longer period of time, the City agrees to provide EPA with its written comments on such deliverables at least seven (7) calendar days prior to the date specified in the UAO Statement of Work for EPA to provide EPA's comments to the Glendale PRPs.

7. EPA agrees to consider any written comments made by the City on deliverables submitted under the UAO or any subsequent UAO if the comments are submitted within the time frame specified in Paragraph 6. EPA further agrees to provide the City with a copy of EPA's written comments submitted to the Glendale PRPs on draft deliverables.

8. The Parties agree that EPA is the lead agency in overseeing the work performed by the Glendale PRPs and the City at the Site and that EPA's decisions regarding the interim remedial action work, including but not limited to approval or disapproval of deliverables, shall control.

9. The City shall permit the Glendale PRPs and their contractors to have reasonable access, free of charge, to real property and fixtures owned or controlled by the City necessary to conduct the interim remedial action work, subject to reaching agreement with the Glendale PRPs regarding indemnification, insurance coverage, reasonable notice and compliance with the City's safety requirements. Notwithstanding the foregoing, this access provision shall not require the City to grant the Glendale PRPs access to City property free of charge to construct any

facilities or structures, nor constitute a waiver of any City, state or federal requirements.

10. The City shall permit EPA, or its authorized representatives, to have reasonable access at all times to the City's properties to monitor any activity conducted pursuant to the UAO, any subsequent UAO or this MOA, or to conduct such tests or investigations as EPA deems necessary, to the extent such properties are reasonably related to the work being performed under either a UAO or this MOA. Nothing in this MOA shall be deemed a limit upon EPA's authority under federal law to gain access to the City's properties.

11. Nothing in this MOA shall preclude EPA from taking any enforcement action or directing any person to take any action pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and/or any other legal authority.

12. Nothing in this MOA shall constitute a compromise, waiver or other relinquishment of the City's claims, rights, defenses or remedies against any other person, including but not limited to the Glendale PRPs, or any other PRPs for the Glendale OUs.

//

13. This MOA shall be effective upon the date of EPA's signature.

IT IS SO AGREED:

DATED: July 2, 1998

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

By: Keith A. Takata

Director, Superfund Division
Region 9

DATED: May 19, 1998

CITY OF GLENDALE

By: [signature]

Mayor of the City of Glendale

ATTEST:

Doris Twedt, Deputy City Clerk

Doris Twedt

for Aileen Boyle, City Clerk

APPROVED AS TO FORM:

Aileen Cunningham

~~Scott H. Howard~~

asst City Attorney 5/6/98

Appendix J: Settlement Agreement Between Settling Defendants and the City

ORIGINAL

SETTLEMENT AGREEMENT AMONG CITY OF GLENDALE,
UNILATERAL ORDER RESPONDENTS AND
GLENDALE RESPONDENTS GROUP, LLC

INTRODUCTION

This Settlement Agreement ("Agreement") is dated as of December 1, 1998 by and among the City of Glendale (the "City"), the recipients listed on Exhibit "A" attached hereto ("Respondents") of Unilateral Administrative Order No. 97-18 ("Order No. 97-18") issued by the United States Environmental Protection Agency ("EPA") on September 30, 1997, and the Glendale Respondents Group, LLC ("LLC"), with reference to the following facts:

RECITALS

A. EPA has named the Respondents and other persons and entities as potentially responsible parties with respect to the alleged contamination of groundwater in the San Fernando Valley Superfund Site, Glendale North and South Operable Units (individually, the "North OU" and the "South OU" and collectively, the "Glendale OUs"). EPA has not named the City as a potentially responsible party with respect to the Glendale OUs.

B. The City has alleged that it has claims against the Respondents and other persons and entities for damages suffered as a result of their alleged contamination of the groundwater in the Glendale OUs and the City's consequent inability to use its groundwater supplies.

C. The Respondents, and each of them, dispute that the City has any claim for damages against them with respect to

the alleged contamination of the groundwater in the Glendale OUs. Although the City is not a party to Order No. 97-18, Respondents also assert that the City is responsible for a portion of the alleged contamination and that they have claims against the City for cost recovery, contribution and indemnity with respect to such alleged contamination.

D. The City disputes that the Respondents have any claims against it with respect to the alleged contamination or that the City is responsible for contamination of the groundwater.

E. EPA has ordered the Respondents and other persons and entities to construct an Interim Remedial Action ("IRA") for the Glendale OUs pursuant to Order No. 97-18. The IRA is intended to implement the Records of Decision for the Glendale OUs (the "RODs").

F. The IRA involves the extraction of groundwater from certain wells and the treatment of the extracted groundwater in a water treatment plant ("WTP"). After the extracted groundwater has been treated by the WTP, the IRA provides that such treated water will either be delivered to the City of Glendale for distribution to Glendale residents or disposed of in an alternative manner.

G. The City asserts that it shut down and stopped operating all wells which it owned within the City and was using to extract groundwater for delivery to its residents due to the existence of the alleged contamination. The City also asserts that it was compelled to purchase replacement water to

supply its residents as a result of the inability to extract groundwater. The City now desires to recommence the delivery of local groundwater to its residents. The City therefore proposes that the IRA be incorporated into the City's water supply system and that all of the groundwater which will be extracted and treated by the IRA be delivered by the City to Glendale residents. The parties acknowledge that the City's proposal includes the extraction of 1,600 gpm of groundwater from a deep well that is not required for remedial purposes.

H. The City proposes to resolve its claims against the Respondents by having the Respondents or the LLC construct a portion of the IRA facilities for the City and provide the City with a portion of the funding required by the City to operate such facilities. The Respondents propose to resolve their claims against the City by having the City construct the balance of the IRA facilities and fund the balance of the operating costs.

I. When referring to the discrete parts of the IRA, the parties are relying on and incorporating the description of the project set forth in the September 26, 1996 Final Design Report ("FDR") for the IRA prepared by Camp, Dresser and McKee, and approved by EPA on November 11, 1996, as well as any modifications to that design which have been approved by EPA prior to and subsequent to the date of this Agreement. A schematic design of the water treatment, extraction and conveyance facilities is attached hereto as Exhibit "B."

J. In addition, when referring to their respective obligations, the parties intend that these responsibilities shall be fulfilled by deadlines set forth in separate requirements that the parties individually or collectively may be subject to under a CERCLA Section 106 Unilateral Order (an "Order"), or if a judicial consent decree is entered into with EPA, such a decree (a "Consent Decree"). Most of the obligations under this Agreement, such as operation and maintenance, shall terminate when EPA certifies the completion of the IRA-operation period, which the parties contemplate will be approximately twelve (12) years following completion of the IRA construction.

NOW, THEREFORE, the City, on the one hand, and the Respondents and the LLC, on the other hand, desiring to settle and mutually compromise and resolve all claims and contentions which they have, may have had, or may have against one another with respect to the alleged groundwater contamination in the Glendale OUs, and in consideration of the execution of this Agreement, and for other good and valuable consideration, the receipt of which is hereby acknowledged, now agree as follows:

AGREEMENT

1. PAYMENTS TO THE CITY

1.1 Respondents shall pay to the City the sum of One Million Eight Hundred Twenty Five Thousand Dollars ($1,825,000) ("Settlement Consideration"), with such amount due and payable as follows:

1.1.1 Within thirty (30) days after the execution of this Agreement, the Respondents shall pay to the City the sum of One Hundred Sixty-One Thousand Dollars ($161,000) by check made payable to the City.

1.1.2 On the dates that are the first and second anniversaries of the date of this Agreement, Respondents shall pay to the City the sum of One Hundred Fifty Thousand Dollars ($150,000) on each such date by check made payable to the City.

1.1.3 Thereafter, on each anniversary of the date of this Agreement, Respondents shall pay to the City the balance of the Settlement Consideration in eleven annual installments of One Hundred and Twenty Four Thousand Dollars ($124,000) by check made payable to the City, with the first installment due and payable on the third anniversary of the date of this Agreement.

1.2 Notwithstanding any provision in this Agreement to the contrary, if, and to the extent, that the Respondents and/or the LLC are required to pay, whether directly or indirectly, any real property or possessory interest tax, fee, penalty, interest or assessment to any County or municipality in the State of California (a "Governmental Assessment") with respect to any portion of the IRA located in the City of Glendale, the Respondents shall be entitled to credit the amounts of any such Governmental Assessment against payments to be made to the City under Section 1 above; provided, further, that in the event that the Respondents' or the LLC's

credits exceed the remaining cash payments owed to the City under Section 1, the City shall be obligated to reimburse the Respondents for the amount paid by Respondents or the LLC for any such Governmental Assessment from amounts previously paid by Respondents or the LLC under Section 1 within thirty (30) days of submission to the City of proof of payment of such Governmental Assessment; however, the LLC shall not be entitled to any credit or reimbursement for non-property related fees and taxes normally imposed on City property or activities, such as sales taxes, inspection fees, franchise fees, utility taxes and sewer discharge fees.

1.3 All payments to be made to the City pursuant to Section 1.1 above shall be sent to the Director of Public Service at the address set forth in Paragraph 11.19 below.

1.4 The obligations set forth in this Section 1 shall survive the termination or expiration of this Agreement.

2. <u>EXPENDITURES TO BE INCURRED AND ACTIONS TO BE TAKEN BY THE RESPONDENTS AND LLC</u>

2.1 Respondents have designed, and the LLC will construct for the benefit of the City, certain groundwater extraction wells (the "Wells") and a 5000 gallon per minute ("gpm") capacity WTP to remove volatile organic compounds ("VOCs") from the extracted groundwater, as further described in the FDR, in each instance on property owned or held by the City.

2.2 Respondents have designed, and the LLC will construct for the benefit of the City, the collection and transmission pipelines from the Wells to the WTP, and from the

WTP to the "Point of Delivery" into the City's existing water system (which is at the corner of Grandview Avenue and Air Way, and is more specifically set forth in the September 1996 FDR pipelines construction contract documents), in each instance on property owned or held by the City. All such pipelines shall be referred to as the "Collection Pipelines." The WTP, the Wells and the Collection Pipelines shall hereinafter be referred to as the "Upstream Facilities."

2.3 As a material part of the consideration given to the City under this Agreement, and consistent with the parties' agreement that the IRA will be owned and operated by the City as part of the City's system for delivering water to its residents, any and all improvements comprising all or any portion of the Upstream Facilities shall at all times be owned by, and all rights, title and interest in and to such improvements shall be vested in, the City. The LLC and the City hereby agree to execute and deliver to each other such further documents as are reasonably required to confirm the City's ownership of such improvements.

2.4 The LLC shall assist the City by reviewing the system design of the Downstream Facilities (as such term is defined in Section 3.4 below) and advising the City as to whether the Downstream Facilities will meet the objectives of the RODs. The LLC acknowledges that the City has provided the engineering drawings for the Downstream Facilities to the LLC for review and the LLC is satisfied with the design concepts.

2.5 The LLC shall provide overall system design review of all aspects of the IRA, including the Downstream Facilities, to ensure that all activities are coordinated and to advise the City on whether improvements the City proposes to construct will be complementary and meet the overall objectives of the RODs. The LLC shall perform such review, if requested to do so by the City, prior to the City requesting bids for its portion of the work. The LLC shall, if requested to do so by the City, review the as constructed Downstream Facilities prior to start-up of the IRA. These reviews do not include responsibility for preparation of detailed design documents for the Downstream Facilities, which remains the responsibility of the City. The LLC shall use its best efforts to identify issues which may affect the overall ability of the system to meet RODs objectives prior to start-up of the system. Notwithstanding the foregoing, Respondents and the LLC shall have no obligation to ensure that the Downstream Facilities are properly constructed or operate as intended under the FDR and the RODs and shall have no liability to the City with respect to the construction, operation or non-operation of the Downstream Facilities.

2.6 The LLC agrees to install the necessary equipment for the City to receive the following signals from the Upstream Facilities:

a. Effluent Flow Meter Reading

b. Treatment Plant Shut-Down Signal

c. On/Off Signal and Flow Rate From Each Well

d. Open/Close Signal From The Treatment Plant Bypass Line

e. Chlorine Residual Reading

The City agrees to provide the following signals from the Downstream Facilities of the system:

f. High Reservoir Alarm

g. Grandview Plant Shut-Down Alarm

In addition to these signals, a communication signal check shall be performed by the City and the LLC to assure the transmittal of signals both from and to the Upstream and Downstream Facilities. The signal to and from the WTP will be transmitted using a dedicated leased telephone line via modem to the City's Howard Substation located at 620 East Wilson Street. Notwithstanding the foregoing, the City shall, at its sole cost and expense, be responsible for picking up all signals from the leased telephone line at the WTP and integrating the signals into the City SCADA system. Additionally, the WTP will be picking up signals from the Downstream Facilities and integrating such signals into the WTP SCADA system using funds provided by the LLC. In the event that the parties agree that additional signals should be sent from the WTP, the City shall cause the O&M Contractor, using funds provided through the Funding Arrangement (as such term is defined in Section 10 below), to send such additional signals, and the City shall, at its sole cost and expense, pick up and integrate such additional signals into the City's SCADA system.

2.7 The LLC will provide signals necessary for the City to develop a SCADA screen which will display summary information regarding the operations of the WTP and Wells.

2.8 The parties acknowledge that the Respondents and/or the LLC may, at its option, establish a trust fund to pay all obligations of the LLC hereunder; provided, that in no event shall the establishment of such a trust fund amend, modify or affect the obligations of the Respondents and the LLC under this Agreement.

3. <u>EXPENDITURES TO BE INCURRED AND ACTIONS TO BE TAKEN BY THE CITY</u>

3.1 The City shall pay up to the first $80,000 of the costs of rehabilitation, repair and relining of the existing City pipeline from the Point of Delivery to the Grandview Pumping Station reservoir inlet chamber (the "Transmission Pipeline") so that it can serve the purposes contemplated in the FDR for the term of the IRA. Except for the $80,000 that the City is obligated to pay under the first sentence of this Section, the City shall not be responsible for any additional cost or any expense associated with the repair, rehabilitation or construction of a new pipeline. In the event that the Transmission Pipeline is repaired and rehabilitated by the City, and, at some later time during the IRA operating period, the Transmission Pipeline fails to serve the purposes contemplated in the FDR and such failure does not result from any fault of the City or its contractor in connection with the repair and rehabilitation of the Transmission Pipeline, all as reasonably determined by the City and the LLC, the City shall

require the O&M Contractor, using funds provided through the Funding Arrangement, to repair or replace the Transmission Pipeline. The parties agree that, as of the date of this Agreement, the City has not inspected the existing Transmission Pipeline and makes no representations or warranties concerning the condition of such pipeline and its useability as a conveyance pipeline. The parties will attach to this Agreement as Exhibit "H" a description of the proposed work to be undertaken with respect to the Transmission Pipeline.

3.2 The City shall design and construct a nitrate blending water facility and a blending water pipeline (the "Blending Facilities"), as set forth in the FDR, with the exception that the blending water pipeline will be sixteen inches in diameter as opposed to the twelve inches referenced in the FDR.

3.3 The City shall design and construct any necessary improvements to the Grandview Pumping Station (the "Grandview Improvements"), as more specifically set forth in the FDR, including the new ammonia feed system at the Grandview Pumping Station.

3.4 The Transmission Pipeline, the Blending Facilities and the Grandview Improvements shall be referred to herein as the "Downstream Facilities."

4. <u>OPERATION AND MAINTENANCE ("O&M") COSTS AND RELATED ACTIONS</u>

4.1 From the System Operation Date (as such term is defined in the Order or Consent Decree) until the date which

is six (6) months after the System Operation Date, the Upstream Facilities shall be operated for the City by the construction contractor. All associated fees and expenses incurred by the construction contractor shall be paid by the LLC.

4.2 From and after the date which is six (6) months after the System Operation Date (the "Commencement Date") until completion of the IRA as determined by EPA under the Order or Consent Decree (the "IRA Completion Date"), the City shall operate and maintain the Upstream Facilities utilizing an independent contractor (the "O&M Contractor") retained by the City either (i) through a competitive bidding process or (ii) by assumption of the contract with the existing contractor. After all bids are received and opened, the City shall consult with the LLC who will assist the City in the evaluation of each bid to determine the lowest responsible bidder. The City shall award the bid to the lowest responsible bidder. The City shall participate in any such contractor selection process at its own cost and expense. The parties shall ensure that the O&M Contractor is selected and under contract no later than three (3) months before the Commencement Date.

4.3 Except for O&M costs that the City has agreed to pay under this Agreement, the City shall use funds provided by the Respondents and/or the LLC as set forth in Section 10 below (the "Funding Arrangement") to pay all O&M costs associated with the Upstream Facilities ("Upstream Facilities O&M Costs")

from and after the Commencement Date until the IRA Completion Date, including, but not limited to, (a) the cost of the O&M Contractor to operate and maintain the Upstream Facilities (including the cost of any subcontractor retained by the O&M Contractor to provide technical support), (b) all property taxes assessed against any Upstream Facilities located outside of the City of Glendale, (c) lease and rental payments for properties used in connection with the Upstream Facilities that are not owned by the City of Glendale as of the date of this Agreement, (d) the cost of free chlorine disinfection (which shall be in concentrations consistent with the City's drinking water system requirements, which requirements shall be provided by the City to the LLC prior to the start-up of the WTP and from time to time thereafter), (e) the cost of repairs and capital repairs and improvements to the Upstream Facilities, (f) the cost of electricity to extract and treat the groundwater less the "Electrical Lifting Cost" (as such term is defined in Exhibit "C" hereto), and (g) the cost of Department of Health Services ("DHS") and other regulatory permitting and oversight as more fully detailed in Section 5.

4.4 The City's reasonable cost of contract administration and oversight with respect to the contract with the O&M Contractor from and after the Commencement Date to and including the IRA Completion Date shall be paid through the Funding Arrangement.

4.5 Notwithstanding the foregoing, the City shall pay the energy costs associated with lifting groundwater in an

amount equal to the Electrical Lifting Cost; provided, that the City shall only be responsible for payment of energy costs under this Section 4.5 to the extent that the extracted groundwater is accepted into the City's water system. The Electrical Lifting Cost credit to be provided by the City shall be calculated in accordance with the provisions of Exhibit "C" attached hereto. In the event that either party can demonstrate with technical information that the formula set forth in Exhibit "C" does not accurately approximate the energy cost for lifting groundwater from the North OU Wells to the elevation of the Grandview Reservoir, such party may have the formula for calculating the Electrical Lifting Cost reevaluated by the Cost Consultant (as such term is defined in Section 10.4 below). In the event that the formula for calculating the Electrical Lifting Cost is changed by the Cost Consultant, the new formula shall be applied to determine the Electrical Lifting Cost for all periods after the date of the notice requesting reevaluation. In no event shall (a) a party be permitted to have the formula for calculating the Electrical Lifting Cost reevaluated by the Cost Consultant more than once in any three year period, and (b) the City make any request for payment to, or receive any amounts from, the O&M Trust Account (as such term is defined in Section 10.1 below) for the Electrical Lifting Cost credit.

4.6 The City shall pay all O&M costs relating to the Downstream Facilities ("Downstream Facilities O&M Costs"), including, but not limited to, (a) the cost of ammonia for

chloramination, (b) the cost of blending water, (c) the cost of nitrate water quality sampling and testing, (d) the cost of repairs and capital repairs and improvements to the Downstream Facilities (except as otherwise provided in Section 3.1 above), and (e) the cost of DHS and other regulatory permitting and oversight as more fully detailed in Section 5.

4.7 The City shall, at no cost to Respondents or the LLC, use its adjudicated rights to all groundwater that shall be extracted during operation of the IRA to the extent that such groundwater is used in connection with the City's water system. The City shall report the amount of groundwater extracted from the Wells to the Los Angeles Watermaster. The parties acknowledge that the Los Angeles Watermaster has agreed that only groundwater used in connection with the City's water system shall be charged to the water credits held by the City consistent with the Los Angeles Watermaster's policies and procedures.

4.8 The City shall require the O&M Contractor to notify the LLC of non-routine repairs and maintenance to the Upstream and Downstream Facilities; provided, however, the failure of the O&M Contractor to provide such notice shall not in any way affect the obligations of the parties hereunder.

5. REGULATORY COMPLIANCE AND DHS AND OTHER REGULATORY PERMITTING, SAMPLING AND REPORTING RESPONSIBILITIES

5.1 The City shall obtain and maintain the DHS and other regulatory permits and amendments necessary to operate the IRA with the assistance of the LLC, as more fully described in this Section 5.

5.2 The City shall obtain the DHS permit amendment that will be required so that the City can accept the treated groundwater into its water system. The parties agree that Exhibit "D" attached hereto sets forth the funding obligations for the LLC and the City in connection with obtaining the DHS permit amendment. Pursuant to Exhibit "D", (a) the City shall obtain, and pay all costs and expenses for obtaining, all water sampling, technical data and other information pertaining to the Downstream Facilities or any other part of the City's water system (other than the Upstream Facilities) and delivering such data and information to the LLC for integration into any submittal to DHS, and (b) the LLC shall obtain, and shall pay all costs and expenses for obtaining, all water sampling, technical data and other information pertaining to the Upstream Facilities. The LLC shall then prepare, and pay for all costs and expenses of preparing, all DHS permit amendment submittals covering the Upstream Facilities and/or the Downstream Facilities to DHS. The LLC shall use its best efforts to deliver such submittals to the City at least five (5) business days prior to the date such submittals are due to DHS. Upon review and approval, the City shall send such submittals to DHS. The City shall provide reasonable assistance in obtaining the DHS permit amendment at its sole cost and expense. The LLC shall pay for any other costs related to obtaining the DHS permit amendment.

5.3 Except as otherwise provided in Section 5.2 above, the parties agree that Exhibit "E" attached hereto sets forth

the funding obligations of the City and the LLC for all regulatory compliance matters related to the IRA. Pursuant to Exhibit "E", each party shall have the following obligations:

5.3.1 The City shall (a) obtain, and pay for all fees, costs and expenses in obtaining, all water quality sampling and technical data for the Downstream Facilities, and (b) prepare, and pay for all costs and expenses in preparing, all reports and technical analyses required by any regulatory agency or entity that relate solely to the Downstream Facilities.

5.3.2 After the Commencement Date, the City shall require the O&M Contractor, using funds provided through the Funding Arrangement, to (a) obtain all water quality sampling and technical data for the Upstream Facilities, and (b) prepare, and pay all costs and expenses in preparing, all reports and technical analyses required by any regulatory agency or entity that relate solely to the Upstream Facilities; provided, however, that the City shall reimburse or provide a credit to the LLC for the cost associated with routine, Title 22 sampling of non-VOCs from four wells. The current list of analyses that DHS requires be sampled and the sampling frequency is attached hereto as Exhibit "F." The parties agree that $3,500 currently represents fair reimbursement for the annual routine, non-VOC Title 22 sampling cost for four wells. The cost of such sampling and analysis shall be adjusted annually to reflect the then

current DHS requirements and frequency of sampling as well as changes in costs. Prior to the Commencement Date, any of the above costs that would be paid by the O&M Contractor, if incurred after the Commencement Date, shall be paid by the LLC.

5.3.3 After the Commencement Date, with respect to the preparation of any report or technical analysis required by any regulatory agency or entity (including EPA) that relates to the entire IRA (including the Upstream and Downstream Facilities), including, without limitation, monthly reports to EPA required under any applicable UAO or Consent Decree, the City shall require the O&M Contractor, using funds provided through the Funding Arrangement, to prepare such report or technical analysis utilizing any information regarding the Downstream Facilities provided by the City at the City's own cost. The City shall require the O&M Contractor to deliver a draft of any such report or technical analysis to the LLC at least five (5) business days prior to the due date so that the LLC has an opportunity to review and comment on such report or technical analysis. The report or technical analysis shall then be submitted by the City to the appropriate agency or entity. Prior to the Commencement Date, any of the above costs that would be paid by the O&M Contractor, if incurred after the Commencement Date, shall be paid by the LLC.

5.3.4 The City's reasonable costs with respect to the oversight of the O&M Contractor and regulatory compliance

in connection with the work undertaken by the O&M Contractor under Sections 5.3.2 and 5.3.3 above shall be funded through the Funding Arrangement.

6. <u>ACCEPTANCE OF GROUNDWATER BY THE CITY</u>

6.1 The LLC shall construct for the City Upstream Facilities which, if properly designed, maintained and operated, will remain capable of producing Seven Thousand Two Hundred Nineteen (7,219) acre feet of extracted and treated groundwater compliant with the MCLs for VOCs in effect on January 1, 1998 (the "Performance Standard") on a calendar year basis (the "Annual Requirement") commencing on the Commencement Date and terminating on the IRA Completion Date.

6.2 All extracted and treated groundwater that is accepted into the City's water supply system prior to the Commencement Date shall be credited in full against the Annual Requirement for the first Compliance Period (as defined in Section 6.5 below).

6.3 If, for any reason other than the failure of the treated groundwater to meet all applicable water quality standards after blending, the City (a) does not or cannot accept extracted and treated groundwater into its water supply system or (b) reduces the amount of groundwater extracted and treated by the WTP to below 21.88 acre feet during any twenty-four hour period, the LLC shall receive a pro rata credit (the "Pumping Credit") against the Annual Requirement for each day or any part thereof that the City does not or cannot accept groundwater, or reduces the amount of groundwater extracted

and treated, which credit shall be calculated by giving the LLC a flat credit of 21.88 acre feet of groundwater for such day and not giving the LLC any credit for any groundwater actually accepted by the City during such day.

6.4 The amount of extracted and treated groundwater accepted by the City during each annual period (determined at each annual anniversary from the Commencement Date) plus all unused Pumping Credits the LLC has accrued before and during each such annual period shall be referred to as the "Cumulative Pumping Credit."

6.5 For the purpose of determining whether the LLC has met the Annual Requirement, the LLC and the City shall calculate the sum of the Cumulative Pumping Credits every two (2) years commencing on the Commencement Date, and continuing until the IRA Completion Date (with each two year period to be hereinafter referred to as a "Compliance Period" and the sum of the Cumulative Pumping Credits over each two year period to be hereinafter referred to as a "Compliance Period Pumping Credit") and then dividing by two (2). For the purposes of determining the amount of extracted groundwater accepted by the City, the flow shall be measured at the point of exit from the WTP.

6.6 In the event that the Upstream Facilities, although properly maintained and operated, are not capable of achieving the Annual Requirement during any Compliance Period, and such inability is not a result of a Force Majeure Event (as such term is defined in Section 6.8 below), the LLC shall, as the

sole and exclusive remedy for the failure to achieve the Annual Requirement during such Compliance Period, within ninety (90) days after the expiration of the Compliance Period, pay to the City an amount equal to (a) the amount of the deficit as measured in acre feet multiplied by (b)(i) the average commodity charge paid for water purchased by the City during the applicable Compliance Period from the Metropolitan Water District as measured on a per acre foot basis, less (ii) the average of the monthly Electrical Lifting Cost per acre foot during the applicable Compliance Period and less (iii) the total cost of electricity at the Grandview Pump Station during the applicable Compliance Period divided by the number of acre feet of water pumped through Grandview Pump Station during the applicable Compliance Period (the "Replacement Water Cost"). If the Compliance Period Pumping Credit for any Compliance Period exceeds Fourteen Thousand Four Hundred and Thirty Eight (14,438) acre feet, the LLC shall be entitled to carry such excess Compliance Period Pumping Credit ("Excess Credit") forward to the following Compliance Periods. If, in the last year of the IRA, the City and the LLC reasonably determine that Excess Credit will exist after the end of the final Compliance Period, the City may, subject to the approval of EPA, reduce water production to eliminate as much of the Excess Credit as feasible. Within ninety (90) days after the IRA Completion Date, the City shall pay to the LLC an amount equal to (a) the Excess Credit, if any, (as measured in acre feet) remaining on the IRA Completion Date, multiplied by (b)

a price to be determined by the parties as of the IRA Completion Date, and if the parties cannot agree on such price within thirty (30) days after the IRA Completion Date, the parties shall submit the dispute on the price to the Cost Consultant for resolution. The Cost Consultant shall determine a reasonable price within seventy five (75) days after the IRA Completion Date and the City shall pay the LLC for such Excess Credit within thirty (30) days thereafter.

6.7 Notwithstanding the foregoing, in the event that unforeseen circumstances arise which prevent the Annual Requirement from being met, the LLC and the City agree to renegotiate the Annual Requirement based on the circumstances and conditions then in effect; provided, however, that, if the Annual Requirement is not met due to (a) a design or construction defect or (b) the bankruptcy, dissolution, withdrawal or termination of the O&M Contractor, the then-current Compliance Period shall be extended by the number of days required to remediate the design or construction defect or retain a replacement O&M Contractor, with no change to the aggregate amount of groundwater to be accepted by the City during the then-current Compliance Period. The parties agree that the extension of a Compliance Period shall not in any way extend the IRA operating period.

6.8 The term "Force Majeure Event" shall mean any delay affecting the performance of the Upstream Facilities or Downstream Facilities which arises from or is any way connected with a labor dispute, fire, earthquake, flood,

natural disaster, an abnormal adverse weather condition, any other cause beyond the O&M Contractor's, LLC's and/or the City's control, or any other cause which EPA determines justifies delay.

6.9 The parties hereto acknowledge and agree that the releases and waivers by the City under this Agreement were granted on the understanding that the LLC would construct Upstream Facilities which, if properly maintained and operated, are capable of achieving the Annual Requirement. Accordingly, if upon the IRA Completion Date, the Upstream Facilities were properly maintained and operated throughout the term of the IRA, but were not capable of achieving the Annual Requirement, and the sum of (a) the actual number of acre feet of treated groundwater accepted by the City, (b) any Pumping Credits accrued to the LLC from the Commencement Date through the IRA Completion Date, and (c) the number of acre feet of water purchased by the LLC for the City pursuant to Section 6.6 above (the sum of which shall be hereinafter referred to as the "Total Pumped Amount"), is less than 86,628 acre feet, then both the City's and the Respondents' Past Environmental Claims (as such term is defined in Section 7.1 below) against each other for the contamination of the groundwater shall be revived; provided, however, that upon any such revival, (A) each party's Past Environmental Claims shall be reduced by an amount equal to (1) the total amount of such party's total Past Environmental Claim multiplied by (2) the

percentage obtained by dividing the Total Pumped Amount by 86,628.

7. MUTUAL COVENANTS AND RELEASES REGARDING CERTAIN LEGAL CLAIMS

7.1 Except as provided in Section 6.9, the City for and on behalf of itself and its successors and assigns hereby agrees that it shall forever release and not bring against each or any of the Released Respondent Parties (as such term is defined in Section 7.7 below) claims related in any way to the matters addressed in the Administrative Order on Consent, Unilateral Administrative Orders No. 97-06 and 97-18, any future Administrative Orders or any Consent Decree related to the Glendale OUs, as such may be amended from time to time, including, without limitation, claims for costs and damages of any kind or character arising out of, resulting from or associated with alleged groundwater contamination in the Glendale OUs, whether arising under CERCLA, HSAA or any other state or federal statute or under state or federal common law, which arose prior to the date of this Agreement ("Past Environmental Claims") or which arise, if at all, from the date of this Agreement through and including the IRA Completion Date ("Operating Period Environmental Claims").

7.2 Except as provided in Section 6.9, each of the Respondents and the LLC for and on behalf of itself and its respective successors and assigns hereby agree that it shall forever release and not bring against the City and its agents, officers, employees successors and assigns claims related in

any way to Past Environmental Claims or Operating Period Environmental Claims.

7.3 The covenants, releases and waivers set forth in Section 7 of the Agreement shall become effective upon the execution of this Agreement.

7.4 It is the intention of the parties that this Agreement shall be effective as a full and final accord and satisfaction and settlement of and a bar to each and every claim heretofore referred to and released by the parties to this Agreement. Accordingly, each party hereto acknowledges that it may hereafter discover facts different from or in addition to the facts which it now knows or believes to be true with respect to the subject matter of this Agreement, but that it is each party's intention to fully, finally, absolutely and forever settle any and all claims which are to be released under this Agreement, and that, in furtherance of such intention, the release herein given shall be and remain in effect notwithstanding the discovery of any such different or additional facts. Section 1542 of the Civil Code of the State of California provides as follows:

> "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."

Each party hereby waives and relinquishes all rights and benefits which it may have or acquire under Section 1542 of the Civil Code of the State of California with respect to the releases contained in this Agreement.

7.5 Notwithstanding the foregoing, the parties agree that the covenants, releases and waivers set forth in Section 7 of this Agreement shall not apply to:

a. Claims asserted in a lawsuit by any third person arising out of alleged consumption of contaminated water or exposure to contaminants in air, soil, water or groundwater;

b. Claims by any third person for costs of alternative water, nuisance, trespass or economic damage;

c. Claims by any person for damages proximately caused by the failure of any party to meet its Order or Consent Decree obligations;

d. The exercise of prosecutorial discretion by the City against any party or entity for criminal conduct; and

e. Claims arising from, or relating to, any obligation of a party under this Agreement.

7.6 The parties hereto agree that the covenants, waivers and releases set forth in Section 7 shall survive the termination or expiration of this Agreement.

7.7 The term "Released Respondent Parties" shall mean each of the Respondents and the LLC and each of its members, and their respective predecessors, successors, assigns, agents, representatives, partners, officers, directors,

shareholders, attorneys and employees, and their respective parents, subsidiaries, affiliates and partners.

7.8 In the event that any party who has executed this Agreement or any other person or entity claiming through or on behalf of such party shall hereafter assert any claim with respect to the Past Environmental Claims or Operating Period Environmental Claims being released herein (other than Past Environmental Claims that have been revived under Section 6.9 above), such party shall indemnify, defend and hold the other parties harmless from and against all such claims.

8. <u>INDEMNIFICATION</u>.

8.1 The LLC agrees to indemnify, save, hold harmless and defend the City, its agents, officers, employees, successors and assigns from any and all claims arising from the date of this Agreement through and including the IRA Completion Date and relating to (a) personal injury or property damage resulting from activities by the LLC or its contractor and subcontractors occurring during the construction of the Upstream Facilities, or (b) any design or construction defect in the Upstream Facilities, excluding therefrom any claims arising from or connected with any negligent act or omission or willful misconduct of the City or its officers, agents or employees.

8.2 In the event that a Consent Decree with EPA for the IRA is entered into by the Respondents, or some portion of the Respondents, and the City, and in such Consent Decree, EPA requires that the United States and DTSC (as each such term is

defined in any such Consent Decree) be indemnified against the negligent or wrongful acts or omissions of the Settling Defendants (as such term is defined in any such Consent Decree) or the City in carrying out activities pursuant to the Consent Decree, then, in any such Consent Decree, (a) the Respondents shall agree to indemnify, save and hold harmless the United States, DTSC and their officials, agents, employees, contractors, subcontractors or representatives for or from claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of the Settling Defendants or the City, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities with respect to the Upstream Facilities pursuant to the Consent Decree, and (b) the City shall agree to indemnify the United States, DTSC, their officials, agents, employees, contractors, subcontractors or representatives for or from claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of the Settling Defendants or the City, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities with respect to the Downstream Facilities pursuant to the Consent Decree. Notwithstanding the foregoing provisions in any such Consent Decree, (A) the City agrees to indemnify, save and hold harmless the Respondents from and against any and all amounts paid by the Respondents to

indemnify, save and hold harmless the United States and DTSC and their officials, agents, employees, contractors, subcontractors or representatives under any such Consent Decree for claims or causes of action arising from, or on account of, any negligent or wrongful act or omission of the City, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on its behalf or under its control, in carrying out activities with respect to the Upstream Facilities, and (B) the Respondents agree to indemnify, save and hold harmless the City from and against any and all amounts paid by the City to indemnify the United States and DTSC and their officials, agents, employees, contractors, subcontractors or representatives under any such Consent Decree for claims or causes of action arising from, or on account of, any negligent or wrongful act or omission of the Respondents, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities with respect to the Downstream Facilities.

8.3 The obligations of the LLC, the Respondents and the City set forth in Section 8 shall survive the termination or expiration of this Agreement.

9. **INSURANCE**

9.1 The City shall require the O&M Contractor to obtain and maintain in full force, at the O&M Contractor's sole cost and expense, from the Commencement Date through and including the IRA Completion Date, policies of insurance listed on

Exhibit "G" (with the limits noted in Exhibit "G"). The City and the LLC shall agree on the deductibles for each insurance policy that is maintained under this Section 9.1, and the City shall contractually require the O&M Contractor to be solely responsible for funding such deductibles.

9.2 The City shall require the O&M Contractor to obtain and maintain, at the O&M Contractor's sole cost and expense, a performance and payment bond, which bond shall comply with the requirements set forth in Exhibit "G."

9.3 Upon the issuance or renewal of any insurance policy required to be maintained by the O&M Contractor hereunder, the City shall contractually require the O&M Contractor to furnish the City, the Respondents and the LLC with a certificate of insurance for the policy limits, together with any special endorsements, including that the insurer shall give the City, the Respondents and the LLC thirty (30) days prior written notice of any cancellation or change in scope or the amount of coverage of such insurance policy.

9.4 The policies of insurance shall be primary to any insurance coverage of the City of Glendale, the Respondents or the LLC.

9.5 All policies of insurance referenced in Section 9 shall be written and issued by an insurance carrier admitted to business in California and have a Best Company rating of not less than A-. In no event shall any policy of insurance referenced in Section 9 be written or issued by a non-admitted insurance carrier.

9.6 Notwithstanding the foregoing, if the professional liability or pollution insurance coverage required to be maintained by the O&M Contractor under Section 9 is not available at commercially reasonable rates, the LLC and the City shall consider alternative arrangements.

9.7 In the event that (a) the Upstream Facilities are damaged or destroyed, or the Upstream Facilities or any part thereof are subject to eminent domain, and (b) EPA requires that (i) the Upstream Facilities be rebuilt, refurbished or relocated, or (ii) Respondents, or any of them, replace the IRA with an alternative remedy for the Glendale OUs, all insurance proceeds or eminent domain proceeds, as the case may be, shall be paid to the LLC or the Respondents and used to rebuild, replace, refurbish or relocate the Upstream Facilities. In the event that (A) EPA requires that the Upstream Facilities be rebuilt, refurbished or relocated, (B) the Respondents, or any of them, agree to rebuild, refurbish or relocate the Upstream Facilities, and (C) the insurance proceeds are insufficient to rebuilt, refurbish or relocate the Upstream Facilities, the City shall not be responsible for making up any shortfall in insurance proceeds in connection with rebuilding, refurbishing or relocating the Upstream Facilities.

9.8 In the event that (a) the Upstream Facilities are damaged or destroyed, or the Upstream Facilities or any part thereof are subject to eminent domain, and (b) EPA does not require that the Upstream Facilities be rebuilt, replaced,

refurbished or relocated, all insurance proceeds or eminent domain proceeds, as the case may be, shall be paid to the City, and all releases, waivers and covenants of the City under Section 7 shall continue in full force and effect and shall not be subject to revival under Section 6.9.

9.9 If the O&M Contractor fails to provide the insurance policies and coverages required under this Agreement, the LLC shall, on behalf of the City, purchase such policies and coverages using funds provided through the Funding Arrangement.

9.10 In the event that the City retains the O&M Contractor to operate and maintain any of the Downstream Facilities, the City may cause the O&M Contractor to extend the insurance policies obtained for the Upstream Facilities to cover those portions of the Downstream Facilities that the O&M Contractor operates and maintains.

10. <u>O&M TRUST ACCOUNT AND COST CONSULTANT</u>.

10.1 Within thirty (30) days after the Date of System Operation, the LLC shall establish and initially fund a trust account ("O&M Trust Account"). The O&M Trust Account shall be used by the City to fund Upstream Facilities O&M Costs and other obligations as required by this Agreement.

10.2 The term "Trust Fund Expenditures" shall mean (a) the Upstream Facilities O&M Costs, (b) the reasonable cost of contract administration and oversight for the O&M Contractor by the City after the Commencement Date, and (c) the regulatory compliance costs to be funded by the LLC pursuant

to Section 5.3 above. The Trust Fund Expenditures shall be paid from the O&M Trust Account subject to the limitations and in accordance with the provisions set forth in Section 10.

10.3 The Downstream Facilities O&M Costs shall be directly paid by the City, unless otherwise provided in this Agreement.

10.4 The LLC and the City shall, by the System Operation Date, jointly retain an independent cost estimating consultant ("Cost Consultant") with expertise in the operation of a water utility business acceptable to the City, the LLC and EPA, whose responsibilities shall include preparation of the annual budgets and audit reports for Trust Fund Expenditures. The Cost Consultant may be replaced by mutual agreement of the LLC and the City upon thirty (30) days written notice to EPA and the Cost Consultant, subject to approval by EPA. Either the City or the LLC may petition EPA for the replacement of the Cost Consultant.

10.5 If the LLC, the City and EPA are unable to agree upon a Cost Consultant by the System Operation Date, the LLC and the City shall, within thirty (30) days thereafter, each submit a list of three (3) cost estimating consultants to the other party and to EPA, along with information regarding the qualifications of each cost estimating consultant on its list. Within ten (10) days after both lists have been submitted, the City and LLC may each veto one cost estimating consultant from the other party's list. EPA shall within ten (10) days

thereafter select the Cost Consultant from the cost estimating consultants remaining on one or both of the lists.

10.6 The Cost Consultant may retain a subcontractor to perform some of his or her functions, as described herein. Any such subcontractor shall be approved by the City, the LLC and EPA prior to performing any work.

10.7 In the event of the resignation or replacement of the Cost Consultant, the City, the LLC and EPA shall use their best efforts to agree upon the selection of a replacement. If the parties cannot agree upon the selection of a replacement, the procedures described in Section 10.5 above shall be employed to select a replacement. The lists of three (3) cost estimating consultants referred to in Section 10.5 shall be submitted forty-five (45) days prior to the effective date of resignation of the Cost Consultant or such other date as may be mutually agreed upon by the City, the LLC and EPA.

10.8 The Cost Consultant's fees and costs shall be paid from the O&M Trust Account.

10.9 It shall be the Cost Consultant's responsibility to independently use his or her best technical judgment to prepare an annual budget for Trust Fund Expenditures for each of the years that the City shall perform O&M activities under this Agreement ("Annual Budget"). The Annual Budget shall be developed in the following manner:

10.9.1 The Annual Budget shall contain the following cost categories: direct labor, contracted-for labor, O&M Contractor oversight and contract administration by the

City, energy, natural gas, liquid phase carbon, vapor phase carbon, laboratory costs, supplies and materials, disposal costs, permitting and other Upstream Facilities regulatory compliance costs, replacement costs, insurance (including but not limited to insurance described in Exhibit "G" hereto), fees of the Cost Consultant, a ten percent (10%) contingency with respect to each cost category and any other cost categories related to the O&M activities that the Cost Consultant deems appropriate for cost accounting purposes.

10.9.2 Not later than the date which is one hundred and twenty (120) days prior to the Commencement Date and annually thereafter, the LLC shall provide the Cost Consultant and the City with information regarding the operation and maintenance costs that are anticipated to be incurred during the following year with respect to the Upstream Facilities.

10.9.3 Not later than the date which is ninety (90) days prior to the Commencement Date and annually thereafter, the Cost Consultant shall, based on the information received from the LLC, prepare and submit to the City, the LLC and EPA its estimate of the cost of O&M activities with respect to the Upstream Facilities and other Trust Fund Expenditures for the one-year period beginning on the Commencement Date or on the anniversary thereof for the upcoming year.

10.9.4 Not later than the date which is sixty (60) days prior to the Commencement Date and annually thereafter, the City, the LLC and EPA may submit comments to the Cost

Consultant on the Cost Consultant's estimate submitted pursuant to Section 10.9.3 above.

10.9.5 Not later than the date which is thirty (30) days prior to the Commencement Date and annually thereafter, the Cost Consultant shall establish and transmit to the City and the LLC the Annual Budget based on: (1) information provided by the LLC; (2) Upstream Facilities O&M Costs and other Trust Fund Expenditures during prior years; (3) the City's comments thereon, if any; (4) the LLC's comments thereon, if any; (5) EPA's comments thereon, if any; and (6) any other cost estimating factors deemed relevant by the Cost Consultant.

10.9.6 The City and the LLC shall, within thirty (30) days after receipt, approve or disapprove the Annual Budget. If either party disapproves of any cost or costs in the Annual Budget, such party can dispute the inclusion of such cost in the Annual Budget under the provisions set forth in Section 10.18 below.

10.10 The LLC shall ensure that the O&M Trust Account contains funds equal to or in excess of the Annual Budget established for the upcoming year as of the Commencement Date and as of each anniversary of that date, by causing funds to be transferred to the O&M Trust Account. The City shall have no obligation to undertake or continue any O&M activities with respect to the Upstream Facilities if (a) the O&M Trust Account has not been funded in the manner required by this Section or (b) even though the budget for any line item has

not been exceeded by the City and the O&M Trust Account has been funded in accordance with this Section, the O&M Trust Account does not have sufficient funds to pay for the following month's anticipated Trust Fund Expenditures. In the event that the City does not undertake or continue O&M activities due the occurrence of either of the events listed in subsections (a) or (b), the LLC shall be liable for consequential damages that arise with respect to the Upstream Facilities due to the cessation of operations at the Upstream Facilities. The parties may mutually agree to change the Annual Budget anniversary date.

10.11 The City shall submit invoices to the trustee of the O&M Trust Account ("Trustee") for payment. Each invoice shall contain the same cost categories as set forth in the Annual Budget. The invoice shall include copies of all relevant documentation, including purchasing documents, and all vendor invoices, including backup documentation to support all invoiced contracted-for costs, and a declaration by an authorized representative of the City that each amount requested in the invoice is due and payable to a party who provided materials or services to be funded by the O&M Trust Account in accordance with this Agreement. The City shall simultaneously provide a copy of each invoice to the Cost Consultant and the LLC. The Trustee shall promptly pay all amounts requested that satisfy the requirements of this Section.

10.12 The City may, prior to incurring any cost or expense, obtain the consent of the Project Manager of the LLC (the "Project Manager") (it being agreed that the LLC will designate the Project Manager by written notice to the City) or, if such consent cannot be obtained, the Cost Consultant using the following procedure:

10.12.1 The City may submit to the Project Manager (or his designated representative) information on the need for, and the amount of, the proposed expenditure. The Project Manager shall thereafter have five (5) business days, from personally acknowledged receipt by the Project Manager or his designated representative, to consent to or reject the proposed expenditure by giving notice to the City of its consent or rejection with an explanation of any reasons for any rejection of the proposed expenditure. If the Project Manager does not give any notice to the City within such five (5) business day period, the Project Manager shall be deemed to have accepted the proposed expenditure. If the Project Manager accepts or is deemed to have accepted the proposed expenditure, neither the LLC nor the Cost Consultant shall thereafter have any right to contest or dispute such proposed expenditure.

10.12.2 If the Project Manager rejects the proposed expenditure, the City may then seek the consent of the Cost Consultant to the proposed expenditure by submitting to the Cost Consultant (or his designated representative) the information previously submitted to the Project Manager

regarding the proposed expenditure. The Cost Consultant shall thereafter have ten (10) business days from receipt to consent to or reject the proposed expenditure by giving notice to the City and the LLC. If the Cost Consultant does not give notice to the City and the LLC within such ten (10) business day period, the Cost Consultant shall be deemed to have rejected the proposed expenditure.

10.12.3 If both the Project Manager rejects and the Cost Consultant rejects or is deemed to have rejected the proposed expenditure, the City shall not incur the proposed expenditure. If the Project Manager rejects and the Cost Consultant consents to the proposed expenditure, the LLC shall have the right to appeal pursuant to Section 10.18 below; provided, that such appeal is filed and served within fifteen (15) business days after receipt by the LLC of the Cost Consultant's written consent to the proposed expenditure.

10.13 The Cost Consultant shall audit the City's expenditures for Trust Fund Expenditures on an annual basis. The audit shall cover the one-year period ending one hundred and eighty (180) days prior to the beginning of the period covered by the next Annual Budget and the Cost Consultant's audit report ("Audit Report") shall be provided to the City, the LLC and EPA at least one hundred fifty (150) days prior to the beginning of the period covering by the next Annual Budget. The purpose of the audit is to: (1) assist the Cost Consultant in preparing the Annual Budget; and (2) allow the parties to determine whether any costs have been incurred that

are not in the Annual Budget or not approved by (a) the LLC or the Cost Consultant pursuant to Section 10.12 above or (b) EPA or a state court, as may be applicable, pursuant to the provisions of Section 10.18 below ("Unauthorized Expenditures").

10.14 Within sixty (60) days of receipt of an annual Audit Report, the City shall reimburse the O&M Trust Account for Unauthorized Expenditures found during the audited period.

10.15 The Cost Consultant shall perform a final audit of the City's request for payments for Trust Fund Expenditures within ninety (90) days following the IRA Completion Date. The LLC and the City shall settle all accounts with the O&M Trust Account within thirty (30) days of the issuance of the Cost Consultant's final Audit Report. At that time, the Cost Consultant shall direct the Trustee, and the Trustee shall be required, to pay over all remaining funds in the O&M Trust Account, if any, to the LLC.

10.16 The City shall utilize the lowest cost electrical rate structure applicable to the operation of the Upstream Facilities by the City.

10.17 The LLC may at any time propose that a capital expenditure be incurred to reduce O&M expenditures with respect to the Upstream Facilities. Any such proposal shall be simultaneously submitted to the Cost Consultant, the City and EPA.

10.17.1 The Cost Consultant shall review the proposal and any comments submitted by the City and/or EPA,

and determine, based on generally accepted cost engineering principles, whether the capital expenditure is economically justified based on the size of the expenditure, the projected O&M savings and the remaining life of the project. The Cost Consultant may meet with the LLC, the City and/or EPA, with respect to the proposal and comments thereon.

10.17.2 If the Cost Consultant determines that the capital expenditure is economically justified, the LLC may submit the proposal and a conceptual design of the proposed work to EPA for approval. The City may submit comments to EPA regarding the proposal and the conceptual design.

10.17.3 If EPA approves the conceptual design, the LLC may submit a final design for the proposed work. If EPA approves the final design, the LLC shall proceed to implement the capital improvement. The LLC shall be solely responsible for funding and constructing the capital improvement. After completion of construction of any such capital improvement, the City shall require the O&M Contractor to operate and maintain such capital improvement using funds provided through the Funding Arrangement.

10.18 Any dispute concerning (a) the Annual Budget, (b) whether the City or the LLC is required to pay a particular expense, (c) any expenditure proposed to be incurred under Section 10.12 above or (d) the reasonableness of an expense may be submitted by either party to the Cost Consultant for resolution. Any decision by the Cost Consultant may be appealed (i) to EPA if the amount in dispute does not exceed

Twenty Five Thousand Dollars ($25,000) and (ii) to state court if the amount in dispute with respect to any item exceeds Twenty Five Thousand Dollars ($25,000).

10.19 Notwithstanding the foregoing, in the event of an emergency, the City shall take all action that it deems necessary to preserve and protect both the Upstream Facilities and the Downstream Facilities, and all reasonable expenditures incurred in good faith by the City in preserving and protecting the Upstream Facilities in an emergency shall not be subject to appeal by the LLC or the Cost Consultant.

11. MISCELLANEOUS PROVISIONS

11.1 In the event that the LLC fails to perform any of its obligations hereunder, each of the Respondents agrees that it shall be jointly and severally liable with each of the other Respondents and the LLC for the performance of such obligations under this Agreement, and the City may proceed against all or any of the Respondents without waiving its rights to proceed against any of the other Respondents. If, at any time from the date of this Agreement through and including the IRA Completion Date, the LLC is no longer in existence, all payments and reimbursements to be made to the LLC under this Agreement shall be made to the Respondents.

11.2 The City shall assume all responsibility and liability for abandoning and/or decommissioning the Upstream Facilities and the pipeline along the Los Angeles River in the South OU. If the City elects not to assume the obligation to abandon and/or decommission the South OU wells and all

pipelines in the South OU (collectively, the "South OU Wells" other than the pipeline along the Los Angeles River, the City shall provide notice of such election to the LLC and EPA within thirty (30) days of receiving notice of the approval of the IRA Completion Date by EPA. In the event that the City elects not to assume such obligation, the LLC shall be solely responsible for the abandonment and/or decommissioning of the South OU Wells.

11.3 The terms of this Agreement shall be binding upon and shall inure to the benefit of each of the parties hereto and the parties' respective agents, parents, subsidiaries, representatives, attorneys, employees, predecessors, successors, heirs, assigns, directors, officers, shareholders and stockholders, executors, administrators and/or any other person or persons who may in any manner claim an interest in the subject matter hereof through any of the parties, including any transferees of any rights created hereunder.

11.4 Except as expressly provided herein, nothing contained in this Agreement shall be deemed to confer any right or benefit upon any individual or entity who is not a party to this Agreement.

11.5 The parties hereto hereby represent, warrant and covenant that each is the sole and lawful owner of all claims, matters and causes of action each is releasing, waiving or dismissing pursuant to this Agreement and that the persons signing this Agreement and the documents to be executed pursuant thereto on behalf of the parties hereto have full

right and authority to enter into this Agreement on behalf of the party or parties for whom they are signing.

11.6 This Agreement (together with the Exhibits hereto constitutes a single, integrated, written contract expressing the entire agreement of all parties hereto concerning its subject matter.

11.7 This Agreement supersedes all agreements, covenants, representations, conditions, warranties, statements, promises and understandings of any kind whether oral or written, with respect to the subject matter hereof. All amendments and modifications to the Agreement must be in writing and executed by all parties specifically set forth in this Agreement. Notwithstanding the foregoing, the parties hereto agree that this Agreement shall in no way affect, modify or amend that certain Reimbursement Agreement dated April 9, 1996, by and among the Glendale Respondents Group, the City, the Glendale Redevelopment Agency, Los Angeles Department of Water and Power and Region IX of the United States Environmental Protection Agency, and such Reimbursement Agreement shall continue in full force and effect.

11.8 All parties hereto further acknowledge and agree that, in entering into this Agreement, they have not in any way relied, and shall not in any way rely, upon any oral or written agreements, covenants, representations, conditions, warranties, statements, promises or understandings not specifically set forth in this Agreement or in the Exhibits hereto.

11.9 This Agreement may be executed in counterparts. Once executed by all parties, the counterparts shall be binding on all parties to the same extent as if they had all signed the same document. This Agreement shall have no force or effect until executed by all parties.

11.10 All parties hereto and each of them represent and declare that in executing this Agreement and the documents to be executed pursuant hereto, they have relied solely upon their own judgment, belief and knowledge, and the advice and recommendations of their own independently selected counsel concerning the nature, extent and duration of their rights and claims, and that they have not been influenced to any extent whatsoever in executing the same by any representations or statements covering any matter made by any other parties hereto or by any person representing any of the other parties hereof.

11.11 Each party hereto hereby acknowledges that it has had the opportunity to seek the advice of legal counsel in connection with the execution of this Agreement, and any party hereto not represented by legal counsel hereby expressly and voluntarily acknowledges that it has determined to enter into this Agreement through its own belief and judgment and expressly and voluntarily waives any claim it may have based on the fact that it has not been represented by counsel.

11.12 Each party and counsel for each party has reviewed and had the opportunity to revise this Agreement, and the documents to be executed pursuant hereto and the normal rule

of construction to the effect that any ambiguities herein are to be resolved against the drafting party shall not be employed in the interpretation hereof. This Agreement shall be deemed to have been drafted by each party.

11.13 This Agreement constitutes a compromise of disputed claims between the parties. It is not to be construed as an admission of liability on the part of any party, and any such liability is expressly denied. Each party hereto acknowledges that by entering into this Agreement none of the parties herein concedes or admits that any allegation, charge or fact alleged against any party is true. This Agreement is entered into by the parties solely in the exercise of their business judgment and in order to bring a conclusion to this complex and expensive dispute.

11.14 Section titles or captions contained herein are used for convenience or reference only and are not intended to and shall not in any way enlarge, define, limit, extend or describe the rights or obligations of the parties hereto or affect the meaning or construction hereof or any provision hereof.

11.15 All parties agree to execute any and all additional documents reasonably necessary to complete and document this Agreement and carry out all terms and conditions hereof.

11.16 Each of the foregoing warranties, representations and declarations shall survive the performance of the

obligations of this Agreement and shall be deemed to be material covenants hereof.

11.17 This Agreement shall be considered to have been executed and delivered, and to be wholly performed, in the State of California, and the rights and obligations of the parties shall be construed and enforced in accordance with, and governed by, the laws of the State of California in state court, excepting therefrom those provisions, if any, enforceable in federal court under any Order or any Consent Decree entered into by the City, Respondents and EPA.

11.18 Any notice required or permitted to be given hereunder shall be in writing and signed by the party from whom it is sent, and shall be either (a) personally delivered, (b) sent through an overnight courier service, (c) sent by facsimile transmission or (d) sent by certified or registered mail, return receipt requested, postage prepaid to the respective addresses of the parties set forth below, or such other addresses as the parties may specify upon five (5) days prior written notice to the other parties. Each notice shall be deemed to have been given on the date of receipt (or refusal to accept delivery) as indicated on the customary receipt used by the delivery service. In the case of facsimile transmission, each notice shall be deemed to have been given on (i) the date upon which such transmission is confirmed to be completed so long as such transmission is completed on or before 6:00 p.m., Pacific time, or (ii) the next business day after such transmission is confirmed to be

completed if such transmission, or any part thereof, is completed after 6:00 p.m., Pacific time.

The LLC

Gregory R. McClintock, Esq.
McClintock, Weston, Benshoof,
Rochefort, Rubalcava & MacCuish
444 South Flower Street, 43rd Floor
Los Angeles, California 90071
Telephone: (213) 623-2322
Facsimile: (213) 623-0824

and

David Jensen
Lockheed Martin Corporation
2550 North Hollywood Way
Burbank, California 91505
Telephone: (818) 847-0792
Facsimile: (818) 847-0170

and

James A. Rogers, Esq.
Wilmer, Cutler & Pickering
2445 "M" Street, N.W.
Washington, D.C. 20037
Telephone: (202) 663-6000
Facsimile: (202) 663-6363

The Respondents

Gregory R. McClintock, Esq.
McClintock, Weston, Benshoof,
Rochefort, Rubalcava & MacCuish
444 South Flower Street, 43rd Floor
Los Angeles, California 90071
Telephone: (213) 623-2322
Facsimile: (213) 623-0824

and

James A. Rogers, Esq.
Wilmer, Cutler & Pickering
2445 "M" Street, N.W.
Washington, D.C. 20037
Telephone: (202) 663-6000
Facsimile: (202) 663-6363

and

Kyle S. Kawakami, Esq.
Irell & Manella LLP
840 Newport Center Drive, Suite 400
Newport Beach, California 92660
Telephone: (949) 760-0991
Facsimile: (949) 760-5200

The City

City of Glendale
c/o Director of Public Services
Attn: Water Services Administrator
141 North Glendale Avenue, Level 4
Glendale, California 91206
Telephone: (818) 548-2137
Facsimile: (818) 552-2852

and

City Attorney
c/o Vivien Cienfuegos Ide, Assistant City Attorney
613 East Broadway, Suite 220
Glendale, California
Telephone: (818) 548-2080
Facsimile: (818) 547-3402

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

"LLC"

GLENDALE RESPONDENTS GROUP LLC

By _____
Its Project Coordinator

"City"

CITY OF GLENDALE

By James Stafford
Its CITY MANAGER

APPROVED AS TO FORM:

Asst. City Attorney

Date: 12/15/98

"Respondents"

Coltec Industries, Inc., Menasco Aerosystems Division

By:_____
Its:_____

Courtaulds Aerospace, Inc.

By:_____
Its:_____

Credit Managers Association of California

By:_____
Its:_____

Foto-Kem Industries, Inc.

By:_____
Its:_____

Haskel International, Inc.

By:_____
Its:_____

"City"

CITY OF GLENDALE

By_____
Its_____

APPROVED AS TO FORM:

_____

Date:_____

"Respondents"

Coltec Industries, Inc., Menasco Aerosystems Division

By: [illegible]
Its: Assistant Secretary

Courtaulds Aerospace, Inc.

By:_____
Its:_____

Credit Managers Association of California

By:_____
Its:_____

Foto-Kem Industries, Inc.

By:_____
Its:_____

Haskel International, Inc.

By:_____
Its:_____

"City"

CITY OF GLENDALE

By_____
Its_____

APPROVED AS TO FORM:

_____

Date:_____

"Respondents"

Coltec Industries, Inc., Menasco Aerosystems Division

By:_____
Its:_____

Courtaulds Aerospace, Inc.

By:_____
Its: President, CEO

Credit Managers Association of California

By:_____
Its:_____

Foto-Kem Industries, Inc.

By:_____
Its:_____

Haskel International, Inc.

By:_____
Its:_____

"City"

CITY OF GLENDALE

By_____
Its_____

APPROVED AS TO FORM:

_____

Date:_____

"Respondents"

Coltec Industries, Inc., Menasco Aerosystems Division

By:_____
Its:_____

Courtaulds Aerospace, Inc.

By:_____
Its:_____

Credit Managers Association of California

By: [illegible]
Its: VP & CFO

Foto-Kem Industries, Inc.

By:_____
Its:_____

Haskel International, Inc.

By:_____
Its:_____

"City"

CITY OF GLENDALE

By_____
Its_____

APPROVED AS TO FORM:

_____

Date:_____

"Respondents"

Coltec Industries, Inc., Menasco Aerosystems Division

By:_____
Its:_____

Courtaulds Aerospace, Inc.

By:_____
Its:_____

Credit Managers Association of California

By:_____
Its:_____

Foto-Kem Industries, Inc.

By: [illegible]
Its: PRESIDENT

Haskel International, Inc.

By:_____
Its:_____

"City"

CITY OF GLENDALE

By_____
Its_____

APPROVED AS TO FORM:

_____

Date:_____

"Respondents"

Coltec Industries, Inc., Menasco Aerosystems Division

By:_____
Its:_____

Courtaulds Aerospace, Inc.

By:_____
Its:_____

Credit Managers Association of California

By:_____
Its:_____

Foto-Kem Industries, Inc.

By:_____
Its:_____

Haskel International, Inc.

By:_____
Its:_____

International Electronic Research Corporation

Jeannine M Davis

By: Jeannine M. Davis
Its: Secretary

ITT Industries, Inc.

By: _____
Its: _____

Lockheed Martin Corporation

By: _____
Its: _____

Lockheed Martin Librascope Corporation

By: _____
Its: _____

Pacific Bell

By: _____
Its: _____

Philips Components, a Division of Philips Electronics North America Corporation

By: _____
Its: _____

The Prudential Insurance Company of America

By: _____
Its: _____

International Electronic Research Corporation

By: _____
Its: _____

ITT Industries, Inc.

By: _____
Its: _____

Lockheed Martin Corporation

By: _____
Its: _____

Lockheed Martin Librascope Corporation

By: _____
Its: _____

Pacific Bell

By: _____
Its: _____

Philips Components, a Division of Philips Electronics North America Corporation

By: _____
Its: _____

The Prudential Insurance Company of America

By: _____
Its: _____

International Electronic Research Corporation

By: _____
Its: _____

ITT Industries, Inc.

By: _____
Its: _____

Lockheed Martin Corporation

By: James R. Buckley
Its: Assistant General Counsel

Lockheed Martin Librascope Corporation

By: _____
Its: _____

Pacific Bell

By: _____
Its: _____

Philips Components, a Division of Philips Electronics North America Corporation

By: _____
Its: _____

The Prudential Insurance Company of America

By: _____
Its: _____

International Electronic Research Corporation

By: _____
Its: _____

ITT Industries, Inc.

By: _____
Its: _____

Lockheed Martin Corporation

By: _____
Its: _____

Lockheed Martin Librascope Corporation

By: Barton B. Davis
Its: Vice President & General Counsel

Pacific Bell

By: _____
Its: _____

Philips Components, a Division of Philips Electronics North America Corporation

By: _____
Its: _____

The Prudential Insurance Company of America

By: _____
Its: _____

International Electronic Research Corporation

By: _____
Its: _____

ITT Industries, Inc.

By: _____
Its: _____

Lockheed Martin Corporation

By: _____
Its: _____

Lockheed Martin Librascope Corporation

By: _____
Its: _____

Pacific Bell

By: _____
Its: REGIONAL MGR - ENV. MGT.

Philips Components, a Division of Philips Electronics North America Corporation

By: _____
Its: _____

The Prudential Insurance Company of America

By: _____
Its: _____

International Electronic Research Corporation

By: _____
Its: _____

ITT Industries, Inc.

By: _____
Its: _____

Lockheed Martin Corporation

By: _____
Its: _____

Lockheed Martin Librascope Corporation

By: _____
Its: _____

Pacific Bell

By: _____
Its: _____

Philips Components, a Division of Philips Electronics North America Corporation

By: Risa H. Weinstock
Its: Senior Director

The Prudential Insurance Company of America

By: _____
Its: _____

International Electronic Research Corporation

By: _____
Its: _____

ITT Industries, Inc.

By: _____
Its: _____

Lockheed Martin Corporation

By: _____
Its: _____

Lockheed Martin Librascope Corporation

By: _____
Its: _____

Pacific Bell

By: _____
Its: _____

Philips Components, a Division of Philips Electronics North America Corporation

By: _____
Its: _____

The Prudential Insurance Company of America

By: _____
Its: Vice President

Ralphs Grocery Co.

By: [signature]
Its: Senior Counsel & Assistant Secretary

Union Pacific Railroad Company,
formerly known as Southern Pacific
Transportation Company

By: _____
Its: _____

Vickers, Incorporated

By: _____
Its: _____

Vorelco, Inc.

By: _____
Its: _____

Walt Disney Pictures & Television

By: _____
Its: _____

ZERO Corporation

By: _____
Its: _____

Ralphs Grocery Co.

By: _____
Its: _____

Union Pacific Railroad Company,
formerly known as Southern Pacific
Transportation Company

By: R Eades
Its: DIR. ENVIRONMENTAL SITE REMEDIATION

Vickers, Incorporated

By: _____
Its: _____

Vorelco, Inc.

By: _____
Its: _____

Walt Disney Pictures & Television

By: _____
Its: _____

ZERO Corporation

By: _____
Its: _____

Ralphs Grocery Co.

By: _____
Its: _____

Union Pacific Railroad Company, formally known as Southern Pacific Transportation Company

By: _____
Its: _____

Vickers, Incorporated

By: _____
Its: Vice President

Vorelco, Inc.

By: _____
Its: _____

Walt Disney Pictures & Television

By: _____
Its: _____

ZERO Corporation

By: _____
Its: _____

Ralphs Grocery Co.

By: _____
Its: _____

Union Pacific Railroad Company, formerly known as Southern Pacific Transportation Company

By: _____
Its: _____

Vickers, Incorporated

By: _____
Its: _____

Vorelco, Inc., formerly a division of Volkswagen of America, Inc.

By: Gerald F. Lunkel
Its: Asst General Counsel and Secretary

Walt Disney Pictures & Television

By: _____
Its: _____

ZERO Corporation

By: _____
Its: _____

Ralphs Grocery Co.

By: _____
Its: _____

Union Pacific Railroad Company, formerly known as Southern Pacific Transportation Company

By: _____
Its: _____

Vickers, Incorporated

By: _____
Its: _____

Vorelco, Inc.

By: _____
Its: _____

Walt Disney Pictures & Television

By: Diane Max
Its: Assistant Secretary

ZERO Corporation

By: _____
Its: _____

Ralphs Grocery Co.

By: _____
Its: _____

Southern Pacific Transportation Co.

By: _____
Its: _____

Vickers, Incorporated

By: _____
Its: _____

Vorelco, Inc.

By: _____
Its: _____

Walt Disney Pictures & Television

By: _____
Its: _____

ZERO Corporation

By: _____
Its: TREASURER

EXHIBIT "A"

LIST OF RESPONDENTS

Access Controls, Inc.
Admiral Controls, Inc.
A.G. Layne, Inc.
Binzley Revocable Family Trust
Brock Bus Lines, Inc.
Burbank Steel Treating Company, Inc.
Coltec Industries, Inc., Menasco Aerosystems Division
Commercial Inspection Services
Courtaulds Aerospace, Inc.
Credit Managers Association of California
Datron Systems, Inc.
Excello Plating, Inc.
Foto-Kem Industries, Inc.
Haskel International, Inc.
International Electronic Research Corporation
ITT Industries, Inc.
Lanco Metals
Litchfield, Charles Carter
Lockheed Martin Corporation
Lockheed Martin Librascope Corporation
Pacific Bell
Philips Components, a Division of Philips Electronics North America Corporation
The Prudential Insurance Company of America
Ralphs Grocery Co.
SAI Industries, Inc.
Union Pacific Railroad Company formerly known as Southern Pacific Transportation Co.
Sunland Chemical and Research Corporation
Vickers, Incorporated
Vorelco, Inc.
Walt Disney Pictures & Television
W&W Manufacturing
ZERO Corporation

KAWA0F55.WP

EXHIBIT A

EXHIBIT B

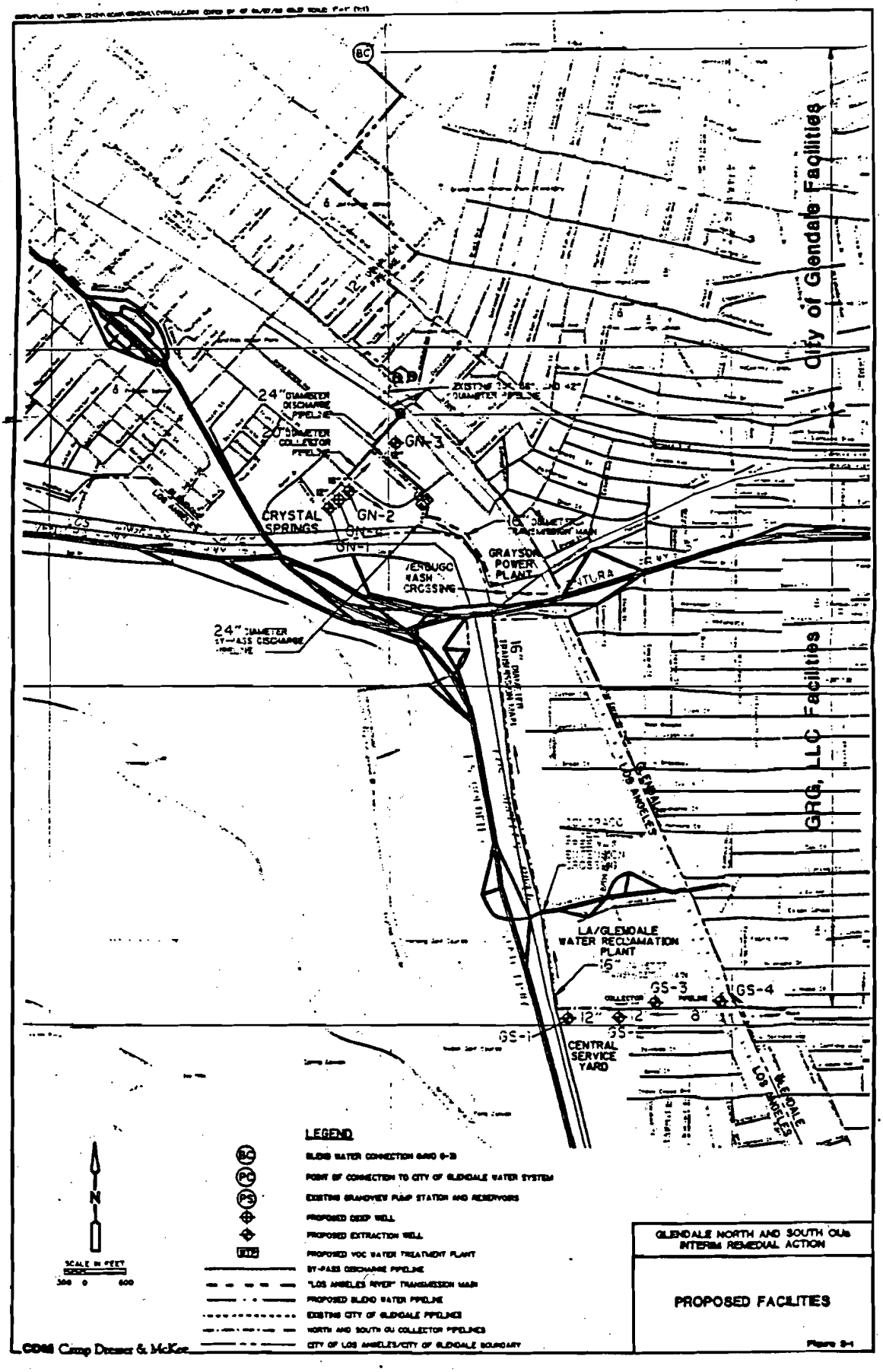

City of Glendale Facilities
GRG, LLC Facilities
24" DIAMETER DISCHARGE PIPELINE
20" DIAMETER COLLECTOR PIPELINE
GN-3
GN-2
GN-1
CRYSTAL SPRINGS
GRAYSON POWER PLANT
TUJUNGA WASH CROSSING
24" DIAMETER BY-PASS DISCHARGE PIPELINE
LA/GLENDALE WATER RECLAMATION PLANT
GS-3
GS-4
GS-1
CENTRAL SERVICE YARD
LEGEND
BC
PC
PS
N
SCALE IN FEET
300 0 600
GLENDALE NORTH AND SOUTH OUs INTERIM REMEDIAL ACTION
PROPOSED FACILITIES
Figure 3-1
CDM Camp Dresser & McKee

EXHIBIT "C"

The term "Electrical Lifting Cost" shall be calculated on a monthly basis as follows:

The total monthly electrical costs for the North OU Wells shall be multiplied by a billing factor of 91.27% to determine the "Actual Lifting Cost." The Actual Lifting Cost shall then be divided by the actual number of acre feet of groundwater pumped from the North OU Wells during such month to determine the "Lifting Cost Per Acre Foot." The Lifting Cost per Acre Foot shall then be multiplied by the actual number of acre feet of extracted and treated groundwater accepted into the City's water system from the Upstream Facilities during such month to determine the "Electrical Lifting Cost."

In the event that no water is pumped from the North OU Wells in any month, the "Lifting Cost Acre Foot" for such month shall equal the average of the Lifting Cost Per Acre Foot from the six (6) preceding months.

For example, if the total monthly electrical cost for the North OU Wells is $10,000 and the 400 acre feet of groundwater is pumped from the North OU Wells during such month, the Actual Lifting Cost is $9,127 ($10,000 x 91.27%) and the Lifting Cost per Acre Feet is $22.82 ($9,127÷400). If 600 acre feet of extracted and treated groundwater are accepted into the City's water system from the Upstream Facilities during such month, the Electrical Lifting Cost is $13,692 (600 x $22.82).

KAWA1058.WP

EXHIBIT C

Exhibit "D"

FUNDING OBLIGATIONS TO OBTAIN DHS PERMIT AMENDMENT		
	Upstream	Downstream
Non-Well Sampling	LLC	City
Non-VOC Title 22 Routine Sampling	n/a	n/a
Other Well Sampling	LLC	n/a
Data Gathering	LLC	City
Reports	LLC	LLC
Technical Analysis	LLC	LLC

KAWA105F.WP

EXHIBIT D

Exhibit "E"

FUNDING OBLIGATIONS WITH RESPECT TO REGULATORY COMPLIANCE OTHER THAN OBTAINING THE DHS PERMIT AMENDMENT			
	Upstream	Downstream	Systemwide
Non-Well Sampling	LLC	City	n/a
Non-VOC Title 22 Routine Sampling	City	n/a	n/a
Other Well Sampling	LLC	n/a	n/a
Data Gathering	LLC	City	n/a
Reports	LLC	City	LLC
Technical Analysis	LLC	City	LLC

KAWA105F.WP

EXHIBIT E

COST OF ANALYZING TITLE 22 PARAMETERS FOR ONE GRANDVIEW WELL ANNUALLY

TESTS INVOLVED	FREQUENCY	UNIT COST	TOTAL
DOHS REQUIREMENTS (TITLE 22, CHAPTER 15 & Table of Vulnerability from DOHS):			
Gen. Physical	1/3 yrs.	$ 6.00	$ 2.00
Gen. Min.	1/3 yrs.	125.00	41.67
Asbestos	1/9 yrs.	120.00	13.33
Lead/Cu	1/yr	15.50	15.50
Gross Alpha	4Q/4yr	30.00	30.00
Radium	AS NEEDED		
Herbicides (515)	2Q/3yrs.	90.00	60.00
Atrazine (507)	2Q/3yrs	60.00	40.00
Carbaryl (531)	2Q/3yrs.	120.00	80.00
SOC's (525) 64450 (A&B)	2Q/3yrs	240.00	160.00
Pesticides (508)	2Q/3yrs.	80.00	53.33
Glyphosate (547)	2Q/3yrs	120.00	80.00
Diquat (549)	2Q/3yrs.	120.00	80.00
Diuron (632)	2Q/3yrs.	185.00	123.33
EDB/DBCP (504)	2Q/3yrs.	35.00	23.33
Dizinon (507)	1/5yrs.	SEE ATRAZINE	
Dimethoate (507)	1/5yrs.	SEE ATRAZINE	
NO3	A	7.00	7.00
Coliform Bacteria	M	5.75	23.00
HPC	M	1.98	7.92
		TOTAL	**$841.41**

NOTES:

1. This does not include Hexachromium, Perchlorate and other analysis that may be required in the future.

2. This cost does not include VOC testing.

[illegible]
August 22, 1997

EXHIBIT F

Scope of Work
Insurance Requirements

General Provisions

Without limiting the Operator's (O&M Contractor's) duty to indemnify the City of Glendale, the Operator shall provide and maintain at its own expense, during the term of its agreement with the City (the Agreement), or as may be further required herein, the following insurance coverages and comply with the following provisions.

By requiring insurance herein, the City does not represent that coverage and limits will necessarily be adequate to protect Operator, and such coverage and limits shall not be deemed as a limitation on Operator's liability under the indemnities granted to the City in the Agreement.

The City and the LLC may, by, mutual agreement, modify the types and levels of coverage based upon the level of risk associated with the work, the availability of coverages, and the reasonableness of costs associated with the level of protection afforded. However, Commercial General Liability (CGL), worker's compensation, and automobile liability coverage shall equal or exceed the levels of coverage specified in any Consent Decree that may be entered into with EPA.

If the Operator fails to maintain the insurance as set forth herein, the City shall have the right to purchase said insurance at the Operator's expense with funds provided by the LLC.

The Operator shall provide certified copies of all insurance policies required by this scope of work within ten days of the City's written request for said copies.

Along with the appropriate insurance coverages, the Operator shall provide the City, the Respondents and the LLC (the other Named Insureds) and the United States EPA and DTSC (the Additional Insureds) an acceptable hold harmless and indemnity provision covering the work it performs under the Agreement.

1.1 **Evidence of Insurance.** Prior to the execution of the Agreement, the Operator shall provide an original plus one copy of a Certificate of Insurance executed by a duly authorized representative of each insurer certifying that coverage as required herein has been obtained and remains in force for the period required herein. Individual endorsements executed by the insurance carrier for the coverage are required. In addition, a certified copy of the policy or policies shall be provided by the Operator upon request by the City.

1.1.1 This verification of coverage shall be sent to the address of the City of Glendale. The Agreement shall not be executed by the City until the verification of coverage has been received and approved by the City of Glendale and the LLC. This approval shall neither relieve or decrease the liability of the Operator.

EXHIBIT G

1.1.2 All certificates shall provide for 30 days written notice to the City, the other Named Insureds and the Additional Insureds prior to the cancellation, termination, expiration or material change of any insurance referred to therein.

1.1.3 Except as required in paragraph 2.4.2 below, should any of the work under the Agreement be sublet, the Operator shall require each of its subcontractors of any tier to provide the aforementioned coverages, or Operator shall insure such subcontractors under its own policies. In addition, if the subcontractor is an architect or engineer, he or she must provide a professional liability policy with limits as prescribed by the City and the LLC. Any disagreements between such parties and the architect or engineer shall be resolved by the Cost Consultant.

1.1.4 The words "endeavor" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives" shall be deleted from the certificate form's cancellation provision.

1.1.5 Failure of the City to demand such certificate or other evidence of full compliance with these insurance requirements or failure of the City to identify a deficiency from evidence that is provided shall not be construed as a waiver of Operator's obligation to maintain such insurance.

1.1.6 Failure to maintain the required insurance may result in termination of the Agreement at the City's option.

1.1.7 Claims Made Coverage for Pollution Liability and Professional Liability Insurance. Except for coverages referenced in paragraph 2.4, all other coverages are available on an occurrence basis. For pollution liability and professional liability coverages, the policy may be written on a claims made basis. In addition to coverage requirements above, such policy shall include the following requirements.

1.1.7.1 The policy (including any subsequent policy purchased as a renewal or replacement) retroactive date must coincide with or precede the Operator's start of work.

1.1.7.2 Operator must maintain similar insurance during the required five-year extended period of coverage, following termination of the Agreement, including the requirement of adding the City, the other Named Insureds and the Additional Insureds.

1.1.7.3 If insurance is terminated for any reason, Operator agrees to purchase an extended reporting provision of at least five years to report claims arising from work performed in connection with the Agreement.

1.1.7.4 The policy shall allow for reporting of circumstances or incidents which may give rise to future claims.

1.1.8 Annual Insurance Report. On or before the execution of the Agreement and as soon as practicable after the end of each calendar year during the term of the Agreement (and in any event within 90 days thereafter), Operator shall furnish or cause to be furnished to the City, the other

Named Insureds and the Additional Insureds a report signed by a firm of independent insurance brokers, which may be a firm regularly retained by the Operator, appointed by the Operator and not objected to by the City, showing the insurance then carried and maintained relative to the Agreement, stating that in the opinion of such firm, such insurance is in full force and effect, that the insurance complies with the terms hereof, and, in the event that the coverage is deficient, certifying the maximum coverage which is available on commercially reasonable terms with respect to each risk required to be insured against under the Agreement. The Operator shall cause such firm to undertake to advise the City, the other Named Insureds and the Additional Insureds in writing promptly of any default in the payment of any premium and of any other act or omission on the part of the Operator of which the firm has knowledge and which might invalidate or render unenforceable, in whole or in part, any such insurance.

Insurance

2.0 The Operator shall obtain insurance of the types and in the amounts described below.

2.1 **Commercial General and Umbrella Liability Insurance.** Operator shall maintain Commercial General Liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less that $15,000,000 each occurrence and in the annual aggregate, all of which is dedicated to activities associated with the Glendale Operable Units, including the actions of the City and the LLC.

2.1.1 CGL insurance shall be written on a standard ISO occurrence form (or a substitute form providing equivalent coverage) and shall cover liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract, as well as defense obligations and defense expenses). The policy shall include a severability of interest clause providing that the coverage applies separately to each insured except with respect to the limits of liability.

2.1.2 The CGL insurance shall include the City, the Respondents and the LLC as named insureds and the United States EPA and DTSC as additional insureds under the policy, and the commercial umbrella and excess liability insurance, if any. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to the named insureds and the additional insureds.

2.1.3 Insurance afforded by this policy shall not be canceled, terminated or changed without 30 days prior written notice of such cancellation, termination or change being delivered to all insureds.

2.1.4 Insurance policy(s) shall reflect that Carrier waives all rights against the City, the other Named Insureds, and the Additional Insureds, and their agents, officers, directors, and employees to the extent any damages are covered by the commercial general liability or commercial umbrella liability insurance maintained pursuant to paragraph 2.1 of these requirements.

2.1.5 Any self-insured retention in the insurance policy(s) is subject to initial review and approval by the City and the LLC and subject to an annual review.

2.2 **Business Auto and Commercial Umbrella Liability Insurance.** The Operator shall maintain business auto liability and, if, necessary, commercial umbrella liability insurance with a limit of not less than $15,000,000 combined single limit per occurrence.

2.2.1. Such insurance shall cover liability arising out of use of any auto (including owned, hired, and non-owned autos).

2.2.2. Business auto coverage shall be written on a standard ISO form or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage.

2.2.3. The City, the other Named Insureds and the Additional Insureds shall be included as "additional insureds" under the business auto policy and the commercial umbrella policy, if any.

2.2.4 The insurance policy shall reflect that Carrier waives all rights against the City, the other Named Insureds and the Additional Insureds, and their agents, officers, directors, and employees for recovery of damages to the extent any damages are covered by the business auto liability, the CGL or umbrella and excess liability insurance obtained by the Operator pursuant to this scope of work.

2.2.5 Insurance afforded by this policy shall not be canceled, terminated or changed without 30 days' written notice of such cancellation, termination or change being delivered to each additional insured.

2.3 **Workers Compensation and Employers Liability Insurance.** The Operator shall maintain workers compensation, occupational disease coverage, and employer's liability insurance.

2.3.1. The Operator shall maintain statutory workers' compensation coverage including a broad form all-states endorsement.

2.3.2 The Operator shall maintain employer's liability and/or commercial umbrella limits coverage for not less than $15,000,000 including occupational disease.

2.3.3 The Operator shall include the City, the other Named Insureds and the Additional Insureds as "additional insureds" or provide a waiver of the right of subrogation.

2.3.4 The insurance policy(s) shall reflect that Carrier waives all rights against the City, the other additional insureds, and their agents, officers, directors, and employees for recovery of damages to the extent any damages and related claims handling costs are covered by the workers compensation and employers liability or umbrella and excess liability insurance obtained by the Operator pursuant to this scope of work.

2.3.5 Insurance afforded by this policy shall not be canceled, terminated or changed without 30 days written notice of such cancellation, termination or change being delivered to each additional insured.

2.4. **Operator's Pollution Liability and Professional Liability Insurance.** Operator shall maintain Contractor's Pollution Liability (CPL) and professional liability, including pollution Errors and Omissions (E&O) insurance with a limit of not less than $15,000,000 per occurrence and $15,000,000 annual aggregate per location.

2.4.1 CPL and E&O insurance shall be written on a policy form(s) acceptable to the City and the LLC and provide project-specific coverage for the work the Operator performs under the Agreement.

2.4.2. CPL and E&O insurance shall cover the liability of any subcontractors performing work for the Operator.

2.4.3. The City, the other Named Insureds and the Additional Insureds shall be included as "additional insureds" under the CPL and E&O.

2.4.4 The insurance policy(s) shall reflect that Carrier waives all rights against the City and the other additional insureds , and their agents, officers, directors, and employees for recovery of damages to the extent such damages are covered by CPL and E&O insurance maintained pursuant to this scope of work.

2.4.5 Insurance afforded by this policy shall not be canceled, terminated or changed without 30 days written notice of such cancellation, termination or change being delivered to each additional insured.

2.5 **Commercial Property and Boiler & Machinery, Including Business Interruption Insurance.** The Operator shall maintain commercial property and boiler and machinery insurance covering the building, fixtures, equipment, improvements and betterments to full replacement cost and loss of income as a result of loss or damage to property.

2.5.1 Property and boiler and machinery shall be insured on a blanket all risk basis, including the peril of flood, but not the peril of earthquake shock. Any self-insured retention in the policy(s) shall be subject to review and approval by the City and the LLC and subject to an annual review.

2.5.2 Property and boiler and machinery insurance shall be extended, if not already provided in the policy form(s), to cover all underground property, and shall include the costs to re-drill any damaged underground water wells.

2.5.3 Property and boiler and machinery insurance shall be extended, if not already provided in the policy form, to include resultant damage to insured property from error in design, faulty workmanship or faulty materials. In addition, coverage shall include joint loss, demolition

coverage, increased cost of construction, contingent liability from operation of building laws, extra expense, expediting expense, and service interruption.

2.5.4 Comprehensive boiler and machinery insurance shall include, but not be limited to, increased cost of construction, hazardous materials, water damage, expediting expense, business income, business interruption, joint loss clause, replacement costs and replacement cost valuation, demolition, increased cost of construction, and services interruption.

2.5.5 Flood coverage with a limit equal to the full replacement cost of the insured property shall be provided. This requirement is subject to annual review and modification by the City and the LLC in recognition of changes in the insurance marketplace.

2.5.6 Contractor shall purchase business income, business interruption, extra expense or similar time element coverage in the amount of $15,000,000 as part of this commercial property insurance, and in no event shall the City, the other Named Insureds or the Additional Insureds be liable for any business interruption or other consequential loss sustained by Contractor, whether or not it is insured, even if such loss is caused by the negligence of the City, the other Named Insureds or the Additional Insureds or their employees, officers, directors, or agents.

2.5.7 Any coinsurance requirement in the policy(s) shall be eliminated through the attachment of an agreed amount endorsement, the activation of an agreed value option, or as is otherwise appropriate under the particular policy form.

2.5.8 All deductibles will be the responsibility of the Operator and will not exceed $10,000 per occurrence excluding flood coverage.

2.5.9 The insurance policies shall reflect that the Carrier waives any recovery of damages against the City, the other Named Insureds and the Additional Insureds, and their employees, officers, directors, agents, or representatives, for loss or damage to the building, improvements and betterment's, fixtures, equipment, and any other personal property to the extent covered by the commercial property insurance or boiler and machinery insurance required above.

2.5.10 The City and the LLC shall be included as additional insureds and loss payees under the commercial property and boiler and machinery insurance, including business interruption insurance.

2.5.11 The coverages required in paragraph 2.5 shall apply as primary insurance.

2.5.12 Insurance required by this paragraph shall not be canceled, terminated or changed without 30 days prior written notice of such cancellation, termination or change being delivered to a designated notice recipient for the additional insureds.

2.6 **Performance and Payment Bond(s).** The Operator shall provide a Performance and Payment bond(s) as security against the Operator's performance and obligations under the Agreement. The bond(s) shall be in an amount equal to 100% of the contract price and be issued

such that it is in effect for the entire term of the Agreement. Said bond(s) shall be written by an insurance company approved and accepted by the City and the LLC, and shall be of such form as is approved and accepted by the City and the LLC. Further, the bond(s) shall show the City and the LLC as dual Obligees.

2.7 All notices to be provided by any insurance carrier shall be delivered to the dual Obligees.

EXHIBIT "H"

1. Coordinate with EPA.

2. Coordinate with City of Glendale.

3. Subcontractor to prepare and submit shop drawings for all materials and installation procedures.

4. Subcontractor to prepare and submit, to the City, traffic control/street closure plans for access pit in Air Way.

5. Comply with City of Glendale substantive permitting requirements for construction.

6. Construct access to existing 30-inch riveted steel pipe and 16-inch concrete pipe at intersection of Grandview Ave. and Air Way. Remove existing isolation valve and short section of existing pipelines; plug pipelines.

7. Replace existing 16-inch concrete pipe with short section of new 16-inch ductile iron pipe (DIP).

8. Construct access pit in Air Way at intersection of existing 30-inch riveted steel pipe and 36-inch welded steel pipe and remove existing valves and short section of pipe.

9. Check clearance in existing pipelines using pipe mandrel.

10. Remove sand/debris from existing pipelines by Apigging@ if required.

11. Install 24-inch diameter HDPE pipe with plastic or redwood skids in existing 30-inch riveted steel pipe, 36-inch welded steel, and 42-inch concrete pipe (see attached figure). HDPE per AWWA Standard C906, DR 17 (100 psi).

12. Pressure test HDPE pipelines.

13. Flow in grout around HDPE pipe to fill the annular space between the 24-inch HDPE and existing pipelines. Expose existing pipeline and cut hole in top of pipe to verify grout installation is full circumference around HDPE (at least one location; if not full circumference, perform second pothole).

14. Connect new 24-inch HDPE to new 16-inch DIP at Grandview Ave. and Air Way.

15. Connect new 24-inch HDPE to existing City of Glendale, Grandview Pumping Plant reservoir.

16. Provide connection point near reservoir for future ammonia feed line injection port. City to construct piping and injection port.

EXHIBIT H

Appendix K: Figure Depicting Upstream and Downstream Facilities