

Appendix E  
**Final Remedial Action Plan,  
Cal Compact Landfill  
(Upper Operable Unit)**





# Final Remedial Action Plan Cal Compact Landfill (Upper Operable Unit) Carson, California

SUBMITTED BY

**BKK Corporation**  
2210 South Azusa Avenue  
West Covina, California 91792

PREPARED BY



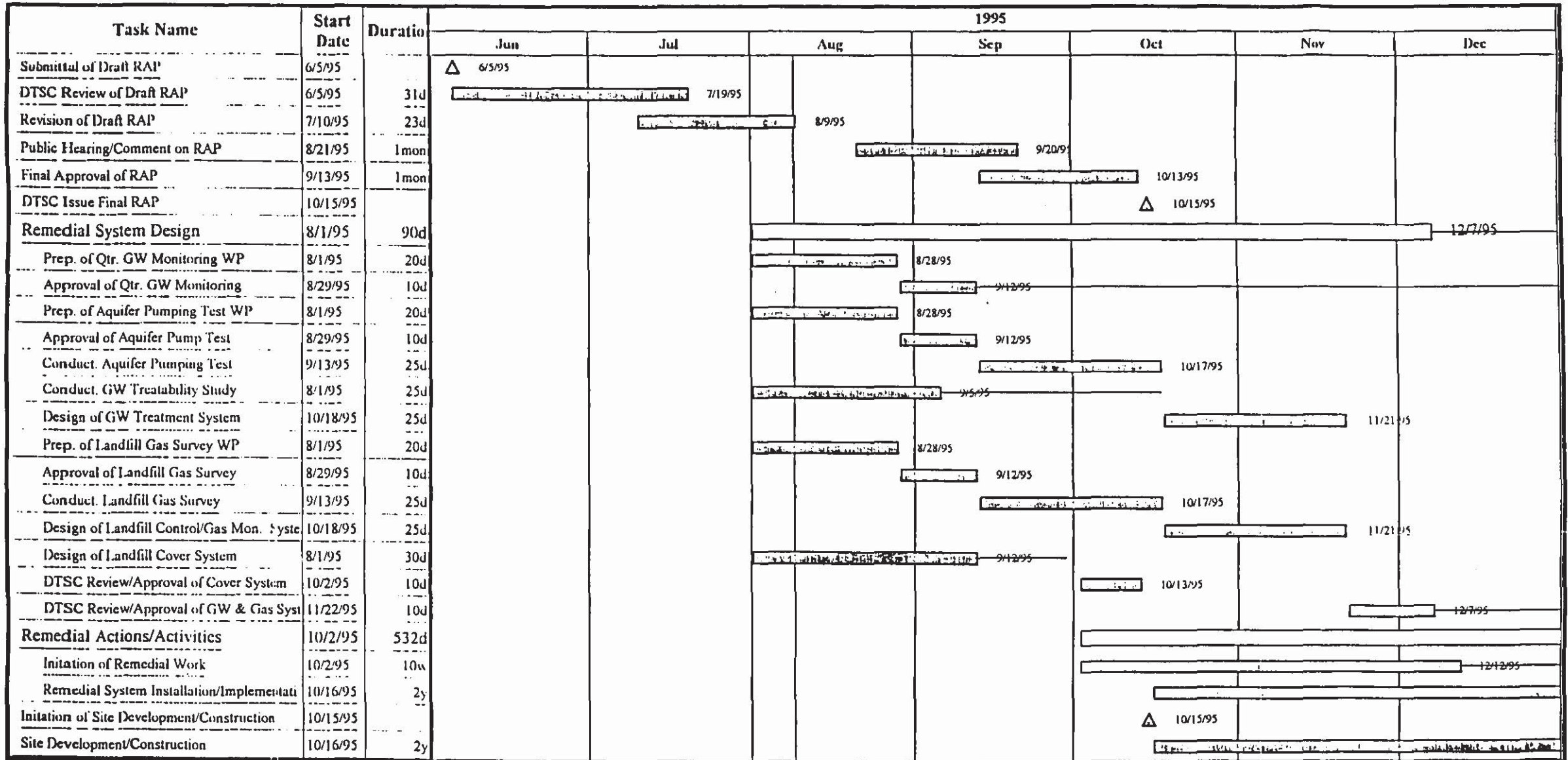
**Brown & Root Environmental**  
A Division of Brown & Root, Inc.

4100 Clinton Drive (77020-6299)  
Post Office Box 3  
Houston, TX 77001-0003

October 1995

FIGURE 9.1

Implementation Schedule: Cal Compact Landfill - Remediation and Site Redevelopment



STATEMENT OF REASONS FOR  
CAL COMPACT LANDFILL  
UPPER OPERABLE UNIT  
REMEDIAL ACTION PLAN

Pursuant to California Health and Safety Code (HSC), section 25356.1(d), the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) has prepared this Statement of Reasons as part of the attached Remedial Action Plan (RAP) for the Cal Compact Landfill (Site), Upper Operable Unit (OU), at 20400 South Main Street, in the City of Carson, County of Las Angeles, State of California.

The RAP presents a summary of the Remedial Investigation (RI) to address volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, and pesticides that have been detected in the Sites soil, waste zones, and groundwater in the Bellflower Aquitard at and near the Cal Compact Landfill. The RAP summarizes the results of a Baseline Risk Assessment performed to determine the potential risk to public health and the environment associated with the VOCs, SVOCs, metals, and pesticides found. The RAP also provides a discussion of the feasible remedial alternatives that were evaluated in the Feasibility Study (FS). The RAP recommends a remedial alternative that will meet the objectives of protecting public health and the environment. The RAP proposes the construction of a landfill cap, landfill gas collection and treatment system and groundwater treatment system.

The DTSC believes that the attached RAP complies with the law as specified in California Health and Safety Code, section 25356.1. Section 25356.1(e) requires that RAPs "shall include a statement of reasons setting forth the basis for the removal and remedial actions selected." The statement of reasons "shall also include an evaluation of the consistency of the removal and remedial actions proposed by the plan with the federal regulations and factors specified in subdivision (d)..." Subdivision (d) specifies six factors against which the remedial alternatives in the RAP must be evaluated. The proposed remedial action is consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (the National Contingency Plan, "NCP"), the federal Superfund regulations. The attached RAP has addressed all these factors in detail. A brief summary of each factor follows. The statement of reasons also includes the preliminary Nonbinding Allocation of Responsibility (NBAR) as required by HSC section 25356.1(e).

1. Health and Safety Risks - HSC Section 25356.1(d)(1)

The chemicals of concern identified for this Site are the following:

Soil - antimony, arsenic, beryllium, benzo(a)anthracene, benzo(b)fluoranthene, alpha-BHC, and bis(2-ethylhexyl)phthalate.

Groundwater - antimony, arsenic, barium, beryllium, chromium, manganese, molybdenum, nickel, selenium, vanadium, zinc, benzene, bis(2-ethylhexyl)phthalate, 1,1-dichloroethane, 1,2-dichloroethane, ethylbenzene, naphthalene, tetrachloroethylene (PCE), toluene, trichloroethylene, vinyl chloride, and xylenes.

Vapor - benzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethylene, tetrachloroethylene (PCE), toluene, trichloroethylene, vinyl chloride, and xylenes.

The risk assessment evaluated potential exposures for the following scenarios:

- a) Long term residential use,
- b) Long term commercial/industrial use, and
- c) 2-year construction and excavation

2. Beneficial Uses of the Site Resources \*- Section \*25356.1(d)(2)

[Discuss beneficial uses of surface water, groundwater, land].

3. Effect of Remedial Actions on \*Groundwater Resources  
Available technologies were evaluated to meet remedial action

objectives for soil and \*groundwater. A variety of scientific engineering approaches and technologies were considered.

[For sites with soil and \*groundwater problems, it may be appropriate to say: "The primary remedial action objectives are to reduce

chemical concentrations in groundwater, limit the migration of chemicals from the soil into groundwater, and restrict further \*downgradient movement of contaminated groundwater."]

[Describe beneficial uses of groundwater). The proposed remedial alternative will result in [describe impact on groundwater].

4. Site characteristics \*- Section \*25356.1(d)(4)  
Chemicals in soil and groundwater beneath the site have

been

extensively characterized. [Describe the following:

\*1)

Potential for \*offsite migration; 2) Commingling, if present, with other contamination; and 3) Site-specific

\*soil/hydrogeological

conditions which may affect contaminant \*movement3.

5.

\*Cost-Effectivan- \*mative

Section \*29156 \*1(d)(5)

The proposed remedial action alternative (describe alternative)

was the most cost-effective alternative to \*meet the cleanup

objectives.

APPENDIX II

6. Potential Environmental Impacts of Remedial Actions -  
Section

253 56. 1 (d) (6)  
All potential impacts will be mitigated under the proposed  
re\*medial alternative. The proposed remedial alternative  
will not  
create any significant environmental impacts. Because of  
this, a  
Negative Declaration was proposed pursuant to the  
California  
Environmental Quality Act \*(CEQA) for the recommended  
remedial  
alternative. An Environmental Study Checklist was completed  
for  
the [site name) which discussed potential environmental  
impacts  
of the recommended remedial alternative, as well as actions  
that  
will be taken to reduce or eliminate these potential  
environmental impacts during implementation. The \*CEQA  
Environmental Study Checklist and proposed Negative  
Declaration  
are being distributed (under separate cover) for a 30-day  
public  
comment period. [For the Final RAP, revise the last  
sentence to  
indicate that \*CEQA documents were distributed)

7. Preliminary Nonbinding Allocation of Financial  
\*Responsibility@

Section \*25356.1(e)  
The RAP must include a "nonbinding preliminary allocation  
of  
responsibility \*(NBAR) among all identifiable potentially  
responsible parties at a particular site, including those  
parties  
which may have been released, or may otherwise be immune,  
from  
liability... \*" \*(HSC section \*25356.1(e)). The current  
\*NBAR for the  
[site name), as issued by the \*DTSC, is presented on the



## DEPARTMENT OF TOXIC SUBSTANCES CONTROL



2000 4  
st Broadway, Suite 425  
each, CA 90802-4444

October 25, 1995

Mr. Paul W. Neff, Director  
Regulatory & Environmental Compliance  
BKK Corporation  
2210 South Azusa Avenue  
West Covina, California 91792

Dear Mr. Neff:

REMEDIAL ACTION PLAN (RAP) APPROVAL: CAL COMPACT LANDFILL, UPPER  
OPERABLE UNIT, CARSON, CALIFORNIA

The Department of Toxic Substances Control (Department) has completed its review of the subject RAP and has determined that this plan meets the statutory requirements under Section 25356.1, California Health and Safety Code. The Department hereby approves the Cal Compact Landfill, Upper Operable Unit RAP. Enclosed please find the RAP approval form for the subject Site.

If you should have any questions, please do not hesitate to contact Mr. Thomas Cota at (310)590-4898.

Sincerely,

A handwritten signature in black ink, appearing to read "Hamid Saebfar".

Hamid Saebfar, Chief  
Site Mitigation Cleanup Operations  
Southern California Branch

Enclosure

cc: Ms. Barbara Coler, Chief  
Statewide Cleanup Operations Division  
Department of Toxic Substances Control  
Region 2  
700 Heinz Avenue, Suite 200  
Berkeley, California 94710

Mr. Peter Sardagna  
Project Manager  
L.A. MetroMall, LLC  
20400 South Main Street  
Carson, California 90745

Mr. Paul W. Neff

October 25, 1995  
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Project Executive  
Brown & Root Building Company  
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City of Carson  
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Mr. James E. Ross, Senior Engineer  
California Regional Water  
Quality Control Board  
101 Centre Plaza Drive  
Monterey Park, California 91754



**HAZARDOUS SUBSTANCES CONTAMINATION  
PUBLIC NOTICE - FINAL REMEDIAL ACTION PLAN  
CAL COMPACT LANDFILL, UPPER OPERABLE UNIT  
20400 SOUTH MAIN STREET, CARSON, CA**

The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared a Final Remedial Action Plan (RAP) to remediate hazardous substance contamination in the soil and groundwater at the former Cal Compact Landfill, Site (Site) at 20400 South Main Street, Carson, California.

The Final RAP was prepared to provide the public with an analysis of surface water, soil, groundwater, and air conditions at the Site and to propose an appropriate remedial action from all available options. Because of the size and complexity of the Site, DTSC divided the Site into two operable units. The Upper Operable Unit (OU) encompasses Site soils, the waste zones, and the aquifer closest to the surface of the earth. The Lower OU encompasses the area beneath the Upper OU, including all aquifers below the Upper OU.

The Final RAP was prepared in accordance with the requirements of the California Health and Safety Code Section 25358.1 and meets all other state and federal statutory requirements. The Final RAP details the plan for remediating soil and groundwater portions of the Cal Compact Landfill by (1) containment of waste in place, (2) construction of a landfill gas collection and treatment system, and (3) treatment of groundwater in the Upper OU. Containment in place is intended to prevent the release of landfill gas into the atmosphere and to prevent surface water from moving into the waste zone and then into the underlying groundwater. The purpose of the groundwater treatment system is to clean up the contaminated groundwater in the Upper OU. An additional investigation of former oil and water wells will be conducted during the implementation of the RAP. DTSC will report findings of this additional investigation to those on the Site mailing list.

The remedial action planned for the Site will mitigate the potential risk associated with known Site contaminants. An Environmental Impact Report (EIR) was prepared and certified by the City of Carson for the Metro 2000 Project that addressed construction of a landfill cap to contain waste in place. DTSC prepared an Initial Study and Supplemental Negative Declaration pursuant to the California Environmental Quality Act (CEQA) for the construction and operation of the systems to collect and treat landfill gas and groundwater in the Upper OU. DTSC filed a Notice of Determination pursuant to CEQA on October 31, 1995.

As required by the Health and Safety Code Section 25358.1, a public meeting was held on September 6, 1995. This meeting was held during the legally required public comment period, which began on August 25, and ended on September 25, 1995. A Responsiveness Summary containing DTSC's responses to all verbal and written comments received during the 30-day comment period was sent to every person that submitted comments. This Summary, along with the entire administrative record, was used by DTSC in making a final decision on the RAP.

The Final Remedial Action Plan, the CEQA documents, and other project documents were placed in the following locations for review by interested persons: Department of Toxic Substances Control, 245 West Broadway, Suite 350, Long Beach, CA 90802-4444 (310-590-4980); Carson Public Library, 151 East Carson Street, Carson, CA 92335 (310-830-0901). For additional information contact Thomas Cota, Project Manager, Department of Toxic Substances Control, 245 West Broadway, Suite 350, Long Beach, CA 90802-4444 (310-590-4898), and if you wish to be added to the Site mailing list for subsequent mailings, please contact Ed Schumacher, Public Participation Specialist, at the same address (310-590-5539).

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**

Region 4  
245 West Broadway, Suite 425  
Long Beach, CA 90802-4444  
(310) 590-4945



November 1, 1995

Dear Interested Party:

**APPROVAL OF THE REMEDIAL ACTION PLAN FOR THE UPPER OPERABLE UNIT OF  
THE FORMER CAL COMPACT LANDFILL SITE**

The California Department of Toxic Substances Control (DTSC) has approved the final Remedial Action Plan (RAP) to remediate the Upper Operable Unit at the Cal Compact Landfill site at 20400 South Main Street, Carson, California. DTSC public noticed the Draft RAP and Supplemental Negative Declaration for the Upper Operable Unit (OU) for a thirty day comment period from August 25, to September 25, 1995.

The approved RAP includes details of the plan for remediating soil and groundwater of the Upper OU by (1) construction of a landfill cap, (2) construction of a landfill gas collection and treatment system, and (3) treatment of groundwater in the Upper OU. Construction of a landfill cap is intended to prevent both the release of landfill gas into the atmosphere and the movement of surface water into the waste zone and then into the underlying groundwater. The purpose of the groundwater treatment system is to remediate the contaminated groundwater in the Upper OU.

The remedial action planned for the site's Upper OU will mitigate the potential risk associated with existing site contaminants. In addition DTSC has determined that the construction of the landfill cap will have significant impacts on the environment which were fully disclosed in the City of Carson's Environmental Impact Report for the Metro 2000 project. DTSC has adopted a Statement of Overriding Consideration for the construction of the landfill cap: DTSC finds that the long-term benefits provided by the construction of the landfill cap will outweigh the short-term, adverse impacts caused by construction activities. Adverse impacts include emissions generated by trucks; other adverse impacts are dust and noise generated by cap construction activities. Benefits include containment of waste in place, control of contaminated surface water running off site, control of hazardous landfill gas emissions into the environment, and long-term control of dust and particulates containing hazardous substances. An additional investigation of former oil and water wells will be conducted during the implementation of the RAP. DTSC will report findings of this additional investigation and any appropriate remedy to those on the site mailing list.

Additional information about the investigation and cleanup of this site can be found in the local information repository at the Carson Public Library, 151 East Carson Street, Carson (310-830-0901) or by contacting Mr. Thomas Cota at 310-590-4898. If you wish to be added to the site mailing list, contact Mr. Ed Schumacher, Public Participation Specialist, at DTSC in Long Beach (310-590-5539).

Sincerely,

A handwritten signature in black ink, appearing to read "Hamid Saebfar".

Hamid Saebfar, Chief  
Site Mitigation Cleanup Operations  
Southern California Branch



CAL COMPACT LANDFILL  
UPPER OPERABLE UNIT  
REMEDIAL ACTION PLAN  
APPROVAL PROCESS

This is to certify that the attached Remedial Action Plan has been circulated for public comments and subsequently amended as deemed appropriate. The proposed remedial action has been determined to be reasonable and feasible.

The undersigned have further determined that the proposed remedial action:

- ( ) Will not have an adverse impact on the environment; or
- ( ) Will or may have an adverse impact but that specific measures will be taken to eliminate or reduce the adverse impact; or
- (X) It is not feasible to eliminate or reduce the adverse impact but the overall adverse impact of not proceeding with site cleanup outweighs the adverse impact of the proposed cleanup.

The undersigned hereby approve and adopt the attached Remedial Action Plan.



Thomas M. Cota  
Project Manager

10/25/95  
Date



Hamid Saebfar, Chief  
Site Mitigation Cleanup Operations  
Southern California Branch

10/25/95  
Date

**Cal Compact Landfill-  
Upper Operable Unit**

**REMEDIAL ACTION PLAN  
ADMINISTRATIVE RECORD LIST**

This Remedial Action Plan (RAP) Administrative Record List for the Cal Compact Landfill, Upper Operable Unit identifies all documents, (e.g., reports, data, policy and guidance documents, statutes and regulations, correspondence, California Environmental Quality Act documents, technical journals, etc.) that were relied on or considered when selecting the remedial action alternative implemented by the RAP. The document also shows that the public was notified of site activity and had opportunity to participate in the response selection process.

<u>DATE</u>	<u>TITLE OF DOCUMENTS</u>
6/15/87	Report on Potentially Responsible Parties, Cal Compact Site, Graham & James
3/18/88	Remedial Action Order, Cal Compact Landfill, Docket No. HSA 87/88-040
January 1990	Final Workplan, Cal Compact Landfill, Bryan A Stirrat & Associates
4/4/91	Monthly Groundwater Investigation, Cal Compact Landfill Site, December 1990. McLaren/Hart
9/23/91	Quarterly Groundwater Investigation, Cal Compact Landfill Site, August 1991, McLaren/Hart
1/10/92	Integrated Remedial Investigation of Cal Compact Landfill, Volume 1 through 11
3/17/92	Groundwater Monitoring for First Quarter 1992 (January-March), Cal Compact Landfill, McLaren/Hart
6/9/92	Groundwater Monitoring for Second Quarter 1992 (April-June), Cal Compact Landfill, McLaren/Hart
December 1993	Final Project and Program Environmental Impact Report Metro 2000, State Clearinghouse No. 93011037

12/ 21/ 1993	City of Carson, City Council, Resolution No. 93-128
1/18/94	DTSC Letter to Interested Parties on the Cal Compact Mailing List
7/6/94	Letter from Mr. Gary Colboth
8/9/94	DTSC Letter to mr. Gary Colboth
2/4/95	Memorandum from Chris Guerre, DTSC, Geological Support Unit
5/25/95	Remedial Action Order and Consent Order, Docket No. HSA 94/95-035, Bkk Corporation
June 1995	Revised Public Participation Plan, Cal Compact Landfill, BKK Corporation
June 1995	Cal Compact Mailing List
June 1995	Cal Compact Landfill Site Investigation Update Fact Sheet #2
6/15/1995	Remedial Investigation Update Public Meeting Agenda
July 1995	Remedial Investigation, Cal Compact Landfill, Volumes 1 through 8, Brown & Root Environmental
August 1995	Final Report Baseline Risk Assessment, Cal Compact Landfill, Volume 1 & 2, Brown & Root Environmental
8/4/95	Memorandum from Dr. A. Kimiko Klein, DTSC Staff Toxicologist
August 1995	Feasibility Study , Cal Compact Landfill, Brown & Root Environmental
August 1995	Draft Remedial Action Plan, Cal Compact Landfill, Brown & Root Environmental
8/14/95	DTSC Letter to Mr. Paul Neff, BKK Corporation, Accepting the Baseline Risk Assessment for the Cal Compact Landfill
8/21/95	DTSC Letter to Mr. Paul Neff, BKK Corporation, Approving Remedial Investigation and Feasibility Study.

8/23/95	Cal Compact Mailing List (Mandatory & General)
8/23/95	Draft Remedial Action Plan Record
8/23/85	DTSC Letter to Los Angeles County Clerk
8/24/95	DTSC Letter to the Supplemental Negative Declaration Mailing List
August 1995	Supplemental Negative Declaration Mailing List
August 1995	Cal Compact Landfill Fact Sheet #3
8/25/95	Cal Compact Public Notice in the Los Angeles Times
8/25/95	Cal Compact Public Notice in the Daily Breeze
August 1995	Initial Study, Cal Compact Landfill, Upper Operable Unit
August 1995	Initial Study Checklist, Cal Compact Landfill, Upper Operable Unit
August 1995	Proposed Supplemental Negative Declaration, Cal Compact Landfill
8/23/95	Notice of Preparation of an Environmental Document
8/23/95	Notice of Preparation of an Environmental Document, Los Angeles County Clerk, Stamped #95000329
8/23/85	DTSC Memorandum to the Office of Planning and Research
8/24/95	Supplemental Negative Declaration Mailing List, Cal Compact Landfill
8/28/95	DTSC Letters to the Potentially Responsible Parties
9/6/95	Transcript of Proceedings, Cal Compact Landfill, Draft Remedial Action Plan and Proposed Supplemental Negative Declaration
9/6/95	Letter from State of California Regional Water Quality Control Board, Los Angeles Region



9/6/95	Letter from Mr. Gary Colboth, Chair, South Dunbrooke Neighborhood Association
9/20/95	Letter from Mr. Gary Colboth, Chair, South Dunbrooke Neighborhood Association
9/21/95	Letter from County of Los Angeles - Department of Public Works
9/22/95	Letter from Mr. Martin J. McHale
9/22/95	Letter from South Coast Air Quality Management District
9/22/95	Letter from Heller, Ehrman, White & McAuliffe
9/25/95	Letter from Kelley Drey & Warren
9/25/95	Letter from Water Replenishment District of Southern California
9/25/95	Letter from County of Los Angeles - Department of Health Services Environmental Health Solid Waste Management Program
9/25/95	Fax from Mr. Paul Nihipali
9/26/95	Letter from State of California Integrated Waste Management Board
9/29/95	Letter from State of California Department of Transportation
10/11/95	Letter from Heller, Ehrman, White & McAuliffe
October 1995	Final Remedial Action Plan, Cal Compact Landfill, Upper Operable Unit, Brown & Root Environmental
10/25/95	Cal Compact Landfill Upper Operable Unit Remedial Action Plan Approval Process
10/25/95	DTSC letter to BKK Corporation Approving the Final Remedial Action Plan
October 1995	Los Angeles County Clerk Stamped Notice of Preparation of an Environmental Document
10/25/95	Supplemental Negative Declaration Approval

10/25/95 Supplemental Negative Declaration  
10/25/95 Notice of Determination  
10/25/95 Notice of Determination Checklist  
10/25/95 DTSC Findings Pursuant to CEQA  
10/25/95 DTSC Findings Checklist  
10/25/95 Initial Study Cal Compact Landfill Upper Operable Unit  
10/25/95 Initial Study Cal Compact Landfill Upper Operable Unit  
Checklist  
11/1/95 DTSC Letter to Cal Compact Mailing List

#### STATUTES AND REGULATIONS, POLICY AND GUIDANCE DOCUMENTS

U.S. Environmental Protection Agency Guidance for Conducting Remedial Investigations and Feasibility Study, Interim Final, October 1988

Risk Assessment Guidance for Superfund Volume 1 Human Health Evaluation Manual (Part A), December 1989

Risk Assessment Guidance for Superfund Volume 1 Human Health Evaluation Manual (Part B and C), Development of Risk-based Preliminary Remediation Goals) December 1991

A Compilation of Water Quality Goals, September 1991, Staff Report of the California Regional Water Quality Control Board Central Valley Region

Remedial Action Plan Development and Approval Process, Department of Toxic Substances Control, Document # OPP 87-2, October 5, 1987

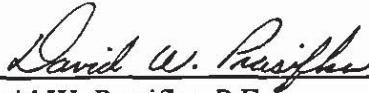
California Health and Safety Code

California Code of Regulations

National Oil and Hazardous Substances Pollution Contingency Plan ("National Contingency Plan," 40 Code of Federal Regulations, Section 300.400 et seq.), ), Subpart E

California Environmental Quality Act Statutes and Guidelines 1992, with amendments dated July 4 1994.

This Final Remedial Action Plan for Upper Operable Unit (Bellflower Aquitard Unit) of the Cal Compact Landfill site was prepared under direct supervision and reviewed by:



---

David W. Prasifka, P.E.  
Brown & Root, Inc.  
Registered Professional (Civil) Engineer  
No. 30787 (State of California)



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## 9.1 Implementation Schedule: Cal Compact Landfill - Remedial and Site Redevelopment

## 1.0 INTRODUCTION

### 1.1 Objectives

The Cal Compact Landfill in Carson, California is listed under the State of California, Department of Health Services, Toxic Substances Control Program (now Department of Toxic Substances Control [DTSC]) as a hazardous site. In March 18, 1988, the site was issued Remedial Action Order No. HSA87/88-040 requiring implementation of remedial activities.

As agreed under the Remedial Action Order and Consent Order, Docket No. HSA 94/95-035 between BKK Corporation (BKK) and the State of California on behalf of the Department of Toxic Substances Control (DTSC), the remedial strategy for the Cal Compact site is to provide remediation of the Upper Operable Unit. The Upper Operable Unit is defined as the site soils, the waste zone above and within the Bellflower Aquitard, and the Bellflower Aquitard down to, but not including the Gage Aquifer. Accordingly, this final Remedial Action Plan (RAP) covers only the UOU of the site.

The final RAP is based on site-specific data gathered from the Remedial Investigations (Phase I & II, McLaren/Hart Environmental Engineering Corp., 1991/1992 and Supplementary CPTs, B&R Environmental, 1995) as they pertain to the UOU. The purpose of the final RAP is to summarize the findings of the RI/FS and to identify the preferred alternative for a remedial action to be taken for the remediation of hazardous substances; describe the other remedial alternatives considered; and solicit public review and comments on the alternatives described.

This final RAP summarizes information contained in the Remedial Investigation (RI), Baseline Risk Assessment (BRA) and Feasibility Study (FS) Report (B&R Environmental, 1995). This final RAP describes the remedial alternative chosen for the UOU, how Remedial Action Objectives (RAOs) are to be met, and the schedule for RAP implementation.

Specific details on the remedial activities that will be carried out at the site will be provided in the Remedial Design (RD). The RD will be prepared and submitted to DTSC prior to initiating any remedial actions. Implementation of the remedial system will commence after final approval of the RD.

### 1.2 Site Identification

The Cal Compact Landfill is located at 20300 Main Street, Carson, California. It is situated between Main Street and the San Diego Freeway (Interstate 405) just south of Del Amo Boulevard (Figure 1.1). The landfill occupies approximately 157 acres and was in operation from April 1959 until about December 1964. The landfill was originally designated as municipal, Class II landfill and was closed around February 1965 (BCL, 1981). Adjacent land areas have been similarly used for sanitary landfill operations.

The site has an irregular configuration. Access to the property is from Main Street which forms a portion of the western site boundary. The remaining portion of the western boundary, along with the southern boundary of the site is defined by the Torrance Lateral Channel, a Los

Angeles County flood control channel. The eastern side of the property is bounded by the San Diego Freeway (Interstate 405). The northern side of the property is bounded by Del Amo Boulevard.

For the purpose of the remedial approach, the Cal Compact site is separated vertically into two operable units. These two operable units are: (1) UOU - the Bellflower aquitard and above and (2) Lower Operable Unit - the Gage aquifer and below. As agreed in the Consent Decree, the subject of this RAP is limited to the UOU.

### 1.3 Scope of RAP

This final RAP describes the remedial action alternatives chosen to mitigate the site. This final RAP was developed in accordance with the DTSC guidance, OPP #87-2, Remedial Action Plan Development and Approval Process (DTSC, 1987).

The final RAP document provides a summary of previous investigations of the UOU, including the RI, BRA, and FS. The primary objective of the FS is to insure the appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options were presented to DTSC and appropriate remedy selected. The final RAP also provides an implementation schedule for remedial action as well as a statement of financial responsibility by related parties.

The primary remedial action objective is to provide protection for human health and the environment. Based on the current site development plan, the ultimate remedial action objectives are to provide mitigation of existing contamination in such a way as to allow for the planned commercial development. There are no plans for any residential development on the property.

Specific RAOs consists of the following:

- Control infiltration of surface water to reduce the generation of leachate
- Prevent direct contact with contaminated soil or buried landfill waste
- Prevent further off-site migration of contaminated groundwater
- Capture, control, and treatment of the on-site contaminated groundwater and the contaminant plume that is now off site
- Control or prevent off-site migration of landfill gas
- Control or prevent potential releases of landfill gas to the atmosphere

To achieve the RAOs as listed, a combination of remedial action alternatives has been selected for implementation at the site. The recommended remedial action include: (1) containment of the impacted soil and buried waste through the use of a low-permeability or bentonite amended

clay cap, (2) extraction and treatment of the contaminated groundwater, (3) collection and treatment of the landfill gas, and (4) long-term environmental monitoring of the groundwater and landfill gas. To obtain specific criteria for detailed design of the selected remedial systems, field investigations will be conducted as part of the RD. A detailed description of the recommended remedial action is presented in Section 7 of this report.

## 2.0 EXECUTIVE SUMMARY

### 2.1 Regulatory Consistency

The selected remedial alternatives will comply with the requirements of the Hazardous Substances Cleanup Bond Act, the Hazardous Waste Control Act, the Hazardous Substance Account Act, and other applicable State and Federal laws.

The selected remedies will be protective of human health and the environment through capping of the buried waste and monitoring and/or collecting and treating groundwater and landfill gas.

The selected remedies are consistent with the regulatory preference for remedies that permanently eliminate or significantly reduce the potential for: (1) migration of contaminants to groundwater, surface water, and air and (2) contact with potential human and environmental receptors.

The selected remedial alternatives comply with State and Federal applicable or relevant and appropriate requirements (ARARs). The selected remedial alternatives are cost-effective and consistent with site redevelopment plans.

### 2.2 Site History

Landfill operations began in April 1959 and continued until December 1964, with an approximate date of closing in February 1965 (BCL Associates [BCL], 1981). Aerial photographs from 1947 to 1961 indicate that the site had been in agricultural use before landfilling operations began. Prior to landfill operations, the site was undeveloped and gently rolling terrain. Surface elevations on the site prior to landfill usage ranged from 7 to 21 feet above Mean Sea Level (MSL). Landfill operations modified surface elevations and changed the surface water drainage patterns. The present surface elevation averages between 30 and 35 feet above MSL. Elevations on the site now vary from 11 feet above MSL near the northeast corner to 58 feet above MSL in the north-central portion of the site.

According to Los Angeles County records, Cal Compact, Inc., a California corporation, was issued an industrial waste disposal permit on July 17, 1959, which authorized Cal Compact to operate a Class II landfill on the site. Los Angeles County records showed that Cal Compact, Inc., was operated by Ben Kazarian and his son, Ben Kazarian, Jr.

Information indicates that operations were conducted initially in the northeast and southeast portions of the landfill. Filling operations expanded westward so that by 1964 the southwestern portion of the landfill was receiving refuse (BCL, 1981). The methods used during the landfill operation consisted of excavation, fill, and cover. All wastes were placed in trenches that were excavated adjacent to the haul roads. The haul road locations have remained unchanged throughout the time the landfill was in operation and are underlain by native soil materials.

As a Class II landfill, the Cal Compact facility was permitted to accept both municipal solid waste and specified industrial liquid wastes. Some of the wastes permitted to be accepted were the following:

- Solid organic and municipal refuse
- Drilling fluids
- Carbide or acetylene sludge
- Cleanings from interceptors, clarifiers, screen chambers for the treatment of wastewater from vehicle washing, ceramic manufacturing, laundering, and food processing
- Sludge derived from the softening of water (lime soda process)
- Paint sludge recovered from water circulated in paint spray booths
- Liquid latex wastes consisting of water and suspended synthetic rubber
- Carbon black slurry
- Diatomaceous earth filter agent (residue from filtering steam condensate).

BCL Associates (BCL, 1981) estimated that during the time that the landfill was in operation approximately 6.2 to 6.3 million cubic yards of municipal solid waste were placed in the landfill and that the landfill had a total volume of about 7.8 million cubic yards. BCL also performed a records search of the existing Los Angeles County Engineer Facilities files for the Cal Compact site (File Number I-4610-22) and found records covering the period of April 1959 through December 1964. Records covering December 1964 through estimated site closure in February 1965 were missing.

Records also contained monthly summaries of the liquid wastes that were reported as accepted at the site (BCL, 1981). However, these liquid waste record summaries only covered the period from June 1960 through June 1964, with the January 1961 record missing. Also missing were records from April 1959 to June 1960 and June 1964 to February 1965. On the basis of the available records, BCL identified specific waste streams that had been accepted at the site, and estimated that approximately 4 percent of the material received (50,815,395 gallons or 251,611 cubic yards) may now be considered hazardous by the State of California (BCL, 1981). There are no records documenting the disposal of drummed liquids in the landfill.

A 1982 California Department of Health Services (DHS) summary report on the Cal Compact site (DHS, 1982 in BKK Corp., 1990) states that waste hauler's records in the Los Angeles County Engineer Facilities files list additional amounts of landfill wastes that could currently be considered hazardous by the State. The DHS summary also states that an additional 1,301,030 barrels (54,643,260 gallons) of possibly hazardous wastes and 451,992 barrels (18,983,664 gallons) of miscellaneous liquid industrial wastes were also reported as received during 47 of the

66 months of landfill operation. This report also lists industrial wastes disposed at Cal Compact reported as follows:

- One hundred tons of organic resins and inorganic salts at the site during 1960.
- Two thousand cubic yards of waste containing heavy metals (iron, manganese, magnesium, zinc, copper, chromium III, chromium VI, and lead), organics (polar and non-polar solvents, oils and oil sludges, esters and ethers, and alcohols), and inorganic salts between 1961 and 1967 (Note: The landfill has a reported closing date of February 1965).

The Cal Compact site has been vacant and basically unused since closure of the landfill in 1965. Ground surfaces at the site are currently unpaved (except for the internal roads) and covered with a light growth of native weeds and scrub vegetation. The City of Carson has extended Del Amo Boulevard eastward across the northern portion of the site. Three trailers present on-site are used for field offices. Proposed future use includes commercial and light industrial development.

### 2.3 Remedial Action Alternatives

Remedial action alternatives combine technologies and process options that remained after screening. The six remedial alternatives were:

- No Action
- Limited Action (Monitoring of Groundwater and Landfill Gas)
- Excavation/Off-site Incineration/Groundwater Treatment
- Excavation/Off-site Disposal/Groundwater Treatment
- Containment/Collection and Treatment of Groundwater and Landfill Gas
- Containment/Collectin and Treatment of Groundwater and Monitoring of Landfill Gas

Limited Action, Excavation/Off-site Incineration/Groundwater Treatment, and Excavation/Off-site Disposal/Groundwater Treatment were eliminated due to high costs and the difficult implementability associated with excavation of over 7 million cubic yards of buried waste.

The remaining alternatives were evaluated against seven specific criteria. These evaluation criteria serve as the basis for the detailed analysis and the rationale for choosing the selected remedial alternative.

- Overall protection of human health and the environment
- Compliance with ARARs
- Long-term effectiveness and permanence
- Reductions in toxicity, mobility, or volume
- Short-term effectiveness
- Implementability
- Cost

Two additional criteria, (1) State acceptance and (2) Community acceptance are formally evaluated based on review of the FS.

Results of the evaluation indicated that the preferred remedial action alternative should include a combination of the following actions.

- Construction of a low-permeability clay cover system for the entire site to contain the buried waste and the impacted soil on-site.
- Installation of groundwater extraction and treatment systems along the downgradient side of the site to intercept/capture groundwater contamination coming from the site. The perimeter groundwater system will also capture off-site migration of the groundwater contamination that exceeds the remediation goal.
- Installation of landfill gas extraction, control, and treatment system along the perimeter of the site within the waste zone to minimize the potential off-site migration.
- Implementation of long-term monitoring of the groundwater and landfill gases.
- Long term maintenance of the cap.

The preferred remedial actions have been determined to be protective of human health and the environment. These actions meet site-specific RAOs for the UOU. These actions were selected over other alternatives because: (1) they comply with the ARARs, (2) they are effective in preventing, minimizing, or significantly reducing the risk/exposure of the buried waste, contaminated groundwater, and landfill gases, (3) they employ proven technologies from similar remediation projects, (4) they are cost-effective, and (5) they are consistent with the proposed site development.

#### 2.4 Financial Responsibility

Health and Safety Code (HSC) Section 25356.1(d) requires the Department of Toxic Substances Control (DTSC) to prepare a preliminary nonbinding allocation of responsibility (NBAR) among all identifiable potentially responsible parties (PRPs). Section 10 of this RAP contains this information.



### 3.0 SITE DESCRIPTION

#### 3.1 Site History

The Cal Compact Landfill is located at 20300 Main Street, Carson, California between Main Street and the San Diego Freeway (Interstate 405) just south of Del Amo Boulevard (Figure 1.1). The landfill occupies approximately 157 acres and was in operation from April 1959 until about December 1964. The approximate date of closing was February 1965 (BCL, 1981). Adjacent land areas have been similarly used for sanitary landfill operations. The legal description of the Cal Compact site is:

"Lots 2 through 9 inclusive of Tract No. 42385, in the City of Carson, in the County of Los Angeles, State of California, as per map recorded in Book 1056 Pages 84-88 of Maps, in the office of the County Recorder of said county.

Except the oil, gas, petroleum and other hydrocarbon substances which lie below a plane parallel to and 500 feet below the natural surface of said land, without however, any right to enter upon the surface of said land, to explore for, develop or remove said substances, but with full right to explore for, develop and remove the same by means of wells and equipment having surface locations outside the outer boundaries of said land, in and under or recoverable from said land, as reserved in the deed from Del Amo Estate Company, a Corporation, Recorded January 1, 1964, in book D-2318, page 313 of Official Records, Instrument No. 2198."

Prior to the 1930s, land immediately surrounding the Cal Compact site was used primarily for agriculture and the site was undeveloped with gently rolling terrain. Limited residential development had taken place to the south and east. During the 1940s, industry was introduced to the area, and residential developments had become more extensive. The current light-industry based community was fully developed by the 1960s-1970s.

According to Los Angeles County records, Cal Compact, Inc., a California Corporation, was issued an industrial waste disposal permit on July 17, 1959, which authorized Cal Compact to operate a Class II landfill on the site. The methods used during the landfill operation consisted of excavation, fill, and cover. All wastes were placed in trenches that were excavated adjacent to the haul roads. The haul road locations have remained unchanged throughout the time the landfill was in operation and are underlain by native soil materials.

As a Class II landfill, the Cal Compact facility was permitted to accept both municipal solid waste and specified industrial liquid wastes. Some of the wastes permitted to be accepted were the following:

- Solid organic and municipal refuse

- Drilling fluids
- Carbide or acetylene sludge
- Cleanings from interceptors, clarifiers, screen chambers for the treatment of wastewater from vehicle washing, ceramic manufacturing, laundering, and food processing
- Sludge derived from the softening of water (lime soda process)
- Paint sludge recovered from water circulated in paint spray booths
- Liquid latex wastes consisting of water and suspended synthetic rubber
- Carbon black slurry
- Diatomaceous earth filter agent (residue from filtering steam condensate).

It was estimated (BCL, 1981) that approximately 6.2 to 6.3 million cubic yards of municipal solid waste were placed in the landfill and that the landfill had a total volume of about 7.8 million cubic yards. LA County records also showed monthly summaries of the liquid wastes that were reported as accepted at the site. On the basis of the available records, BCL identified specific waste streams that had been accepted at the site and estimated that approximately 4 percent of the material received (251,611 cubic yards) may now be considered hazardous by the State of California. The BCL summary table of liquid hazardous waste volumes disposed of at the Cal Compact landfill is included as Table 3.1.

In a separate effort by the California Department of Health Services (DHS, 1982 in BKK Corp., 1990), the DHS stated that a total of 2.6 million barrels (unit of measure, not a container, equivalent volume 540,540 cubic yards) of liquid industrial waste were reported in the Cal Compact landfill. Among these waste, the DHS summary also stated that 1,301,030 barrels (270,484 cubic yards) of possibly hazardous wastes and 451,992 barrels (93,969 cubic yards) of miscellaneous liquid industrial wastes were reported as received during 47 of the 66 months of landfill operation. In addition, waste hauler's records in the Los Angeles County files list additional 149,979 barrels (31,179 cubic yards) of landfill wastes that could currently be considered hazardous by the State (Table 3.2). Based on these records, it is estimated that a total of 301,663 cubic yards of waste within the liquid waste may be possibly hazardous. This report also listed industrial wastes disposed at Cal Compact reported as follows:

- One hundred tons of organic resins and inorganic salts at the site during 1960.
- Two thousand cubic yards of waste containing heavy metals (iron, manganese, magnesium, zinc, copper, chromium III, chromium VI, and lead), organics (polar and non-polar solvents, oils and oil sludges, esters and ethers, and alcohols), and inorganic salts between 1961 and 1967 (Note: The landfill has a reported closing date of February 1965).

The Cal Compact site has been vacant and basically unused since closure of the landfill in 1965. The site is presently on the State of California, Department of Health Services, Toxic Substances Control Program (now Department of Toxic Substances Control [DTSC]) list of toxic sites and is subject to a Remedial Action Order (RAO) No. HSA87/88-040, dated March 18, 1988, requiring implementation of a Remedial Investigation/Feasibility Study (RI/FS) and development of a Remedial Action Plan (RAP) for approval by DTSC.

### 3.2 Physical Description

Prior to landfill operations, the Cal Compact site was undeveloped and gently rolling terrain. Surface elevations on the site prior to landfill usage ranged from 7 to 21 feet above Mean Sea Level (MSL). Landfill operations modified surface elevations and changed the surface water drainage patterns. The present surface elevation averages between 30 and 35 feet above MSL. Elevations on the site now vary from 11 feet above MSL near the northeast corner to 58 feet above MSL in the north-central portion of the site.

Ground surfaces at the site are currently unpaved (except for the internal roads) and covered with a light growth of native weeds and scrub vegetation. The city of Carson has extended Del Amo Boulevard eastward across the northern portion of the site. Three trailers present on-site are used for field offices.

The site has an irregular configuration. Access to the property is from Main Street which forms a portion of the western site boundary. The remaining portion of the western boundary, along with the southern boundary of the site is defined by the Torrance Lateral Channel, a Los Angeles County flood control channel. The eastern side of the property is bounded by the San Diego Freeway (Interstate 405). The northern portion of the site is essentially defined by Del Amo Boulevard. The Dominguez Channel is situated north and east, and parallel to the San Diego Freeway. The Torrance Lateral Channel discharges to the Dominguez Channel.

For the purpose of the remedial investigation, the Cal Compact site is separated vertically into two operable units. These two operable units are: (1) UOU - the Bellflower Aquitard and above and (2) Lower Operable Unit - the Gage aquifer and below. The specific definition of the UOU includes site soils, the waste zone above and within the Bellflower Aquitard, and the Bellflower Aquitard down to, but not including, the Gage Aquifer. As agreed in the Consent Decree, only the UOU is addressed in this RAP.

#### Surface Features

The topography of the site is irregular and the surface drainage is poorly developed. The top of the waste and overlying soil cover lies topographically higher than the former haul roads in many areas of the site. Figure 3.1 presents a topographic map of the site. The former haul roads for the landfill are paved and are identified as Lenardo Drive and Stamps Drive on the site maps. These two roads are the only paved roads within the site and are underlain by water lines, electric lines, storm drains, and sewer systems. The water, electric, and sewer systems are

currently inactive. Dirt roads border the site's eastern and southern perimeter along the San Diego Freeway and the Torrance Lateral Channel respectively.

Del Amo Boulevard is located outside the landfill and forms the northern boundary of the property. Three underground fuel lines, operated by Chevron, Shell, and UNOCAL, are located along or beneath Del Amo Boulevard. Two of the fuel lines are immediately north of the boulevard and the third is beneath the northernmost traffic lane.

The current surface topography and thickness of the soil cover may vary from that indicated by the investigations. Importing of soil and periodic grading of the ground surface for drainage and weed control has occurred and modified the surface.

### Natural Resources

Based on the geologic history of the site and surrounding area, it is unlikely that there are any significant amounts of mineral resources present beneath the Cal Compact site. The nearest producing oil fields are the Torrance Oil Field (approximately 2 miles southwest) and the Dominguez Oil Field (approximately 2.5 miles northeast). Two exploratory oil wells were drilled and later abandoned in the northwest portion of the site. As both of these holes were "dry" it is unlikely that there are significant oil or gas reserves beneath the Cal Compact site. Details of the efforts made to determine these well locations on the Cal Compact site, and well construction and abandonment information are presented in Section 1.3.2.1 of the RI. On the basis of Los Angeles County Flood Control District (LACFCD) records, a groundwater well listed as Well No. 825 was drilled in November 1948 for livestock watering. There was no record of abandonment of the water well. It was indicated in a memo (Neff, 1991) that this well was backfilled with soil and capped with a steel plate.

There are no national or state parks, forests, wildlife reserves, or any prime agricultural land within 2 miles of the Cal Compact site. The site is over 2 miles away from a coastal wetland and over 1 mile away from a freshwater wetland.

### Demography and Land Use

Demographics of the area surrounding the Cal Compact site are variable and include residential, commercial, light industrial, and several former Class II landfills (Figure 3.2). Residences are adjacent to the southern and western boundaries of the site. Two former landfills are located further west of the Cal Compact site. The San Diego Freeway (Interstate 405) runs along the eastern edge of the site. The Carson Mall (retail) is located east of the San Diego Freeway approximately 0.5 mile east of the site. A small, recreational baseball field and the Dominguez Golf Course, built over a former Class II landfill, border the northern edge of the site.

### Active Groundwater Production Wells

Several existing or potential groundwater supply wells were identified within a two mile radius of the Cal Compact site. Only two wells, Dominguez Water Company (DWC) well 19A and

Well 79, appear to be active drinking water supply wells within two mile of the site. Details for these wells were obtained from previous and recent search records (BKK, 1990; McLaren/Hart [M/H], 1992, and Dominquez Water Wells) and are summarized in Table 3-3. The well locations are shown on Figure 3.3.

The closest known active production well to the site is DWC Well 19A at the intersection of Carson Street and Avalon Boulevard about 0.75 miles southeast of the site. Well 19A is 685 feet deep and is screened from a depth of 510 to 665 feet in the Silverado Aquifer. DWC Well 79 is approximately 1.5 miles south of the site near the intersection of 228th Street and Avalon Boulevard. Well 79 is 925 feet deep and is screened from a depth of 480 to 652 feet in Silverado Aquifer.

There were no available records reveals any known active groundwater from the Gage Aquifer within two mile radius of the site. The closest possible Gage well is DWC Well 75A near Main and Lomita approximately 2.75 miles south of the site. In Well 75A, the shallowest perforations are 210 to 290 feet. DWC personnel indicated that the Gage Aquifer is not tapped by any DWC well for use as a potable water source.

### Climatology

The regional climate of southern California is modified by local geographic features but is determined principally by its location within the large-scale, semi-permanent high-pressure zone of the eastern Pacific. As is typical of coastal areas along the western shores of continents at lower latitudes, the region is characterized by sparse rainfall, with most of it occurring during the winter months (Keith, 1980).

During the spring and summer months, the predominant wind flow in the southern California coastal area is from the northwest. This wind pattern creates an offshore drift of warm surface water seaward to the southwest. The surface water is then replaced by cold water upwelling from below. The resultant cold ocean surface underlies warm, descending air on the eastern side of the high-pressure system and produces, by cooling and turbulent mixing, a persistent marine air layer at the ocean surface. The top of the marine air layer defines the base of a temperature inversion, above which the air is warm and dry. The presence of a cool marine layer of trapped air, capped by a temperature inversion, is the cause of the air pollution problem in the South Coast Air Basin.

Onshore sea breezes constitute the prevailing wind flow pattern at the Cal Compact site. In the morning winds usually come from a southerly direction and shift to be from the west and finally north-northwest by the early evening hours. Wind speeds typically range from 7 to 10 miles per hour. Offshore flow occurs at night and early morning with wind directions ranging from the north-northwest through northeast and east. Wind speeds average between 1 and 5 miles per hour.

### Regional Hydrogeology

A regional geologic cross section showing the principal regional groundwater-bearing units of the Cal Compact site is presented in Figure 3.4. Shallow groundwater chemistry in the vicinity of the Cal Compact site has been documented by several investigations on file with the DTSC. The groundwater contains chemicals from surrounding landfills and from some neighboring industrial activities. Shallow groundwater is encountered under unconfined conditions in the Bellflower Aquitard but is not known to be used as a source of water.

Underlying the Bellflower Aquitard is the Gage Aquifer, a regional, confined aquifer. Recharge to the Gage and other, deeper aquifers is mainly from groundwater flowing from the Central Basin across the Newport-Inglewood Fault and Uplift. The Lynwood and Silverado Aquifers are used as domestic water sources by the Dominguez Water Company (DWC).

## 4.0 SUMMARY OF RI FINDINGS

### 4.1 Previous Investigations

- Previous geologic studies and reports regarding the Cal Compact landfill are presented in Table 4.1. Summaries of these reports are presented below.

In 1975, Robert Stone and Associates conducted a geotechnical investigation for a mobile home park proposed for the site. Soil borings were completed to depths up to 76 feet below grade. It was concluded that most of the expected subsidence had already taken place and that additional subsidence should take place uniformly. The primary future development concern was management of potential methane gas accumulation.

In 1977, Converse Davis Dixon Associates conducted subsurface permeability and air testing for the proposed mobile home park. Subsurface soils consisted of natural and fill deposits of firm to stiff silty and sandy clay, clayey silt, and medium dense silty sand. Gas barriers constructed of site soil and bentonite clay mixtures were recommended to manage potential gases that may accumulate.

In 1978, Engineering-Science Inc. (ES) investigated landfill gases at the site. Soil vapor analyses indicated that methane and carbon dioxide were detected at concentrations of 40 to 50 percent and 20 to 35 percent, respectively, at depths of 5 feet and 15 feet below the ground surface. According to ES (1978), these concentrations were considered typical for a sanitary landfill undergoing anaerobic decomposition. Hydrogen sulfide was also detected at concentrations of 3 to 100 parts per million (ppm).

In 1981, BCL Associates conducted an investigation to determine the competency of the fill for pavement design and utility support. Shallow trenches and soil borings were excavated along the roadways. The soil was classified as sandy silt to clayey sand. BCL concluded that the property was suitable for development, with the exception of certain roadway sections that might require excavation, special mitigation and/or minor realignment.

BCL Associates also conducted an investigation of the waste, groundwater, and vapor on-site (BCL, 1981). Acid priority pollutants, such as carboxylic acids and dimethylbenzene-butanoic acid, were found above laboratory detection limits in the waste. Some metals were found above laboratory detection limits, but all were below Total Threshold Limit Concentrations as defined in Title 22 of the California Code of Regulations. Results of gas analyses indicated the presence of methane at 50 percent, carbon dioxide at 34 percent, and nitrogen at 13 percent. According to BCL (1981), "The results of the vapor sampling program indicate that due to biological degradation of organic materials contained in the landfill, as well as the presence of industrial wastes, the site is generating and emitting landfill gas (LFG) which contains low levels of toxic vapors." BCL also indicated that some contaminant mitigation measures may need to be taken depending on anticipated future land use.

BCL also drilled three soil borings (borehole numbers 2, 19, and 21) in their 1981 investigation. No groundwater monitor wells were constructed. Boreholes 2, 19, and 21 were located near the future locations of wells GW-1, GW-2, and GW-3, respectively. BCL also collected groundwater samples from boreholes 2 and 21. The samples were analyzed for metals, priority and nonpriority pollutants, and volatiles. According to BCL (1981), the groundwater table "fell so rapidly in hole number 19 that it was impossible to recover a sample." The groundwater samples were obtained by lowering a one quart jar into the open boring using a cable. BCL did not specify the analytical methods used to analyze the groundwater samples or the depths at which the groundwater samples were obtained. According to the analytical results of the BCL (1981) investigation, antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc were detected in one or both of the groundwater samples analyzed. In addition, selected priority and nonpriority pollutants were detected in one or both of the groundwater samples. Pesticides (0.0017 to 0.002 ppm), ethylbenzene (0.015 ppm), and pentachlorophenol (0.0019 ppm) were detected in the sample from borehole 21.

#### 4.2 McLaren/Hart Phases I and II Remedial Investigation Summary

As required in the Remedial Action Order (No. HSA87/88-040) dated March 18, 1988, McLaren/Hart (M/H) conducted Phase I and Phase II remedial investigations at the Cal Compact Landfill site. The Phase I investigation was performed in accordance with the work plan entitled "To Perform a Remedial Investigation/Feasibility Study at the Cal Compact Landfill," prepared by Bryan A. Stirrat & Associates (dated January 1990). The Phase I workplan was submitted to and approved by the lead agency, formerly the State of California Department of Health Services, Toxic Substances Control Program, Region 4, Site Mitigation Branch (now the State of California Environmental Protection Agency, Department of Toxic Substances Control [DTSC], Region 4, Site Mitigation Branch). The fieldwork for the Phase I remedial investigation was performed by McLaren/Hart between September 27 and November 16, 1990. The results from the Phase I investigation were presented in the McLaren/Hart report entitled "Remedial Investigation at the Cal Compact Landfill Site, 20300 Main Street, Carson, California," Volumes 1 through 9 (dated January 17, 1991). The Phase I report was submitted to the DTSC on January 17, 1991.

The Phase II investigation was performed in accordance with the McLaren/Hart work plan entitled "Phase II Remedial Investigation, Cal Compact Landfill, June 12, 1991." The Phase II workplan was submitted to and approved by the DTSC. The Phase II remedial investigation field activities were performed by McLaren/Hart between August 6 and October 30, 1991. An integrated report documenting the results from the Phase I and Phase II investigations was submitted to the DTSC on January 10, 1992.

In summary, the Phase I/II investigations consisted of:

- Evaluation of site hydrogeological conditions



- Chemical characterization of the soil cover and waste zone
- Evaluation of stormwater runoff water quality
- Vadose zone moisture sampling and analyses
- Groundwater chemical characterization
- Vadose zone and ambient air quality sampling and analyses
- Magnetics survey to identify the location of two former oil wells and one groundwater production well

The overall objectives of the remedial investigations were to determine the possible existence, nature, and approximate extent of contaminants of concern in the landfill soil cover and waste zone, surface water runoff, vadose zone moisture, and groundwater and air at the site.

Specific activities conducted during the Phase I/II remedial investigation included:

- Conducting waste soil sampling and analysis on 15 waste soil borings (WSB-1 through WSB-15). The waste soil boring locations are shown on Figure 4.1.
- Collecting surface water runoff samples and analyzing for metals, VOCs, SVOCs, and oil and grease. The surface runoff collection point locations are shown on Figure 4.2.
- Installing three lysimeters (L-1 to L-3) to monitor vadose zone moisture. The lysimeter locations are shown on Figure 4.2.
- Installing five vadose wells (VW-1 to VW-5) and several vadose wells for the landfill gas emissions at site. The vadose well locations are shown on Figure 4.2.
- Installing 11 gas probes at 1,000 foot spacings around the landfill perimeter to monitor potential lateral LFG emissions. Figure 4.3 shows the locations of the perimeter probes.
- Installing a climatronics wind system to collect upwind and downwind ambient air samples. As shown on Figure 4.3, three ambient air samples were collected from four locations during November 1990.
- Installing a total of 17 monitor wells (GW-1B, GW-1C, GW-2, GW-2B, GW-2C, GW-3B, GW-3C, GW-4, GW-5A, GW-5B, GW-5C, GW-6, GW-7, GW-7B, GW-7C, GW-8 and GW-7.1). Fifteen of the 17 monitor wells, including the downgradient off-site well (GW-7.1), were completed in the Bellflower aquitard. Two monitor wells (GW-2 and GW-7) were installed in the underlying Gage

aquifer. The groundwater sampling and analysis were conducted on about five separate monitoring events. The groundwater monitoring locations are shown on Figure 4.4.

- Conducting soil sampling and laboratory analysis on nine monitoring well borings (GW-1C, GW-2B, GW-3A, GW-4, GW-5B, GW-6, GW-6B, GW-7B and GW-8).
- Conducting 17 Cone Penetration Tests (CPTs) (CPT-1 through CPT-6, CCPT-1, CCPT-4, CCPT-5, CCPT-7, DCPT-1.1, DCPT-1.2, DCPT-5.1, DCPT-7.1 and DCPT-7.2, UCPT-3 and UCPT-3A) along the landfill perimeter, interior haul roads, and outside the site boundary to an approximate depth of 90 feet below grade. The CPT locations, except for UCPT-3A, are shown on Figure 4.4.
- Collecting 15 groundwater samples using BAT Enviroprobes during CPTs. Eight of the groundwater samples were analyzed to further delineate the concentrations and lateral extent of the VOCs in the Bellflower aquitard. Three of the eight samples were collected from on-site locations (CCPT-1, CCPT-7, and CPT-3) and five of the samples were collected from off-site locations (DCPT-1.1, DCPT-5.1, DCPT-7.1, DCPT-7.2, and UCPT-3). The sampling locations are shown on Figure 4.4.
- Conducting aquifer slug tests on wells completed in the Bellflower aquitard to estimate hydraulic conductivity of the unit.
- Employing several types of geophysical surveys to identify the vertical and lateral extent of the waste zone in the landfill, including 42 Direct Current (DC) resistivity depth soundings, 10 Seismic Refraction (SR) lines, and Ground Penetrating Radar (GPR) measurements at 27 locations.
- Conducting a magnetics survey to determine the locations of the two former oil wells and one former groundwater production well.

Results of these investigations are presented in Section 4.4.

#### 4.3 Supplementary CPT/Hydropunch Investigation

At the request of the DTSC, a supplemental field investigation was conducted at the Cal Compact Landfill site during the period of April 17 through May 10, 1995. Cone Penetration Testing (CPT) and hydropunch-type groundwater sampling were used to acquire additional lithologic, stratigraphic, hydrogeologic, and groundwater quality data for the Bellflower Aquitard. Water levels were measured and groundwater samples were collected for chemical analysis from the existing site monitor wells. Hydropunch technology was used to collect groundwater samples for chemical analysis at additional locations on the site.

In summary, the investigation conducted 32 CPTs, collected hydropunch type groundwater samples from 55 intervals at 37 locations, and measured water levels and collected groundwater samples from 15 monitor wells. Figure 4.5 shows the monitor well, CPT, and Hydropunch locations.

Results of the supplementary investigation are also summarized in Section 4.4.

#### 4.4 Geologic and Hydrogeologic Investigation Results

Findings from the Final RI Report (B&R Environmental, July 1995) are briefly summarized below.

##### 4.4.1 Surface Soil and Waste Zone

To delineate the thickness and areal extent of the buried waste and the existing soil cover, 15 soil samples were drilled. Using the waste soil boring data and the GPR results, the soil cover thickness, waste thickness, and the base of the waste were defined, see Figures 4.6, 4.7, and 4.8, respectively (M/H, 1992).

##### 4.4.2 Groundwater Elevations and Flow

The static groundwater elevations for the Bellflower Aquitard at the Cal Compact site were measured at -21.51 to -29.05 feet MSL during 1990/1991 (M/H, 1992) and at -14.83 to -22.59 feet MSL on May 1995 (B&RE, 1995). These data indicated a water table rise of about 6.5 feet between 1990/1991 and 1995.

Based on these data, groundwater flow in the Bellflower Aquitard is generally in the south-southwest direction. This is consistent with the M/H's 1992 assessment. The groundwater contour map is presented in Figure 4.9. The gradient ranges from 0.001 feet/foot in the northwest portion of the site to 0.010 feet/foot in the southeast portion of the site. The central portion of the site has an average gradient of 0.004 feet per foot.

Groundwater flow within the Bellflower Aquitard is influenced by a number of factors including the site stratigraphy, possible leakage from the Dominguez Channel, irrigation on the golf course north of the site, and waste cell/haul road geometry. In addition to the site geometry, the geotechnical soil characteristics of the soil cover over the waste cells influences the infiltration of precipitation. Groundwater could potentially be in contact with the base of the waste cells under the western half of the site since the elevation of the potentiometric surface is above the elevation of the waste cell base.

#### 4.4.3 Background Soil and Groundwater Concentrations

Background metal concentrations in soil at the Cal Compact Landfill site were calculated based on analytical data obtained from soil samples collected at depths of 10 and 30 feet at monitor well GW-2B and GW-4 locations which are upgradient from the waste. The background soil metals concentration are presented in Table 4.2. Background groundwater metals concentrations were determined in the same fashion based on analytical results from eight sampling events between November 1990 and May 1995 from the four upgradient monitor wells GW-1C, -2C, -3C and GW-4. Results of the background groundwater metal concentration are listed in Table 4.3. Background concentrations for anthropogenic chemicals in both soil and groundwater are assumed to be zero.

#### 4.4.4 Surface Water and Runoff Concentrations

##### Background

Surface runoff samples were collected by the County of Los Angeles, Department of Public Works (LADPW) from the Torrance Lateral Channel immediately upgradient of the site at Main Street and analyzed. The analytical results for one sample collected on February 28, 1991, are listed in Table 4.4 (M/H, 1992) as background values.

##### Metals in Rainwater Runoff

Four surface runoff samples at three locations were collected and analyzed for metals on February 28, 1991. An earlier sample collected on January 4, 1991 at location SWC-3 was also analyzed for a limited suite of metals. Results of these analytical data are presented in Table 4.5 (M/H, 1992). For comparison purposes, drinking water Maximum Contaminant Levels (MCLs) are also included in this table.

##### Volatile Organic Compounds

Seven VOC samples were collected from four surface water locations at the landfill between January and March 1991. Only xylene (4 ppb) was detected at SWC-3.

##### Semivolatile Organic Compounds

Four SVOC samples were collected at three surface water sampling locations at the landfill in January and February 1991. Only bis (2-ethylhexyl) phthalate (4 ppb) and butyl benzyl phthalate (8 ppb) were detected in the January 1991 sample at location SWC-2.

##### Oil and Grease

Oil and grease analyses were performed on one sample collected on January 4, 1991 at location SWC-2, and on four samples collected at four locations during the February/March 1991 sampling round (M/H, 1992). The analytical results indicated no detectable total petroleum

hydrocarbons (concentrations < 0.5 ppm) in the January sample. Oil and grease were detected in samples from all four sampling locations during the February/March sampling event. The concentrations detected ranged from 0.36 to 0.62 ppm. These concentrations may be the result of laboratory error since a concentration of 0.34 ppm was detected in the method blank (M/H, 1992).

#### 4.4.5 Soil Cover Concentrations

##### Metals

Sixteen samples of the soil cap covering the waste trenches were collected from 15 locations. Metals that were detected at concentrations higher than the identified background concentrations are listed below.

<u>Metal</u>	<u>Concentration Range (ppm)</u>
Antimony	1.8 - 4.8
Beryllium	<0.05 - 0.1
Calcium	4,800 - 50,000
Lead	<0.5 - 39
Silver	<0.05 - 5.4
Zinc	40 - 190

##### Volatile Organic Compounds

Sixteen samples of the soil cover were collected from 15 locations. Toluene (0.006 to 0.014 ppm) was found in four samples. It was the only VOC detected.

##### Semivolatile Organic Compounds

Sixteen samples of the soil cover were collected from 15 locations. Only one location, WSB-1, detected the following, acenaphthene (0.47 ppm), bis (2-ethylhexyl) phthalate (1.1 ppm), butyl benzyl phthalate (0.72 ppm), dibenzofuran (0.38 ppm), diethyl phthalate (1.8 ppm), 2,4-dimethyl phenol (0.37 ppm), 2-methyl-naphthalene (0.32 ppm), 4-methyl-phenol (1.1 ppm), naphthalene (0.53 ppm), and phenanthrene (0.7 ppm) were detected at WSB-1 location only.

##### Pesticides and PCBs

Pesticides were detected in soil cover samples at 10 of 15 sampled locations. Pesticides 4,4'-DDT, its breakdown products (4,4'-DDD and 4,4'-DDE), alpha-BHC, beta-BHC, and endrin were detected at concentrations ranging from 0.0008 to 0.063 ppm.

No PCBs were detected in any of the soil cover samples.

#### 4.4.6 Waste Zone Concentrations

##### Metals

A total of 13 composite waste zone samples, collected at 15 locations, were analyzed for metals. Metals that were detected at higher than background concentrations are:

<u>Metal</u>	<u>Concentration Range (ppm)</u>
Antimony	1.7 - 4.8
Calcium	60 - 67,000
Chromium	11 - 44
Copper	20 - 27,000
Lead	<0.5 - 340
Molybdenum	<0.1 - 2.1
Nickel	5.9 - 56
Zinc	57 - 570

##### Volatile Organic Compounds

A total of 34 waste zone samples, collected at 15 locations, were analyzed for VOCs. The detected VOCs are:

<u>Constituent</u>	<u>Concentration Range</u>
Acetone	0.026-2.6 ppm
Benzene	0.025-0.041 ppm
2-butanone	0.102-0.477 ppm
Carbon disulfide	0.005-0.008 ppm
Chlorobenzene	56 ppm
1,4-dichlorobenzene	0.037-124 ppm
Ethyl benzene	0.005-120 ppm
2-hexanone	0.032 ppm
4-methyl-2-pentanone	0.17 ppm
Methylene chloride	0.011-0.030 ppm
Toluene	0.009-12 ppm
Xylenes	0.016-10 ppm

##### Semivolatile Organic Compounds

A total of 12 composite waste zone samples, collected at 12 locations, were analyzed for SVOCs. The detected SVOCs are summarized below:

<u>Constituent</u>	<u>Concentration</u>
Benzo(a)anthracene	0.80 ppm
Benzo(b)fluoranthene	0.72 ppm

Bis(2-ethylhexyl)phthalate	0.33-7.5 ppm
Butylbenzylphthalate	0.26-5.0 ppm
Chrysene	0.30-0.98 ppm
1,4-dichlorobenzene	16 ppm
Diethylphthalate	2.8 ppm
di-N-butylphthalate	0.51-0.52 ppm
Fluoranthene	0.69 ppm
2-methylnaphthalene	0.29-16 ppm
4-methylphenol	0.50-4 ppm
Naphthalene	0.50-52 ppm
Phenanthrene	0.24-224 ppm
Phenol	1.0-1.5 ppm
Pyrene	0.26-0.55 ppm

#### Pesticides and PCBs

A total of 13 composite waste samples, collected from 13 locations, were analyzed for pesticides and PCBs. The only pesticides detected were:

<u>Constituent</u>	<u>Concentration</u>
4,4'-DDT	0.034 to 0.08 ppm
4,4'-DDD	0.003 to 0.10 ppm
4,4'-DDE	0.0034 to 20 ppm
Alpha-BHC	0.044 ppm
Dieldrin	0.0013 and 0.59 ppm

No PCBs were detected in any of the waste zone samples.

#### 4.4.7 Groundwater Concentrations

The nature and both lateral and vertical extent of groundwater contamination at the Cal Compact Landfill site were identified by tabulating and mapping contaminant concentrations in the Final RI Report (B&RE, 1995). The data used for this evaluation is based on all available data from the relevant investigations (M/H, 1991/1992 and B&RE, 1995).

#### VOC Lateral Distribution

Summaries of the groundwater VOC data are compiled in Table 4.6 from M/H's investigations and Tables 4.7 (hydropunches) and 4.8 (CPTs) from the supplementary investigation (B&RE, 1995). Based on data presented in Tables 4.7 and 4.8, Figure 4.10 shows the total VOC concentrations detected in groundwater samples from the sands of the Bellflower aquitard. As shown in Figure 4.10, the highest concentration of total VOCs are located along the southwest corner of the site extending approximately 1200 feet northwest along the southwest perimeter. Highest total VOC detected was about 50,300 ppb. VOC concentrations decrease rapidly from the area of highest VOC concentration going off-site following the southwesterly direction of

groundwater flow. SCPT-36, located 370 feet off-site in a southwesterly direction, from the area of highest VOC concentration contained a total VOC concentration of 1.5. ppb at a depth of 62 feet below grade (-51 feet MSL). SCPT-37, located approximately 720 feet off-site in a southwesterly direction from the area of highest VOC concentration, shows a decrease in total VOC concentration to 0.5 ppb at a depth of 59 feet below grade (-45 feet MSL). The decrease in VOC concentration to an almost non-detect concentration from concentrations as high as 50,000 ppb in a short horizontal distance indicates slow groundwater movement and contaminant dilution.

In a similar manner as Figure 4.10, Figure 4.11 shows BTEX concentrations in the groundwater from the sands of the Bellflower aquitard. Again, the highest area of BTEX concentration is located along/near the southwest side of the property line with a highest BTEX value of 50,300 ppb. Comparisons of the BTEX and total VOC show that BTEX components are the main contaminants in groundwater at the site. Two areas of the site, north central and southeastern, show total VOC contamination of 140.6 ppb and 73.4 to 81.6 ppb, respectively, but do not have a significant component of BTEX.

#### VOC Vertical Distribution

To illustrate the vertical distribution of the VOCs in the Bellflower sand, total VOCs are evaluated alongside with cross sections of inferred stratigraphy under the site. Figures 4.12 and 4.13 represent the cross sections along the west/southwest and south side of the property boundaries, respectively. As shown in these figures, VOC concentrations are primarily located in the Bellflower sands at depths of -30 to -50 feet MSL. Again, the total VOC concentrations decrease rapidly toward the base of the UOU. VOC concentrations detected close to the base of the Bellflower Aquitard range from non-detect to 11.0 ppb.

#### Lateral and Vertical Distribution of SVOCs

The lateral distribution of semivolatiles in groundwater from the sands of the Bellflower Aquitard is limited to the areas of highest VOC concentrations. The SVOCs detected in the groundwater are summarized below

<u>Constituent</u>	<u>Concentration (ppb)</u>
Bis(2-ethylhexyl)phthalate	<4.0 - 9.2
2-methylnaphthalene	<1.0 - 210
di-N-butylphthalate	<2.0 - <50, 2.2, 2.3
2,4-dimethylphenol	<1 - <25, 36
Naphthalene	<1 - 910

#### Distribution of Metals in Groundwater

Metal concentrations in groundwater exhibit a similar lateral distribution as the VOCs and BTEX distributions shown on Figures 4.10 and 4.11. The highest levels of contamination occur in the southwest and southeast sections of the site. A summary of the metal concentrations in the



groundwater which exceeded both the analytical detection limits and the primary (California State or federal) MCLs are summarized as follows.

<u>Metals</u>	<u>Concentration Range (ppm)</u>		<u>MCLs</u>
	<u>All Monitor Wells</u>	<u>CPTs (1995)</u>	
Aluminum	0.13 - 420	0.34 - 160	1000 (State only)
Antimony	0.021 - 0.027	0.01 - 0.29	0.006 Fed. only)
Arsenic	0.01 - 0.23	0.019 - 0.76	0.05
Beryllium	ND	0.002 - 0.007	0.004 (Fed. only)
Chromium	0.02 - 0.65	0.03 - 0.43	0.05
Lead	ND	0.005 - 0.26	0.05
Nickel	0.01 - 0.56	0.02 - 0.78	0.1 (Fed. only)
Selenium	0.01 - 0.03	0.034 - 1.73	0.01
Silver	0.052 - 0.24	ND	0.05
Thallium	0.13 - 0.14	0.04 - 0.26	0.002 (Fed. only)

To illustrate the vertical distribution of the hazardous metals across the site, total RCRA metal concentrations are shown alongside with cross sections of inferred stratigraphy under the site. Figures 4.14 and 4.15 represent the cross sections along the west/southwest and south side of the property boundaries, respectively. Along with metal concentrations, Total Dissolved Solids (TDS) and field Conductivity measurements are also shown at where samples were taken.

#### 4.5 Air Investigation Results

##### 4.5.1 Vapor Monitoring

Air sampling of five vadose wells was conducted by M/H. Two Calderon<sup>1</sup> compounds, vinyl chloride (2.0 to 20.5 ppm) and benzene (1.4 to 8.8 ppm) were detected in all five wells.

Concentration ranges for the detected non-Calderon VOCs are as follows:

<u>Constituent</u>	<u>Concentration</u>
Ethylbenzene	13.9 to 276 ppm
Toluene	7.6 to 45.7 ppm
Xylenes	9.0 to 49.4 ppm
Dichlorodifluoromethane	8.4 to 39.6 ppm

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<sup>1</sup> Assembly Bill 3525 (Calderon) of 1984 and amendments require the testing of air emissions from existing solid waste site for the purpose of solid waste air quality assessment test. Specific Calderon compounds include: Chloroethene (Vinyl Chloride), Benzene, 1,2-Dibromoethane (Ethylene Dibromide), 1,2-Dichloroethane (Ethylene Dichloride), Dichloromethane (Methylene Chloride), Tetrachloroethane (Perchloroethylene), Tetrachloromethane (Carbon Tetrachloride), 1,1,1-Trichloroethane (Methyl Chloroform), Trichloroethylene, and Trichloromethane (Chloroform).

Other gas compounds ranged in volume percent concentration (volume gas/ volume air) are as follows:

<u>Constituent</u>	<u>Concentration</u>
Methane	26.7 to 64.4%
Carbon monoxide	<0.1%
Carbon dioxide	15.7 to 30.6%
Oxygen	0.2 to 9.2%
Nitrogen	15.5 to 43.4%

#### 4.5.2 Landfill Gas Monitoring

M/H installed 11 gas probes at 1,000 foot spacings around the landfill perimeter to monitor potential lateral LFG emissions. The concentration ranges detected at these gas probes are as follows:

<u>Calderon Compounds</u>	<u>Concentration Range in ppb (no. of point detected)</u>
Vinyl chloride	80.9 (1)
Benzene	1.4 - 57.3 (5)
Methylene chloride	4.6 - 9.3 (8)
Perchloroethylene	2.0 - 57.9 (8)
Methyl chloroform	2.5 - 3.2 (3)
Trichloroethylene	7.5 (1)
Chloroform	8.2 - 4.0 (2)
<u>Non-Calderon compounds</u>	
trans-1,2-Dichloroethene	3.4 - 4.7 (7)
Toluene	4.4 - 17.7 (11) (note: blank is 5.4 ppb)
Xylenes	3.3 - 957.0 (5)
Chlorotrifluoromethane	9.2 - 420.0 (6)
Dichlorodifluoromethane	4.5 - 129.0 (6)
Trichlorofluoromethane	2.8 - 26.9 (3)
Methane (ppmv)	48.5 - 29,981 (2)

#### 4.5.3 Ambient Air

A Climatronics wind system was installed to collect upwind and downwind ambient air samples. Three ambient air samples were collected from four locations during November 1990. All collections were reported in milligrams per cubic meter. Benzene (0.005 to 0.039), methyl chloroform (0.017 to 0.065), and toluene (0.017 to 0.091) were detected in all the samples at all locations. Methylene chloride (0.023 to 0.118) was detected in all samples except for the one collected (<24 hrs./downwind) on November 15, 1990. Xylene (0.018 to 0.082), perchloroethylene (0.022) and dichlorofloromethane (0.080 to 0.093) were detected.

## 5.0 SUMMARY OF RISK ASSESSMENT

### 5.1 Biological Investigation Results

Sensitive ecosystems are defined as natural ecosystems which are rare in the project area, are relic ecosystems which provide unique habitats or are composed of unique assemblages of plants and animals. As an example, sensitive ecosystems would include rookeries, wetland, remnant native prairies, or critical habitats of threatened or endangered species.

The vicinity surrounding the site is heavily disturbed by human activity, predominantly urban development. Most natural habitats in this area have been replaced by residential, commercial and transportation land uses with some open space remaining in the form of vacant lots, utility rights-of-way, and a golf course. The Cal Compact Landfill site has been totally disturbed by excavation and fill activities.

Plant life in the project vicinity consists almost entirely of landscaping in residential areas, parks, golf courses and around commercial establishments. The Cal Compact site has been extensively graded and cleared on a regular basis since closure of the landfill. Due to the grading and clearing, the site is mostly covered with indigeous weeds. Plant species occurring on-site are primarily introduced grassy species found throughout coastal, urban regions of Southern California. Animal species present within the project area consist of mammalian, avian and reptilian species which have adapted to urban environments in Southern California (Carson City, 1993). Due to the past site activities (i.e., landfill and agricultural uses) at the site, specific biological investigations were not deemed necessary. Ecosystems potentially present in the project area were reviewed through use of the U.S.G.S. quadrangle map (Torrance Quadrangle) and the Metro 2000 - Final Project and Program Environmental Impact Report, dated November, 1993.

The water bodies closest to the site are the Torrance Lateral Channel and the Dominquez Channel. Both of these features are man-made, concrete-lined, drainage channels. Both are utilized for flood control and stormwater run-off. Drainage from the site is channeled into four concrete storm drains which flow into the Torrance Lateral Channel, which empties into the Dominquez channel. Due to the nature of the facilities and the lack of natural environments, no ecological receptors are present in these concrete structures.

Human activity such as heavy urban development around the site vicinity and specifically, grading and clearing of the site, have eliminated any sensitive ecosystems from the immediate project area. Due to the heavily urbanized nature of the area, most fauna (except birds) from remnant natural areas in the region would be precluded from migration onsite.

Based on the past and present uses of the site, and the vicinity around the site, there are no areas that will be impacted by the site's remediation, that meet the definition of a sensitive ecosystem.

## 5.2. Contaminants Of Concern

Not all compounds identified in the RI pose significant health risks; thus not all identified compounds need to be considered in future remedial actions. Two lists of contaminants can be generated from the baseline risk assessment, the Contaminants of Concern (COCs), which actually present potential risk, and those that are not COCs. The purpose of identifying COCs is to focus on the contaminants which require remediation for the protection of human health and the environment.

The National Contingency Plan (NCP) defines the point of departure for unacceptable risk as one in a million ( $1 \times 10^{-6}$ ) for carcinogenic compounds. The acceptable limit for noncarcinogenic effects is a hazard index (HI) of less than 1.0. A HI of greater than 1.0 is considered indicative of a potential toxic effect. However, since multiple contaminants are being considered, the screening point of departure for this FS is set at a  $10^{-7}$  carcinogenic risk and a Hazard Index of 0.2 to ensure no significant contaminants are eliminated. Therefore, any contaminant with a cancer risk level or HI less than this FS point of departure is not typically considered significant and is not subject to further consideration.

Chemical contaminants of concern, by media, are shown in Table 5-1.

## 5.3 Summary of Baseline Risk Assessment

The purpose of the baseline risk assessment is to evaluate the nature and extent of the human health risks associated with exposure to site-related chemicals under defined hypothetical future uses of the site. Previous investigations have demonstrated the presence of methane, certain volatile and semivolatile chemicals, and metals in soils, waste, and groundwater at the site.

The Risk Assessment was prepared under the direction of the State of California Environmental Protection Agency Department of Toxic Substances Control, Region 4, Site Mitigation Branch (DTSC) and in accordance with DTSC and USEPA guidelines (California Environmental Protection Agency, 1990; and USEPA, 1988a, 1989a, 1991a, 1991b) and the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). In accordance with USEPA guidance and with specific directions from DTSC, three hypothetical exposure scenarios for the Cal Compact site are evaluated. Each of the three scenarios assumes that no remedial actions or controls are in place. However, it is not the recommendation of B&RE that any of the future use scenarios evaluated in this assessment be pursued without adequate and appropriate remedial actions and controls.

Highly conservative assumptions regarding chemical concentrations, chemical fate/transport, and human exposure are incorporated into each of the three scenarios. The conservative nature of the parameters presents the "worst-case possibilities" in each case. For example, the actual thickness of the soil cover on the landfill ranges from a minimum of 3 feet up to 30 feet. The conservative risk assessment assumes that the soil cover is only 3 feet thick over the entire landfill. This significantly influences the amount of vapor migrating to the surface. The conservative assumptions used in this risk assessment are not intended to reflect actual conditions, but are used to "err on the side of safety."

The baseline risk assessment results are summarized below for each scenario. Age-specific increased cancer risks (carcinogens), and noncancer hazard indices (noncarcinogens) are presented, as well as the predominant pathways of exposure.

Hazard Index (HI) is a numerical representation of the potential for noncarcinogenic health effects. If the HI exceeds unity (1), there may be concern for potential noncancer effects. Cancer risks calculation based on arithmetic or geometric mean (mean-based) and the 95% upper confidence limit of the mean (UCL - based) are presented. Cancer risk for 30-year exposure is the combined risks for 24-year adult exposure and 6-year child exposure. Existing risks are calculated based on revised representative concentrations and exposure input parameters.

### Scenario I--Long-Term Residential Use

A hypothetical community with residential housing is developed on the landfill. This scenario assumes unrestricted disruption of the current soil cover (by the residents), and evaluates exposures for both children and adults living on the site. Consideration are made for the excavation of swimming pools, gardening, inhalation of vapors, drinking groundwater and other associated exposures. The scenario also evaluates the site-related risks to children and adults living off-site within neighboring residential communities.

- On-site Residents

Increased cancer risk for child:  $8.3 \times 10^{-3}$  (mean-based);  $1.4 \times 10^{-2}$  (UCL-based).  
Increased cancer risk for adult:  $6.9 \times 10^{-3}$  (mean-based);  $1.2 \times 10^{-2}$  (UCL-based)  
Noncarcinogenic health hazard index for child: 120 (mean-based); 210 (UCL-based)  
Noncarcinogenic health hazard index for adult: 26 (mean-based); 45.3 (UCL-based)  
Predominant exposure pathways - groundwater ingestion, vapor inhalation  
Explosive levels of methane gas reached in unventilated home space: 45 days

- Off-site Residents

Increased cancer risk for child:  $7.7 \times 10^{-5}$  (mean-based);  $7.6 \times 10^{-5}$  (UCL-based).  
Increased cancer risk for adult:  $5.0 \times 10^{-5}$  (mean-based);  $8.6 \times 10^{-5}$  (UCL-based).  
Noncarcinogenic health hazard index for child: 0.9 (mean-based); 1.3 (UCL-based).  
Noncarcinogenic health hazard index for adult: 0.3 (mean-based); 0.4 (UCL-based).  
Predominant exposure pathways - vapor inhalation

### Scenario II--Long Term Commercial/Industrial Use

A hypothetical situation, with workers on the site engaged in commercial or industrial activities. No disruption of the current soil cover occurs under this scenario. This scenario also estimated risks to the potential periodic on-site trespasser.

- On-site Adult Workers

Increased cancer risk:  $3.8 \times 10^{-5}$  (mean-based);  $6.6 \times 10^{-5}$  (UCL-based).  
Noncarcinogenic health hazard index: 0.2 (mean-based); 0.3 (UCL-based).

Predominant exposure pathways - vapor inhalation

- Trespasser

Increased cancer risk for child:  $4.2 \times 10^{-5}$  (mean-based);  $7.3 \times 10^{-5}$  (UCL-based).

Increased cancer risk for adult:  $3.2 \times 10^{-5}$  (mean-based);  $5.8 \times 10^{-5}$  (UCL-based).

Noncarcinogenic health hazard index for child: 0.05 (mean-based); 0.07 (UCL-based).

Noncarcinogenic health hazard index for adult: 0.02 (mean-based); 0.02 (UCL-based).

Predominant exposure pathways - vapor inhalation (carcinogenic effects); Dermal contact (noncarcinogenic effects)

### Scenario III--2-Year Construction and Excavation Activities

This scenario evaluates risks to on-site workers and off-site residents during development, construction and excavation activities on the landfill over a period of two years. Under these conditions, the current soil cover is completely removed for a period of two years.

- Adult Worker

Increased cancer risk:  $5.0 \times 10^{-5}$  (mean-based);  $9.1 \times 10^{-5}$  (UCL-based).

Noncarcinogenic health hazard index: 1.6 (mean-based); 1.7 (UCL-based).

Predominant exposure pathways - vapor inhalation

- Neighboring Off-site Resident

Increased cancer risk for child:  $1.6 \times 10^{-4}$  (mean-based);  $2.9 \times 10^{-4}$  (UCL-based).

Increased cancer risk for Adult:  $3.4 \times 10^{-5}$  (mean-based);  $6.3 \times 10^{-5}$  (UCL-based).

Noncarcinogenic health hazard index for child: 4.6 (mean-based); 7.8 (UCL-based).

Noncarcinogenic health hazard index for adult: 0.98 (mean-based); 1.7 (UCL-based).

Predominant exposure pathways - vapor inhalation

### Summary

The risk findings depend upon the assumptions regarding probable future use of the site. In particular, excavation activities associated with unrestricted construction and/or the development of the landfill into permanent homes is likely to result in greater risks to human health.

If the site is developed into permanent housing, the most immediate health hazard would be related to the possible accumulation of methane gas beneath housing structures and the potentially high injury or death rate that result from an explosion or fire. In addition, long-term residents might be subject to elevated cancer risks and noncarcinogenic health hazards. It should be noted that multiple regulatory restrictions are now in place in Southern California to avoid such hazards in the future.

In contrast, the estimated health risks are lower for the commercial/industrial future use scenario. Based on "reasonable maximum exposure" or "UCL-based" calculations, the estimated

lifetime cancer risks to off-site residents/trespassers (1.3 per 100,000) and on-site workers (7.0 per 100,000) are well within target risk levels of 1 per 10,000 to 1 per 1,000,000..



## **6.0 EFFECTS OF CONTAMINATION UPON PRESENT, FUTURE, AND PROBABLE BENEFICIAL USES OF RESOURCES**

### **6.1 Present Uses of the Land and Water in the Upper Operable Unit**

The 157-acre Cal Compact Landfill site operated as a Class II landfill from 1959 until approximately 1965. The site became inactive and unproductive upon suspension of landfill operations. In 1978, the Carson Redevelopment Agency investigated the site's development potential. Thereafter, the site was rezoned mixed-use, commercial/light industrial and residential. Some basic infrastructure, underground utilities, roads and drainage, were installed. Development did not progress and the site remained generally unproductive. From 1991 to 1993, a concrete (demolition debris) crushing and recycling facility operated on small portion of the site. Since 1992, a small portion of the site, less than an acre, houses two mobile offices. The two offices are operated by Commercial Realty Project, Inc. Title to the site is currently held by World Industrial Center, LTD, a reorganized debtor under Chapter 11 of the U.S. Bankruptcy Code.

No significant beneficial use has been made of either the land or the groundwater in the Upper Operable Unit of the site. Except for the suspended development attempt, no significant beneficial use has been made of the land since the suspension of landfill operations in 1968. Since 1959, there are no records of any attempt to make beneficial use of the Bellflower Aquitard groundwater (Ref: record search, Section 1.3.3.1, RI, B&RE, 1995).

### **6.2 Future Uses of the Land and Water in the Upper Operable Unit**

Currently, Commercial Realty Projects, Inc. plans to develop the site as commercial/light industrial. Generally, plans call for an enclosed, retail shopping mall near the center of the property, surrounded by access roads and parking lots. The perimeter of the property will provide additional retail and commercial building sites. The perimeter sites will also be served by access roads and parking lots. Except for specific stormwater run-off retention and landscaped areas, the entire site will eventually be covered by either building foundations, parking lots or roadways.

Currently, there are no specific plans to make beneficial use of the Bellflower Aquitard groundwater. However, consideration may be given to recycle some treated groundwater on site for irrigation purposes.

### **6.3 Probable Beneficial Uses of the Land and Water in the Upper Operable Unit**

Remedial action of the Upper Operable Unit, as described in this final RAP, will allow the proposed redevelopment of the site to proceed. Redevelopment will produce substantial beneficial use of the land, including economic benefits in the form of new job opportunities for the community and new tax revenues for the City of Carson and the State of California.

In the future, the potential exists for treated effluent from the proposed Bellflower Aquitard groundwater extraction and treatment system, to be beneficially used for landscape irrigation. This potential future use of the Bellflower Aquitard groundwater will depend on the quantity and quality of the treated effluent.

## 7.0 REMEDIAL ACTION

### 7.1 Summary of Remedial Action Alternatives

The development, screening, and detailed analysis of remedial action alternatives is presented in the Final Report - Feasibility Study for Cal Compact Landfill (B&R Environmental, August 1995). Information contained in the FS report is summarized here.

The remedial alternatives for the site were assembled using the technologies and process options that remained after screening. The six remedial alternatives for the site include:

- "No Action"
- Limited Action (Monitoring of Groundwater and Landfill Gas)
- Excavation/Off-site Incineration/Groundwater Treatment
- Excavation/Off-site Disposal/Groundwater Treatment
- Containment/Collection and Treatment of Groundwater and Landfill Gas
- Containment/Collection and Treatment of Groundwater and Monitoring of Landfill Gas

Limited Action, Excavation/Off-site Incineration/Groundwater Treatment, and Excavation/Off-site Disposal/Groundwater Treatment were evaluated and eliminated due to high costs and the difficult implementability associated with excavation of over 7 million cubic yards of buried waste.

The remaining alternatives were evaluated against nine specific criteria. These evaluation criteria serve as the basis for the detailed analysis and the rationale for choosing the selected remedial alternative. The seven evaluation criteria are listed below:

- Overall protection of human health and the environment
- Compliance with ARARs
- Long-term effectiveness and permanence
- Reductions in toxicity, mobility, or volume
- Short-term effectiveness
- Implementability
- Cost
- State acceptance
- Community acceptance

#### 7.1.1 No Action

The No Action alternative involves no remedial activities at the Cal Compact site. The alternative provides a comparative baseline against which other alternatives can be evaluated.

This alternative will not achieve overall protection of human health and the environment, and will not actively reduce or control the migration of soil gas or groundwater contaminants to off-site areas. Risk associated with this alternative is the same as the baseline risk associated with the existing site conditions.

This alternative will not result in the reduction of toxicity, mobility, or volume of contaminants found at the site. There is no cost associated with this alternative. Implementation of this alternative is not anticipated to receive agency approval.

#### 7.1.2 Containment/Collection and Treatment of Groundwater and Landfill Gas

The entire site would be capped. A foundation layer would be spread and compacted. Then a barrier layer of clay soil would be placed. A final, protective soil layer would complete the cap. Dust and vapor suppression controls will be implemented during cover installation

Groundwater will be collected and treated prior to discharge. The collection system will consist of a series of extraction wells placed along the western and southern boundaries of the site. The groundwater will be treated on site in a centrally located plant. Treatment will consist of precipitation of metals and carbon adsorption of VOCs and some SVOCs for discharge to surface water or carbon adsorption of VOCs and some SVOCs for discharge to the local sanitary sewer system. In either case, some treated groundwater may be used on-site as irrigation water. Monitor wells will be located around and off the site in both aquifers. Groundwater will be sampled quarterly to document the effectiveness of the remediation treatment system and determine compliance with the Remedial Action Goals (RAGs).

Gas collection will consist of a series of vertical extraction wells on the perimeter of the site. The collected gasses will be flared. Perimeter monitoring probes will be provided to determine the effectiveness of the systems. Landfill gas control will be provided when the results of gas monitoring indicate exceedance of the RAGs in association with relevant regulatory limits.

A surface cover will protect human health and the environment from exposure to contaminants of concern that are present in the buried waste. The surface cover will prevent dermal contact with the existing contaminants and reduce the potential for inhalation of landfill gases or particulates. Infiltration of surface waters will be greatly reduced by construction of a cover and will minimize the potential for additional landfill gas production and further migration of contaminants from the buried waste to the underlying groundwater. Off-site migration of contaminated groundwater will also be controlled through groundwater extraction and treatment. Landfill gas monitoring and control along the property boundary will control off-site migration of gases in the vadose zone. The collected landfill gases will be flared to eliminate contaminants from the environment.

Long-term risks from untreated buried wastes will be reduced by proper maintenance of the final cover. A post closure monitoring program will be developed to include activities to maintain and repair identified cover failures. Long-term risks associated with accumulated landfill gases

and contaminants in groundwater will be reduced by implementing landfill gas monitoring and collection and treatment and groundwater collection and treatment. A monitoring program will evaluate each treatment systems effectiveness.

Although not a treatment, a surface cover will reduce the mobility of the contaminants of concern that are present in the buried waste. Mobility of these contaminants will be reduced by preventing infiltration of surface water into the buried waste. The mass of contaminants that are contained in the buried waste material will not be substantially reduced. Groundwater collection and treatment will reduce the volume and concentration of contaminants in the underlying aquifer. The reduction in the volume and concentration of contaminants in the groundwater reduces the risk and/or toxicity associated with this media. Collection and treatment of landfill gas will result in compliance with the relevant regulations.

Short-term risks that are associated with implementation of this alternative include creating dust/particulate emissions from the buried waste, releasing landfill gases, and direct contact with exposed buried waste. The community in the near vicinity of the site will be protected by utilizing techniques to reduce dust, particulate, and vapor emissions. Materials that are generated during construction of the groundwater extraction wells and landfill gas extraction wells equipped with gas monitoring probes will be handled in a manner that does not generate appreciable quantities of dust, particulates, or vapors. Waste materials that are removed from the site will be properly managed and disposed of at appropriate facilities.

The construction equipment and materials that will be used are readily available. Construction methods and techniques that will be employed follow industry standards. The groundwater and landfill gas extraction wells/probes will be constructed using standard drilling equipment and well construction materials. The groundwater and landfill gas systems proposed are currently in widespread use. Groundwater and landfill gas systems will be constructed using currently available equipment and materials. Construction of these systems will follow industry standards.

Capital costs for this alternative are high and O&M costs are high compared to the other alternative.

### 7.1.3 Containment/Collection and Treatment of Groundwater and Monitoring of Landfill Gas

The entire site would be capped. A foundation layer would be spread and compacted. Then a barrier layer of clay soil would be placed. A final, protective soil layer would complete the cap. Dust and vapor suppression controls will be implemented during cover installation. Groundwater will be collected and treated prior to discharge. Monitor wells will be located around the site and groundwater will be sampled on quarterly intervals. Perimeter landfill gas monitoring probes will be provided. Landfill gas will be analyzed periodically according to landfill gas monitoring plan to determine the presence of gas migration.

A surface cover will protect human health and the environment from exposure to contaminants of concern that are present in the buried waste. The surface cover would prevent dermal contact with the existing contaminants and reduce the potential for inhalation of landfill gases or

particulates. Infiltration of surface waters will be greatly reduced which minimizes the potential for additional landfill gas production, and further migration of contaminants from the buried waste to the underlying groundwater. Off-site migration of these substances will also be reduced through groundwater extraction and treatment. This alternative will not actively reduce or control the migration of contaminants in soil gas to off-site areas. Lack of landfill gas controls will increase the potential for gases to collect under the surface cover and migrate upward.

Long-term risks from untreated buried wastes will be reduced by proper maintenance of the final cover. A post closure monitoring program will be developed to maintain and repair identified cover failures. Potential risks associated with landfill gas contaminants, if present, will not be reduced.

Although not a treatment, a surface cover will reduce the mobility of the contaminants of concern that are present in the buried waste. Mobility of these contaminants will be reduced by preventing infiltration of surface water into the existing soil cover/buried waste. The volume of contaminants that are contained in the buried waste material will not be substantially reduced.

The short-term risks that are associated with implementation of this alternative include creating dust/particulate emissions from the existing soil cover/buried waste, releasing landfill gases, and direct contact with exposed buried waste. These risks will be mitigated during implementation of this alternative by incorporating proper safeguards.

The construction equipment and materials that will be used during construction activities are readily available. Construction methods and techniques that will be employed follow industry standards. Materials for dust, particulate, and vapor control, such as water, suppressant foam, and polyethylene sheeting, that will be used are also readily available.

Capital costs for this alternative are high and O&M costs are moderate compared to the other alternative.

## 7.2 Recommended Remedial Action

Information used in the selection of a preferred remedial action alternative is presented in Section 6.0 - Comparative Analysis in the FS Report. Summary of the comparative analysis (ref.: Table 6-1, FS Report) is shown in Table 7-1. Results of the comparative analysis indicated that the preferred remedial action alternative should include a combination of the following actions.

- Construction of a low-permeability clay cover system for the entire site to contain the buried waste and the impacted soil on-site.
- Installation of groundwater extraction and treatment systems along the downgradient side of the site to intercept/capture groundwater contamination coming from the site. The perimeter groundwater system will also capture off-site migration of the groundwater contamination that exceeds the remediation goals.

- Installation of a perimeter landfill gas extraction, control, and treatment system along the the site boundary within the waste zone. The perimeter landfill gas control and treatment system will be used to minimize the potential off-site migration and impacts to air quality standards in compliance with the relevant regulations. Additionally, an updated landfill gas survey will be conducted. Following the landfill gas survey, the data will be evaluated to determine whether a gas collection system is necessary to achieve regulatory compliance. Based upon survey results and regulatory agencies approval, a landfill gas collection system may or may not be required.
- Implementation of long-term monitoring of the groundwater and landfill gases.
- Long-term maintenance of the landfill cap.

For the purpose of protecting the proposed site development, additional system design/installation including an interior landfill gas collection system for on-site building area will need to be constructed. Detailed descriptions of such syetm and/or requirements are presented in Section 8.0.

The preferred remedial actions have been determined to be protective of human health and the environment. These actions meet site-specific RAOs for the UOU. These actions were selected over other alternatives because: (1) they fully comply with the ARARs, (2) they are most effective in preventing, minimizing, or significantly reducing the risk/exposure of the buried waste, contaminated groundwater, and landfill gases, (3) they employ proven technologies from similar remediation projects, and (4) they are cost-effective.

To ensure the proper design, construction, and implementation of the systems indicated above, recommendations are also provided for the following actions/activities.

- Development and performance of detailed confirmatory investigations to obtain additional information for the RD. The planned confirmatory investigations include (1) groundwater aquifer pump test and (2) landfill gas survey.

During the RD phase, operation and maintenance and monitoring programs will also be developed for all remedial systems.

## 7.2.1 Confirmatory Investigations for Remedial System Design

### 7.2.1.1 Aquifer Pump Test

Aquifer testing will be conducted in the Bellflower Aquitard to verify specific hydrogeologic data required for the design of the groundwater extraction system. Prior to conducting the pump test, an aquifer pump test work plan will be prepared and submitted for DTSC review and approval. At least one pump test will be conducted. The pump test will be conducted in a newly

installed well. Additional pumping tests, if needed will be conducted in either new wells or existing well locations. Each pump test will require the installation of an array of three observation wells (piezometers), spaced at 40, 80, and 160 feet from the test well. The target screening zone for the pump test wells will be in the Bellflower sand unit beneath the bottom of the waste (approximate interval between -25 and -60 MSL).

If required, aquifer slug tests may also be performed on existing monitoring wells to assist identifying the hydrogeologic parameters. Slug test data will be correlated against the pump test data to evaluate hydrogeologic characteristics.

#### 7.2.1.2 Landfill Gas Survey

To ensure the compliance status of the site gases and emissions regarding the development/design of a landfill gas monitoring and control system, an updated landfill gas survey will be performed during the RD phase. The survey protocol will be based on Section II.A of the California Air Resource Board (CARB) guidelines including integrated surface sampling, ambient air monitoring at or near the site perimeter, and enhanced perimeter gas probes. Prior to conducting the survey, a landfill gas survey work plan will be prepared and submitted to DTSC, SCAQMD, and RWQCB for review and approval.

In accordance with California Health and Safety Code (H&S) Section 41805.5, a minimum of one integrated surface sampling grid will be established for the entire site. The integrated surface sampling will collect one continuous air sample three inches above the ground surface within the grid along the standard walking pattern. The sample will be analyzed for (1) Calderon<sup>1</sup> air contaminants and (2) total organic compounds measured as methane. Ambient air monitoring will be conducted at or near the site perimeter to verify existing air quality near the landfill according to the CARB guidelines. The sampling will consist of two, 24-hour samples and two, less-than-24-hour samples, to be performed on three different (not necessarily consecutive) days. The samples will be analyzed for Calderon air contaminants.

To verify the potential off-site gas migration, a minimum of 12 monitoring wells/probes will be installed at approximately 1000-foot spacings along the property boundaries. Each perimeter wellbore will nest a shallow probe at 5 to 10 feet depth, an intermediate probe at or near half the depth of the wellbore, and a deep probe at or near the depth of the wellbore above the permanent low seasonal water table. The specific depths of probes will be placed adjacent to most conductive (i.e., pervious) zones. The samples will be analyzed for (1) Calderon air contaminants, (2) total organic compounds measured as methane, and (3) VOCs. During sampling, the barometric pressure and ambient air temperature will also be measured at each probe location. The specific perimeter monitoring network will be performed according to CCR

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<sup>1</sup> Assembly Bill 3525 (Calderon) of 1984 and amendments require the testing of air emissions from existing solid waste site for the purpose of solid waste air quality assessment test. Specific Calderon compounds include: Chloroethene (Vinyl Chloride), Benzene, 1,2-Dibromoethane (Ethylene Dibromide), 1,2-Dichloroethane (Ethylene Dichloride), Dichloromethane (Methylene Chloride), Tetrachloroethane (Perchloroethylene), Tetrachloromethane (Carbon Tetrachloride), 1,1,1-Trichloroethane (Methyl Chloroform), Trichloroethylene, and Trichloromethane (Chloroform).



Title 14, Article 7.8 .- Integrated Waste Management Board requirements for Gas Monitoring During Closure and Postclosure (Sections 17783 and seq.). The gas wells/probes will be maintained as a part of the overall perimeter monitoring network system for further monitoring. Specific number of the wells/probes will be identified in the landfill gas survey work plan and be approved by DTSC.

### 7.2.2 Landfill Cover System

Containment of the chemicals within the buried waste will be achieved by constructing a surface cover over the entire landfill site. The selected cover system addresses the waste containment to support the RAOs and also provides a cover system that can remain functional during anticipated landfill settlement.

As evaluated in the FS, the selected landfill cover alternatives consist of several components (layers) of material acting together as a complete cover system. Based on the evaluation, the alternative of using an impermeable asphalt layer was eliminated because of its relatively new and unproven record for the landfill cover application. The preferred cover system for the site is to install an 24 inch thick low-permeability clay layer as a basic barrier layer.

For future land use/development, additional design and construction considerations will be included to enhance the integrity of the cover system. Enhanced cover design and construction considerations for the future land use/development are described in Section 8.0.

Details of the preferred landfill cover system are shown in Figure 7-1. The cover system will use clean imported soil, free of toxic and deleterious substances and certified clean by supplier. The acceptance of the clean soil material/sources shall be approved by DTSC prior to utilization. Brief descriptions of the components of the cover system are summarized below.

- Foundation Layer. A compacted foundation layer serves to support the cover system. This foundation layer will have a thickness of 24 inches and will be constructed from existing soil cover material and/or suitable imported material. For the purpose of the RAP, a thickness of 12 inches of existing soil cover will be accounted for as a part of the foundation layer. \*
- Clay Layer. The barrier layer for the entire site will include the construction of a minimum of 24-inch clay material using suitable off-site borrowed soil having a permeability of  $1 \times 10^{-6}$  cm/sec or less. As needed, bentonite amended soil may be added to achieve the required permeability.
- Protective Soil Cover. A layer of compacted soil cover serves to protect the barrier layer. The protective soil cover is placed above the barrier layer and will have a thickness of 18 inches. This protective soil cover will be constructed from suitable imported material. \*
- Top Soil. A top soil layer of suitable material which supports vegetation with a root systems less than the depth of the top soil layer. A top soil layer is required only in the

landscape areas if coordinated with the future site development activities. The top soil will have a normal thickness of 12 inches and may replace the top 6 inches of the protective soil cover.

### Surface Cover Transitions

A conceptual drawing showing how each cover material will transition from one to another is presented in Figure 7-2. This figure also shows transitions to areas under buildings which will be part of future site development. The additional measures shown are not a part of the recommended remedial action. The final cover design will be engineered during the remedial design phase. The final cover design will also include details on liner selection, manufacturers, installation, specifications, and construction QA/QC control.

### 7.2.3 Groundwater Extraction and Treatment

Findings from the RI indicated that volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals are present in groundwater at concentrations above the defined background levels and in instances above the ARAR-based levels. Due to the uncertainty of contaminant sources and the potential impact of the surrounding properties, remedial alternatives are selected to combine the groundwater containment with the traditional extraction and treatment process. The preferred remedial alternative for groundwater remediation is to provide groundwater extraction and treatment along the downgradient side of the site. The proposed extraction well locations are presented on Figure 7-3. The purpose of the groundwater remediation is to prevent or significantly reduce potentially contaminated groundwater going off site or impacting other water sources.

#### 7.2.3.1 Groundwater Containment and Extraction

Groundwater will be extracted through 6-inch diameter PVC or stainless steel vertical extraction wells along the downgradient site perimeter as shown on Figure 7-43. Based on the data provided in the RI from preliminary aquifer hydraulic characteristic testing, extraction wells will be arranged at 150 to 200 feet spacing. The extraction network will provide a drawdown of approximate 10 to 15 feet with a zone of influence of about 150 feet. It is anticipated that a total of 26 extraction wells will be required. The flow rate at each well is estimated at 3 to 5 gallons per minute (gpm) for a total estimated extraction rate of 78 to 130 gpm. Well headworks will consist of sample ports, sounding ports, pressure gauges, and valving. Each extraction well will be protected by a traffic rated vault box. Extracted groundwater will be routed to the treatment unit before discharging to the facility storm drain system for off-site discharge into the Torrance Lateral Channel or to the facility sanitary sewer system for off-site discharge into the local sanitary sewer system. In either case, some treated groundwater may be recycled within the development for irrigation purposes. Groundwater will be conveyed below surface to the treatment area using PVC piping.

Final design details and specifications for the extraction well system will be based on data collected during the previously described pump tests. Time frame for the extraction of

groundwater to meet the RAGs may be determined as more detailed hydraulic and chemical data become available.

### 7.2.3.2 Groundwater Treatment

Groundwater quality data in the RI indicate the presence of VOCs, SVOCs or metals at concentrations above regulatory criteria at various locations along the site. As discussed above, preliminary sizing of the treatment system is based on approximately 100 gpm of extracted groundwater. The groundwater treatment system will consist of an equalization (holding tank) step, a filtering (screening) step to remove suspended solids, a precipitation/sedimentation step or steps to remove metals, a treatment step using activated carbon to remove organics, and a final polishing filter step to remove settleable solids prior to discharge.

Extracted groundwater will be directed to the equalization tank to account for equalization of flow from the individual pumps. The equalization tank will be followed with an in-line filter to remove suspended solids. The precipitation/sedimentation treatment step will precipitate and settle metal contaminants prior to the activated carbon system. Precipitated waste sludge which could contain heavy metals concentrated in amounts which may be hazardous will be transported off-site to an approved disposal or recycling facility.

The organic treatment step consists of two activated carbon adsorbers operated in series. Sampling stations will be located at the inlet and outlet of each carbon adsorber. A sampling program will be developed to meet the requirements of the NPDES or the local sanitary sewer pretreatment permit. Either of these permits will set the sampling frequency, discharge contaminant concentration limits, and reporting requirements for discharge of treated water into the storm drain system or the local sanitary sewer system.

The NPDES or pretreatment permit typically requires the following monitoring and reporting:

- Daily flow recording
- Periodic point of discharge sampling
- Monthly point of discharge reporting
- Annual reporting of yearly activities.

Table 7-2 presents the discharge limitations required to be achieved in order to discharge the treated groundwater off-site.

The sampling program will also serve to determine when carbon disposal and replacement is required. Sampling of each carbon adsorber will be used to determine when breakthrough has occurred. Spent carbon will be transported off-site to an approved disposal or regeneration facility.

Groundwater treatment equipment will be constructed on a reinforced concrete pad or equivalent structure located for ease of maintenance and considering future site development plans. The system will be secured by constructing a fence or block wall with appropriate access gates.

Detailed groundwater modeling to determine the duration of groundwater treatment required to meet the RAGs has not been undertaken. This modeling will be undertaken as more detailed information on the hydraulic and chemical characteristics of the aquifers become available. Treatment time frames for the purposes of the RAP cost estimate have been assumed to be 30 years.

Figure 7-4 shows a conceptual groundwater treatment system flow schematic. A final treatment system design and operation and maintenance program will be developed during the remedial design phase. Due to the contaminant characteristics in the groundwater, it is anticipated that treatability studies are required to fine-tune the precise treatment steps necessary to achieve the discharge limitations selected depending on the ultimate discharge location.

#### 7.2.4 Landfill Gas Control and Treatment

As required under Section 17783 and seq., CCR Title 14, article 7.8 - Gas Monitoring and Control During Closure and Postclosure, landfill gas control is necessary when the results of gas monitoring indicate concentrations of landfill gas (i.e., methane and other trace gases) in excess of the compliance levels. To ensure the compliance status of the site gases and emissions, an updated landfill gas survey (Section 7.2.1.2) and perimeter monitoring program (Section 7.2.5.2) will be implemented. Pending confirmation of the landfill gas data, landfill gas control is assumed necessary in the FS. However, based upon survey results and regulatory agencies approval, the landfill gas control may or may not be required.

The preferred landfill gas control, collection, and treatment system will consist of: (1) a series of vertical gas extraction wells within outer edges of the waste cells along the site boundaries, (2) thermal destruction of collected gas using a flare unit, and (3) other gas monitoring and venting systems, if determined necessary and applicable. Figure 7-5 presents a conceptual gas extraction well detail. Figure 7-6 presents a conceptual flare unit design.

The gas control wells will be installed and screened at appropriate depths intercepting the pervious or semi-pervious zones above the water table. Depending on the presence of the methane and toxic contaminants, these wells will be designed either as a passive or active system to intercept/control the potential offsite migration. As required, the gas control system design will be conducted and submitted for DTSC's approved prior to implementation.. For the purpose of this RAP, the perimeter gas control system assumes the use of an active extraction system with a typical well spacing of 200 feet and an average depth of about 40 feet. As a result, a total of 55 wells will be constructed along the site boundaries as shown on Figure 7-7. Detailed design of the gas control system including actual number of wells and specific spacing will be determined based on the landfill gas survey as indicated in Section 7.2.1.1.

Based on the size of the site and the need of the perimeter landfill gas control, it is assumed that the landfill gas treatment will require the construction of a flare units including related collection headers, blowers, and gas sampling and processing components. Collected landfill gas will be delivered from the header system to the flare by a blower. The gas will pass through an

automatic shut-off valve and a flame arrestor to prevent flash back. Landfill gas will be mixed with dilution air for efficient combustion at the flare burner elements. Dilution will be automatically introduced into the flare by a dilution air valve regulated by the combustion temperature. Supplemental fuel (natural gas or propane) will be automatically introduced into the flare to maintain the required combustion temperature and thermal efficiency. The flare will be equipped with standard safeguard controls and other required air emission control devices to monitor operating conditions and shut down the system when appropriate. The flare will be constructed or shielded from the travelling motorists as to minimize or reduce the potential for visual distraction.

For future land use/development, the landfill gas control will include the installation of a geosynthetic membrane layer and/or an active landfill gas ventilation system underneath the building structures. Specific landfill gas control for the future building structures is described under Section 8.0.

#### 7.2.5 Site Environmental Monitoring

##### 7.2.5.1 Quarterly Groundwater Monitoring

Quarterly groundwater monitoring for the UOU (Bellflower Aquitard) will be performed in accordance with relevant regulations set forth in Sec. 2550.7 (D), CCR Title 23, Chapter 15, Article 5 - Water Quality Monitoring for Corrective Action Program. The purpose of the groundwater monitoring system is to provide adequate and representative groundwater quality data to monitor the effectiveness and duration of the groundwater remedial action. Monitoring data will be used to adjust the remedial strategy so that chemical compounds detected in the groundwater are not migrating offsite.

The monitoring program will include monitoring points installed at appropriate locations and depths such as downgradient points (on-site and off-site), upgradient points, and monitoring points in the Gage aquifer beneath the UOU. For the purpose of this RAP, the proposed monitoring network will include the use of (1) approximately five new downgradient monitoring wells located outside the leading edge of the identified contamination area of concern near the west and southwest corner of the property, (2) one new upgradient well near the northeast property boundary, and (3) three new Gage monitoring wells, one upgradient and two downgradient. As appropriate, several existing monitoring wells including the two Gage wells will be redeveloped and used as a part of the monitoring program. Approximate locations of these wells are shown in Figure 7-7. Specific number and location of the wells will be determined during final development of the groundwater monitoring program and approved by DTSC. The first groundwater sampling event including all proposed monitoring wells will be implemented prior to initiating of any site work.

The new wells will be drilled and constructed using hollow stem auger or mud rotary drilling technologies, whichever is appropriate. Each well will be 4-inches in diameter and constructed of stainless steel screen and blank casing. The screen slot width and screen length will be based on findings from the previous RIs and lithologic data obtained during the drilling of each

monitoring well and sieve analyses of representative water-bearing materials. Generally speaking, the Bellflower monitoring wells will be completed across the entire saturated interval in the Bellflower sand with a typical 10 feet screen section located above the bottom of the sand layer. Gage monitoring wells will screen the upper 20 feet of its water-bearing zone. A typical monitor well is illustrated in Figure 7-8.

Groundwater monitoring and sampling of all monitoring wells is to be initially conducted on a quarterly basis for one year and analyzed for 34 VOCs in the Target Compound List (TCL) using EPA Method 624, 65 SVOCs in the TCL using EPA Method 625, and a suite of 23 metals using EPA Methods 6010 and 7000 series. After one year, the frequency and the analyses to be performed should be re-evaluated and modified as appropriate. In general, the monitoring program will be conducted for 30 years or until that the groundwater contamination has been in continuous compliance with the preliminary remediation goals and upon DTSC and RWQCB written approval. A detailed groundwater monitoring program will be prepared and submitted for DTSC approval during the remedial design phase prior to implementation.

#### 7.2.5.2 Landfill Gas Monitoring

Quarterly landfill gas monitoring at the Cal Compact site will be performed in accordance with relevant regulations set forth in Sec. 17783 et. seq., CCR Title 14, Division 7, Article 7.8 - Gas Monitoring During Closure and Postclosure. The purpose of the landfill gas monitoring is to provide early warning of potential off-site migration and to ensure proper control of the landfill gases. Specific requirements for the gas monitoring include (1) the concentration of methane gas must not exceed 1.25 percent by volume in air within on-site structure, (2) the concentration of methane gas must not exceed 5 percent by volume in air at the facility property boundary, and (3) trace gases must be controlled to prevent adverse acute and chronic exposure to toxic and/or carcinogenic compounds. Monitoring data will be used to adjust the gas collection and treatment measures so that gas control and treatment system will be properly implemented.

The landfill gas monitoring system will include the use of a series of perimeter gas monitoring network as specified under CCR Title 14, Division 7, Article 7.8 - Integrated Waste Management Board requirements for Gas Monitoring During Closure and Postclosure (Sections 17783 and seq.). The planned monitoring network will utilize a total of 18 monitoring wells/probes including the initial 12 gas wells/probes to be installed for the proposed landfill gas confirmatory survey (Section 7.2.1.2). The monitoring network will be distributed along the entire property perimeter within the native soil. Spacing of the wells will be approximately 1000 feet along the north and east property boundaries and 500 feet along the south and west property boundaries near the neighboring residential area. Approximate locations of these wells are shown in Figure 7-7. Each perimeter wellbore will nest a shallow probe at 5 to 10 feet depth, an intermediate probe at or near half the depth of the wellbore, and a deep probe at or near the depth of the wellbore above the permanent low seasonal water table. The specific depths of probes will be placed adjacent to most conductive (i.e., pervious) zones.

Based on data revealed from the RI as well as the relevant monitoring requirements, the perimeter landfill gas monitoring will include the analysis of (1) Calderon air contaminants in particular Benzene and Vinyl Chloride, and (2) total organic compounds measured as methane.

As a general guidance, the landfill gas monitoring will be conducted on a quarterly basis during the postclosure care period of 30 years. The monitoring program may be re-evaluated and modified as appropriate if the gas control/monitoring warrants such changes. A landfill gas monitoring program will be prepared and submitted for DTSC's approval prior to implementation.

### 7.2.6 Former Oil and Water Wells Investigation

An additional investigation will be conducted during the implementation phase of the RAP to locate the former oil and water wells at the Site to address issues such as the risk of downward migration of contaminants into lower aquifers. To the extent feasible, the former water well and two oil wells will be located and abandoned to meet current regulatory standards. All available information regarding the location of these wells will be utilized in this investigation. The location of the wells will be re-surveyed using available historic data. Survey locations will then be compared to the prior investigations. Based on the results of these investigations, an excavation plan will be considered. This excavation plan shall be limited to those Site areas with the highest probability of finding the oil and water wells. Such limitation is further justified because of the risk associated with excavating buried hazardous substances. Prior to any excavation the health risk of such activities will be evaluated to assess the appropriateness of such excavation. Regulatory approval of all plans and permits will be obtained prior to any excavation activities.

A fate and transport modeling program may also be conducted to evaluate the potential risk to the lower aquifers. Should such program reveal that the potential risk to the lower aquifers from the abandoned wells is insignificant, then excavation, and well abandonment need not be pursued.

In the event that an excavation is conducted to locate these wells, DTSC may suspend such investigation if the investigation itself poses a human health or environmental threat. If the investigation fails to locate these wells, the search for these wells will cease and all other remedial activities will be implemented.

## 7.3 Consistency with ARARs

### 7.3.1 Chemical-Specific ARARs

Chemical-specific ARARs are usually health or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. (CERCLA Compliance With Other Laws Manual: Interim Final, EPA/540/1G-89/006, August 1988)

The most common chemical-specific standards or references that are used to establish chemical-specific ARARs are:

- Federal Safe Drinking Water Act and California Primary and Secondary Drinking Water Standards establish levels for compounds found in public drinking water supplies as Maximum Contaminant Levels (MCLs) . The state may establish more stringent MCLs than the Federal standards.
- Federal Clean Air Act National Primary and Secondary Ambient Air Quality Standards and the California Air Quality Standards establish protective concentrations for compounds found in ambient air.
- Federal Clean Water Act and the California Water Quality Protection Standards set guidelines for concentrations of pollutants depending on the designated uses of the surface water body (i.e. noncontact recreational versus public drinking water supply).
- The State of California has an anti-degradation policy requiring cleanup to background water quality or to the lowest concentrations technically and economically feasible to achieve.

The recommended remedial action is consistent with the chemical-specific ARARs as discussed below.

The use of MCLs as an ARAR is considered relevant as required by DTSC and RWQCB although the groundwater quality for the Bellflower Aquitard may not be considered a source of drinking water and the recommended remedial action does not return (i.e. reinject) groundwater



to the source. The State of California definition of a drinking water source is a source that has a total dissolved solids (TDS) of less than 3000 parts per million (ppm). Recent data collected at the site indicates that the upgradient wells are showing TDS concentrations above 3000 ppm.

Air emissions from the site (i.e. the landfill gas collection and treatment system) will require permitting under the state air quality standards as administered by the South Coast Air Quality Management District. Permitting includes submittal of a permit application, regulatory agency review, public comment, and approval. As stated in the permit, periodic monitoring (of the landfill gas) and reporting are required to determine compliance.

Discharges (both storm water runoff and the effluent from the groundwater treatment system - if discharged off-site) will require permitting under the National Pollutant Discharge Elimination System (NPDES) and state permitting program as administered by the Regional Water Board or the local sanitary sewer pretreatment standards to set compliance with water quality standards. Permitting includes submittal of a permit application, regulatory agency review, public comment, and approval. As stated in the discharge permit, periodic effluent quality monitoring and reporting are required to determine compliance and monitor treatment system efficiency.

In accordance with the ARAR requirements, specific Remedial Action Goals (RAGs) for the groundwater and landfill gas are proposed in Tables 7-3 and 7-4, respectively. The RAGs for groundwater are based on the State's non-degradation policy for on/off-site groundwater and on the State's interpretation that the Bellflower Aquitard may be a future drinking water source. If this interpretation becomes inappropriate in the future, or the proposed RAGs are demonstrated physically or economically unachievable, the RAGs for groundwater may be adjusted upon regulatory agencies approval.

### 7.3.2 Action-Specific ARARs

Action-specific ARARs are technology- or activity-based requirements for activities undertaken with respect to remedial actions. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. Action-specific ARARs do not determine the remedial alternative but indicate how a selected alternative must be achieved. Action-specific ARARs may establish performance levels, actions, or technologies, as well as specific levels for discharged or residual contaminants. (CERCLA Compliance With Other Laws Manual: Interim Final, EPA/540/1G-89/006, August 1988)

Some of the most common regulations and standards used to establish action-specific ARARs are:

- Federal Resource Conservation and Recovery Act and California hazardous waste regulations under the CCR Title 22
  - hazardous waste requirements for generators and transporters
  - hazardous waste treatment, storage, and disposal requirements
  - land disposal restrictions
  - land treatment requirements
  - minimum technology standards

- National Emission Standards for Hazardous Air Pollutants (NESHAPs) under the Clean Air Act
- National Pollutant Discharge Elimination System (NPDES) permitting program under the Clean Water Act and California Regional Water Quality Control Plan
- Department of Transportation (DOT) requirements for transportation of hazardous waste on public roadways
- Health and safety requirements for remediation workers under the Occupational Health and Safety Act (OSHA)
- State noise requirements for construction sites

The recommended remedial action is consistent with the action-specific ARARs as discussed below.

The removal of contaminants in the groundwater treatment system will generate wastes which will probably be hazardous and subject to the RCRA regulations. These wastes will consist of solids containing heavy metals and spent carbon with volatile organics adsorbed on the surface of the carbon. Handling, transportation, and disposal or recycle of these wastes will be conducted under the appropriate requirements. The owner of the site will be required to register as a hazardous and/or solid waste generator and comply with reporting requirements. Potentially hazardous wastes generated at the site from the groundwater treatment system will be transported by licensed haulers as required by the DOT and the State Department of Toxic Substances Control. These hazardous wastes will be disposed of in an appropriately permitted facility.

As discussed in the chemical-specific ARARs, air permits will be required for the groundwater treatment and landfill gas collection and control system. Additional requirements which may be relevant are found in the NESHAPs for controlling wastewater streams containing benzene. Should activities, such as grading or excavation, expose buried landfill material to the atmosphere, as defined by SCAQMD Rule 1150, an Excavation Management Plan will be submitted to SCAQMD. All required permits and approval shall be obtained prior to any landfill excavation activities.

The NPDES program regulates the discharge of effluent to off-site waters. This will control the discharge from the groundwater treatment system as discussed in the chemical-specific ARARs. If the option to discharge to the local sanitary sewer is pursued, this regulation will also determine the pretreatment requirements for discharge into a publicly owned treatment works (POTW).

Health and safety requirements for remedial construction workers at the site will be regulated by OSHA and will set limits on exposures and minimum training requirements. A Health and

Safety Plan will be written to determine levels of personnel protection and monitoring required for remedial construction workers.

Noise requirements for remedial construction will be monitored and controlled as necessary.

### 7.3.3 Location-Specific ARARs

The location of a site is fundamental in determining its impact upon human health and the environment. Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities because they occur in specific locations. (CERCLA Compliance With Other Laws Manual: Interim Final, EPA/540/1G-89/006, August 1988)

These location-specific ARARs typically include restrictions on locations such as flood plains, if historic sites are present, if endangered species are present, delineated wetlands, etc. There can also be some local regulatory agency requirements that must be followed during remedial activities.

The recommended remedial action will be consistent with the location-specific ARARs as discussed below.

On-site systems for groundwater treatment and landfill gas collection and control will comply with local requirements such as building codes, Fire Marshall office inspections, traffic control, and nuisance ordinances such as noise.

Deed restrictions may be placed on the property because waste will be left in-place underneath the cap system. Notification of property transactions or transfers may be required, along with continued financial responsibility.

The following approvals and permits are required for implementation of the selected remedial alternative:

- DTSC approval of the final cover, groundwater treatment system, and landfill gas collection and treatment system. The engineering design for each element of the selected alternative will be submitted for DTSC for review and approval at the completion of the RD phase.
- RWQCB review and approval of the final cover design and groundwater treatment system.
- NPDES permit from the RWQCB for the discharge of treated groundwater.
- SCAQMD permit for landfill excavation during construction of the final cover.
- SCAQMD permit to construct and operate the landfill gas collection system and flare units.

- Various local agency permits for construction activities.

#### 7.4 Mitigation Measures for Remedial Activities

The following mitigation measures are proposed to minimize potential impacts which may result from the remedial activities. The remedial activities include construction of a landfill cap, construction of a groundwater extraction, monitoring, and treatment system, and construction of a landfill gas control system.

##### 7.4.1 Dust and Particulate Monitoring

Earthwork associated with landfill cap construction will generate dust and air borne particulates. To ensure proper protection of human health due to dust and particulate matters, dust/particulate samples will be collected and analyzed for suspended particulate matter of  $10\mu$  or less in size ( $PM_{10}$ ), Lead particulate, and potential toxic air contaminants during the remediation process. Based on results of the Baseline Risk Assessment (B&R Environmental, 1995) for a two-year construction scenario, Chromium is the only air contaminant that exhibits a potential inhalation cancer risk (UCL) of  $6.0 \times 10^{-6}$ ,  $3.3 \times 10^{-6}$ , and  $1.3 \times 10^{-6}$  for offsite resident child, on-site worker, and off-site resident adult, respectively. In all cases, Chromium contributes more than 99 percent of the total cancer risk for inhalation of particulates. Total hazardous index values for inhalation of particulates are all less than one for on- and off-site worker/resident under the two-year construction scenario. Thus, only Chromium will be monitored as a potential toxic air contaminants. The monitoring will include a baseline monitoring prior to initiating the remedial work and a real-time perimeter monitoring during the remediation.

The baseline monitoring will be used to assess pre-remediation surface soil condition that may impact the dust and particulate concern for the on-site remedial activities. Airborne substances to be monitored will include Hexavalent Chromium as potential toxic air contaminant and  $PM_{10}$  and Lead under the relevant air quality standards. To verify the concern of the suspended Chromium and Lead particulates, a minimum of five samples will be collected using High Volume Sampler which draws air particulates through the filter paper sampling media. The sample media will be sent to a state certified laboratory for specific analyses. Monitoring of  $PM_{10}$  will be conducted for one, 24-hour duration using  $PM_{10}$  monitoring procedures stated below.

Airborne particulate monitoring during remediation will be implemented by monitoring the  $PM_{10}$ , Lead, and Hex-Chromium. Initially, upon start-up of the earth work activities,  $PM_{10}$  will be monitored at eight perimeter monitoring points along east, south, west, and north site boundaries. Since wind direction changes, an on-site Anemometer will be used to monitor the wind speed and direction for the  $PM_{10}$  monitoring. Wind data collected will be used to identify the up- and down-wind  $PM_{10}$  readings. A MIE Miniram type (or equivalent)  $PM_{10}$  monitor will be used for real-time data reporting at every two-hour interval during the active work duration. Lead and Chromium (VI) monitoring will be conducted initially for three, one-day (not

necessarily consecutive) periods at one downwind and one upwind locations. High Vol. filter samples will be collected and laboratory analyzed for monitoring result.

As remediation work progresses, the PM<sub>10</sub> monitoring will be adjusted to one to two times a day and/or during relatively high wind/dust condition as determined by the site health and safety officer. Based on initial data results, periodic Chromium (VI) and Lead particulate monitoring will be conducted as determined by the site health and safety officer to ensure the compliance requirements.

All particulate monitoring data will be properly documented immediately upon measurements in a daily monitoring report to determine when the air quality is exceeding the significant effect. The significant effect will be set as "action levels" in accordance with the California air quality standards and/or site-specific risk assessment calculations to prevent adverse health concern. For the purpose of this RAP, action levels for particulate monitoring are established in Table 7-5. Should the monitoring result exceed the action level, field activities will be temporarily shut down until proper corrective actions are executed. Corrective actions will include immediately wetting the working area with water or appropriate dust suppressant and/or adjusting the field activities to ensure compliance requirements. Details of the air monitoring program will be included in earthwork contractor's work plan and approved by DTSC.

#### 7.4.2 Dust and Particulate Control

The dust control measures will be in compliance with SCAQMD Rule 403. Based on anticipated engineering design considerations, the soil materials used to construct the cover will need to be preconditioned with water. The preconditioned soil should be damp enough to that it does not readily produce dust during placement. Dust and airborne particulate that is generated during placement of the material will be primarily controlled by wetting the working surface. Wetting will be performed as required to reduce fugitive dust, but not less than twice per day. As needed, commercially available additives, suppressant foams, and mulches will be considered to augment the standard water treatment. For disturbed dirt areas which remain inactive over an extended period of time, soil stabilization measures will be provided such as smooth rolling the surface with a steel drum roller or application of moisture retaining binders to form a sealed cover.

Roads must be cleaned, swept, or scraped at regular intervals in accordance with the City of Carson's haul route permit if required, or other applicable instrument acceptable to the City of Carson.

Fill material imported by haul trucks will be covered by a tarp or other means. Haul trucks exiting the site will be visually inspected at a dust control monitoring station to ensure they have been adequately cleaned/washed for residual dirt. All construction vehicle tires will be washed at the time these vehicles exit the site. To ensure proper execution, a staging, unloading, and cleaning process will be designed in earthwork contractor's work plan.

Other measures that will be considered and addressed in earthwork contractor's work plan are confining work to limited areas of the site at one time, suspending work during periods of high

winds (i.e., greater than 25 mph for an extended period of time) and during Stage 2 or 3 Ozone Episodes, and placing final vegetation and surface treatments (area paving, etc.) as soon as practical in the construction schedule. Other intensive dust generating activities, such as abrasive blasting, drilling, and grinding will be controlled to the greatest extent feasible. Such control may include the use of screens or enclosures, water sprays or collection, and would be specific to the activity.

#### 7.4.3 Traffic Control

To accommodate the anticipated haul truck traffic to support the cover construction, a haul route plan will be prepared in earthwork contractor's work plan. All truck staging will be within the project site. No transport of imported materials or off-site parking will be permitted in adjacent residential neighborhoods.

Construction traffic control measures such as signing and striping will be provided near the site entrance in accordance with the relevant traffic control plan. Traffic control plan will be submitted to the City of Carson, Engineering Services Director for approval. To minimize the potential impact of the haul truck traffic, a new traffic light, signing, or flagman will be provided at/near the site entrance (Del Amo and Main). The traffic signal timing will be evaluated by the City of Carson officials.

#### 7.4.4 Construction Emission

The construction emission for the related remedial activities will be monitored at the property boundary on a periodic basis in accordance with relevant SCAQMD regulations. For general construction practice, the remedial activity will use only well maintained equipment with proper planning of equipment utilization, such as proper size and consolidated deliveries, to reduce rework and multiple handling. If feasible, diesel-powered construction equipment will be used to reduce exhaust emissions and evaporative and crankcase hydrocarbon emissions. For equipment utilizing the diesel drive internal combustion engine, an alternative diesel fuel with a maximum of 0.05 percent sulfur and a four degree retard will be used. NO<sub>x</sub> control technologies, such as fuel injection timing retard will be applied for diesel engines and air-to-air after cooling.

Deliveries, other than concrete and earthwork related deliveries, will be restricted to non-peak travel periods whenever feasible to reduce engine idling time and low traffic speed.

#### 7.4.5 Noise Control

To minimize the potential noise impacts caused by the related remedial activities, proper noise control procedures (in accordance with local regulations) will be established in earthwork contractor's work plan.

In general, loading, unloading, and staging areas will be located on-site and away from the noise-sensitive residential areas south and west of the site. Grading operations will be phased such that grading of the southerly and westerly portions of the site will be completed last. If night time

activities are required, they will be limited to the low-noise level work. All nighttime hauling operations will utilize bottom dump trucks. During nighttime grading activities the following activities will be prohibited.

- Operation of any machinery or equipment except for bottom dump trucks with trailers and tractors to assist unloading. Dump trucks will travel in the forward direction only.
- Soil spreading or compaction activities.
- Backing up of equipment fitted with safety alarms.

Noise monitoring will be conducted at the near-by residents property boundaries. The noise generated from the remedial activities will not exceed local standard established by the City of Carson or other regulatory agency.

#### 7.4.6 Odor Control

The selected remedial activities do not include any soil excavation into the waste or the existing soil cover except some limited drillings for typical well construction. Due to limited waste disturbance, odor control should not be a problem during the remedial activities. Perimeter monitoring during construction will be provided to detect any potential odor problem so that mitigation measures can be implemented.

#### 7.4.7 Health and Safety Plan

A site/activity specific health and safety plan will be prepared for remedial activities in order to ensure worker health and safety. The health and safety plan will establish on-site exclusion or decontamination zones, if applicable, which will be utilized for the duration of on-site remedial activities. The health and safety measures to be enacted will be consistent with 29 CFR 1910 and 8 CCR 5192.

## 8.0 PROPOSED FUTURE LAND USE

A company proposes to redevelop the project site for commercial/light industrial land use. The first phase of a two-phase development consists of an enclosed retail shipping mall near the center of the property with access roads and parking lots over the remaining area. Phase II development would add retail/office buildings near the perimeter of the site. This section describes additional design/construction considerations related to the proposed development, that work in conjunction with the preferred remedial actions (Section 7.0), to protect human health and the environment.

### 8.1 Deed Restrictions

Deed restrictions are a legal control to prohibit specific activities. Deed restrictions will be recorded on this property with the appropriate county recorders office to limit future land uses to commercial/light industrial activity, and to ban such uses as residential, hospitals, schools, and day care centers. In addition, the deed restriction will limit activities on the site such as deep excavations into the clay layer or buried waste or use of groundwater wells for domestic supply or for agriculture.

The deed restrictions will be approved by the Department of Toxic Substances Control prior to recording and run with the property. The recording of the deed restriction will put all potential buyers of the property on notice of the deed restrictions. Thus, the deed restrictions will remain in force regardless of future property transactions.

### 8.2 Landfill Cap for the Proposed Building Area

To provide extra protection and landfill cap integrity under the building area, additional cap design considerations are proposed, including:

- Provide a double liner system under the building
- Provide for differential settlement between the double liner and the building support piles
- Provide for landfill gas protection as required under CCR Title 14, section 17796 for post closure land use.

Accordingly, a geomembrane liner will be added under the building area. The geomembrane liner will be highly gas-impermeable and installed over the clay barrier layer described in Section 7.2.2. The geomembrane will be low density polyethylene (LDPE) and have a minimum thickness of 30 mils.



The geomembrane layer system will include:

- 6-inch thick sand layer. This sand layer is placed above the geomembrane liner to protect it during construction/installation activities, and to serve as a drainage layer. This sand layer is part of the protective layer as specified in Section 7.2.2.
- 12-inch thick sand/gravel aggregate layer. This layer is used as a part of the landfill gas control protection under the building area. This aggregate layer will be placed under the clay layer and wrapped with a geotextile filter to prevent the introduction of fines. Details of the landfill gas control is further described in Section 8.3.

Details of the double liner, enhanced landfill cap cover system for the building area are shown in Figure 8-1.

In parking areas and roadways, additional materials for the road base and pavement will be incorporated into the cover alternatives. These materials will provide an additional barrier to the landfill cover system while providing support for the traffic requirements. These materials are not considered as a part of this RAP and will be addressed during the site design and development stage.

### 8.3 Landfill Gas Control and Treatment for the Proposed Building Area

The landfill gas control and treatment system for the building area will consist of: (1) an active landfill gas control system of horizontal piping embedded in a sand/gravel layer, (2) thermal destruction of collected gas using a flare unit, and (3) gas monitoring and venting system.

Under the building areas, an active landfill gas control system will be installed under the clay cover system to protect against the landfill gases. The active landfill gas control system will consist of horizontal, perforated piping that is installed in the permeable aggregate layer (Section 8.2) below the clay/geomembrane layer. The active gas control will be a low pressure vacuum system to minimize potential drying of the clay layer. Spacing for these pipes will coincide with the spacing for the piling needed to support the building. A spacing of 15 feet is anticipated for the horizontal piping.

The ancillary components include a flare unit, collection headers, blowers, and gas sampling and processing components. Collected landfill gas will be delivered from the header system to the flare by a blower. The gas will pass through an automatic shut-off valve and a flame arrestor to prevent flash back. Landfill gas will be automatically mixed with supplemental gas or dilution air for efficient combustion at the flare. The flare will be equipped with standard safeguard controls to monitor operating conditions and shut down the system when appropriate. Detailed design of the flare system including size, emission limits, treatment components, and supplementary fuel requirements, will be provided during final design of the gas control system. Final design of the gas control/treatment system will be submitted for DTSC approved prior to implementation.

For the building safety/construction purpose, additional landfill gas venting or monitoring features are also be considered. These features include:

- Open ventilation provided by open parking structures or passive surface vent pipes to monitor or release methane from accumulating beneath the cap. As applicable, the vent pipe will be constructed with the ability to be connected to an induced draft exhaust system.
- A pile sleeve system to seal the liner to the building piles
- A landfill gas monitoring and alarm system for landfill gas in or under the building

These features will be designed in detail during the remediation system and/or building construction/design phase and will be part of the ongoing O&M activities.

#### 8.4 Piling Construction

A pile foundation is anticipated to support the buildings located over the landfill refuse. The pile penetrations in the building areas will incorporate a sealable sleeve made out of steel, geomembrane or geocomposite (a composite layer of geomembrane and bentonite) material that is fastened or adhered to the geomembrane liner. The sleeve will be attached between the piles and the liner and provide controlled slacks to allow for settlement. The piles will be driven to the bearing soil below the waste. The annular space between the piling and sleeve will be sealed with a polymer material.

#### 8.5 Mitigation Measures for the Proposed Site Development Activities

Mitigation measures for the proposed site development activities will be implemented to minimize impacts to the neighboring residents, public, and the environment. Specific recommended or code required mitigation measures for the development will be in accordance with "Final Project and Program Environmental Impact Report - Metro 2000" dated November 1993. The pertinent mitigation measures covered in the Final EIR include:

- Earth Grading - - Mitigation measures for earth grading include the control of fugitive dust and air borne particulates, the control of odor by limiting any excavation into waste, the implementation of a project geotechnical report and erosion control plan, the implementation of a mitigation monitoring plan acceptable to the City of Carson, provisions to obtain haul route approval and to provide traffic barriers and warning signs, provisions for temporary berm construction along the west and south site boundaries, and limited night time grading activities.
- Air Quality - - Air pollutant mitigation measures include the control of five sources of construction emissions: (1) combustion exhaustion of construction equipment, (2) fugitive

dust, (3) construction deliveries and off-site hauling, (4) construction workers travel, and (5) building materials and architectural coatings.

- Traffic Control - - Mitigation measures include the control of access and on/off site parking, installing and utilization of a new traffic signal and traffic warning signs as well as provisions for implementing a haul route plan for construction traffic.
- Noise Control - - Mitigation measures include provisions to minimize potential noise impacts from pile driving, dynamic compaction, and other construction noise. A temporary berm will be provided along the length of the fill slope across from existing residential areas. Other provisions include limited night-time operations.

The Final EIR has been prepared in accordance with the requirements of CEQA and represents the independent judgment of the Lead Agency (City of Carson).

## 9.0 IMPLEMENTATION SCHEDULE

Figure 9-1 is the project schedule for remediation and redevelopment of the Cal Compact Landfill site. The ambitious schedule is designed to accomplish two principal objectives. First, remediation of the site. The remediation as proposed in the RAP is consistent with the future use of the site for commercial/light industrial development. Second, construction of a retail shopping mall, to return the site to beneficial use.

The two objectives are linked because remediation of the Upper Operable Unit will be primarily funded by the mall developer. The mall developer is not a PRP and therefore is participating in the remediation on a voluntary basis. As such, timely construction and eventual operation of the mall is a critical element to ensure that the remediation funds become available.

## 10.0 PRELIMINARY NONBINDING ALLOCATION OF RESPONSIBILITY

Health and Safety Code (HSC) Section 25356.1(d) requires the Department of Toxic Substances Control (DTSC) to prepare a preliminary nonbinding allocation of responsibility (NBAR) among all identifiable potentially responsible parties (PRPs). HSC section 25356.3(a) allows PRPs with an aggregate allocation in excess of 50% to convene an arbitration proceeding by submitting to binding arbitration before an arbitration panel. If PRPs with over 50% of the allocation convene arbitration, then any other PRP wishing to do so may also submit to binding arbitration.

The sole purpose of the NBAR is to establish which PRPs will have an aggregate allocation in excess of 50% and can therefore convene arbitration if they so choose. The NBAR, which is based on the evidence available to DTSC, is not binding on anyone, including PRPs, DTSC, or the arbitration panel. If a panel is convened, its proceedings are de novo and do not constitute a review of the provisional allocation. The arbitration panel's allocation will be based on the panel's application of the criteria spelled out in HSC section 25356.3(b) to the evidence produced at the arbitration hearing. Once arbitration is convened, or waived, the NBAR has no further effect, in arbitration, litigation or any other proceeding, except that both the NBAR and the arbitration panel's allocation are admissible in a court of law, pursuant to HSC section 25356.7 for the sole purpose of showing the good faith of the parties who have discharged the arbitration panel's decision.

The Cal Compact Site operated as a landfill between 1959 and 1965. A thorough PRP analysis was performed, and a volume of waste sent to the site has been calculated for all PRPs named in the NBAR. Generators as a group have been assigned an aggregate liability for the site of 80%. Transporters have been assigned an aggregate liability of 5%. Owners and Operators have been assigned the remaining 15%. DTSC has distinguished among owners and operators during the active phase of the landfill operation by assigning them a higher relative share than those who owned the facility after it ceased receiving wastes.

DTSC sets forth the following identifiable potentially responsible parties:

### Generators

1. Phillips Petroleum Company (via acquisition/merger with Signal Oil & Gas)
2. Shell Chemical Company
3. Chevron Corporation (previously Standard Oil Co. of California)
4. UNOCAL Corporation (via merger with Union Oil of California)
5. Shell Oil Company
6. Atlantic-Richfield Oil Company (via merger of Atlantic Refining and Richfield Oil)

7. Long Beach Oil Development Company
8. Mobil Oil Corporation
9. E. I. du Pont de Nemours & Company (via merger with Continental Oil, a Delaware Corp./CONOCO Inc.)
10. Atchison, Topeka & Santa Fe Railway Company
11. Getty Oil Company (via merger with Tidewater Oil Inc.)
12. Southern California Gas Company
13. Exxon Corporation (via acquisition/merger of Humble Oil & Refining Company and Standard Oil of New Jersey)
14. Texaco, Incorporated
15. U. S. Borax, Incorporated
16. Minnesota Mining and Manufacturing
17. Gulf Oil Corporation
18. Southern Pacific Rail Corporation

Owners and Operators

19. BKK Corporation (Cal Compact, Inc.)
20. The Deutsch Company
21. L.A. MetroMall, LLC, a California Limited Liability Company

Transporters

22. BKK Corporation (Chancellor and Ogden)

The NBAR allocation is non-binding and preliminary and does not limit strict joint, and several liability under CERCLA and other laws. Commercial Realty Projects, Inc. has assumed 100 percent of the responsibility for the remediation of the Cal Compact Landfill Upper Operable Unit, as defined in this RAP, without prejudice to its right to seek contribution from other responsible parties.

Agent for Services of Process for the preliminary, nonbinding allocation of responsibility for the Cal Compact Landfill site:

Generators

1. Phillips Petroleum Company (via acquisition/merger with Signal Oil & Gas)

Phillips Petroleum Company  
United States Corporation Company  
1455 Response Rd. Suite 250  
Sacramento, CA 95815

separate agent for

Signal Oil & Gas Co.  
C T Corporation System  
818 West 7th Street  
Los Angeles, CA 90017

2. Shell Chemical Company

Shell Chemical Company  
Lee Prentice-Hall Corporation System, Inc.  
1455 Response Road, Suite 250  
Sacramento, CA 95815

3. Chevron Corporation (previously Standard Oil Co. of California)

Chevron Corporation  
H. T. Walker  
225 Bush Street  
San Francisco, CA 94104

4. UNOCAL Corporation (via merger with Union Oil of California)

UNOCAL Corporation  
Vickie Simonian  
1201 West 5th Street  
Los Angeles, CA 90017

5. Shell Oil Company

Shell Oil Company  
C T Corporation System  
818 West 7th Street  
Los Angeles, CA 90017

6. Atlantic-Richfield Oil Company (via merger of Atlantic Refining and Richfield Oil)

Atlantic-Richfield Oil Company  
C T Corporation System  
818 West 7th Street  
Los Angeles, CA 90017

7. Long Beach Oil Development Company

Long Beach Oil Development Company  
J. J. Grigg, Jr.  
550 North Brand Blvd. # 1960  
Glendale, CA 91203

8. Mobil Oil Corporation

Mobil Oil Corporation  
Lee Prentice-Hall Corporation System, Inc.  
1455 Response Road, Suite 250  
Sacramento, CA 95815

9. E. I. du Pont de Nemours & Company (via merger with Continental Oil, a Delaware Corp./CONOCO Inc.)

E. I. du Pont de Nemours & Company  
C T Corporation System  
818 West 7th Street  
Los Angeles, CA 90017

10. Atchison, Topeka & Santa Fe Railway Company

Atchison, Topeka & Santa Fe Railway Company  
P. J. Nelson  
3770 East 26th St.  
Los Angeles, CA 90023



11. Getty Oil Company (via merger with Tidewater Oil Inc.)

Getty Oil Co. (Tidewater Oil, Inc.)  
L. N. Elsen  
10 Universal City Plaza  
Universal City, CA 91608-1097

12. Southern California Gas Company

Southern California Gas Company  
Thomas C. Sanger  
555 W. 5th St.  
Los Angeles, CA 90013

13. Exxon Corporation (via acquisition/merger of Humble Oil & Refining Company and Standard Oil of New Jersey)

Exxon Corporation (Humble Oil & Refining Company  
and Standard Oil of New Jersey)  
C T Corporation System  
818 West 7th Street  
Los Angeles, CA 90017

14. Texaco, Incorporated

Texaco, Inc.  
L. N. Elsen  
10 Universal City Plaza  
Universal City, CA 91608-1097

15. U. S. Borax, Incorporated

U. S. Borax, Incorporated  
C T Corporation System  
818 West 7th Street  
Los Angeles, CA 90017

16. Minnesota Mining and Manufacturing

Minnesota Mining and Manufacturing  
C T Corporation System  
818 West 7th Street  
Los Angeles, CA 90017

17. Gulf Oil Corporation

Gulf Oil Corporation  
H. P. Walker  
225 Bush St.  
San Francisco, CA 94104

18. Southern Pacific Rail Corporation

Southern Pacific Rail Corporation  
T. S. O'Donnell  
Southern Pacific Building  
One Market Plaza, Suite 816  
San Francisco, CA 94105

also main company: (SPTCO)

Southern Pacific Transportation Company  
T. S. O'Donnell  
Southern Pacific Building  
One Market Plaza, Suite 816  
San Francisco, CA 94105

Owners and Operators

19. BKK Corporation (Cal Compact, Inc.)

BKK Corporation (Cal Compact, Inc.)  
Peter Weiner  
Heller, Ehrman, White & McAuliffe  
333 Bush Street  
San Francisco, CA 94104-2878

20. Passive Owner: The Deutsch Company (active corp.)

The Deutsch Company  
W. E. Holler  
2444 Wilshire Blvd. #600  
Santa Monica, CA 90403

also:

President: Alex Deutsch  
Lester Deutsch, Pres. of D. Finance Company  
same address (active corp.)

21. L.A. MetroMall, LLC, a California Limited Liability Company

L.A. MetroMall, LLC  
Peter Weiner  
Heller, Ehrman, White & McAuliffe  
333 Bush Street  
San Francisco, CA 94104-2878

Transporters

22. BKK Corporation (Chancellor and Ogden), 5.0%;

BKK Corporation (Chancellor & Ogden)  
Peter Weiner  
Heller, Ehrman, White & McAuliffe  
333 Bush Street  
San Francisco, CA 94104-2878

## 11.0 FUTURE/ONGOING OPERATION AND MAINTENANCE (O&M) REQUIREMENTS

### 11.1 Ongoing and Future Upper Operable Unit Site O&M and Monitoring Requirements

O&M and monitoring requirements are summarized for each of the systems associated with the RAP. Specific O&M Plan will be developed and submitted to DTSC for review and approval.

#### 11.1.1 Landfill Cap

To limit the infiltration of stormwater through the landfill cap, observe and, if necessary, repair the surface drainage systems, erosion control measures, and stormwater retention basins. To limit stormwater infiltration and gas migration through the landfill cap, observe, and repair if necessary, differential settlement in parking areas, pavement breaks and other indications that the integrity of the landfill cap may be impacted.

#### 11.1.2 Groundwater Extraction and Treatment System

Perform routine maintenance of all mechanical equipment (pumps, valves, meters, recorders, etc.) according to the manufacturer's instructions. Perform, as needed, maintenance of the extraction wells to maintain the desired flow rates. Observe the well and piping for signs of settlement or other indications of potential maintenance problems.

#### 11.1.3 Landfill Gas Extraction and Flaring System

Perform routine maintenance of all mechanical equipment (flares, vacuum pumps, supplementary gas systems, valves, meters, recorders, etc.) according to the manufacturer's instructions. Perform, as needed, maintenance of the extraction wells to maintain the desired gas flow rates. Observe the gas wells and piping for signs of settlement or other indications of potential maintenance problems.

#### 11.1.4 Site Monitoring Systems

Perform routine monitoring (sampling and analysis) of the groundwater monitoring wells in accordance with the RAP.

Perform routine monitoring (sampling and analysis) of the landfill gas and the exhaust gases from the landfill gas control and flare system in accordance with the RAP.

Perform routine monitoring (sampling and analysis) of the stormwater control, retention and discharge system in accordance with the RAP.

Perform routine monitoring (sampling and analysis) of the groundwater treatment system in accordance with the RAP.

#### 11.2 Estimated Duration of O&M and Monitoring Activities

O&M and monitoring activities are anticipated to continue for a period of 30 years following implementation of the RAP, or until such time as the remediation achieves the Remedial Action Objectives (RAOs) or Remedial Action Goals (RAGs).

#### 11.3 Estimated Cost of Conducting O&M and Monitoring and Source of Financing

The estimated cost of conducting the O&M and monitoring measures are summarized below: Post-closure care costs should be updated annually as a record of actual facility costs is developed.

	Estimated Annual O&M Factor	Ref.
<b>Collection/Control Systems</b>		
Landfill cap and ground surface observation	\$ 10,000	1,3
Landfill cap and ground surface repairs	\$ 50,000	1,4
Groundwater extraction and treatment system	260,000	1,2
Gas collection and flare system	89,000	1,4
<b>Long-Term Monitoring</b>		
Groundwater sampling and analysis	46,000	1,2
Gas monitoring	50,000	1,2
Stormwater monitoring	10,000	1,5
Treatment system effluent monitoring	50,000	1,5

References:

1. Feasibility Study. B&R Environmental. 1995.
2. Seminar Publication. Design, Operation, and Closure of Municipal Solid Waste Landfills. EPA. September 1994.
3. Based on 2 mh/wk @ \$10 to \$15/hr.
4. Budgetary amount based on engineers estimate.
5. Based on monthly reporting of composite analysis for the same constituent list as the groundwater monitoring wells.

#### 11.4 Measures Which Will Assure Continued O&M

The owner and operator of the site will be primarily responsible for the on-going O&M and monitoring of the site. DTSC may also seek implementation of O&M from any other identified PRP(s).

11.5 Measures to Provide for Remediation of any Contamination Discovered in the Future

Remediation of contamination at the project site, discovered in the future shall be governed by the relevant law, regulations and cleanup agreements among the owner, operator, PRPs, and DTSC. Where appropriate, future remediation activities will be combined with the remedial systems in the RAP.

Responsiveness Summary  
Cal Compact Landfill  
Upper Operable Unit

Draft Remedial Action Plan and  
Proposed Supplemental Negative Declaration

This Responsiveness Summary section consists of written comments submitted to the Department of Toxic Substances Control (DTSC) during the public comment period for the Cal Compact Landfill, Upper Operable Unit, Draft Remedial Action Plan. The public comment period ran from August 25, 1995 through September 25, 1995. A total of 13 comment letters were received and are identified as follows:

- A State of California Regional Water Quality Control Board, Los Angeles Region
- B Mr. Gary Colboth, Chair, South Dunbrooke Neighborhood Association
- C County of Los Angeles - Department of Public Works
- D Mr. Martin J. McHale
- E South Coast Air Quality Management District
- F Heller, Ehrman, White & McAuliffe
- G Kelley Drey & Warren
- H Water Replenishment District of Southern California
- I County of Los Angeles - Department of Health Services Environmental Health Solid Waste Management Program
- J Mr. Paul Nihipali
- K State of California Integrated Waste Management Board
- L State of California Department of Transportation
- M Heller, Ehrman, White & McAuliffe
- N Transcript of Proceedings from the September 6, 1995, public meeting for the Cal Compact Landfill draft Remedial Action Plan and proposed Supplemental Negative Declaration

Comment Letters and the Transcript of Proceedings from the September 6, 1995, public meeting for the Cal Compact Landfill draft Remedial Action Plan and proposed Supplemental Negative Declaration have been labeled "A" through "N" with comments identified with numbers along the left margin of each letter. Each comment letter is immediately followed by a "Response to Comment" page, with the response number corresponding to the number in the margin in the comment letter.

## REFERENCES

- BCL Associates, Inc., 1981, *Environmental Assessment of Soils, Perched Groundwater, and Vapor Impacts at the Former Cal Compact Landfill Site Located in the City of Carson*, March 1981.
- Brown & Root Environmental, 1993, *Addendum for Final Report Baseline Risk Assessment*, November 1993.
- Brown & Root Environmental, 1993, *Draft Final Report Feasibility Study for Cal Compact Landfill*, November 1993.
- Brown & Root Environmental, 1995, *Final Remedial Investigation Report of the Cal Compact Landfill*, July 1995.
- Brown & Root Environmental, 1995, *Final Report Baseline Risk Assessment for Cal Compact Landfill*, August 1995.
- Brown & Root Environmental, 1995, *Final Report Feasibility Study for Cal Compact Landfill*, August 1995.
- Byron A. Stirrat & Associates, 1990, *Final Workplan to Perform a Remedial Investigation/Feasibility Study at the Cal Compact Landfill*, January, 1990.
- City of Carson, Community Development Department, 1993, *Final Project and Program Environmental Impact Report - Metro 2000, State Clearinghouse No. 93011037, November 1993*
- ChemRisk, A Division of McLaren/Hart, 1992, *Final Report, Baseline Risk Assessment of the Former Cal Compact Landfill*, December 10, 1992.
- McLaren/Hart, 1992, *Revised Integrated Remedial Investigation Report, Cal Compact Landfill*, August 17, 1992 (six volumes)
- McLaren/Hart, 1992, *Draft Feasibility Study, Cal Compact Landfill*, March 6, 1992
- McLaren/Hart, 1992, *Draft Feasibility Study Addendum, Cal Compact Landfill*, May 8, 1992 (Addendum 1)
- McLaren/Hart, 1992, *Addendum 2 - Draft Feasibility Study, Cal Compact Landfill*, August 31, 1992
- State of California, Environmental Protection Agency, Department of Toxic Substances Control, 1995, *Remedial Action Order and Consent Order - Cal compact Landfill Site, Docket No. HSA 94/95-035*



State of California, Environmental Protection Agency, Region 4, 1987, *Remedial Action Plan Development and Approval Process, Appendix 1, Model RAP Outline, September 1987*

United States Environmental Protection Agency, 1985, *Handbook, Remedial Action at Waste Disposal Sites (Revised)*, October 1985.

United States Department of Commerce National Technical Information Service, 1987, *Remedial Action Costing Procedures Manual*, October 1987.

United States Department of Commerce National Technical Information Service, 1987, *Compendium of Costs of Remedial Technologies at Hazardous Waste Sites*, October 1987.

United States Environmental Protection Agency, 1988, *Land, Disposal, Remedial Action, Incineration and Treatment of Hazardous Waste; Proceedings of the Fourteenth Annual Research Symposium, July, 1988*

United States Environmental Protection Agency, 1995, Region IX, *Region IX Preliminary Remediation Goals First Half of 1995*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—  
LOS ANGELES REGION

101 CENTRE PLAZA DRIVE  
MONTEREY PARK, CA 91754-2156  
(213) 266-7500



September 6, 1995

SEP 8 1995  
STATE

Mr. Thomas M. Cota  
Department of Toxic Substances Control, Region 4  
Site Mitigation Operations Branch  
245 West Broadway, Suite 350  
Long Beach, CA 90802-4444

C 9-27-95

REMEDIAL ACTION PLAN, CAL COMPACT LANDFILL, CARSON (File No. 59-045)  
SCH NO. 95081061

Reference is made to your report entitled "Cal Compact Landfill, Upper Operable Unit", dated August, 1995. We have reviewed the subject document and offer the following comments:

- A-1 | — Final cover shall be designed in accordance with Title 23, CCR, Chapter 15, Section 2581.
- A-2 | — No waste water or storm water shall leave this site except as permitted by a National Pollutant Discharge Elimination System (NPDES) permit issued in accordance with the Federal Clean Water Act and the California Code of Regulations.
- A-3 | — Permanent drainage controls, structures, and facilities shall be graded and maintained to promote runoff of precipitation and to prevent ponding of liquids and surface water. Erosion or washout of refuse or cover materials by surface flow shall be prevented.

Thank you for the opportunity to review this project.

If you have any questions, please call Mr. Don Peterson at (213) 266-7578.

*Rodney H. Nelson*

RODNEY H. NELSON, Head  
Landfills Unit

cc: Elizabeth Haven, California State Water Resources Control Board  
Charlene Herbst, California Integrated Waste Management Board  
Chris Belsky, State Clearinghouse  
Richard Hanson, County of Los Angeles, Solid Waste Department

Response to comment received from the Los Angeles Regional Water Quality Control Board on the Cal Compact Landfill Project.

**Comment 1:**

Final cover shall be designed in accordance with Title 23, CCR, Chapter 15, Section 2581.

**Response:**

Comment noted and accepted.

**Comment 2:**

No waste water or stormwater shall be discharged from this Site except as permitted by a National Pollutant Discharge Elimination System (NPDES) permit issued in accordance with the Federal Clean Water Act and the California Code of Regulations, or as permitted through an indirect discharge permit through the appropriate Publicly Owned Treatment Works (POTW).

**Response:**

Comment noted and accepted.

**Comment 3:**

Permitted drainage controls, structures, and facilities shall be graded and maintained to promote runoff of precipitation and to prevent ponding of liquids and surface water. Erosion or washout of refuse or cover materials by surface flow shall be prevented.

**Response:**

Comment noted and accepted.

Sept. 6, 1995

Mr. Thomas Cota  
Cal Compact Landfill Project Manager  
Department of Toxic Substances Control  
California Environmental Protection Agency  
245 West Broadway, Room 425  
Long Beach, CA 90802

Re: COMMUNITY QUESTIONS AND INPUT  
CAL COMPACT SITE  
COMMUNITY MEETING - Sept. 6, 1995 - CARSON COMMUNITY  
CENTER

Dear Mr. Cota:

Please treat this letter as community input that should be made part of the official file in this matter to the extent allowed by state laws regarding administrative procedures.

B-1 | I raised a number of issues by letter to you dated June 15, 1995, four months ago, and many of those issues are not resolved by the Remedial Action Plan which is very general. The public need a very specific RAP to be able to make meaningful comments. My four page letter to you of June 15, 1995, raised some 15 categories of questions, many of which have not received a specific response. For the Department to say "we do not know" or "we do not have that data" does not meet your obligation to respond to public input. Unless citizens receive specific answers, these meetings to invite public input are mere charades.

I will highlight some of the questions asked earlier.

B-2 | How will dangerous dust be avoided during the cleanup and construction?

B-3 | Some of us remain concerned that we do not know the extent of the contamination. There is no record of what was dumped at the site for a 19 month period and the borings and monitoring wells have been on the perimeter or on internal roads, places that would not measure the worse contaminants. If it is too dangerous for testing and evaluation to bore into the heart of the landfill, will it not also be too dangerous to drive thousands of construction piles into that same fill? We appear to be in the situation of talking about cleanup without knowing the precise nature of the contamination.

B-4 | Has the Department concluded that a landfill gas collection and

- B-4 | treatment system will not be initially required? How did the Department come to that conclusion without boring into the heart of the landfill and collecting samples?
- B-5 | How many other contaminated sites in California have been cleaned up using the vertically-phased approach cleaning up the top half and proceeding with construction without cleaning up the lower half? (Lower half meaning the Lower Operable Unit and aquifer). When would the lower half be cleaned up? What is the extent of the contamination of the lower half? How would the cleaning of the lower half be financed? Is it the practice of the Department when faced with a project of "size and complexity" to "divide it into two operable units"? Is it further the practice of the Department to only clean up half the project?
- B-6 |
- B-7 |
- B-8 | In the past four months, has there been any attempts to hold any of the 12 PRPs liable for any cleanup costs? Are we on a course by which the shopping center tenants (or the bondholders in the event of default) will pay for the upper unit, and no one will pay for the lower unit because it will not be cleaned? Thus, none of the polluters would end up paying any of the costs of cleanup.
- B-9 | In what way has the Department coordinated with the Regional Water Quality Control Board about the vertical-phased two tier approach of cleaning the top but not the bottom? What is the opinion of the Water Board about the vertical-phasing of the cleanup?
- B-10 | If construction is permitted at the site, will it mean as a practical matter that the lower half will not be cleaned up?
- B-11 | The soil at the site will be unstable in the event of an earthquake. Does the Department have data to conclude that the proposed gas cap barrier, gas collection systems, and structures can withstand an earthquake which may produce significant debris consolidation, settlement, and liquefaction?
- B-12 | What will be done to the two abandoned wells on the site? What is the extent of the danger that the wells might become channels to allow contaminants to flow down into the lower aquifer and damage the drinking water supply? What specific provision is made for this in the RAP?
- B-13 | Have experts, other than those being paid by developers, been involved in providing data to the Department? Are the experts involved influenced by having a financial interest in having the project go forward? For example, you write that: "As a potentially responsible party, BKK has conducted the remedial investigation for the portion of the site known as the Upper Operable Unit." Is this analogous to asking the fox to investigate the chicken coop? Does not BKK have an enormous financial interest in having this project go forward so shopping mall tenants (or bondholders in default) will spend the millions

B-13 | of dollars to clean up the site rather than having BKK spend its own money to clean the site?

B-14 | What person concluded that the site cleanup could be accomplished without significant environmental impacts? Did that person realize that there would be massive truck traffic, earthmoving, dust, driving of thousands of piles into the ground adjacent to residential areas, pumping and treating of water that could contaminate additional groundwater, and related activities? A Negative Declaration seems wildly inappropriate.

Sincerely,

*Gary Colboth*

Gary Colboth, Chair  
South Dunbrooke Neighborhood Association  
19813 Dunbrooke Ave  
Carson, CA 90746 (310) 516-3768

June 15, 1995

Mr. Thomas Cota  
Cal Compact Landfill Project Manager  
Department of Toxic Substances Control  
California Environmental Protection Agency  
245 West Broadway, Room 425  
Long Beach, CA 90802

Re: COMMUNITY QUESTIONS AND INPUT  
CAL COMPACT SITE  
COMMUNITY MEETING - JUNE 15, 1995 - CARSON COMMUNITY  
CENTER

Dear Mr. Cota:

Please treat this letter as community input that should be made part of the official file in this matter to the extent allowed by state laws regarding administrative procedures.

The 157 acre site was used for a dump. Buried there is the equivalent of 2,700,000 barrels of waste much of which is volatile and semi-volatile organic compounds, pesticide, metals, paint sludge, latex from refineries, ink, grease, kerosene, carbon black slurry, and other hazardous substances. It is assumed that about half of the material dumped at the site would be considered to be hazardous substances. That dump site operated for about 66 months, and during about 19 of those months there were "no records" regarding what was dumped there. Thus, we are not aware of the real scope of the problem and the threat to air quality and ground water and problems of gas accumulations and land subsidence. Some of the waste is only covered by a few feet of dirt. Development would involve massive dirt moving, the driving of metal poles through the waste to solid ground, and the driving of heavy trucks and other equipment on a massive scale.

The State of California agencies have not approved construction at this contaminated site until there is remediation to comply with applicable laws. The following questions require your attention.

B-15 | 1. Since some of the buried waste is only covered by as little as two feet of dirt, what is the danger to people in the area of breathing airborne dust caused at the site from construction activities?

B-16 | 2. To my knowledge, only 15 soil borings and 17 groundwater monitoring wells have been completed on the 157 acre. That is about one boring and well per each ten acres. Since we do not know what was dumped there for a 19 month period, are these borings adequate to determine the nature of the contamination? Also, no monitoring wells were installed in the interior of the property or in the aquifers used for drinking water. How can you evaluate a remediation plan without a better evaluation of the

extent of the contamination?

B-17 | 3. Does the DTCS intend to assess the extent of the contamination of the ground drinking water and to require that the ground drinking water be protected by the remediation plan?

B-18 | 4. Does the DTCS have reports from experts other than consultants paid by parties with a financial interest in having the construction project go forward? Will DTCS conduct and tests independent of those with such a financial interest?

B-19 | 5. There are at least two abandoned wells on the site. Will these abandoned wells provide channels for hazardous liquids to reach the aquifers and contaminate ground drinking water? Will the remediation plan deal with these wells?

B-20 | 6. The project would involve the pounding of thousands of pilings through the waste material and into solid ground below. These activities will change the flow and migration of contaminants and methane gas. How will the mitigation plan possibly anticipate and deal with these factors?

B-21 | 7. Will the pounding of thousands of pilings through the waste material and into the solid ground below involve a high risk of breaking through under ground earth layer barriers and, thereby, allowing hazardous liquids to move quickly into the underground drinking water?

B-22 | 8. Forcing heavy piles deep into the waste and ground involves dynamic compaction. What hazards exist based on the combination of the contaminants already there (not all of which are presently known), mixed with the methane gas, affected by dynamic compaction and the vibrations of trucks, equipment, and construction activities?

B-23 | 9. This area is close to the Inglewood-Newport earthquake fault which creates public safety concerns related to soil liquefaction. What is the depth to groundwater? Is it affected by annual rainfall amounts? Will the pounding of thousands of pilings and other vibrations at the site increase the danger of soil liquefaction? Would the soil liquefaction speed contaminants into the deep ground drinking water?

B-24 | 10. I assume that contaminated liquids will be pumped from the ground. Will a sufficient degree of groundwater extraction be achieved by proposed pumping plans?

B-25 | 11. There have been discussions about cleaning the top of the site but not the lower part, including that affecting the deeper aquifers. Why would the DTCS allow such a two tier approach? Is this a standard approach? Has it been used on other large contaminated sites? Should not both levels of the site be cleaned before the surface is developed? Since liquid contaminants tend to go downward pulled by gravity, is it not of



great importance to clean up the deep contaminants as quickly as possible? Is not the deep material of great threat to the underground drinking water? Should not there be a plan to clean up both levels before construction is allowed?

B-25

(a) At how many other sites in California in the last 10 years has the DTCS employed this vertically defined operable units, i.e., clean up the top but not clean up the bottom? If this has been done in other locations, what unusual issues arose?

(b) Has the Regional Water Quality Control Board agreed to such a two tier approach, i.e., clean up the top but not the bottom? Would you expect the RWQCB to consider such an approach to be appropriate and reasonable at this large site?

B-26

12. If a two tier cleanup plan is approved, will the DTCS require that a specific party be required to finance the cleanup of the lower level? How and when will that be determined? How can DTCS be confident that work should proceed on the top tier without a full plan for cleaning up the lower tier of the site?

B-27

13. The fact sheet indicates that the BKK corporation will take responsibility to complete the remediation of the upper unit. Who will be responsible to clean the lower level? If BKK cleans the upper unit, will BKK be excused for any responsibility for the lower level? What agency or court will make that decision about responsibility of various parties to clean the lower level?

B-28

14. The fact sheet cites 12 PRPs including BKK. Who are these others and what is DTCS doing to encourage them to meet their obligations to clean the site?

B-29

15. The fact sheet states that additional field work was conducted in May, 1995, to complete the remedial investigation of the upper operable unit. Has the field work been completed? What was done? What results are now to be made part of the public record? Are all of the findings available to the public? Was all or part of the work done by consultants paid by parties with a financial incentive to have the project go forward?

We look forward to hearing answers to these questions.

Sincerely,

Gary Colboth, Chair  
South Dunbrooke Neighborhood Association  
19813 Dunbrooke Ave  
Carson, CA 90746 (310) 516-3768

Continued

The following are Response to Comments received from Mr. Gary Colboth on September 6, 1995 regarding the Cal Compact Landfill Project.

**1. Comment:**

The public needs a very specific Remedial Action Plan to be able to make meaningful comments.

**Response:**

The draft Remedial Action Plan (RAP) is specific in describing the proposed remedy. The purpose of the RAP is to summarize the findings of the Remedial Investigation (RI) Report, the Feasibility Study (FS) and to describe the proposed remedial alternative actions to be taken for the remediation of hazardous substances. The draft RAP provides the overall framework for the proposed remedial actions and does not contain, nor is it required to contain, specific engineering design details. The draft RAP complies with federal Superfund regulations contained in the National Oil and Hazardous Substances Pollution Contingency Plan (commonly referred to as the Nation Contingency Plan or NCP), U.S. Environmental Protection Agency's guidance documents, and the Department of Toxic Substances Control's (DTSC) policy and guidance documents.

The next phase of the Cal Compact Landfill (the Site) remediation process is the Remedial Design (RD) phase. During the RD phase a detailed engineering design plan will be submitted to DTSC for the construction of the remedial systems.

**2. Comment:**

How will the dangerous dust be avoided during the cleanup and construction?

**Response:**

Section 7.4 in the draft RAP, entitled "Mitigations Measures for Remedial Action", identifies specific activities required for dust suppression. All Site activities must comply with South Coast Air Quality Management District (SCAQMD) Rule 403 for fugitive dust. The following measures have been identified to reduce the generation of fugitive dust:

1. The use of water will be the primary control for dust. Soil wetting will be performed as required to reduce fugitive dust, but not less than twice per day. Commercially available additives, suppressant foams, and mulches will be considered if needed to augment the water treatment.
2. Soil stabilization measures will be utilized for areas that remain inactive over an extended period of time. Such measures include smooth rolling the surface with a steel

drum roller or the application of moisture-retaining binders to form a seal cover.

3. Roads will be cleaned, swept, or scraped at regular intervals in accordance with the truck route permit issued by the City of Carson.
4. Fill material imported by haul trucks will be covered by tarp or other means.
5. Haul trucks exiting the Site will be visually inspected at a dust control monitoring station to ensure that they have been adequately cleaned/washed for residual dirt.
6. All construction vehicle tires will be washed at the time these vehicles exit the Site.
7. A staging, unloading, and cleaning process will be designed in the earthwork contractor's workplan.
8. Other measures in the earthwork contractor's workplan will consider confining work at any one time to limited areas of the Site, suspending work during periods of high winds (i.e., greater than 25 mph for an extended period of time) and during Stage 2 to 3 Ozone Episodes, and placing final vegetation and surface treatments (area paving, etc.) as soon as practical in the construction schedule.

Section 7.4.1 in the draft RAP identifies specific dust and particulate monitoring requirements to be conducted during construction of remedial systems.

**3. Comment:**

Some of us remain concerned that we do not know the extent of the contamination. There is no record of what was dumped at the Site for a 19-month period and the borings and monitoring wells have been on the perimeter or on internal roads, places that would not measure the worse contaminants. If it is too dangerous for testing and evaluation to bore into the heart of the landfill, will it not also be too dangerous to drive thousands of construction piles into the same fill? We appear to be in the situation of talking about cleanup without knowing the precise nature of the contamination.

**Response:**

In DTSC's view, the Upper Operable Unit (Upper OU) principally composed of the waste zone in and above the Bellflower Aquitard has been adequately characterized in light of

the proposed remedy. Even if it were true that some hazardous substances in the Upper OU have not been identified, the selected remedy will either capture such contaminants from further off-site migration, or will prevent their exposure to nearby residents or on-site users of the property. The Remedial Investigation (RI) adequately characterized the major classes of hazardous substances known to have been deposited at this Site, specifically, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals.

The Cal Compact landfill operated from late 1959 until approximately 1968. The landfill was permitted by the Los Angeles County to accept municipal solid waste and specified industrial waste. Records from the Los Angeles County indicate that the industrial waste included drilling fluids, paint sludges, liquid latex waste, and carbide or acetylene sludge. These types of compounds contain heavy metals, VOCs and SVOCs. While it is true that during a 19-month period operation records are not available, analytical data confirm the presence of hazardous substances known to be disposed at the Site based on the existing operation records.

To better appreciate what work has been performed, DTSC offers the following summary. Samples were collected at the Site from the following areas: 1) surface and run-off water, 2) soil cover, 3) waste zones, and 4) groundwater. These samples were collected and analyzed for hazardous substances using U.S. Environmental Protection Agency (EPA) approved analytical methods. The chemicals and compounds detected included metals, VOCs, SVOCs and pesticides. No polychlorinated biphenyls (PCBs) were detected. Soil samples were indeed collected from the waste zones at the Cal Compact Landfill. Sampling of the waste zones proved not to pose any special risk to on-site workers or nearby residents.

**4. Comment:**

Has the Department concluded that a landfill gas collection and treatment system will not be initially required? How did the Department come to that conclusion without boring into the heart of the landfill and collection samples?

**Response:**

No, DTSC has not concluded that a landfill gas collection and treatment system will not be required.

A landfill gas collection and treatment system is proposed in the draft RAP. However, to confirm the need for such a system, an additional landfill gas survey (LGS) will be required.

A LGS workplan will be submitted to DTSC, the SCAQMD and the Los Angeles Regional Water Quality Control Board (Water Board) for review. Final approval of the workplan shall be provided by DTSC prior to any field activities. The LGS will provide information on the concentrations of landfill gases being generated as well as design information required for a landfill gas collection and treatment system. DTSC, with concurrence by SCAQMD and the Water Board, will determine the need for a landfill gas collection system based on the results of the LGS. If a landfill gas system will be required, a detailed engineering design must be submitted to DTSC for approval.

The basis for the determination of the need for a landfill gas collection system does not depend upon borings into the "heart of the landfill". It depends upon extracting landfill gases through sampling probes inserted in and around the landfill - such probes will be employed during the Remedial Design (RD) phase of this process.

5. **Comment:**

How many other contaminated sites in California have been cleaned up using the vertically-phased approach cleaning up the top half and proceeding with construction without cleaning up the lower half? (Lower half meaning the lower Operable Unit and aquifer). Is it the practice of the Department when faced with a project of "size and complexity" to "divide it into two operable units"

**Response:**

DTSC does not track the specific number of sites managed in this way. A phased approach is an accepted practice in the field and, moreover, this approach complies with the NCP. DTSC directs your attention to the definition of an "Operable Unit" found in the Federal regulations at 40 CFR 300.5 as follows:

**"Operable Unit** means a discrete action that comprises an incremental step toward comprehensively addressing the problem. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of release, or pathway of exposure. The cleanup of the site can be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographical portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or actions that are concurrent but located in different parts of a site."

To our knowledge the waste zone is located above and within a well-characterized geological formation, the Bellflower Aquitard, which in our view represents the principal source of potential contamination to deeper off-site groundwater sources. 40 CFR 300.430(a)(i)(A) states that "Sites should generally be remediated in operable units when early actions are necessary or appropriate to achieve significant risk reduction, when phased analysis and response is necessary or appropriate given the size or complexity of the site, or to expedite the completion of total site cleanup." DTSC believes that the proposed remedy will immediately mitigate off-site migration and would thus provide DTSC the opportunity to assess potential releases, as yet unknown, to areas outside this operable unit.

To delay implementation of the remedy in order to first investigate the potential contamination in the Lower Operable Unit (Lower OU), would needlessly forestall a remedy which is appropriate for known contamination in the Upper OU. Should further investigations reveal that deeper areas are contaminated, additional wastewater treatment wells can be employed in further remedial processes. Furthermore, both the landfill cap and landfill gas collection system are appropriate control measures for any deeper contamination.

DTSC's practice is to strive to achieve meaningful environmental protection and, where a phased approach achieves that goal, to employ such an approach.

**6. Comment:**

How will the lower half be financed? When would the lower half be cleaned up?

**Response:**

DTSC has identified a number of Potentially Responsible Parties (PRPs) for the remediation of the entire Site. Among these PRPs are those identified in the Preliminary Non-Binding Allocation of Responsibility Section of the draft RAP.

DTSC plans to begin investigation of the Lower OU by all identified PRPs and, if necessary, to seek remediation of the Lower OU from these PRPs. DTSC has a number of enforcement tools at its discretion to achieve this purpose. Naturally, since litigation may be required, it is impossible to conclude when this process will lead to a successful outcome.

**7. Comment:**

Is it the practice of the Department to only cleanup half the project? What is the extent of the contamination of the lower half?

**Response:**

No, DTSC is not proposing to remediate only half the Site. DTSC is proposing to begin the remediation of the Upper OU and will pursue a separate remedial investigation for the Lower OU. Based on the results of the Lower OU investigation, a remedial action plan may be developed.

At the present time, DTSC knows very little about any hazardous substances in the Lower OU. A Lower OU remedial investigation will be conducted to determine the nature and extent of contamination in the lower aquifers. A Lower OU RAP, if needed, will address hazardous substances identified in the Lower OU which require remediation.

**8. Comment:**

In the past four months, has there been any attempts to hold any of the 12 PRPs liable for any cleanup cost? Are we on the course by which the shopping center tenants (or the bondholders in the event of default) will pay for the upper unit, and no one will pay for the lower unit because it will not be cleaned? Thus, none of the polluter would end up paying any of the costs of cleanup.

**Response:**

In the past four months, DTSC has achieved a cooperative agreement with the BKK Corporation to preform a Remedial Investigation/Feasibility Study (RI/FS) and prepare a draft RAP. DTSC intends to hold these named PRPs in the draft RAP, as well as other identifiable PRPs, liable for all cleanup costs. Future tenants of the property, simply by virtue of there tenancy, are not liable parties. Bondholders, in the event of default, likewise are not liable. DTSC will seek all available legal remedies at its disposal to make sure the polluters pay. In every case, there are litigation risks as well as the problem of insolvent PRPs. DTSC cannot predict or guarantee the outcome in any litigation matter.

**9. Comment:**

In what way has the Department coordinated with the Regional Water Quality Control Board about the vertical-phased two tier approach of cleaning the top but not the bottom? What is the

opinion of the Water Board about the vertical-phasing of the cleanup?

**Response:**

DTSC and the Water Board staff have met to discuss the Cal Compact landfill project. The draft RAP and RI/FS have been submitted to the Water Board for review.

**10. Comment:**

If construction is permitted at the Site, will it mean as a practical matter that the lower half will not be cleaned up?

**Response:**

No, DTSC is committed to conducting a remedial investigation for the Lower OU. As stated in Response to Comment No. 5, a phased approach follows federal regulations for the remediation of hazardous releases at large and complex sites. Remediation of the Lower OU will be based on the results of a Lower OU investigation. As a practical matter, DTSC will require that any future development of the Site be conducted in a manner that will not interfere with DTSC's ability to investigate and remediate the Lower OU. Such requirements will include reasonable access agreements to investigate the Lower OU and, if necessary, to construct additional remedial systems.

**11. Comment:**

The soil at the Site will be unstable in the event of an earthquake. Does the Department have data to conclude that the proposed gas cap barrier, gas collection system, and structures can withstand an earthquake which may produce significant debris consolidation, settlement, and liquefaction?

**Response:**

The unremediated landfill, in its present condition, is subject to earthquake upset. The presence of the proposed cap and landfill gas collection system cannot adversely impact Site conditions or the adverse impacts of an earthquake. Moreover, if the systems were damaged by an earthquake, needed repairs will be made.

Insofar as structures related to commercial development of the Site, DTSC has no authority to approve or disapprove such development based upon seismicity analysis. These issues are local land-use and permitting authority decisions. Such approvals are not a part of the draft RAP.



However, insofar as these structures may impact the proposed remedial action, a workplan to study dynamic compaction and subsidence has been submitted to DTSC and the City of Carson. The proposed workplan outlines a pilot study to investigate the results of dynamic compaction on the soil cover and waste zone. The information obtained during this field investigation will be used in the remedial design phase to further ensure compatibility of development and remediation.

**12. Comment:**

What will be done to the two abandoned wells on the Site? What is the extent of the danger that the wells might become channels to allow contaminants to flow down into the lower aquifer and damage the drinking water supply? What specific provision is made for this in the RAP?

**Response:**

An extensive investigation was conducted to identify the location of the abandoned wells. The investigation for these wells included historical records review, magnetometer survey, and historical aerial photographic search. Although DTSC knows the general location of the three wells, DTSC does not know their precise location.

An additional investigation will be conducted during the implementation phase on the RAP to locate the former oil and water wells at the Site to address issues such as the risk of downward migration of contaminants into lower aquifers. To the extent feasible, the former water well and two oil wells will be located and abandoned to meet current regulatory standards. All available information regarding the location of these wells will be utilized in this investigation. The location of the wells will be re-surveyed using available historical data. Survey locations will then be compared to the prior investigations. Based on the results of these investigations, an excavation plan will be considered. This excavation plan shall be limited to those Site areas with the highest probability of finding the oil and water wells. Such limitation is further justified because of the risk associated with excavating buried hazardous substances. Prior to any excavation the health risk of such activities will be evaluated to assess the appropriateness of such excavation. Regulatory approval of all plans and permits will be obtained prior to any excavation activities.

A fate and transport modeling program may also be conducted to evaluate the potential risk to the lower aquifers. Should such program reveal that the potential risk to the lower aquifers from the abandoned wells is insignificant, then excavation, and well abandonment need not be pursued.

In the event that an excavation is conducted to locate these wells, DTSC may suspend such investigation if the investigation itself poses a human health or environmental threat. If the investigation fails to locate these wells, the search for these wells will cease and all other remedial activities will be implemented.

At this time, there is no data to indicate that the Silverado Aquifer (drinking water aquifer) has been or is presently adversely impacted.

**13. Comment:**

Have experts, other than those being paid by developers, been involved in providing data to the Department? Are the experts involved influenced by having a financial interest in having the project go forward? For example, you write that: "As a potentially responsible party, BKK has conducted the remedial investigation for the portion of the Site known as the Upper Operable Unit." Is this analogous to asking the fox to investigate the chicken coop? Does not BKK have an enormous financial interest in having this project go forward so shopping mall tenants (or bondholders in default) will spend the millions of dollars to clean up the Site rather than having BKK spend its own money to clean the Site?

**Response:**

DTSC oversees all site investigations and remedial activities conducted by PRPs. This oversight function helps to ensure that the samples collected and analyzed are free from bias or fraud. Confirmatory samples have been and will be sent to either DTSC's Hazardous Materials Laboratory or an independent laboratory, certified by the State, for data verification. California law makes it a crime to knowingly provide false or misleading information to DTSC. Furthermore, California law specifically provides for DTSC issuing orders to PRPs to investigate and remediate sites. The Legislature intended that PRPs conduct these activities. The Legislature also provided for severe penalties for fraud.

**14. Comment:**

What person concluded that Site cleanup could be accomplished without significant environmental impacts? Did that person realize that there would be massive truck traffic, earthmoving, dust, driving of thousands of piles into the ground adjacent to residential areas, pumping and treating of water that could contaminate additional groundwater, and related activities? A Negative declaration seems widely inappropriate.

**Response:**

DTSC determined that the remedy itself, as proposed and properly designed, will not have significant adverse environmental impact, as required by the California Environmental Quality Act (CEQA). That determination is separate and apart from the fact that existing Site conditions themselves may pose adverse environmental impacts. It is the remedy, not existing Site conditions, which is subject to CEQA analysis.

As for the other activities identified in this comment (truck traffic, earthmoving, dust, and driving of piles), these impacts have already been addressed in the Final Project and Program Environmental Impact Report, Metro 2000, prepared and certified by the City of Carson for the Site development.

The following are DTSC's response to comments contained in Mr. Gary Colboth letter dated June 15, 1995.

15. **Comment 1:**

Since some of the buried waste is only covered by as little as two feet of dirt, what is the danger to people in the area of breathing airborne dust caused at the Site from construction activities?

**Response:**

As discussed in the Response to Comment No. 2, dust mitigation measures have been incorporated into the draft RAP in order to minimize the generation of fugitive dust. Air monitoring shall also be conducted during the initial phase of the construction of the proposed cap.

16. **Comment 2:**

To my knowledge, only 15 soil borings and 17 groundwater monitoring wells have been completed on the 157 acre. That is about one boring and well per each ten acres. Since we do not know what was dumped there for a 19 month period, are these borings adequate to determine the nature of the contamination? Also, no monitoring wells were installed in the interior of the property or in the aquifers used for drinking water. How can you evaluate a remedial plan without a better evaluation of the extent of contamination.

**Response:**

Please refer to the Response to Comment No. 3. DTSC believes that the Upper OU has been adequately characterized in light of the proposed remedy. During the RI, several different investigative techniques were conducted to identify and characterize Site conditions. Groundwater samples were collected through the use of HydroPunch technique, which does not require construction of a monitoring well. Soil lithology was identified through the technique of Cone Penetrometer Testing.

17. **Comment 3:**

Does the DTSC intend to assess the extent of the contamination of the ground drinking water and to require that the ground drinking water be protected by the remediation plan?

**Response:**

Please refer to Response to Comments No. 5, 6, 7, 10, and 12.

18. **Comment 4:**

Does the DTSC have reports from other than consultants paid by parties with a financial interest in having the construction project go forward? Will DTSC conduct and tests independent of those with such a financial interest?

**Response:**

Please refer to Response to Comment No. 13.

19. **Comment 5:**

There are at least two abandoned wells on the site. Will these abandoned wells provided channels for hazardous liquids to reach the aquifers and contaminate ground drinking water? Will the remediation plan deal with these wells?

**Response:**

Please refer to response to Comment No 12.

**20. Comment 6:**

The project would involve the pounding of thousands of pilings through the waste material and into solid ground below. These activities will change the flow and migration of contaminants and methane gas. How will the mitigation plan possibly anticipate and deal with these factors?

**Response:**

The installation of pilings for development purposes are not part of the remedial action for the draft RAP. However, insofar as these pilings may impact the proposed remedial action, a workplan to study dynamic compaction and subsidence has been submitted to DTSC and the City of Carson. The proposed workplan outlines a pilot study to investigate the results of dynamic compaction on the soil cover and waste zone. The information obtained during this field investigation will be used in the remedial design phase of the process to further ensure compatibility of development and remediation.

DTSC does not believe that the pilings will affect groundwater flow and direction. As far as downward migration of the Upper OU contaminants, this should be minimized by proper pile design and installation whereby waste zone materials will simply be slightly displaced laterally. Vertical migration for Lower OU aquifers is unlikely, because piling depths are not proposed to extend to the Gage Aquifer. However, DTSC is requiring in the RAP the construction of additional groundwater monitoring wells in both the Bellflower Aquitard and Gage Aquifer. These wells will be installed and sampled prior to and throughout the construction activities. In the event that an adverse condition is detected, DTSC has several actions that can be taken, including but not limited to issuing a Stop Work Order.

**21. Comment 7:**

Will the pounding of thousands of pilings through the waste material and into the solid ground below involve a high risk of breaking through under ground earth layer barriers and, thereby, allowing hazardous liquids to move quickly into the underground drinking water?

**Response:**

See Response to Comment No. 18.

**22. Comment 8:**

Forcing heavy piles deep into the waste and ground involves dynamic compaction. What hazards exist based on the combination

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of the contaminants already there (not all of which are presently known), mixed with methane gas, affected by dynamic compaction and the vibrations of trucks, equipment, and construction activities?

**Response:**

As discussed in the Response to Comment No. 11 and 14, the draft RAP does not propose forcing heavy piles into the waste zones. The draft RAP proposes the construction of a landfill cap, gas collection and treatment system, and a groundwater collection and treatment system. Dynamic compaction is the process that would compact the Site's soils and waste zones; dynamic compaction will not be used to drive piles into the ground.

A Baseline Risk Assessment has been conducted for the Cal Compact Landfill. The most significant exposure pathways for off-site residents identified at the Site, in its present unremediated condition, are the inhalation of benzene and vinyl chloride vapors, and the inhalation of chromium as suspended soil particulates. Therefore, DTSC is proposing the construction of a cap and landfill gas collection and treatment system, which would contain and control off-site particulates as well as collect and treat gases generated from the Site. Dust suppression activities shall be conducted in order to minimize the generation of fugitive dust during cap construction. Please see Response to Comment No. 2. for required dust suppression activities.

**23. Comment 9:**

This area is close to the Inglewood-Newport earthquake fault which creates public safety concerns related to soil liquefaction. What is the depth to groundwater? Is it affected by annual rainfall amounts? Will the pounding of thousands of pilings and other vibrations at the site increase the danger of soil liquefaction? Would the soil liquefaction speed contaminants into the deep ground drinking water?

**Response:**

The elevation of groundwater contained in the Bellflower Aquitard is affected by annual rainfall. The static groundwater elevations for the Bellflower Aquitard at the Site were measured at -21.51 to -29.05 feet Mean Sea Level (MSL) (approximately 36 to 53 feet below ground surface) during 1990/1991 groundwater sampling events. In May of 1995, static groundwater elevations for the Bellflower Aquitard were measured at -14.83 to -22.59 feet MSL.

As stated in Response to Comment No. 20, the draft RAP does not propose forcing heavy piles into the waste zones. Please refer to Response to Comment No. 11, regarding liquefaction.

24. Comment 10:

I assume that contaminated liquids will be pumped from the ground. Will a sufficient degree of groundwater extraction be achieved by proposed pumping plans?

**Response:**

An Aquifer Test Workplan has been submitted to DTSC to determine the pumping rate for the groundwater collection system. The objectives of the aquifer test are: 1) determine effective pumping rates for the extraction wells, 2) determine the magnitude of capture zone as a result of pumping, and 3) obtain site-specific aquifer property data to aid in design of the groundwater collection and treatment system with respect to the number and spacing of wells. The results of the aquifer test will be incorporated into the final remedial design for this site.

25. Comment 11:

There have been discussions about cleaning the top of the site but not the lower part, including that affecting the deeper aquifers. Why would DTSC allow such a two tier approach? Is this a standard approach? Has it been used on other large contaminated sites? Should not both levels of the site be cleaned before the surface is developed? Since liquid contaminants tend to go downward pulled by gravity, is it not of great importance to cleanup the deep contaminants as quickly as possible? Should not there be a plan to cleanup both levels before construction is allowed?

(a) At how many other sites in California in the last 10 years has DTSC employed this vertically defined operable units, i.e., cleanup the top but not cleanup the bottom? If this has been done in other locations, what unusual issues arose?

(b) Has the Regional Water Quality Control Board agreed to such a two tier approach, i.e., cleanup the top but not cleanup the bottom? Would you expect the RWQCB to consider such an approach to be appropriate and reasonable at this large site.

**Response:**

Please refer to Response to Comments No. 5, 7, and 9.

26. Comment 12:

If a two tier cleanup plan is approved, will the DTSC require that a specific party be required to finance the cleanup

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of the lower level? How and when will that be determined? How can DTSC be confident that work should proceed on the top tier without a full plan for cleaning up the lower tier of the site?

**Response:**

Please refer to Response to Comments No. 6, 5, and 10.

**27. Comment 13:**

The fact sheet indicates that the BKK Corporation will take responsibility to complete the remediation of the upper unit. Who will be responsible to cleanup the lower level? If BKK Corporation cleans the Upper OU, will BKK be excused for any responsibility for the Lower OU.

**Response:**

DTSC has entered into an agreement with the BKK Corporation to conduct the Remedial Investigation, Feasibility Study and prepare a draft RAP. BKK has been identified by DTSC as a PRP; therefore, they are liable, along with the other PRPs, for the investigation and remediation, if necessary, for the Lower OU.

**28. Comment 14:**

The fact sheet cites 12 PRPs including BKK. Who are these other and what is DTSC doing to encourage them to meet their obligations to clean the Site?

**Response:**

The other PRPs named in the 1987/1988 Remedial Action Order are: Signal Oil Company (C.K.A. Allied-Signal, Inc.), Shell Oil Company, Union Oil Company, Standard Oil of California (C.K.A. Chevron Corporation), Buttram Oil Company (C.K.A. Buttram Energies, Inc.), Atlantic Richfield Company (ARCO), Continental Oil Company (C.K.A. CONOCO, Inc), Mobil Oil Corporation, Long Beach Oil Development Company, Del Amo Gardens, Inc., The Deutsch Company, Chancellor and Ogden, and World Industrial Center, Ltd.

As stated in Response to Comment No. 6 and 8, DTSC has identified a number of other Potentially Responsible Parties (PRPs) for the remediation of the entire Site. These PRPs have been notified that they have been so identified in the Preliminary Non-Binding Allocation of Responsibility Section of the draft RAP.

**29. Comment 15:**

The fact sheet states that additional field work was conducted in May 1995, to complete the remedial investigation of



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the upper operable unit. Has the field work been complete? What was done? What results are now available to the public? Was all or part of the work done by consultants paid by parties with a financial incentive to have the project go forward?

**Response:**

Yes, the field work has been completed. The filed work conducted in May 1995, consisted of obtaining additional groundwater samples and information on Site soils. The data obtained from the field work is contained in the RI Report prepared by Brown & Root Environmental.

The RI Report along with the FS and draft RAP are available for public review in Carson Regional Library, located on Carson Street in the City of Carson and at DTSC's Long Beach office.

The field work was conducted by Brown & Root Environmental under DTSC's oversight. Brown & Root Environmental was contracted by the BKK Corporation.



COUNTY OF LOS ANGELES  
DEPARTMENT OF PUBLIC WORKS

900 SOUTH FREMONT AVENUE  
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HARRY W. STONE, Director

ADDRESS ALL CORRESPONDENCE TO:  
P.O. BOX 1460  
ALHAMBRA, CALIFORNIA 91802-1460

September 21, 1995

IN REPLY PLEASE  
REFER TO FILE. WM-2

Mr. Thomas Cota  
Department of Toxic Substances Control  
245 West Broadway  
Long Beach, CA 90802-4444

Dear Mr. Cota:

**NEGATIVE DECLARATION FOR CAL COMPACT LANDFILL  
UPPER OPERABLE UNIT, CITY OF CARSON**

Thank you for the opportunity to provide comments on the environmental document for the above-named project. We have reviewed the Negative Declaration in reference to Waste Management Division's areas of responsibility and offer the following comments:

C-1

The Los Angeles County Uniform Building Code, Section 308(c), requires that a building or structure located on or within 1,000 feet of a landfill containing decomposable material, must include the installation of a landfill gas migration protection system and/or control system. This office must be contacted for issuance of necessary permits.

C-2

The project site also contains active, abandoned or idle oil or gas wells. The Los Angeles County Building Code, Section 308(d) requires that buildings and/or enclosed structures located within 200 feet from oil or gas wells be provided with methane gas protection systems. This office must be contacted for issuance of necessary permits.

If you have any questions regarding this matter, please contact the undersigned at (818) 458-3561, Monday through Thursday, 7:00 a.m. to 5:30 p.m.

Very truly yours,

HARRY W. STONE  
Director of Public Works

*David M. Smith*  
DAVID M. SMITH

Supervising Civil Engineer III  
Waste Management Division

JR:al  
JANET1\COMP.1

Enc.

Post-It™ brand fax transmittal memo 7671		# of pages	1
To	THOMAS N. COTA	From	JANET RANGIER
Ca.		Co.	DBA
Dept.		Phone	(818) 458-3564
FAX	(310) 590-4932		(818) 458-3593

Response to comment received from County of Los Angeles,  
Department of Public Works on the Cal Compact Landfill Project.

**Comment 1:**

The Los Angeles County Uniform Code, Section 308(c), requires that a building or structure located on or within 1,000 feet of a landfill containing decomposable material, must include the installation of a landfill gas migration protection system and/or control system. This office must be contacted for issuance of necessary permits.

**Response:**

Comment noted and accepted.

**Comment 2:**

The project site also contains active, abandoned or idle soil or gas wells. The Los Angeles County Building Code, Section 308(d) requires that buildings and/or enclosed structures located within 200 feet from oil or gas wells be provided with methane gas protection systems. This office must be contacted for issuance of necessary permits.

**Response:**

Comment noted and accepted.

Martin J. McHale  
21111 Dolores Sp #158  
Carson, CA 90745

September 22, 1995

Mr. Thomas M. Cota  
Hazardous Materials Specialist  
California Environmental Protection Agency  
Department of Toxic Substances Control  
Site Mitigation Branch  
245 W. Broadway, Suite 425  
Long Beach CA 90802-4444

RE: CAL-Compact Landfill (Metro 2000)

The situation in California demands that steps be taken today to ensure the adequate supply of potable water for our children and grandchildren. The number of contaminated aquifers today in California is staggering. Now, the Department of Toxic Substance Control (D.T.S.C.) wants to endanger another aquifer, the Silverado.

D-1 | The D.T.S.C. plan to cap the millions of gallons of hazardous waste now on the site is badly flawed. Your statement on Tuesday night, September 19, 1995, that "all the contaminated water will be treated" is impossible to accomplish. The 3,000 piles driven below the fill and the protective membrane will perform as a straw, siphoning the now contaminated water into the Silverado aquifer.

D-2 | The decision to remediate only the upper half of the site was made at a private conference by B.K.K., the potential responsible party, (P.R.P.), D.T.S.C., and Carson Realty Project, Inc. (C.R.P.), without any consideration or participation by citizens living in the community.

D-3 | The claim of D.T.S.C. and others that the hazardous waste can not be moved because of the lack of facilities that will accept it is not true. Kettleman Hills in California is accepting hazardous waste presently. The cost of extricating and moving hazardous waste is costly. The old adage "Pay me now, Pay me later" is still true.

D-4 | The D.T.S.C. statement that they do not have the resources at this time to ensure all the P.R.P.'s fulfill their responsibilities for the clean-up may be true. However, the federal environmental laws are also applicable, including the awarding of treble damages to P.R.P.'s who do not fulfill their obligations to clean up the hazardous waste they converted.

Californians want More Environmental Protection, not less. The decision to remediate only the top half of the Metro 2000 site, at this time, is haphazard and could have many unintended consequences.

Sincerely,



Martin J. McHale

cc: City of Carson City Council  
Juanita McDonald, 55th District Assemblywoman

Response to comments received from Mr. Martin McHale on the Cal Compact Landfill Remedial Action Plan

**Response to comment No. 1:**

The proposed remedy for the groundwater contained in the Bellflower Aquitard is to install extraction wells along the down-gradient side (western and southern Site boundaries) of the landfill. This remedy should capture and prevent the further off-site migration of groundwater containing hazardous substances. The extracted groundwater will be treated to regulatory standards prior to being discharged.

As for the 3,000 piles mentioned, the draft RAP addresses the remedy for the remediation of the Upper Operable Unit (OU). The draft RAP does not contain, nor should contain, proposed future development designs. DTSC is aware of the proposed development of the Site, to the extent that any given construction activity, associated with any development of the Site, has the potential to cause further releases of hazardous substances, DTSC reserves the right to review and comment upon such non-remediation activities and, where necessary, enjoin such activities.

At this time it is premature to state that the proposed pilings will perform as a "straw", siphoning contaminated water into the Silverado. The exact depths of the pilings have to be determined. Furthermore, the depths of the pilings are not expected to penetrate the Gage Aquifer, the aquifer directly below the Upper OU.

**Response to Comment 2:**

DTSC held two public meetings, on June 15, and September 6, 1995, to discuss the remedial process at the Cal Compact Landfill. The meetings were part of the Public Participation Plan prepared for this Site to provide opportunities for public involvement in the remediation process. During both meetings the phased approach was addressed. Title 40 Code of Federal Regulations § 300.430(a)(ii)(A) states that "Sites should generally be remediated in operable units when early actions are necessary or appropriate to achieve significant risk reduction quickly, when phased analysis and response is necessary or appropriate given the size or complexity of the site, or to expedite the completion of total site cleanup." The remedy selected for the Upper OU will reduce significantly the potential migration of any hazardous substances found in the Upper OU.

DTSC's Official Policy Document No. SM #92-1, dated July 1, 1992, Section II(h) defines an "Operable Unit" as "a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure." It goes

on to state that "The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographical portions of a site, specific site problems associated with the site... By dividing the site into separate operable units, emphasis is placed on addressing critical public health and environmental problems first." To our knowledge the waste zone is located above and within a well-characterized geological formation, the Bellflower Aquitard, which in our view represents the principal source of potential contamination to deeper off-site groundwater sources. DTSC believes that the proposed remedy will immediately control and mitigate off-site migration and would thus provide DTSC a meaningful first step without compromising our ability to continue investigating the Lower OU. Furthermore, the proposed remedy will be consistent with the final remedy for the Lower OU.

To delay implementation of this proposed remedy, in order to first investigate the potential contamination in the Lower OU, would needlessly forestall a remedy which is appropriate for the Upper OU and which will also minimize further migration of hazardous substances from the Upper OU to the Lower OU. The absence of the remedy for the Upper OU, or delay in its implementation, could only serve to increase future contamination of the Lower OU.

#### RESPONSE TO COMMENT 3:

To our knowledge no DTSC representative has claimed that "hazardous waste cannot be moved because of lack of facilities that will accept it". Excavation with off-site disposal was evaluated in the Feasibility Study (Section 5.1.4.2). There are several reasons why excavation and off-site disposal was not proposed as the final remedy. They include: a) increase in health risk, b) difficult to implement, and c) high cost.

Scenario III in the Baseline Health Risk Assessment addressed a 2-year construction and excavation scenario. The effects of excavation activities on adults working on the landfill and adults and children living in the neighboring residential areas were evaluated. The conclusion of the risk assessment was that inhalation of organic vapors would contribute to increase in risk. Cumulative cancer risks for the construction workers are  $9.05 \times 10^{-5}$  (Upper Confidence Level (UCL) Based); for off-site residents  $3.56 \times 10^{-4}$  (UCL-Based). This translates for the construction worker in an estimated lifetime cancer risk to not more than 9 cancers in an exposed population of 100,000 individuals; and for the off-site resident an estimated lifetime cancer risk of not more than 3.5 cancers in an exposed population of 10,000 individuals.

#### Response to Comment 4:

The comment that "The DTSC statement that they do not have

the resources at this time to ensure all the PRPs fulfill their responsibility for the cleanup" is mis-quoted. What was stated was that DTSC does not have the resources to conduct the remedial activities proposed for the Cal Compact Landfill.



South Coast  
AIR QUALITY MANAGEMENT DISTRICT

21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (909) 396-2000

September 22, 1995

Mr. Thomas Cota, Project Manager  
Department of Toxic Substances Control  
245 West Broadway, Suite 350  
Long Beach, CA 90802-4444

Dear Mr. Cota:

Thank you for the opportunity to review the Draft Remedial Action Plan (DRAP) and Supplemental Negative Declaration for the Cal Compact Landfill in Carson. Our staff has limited its review to the Executive Summary, Air Investigation Results (pp. 4-11 to 4-13), and the Remedial Action (pp. 7-1 to 7-20) sections of the DRAP dated August 8, 1995 and the Supplemental Negative Declaration dated August 24, 1995.

Based on this review, our staff has the following comments:

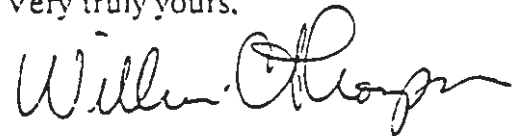
- E-1 | 1. It is staff's understanding that a gas collection system for the interior portion of the landfill (under the proposed Metro Mall Project) will be installed and that a perimeter gas collection system will be installed if required. A distinction should be made in the documents between the "interior" gas collection system and the "perimeter" gas collection system to reduce confusion.
- E-2 | 2. As landfill gas travels along wells and headers, condensate is typically generated. There is no mention of landfill gas condensate generation nor how this condensate will be collected, stored and/or treated. Of course, condensate collection, storage and/or treatment systems will require permits from the SCAQMD.
- E-3 | 3. On page 7-15, the following statement is incorrect:  
"A SCAQMD permit may be required for excavation if wastes which may contain elevated concentrations of VOC's are disturbed."  
SCAQMD's Rule 1150, which regulates excavations at landfills, defines an excavation as "any activity which exposes buried wastes to the atmosphere." Earthmoving activities, such as grading, which may expose buried landfill material to the atmosphere, will require a Rule 1150 Excavation Management Plan.
- E-4 | 4. Due to the size of this site and the amount of soil to be moved for the construction of the landfill cover, a Rule 403 Fugitive Dust Plan may be required, which may include PM10 upwind and downwind monitoring.
- E-5 | 5. Page 7-17 describes the monitoring for PM10, Lead and Chromium during construction of the landfill cap. If buried wastes are not expected to be disturbed during remediation (page 7-15), why is it necessary to sample for



- E-5 | Lead and Chromium? Since heavy metals were disposed of at this site (page 2-3), has contamination spread? If earthmoving activities include disturbance of contaminated soils, a Rule 1150 Excavation Management Plan may be required which will specify upwind and downwind monitoring of dust and heavy metals and well as organic gases.
- E-6 | 6. The landfill gas survey work plan mentioned in Section 7.2.1.2 will be reviewed by our staff as a separate document.

Again, thank you for this opportunity to review the above mentioned documents. Our staff looks forward to working with you on this project. If you have any further questions, please call Ms. Linda Dejbakhsh at (909) 396-2614.

Very truly yours,



William C. Thompson, P.E.  
Senior Manager  
Public Facilities Branch  
Stationary Source Compliance

LLD/landfill/calcomp/revdrap

cc: Fred Braganza, SCAQMD

Response to Comments received from SCAQMD on the Draft Remedial Action Plan for the Cal Compact Landfill.

**Response to comment 1:**

The RAP will be modified to provide a distinction between the "interior" gas collection system that is part of the proposed development and the "perimeter" gas collection system that is part of the remedial action.

**Response to comment 2:**

The final design of the landfill gas collection system has not been developed. The next stage of the remedial process is the remedial design/remedial action (RD/RA) stage. During the RD/RA stage final designs will be developed and approved. However, DTSC will inform the contractors of the possibility that a condensate collection, storage and/or treatment systems may be needed and these units would require SCAQMD permits.

**Response to comment 3:**

DTSC concurs with the comment regarding the need for obtaining a permit from SCAQMD should activities, such as grading, expose buried landfill material to the atmosphere. The RAP will be revised to read "should activities, such as grading or excavation, expose buried landfill material to the atmosphere, as defined by SCAQMD Rule 1150, an Excavation Management Plan will be submitted to SCAQMD. All required permits and approval shall be obtained prior to any landfill excavation activities."

**Response to comment 4:**

DTSC concurs with the comment that a Fugitive Dust Plan may be required in accordance with SCAQMD Rule 403. The draft RAP, section 7.4.1, page 7-17, contains specific monitoring activities to be conducted during field activities. The RAP will be revised to indicate that a Fugitive Dust Plan should be submitted to SCAQMD in accordance with Rule 403.

**Response to comment 5:**

As stated in the draft RAP section 7.4.1, page 17, to ensure proper protection of human health dust particulate samples will be collected and analyzed. These samples will be analyzed for

lead and chromium because lead was detected in low concentration in the soil cover. And based on the Baseline Risk Assessment only chromium exhibits a potential inhalation cancer risk of  $6.0 \times 10^{-6}$ ,  $3.3 \times 10^{-6}$ , and  $1.3 \times 10^{-6}$  for off-site resident child, on-site worker, and off-site resident adult, respectively.

Please refer to Response to Comment No. 3 in regards to Rule 1150 requirements.

**Response to comment 6:**

Comment noted and accepted.

# HELLER EHRMAN WHITE & MCAULIFFE

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September 22, 1995

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VIA FACSIMILE AND U.S. MAIL

Daniel P. Weingarten, Esq.  
Staff Counsel  
Department of Toxic Substances Control  
245 W. Broadway, Suite 350  
Long Beach, California 90802

The Nonbinding Allocation of Responsibility  
in the Draft RAP for the Cal Compact Landfill

Dear Mr. Weingarten:

I am writing on behalf of BKK Corporation ("BKK") to provide comments on the Nonbinding Allocation of Responsibility ("NBAR") set forth in the draft remedial action plan (the "RAP") for the Cal Compact Landfill site (the "Site"). Under the heading "Transporters," the NBAR allocates 5.0% of the responsibility for the Site to "BKK Corporation (Chancellor & Ogden)." No other transporter is identified in the NBAR or allocated any responsibility. BKK objects to this allocation for the following reasons.

F-1

First, no evidence presented in the RAP or the NBAR indicates that Chancellor & Ogden ("C&O") ever arranged for the disposal of any hazardous substances at the Site by selecting the Site. "A transporter must select the disposal facility to be held liable under [CERCLA] § 107(a)(4)."<sup>1/</sup> Tippins Inc. v. USX Corp., 37 F. 3d 87, 94 (3rd Cir. 1994). The decision chiefly relied upon by the Tippins court, U.S. v. Western Processing Co., Inc., 756 F. Supp. 1416 (W.D. Wash. 1991), reached the same conclusion both on the basis of strict statutory construction and on the grounds of equity, explaining the latter grounds as follows:

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<sup>1/</sup> The Carpenter-Presley-Tanner Hazardous Substance Account Act ("HSAA"), California Health & Safety Code ("H&SC") §§ 25300 et seq., adopts the same standard. See H&SC § 25323.5.

F-1

To restrict transporter liability to those situations where transporters have selected the site for delivery of hazardous waste is equitable. . . . [T]ransporters have a limited role in the activity surrounding hazardous substances. They neither create nor treat the material, but are responsible for its safe carriage between the point where it is generated and where it is left for disposal or treatment. If the transporter does not select the delivery site, the transporter's connection with the material is the most attenuated among potentially responsible parties. If the transporter does select the delivery site, the transporter's role becomes a less passive one. As one who actively selected a disposal site, the transporter may more equitably be subject to liability.

Id. at 1420; accord ; Alcatel Information Systems, Inc. v. State of Arizona, 778 F. Supp. 1092, 1095-96 (D. Ariz. 1991). Again, the RAP and the NBAR contain no evidence indicating any support for a finding that C&O ever "actively selected" the Site for the disposal of hazardous substances. In the absence of any such evidence, the law clearly provides that C&O bears no liability under either CERCLA or the HSAA, and therefore should not be included in the NBAR.

F-2

Second, the NBAR provides no explanation for why C&O is singled-out for inclusion in the NBAR. Surely, the Department has identified other transporters during its investigation of the Site. Why is C&O alone named in the NBAR? Not only is this clearly unfair, it casts doubt upon the process by which the Department allocated responsibility amongst transporters at the Site. Moreover, the NBAR provides no explanation for C&O's allocation of 5.0%.

Finally, the naming of C&O in the NBAR and the allocation to it, will have a serious detrimental impact upon BKK. Companies ought not to be named lightly in an NBAR, as such an identification can have a major impact upon the financial viability of a company. As discussed in greater detail above, there does not appear to be an adequate basis for naming C&O in the NBAR; and such an identification will cause C&O undue harm. Therefore, BKK respectfully requests that the Department remove C&O from the NBAR included in the final RAP.

Daniel P. Weingarten, Esq.  
Department of Toxic Substances Control  
September 22, 1995

Page 3

We are looking forward to reviewing the Department's response to these comments. Please call me if you have any question concerning the foregoing.

Very truly yours,



Peter H. Weiner

cc: Ronald R. Gastelum, Esq.  
Paul Neff

Response to comments received from Heller, Ehrman, White & Caffee regarding the Cal Compact Landfill draft Remedial Action Plan.

Response to Comment 1:

The Department of Toxic Substances Control (DTSC) believes that there is substantial evidence in the administrative record for DTSC to conclude that Chancellor & Ogden is liable under CERCLA as a "transporter". It is reasonable to conclude that a party which transported numerous wastes and conducted numerous transactions played a role in selecting Cal Compact Landfill as the ultimate disposal site for these materials.

Response to Comment 2:

The NBAR's purpose is to facilitate an allocation process among PRPs. Your comment seeks information from DTSC which is exempt from disclosure to the public under California law, specifically, attorney-client privilege materials as well as the exemption for agency deliberative processes found in the Public Records Act and decisional law. Finally, that the naming of a party in an NBAR may cause harm to that party is an insufficient basis to exclude the party from the NBAR.

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September 25, 1995

BY HAND

Mr. Thomas Cota  
Project Manager  
Department of Toxic Substances Control  
245 West Broadway, Suite 350  
Long Beach, California 90802-4444

Re: Comments on Draft Remedial Action Plan Regarding  
Former Cal Compact Landfill in Carson

Dear Mr. Cota:

The purpose of this letter and its attachment is to report to the Department of Toxic Substances Control ("DTSC") concerns regarding environmental issues related to the investigation and remediation of the former Cal Compact Landfill, located at 20300 South Main Street in Carson, California (the "Landfill"). This letter and its attachment are submitted in response to the draft Remedial Action Plan ("RAP") issued on August 25, 1995, and are submitted pursuant to California's Hazardous Substances Account Act, including Health and Safety Code Sections 25356.1 and 25358.7(c). In accordance with Section 25356.1(e), it is requested that DTSC review and consider these comments, and, in accordance with Section 25358.7(c), it is respectfully requested that DTSC respond to and incorporate the comments and responses in the RAP.

Various environmental reports regarding the Landfill have been prepared and submitted to DTSC. These reports include, among others, Remedial Investigation dated July 1995 (the "RI"), Final Report Baseline Risk Assessment, dated August 1995 (the "HRA"), Feasibility Study, dated August 1995 (the "FS"), and draft RAP dated August 1995 (collectively, the "Reports"). As is explained herein, the Reports are inadequate for responsible decision making as to how to remediate the Landfill. The draft RAP is defective in numerous significant respects and, therefore, should not be approved under Section 25356.1(f).

The investigative, remedial, and development activities at the Landfill, including those completed to date and those that will be undertaken in the future, are functionally interrelated and dependent on one another. Landfill redevelopment without



KELLEY DRYE & WARREN

Mr. Thomas Cota  
September 25, 1995  
Page 2

resolution of environmental issues related to site characterization and remediation, many of which are not adequately addressed in the Reports, will likely have grave consequences for the City of Carson and is contrary to good health and safety practices and, therefore, public policy. Moreover, the proposed remediation strategy ignores the presence and possible migration of leachate within the Landfill, ignores soil conditions that may have a long term adverse affect on groundwater, and completely neglects the regional groundwater resources (including drinking water) that ultimately require protection. Essentially, what the draft RAP proposes is containment rather than remediation.

An Environmental Impact Report ("EIR") for this proposed development was previously approved. The EIR assumed that environmental issues related to hazardous substances at the Landfill would be addressed by a RAP. To the extent, therefore, that the draft RAP is deficient, the EIR becomes deficient.

The major concerns with the Reports may be summarized as follows (details of each point are discussed in the attachment):

1.           **The Contents of the Landfill Have Not Been Adequately Investigated.**
  - Threshold issue of whether the proposed phased approach is appropriate has been ignored. Significantly, there is no plan in place (and no financial commitments) for investigation or remediation of drinking water underlying the Landfill.
  - Investigation that was conducted is woefully inadequate: there are too few borings overall and insufficient borings in the interior of the Landfill. The limited investigation conducted to date does not form the basis for a rational RAP that could pass the substantial evidence test.
  
2.           **The Proposed Remediation Plan Is Incomplete.**
  - Without explanation, the Feasibility Study was allowed to proceed without the benefit of a complete and approved Remedial Investigation.
  - The Feasibility Study and draft Remedial Action Plan are grossly generic, with insufficient details. They "conceptually" discuss remediation but fail to give firm plans with *details*. Essentially, what is proposed is *containment* rather than *remediation*. In addition, the end use and associated engineering lack definition. Issues such as possible subsidence, existing contamination pathways, and contamination

Mr. Thomas Cota  
September 25, 1995  
Page 3

pathways that might be created or expanded have either not been discussed or have not adequately been discussed.

- The Health Risk Assessment is hopelessly flawed; among other things, its conclusions are based on references to outdated documents.
- The draft Remedial Action Plan is incomplete; significant issues are not discussed and have apparently not been considered, such as the effect the construction of the shopping center will have on the cap.

3. **The Draft RAP Does Not Resolve Issues That DTSC Itself Previously Raised In Connection With The Landfill.**

- DTSC's prior concerns, such as proper abandonment of the two oil wells and one drinking water well on site and investigation of the underlying drinking water, are not addressed and therefore not resolved by the draft RAP. Has DTSC abandoned these concerns or simply overlooked them?

4. **The Draft RAP Does Not Contain Any Indication That There Are Proper Financial Assurances Regarding The Proposed Remediation.**

- The Draft RAP leaves "blank" the section for Financial Responsibility (Section 2.4), and states "[t]o be provided by DTSC." A significant aspect of the draft RAP is groundwater and gas monitoring and cap maintenance for 30 years. Yet, the owner of the Landfill is in bankruptcy and the apparent possible future owner has made no demonstration of financial ability. It appears that the financial viability of any future owner is tied to the success of a shopping center development effort still in its preliminary stages. There is no provision in the draft RAP for the contingency of lack of funds and what effect this would have on the ongoing monitoring, operation, and maintenance.

5. **The Proposed Redevelopment Plan Creates Significant Environmental Concerns that Have Not Been Addressed.**

- No consideration in draft RAP of what effect the driving of piles and other aspects of shopping center construction will have on environmental issues on the Landfill. Indeed, there do not even appear to be in place final development plans from which an analysis of these

Mr. Thomas Cota  
September 25, 1995  
Page 4

issues reasonably could be made. Among other things, construction may create conduits for downward migration of contaminants into the drinking water and subsidence, especially where groundwater will be extracted.

- No consideration in draft RAP of various issues related to ongoing maintenance (30 years) of the Landfill cap.
- No consideration in draft RAP of what effect the Landfill cap and gas collection systems will have on possible subsidence or on the subsequent investigation/remediation of the Lower Operable Unit.

The report attached hereto provides a detailed analysis of each of the above points. Additionally, since we respectfully request complete responses from the DTSC as to each of the points raised in the attached report, for your convenience, attached as Exhibit A to the report is a copy of the enclosed report with bracketed numbers next to each point for which we request a response.

We appreciate your courtesy and cooperation in connection with this matter.

Very truly yours,

Dana A. Suttgart

DAS:bhs

DETAILED ANALYSIS  
FORMER CAL COMPACT LANDFILL  
ENVIRONMENTAL ISSUES OF CONCERN TO CITY OF CARSON

The former Cal Compact Landfill (the "Landfill") consists of 157 acres, and was used as a Class II landfill from approximately April 1959 until December 1964. During that period, approximately 6.2 million cubic yards of solid waste and 540,000 cubic yards of liquid waste were placed in the landfill. Of the 540,000 cubic yards of liquid waste, the Department of Toxic Substances Control ("DTSC") estimates that 300,000 cubic yards would today be classified as hazardous. (Remedial Investigation report, § 1.2.1 (hereafter, the "RI")). The liquid waste consists of various hazardous substances, such as chlorinated solvents, waste oils, and oil exploration drilling mud. With the exception of recent interim uses, the Landfill has been vacant since 1965.

On May 25, 1995, BKK Corporation and the DTSC signed Remedial Action Order and Consent Order. Docket No. HSA 94/95-035, which outlines the proposed remediation and financial arrangements for the Upper Operable Unit ("UOU") of the Landfill. The UOU is defined as that area between the ground surface and the base of the Bellflower Aquitard, approximately 85 feet below the ground surface. Similarly, the draft Remedial Action Plan ("RAP") and other Reports (RI, Feasibility Study ("FS"), and Health Risk Assessment ("HRA")) address only the investigation and remediation of the UOU, and they fail to address any arrangements for investigation or remediation of the Lower Operable Unit ("LOU").

A developer has expressed a desire to develop the Landfill as an outlet shopping center.

In connection with the remedial process, various environmental reports have been submitted to the DTSC. (See Appendix). These reports take the position that the Landfill has been adequately characterized and that the remedial measures proposed will be appropriately protective of human health and the environment. Documents in the DTSC files indicate that the agency frequently has criticized the earlier reports (Nos. 1 through 7 in the Appendix), citing a range of technical errors and unsupported or improper conclusions. (See DTSC Memorandum, March 24, 1993, from Office of Scientific Affairs to Omoruyi Patrick). Contrary to standard DTSC procedure and CERCLA (see, e.g., 40 C.F.R. §§ 300.430 and 300.435 (incorporated by reference in Health and Safety Code § 25356.1(c))), the Draft RAP fails to indicate whether the DTSC has approved the RI, FS, or HRA.

The draft RAP and the Reports upon which it is based are inadequate and deficient in a number of significant respects such that the draft RAP should not be approved. A detailed explanation of the major concerns with the draft RAP and other Reports is as follows:

1. The Contents of the Landfill Have Not Been Adequately Investigated.

G-1

This issue is perhaps the most significant problem with the draft RAP, and it comprises several different concerns. First, the DTSC has made the decision to operate under a "phased approach": the DTSC has apparently approved the concept of remediating the UOU without remediating -- or even investigating -- the LOU. Thus, the remediation plan proposed in the draft RAP is, by definition, incomplete, because, by failing to address the LOU, it fails to propose a comprehensive remediation of the Landfill. This planned course of action will have farreaching consequences. Most significant is the fact that the LOU contains drinking water. Further, remediation of the UOU, as well as construction of the shopping center, may have a significant impact on the LOU, including among other things the creation of conduits for contaminants between the two operable units and making it more difficult to investigate the LOU at a later date. *None of these issues -- not even the issue of whether a phased approach is appropriate -- are even addressed in the draft RAP.*

Before the draft RAP can be approved, the threshold issue of whether to use a "phased approach" must be fully and properly analyzed.<sup>1</sup> After this analysis has been completed, appropriate reports must be submitted to the DTSC and the public, and there must be public hearings in accordance with the Hazardous Substances Account Act, regarding the appropriateness of the phased approach. Only if this procedure is followed can a RAP be approved in accordance with law.

G-2

Second, despite the sheer size of the Landfill -- 157 acres -- there has been precious little testing: only 15 soil borings, 17 groundwater monitoring wells, and 54 cone penetrometer test ("CPT") borings. This is significantly below the average number of borings completed at other State Superfund sites of similar size and complexity.<sup>2</sup> Thus, the testing to date is patently insufficient to fully and properly characterize this complicated site. Moreover, by virtue of this limited testing, there cannot be a finding that the draft RAP is based on substantial evidence and, therefore, the draft RAP cannot be approved. See Health and Safety Code § 25356.1(f). This is especially true because, as the Reports concede, there are *no records* of what wastes were deposited in the landfill for a period of 27 months out of the approximately 70 months the landfill was open (39 percent of the operational time of the landfill). (RI, § 1.2.1). It is crucial to a proper remediation of the Landfill that the Landfill

G-1

<sup>1</sup> A phased approach is also not appropriate for this Site under the standards set forth in 40 C.F.R. § 300.430(a)(ii), which is incorporated by reference in Health and Safety Code Section 25356.1(c).

G-2

<sup>2</sup> The degree of borings and wells at the Landfill each averages about .1 per acre. Comparisons with other DTSC sites are illuminating: at the McColl site in Fullerton there were 11 borings and 1 well per acre; at the BKK site in West Covina there were 2 borings and 1 well per acre; and at the Marine Corps Air Station at El Toro there were 5 borings and 1 well per acre.

G-2 first be adequately investigated and characterized. Otherwise, any remediation plan is, by definition, incomplete.

Third, there are significant inadequacies with the sampling that did occur. Of the 15 soil borings (*less than one boring per 10 acres*), 9 soil borings did not fully penetrate the landfill waste due either to drill rig refusal and/or the presence of explosive concentrations of methane gas. With respect to the CPT borings, they were conducted only either along the perimeter or on internal haul roads of the Landfill. The same is true of the groundwater monitoring wells: none of the groundwater monitoring wells were in the interior of the Landfill. Further, none of the groundwater monitoring wells were installed in the underlying Gage, Lynwood, and Silverado Aquifers -- the aquifers that are used for domestic water sources. (RI, § 1.6). Indeed, the Dominguez Water Company pumps water from these aquifers. (RI, § 1.6). Thus, because of the extremely limited nature of the testing, there does not exist the substantial evidence required to support approval of a draft RAP. Health and Safety Code § 25356.1(f). The Reports do not cite other successful landfill remediation plans where limited testing of this nature was successfully used.

G-3 Thus, the sampling that has been conducted to date is plainly insufficient to properly characterize the Landfill or to support a proper RAP. This is a significant problem, and it would be imprudent to begin an expensive remediation plan (and construction of a shopping center) without first properly characterizing the Landfill. Indeed, because of the limited site investigation, the following crucial analytical data is lacking:

- There is inadequate information regarding the nature of the wastes in the landfill cells;
- There is inadequate information regarding the nature and vertical and lateral extent of soil contamination;
- There is inadequate information regarding the nature and vertical and lateral extent of groundwater contamination;
- There is inadequate information regarding the presence and characteristics of leachate in the landfill and its possible release into the underlying soils and groundwater; and
- There is inadequate information regarding the distribution and migration routes for explosive landfill gases.

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§ 3.1.4). Further, the RI also states that there is a downward vertical gradient at the Landfill (RI, § 2.3.2), so groundwater contaminants would be expected to migrate downward, likely into the underlying drinking water aquifers.

*In the absence of a comprehensive characterization of the contaminant conditions at the Landfill, including migration pathways, the feasibility of the proposed remediation cannot be properly evaluated and the draft RAP is inadequate.*

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Second, here, the DTSC allowed the FS to proceed to evaluate remedial alternatives without having the RI completed for the Landfill. This is not only inconsistent with standard DTSC policy, but it is imprudent because work on an FS should begin only after a thorough investigation of the site has been completed, from which an appropriate body of data has been developed. Nonetheless, here, the DTSC files indicate that the FS was allowed to begin in the absence of an approved RI with the understanding that deficiencies in the RI would be addressed during the execution of the FS. (See DTSC Memorandum, November 18, 1993, from Margie Youngs to Gloria Conti). *Therefore, it follows that to the degree that the RI is deficient and flawed, the FS is deficient and flawed.*

Further, the FS and draft RAP are very general in nature and fail to contain significant details. Proposed "concepts" are discussed, but the documents fail to include specifics for crucial aspects of the proposed remediation such as the cap or the groundwater and landfill gas collection and treatment systems. For instance, the draft RAP concedes that no specific program has been developed for the groundwater and landfill gas monitoring systems, and that the specific number and locations of the groundwater wells has not even been determined. (Draft RAP, §§ 7.2.5.1 and 7.2.5.2). The same is true for monitoring of the air during the remediation: the draft RAP states that "details" will be provided at a later date. (Draft RAP, § 7.4.1). There are similar inadequacies in the draft RAP with respect to traffic and noise concerns. (Draft RAP, §§ 7.4.3 and 7.4.5). Without more detailed plans regarding the proposed remediation, the effectiveness of the remediation -- and therefore the draft RAP -- cannot be properly evaluated.

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6-7

- The executive summary states that the existing risks for the hypothetical scenarios are well within the risk calculated for average background concentrations of selected air pollutants common in the Los Angeles area. This is a major departure from the risk standards DTSC has established. DTSC usually looks at cancer risks of one in one million as being a subject of concern, while the risk from background air pollutants can be as high as one in one thousand. Therefore, the comparison used is irrelevant and misleading.
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6-8

The draft RAP is also seriously lacking in details regarding the numerous geotechnical issues associated with the cap and the design of the methane gas collection and groundwater pump-and-treat systems. For instance, how will the cap respond to an earthquake, along with possible liquefaction? The area is prone to flooding; how will the cap respond to flooding? What is the likelihood of subsidence and differential settling and what are the likely consequences? There are no contingency plans to cover these issues. How will construction on the Landfill affect the cap? What about the heavy truck and equipment traffic that will pass through? What about paving of parking lots? Will the construction workers be trained in construction techniques that will preserve the integrity of the cap? Will they have the proper technology? What about simple things like the planting of trees and other landscaping? How will the roots, etc. affect the cap? Is the draft RAP realistic in assuming that there will be adequate maintenance of the cap (including seals on the pilings, etc.) for the anticipated life, 30 years? (Draft RAP, § 7.2.5.2). No operation and maintenance plan has even been developed yet. (Draft RAP, § 11.1). What will happen to ongoing operation and maintenance if the shopping center is not successful?



6-9

Further, although the FS suggests that the most effective cap for the Landfill would be an impermeable synthetic membrane (see FS, § 4.2.1.2 "synthetic membrane is highly reliable"; § 4.2.2.2 "impermeable synthetic membrane is most reliable"; see also Tables 4-1, 4-2, 4-3, which indicate that a synthetic membrane is less susceptible to cracking than a soil cap), the FS ultimately concludes, without any explanation, that the cap will, instead, consist of soil and clay. The draft RAP similarly fails to explain why the proposed synthetic membrane cap was rejected. In so doing, the draft RAP fails to abide by the requirements of Health and Safety Code Section 25356.1(d), under which a RAP must "set forth the reasons for rejection of alternative removal and remedial actions." Moreover, the draft RAP also fails of one of its stated purposes, to "[c]ontrol infiltration of surface water to reduce the generation of leachate." (Draft RAP, § 1.3). Indeed, it is only under the proposed locations of the shopping center buildings that it is planned to provide a synthetic liner. (FS, § 5.3.2.1). This raises the additional concern that until there are firm plans for the locations of the buildings, how can the cap be installed? What about buildings that may be constructed in Phase II of the construction?<sup>3</sup>

6-10

Moreover, the draft RAP proposes a groundwater extraction well spacing of 150-200 feet with a pump rate of 3 to 5 gallons per minute ("gpm"). There is no supporting data to determine the suitability of these estimates. Given the limited water production capabilities of the Bellflower Aquitard (RI, § 2.3.2; Draft RAP, § 6.1), it is highly unlikely that a 3-5 gpm flow rate will produce a 75 to 100 foot radius of influence. It is likely that the proposed the degree of pumping will not remove the toxics; at best, it may keep them from spreading. Thus, the draft RAP fails of one of its stated intended objectives: the "[c]apture, control, and treatment of the on-site contaminated groundwater and the contaminant plume that is now off site." (Draft RAP, § 1.3).

6-11

Rather than complete a thorough investigation of the groundwater at the Landfill, and thereby develop a factual basis for characterizing the nature and distribution of conditions that will require remediation and/or monitoring, the draft RAP proposes very limited investigation and remedial responsibilities -- essentially limited to the Bellflower Aquitard. Indeed, there is simply no plan whatsoever for investigation, let alone treatment, of the groundwater contained in the underlying regional aquifers. This vertical partitioning of the groundwater contamination at the base of the Bellflower Aquitard should not be approved.

*The proposed remediation strategy, with its focus on landfill gas, ignores the presence and possible migration of leachate within the landfill, ignores soil conditions that may have a long term adverse affect on groundwater, and completely neglects the regional groundwater resources (including drinking water) that ultimately require protection.*

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<sup>3</sup> Moreover, although the draft RAP mentions the fact that the FS proposed and then rejected an asphalt cap, it is curiously silent on the idea of a synthetic cap or why that proposed cap was rejected.

3. The Draft RAP Does Not Resolve Issues that DTSC Previously Raised in Connection with the Landfill; Therefore, Clarification of these Issues is Requested from DTSC.

6-12 The DTSC project file contains numerous references to previous concerns raised by the DTSC regarding the investigation and proposed remediation and redevelopment of the property. Some examples are the concerns the DTSC had regarding liquefaction and compaction of the landfill waste. (DTSC Memorandum, January 29, 1993, from Permitting and Enforcement Geological Service Unit to Karen Baker). Some of DTSC's prior concerns do not appear to be remedied by the RI/FS, HRA, or draft RAP, as evidenced by the lack of any discussion of the two issues cited above. It is unclear whether RI/FS, HRA, and draft RAP have simply failed to properly alleviate DTSC's concerns or whether DTSC has instead abandoned its prior concerns. In either case, DTSC should respond and comment on these issues. These issues include the following two major concerns:

- The hydrogeologic characterization of the Landfill has not been completed. There has been no investigation whatsoever on what impact there would be to the Gage, Lynwood, and Silverado Aquifers by virtue of the following: (i) remediation of the UOU and (ii) construction of a large shopping center. Concerns regarding the impact to these aquifers are significant, especially because at least the Silverado Aquifer is a source of drinking water.
- Any prudent remediation of the Landfill must include proper abandonment of the three former wells (two oil wells and one water well) located in the western portion of the Landfill. The RI specifically concedes that the wells were not abandoned consistent with current standards. (RI, § 1.3.2.1). Indeed, the water well was not abandoned consistent with *any* standards. Yet, the RI is silent on the potential problems that the wells may create. (RI, § 1.3.2.1). Moreover, the draft RAP does not propose any additional investigation or excavation as to the wells. According to the RI, all three well casings extend into the waste cells. (RI, § 1.3.2.1). As a result, groundwater and leachate have been in contact with the casings and have, most likely corroded through. Thus, there is a significant risk of downward migration into the underlying drinking water. It is crucial that there be no conduit for downward vertical migration of contaminants. Again, this issue is simply not addressed in the draft RAP.

6-14 Aside from the above, there are other areas in which the draft RAP (and the investigation and studies that it is based on) are not thorough or complete and do not take into account significant issues that should be considered as part of a clean-up of the Landfill. For instance, the DTSC has deviated from its usual policy by approving of the characterization and remediation of the site in two phases and in allowing an FS to be conducted before completion of an RI. Neither the RI/FS nor the draft RAP give an analysis of why the DTSC decided to approve of the use of this unusual approach on this Landfill. Therefore, an explanation from DTSC for why it decided to approve of the phased approach is warranted. Moreover, the DTSC should indicate whether the California Regional Water

6-14 | Quality Control Board has been consulted regarding this strategy and whether it has approved the phased approach in writing. If so, a copy of that writing should be provided.

6-15 | Moreover, the draft RAP fails to indicate whether the DTSC has approved the RI, FS, or HRA. Approval by the DTSC of these reports is a standard requirement, which should be met before the proposed remediation and redevelopment activities should be allowed to begin.

4. The Draft RAP Does Not Contain Any Indication That There Are Proper Financial Assurances Regarding the Proposed Remediation.

The draft RAP is plainly incomplete in that, under the section "Financial Responsibility," it states simply "[t]o be provided by DTSC." This is indicative of the overall incomplete nature of the draft RAP. Without any financial commitment to conduct the remediation (including the long term operation and maintenance that is a significant aspect of it), how can the draft RAP possibly be approved? This is especially true given the size of the Landfill (and therefore the significant amount of money it will take to pay for the remediation and subsequently to perform the necessary maintenance).

6-16 | The draft RAP also states that "[t]he owner and operator of the site will be responsible for the ongoing [operation and maintenance] and monitoring of the site." (Draft RAP, § 11.4). However, the owner of the Landfill is in bankruptcy and the apparent possible future owner has made no demonstration of financial ability. It appears that the financial viability of any future owner is tied to the success of a shopping center development effort still in its preliminary stages. This is especially significant given that the draft RAP proposes monitoring and maintenance for some 30 years. Yet, there is no provision in the draft RAP for the contingency of lack of funds at some time after the remediation has begun. A partial, incomplete remediation could be more harmful than no remediation at all. What assurances are there that the developer has the financial wherewithal to live up to obligations to maintain the remedial activities? The draft RAP mentions none. The developer expects to benefit financially from the project and is not being required to fund any portion of the remediation according to the draft RAP. (Draft RAP, § 9). Yet, it is proposed that the developer be immunized from any environmental liability, notwithstanding the importance of a commitment to fund the ongoing long term operation and maintenance. There should be a demonstration of financial responsibility adequate to cover long term operation and maintenance.

6-17 | The funding of the remediation is contingent on the success of the issuance of bonds, which is contingent on the successful leasing of the shopping center. This financial structure does not constitute a firm plan or commitment for funding the remediation. Moreover, any change in the amount of funds required to complete the remediation (and given the other concerns raised in these comments, there is a substantial risk of such an increase) may cause the proposed financing structure to prove untenable. This is a significant concern. Thus, there needs to be a contingency plan in place to cover the possibility that (i) the remediation

6-17 will not be completed because of a lack of funding, and (ii) the ongoing operation and maintenance of the groundwater and landfill gas treatment systems will be discontinued because of a lack of funding. Indeed, there could be increased exposures to the surrounding residents -- at levels greater than if there was no development at all -- if the operation of the remediation system and the maintenance of the Landfill cease after the proposed development is constructed.

5. The Proposed Redevelopment Plan Creates Significant Environmental Concerns that Have not been Addressed.

The prior development plan, which included a large shopping mall consisting of three-story structures, required the importation of a large volume of fill soil and installation of deep driven piles. The current redevelopment plans still include the shopping mall located in the center of the Landfill as Phase I, and office buildings constructed on the Landfill boundaries as Phase II.

6-18 From a review of DTSC files, it is not clear whether the dynamic deep compaction considered in the prior development plan will be performed. However, the FS and draft RAP call for the shopping center structures to be supported by piles driven into the soil underlying the waste cells, and while the FS and draft RAP are silent on the issue, previous plans called for the piles to be driven until refusal. (One of the problems with the draft RAP is that it fails to address engineering issues associated with the proposed development and there do not appear to be final plans for such development.) The driving of pilings in this manner creates a significant concern, because, for the most part, soils of the Bellflower Aquitard underlie the waste cells, and in some areas the Bellflower Aquitard soils are as thin as six feet. (RI, § 2.2.5). The thickness of soil required to key in the driven pilings was not given in the FS or draft RAP. Penetration of the Bellflower Aquitard soils by the driven piles may provide a conduit for contaminant migration. These issues do not appear to have been appropriately reviewed in connection with the draft RAP. These issues must be carefully reviewed by the DTSC before a RAP can be approved.

Another issue that is not discussed is the possibility of subsidence. This always is a concern in a landfill. Here, it is even more of a concern because of the fact that groundwater will be extracted, leaving gaps that might promote subsidence. Moreover, subsidence is also a special concern here because of the heavy equipment that will be driven and operated on the Landfill.

Preservation of the landfill cap will be required to maintain the effectiveness of the methane gas collection system and to prevent exposure to workers and visitors to the Landfill. A detailed maintenance plan addressing any digging activity, such as utility trenching or planting of landscaping, as well as proper repair of the cap, will need to be prepared and submitted. This is simply absent from the draft RAP.

6-19 Further, the presence of the landfill cap and methane gas collections systems will complicate the subsequent characterization and remediation of the LOU. Possible boring locations will be reduced due to constraints with the proposed development. The completion of numerous borings and wells may compromise the integrity of the landfill cap from the numerous penetrations and subsequent repairs.

*The contemplated importation of fill soil, unresolved issues of soil compaction, and deep pilings are all issues relevant to the environmental condition of the Landfill and the need to complete site characterization and aspects of the remediation before beginning site development.*

### CONCLUSION

The above summarizes the major environmental issues and concerns that have not adequately been addressed in the draft RAP. These issues and concerns are significant, and they must be properly resolved before a RAP can be approved by the DTSC. Without a proper analysis and resolution of these issues, the draft RAP will fail of its primary objective: "to provide protection for human health and the environment." (Draft RAP, § 1.3).

APPENDIX

- 1) McLaren/Hart, January 1990. *Remedial Investigation/Feasibility Study (RI/FS) Work Plan.*
- 2) McLaren/Hart, June 11, 1991. *Draft Interim Use Risk Assessment.*
- 3) Western Laboratories, October 31, 1991. *Geotechnical Engineering Report.*
- 4) McLaren/Hart, January 10, 1992. *Integrated Remedial Investigation Report (11 Volumes).*
- 5) McLaren/Hart, April 1991 to March 1992. *Groundwater Monitoring Reports.*
- 6) McLaren/Hart, November 1993. *Final Feasibility Study Report.*
- 7) McLaren/Hart, December 1993. *Baseline Risk Assessment Report.*
- 8) Brown and Root Environmental, July 1995. *Remedial Investigation Report.*
- 9) Brown and Root Environmental, August 1995. *Feasibility Study.*
- 10) Brown and Root Environmental, August 1, 1995. *Baseline Risk Assessment.*
- 11) Brown and Root Environmental, August 8, 1995. *Draft Remedial Action Plan.*

DETAILED ANALYSIS  
FORMER CAL COMPACT LANDFILL  
ENVIRONMENTAL ISSUES OF CONCERN TO CITY OF CARSON

The former Cal Compact Landfill (the "Landfill") consists of 157 acres, and was used as a Class II landfill from approximately April 1959 until December 1964. During that period, approximately 6.2 million cubic yards of solid waste and 540,000 cubic yards of liquid waste were placed in the landfill. Of the 540,000 cubic yards of liquid waste, the Department of Toxic Substances Control ("DTSC") estimates that 300,000 cubic yards would today be classified as hazardous. (Remedial Investigation report, § 1.2.1 (hereafter, the "RI")). The liquid waste consists of various hazardous substances, such as chlorinated solvents, waste oils, and oil exploration drilling mud. With the exception of recent interim uses, the Landfill has been vacant since 1965.

On May 25, 1995, BKK Corporation and the DTSC signed Remedial Action Order and Consent Order, Docket No. HSA 94/95-035, which outlines the proposed remediation and financial arrangements for the Upper Operable Unit ("UOU") of the Landfill. The UOU is defined as that area between the ground surface and the base of the Bellflower Aquitard, approximately 85 feet below the ground surface. Similarly, the draft Remedial Action Plan ("RAP") and other Reports (RI, Feasibility Study ("FS"), and Health Risk Assessment ("HRA")) address only the investigation and remediation of the UOU, and they fail to address any arrangements for investigation or remediation of the Lower Operable Unit ("LOU").

A developer has expressed a desire to develop the Landfill as an outlet shopping center.

In connection with the remedial process, various environmental reports have been submitted to the DTSC. (See Appendix). These reports take the position that the Landfill has been adequately characterized and that the remedial measures proposed will be appropriately protective of human health and the environment. Documents in the DTSC files indicate that the agency frequently has criticized the earlier reports (Nos. 1 through 7 in the Appendix), citing a range of technical errors and unsupported or improper conclusions. (See DTSC Memorandum, March 24, 1993, from Office of Scientific Affairs to Omoruyi Patrick). [1] Contrary to standard DTSC procedure and CERCLA (see, e.g., 40 C.F.R. §§ 300.430 and 300.435 (incorporated by reference in Health and Safety Code § 25356.1(c))), the Draft RAP fails to indicate whether the DTSC has approved the RI, FS, or HRA.

The draft RAP and the Reports upon which it is based are inadequate and deficient in a number of significant respects such that the draft RAP should not be approved. A detailed explanation of the major concerns with the draft RAP and other Reports is as follows:

1. The Contents of the Landfill Have Not Been Adequately Investigated.

This issue is perhaps the most significant problem with the draft RAP, and it comprises several different concerns. [2] First, the DTSC has made the decision to operate under a "phased approach": the DTSC has apparently approved the concept of remediating the UOU without remediating -- or even investigating -- the LOU. [3] Thus, the remediation plan proposed in the draft RAP is, by definition, incomplete, because, by failing to address the LOU, it fails to propose a comprehensive remediation of the Landfill. This planned course of action will have farreaching consequences. Most significant is the fact that the LOU contains drinking water. [4] Further, remediation of the UOU, as well as construction of the shopping center, may have a significant impact on the LOU, including among other things the creation of conduits for contaminants between the two operable units and making it more difficult to investigate the LOU at a later date. [5] *None of these issues -- not even the issue of whether a phased approach is appropriate -- are even addressed in the draft RAP.*

[6] Before the draft RAP can be approved, the threshold issue of whether to use a "phased approach" must be fully and properly analyzed.<sup>1</sup> After this analysis has been completed, appropriate reports must be submitted to the DTSC and the public, and there must be public hearings in accordance with the Hazardous Substances Account Act, regarding the appropriateness of the phased approach. Only if this procedure is followed can a RAP be approved in accordance with law.

[7] Second, despite the sheer size of the Landfill -- 157 acres -- there has been precious little testing: only 15 soil borings, 17 groundwater monitoring wells, and 54 cone penetrometer test ("CPT") borings. [8] This is significantly below the average number of borings completed at other State Superfund sites of similar size and complexity.<sup>2</sup> [9] Thus, the testing to date is patently insufficient to fully and properly characterize this complicated site. Moreover, by virtue of this limited testing, there cannot be a finding that the draft RAP is based on substantial evidence and, therefore, the draft RAP cannot be approved. See Health and Safety Code § 25356.1(f). [10] This is especially true because, as the Reports concede, there are *no records* of what wastes were deposited in the landfill for a period of 27 months out of the approximately 70 months the landfill was open (39 percent of the

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<sup>1</sup> [11] A phased approach is also not appropriate for this Site under the standards set forth in 40 C.F.R. § 300.430(a)(ii), which is incorporated by reference in Health and Safety Code Section 25356.1(c).

<sup>2</sup> The degree of borings and wells at the Landfill each averages about .1 per acre. Comparisons with other DTSC sites are illuminating: at the McColl site in Fullerton there were 11 borings and 1 well per acre; at the BKK site in West Covina there were 2 borings and 1 well per acre; and at the Marine Corps Air Station at El Toro there were 5 borings and 1 well per acre.



operational time of the landfill). (RI, § 1.2.1). It is crucial to a proper remediation of the Landfill that the Landfill first be adequately investigated and characterized. Otherwise, any remediation plan is, by definition, incomplete.

Third, there are significant inadequacies with the sampling that did occur. [12] Of the 15 soil borings (*less than one boring per 10 acres*), 9 soil borings did not fully penetrate the landfill waste due either to drill rig refusal and/or the presence of explosive concentrations of methane gas. [13] With respect to the CPT borings, they were conducted only either along the perimeter or on internal haul roads of the Landfill. [14] The same is true of the groundwater monitoring wells: none of the groundwater monitoring wells were in the interior of the Landfill. [15] Further, none of the groundwater monitoring wells were installed in the underlying Gage, Lynwood, and Silverado Aquifers -- the aquifers that are used for domestic water sources. (RI, § 1.6). Indeed, the Dominguez Water Company pumps water from these aquifers. (RI, § 1.6). [16] Thus, because of the extremely limited nature of the testing, there does not exist the substantial evidence required to support approval of a draft RAP. Health and Safety Code § 25356.1(f). [17] The Reports do not cite other successful landfill remediation plans where limited testing of this nature was successfully used.

Thus, the sampling that has been conducted to date is plainly insufficient to properly characterize the Landfill or to support a proper RAP. This is a significant problem, and it would be imprudent to begin an expensive remediation plan (and construction of a shopping center) without first properly characterizing the Landfill. Indeed, because of the limited site investigation, the following crucial analytical data is lacking:

- [18] There is inadequate information regarding the nature of the wastes in the landfill cells;
- [19] There is inadequate information regarding the nature and vertical and lateral extent of soil contamination;
- [20] There is inadequate information regarding the nature and vertical and lateral extent of groundwater contamination;
- [21] There is inadequate information regarding the presence and characteristics of leachate in the landfill and its possible release into the underlying soils and groundwater; and
- [22] There is inadequate information regarding the distribution and migration routes for explosive landfill gases.

[23] Significantly, the RI states that groundwater is in contact with landfill waste in the western portion of the Landfill. (RI, § 2.3.2). This is evidenced by the fact that the highest contaminant concentrations (50,000 micrograms per kilogram total volatile organic

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The draft RAP is also seriously lacking in details regarding the numerous geotechnical issues associated with the cap and the design of the methane gas collection and groundwater pump-and-treat systems. [37] For instance, how will the cap respond to an earthquake, along with possible liquefaction? [38] The area is prone to flooding; how will the cap respond to flooding? [39] What is the likelihood of subsidence and differential settling and what are the likely consequences? [40] There are no contingency plans to cover these issues. How will construction on the Landfill affect the cap? [41] What about the heavy truck and equipment traffic that will pass through? [42] What about paving of parking lots? [43] Will the construction workers be trained in construction techniques that will preserve the integrity of the cap? [44] Will they have the proper technology? [45] What about simple things like the planting of trees and other landscaping? [46] How will the roots, etc. affect the cap? [47] Is the draft RAP realistic in assuming that there will be adequate maintenance of the cap (including seals on the pilings, etc.) for the anticipated life,

30 years? (Draft RAP, § 7.2.5.2). [48] No operation and maintenance plan has even been developed yet. (Draft RAP, § 11.1). [49] What will happen to ongoing operation and maintenance if the shopping center is not successful?

[50] Further, although the FS suggests that the most effective cap for the Landfill would be an impermeable synthetic membrane (see FS, § 4.2.1.2 "synthetic membrane is highly reliable"; § 4.2.2.2 "impermeable synthetic membrane is most reliable"; see also Tables 4-1, 4-2, 4-3, which indicate that a synthetic membrane is less susceptible to cracking than a soil cap), the FS ultimately concludes, without any explanation, that the cap will, instead, consist of soil and clay. [51] The draft RAP similarly fails to explain why the proposed synthetic membrane cap was rejected. [52] In so doing, the draft RAP fails to abide by the requirements of Health and Safety Code Section 25356.1(d), under which a RAP must "set forth the reasons for rejection of alternative removal and remedial actions." [53] Moreover, the draft RAP also fails of one of its stated purposes, to "[c]ontrol infiltration of surface water to reduce the generation of leachate." (Draft RAP, § 1.3). Indeed, it is only under the proposed locations of the shopping center buildings that it is planned to provide a synthetic liner. (FS, § 5.3.2.1). [54] This raises the additional concern that until there are firm plans for the locations of the buildings, how can the cap be installed? [55] What about buildings that may be constructed in Phase II of the construction?<sup>3</sup>

Moreover, the draft RAP proposes a groundwater extraction well spacing of 150-200 feet with a pump rate of 3 to 5 gallons per minute ("gpm"). [56] There is no supporting data to determine the suitability of these estimates. [57] Given the limited water production capabilities of the Bellflower Aquitard (RI, § 2.3.2; Draft RAP, § 6.1), it is highly unlikely that a 3-5 gpm flow rate will produce a 75 to 100 foot radius of influence. [58] It is likely that the proposed the degree of pumping will not remove the toxics; at best, it may keep them from spreading. [59] Thus, the draft RAP fails of one of its stated intended objectives: the "[c]apture, control, and treatment of the on-site contaminated groundwater and the contaminant plume that is now off site." (Draft RAP, § 1.3).

Rather than complete a thorough investigation of the groundwater at the Landfill, and thereby develop a factual basis for characterizing the nature and distribution of conditions that will require remediation and/or monitoring, the draft RAP proposes very limited investigation and remedial responsibilities -- essentially limited to the Bellflower Aquitard. [60] Indeed, there is simply no plan whatsoever for investigation, let alone treatment, of the groundwater contained in the underlying regional aquifers. This vertical partitioning of the groundwater contamination at the base of the Bellflower Aquitard should not be approved.

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<sup>3</sup> [61] Moreover, although the draft RAP mentions the fact that the FS proposed and then rejected an asphalt cap, it is curiously silent on the idea of a synthetic cap or why that proposed cap was rejected.

[62] *The proposed remediation strategy, with its focus on landfill gas, ignores the presence and possible migration of leachate within the landfill, ignores soil conditions that may have a long term adverse affect on groundwater, and completely neglects the regional groundwater resources (including drinking water) that ultimately require protection.*

3. The Draft RAP Does Not Resolve Issues that DTSC Previously Raised in Connection with the Landfill; Therefore, Clarification of these Issues is Requested from DTSC.

The DTSC project file contains numerous references to previous concerns raised by the DTSC regarding the investigation and proposed remediation and redevelopment of the property. [63] Some examples are the concerns the DTSC had regarding liquefaction and compaction of the landfill waste. (DTSC Memorandum, January 29, 1993, from Permitting and Enforcement Geological Service Unit to Karen Baker). Some of DTSC's prior concerns do not appear to be remedied by the RI/FS, HRA, or draft RAP, as evidenced by the lack of any discussion of the two issues cited above. It is unclear whether RI/FS, HRA, and draft RAP have simply failed to properly alleviate DTSC's concerns or whether DTSC has instead abandoned its prior concerns. In either case, DTSC should respond and comment on these issues. These issues include the following two major concerns:

- [64] The hydrogeologic characterization of the Landfill has not been completed. [65] There has been no investigation whatsoever on what impact there would be to the Gage, Lynwood, and Silverado Aquifers by virtue of the following: (i) remediation of the UOU and (ii) construction of a large shopping center. Concerns regarding the impact to these aquifers are significant, especially because at least the Silverado Aquifer is a source of drinking water.
- [66] Any prudent remediation of the Landfill must include proper abandonment of the three former wells (two oil wells and one water well) located in the western portion of the Landfill. The RI specifically concedes that the wells were not abandoned consistent with current standards. (RI, § 1.3.2.1). Indeed, the water well was not abandoned consistent with *any* standards. [67] Yet, the RI is silent on the potential problems that the wells may create. (RI, § 1.3.2.1). [68] Moreover, the draft RAP does not propose any additional investigation or excavation as to the wells. According to the RI, all three well casings extend into the waste cells. (RI, § 1.3.2.1). As a result, groundwater and leachate have been in contact with the casings and have, most likely corroded through. [69] Thus, there is a significant risk of downward migration into the underlying drinking water. It is crucial that there be no conduit for downward vertical migration of contaminants. Again, this issue is simply not addressed in the draft RAP.

Aside from the above, there are other areas in which the draft RAP (and the investigation and studies that it is based on) are not thorough or complete and do not take into account significant issues that should be considered as part of a clean-up of the Landfill.

[70] For instance, the DTSC has deviated from its usual policy by approving of the characterization and remediation of the site in two phases and in allowing an FS to be conducted before completion of an RI. Neither the RI/FS nor the draft RAP give an analysis of why the DTSC decided to approve of the use of this unusual approach on this Landfill.

[71] Therefore, an explanation from DTSC for why it decided to approve of the phased approach is warranted. [72] Moreover, the DTSC should indicate whether the California Regional Water Quality Control Board has been consulted regarding this strategy and whether it has approved the phased approach in writing. If so, a copy of that writing should be provided.

[73] Moreover, the draft RAP fails to indicate whether the DTSC has approved the RI, FS, or HRA. Approval by the DTSC of these reports is a standard requirement, which should be met before the proposed remediation and redevelopment activities should be allowed to begin.

4. The Draft RAP Does Not Contain Any Indication That There Are Proper Financial Assurances Regarding the Proposed Remediation.

[74] The draft RAP is plainly incomplete in that, under the section "Financial Responsibility," it states simply "[t]o be provided by DTSC." This is indicative of the overall incomplete nature of the draft RAP. [75] Without any financial commitment to conduct the remediation (including the long term operation and maintenance that is a significant aspect of it), how can the draft RAP possibly be approved? This is especially true given the size of the Landfill (and therefore the significant amount of money it will take to pay for the remediation and subsequently to perform the necessary maintenance).

The draft RAP also states that "[t]he owner and operator of the site will be responsible for the ongoing [operation and maintenance] and monitoring of the site." (Draft RAP, § 11.4). However, the owner of the Landfill is in bankruptcy and the apparent possible future owner has made no demonstration of financial ability. [76] It appears that the financial viability of any future owner is tied to the success of a shopping center development effort still in its preliminary stages. This is especially significant given that the draft RAP proposes monitoring and maintenance for some 30 years. [77] Yet, there is no provision in the draft RAP for the contingency of lack of funds at some time after the remediation has begun. [78] A partial, incomplete remediation could be more harmful than no remediation at all. [79] What assurances are there that the developer has the financial wherewithal to live up to obligations to maintain the remedial activities? The draft RAP mentions none. The developer expects to benefit financially from the project and is not being required to fund any portion of the remediation according to the draft RAP. (Draft RAP, § 9). Yet, it is proposed that the developer be immunized from any environmental liability, notwithstanding the importance of a commitment to fund the ongoing long term operation and maintenance. [80] There should be a demonstration of financial responsibility adequate to cover long term operation and maintenance.

The funding of the remediation is contingent on the success of the issuance of bonds, which is contingent on the successful leasing of the shopping center. [81] This financial structure does not constitute a firm plan or commitment for funding the remediation. Moreover, any change in the amount of funds required to complete the remediation (and given the other concerns raised in these comments, there is a substantial risk of such an increase) may cause the proposed financing structure to prove untenable. This is a significant concern. [82] Thus, there needs to be a contingency plan in place to cover the possibility that (i) the remediation will not be completed because of a lack of funding, and (ii) the ongoing operation and maintenance of the groundwater and landfill gas treatment systems will be discontinued because of a lack of funding. Indeed, there could be increased exposures to the surrounding residents -- at levels greater than if there was no development at all -- if the operation of the remediation system and the maintenance of the Landfill cease after the proposed development is constructed.

5. The Proposed Redevelopment Plan Creates Significant Environmental Concerns that Have not been Addressed.

The prior development plan, which included a large shopping mall consisting of three-story structures, required the importation of a large volume of fill soil and installation of deep driven piles. The current redevelopment plans still include the shopping mall located in the center of the Landfill as Phase I, and office buildings constructed on the Landfill boundaries as Phase II.

[83] From a review of DTSC files, it is not clear whether the dynamic deep compaction considered in the prior development plan will be performed. However, the FS and draft RAP call for the shopping center structures to be supported by piles driven into the soil underlying the waste cells, and while the FS and draft RAP are silent on the issue, previous plans called for the piles to be driven until refusal. [84] (One of the problems with the draft RAP is that it fails to address engineering issues associated with the proposed development and there do not appear to be final plans for such development.) [85] The driving of pilings in this manner creates a significant concern, because, for the most part, soils of the Bellflower Aquitard underlie the waste cells, and in some areas the Bellflower Aquitard soils are as thin as six feet. (RI, § 2.2.5). [86] The thickness of soil required to key in the driven pilings was not given in the FS or draft RAP. [87] Penetration of the Bellflower Aquitard soils by the driven piles may provide a conduit for contaminant migration. These issues do not appear to have been appropriately reviewed in connection with the draft RAP. These issues must be carefully reviewed by the DTSC before a RAP can be approved.

[88] Another issue that is not discussed is the possibility of subsidence. This always is a concern in a landfill. Here, it is even more of a concern because of the fact that groundwater will be extracted, leaving gaps that might promote subsidence. Moreover, subsidence is also a special concern here because of the heavy equipment that will be driven and operated on the Landfill.

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Preservation of the landfill cap will be required to maintain the effectiveness of the methane gas collection system and to prevent exposure to workers and visitors to the Landfill. [89] A detailed maintenance plan addressing any digging activity, such as utility trenching or planting of landscaping, as well as proper repair of the cap, will need to be prepared and submitted. This is simply absent from the draft RAP.

[90] Further, the presence of the landfill cap and methane gas collections systems will complicate the subsequent characterization and remediation of the LOU. [91] Possible boring locations will be reduced due to constraints with the proposed development. [92] The completion of numerous borings and wells may compromise the integrity of the landfill cap from the numerous penetrations and subsequent repairs.

[93] *The contemplated importation of fill soil, unresolved issues of soil compaction, and deep pilings are all issues relevant to the environmental condition of the Landfill and the need to complete site characterization and aspects of the remediation before beginning site development.*

CONCLUSION

The above summarizes the major environmental issues and concerns that have not adequately been addressed in the draft RAP. These issues and concerns are significant, and they must be properly resolved before a RAP can be approved by the DTSC. Without a proper analysis and resolution of these issues, the draft RAP will fail of its primary objective: "to provide protection for human health and the environment." (Draft RAP, § 1.3).



APPENDIX

- 1) McLaren/Hart, January 1990. *Remedial Investigation/Feasibility Study (RI/FS) Work Plan.*
- 2) McLaren/Hart, June 11, 1991. *Draft Interim Use Risk Assessment.*
- 3) Western Laboratories, October 31, 1991. *Geotechnical Engineering Report.*
- 4) McLaren/Hart, January 10, 1992. *Integrated Remedial Investigation Report (11 Volumes).*
- 5) McLaren/Hart, April 1991 to March 1992. *Groundwater Monitoring Reports.*
- 6) McLaren/Hart, November 1993. *Final Feasibility Study Report.*
- 7) McLaren/Hart, December 1993. *Baseline Risk Assessment Report.*
- 8) Brown and Root Environmental, July 1995. *Remedial Investigation Report.*
- 9) Brown and Root Environmental, August 1995. *Feasibility Study.*
- 10) Brown and Root Environmental, August 1, 1995. *Baseline Risk Assessment.*
- 11) Brown and Root Environmental, August 8, 1995. *Draft Remedial Action Plan.*

Responses to Kelley Drye & Warren Comments on the Draft Remedial Action Plan for the Cal Compact Project.

**Response to Comment 1:**

DTSC supports its decision that a "phased approach is appropriate for this Site". In accordance with Title 40 C.F.R. § 300.430(a)(ii)(A) "Sites should generally be remediated in operable units when early actions are necessary or appropriate to achieve significant risk reduction quickly, when phased analysis and response is necessary or appropriate given the size or complexity of the site, or to expedite the completion of total site cleanup." The remedy selected for the Upper Operable Unit (OU) will reduce significantly the potential migration of any hazardous substances found in the Upper OU.

Due to the size and complexity of the Site, DTSC determined that a phased analysis and response was appropriate to achieve a complete remediation of the Site. Therefore, DTSC divided the Site's remediation into two operable units, which, addressed separately in a phased approach, shall be intended to achieve a final remedy. The first operable unit, referred to as the Upper OU, consists of Site soils, the waste zone above and within the Bellflower Aquitard, and the Bellflower Aquitard down to, but not including, the Gage Aquifer. The second operable unit, referred to as the Lower OU, is composed of the Gage, Lynwood, and Silverado Aquifers, and all other areas impacted by the areal extent of any hazardous substances which may have migrated or may migrate either from the aquifers just mentioned or from the Upper OU.

DTSC's Official Policy Document No. SM #92-1, dated July 1, 1992, Section II(h) defines an "Operable Unit" as "a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure." It goes on to state that "The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographical portions of a site, specific site problems associated with the site... By dividing the site into separate operable units, emphasis is placed on addressing critical public health and environmental problems first." To our knowledge the waste zone is located above and within a well-characterized geological formation, the Bellflower Aquitard, which in our view represents the principal source of potential contamination to deeper off-site groundwater sources. DTSC has determined that the proposed remedy will immediately control and mitigate off-site migration and thus provide a meaningful first step without compromising our ability to continue investigating the Lower OU. Furthermore, the proposed remedy will be consistent with the final remedy for the Lower OU.

To delay implementation of this proposed remedy, in order to first investigate the potential contamination in the Lower OU, would needlessly forestall a remedy which is appropriate for the Upper OU and which will minimize further migration of hazardous substances from the Upper OU to the Lower OU. Absent the proposed remedy for the Upper OU or delay in its implementation only serves to increase the likelihood of migration of hazardous substances to the Lower OU. Please see Response to Comments from Mr. Colboth, Number 5,6 and 7.

**Response to Comment 2:**

Sites are evaluated on an individual basis due to unique hazards, environmental conditions, and site specific circumstances. Therefore, comparison of the Cal Compact Landfill Site to other sites is not appropriate.

DTSC has determined that the Remedial Investigation (RI) adequately characterized Site conditions in light of the proposed remedy. The proposed remedy provides overall protection of human health and the environment. The proposed remedy will remove, control and treat landfill gases and contaminated groundwater contained in the Bellflower Aquitard and provide containment of the waste buried at the landfill. The construction of a landfill cap, landfill gas collection and treatment system, and groundwater collection and treatment system are all proven and accepted methods for remediating landfills. The proposed remedy would be the same even with extensive sampling, because the remedy captures emissions from all pathways. The U.S. Environmental Protection Agency (U.S EPA) "Guidance for Conducting Remedial Investigation and Feasibility Study Under CERCLA" (RI/FS Guidance), October 1988, provides for a sampling approach that encourages key data collection, directed toward providing information relevant to selection of a remedial action. Therefore, overall site characterization efforts can be continually scoped to minimize the collection of unnecessary data and maximize data quality. DTSC has determined that the sampling activities conducted during numerous field investigations adequately characterized Upper OU conditions and reflect the type of industrial waste identified in the available records. There are no sampling results to indicate that during the period in which records are not available that other types of waste were disposed of at this landfill.

**Response to Comment 3:**

DTSC has determined that sampling locations in the Upper OU adequately represent the waste disposed of in the landfill (see response to comment 2 above), and exhaustive sampling is not warranted in light of the proposed containment remedy.

The comment that "none of the groundwater monitoring wells were installed in the underlying Gage, Lynwood, and Silverado Aquifers -- the aquifers that are used for domestic water sources." is incorrect. The Dominguez Water Company is currently only pumping potable water from the Silverado Aquifer. The Silverado Aquifer is located approximately 500 feet below mean sea level (MSL) beneath the Site. Furthermore, two monitoring wells were installed in the Gage Aquifer (GW-2 & GW-7), which is the aquifer lying immediately below the Upper OU. In October 1991, January 1992, and April 1992, groundwater samples from these wells were analyzed. Toluene, at a concentration of 6 parts per billion (ppb), was detected above the detection limit of 5 ppb, for volatile organic compounds. Semi-volatile organic compounds were not detected above the detection limit. Several metals were detected including sodium, potassium, nickel, iron, and zinc.

Even if the Gage Aquifer were significantly contaminated, for which there is no evidence, the proposed remedy would further ensure that the Gage Aquifer does not become more contaminated. The absence of the proposed remedy could only serve to increase future contamination of the Gage Aquifer and the deeper aquifers below.

DTSC has further concluded that there is sufficient Site data collected during field activities to support the proposed remedy. DTSC has determined that the RI adequately addressed: the nature of the waste in the landfill cells; the nature and vertical extent of soil contamination; the nature and vertical and lateral extent of the groundwater contamination; and the distribution and migration routes of landfill gases for the proposed remedy. DTSC has identified all the major classes of hazardous substances in the landfill, and the remedy addresses all potential exposure pathways for each of these major classes. The classes of hazardous substances are consistent with the known materials sent to the landfill. Additional investigation would needlessly delay remediation activities. This is why a phased approach is delineated in the federal regulations. Otherwise, parties opposing any remediation could always assert that more investigation is necessary.

**Response to Comment 4:**

The comment that there is a downward vertical gradient at the landfill such that groundwater contaminants would be expected to migrate downward, possibly into the underlying drinking water aquifers, is correct. However, the conclusion that this finding justifies further characterization does not follow. On the contrary, it justifies a prompt remedial response, which in this case will substantially minimize this migration pathway.

**Response to Comment 5:**

DTSC believes that the RI is sufficiently complete for the remedy proposed in the RAP. Please refer to Response to Comment 1, 2, and 3 above.

The U.S. EPA RI/FS Guidance states that "the RI and FS are to be conducted concurrently and that data collected in the RI influences the development of the FS, which in turn affects the data needs and the scope of treatability studies and additional field investigations." Furthermore, DTSC's Official Policy SM #92-1, also adopts the same approach, that the RI and FS be conducted concurrently.

The purpose of the RI "is to collect data necessary to adequately characterize the site for the purpose of developing and evaluating effective remedial alternative." (see 40 C.F.R. § 300.430(d)(1)). The RI's purpose is, therefore, linked to remedy selection, as a matter of law. This subsection provides that the RI and FS need not be performed sequentially, but instead that "site characterization activities should be fully integrated with the development and evaluation of alternatives in the feasibility study" (see 40 C.F.R. § 300.430(d)(1)). Characterization thus must be linked to the range of proposed alternatives.

**Response to Comment 6:**

DTSC believes that the FS and draft RAP are specific and contain sufficient specific details to justify selection of the proposed remedy of the Upper OU. The primary objective of the FS is to ensure that appropriate remedial objectives are developed and evaluated, so that relevant information concerning the remedial action options can be presented and an appropriate remedy selected (40 C.F.R. § 300.430 (d) and (e)). The purpose of the RAP is to summarize the findings of the RI/FS and to describe the proposed remedial alternative actions to be taken for the remediation of hazardous substances. The draft RAP provides the overall framework for the proposed remedial actions but does not contain, nor is it required to contain, specific engineering design details. The draft RAP complies with federal Superfund regulations contained in the National Oil and Hazardous Substances Pollution Contingency Plan (commonly referred to as the National Contingency Plan or NCP), U.S. Environmental Protection Agency's guidance documents, and DTSC's policy and guidance documents.

The next stage of the Cal Compact Landfill remediation process is the remedial design/remedial action (RD/RA) stage. The RD/RA stage includes the development of the actual design of the selected remedy and implementation of the remedy (40 C.F.R. §

300.435(a). It is in the RD stage that detailed engineering designs will be submitted to DTSC for the construction of the remedial systems.

**Response to Comment 7:**

a) The list of references in the Final Report Baseline Risk Assessment (BRA) for the Cal Compact Landfill was not updated. However, information provided in the 1992 DTSC Supplemental Guidance for Human Health Multimedia Risk Assessment at Hazardous Waste Sites and Permitted Facilities was used in this health risk assessment where that guidance was necessary for the most complete portrayal of risks. An example is the evaluation of lead exposure at this Site using a method described in the DTSC Supplemental Guidance (see BRA page 4-4). During the four-year course of review and oversight of the conduct of this health risk assessment, toxicologists at DTSC have provided the most up-to-date guidance possible. For example, the statistical treatment of sampling data at this Site followed the U.S. EPA Supplemental Guidance to RAGS: "Calculating the Concentration Term (May 1992)", which supersedes the guidance provided in the DTSC Supplemental Guidance. The chemical bioavailability values listed in Table 3-3 of the BRA represent the most recent values that have appeared in the scientific literature.

This health risk assessment utilized the California EPA Cancer Slope Factor list of 1994 (see footnote to Table 4-1 of the BRA). If values were not available on that list, the on-line database of the U.S. EPA Integrated Risk Information System (IRIS) was used. As shown in the footnotes to Table 4-1 of the BRA, the database was assessed in 1995 which is as up-to-date as possible.

b) The executive summary lists the calculated risks and hazards for the different scenarios. The comparison only places those risks in context with risk from the surrounding environment and has no bearing on the point of departure for consideration for action by the DTSC.

c) The BRA includes an explanation of how the vapor well data were used. The vapor well data were used in predicting future vapor emissions and air concentrations at the site. The highest concentration of a chemical in vapor well/perimeter probe gases was put into the Farmer Model to estimate vapor emissions and subsequent air concentration of that chemical (see Section 3.3.1 of the BRA). Air concentrations were used to estimate the health risks due to inhalation of volatile chemicals.

d) The air monitoring data from the Site showed little difference from ambient air data for the Los Angeles area.

Therefore, these data were not used in the health risk assessment. Instead, air concentrations were estimated using vapor emissions calculated from either the Farmer Model or the Jury Behavior Assessment Model. These models used the highest concentration of a chemical found in either soil, vapor well/perimeter probe gases, or ground water as the input parameter (see Sections 3.3.1 and 3.3.2 of the BRA).

e) We agree that Threshold Limit Values should not be used for risk assessment purposes. The health risk assessment contains a brief discussion of this issue (see page 4-3, third paragraph of the BRA). In this discussion, it is noted that using these values ultimately results in a higher cumulative hazard (that is, more conservative) than if the U.S. EPA oral reference doses had been used. We accepted the calculated hazard indices, because they are conservative and protective of the public health.

f) The long-term commercial/industrial use scenario was not intended to estimate the residual risks after remedial action is completed and with the proposed development in place. The scenario assumes commercial use of the property as the property now exists. Therefore, the risks from indoor air concentrations are not evaluated. The assumption was made that the Site is not capped in any way with relatively impermeable materials, such as asphalt and concrete. However, disruption of soil and other construction activities are considered in the 2-year construction and excavation scenario. The residual risk for the planned shopping mall should be included in a future document describing that approved land use.

**Response to Comment 8:**

As stated in Response to Comment No. 6, the final engineering designs will be drafted and submitted to DTSC during the RD stage of the remedial process and these designs will address geotechnical issues related to the remediation. The construction of the landfill cover will meet all regulatory and engineering requirements. Moreover, current Site conditions present a threat to human health and the environment due to the lack of a properly designed landfill cover. As for construction workers, all personnel working at the Site will have experience and the proper training required to perform their duties.

In regards to the planting of trees and landscaping, please see page 7-7 of the RAP. A top soil layer of suitable material which supports vegetation with a root system less than the depth of the top soil layer will be constructed in an area where landscaping is planned. The top soil will have a normal thickness of 12 inches. Beneath the top soil layer lies a protective soil cover. This protective soil cover provides the

clay layer with an additional measure of protection. Furthermore, the use of vegetation with a shallow root system should also ensure that the clay layer will not be adversely affected.

As assurance that the remedial systems are properly operated and maintained (O&M), DTSC and the developers will enter into an O&M agreement. As part of the remedial process, an O&M Plan will be drafted and submitted to DTSC for approval after the draft RAP has been approved. Furthermore, DTSC will provide direct oversight of the O&M activities conducted at this Site. The shopping center's commercial success will not be a factor in the O&M of the remedial systems. DTSC will seek O&M financial assurance from future Site developers as well as from PRPs.

**Response to Comment 9:**

The evaluation of the synthetic membrane was inadvertently omitted from the final Feasibility Study. The FS will be revised to include the synthetic membrane evaluation. The results of the clay layer compared to the synthetic membrane were: the clay layer was ranked the better alternative based on overall performance. Because of its simple configuration, the clay layer was assessed better for ease of installation, relative ability to make repairs, and overall cost.

**Response to Comment 10:**

In section 7.2.1.1, Aquifer Pump Test, page 7-5, of the draft RAP, it states that "Aquifer testing will be conducted in the Bellflower Aquitard to verify specific hydrogeologic data required for the design of the groundwater extraction system." The well spacing and pumping rate are estimates used for conceptual purposes only. In the RD stage of the remediation, the exact number and spacing of wells will be determined based on data collected during the aquifer pump test.

**Response to Comment 11:**

DTSC has determined that the RI/FS supports the remedy proposed in the RAP, and the remedy will provide protection to human health and the environment, for reasons stated in Response to Comments No. 1, 2, 3, and 4.

**Response to Comment 12:**

DTSC has determined the hydrogeologic characterization of the Upper OU is sufficiently complete for a draft RAP, and a phased approach enables DTSC to mitigate hazardous substances found in the Upper OU prior to completing an investigation of the



California Environmental Quality Act Review

California Environmental Quality Act (CEQA) compliance is required for the establishment, expansion, or change in operation(s) of a Solid Waste Facility (SWF) requiring the issuance or revision of a Solid Waste Facilities Permit (SWFP).

The Board must ensure that local SWFs meet required state standards for the protection of public health, safety, and the environment. The Board implements this goal through programs such as: permit oversight for solid waste facilities, certification and evaluation of Local Enforcement Agencies which administer specific provisions of Assembly Bill (AB) 939, otherwise known as the Integrated Waste Management (IWM) Act; review of environmental documents for proposed, new or expanded solid waste facilities for compliance with CEQA; enforcement of state standards for solid waste facilities; corrective action programs for facilities out of compliance with state standards; and research and development for special waste management issues.

CIWMB staff's review of a ND is to help decision-makers 1) identify potential impacts from proposed projects, 2) determine whether any such impacts are significant, and 3) ascertain whether significant impacts can be mitigated to a level of insignificance in compliance with the CEQA statute and guidelines. In order for CIWMB staff to ascertain that the ND is adequate for our use in the permitting process, the proposed project must be described in sufficient detail and the potential environmental impacts must be identified clearly in the environmental assessment and offer "mitigating measures, if any, included in the project to avoid potentially significant effects", CEQA Guidelines, Article 6, section 15071(e).

K-1 | NOTE: Page 3 of the ND refers to Section 15381 as being in the Public Resources Code (PRC). This Section is in the California Code of Regulations, Title 14, Chapter 3. Assembly Bill 314 and Senate Bill 749 amended Section 21081.6 of the PRC to require that mitigation measures to lessen potential environmental impacts are to be enforceable.

Solid Waste Facility Permit (SWFP)

CIWMB staff are not clear, from the information provided in the ND, if the proposed project will constitute a revision of the SWFP. The Local Enforcement Agency (LEA) will need to make this determination. For the purposes of this project CIWMB staff

Lower OU. The first operable unit, referred to as the Upper OU, consists of Site soils, the waste zone above and within the Bellflower Aquitard, and the Bellflower Aquitard down to, but not including, the Gage Aquifer. The second operable unit, referred to as the Lower OU, is composed of the Gage, Lynwood, and Silverado Aquifers, and all other areas impacted by the areal extent of any hazardous substances which may have migrated or may migrate either from the aquifers just mentioned or from the Upper OU.

To our knowledge the waste zone is located above and within a well-characterized geological formation, the Bellflower Aquitard, which in DTSC's view represents the principal source of potential contamination to deeper off-site groundwater sources. 40 CFR 300.430(a)(i)(A) states that "Sites should generally be remediated in operable units when early actions are necessary or appropriate to achieve significant risk reduction, when phased analysis and response is necessary or appropriate given the size or complexity of the site, or to expedite the completion of total site cleanup." DTSC has concluded that the proposed remedy will immediately mitigate off-site migration. And the proposed remedy will not interfere with the ability to assess potential releases as yet unknown to areas outside this operable unit.

To delay implementation of the proposed remedy, in order to first investigate potential contamination in the Lower OU, would needlessly delay implementing a remedy which is appropriate for the Upper OU. Should further investigations reveal that deeper areas are contaminated, additional waste water treatment wells can be employed in further remedial processes. Furthermore, both the landfill cap and landfill gas collection systems are appropriate control measures for any later discovered, deeper contamination.

DTSC's practice is to strive to achieve meaningful environmental protection and, where a phased approach achieves that goal, to employ such an approach.

DTSC is not proposing to remediate only half the Site. DTSC is proposing to begin the remediation of the Upper OU and to pursue a separate remedial investigation for the Lower OU. Based on the results of a Lower OU investigation, a remedial action plan may be developed.

The construction of the shopping center is not a remedy proposed in the draft RAP. DTSC does not have the authority to issue Land Use Permits, which are the province of local authorities. However, insofar as these structures may impact the proposed remedial action, a workplan to study dynamic compaction and subsidence has been submitted to DTSC and the City of Carson.

The proposed workplan outlines a pilot study to investigate the results of dynamic compaction on the soil cover and waste zone. The information obtained during this field investigation will be used in the remedial design stage to further ensure compatibility of development and remediation.

In order to monitor any potential impacts from the construction of the proposed development and remedial activities, DTSC has required that additional monitoring wells be installed in the Gage Aquifer prior to the start of any construction activity.

**Response to Comment 13:**

An extensive investigation was conducted to identify the location of the abandoned wells. The investigation for these wells included historical records review, magnetometer survey, and historical aerial photographic search. Although DTSC knows the general location of the three wells, DTSC does not know their precise location.

An additional investigation will be conducted during the implementation phase on the RAP to locate the former oil and water wells at the Site to address issues such as the risk of downward migration of contaminants into lower aquifers. To the extent feasible, the former water well and two oil wells will be located and abandoned to meet current regulatory standards. All available information regarding the location of these wells will be utilized in this investigation. The location of the wells will be re-surveyed using available historical data. Survey locations will then be compared to the prior investigations. Based on the results of these investigations, an excavation plan will be considered. This excavation plan shall be limited to those Site areas with the highest probability of finding the oil and water wells. Such limitation is further justified because of the risk associated with excavating buried hazardous substances. Prior to any excavation the health risk of such activities will be evaluated to assess the appropriateness of such excavation. Regulatory approval of all plans and permits will be obtained prior to any excavation activities.

A fate and transport modeling program may also be conducted to evaluate the potential risk to the lower aquifers. Should such program reveal that the potential risk to the lower aquifers from the abandoned wells is insignificant, then excavation, and well abandonment need not be pursued.

In the event that an excavation is conducted to locate these wells, DTSC may suspend such investigation if the investigation itself poses a human health or environmental threat. If the investigation fails to locate these wells, the search for these wells will cease and all other remedial activities will be

implemented.

At this time, there is no data to indicate that the Silverado Aquifer (drinking water aquifer) has been or is presently adversely impacted by Site conditions.

**Response to Comment 14:**

DTSC is following its policy by proceeding with a phased approach and conducting the RI and FS concurrently. In fact, DTSC is following both U.S. EPA and DTSC policies in conducting site remediation activities. See also, Response to Comments No. 1, 3, 4, 5, 11, and 12.

**Response to Comment 15:**

DTSC accepted the Baseline Health Risk Assessment on August 14, 1995, and approved the RI and FS on August 21, 1995.

A statement will be incorporated into the RAP stating the dates DTSC approved and/or accepted these documents.

**Response to Comments 16:**

Financial assurance for implementation of the final RAP is not a legal requirement pursuant to California Health and Safety Code (H&SC) 25356.1. DTSC has authority under Chapter 6.8 of H&SC to seek compliance with the remedy selected in a final RAP from any identifiable PRPs. There is no requirement under law that DTSC first have a full commitment of financial resources from the PRPs before it can prepare or approve a RAP. A final RAP simply represents an approved plan to remediate part or all of a site. So long as the approved plan was adopted pursuant to federal and state procedural guidelines, the plan is legally sufficient.

The previous owner of the Site was in bankruptcy, however, the Site has been purchased by L.A. MetroMall, LLC, a Limited Liability Company. The RAP will be modified to reflect the fact that DTSC may also seek implementation of O&M from any other identified PRP(s) as well as from any person(s) who may acquire title to the Site in the future.

**Response to comment 17:**

The draft RAP does not propose the construction of a shopping center or any other redevelopment structures. The draft RAP proposes the construction of a landfill cap, landfill gas collection and treatment system, and a groundwater collection and treatment system. DTSC will review and provide comments on all

future development designs and activities that might have an adverse impact on the Site. The final approval of all designs associated with the development of the proposed shopping center lies with the local agencies, not with DTSC. DTSC has the regulatory authority to approve the remedial designs for the activities identified in the RAP.

**Response to Comment 18:**

As stated in Response to Comments No. 6 and 8, the next stage of the remediation process, after the approval of the RAP, is the remedial design/remedial action (RD/RA) stage. The RD/RA stage includes the development of the actual design of the selected remedy and implementation of the remedy (40 C.F.R. § 300.435(a)). At that time, detailed engineering designs will be submitted to DTSC for the construction of the remedial systems. Prior to DTSC certifying that the remedial systems are operating properly, an O&M Plan will be submitted for approval. The O&M Plan will contain specific operations details and maintenance schedules for each remedial system.

A test workplan for deep dynamic compaction has been submitted to DTSC for review. Dynamic compaction is not associated with remedial activities, but rather, the proposed development of the Site. Therefore, dynamic compaction was not included in the draft RAP. However, to the extent that any given construction activity has the potential to cause further releases of hazardous substances, DTSC at all times reserves the right to review and comment upon such non-remediation activities.

**Response to Comment 19:**

DTSC is committed to conducting a remedial investigation for the Lower OU. Remediation of the Lower OU will be based on the results of a Lower OU investigation. As a practical matter, DTSC will require that any future development of the Site be conducted in a manner that will not interfere with DTSC's ability to investigate and remediate the Lower OU. Such requirements will include reasonable access agreements to investigate the Lower OU and, if necessary, to construct additional remedial systems.

Response to comments received from the County of Los Angeles - Department of Health Services Environmental Health, Solid Waste Management Program on the Cal Compact Landfill Draft Remedial Action Plan.

**RESPONSE TO COMMENT 1:**

The final designs for the landfill gas collection and treatment system have not been developed. A landfill gas emission and monitoring program needs to be conducted in order to obtain additional information for the final designs. The gas extraction well placement will be based on the results of the emission and monitoring program. The final design will contain the exact location and number of extraction wells and the operating requirement for the landfill gas collection and treatment system.

**RESPONSE TO COMMENT 2:**

The draft Remedial Action Plan (RAP), on which the Department of Toxic Substances Control (DTSC) is acting on, does not address the proposed site development. The draft RAP addresses the proposed remedy for the remediation of the Upper Operable Unit at the Cal Compact Landfill (the Site). DTSC is aware of the proposed development of the Site and to the extent that any given construction activity, associated with any development of the Site, has the potential to cause further releases of hazardous substances, DTSC at all times reserves the right to review and comment upon such non-remediation activities, and if necessary, to exercise its lawful authority to enjoin such activities.

Section 8.2 and 8.3 of the draft RAP addresses the landfill cap and landfill gas control and treatment systems, respectively, for the proposed building area. A synthetic liner and a gas control and treatment system are proposed for the building area. The City of Carson will provide the final approval of these designs.

The Final RAP and supporting documents are available for review at the Carson Public Library, Reference Section, 151 East Carson Street, Carson, California 90745 or at the Department of Toxic Substances Control 245 West Broadway, Suite 350, Long Beach, California 90802. For an appointment to review the records at the DTSC office, please contact Ms. Julie Johnson at (310) 590-4980.



WATER REPLENISHMENT DISTRICT  
OF SOUTHERN CALIFORNIA

DIRECTORS  
DR. KENNETH M. ORDUÑA, PRESIDENT  
LEO J. VANDER LANS, VICE PRESIDENT  
ALBERT ROBLES, TREASURER  
M. SUSAN CARRILLO, SECRETARY  
ROBERT GOLDSWORTHY, DIRECTOR  
FRED CARDENAS, GENERAL MANAGER

September 25, 1995

Mr. Thomas Cota  
Project Manager  
Department of Toxic Substance Control  
245 West Broadway  
Suite 350  
Long Beach, CA 90802

SUBJECT: Cal Compact Landfill Draft Remedial Action Plan

Dear Mr. Cota:

The Water Replenishment District of Southern California (WRD) encompasses the urban coastal plain of Los Angeles County. WRD is responsible for managing and protecting the groundwater supplies of the Central and West Coast Basins. We are therefore interested in the clean up activities for the Cal Compact Landfill site. Unfortunately we have not received full information regarding this site, but we do have a general understanding of what is included in the draft Remedial Action Plan and offer the two following points for consideration:

- H-1
- 1) A review of available data indicates that there is no information that a former groundwater production well on the site has been destroyed. This well (identified by state well number 4S/13W-07H01) is 720 feet deep and has perforations from 555 to 676 feet, within the Silverado Aquifer. We are very concerned with this well because if it is not properly destroyed it may serve as an artificial conduit for contamination migration from the former landfill into deeper production aquifers such as the Silverado Aquifer.
  - H-2 2) WRD is concerned that there might not be adequate information to support that control and containment of the contamination rather than a clean up effort is adequate.

We appreciate the opportunity to voice our concerns regarding the Cal Compact Landfill site.

Sincerely,

Fred Cardenas  
General Manager

Response to comment received from the Water Replenishment District of Southern California on the Cal Compact Draft Remedial Action Plan.

**Response to Comment 1:**

An extensive investigation was conducted to identify the location of the abandoned wells. The investigation for these wells included historical records review, magnetometer survey, and historical aerial photographic search. Although DTSC knows the general location of the three wells, DTSC does not know their precise location.

An additional investigation will be conducted during the implementation phase on the RAP to locate the former oil and water wells at the Site to address issues such as the risk of downward migration of contaminants into lower aquifers. To the extent feasible, the former water well and two oil wells will be located and abandoned to meet current regulatory standards. All available information regarding the location of these wells will be utilized in this investigation. The location of the wells will be re-surveyed using available historical data. Survey locations will then be compared to the prior investigations. Based on the results of these investigations, an excavation plan will be considered. This excavation plan shall be limited to those Site areas with the highest probability of finding the oil and water wells. Such limitation is further justified because of the risk associated with excavating buried hazardous substances. Prior to any excavation the health risk of such activities will be evaluated to assess the appropriateness of such excavation. Regulatory approval of all plans and permits will be obtained prior to any excavation activities.

A fate and transport modeling program may also be conducted to evaluate the potential risk to the lower aquifers. Should such program reveal that the potential risk to the lower aquifers from the abandoned wells is insignificant, then excavation, and well abandonment need not be pursued.

In the event that an excavation is conducted to locate these wells, DTSC may suspend such investigation if the investigation itself poses a human health or environmental threat. If the investigation fails to locate these wells, the search for these wells will cease and all other remedial activities will be implemented.

At this time, there is no data to indicate that the Silverado Aquifer (drinking water aquifer) has been or is presently adversely impacted by Site conditions.

**Response to Comment 2:**

DTSC believes that sufficient site data was collected during field activities to support the proposed remedy. DTSC has identified all the major classes of hazardous substances in the landfill, and the remedy addresses all potential exposure



Response to Comments  
Water Replenishment District  
Page 2

pathways for each of these major classes. An aquifer pump test will be conducted in order to obtain additional information required for the remedial design of the groundwater treatment system.



COUNTY OF LOS ANGELES - DEPARTMENT OF HEALTH SERVICES  
ENVIRONMENTAL HEALTH  
SOLID WASTE MANAGEMENT PROGRAM  
2525 Corporate Place, Room 150, Monterey Park, California 91754  
(213) 881-4151



September 25, 1995

TO: Thomas Cota  
Site Mitigation Operations Branch

FROM: Arlene Block, REHS IV  
Solid Waste Management Program

SUBJECT: SUPPLEMENTAL NEGATIVE DECLARATION REVIEW, CAL COMPACT  
LANDFILL, CARSON, CALIFORNIA

Thank you for the opportunity to respond to the proposed Negative Declaration for the Cal Compact Landfill. We have several comments or concerns.

I-1

The proposed landfill gas extraction system will consist of vertical wells installed at the perimeter of the waste zone. We are concerned that the amount of gas generated and collected by a perimeter system will not be sufficient to maintain a flare without supplemental supplied natural gas. Installation of additional interior wells may enrich the landfill gas mixture. We understand that the cap over the landfill will be increased so that little or no gas will be released at the surface, however, that may not improve the gas flow through the system significantly.

I-2

We would also be interested in knowing how the footings for buildings to be constructed on top of the landfill will be designed and sealed. Will there be a liner under the building and/or gas monitoring equipment?

Some of these issues may have been addressed in previous documents. If so, please let us know where we can find the information.

Tom -- I am forwarding this to you  
and hope that you will address these  
issues in your public comment section

Councilmember

Lorelie  
Olson

Sept. 25, 1995

Councilwoman Olson

CITY COUNCIL

(FAX sent

95 SEP 25 AM 58

Sept 25, 1995

2:25

The following is regarding  
the News 2000 project.

J-1

Toxic fume gases which is  
still underground, should be  
transform into vapor, this  
procedure would eliminate the  
pollution to our environment.

J-2

What are the results of the  
sounding test, & the percentage  
or report of toxic/hazard waste  
regarding this project?

J-3

Can they specify what will be  
done with clay materials which  
I know is there.

Thank You  
Paul Nihipali  
Public Works Comm.

Response to comments received from Paul Nihipali on the Cal Compact Remedial Action Plan.

1. Comment:

Toxic fume gases which is still underground should be transform into vapor, this procedure would eliminate the pollution to our environment.

Response:

DTSC believes that the proposed landfill gas collection and treatment system is protective of the environment. The system will collect landfill gases "underground" through a series of extraction wells. These gases will be transported through a network of pipes to a landfill flare unit. Landfill gases will be destroyed by thermal destruction.

2. Comment:

What are the results of the sounding test, and the percentage or report of toxic/hazard waste regarding this project?

Response:

DTSC is unaware of a "sounding test". However, there is a scheduled Deep Dynamic Compaction Test scheduled to begin in late October 1995. The results of this test is not expected to be available until late November 1995.

BLC Associates estimated that during the time that the landfill was in operation approximately 6.2 to 6.3 million cubic yards of municipal solid waste were placed in the landfill and that the landfill had a total volume of about 7.8 million cubic yards. On the basis of available records it was estimated that approximately 4 percent of the total material received may be considered hazardous by the State of California, using today's standards.

3. Comment:

Can they specify what will be done with clay materials which I know is there.

Response:

DTSC is unaware of what clay materials are being referred to in this comment. However, a clay layer is being proposed as part of the landfill cap. The clay layer will be placed on top of a base layer of soil and covered with a protective layer of soil.

State of California

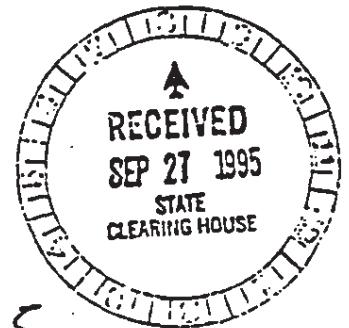
California Environmental  
Protection Agency


Memorandum

To : Chris Belsky  
State Clearinghouse  
1400 Tenth Street, Room 121  
Sacramento, California 95814

Date: September 26, 1995

Thomas M. Cota  
Department of Toxic Substances Control  
Site Mitigation Operations Branch  
245 West Broadway, Suite 350  
Long Beach, California 90802-4444



From :  9-27-95  
John Loane, Associate Waste Management Specialist  
Environmental Review Section, Permits Branch  
Permitting and Enforcement Division  
California Integrated Waste Management Board

Subject: SCH #95081061 - Proposed Negative Declaration (ND) for the approval of the draft Remedial Action Plan (RAP) for groundwater and landfill decomposition gas (LFG) collection and treatment at the Cal Compact Landfill (CCLF), Los Angeles County.

California Integrated Waste Management Board (CIWMB or Board) staff have reviewed the ND for the project cited above.

Project Description

The CCLF is located on 157 acres at 20400 Main Street in the City of Carson. BKK Corporation is requesting approval of the draft RAP for the CCLF, Upper Operable Unit from the Department of Toxic Substances Control (Toxics). The proposed project for which Toxics is acting upon addresses the construction and operation of a groundwater and LFG collection and treatment system. Mitigations for minimizing the potentially significant environmental and human health and safety effects of the proposed project are addressed incorporated into the RAP. The landfill cap construction, which will be occurring during the same construction period, was addressed in the Metro 2000 Environmental Impact Report, dated December 1993.

CCLF RAP ND  
Sept. 26, 1995  
Page 3 of 3

offer the following comments and questions as a 'commenting agency' (not a Responsible Agency) in order to assist the Lead Agency in identifying significant environmental issues and to facilitate the evaluation process.

Excavation of Landfilled Refuse

K-2

If excavation of landfilled refuse occurs/will occur at the CCLF during construction activities, CIWMB staff requests that the LEA be contacted and informed immediately.

Thank you for the opportunity to review this document. If you have any questions regarding these comments, please contact me at (916) 255-4069.

## DEPARTMENT OF TRANSPORTATION

DISTRICT 7, 120 SO. SPRING ST.  
LOS ANGELES, CA 90012-3606  
TDD (213) 897-6610



September 29, 1995

IGR/CEQA/INITIAL STUDY  
Department of Toxic  
Substances Control  
REMEDIAL ACTION PLAN: CAL  
COMPACT LANDFILL  
8056  
Vic. LA-405-11.4, LA-110-  
8.03

Mr. Thomas M. Cota  
Department of Toxic Substances Control  
Site Mitigation Operations Branch  
245 West Broadway, Suite 350  
Long Beach, CA 90802-4444

Dear Mr. Cota:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above-referenced document. This project involves construction and operation of a landfill gas collection and treatment system and a groundwater treatment system

Based on our preliminary review, we have the following comment:

The landfill gas flare should be constructed or shielded from the traveling motorists as to minimize or reduce the potential for visual distraction.

If you have any questions regarding this response, please call me at (213) 897-4429.

Sincerely,

A handwritten signature in cursive script that reads "Steve Buswell".

Steve Buswell  
IGR/CEQA Coordinator  
120 So. Spring Street  
Los Angeles, CA 90012

Response to comments received from the Department of Transportation on the cal Compact Landfill Project.

RESPONSE TO COMMENT 1:

Comment noted and accepted. The RAP will include the statement that "The landfill gas flare will be constructed or shield from the traveling motorists as to minimize or reduce the potential for visual distraction."



# HELLER EHRMAN WHITE & MCAULIFFE

ATTORNEYS

A PARTNERSHIP OF PROFESSIONAL CORPORATIONS

333 BUSH STREET  
SAN FRANCISCO  
CALIFORNIA 94104-2878  
FACSIMILE (415) 772-6268  
TELEPHONE: (415) 772-6000  
WATERS DIRECT DIAL NUMBER

October 11, 1995

ANCHORAGE  
LOS ANGELES  
PALO ALTO  
PORTLAND  
SEATTLE  
TACOMA

17422-0001

(415) 772-6566

VIA FACSIMILE AND U.S. MAIL

Mr. Thomas M. Cota  
Hazardous Materials Specialist  
California Environmental Protection Agency  
Department of Toxic Substances Control  
Site Mitigation Operations Branch  
245 West Broadway, Suite 425  
Long Beach, California 90802-4444

Draft RAP for the Former Cal Compact Landfill Site

Dear Mr. Cota:

M-1  
I am writing on behalf of Commercial Realty Projects, Inc. ("CRP") concerning the nonbinding preliminary allocation of responsibility ("NBAR") contained in the draft remedial action plan ("RAP") for the former Cal Compact Landfill site. In accordance with the many conversations that Peter Weiner and I have conducted with you and Dan Weingarten since early September, CRP has agreed -- for the purposes of the NBAR alone -- to assume 100% of the responsibility for the site to be allocated in the final RAP's NBAR.

Please call me if you have any questions.

Very truly yours,



Nicholas W. van Aelstyn

cc: Daniel P. Weingarten, Esq.  
Peter H. Weiner, Esq.

Response to comments received from Heller, Ehrman, White & McAuliffe regarding the Cal Compact Landfill draft Remedial Action Plan.

1. Comment:

Commercial Realty Projects, Inc. has agreed -- for the purpose of the NBAR alone -- to assume 100% of the responsibility for the site to be allocated in the final RAP's NBAR.

Response:

DTSC accepts the comment and the Non-Binding Allocation of Responsibility (NBAR) will be revised to read as follows:

The above allocation is non-binding and preliminary and does not limit strict, joint, or several liability under CERCLA and other laws. Commercial Realty Projects, Inc. has assumed 100% of the responsibility for the remediation of the Cal Compact Landfill Upper Operable Unit, as defined in this RAP, without prejudice to its right to seek contribution from other responsible parties.

0001

1 In RE: )  
2 )  
3 CAL COMPACT LANDFILL )

4 )  
5 TRANSCRIPT OF PROCEEDINGS  
6 Carson, California  
7 Wednesday, September 6, 1995  
8 JOHN F. STEHL, CSR NO. 5859  
9 JOB NO. 155428

0002

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4 In RE: )  
5 CAL COMPACT LANDFILL )

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Transcript of Proceedings, taken before  
the California Department of Toxic Substances, at 801  
East Carson Street, Carson, California, commencing at  
6:00 p.m. on Wednesday, September 6, 1995, before  
JOHN F. STEHL, Certified Shorthand Reporter No. 5859.

Page 3

(1) Carson, California, Wednesday, September 6, 1995 (2) 6:00 p.m.  
 (4) DR. SCHUMACHER: Well, I think we can begin (5) tonight's meeting.  
 (6) I would like to welcome you to tonight's (7) public meeting seeking your input into the proposal by (8) the California Toxic Substances Control - can you (9) hear me in the back?  
 (10) I want to welcome you to tonight's public (11) meeting seeking your input into the proposal by the (12) California Department of Toxic Substances Control, (13) also known as DTSC, to remediate hazardous substances (14) from the Cal Compact Landfill site. We invite public (15) participation in this effort as the California (16) Environmental Protection Agency's mission is to (17) protect the health and environment of the (18) public from the landfill and exposure to hazardous (19) substances.  
 (20) DTSC is working with BKK Corporation, who (21) is a potentially responsible party by virtue of BKK (22) merging with a former operator. The department is (23) working with BKK to investigate the site's (24) contamination and to investigate feasible alternatives (25) to remedy that contamination. This former landfill is

Page 4

(1) located at 82030 Main Street in Carson, and I believe (2) fact sheets - extra copies were available at the rear (3) table as you came in.  
 (4) We have two objectives for tonight's (5) meeting: One is to present the DTSC draft remedial (6) action plan and proposed negative declaration for the (7) former Cal Compact Landfill site. And we also want to (8) seek public comments to these two documents during the (9) 30-day public comment period that began August 25th (10) and will end September 25th.  
 (11) While the former landfill doesn't (12) represent an immediate threat, remedial action is (13) being proposed now to prevent a long-term potential (14) threat to public health and the environment.  
 (15) DTSC is working now with BKK to (16) investigate the contamination in the DTSC site (17) mitigation remediation program. After the draft (18) remedial action plan, commonly known as a RAP, is (19) approved, the current owner of the property, (20) Commercial Realty Projects, Incorporated, who has a (21) security interest in the property,

will be responsible (22) for site remediation activities, with DTSC oversight, (23) of course.  
 (24) Tonight we have several presentations, (25) and you all received, as you signed in, a package of

Page 5

(1) handouts. The agenda is the cover sheet.  
 (2) As shown on the first page, there will be (3) presentation on the site cleanup process, the site (4) background, the remedial investigation, the health (5) risk assessment and the remedial action proposal.  
 (6) These presentations should take about 40 minutes to (7) complete.  
 (8) After the last presentation, I'll return (9) to explain how we'd like to receive your formal (10) comments. Please save your questions for that (11) question-and-comment period.  
 (12) We have made speaker cards available, and (13) if you didn't receive one, it's okay, we can just (14) accept comments. I'll recognize one or two folks at a (15) time, and we'll take people in order. At that time, (16) I'll explain how we'd like to receive your comments.  
 (17) We included a comment sheet that should (18) be the last page in your handout. It's also on DTSC (19) letterhead, and we can receive written or verbal (20) comments. So if you can keep that comment sheet, (21) those should be postmarked no later than September (22) 25th. The department will consider public comments on (23) the draft remedial action plan before deciding how to (24) proceed.  
 (25) We're here tonight for public input and

Page 6

(1) we'll carry your formal comments back to our office (2) for the full consideration they deserve before making (3) a final decision about approving the draft RAP, the (4) remedial action plan, and the proposed negative (5) declaration.  
 (6) Tonight's meeting is part of the (7) department's public participation program to inform (8) and provide the public with opportunities to be (9) involved in decisions for the site.  
 (10) We have a court reporter, as you may have (11) noticed, for tonight's public meeting who is making a (12) formal record of public comments and a transcript of (13) the entire meeting. That

transcript, I've been told, (14) will be available at the local information repository, (15) which is at the Carson library, and DTSC Long Beach (16) office in approximately two weeks. The exact location (17) of the repository as well as the names and numbers of (18) the project contacts are also in the fact sheet. And (19) there again, there are extra copies at the rear table (20) if you haven't received one of those to date.  
 (21) As part of the public participation (22) program we announced the 30-day public comment period (23) in a display advertisement in the local news sections (24) of both the L.A. Times and the Daily Breeze as well (25) as the aforementioned fact sheet, and that fact sheet

Page 7

(1) was mailed to approximately 1,800 addresses on the (2) developed site mailing list.  
 (3) Again, we want to keep that mailing list (4) current and up to date. Please sign in, if you (5) haven't, before you leave so we can keep that mailing (6) list current and accurate.  
 (7) Tonight on our panel we have three DTSC (8) staff and one representative from BKK Corporation.  
 (9) Mr. Hamid Saebfar is from DTSC. Mr. Saebfar is branch (10) chief in the site mitigation branch, and he will (11) explain the site cleanup process.  
 (12) We invited Mr. Paul Neff, director of (13) regulatory compliance for BKK Corporation, to provide (14) information on the site background.  
 (15) Mr. Thomas Cota. Tom is the DTSC project (16) manager for the site and will address the remedial (17) investigation. Then Dr. Kimi Klein, DTSC staff (18) toxicologist, will present a summary of the health (19) risk assessment findings. Then Mr. Cota will return (20) with a presentation on the remedial action proposal.  
 (21) The question-and-comment period, as I (22) said, will follow that last presentation. Also here (23) tonight representing DTSC is Mr. Dan Weingarten, staff (24) attorney. Dan.  
 (25) With this presentation then, under

Page 8

(1) cleanup process, let me introduce to you again (2) Mr. Hamid Saebfar.

(3) MR. SAEBFAR: Thank you, Ed. Good evening, (4) ladies and gentlemen.  
 (5) As Ed mentioned, my name is Hamid (6) Saebfar, and I'm the chief of site mitigation for the (7) Department of Toxic Substances Control, one of the (8) agencies within California EPA.  
 (9) The department is charged with the (10) mission to protect the public health and environment.  
 (11) We do this primarily in three basic steps wherein the (12) department can regulate the management of hazardous (13) wastes.  
 (14) We conduct or oversee the remediation of (15) hazardous waste and we promote the development of (16) alternative technologies through pollution prevention, (17) also resource recovery and recycling.  
 (18) My responsibility on the site mitigation (19) program consists of site evaluation, investigation and (20) remediation of properties contaminated with hazardous (21) substances in Southern California, which covers an (22) area from Santa Barbara to San Diego County.  
 (23) Tonight I would like to briefly explain (24) the department's role at the Cal Compact Landfill, (25) the site mitigation process, including the California

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(1) Environmental Quality Act, commonly referred to as (2) CEQA, and the role of BKK Corporation in the (3) development of the draft remedial action plan, also (4) known as the RAP.  
 (5) The department's role in this project is (6) to ensure that all applicable state and federal laws (7) and regulations are met and followed during the (8) mitigation for this site.  
 (9) Site mitigation begins with the (10) identification of the potential hazardous substances (11) released at the site.  
 (12) After the site has been identified, a (13) preliminary endangerment assessment is conducted. The (14) preliminary assessment consists of a record search, (15) limited field investigation and risk assessment to (16) determine if the site poses a threat to public health (17) and the environment.  
 (18) If the preliminary endangerment (19) assessment determines that there is a threat to public (20) health, a comprehensive field investigation is (21) conducted.  
 (22) The next phase is called the remedial (23) investigation, during

which a significant number of (24) soil, air and groundwater samples are taken at various (25) locations at the site to determine the area and extent

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(1) of contamination.  
 (2) As part of this investigation, a baseline (3) risk assessment is prepared to identify the potential (4) risks associated with the site. During the remedial (5) investigation, a feasibility study is also conducted (6) to evaluate various remedial alternatives. The (7) remedial alternatives identified in the feasibility (8) study are further evaluated using various criteria in (9) developing a proposed draft RAP, which is the subject (10) of our discussion here tonight.  
 (11) Once the RAP has been finalized, a (12) remedial design, which is an engineering document that (13) specifies exactly how remedial systems are (14) constructed, is prepared, approved and implemented.  
 (15) Upon completion of the RAP, the site is certified and (16) the remediation then will proceed to the long-term (17) operation and maintenance phase.  
 (18) It's important to note that throughout (19) this process DTSC implements a meaningful public (20) participation plan, and the criteria of community (21) acceptance is fundamental to our final decision-making (22) process. That is why we are here tonight, accepting (23) your comments regarding the draft RAP and the proposed (24) supplemental negative declaration which was prepared (25) to comply with CEQA requirements.

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(1) The department has been working with BKK (2) Corporation, one of the potentially responsible (3) parties for this site, in preparing the RI/FS and the (4) draft RAP. The department and BKK have entered into (5) an enforceable administrative consent agreement in (6) which BKK has agreed to perform the RI/FS -- the RAP (7) for the upper operable area of the site.  
 (8) Due to the size and complexity of this (9) site, the department has determined that its phased (10) analysis and response is necessary and appropriate to (11) achieve a complete remediation of this site. In this (12) phased approach, we have divided the site into two (13)

operable units.  
 (14) The first operable unit is designated as (15) upper operable unit, consisting of soil and a waste (16) zone above and within the Bellflower Aquitard, which (17) includes an area from the surface to approximately 90 (18) feet below mean sea level.  
 (19) The second operable unit covers the area (20) below the 90 feet which consists of the Gage, Lynwood (21) and Silverado aquifers and all areas impacted by the (22) aerial extent of any hazardous substances which may (23) have migrated or may migrate from the site.  
 (24) The department will pursue potentially (25) responsible parties in characterizing and, if

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(1) necessary, remediating the lower operable unit at a (2) later date.  
 (3) As I mentioned earlier, we're here (4) tonight to discuss the draft RAP for the upper (5) operable unit and to hear your thoughts on this (6) proposal. Comments will be accepted tonight and (7) during the remainder of the public comment period, (8) which concludes on September 25th.  
 (9) Now I would like to introduce Mr. Paul (10) Neff of BKK Corporation who will give you a brief (11) description of the Cal Compact Landfill.  
 (12) Thank you.  
 (13) MR. NEFF: Thank you, Hamid.  
 (14) My name is Paul Neff, I'm with BKK (15) Corporation. We are the entity that merged the former (16) Cal Compact, Incorporated, the company who was the (17) operator of the site sometime ago -- a couple of (18) decades ago.  
 (19) I want to give you a very brief history (20) of the landfill and tell you about its location and (21) its size.  
 (22) The site is located in Carson. It's (23) bounded on the north by the Del Amo Boulevard (24) extension, on the west by Main Street as well as a (25) residential area. It's bounded on the south by the

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(1) Torrance lateral channel, as you can see in the (2) sketch, as well as a residential area, and it's (3) bounded on the east by the San Diego Freeway and the (4) Dominguez Channel. It occupies approximately 157 (5) acres.  
 (6) The sketch that you see on the screen (7) depicts the general

landfill configuration as it (8) occurred.

(9) This site was permitted by the Los (10) Angeles County Department of Public Works with an (11) industrial waste discharge permit for a Class II (12) landfill, which means it was permitted to accept (13) commercial and certain specified industrial wastes.

(14) Some of these today are categorized as hazardous (15) wastes. (16) The site was filled in a sequence, (17) beginning on the east by opening long trenches to a (18) depth - a maximum depth of approximately 60 feet. (19) The deepest zone that we have on-site - the deepest (20) waste zone we have on-site that we have found is about (21) 60 feet thick. The soil was piled to one side of the (22) trench, the trench was filled and a portion of that (23) soil was used each day for cover. And when the trench (24) was finally filled altogether and mounded, then that (25) trench was completed and a new trench was opened up.

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(1) But as you can see, this was not a (2) complete filling of the entire site. These haul roads (3) are, today, paved streets and they sit over (4) undisturbed native soil. So we have relatively (5) discrete waste zones around the site.

(6) The permits were issued for this site (7) for very practical reasons at the time. The site was (8) unused. The area in the '30s was largely agricultural (9) and this was a low area and it was subject to annual (10) flooding. And one of the purposes of granting (11) landfilling permits in the area, as well as others (12) nearby, was the construction of usable land.

(13) The site took - over its history - it (14) was operated between 1959 and it was - operation (15) ceased in early 1965. It accepted somewhere between 6 (16) and 8 million cubic yards of waste, of which it's (17) estimated, perhaps, 3- to 500,000 cubic yards might (18) be, today, categorized as hazardous. (19) With that, I'm going to turn things over (20) to Thomas Cota, who is the project manager for DTSC (21) for the remedial investigation and feasibility study (22) and preparation of the draft RAP for the project, who (23) will go into the outcome of the RI and the FS.

(24) MR. COTA: Good evening, ladies and gentlemen.

(25) As Paul mentioned, my name is Thomas

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(1) Cota. I'm the project manager for the Cal Compact (2) Landfill for the Department of Toxic Substances (3) Control. My presentation tonight will cover the (4) remedial investigation, the feasibility study and (5) later on I'll address the draft remedial action plan, (6) commonly referred to as a draft RAP, the California (7) Environmental Quality Act and a proposed project (8) schedule.

(9) Over the last several years there have (10) been a number of remedial investigations conducted at (11) the Cal Compact Landfill. The information collected (12) during these investigations has been compiled into the (13) remedial investigation report.

(14) First, I'd like to explain some terms (15) that I'll be using during my presentation.

(16) An aquitard. An aquitard is a layer of (17) soil and rock below the ground surface that contains (18) some water; however, it's not enough water to be (19) pumped for beneficial uses.

(20) An aquifer. An aquifer, on the other (21) hand, is a layer of soil and rock below the surface of (22) the earth that is fully saturated with water and then, (23) when pumped, will provide significant amounts of (24) water.

(25) I'll be using cross-sections. And a

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(1) cross-section is a photograph or a drawing of a plain (2) surface exposed as you cut through that surface. In a (3) minute, I'll have - there's a cross-section up on the (4) slide, and I'll explain a little bit more how the (5) cross-sections where developed.

(6) Data collected during the remedial (7) investigation fill work permits us to depict the site (8) conditions through the use of these cross-sections.

(9) As you can see - maybe we can turn down one more set (10) of lights. I don't know if it -

(11) As you can see on this cross-section, (12) there's a lot of information contained on here. And (13) let me identify some of the more important - or just (14) identify some of the information.

(15) This red section right here consists of (16) the cover soil on top of a waste zone. The waste zone (17) is this blue section. This could represent, looking (18) at it here, one of these areas of where

waste was (19) deposited. This green layer is a unit of clay or a (20) layer of clay which was identified during our field (21) investigations. The yellow and red zones identify (22) different types of soil such as sand, silt, silty (23) sands.

(24) This whole unit, from the top surface (25) down to approximately 80 to 90 feet below mean sea

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(1) level is the upper operable unit. The Bellflower (2) Aquitard starts approximately about 15 to 20 feet (3) below mean sea level and goes down to roughly 80 to 90 (4) feet below mean sea level.

(5) The Gage aquifer starts roughly below (6) that and extends down to the top of the Lynwood, and (7) further on down is the Silverado aquifer, which is the (8) drinking water aquifer.

(9) I'd like to show you how we take a (10) cross-section. During our field investigations, we (11) obtained a number of samples along the western portion (12) of the property. We take this information, kind of (13) tilt it this way and we run it from here to here.

(14) This section is marked with an A going to (15) an A prime. You can see up here we have A and over (16) here is our A prime. As we start along here, you can (17) see where we cross a waste zone that is depicted by (18) the blue going along to the south.

(19) These points that go vertically across (20) the site are areas in which we took soil or (21) groundwater samples. Samples were taken at different (22) locations and different elevations. The blue circles (23) indicate groundwater samples that were detected with (24) total volatile organic compounds. The soil cover (25) thickness varies from 3 feet to a maximum thickness of

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(1) 30 feet with an average thickness of approximately 4 (2) feet.

(3) Several heavy metals, such as zinc and (4) leads, were detected in the soil cover; however, (5) these metals were found below hazardous waste (6) concentrations. Volatile organic and semi-volatile (7) organic compounds were also detected in the soil (8) cover. An example of volatile organic compounds is (9) toluene. An example of semi-volatile organic (10) compounds is naphthalene. Low

levels of pesticides (11) were also detected. DDT and its breakdown product (12) DDD were the types of pesticides identified.

(13) The waste zone - can you show that other (14) cross-section? (15) The next one - this cross-section goes (16) from C to C prime. And let me show you where (17) this one's going from. This is taking it from this (18) point to this point, turning it this way and we'll run (19) it this way. (20) The waste zone - see a little bit (21) better - here and here thickness increases from 0 (22) adjacent to the small voids to a maximum thickness of (23) 60 feet in the interior of the waste cells. (24) Laboratory analysis from samples obtained (25) in the waste zone detected volatile organic compounds

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(1) such as benzene, toluene and xylene, semi-volatile (2) organic compounds such as naphthalene and phenol, (3) heavy metals such as chromium, lead and nickel, and (4) pesticides such as DDT and breakdown products.

(5) An air survey in the waste zone was (6) conducted by McClaren Hart in 1991. The result of an (7) air study identified several chemicals in a gaseous (8) state, among them ethylbenzene, toluene, xylene, (9) dichlorofluoromethane, methane, carbon monoxide and (10) nitrogen. (11) Groundwater in the Bellflower Aquitard is (12) first encountered at a relatively shallow depth, (13) approximately 50 feet below ground surface, (14) approximately somewhere around here. The groundwater (15) contained in the Bellflower Aquitard is not a drinking (16) source, nor is it used for other beneficial uses; (17) however, water coming from the site may threaten other (18) beneficial waters near the site.

(19) The Bellflower Aquitard extends down to a (20) depth of 80 to 90 feet below mean sea level throughout (21) the site. Several groundwater investigations have (22) been conducted at this site over the past several (23) years. The groundwater moves very slowly from the (24) Bellflower Aquitard in a south-southwesterly direction (25) this way.

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(1) Samples were collected at approximately (2) 100- to 300-foot intervals along the western (3) and southwestern portion of the site. The hazardous (4) substances

identified can be grouped into three major (5) classes: Volatile organic compounds, semi-volatile (6) organic compounds and metals. No pesticides were (7) detected in the groundwater. The dispersion of these (8) chemicals varied along the perimeter of the site.

(9) This overhead depicts the total volatile (10) organic compounds and the plumes which we've (11) identified.

(12) The highest concentration of these (13) compounds were identified in the south-southwesterly (14) section; however, all along the southern portion total (15) volatile organic compounds were also identified and (16) up along in through here.

(17) Some off-site contamination has also been (18) detected, as you can see on this map, along the (19) southwestern side of the site.

(20) Now I'd like to discuss the feasibility (21) study. The remedial alternatives were evaluated in (22) the feasibility study.

(23) The feasibility study process involves (24) the development, screening and detailed evaluation of (25) the remedial alternative actions. The remedial

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(1) alternative evaluation in the feasibility study for (2) the Cal Compact Landfill included no action in which (3) the site would be left as is, limited action (4) monitoring of the groundwater and landfill gases, (5) excavation and off-site incineration with groundwater (6) treatment, excavation and off-site disposal with (7) groundwater treatment, containment with collection and (8) treatment of landfill gases and groundwater, (9) containment with monitoring of landfill gases and the (10) collection and treatment of groundwater.

(11) These alternatives were evaluated using (12) the criteria identified in the National Contingency (13) Plan. The National Contingency Plan are the federal (14) regulations that are followed by the state in the (15) remedial process of hazardous waste sites.

(16) The nine evaluation criteria are overall (17) protection of human health and environmental (18) compliance, the applicable or relevant and appropriate (19) requirements commonly referred to as ARAR's, long-term (20) effectiveness and permanence, reduction in toxicity, (21) mobility and volume through treatment, short-term (22) effectiveness and

implementability cost, state (23) acceptance and community acceptance.

(24) Now I would like to introduce Dr. Kimi (25) Klein, staff toxicologist from the Department of Toxic

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(1) Substances Control to discuss the baseline risk (2) assessment.

(3) Dr. Kimi Klein.

(4) DR. KLEIN: Is it on? Okay.

(5) My name is Dr. Kimi Klein.

I'm a (6) toxicologist with the Department of Toxic Substances (7) located in Sacramento, and I'm down here to describe (8) to you the risk assessment that was done for this (9) site.

I wanted to tell you that the (10) risk assessment was done, assuming the first (11) alternative in the feasibility - in Tom's list of (12) remedial alternatives, that is assuming no action has (13) been taken at this site.

(14) Before I describe and summarize the risk (15) assessment, I will just give you a brief overview of (16) what the risk assessment is. It's a series of boxes (17) that look like this.

(18) As Tom has described, the very first part (19) of a risk assessment is to collect data and evaluate (20) data. And he's told you that there's been a (21) considerable amount of work done to collect data that (22) describes the physical characteristics at the site as (23) well as identifying the chemicals that are present at (24) that site in the soil, in the groundwater underlying (25) the site and also that could be evaporating into the

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(1) air above the site. And that is what we do in the (2) data collection - data evaluation part of the risk (3) assessment.

(4) The other part of a risk assessment is (5) that after identifying those chemicals which we have (6) found at the site, we try to determine what those (7) chemicals can do to either humans in regard to their (8) health, or to the environment, and that's what we do (9) in the toxicity assessment portion of the risk (10) assessment. (11) So, after having identified the (12) chemicals, we identify those health effects that might (13) occur if you are exposed to those chemicals.

(14) The major portion of a risk assessment (15) that we do in the department is exposure assessment. (16) And in an exposure assessment,

which I'm going to go (17) into more detail in just a few minutes, we try to (18) determine what the dose is of -- that people could (19) be -- that people could take in by being -- living on (20) the site, near the site, working on the site, near the (21) site, et cetera. So we try to determine what the (22) exposure is to those people and what the dose might (23) be.

(24) Then, finally, after we determine what (25) the dose is of all of chemicals that are coming from

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(1) that site and having information about the toxicity of (2) those chemicals, then we can describe what the risk (3) would be as a result of that exposure. So basically (4) in a nut shell that's what the risk assessment process (5) is. (6) Now, as I said, the major portion of our (7) risk assessment is exposure assessment. And the (8) outcome is what are the doses; what are the doses that (9) people are getting if they live at the site, live near (10) the site, if they work on the site, if they're doing (11) construction work at the site, et cetera.

(12) So we try to -- so that's -- that's what (13) our final outcome is. We do that by trying to (14) determine how is a chemical released from the site; (15) who are the populations that may be exposed to the (16) site; what are the ways that people can be exposed, (17) that is to say, are they breathing the air, if so, how (18) much air are they breathing; are they in getting the (19) water that's been contaminated by the site, if so, how (20) much are they getting and the like.

(21) So finally -- here's a lovely original (22) drawing of a very simple schematic of a very complex (23) site.

(24) This is the landfill with the waste.

(25) This is the Bellflower Aquitard, and these are the

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(1) different things that can happen to chemicals that (2) have been deposited at the landfill over its operating (3) life. And these arrows here are put there to describe (4) the direct air emissions of the volatile chemicals (5) that Tom described.

(6) So, the chemicals, they have the ability (7) to evaporate in the air, chemicals that have the --

(8) that have been generated in the

landfill and then (9) subsequently go -- get into the air. And that is (10) really a major exposure pathway at this site.

(11) The other major exposure pathway is the (12) leaching of chemicals from the site to the (13) groundwater, and that is -- simply means the movement (14) of chemicals from the waste cell through the soil and (15) into the groundwater.

(16) So basically what this risk assessment (17) did was we looked at three different kinds of (18) scenarios. The first scenario that we looked at was, (19) okay, what if we allowed housing to be built directly (20) on the site, and not only did we allow housing to be (21) built on the site, but the people who lived in those (22) houses grew vegetables that they were going to eat.

(23) And not only that, but each house would have a well (24) that took -- that reached the Bellflower, and that (25) this water would be the water that they would drink

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(1) and that they would bathe in and that they would (2) shower in. (3) We also, under this scenario, looked at (4) the houses that might be -- that, in fact, do exist (5) right off-site here and tried to determine what the (6) risk would be. That was the first scenario.

(7) In that scenario we found that the risk (8) where, in deed, quite high. And most of that risk is (9) due to the ingestion of the contaminated (10) groundwater. About 11 percent of the risk comes from (11) the inhalation of chemicals that are in the air.

(12) And when I say, "risk," I mean there's (13) actually three kinds of risk that we look at. One is (14) cancer risk, which I'm sure all of you are familiar (15) with. The other is a risk due to noncarcinogenic or (16) noncancer effects of certain chemicals.

(17) I mean, not all chemicals -- not all bad (18) chemicals cause cancer, but there are other kinds of (19) effects that might occur. For example, it might have (20) some effects on the reproductive system or you can (21) have some effects on the central nervous system and (22) the like.

(23) The third kind of risk that we looked at (24) is the risk due to the accumulation of methane, which (25) is a very common landfill gas that is quite explosive

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(1) if it is contained within a closed -- in an enclosed (2) area. And we looked at -- so those are the three (3) kinds of risk that we looked at under this scenario (4) which I just described, and all of those risks are (5) quite high.

(6) The second scenario we looked at is very (7) close to what we think the real use of this site, (8) which is a commercial or industrial scenario. And in (9) this scenario, rather than living on the site, we (10) assumed that workers worked on the site, that there (11) was a building here and workers came -- came to work (12) here, but they did not drink the water; that they did (13) not -- there where no wells in our scenario that (14) reached the Bellflower aquifer (sic), instead, they (15) drink the water that is supplied by the city.

(16) Under this scenario, then, as you can (17) well imagine, most of that risk comes from inhaling (18) the air that is contaminated with chemicals, either (19) being generated by the site or evaporating by the (20) site. This risk is on the order of 1 in -- 1 in (21) 10,000; that is to say, if 10,000 people were exposed (22) to the chemicals that exist at this site over the (23) period of their working life, perhaps 1 of them might (24) get cancer.

(25) The noncarcinogenic risks where rather

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(1) low, but in this case the methane risks where about (2) the same as they would be for a house, if you assume (3) that the commercial building had some areas that were (4) below ground where methane could, in deed, accumulate. (5) Now, the third scenario that we looked at (6) was a construction scenario or an excavation scenario. (7) And this scenario assumes for a period of two years (8) there would be extensive construction going on.

(9) You can well imagine that, perhaps, there (10) would be an increase in the chemicals that might (11) volatilize off from the site, but here again we did (12) not assume that construction workers would be drinking (13) the water from the Bellflower, we assumed they would (14) be drinking water from the city water supply. In this (15) scenario the risks where somewhat in between the (16) residential scenario and the commercial scenario.

(17) So that is my presentation. And I will (18) give the microphone



back to Tom Cota.

(19) MR. COTA: Now I'd like to address the draft (20) remedial action plan, the California Environmental (21) Quality Act, and the proposed project schedule.

(22) The chosen remedial actions for the upper (23) operable unit at the Cal Compact Landfill include (24) containment, construction of the landfill cap over the (25) entire site and collection and treatment of the

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(1) landfill gases, and collection and treatment of the (2) groundwater contained in the Bellflower Aquitard. (3) Briefly, I will mention the remedial (4) alternatives chosen and how they will provide (5) protection for the human health and the environment.

(6) Containment by construction of a landfill (7) cap. The construction of landfill cap will provide a (8) protected barrier. It will contain the waste in (9) place. It provides a protective barrier from the (10) waste, the landfill gases, and from the dust that is (11) currently being generated from the site soil cover. (12) It prevents contaminants found in the soil from (13) washing off-site during rain storms. It prevents (14) contaminants - it prevents rain water and surface (15) water from percolating through the waste zone. This (16) reduces the amount of additional groundwater (17) contaminants from which can be mentioned the leachate (18) that would be generated. And it aids in reducing the (19) generation of landfill gases.

(20) The collection and treatment of the (21) landfill gases. By collecting and treating the (22) landfill gases, we will prevent the escape of these (23) gases to the atmosphere. It reduces the chances of (24) human exposure to the landfill gases. It reduces the (25) chances of upset by reducing the potential buildup of

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(1) the landfill gases. And it provides a permanent (2) destruction of these gases through treatment through a (3) landfill gas flare.

(4) The collection and treatment of (5) groundwater. The groundwater treatment system will (6) collect and treat the downgradient contaminated water (7) flowing from the upper operable unit. This will (8) reduce the chance of human exposure to the (9) contaminants found in the groundwater. It controls or (10)

prevents further off-site migrations. It reduces the (11) concentration of contaminants available to migrate (12) downward to the lower aquifer.

(13) The construction of landfill cap involves (14) implementation of clean fill soil that will be (15) compacted on the existing soil cover. A site-specific (16) health and safety plan will be submitted to the (17) department prior to the start of any field work.

(18) The landfill gas system will consist of a (19) series of gas collection wells installed along the (20) perimeter of the waste zone. The collected gases will (21) be thermally treated in a landfill flare unit located (22) to the northeast - located in the northeast portion (23) of the landfill - northeast portion of the site and (24) permitted by the South Coast AQMD. The flare system (25) will be equipped with required air pollution devices

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(1) to meet all their codes prior to its operation.

(2) The groundwater treatment system. The (3) groundwater treatment system will be designed to (4) capture all of the contaminated groundwater coming (5) from the site and to contain and pull back off-site (6) contaminations. The system will consist of a series (7) of groundwater extraction wells located along the west (8) and southern perimeter of the site.

(9) The extracted water will pass through a (10) series of filters to remove the metals, then through a (11) series of activated carbon canisters to remove (12) volatile and semi-volatile compounds. The treated (13) groundwater will then be used for site irrigation or (14) discharge to sewer or storm drain systems.

(15) The draft RAP identifies specific (16) monitoring, measured - and field activities required (17) during the construction phases. They include the (18) following: A dust and particulate monitoring plan.

(19) Air will be monitored for lead, hexavalent chromium (20) and particulates smaller than 10 microns in size.

(21) There will be dust and particulate (22) control which will comply with South Coast Air Quality (23) Management District Rule 403. Use of water (24) suppression devices to prevent the generation (25) of dust. Roads will be swept regularly. Trucks will

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(1) be tarped and washed prior to exiting the site.

(2) There will be a traffic control plan.

(3) Traffic and vehicles must follow a site-specific route (4) plan.

Transportation of materials or off-site parking (5) in residential neighborhoods will not be permitted.

(6) There will be a noise control and (7) monitoring plan. In

general, loading and unloading (8) and staging areas will be located away from (9) residential areas.

Noise monitoring will be conducted (10) at nearby residents' property boundaries.

(11) There will be an odor control monitoring (12) plan wherein objectionable odors will be identified

(13) and will have to meet the South Coast Air Quality (14)

Management nuisance requirements.

(15) There will be a health and safety plan (16) for each specific activity to be conducted under the (17) remedial action plan.

(18) Now I'd like to talk about the CEQA (19) process. Under the California Environmental Quality (20) Act process, the department is required to complete an (21) initial study to identify any potentially significant (22) impact the remedial project may pose to the (23) environment. If the project does not pose a (24) significant impact to the environment, a negative (25) declaration is typically prepared; however, if the

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(1) initial study indicates that the project may pose a (2) significant environmental impact, then a mitigated (3) negative declaration or an environmental impact (4) report, commonly known as an EIR, is prepared.

(5) An EIR was proposed and certified by the (6) city of the Carson for the preparation for future (7) development of the site. Part of the EIR addressed (8) the construction of the landfill cap. The department, (9) acting as a responsible agency, has reviewed the EIR (10) and has concurred with the city of Carson's findings.

(11) However, some of the remedial activities were not (12) fully addressed in the EIR due to the fact that it was (13) not feasible at that time; therefore, the department (14) conducted an initial study addressing the landfill gas (15) and groundwater collection and treatment systems.

(16) The initial study indicates that, as (17) proposed, no significant impacts on the environment (18) will

result from the proposed activities, which are (19) the construction and operation of the landfill gas (20) collection system and groundwater collection and (21) treatment system. The department has, therefore, (22) proposed a supplemental negative declaration for this (23) project. (24) Project schedule. After the public (25) comment period has ended, the department will review

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(1) and address all comments received. During this time, (2) some field investigation for pilot studies may take (3) place at the site. These investigations are required (4) to obtain additional information for future designs. (5) The department and the city of the Carson (6) will review all submitted workplans and approve them (7) prior to any field activities. A final notice of the (8) department's decision to approve or modify the (9) existing RAP will be provided to interested parties on (10) the Cal Compact mailing list. Once the remedial (11) action plan is approved, it will take approximately (12) one year to construct the landfill cap. The gas and (13) groundwater treatment systems should only require (14) three to five months to install. (15) Prior to any remedial or construction (16) activities, additional groundwater monitoring wells (17) will be installed and sampled. The proposed schedule (18) is to start construction on the remedial activities (19) once the RAP is approved. (20) This concludes my presentation, and I (21) thank you for your cooperation and attention. (22) DR. SCHUMACHER: Thank you, Tom. (23) The Department of Toxic Substances (24) Control's next step regarding public formal comments (25) are, first, we will hear your comments tonight and

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(1) continue to receive written comments until the end of (2) the public comment period, September 25th. (3) If you have comments after tonight, (4) please submit them in writing. If you wish to review (5) the draft remedial action plan and the proposed (6) supplemental negative declaration, they are both (7) available at the information repositories located at (8) the local library in Carson or DTSC's Long Beach (9) office.

(10) Second, written responses to each comment (11) will be prepared. After the close of this public (12) comment period, we will review all comments and (13) compare them with the draft remedial action plan, (14) proposed negative declaration and see if those (15) documents need to be modified. If they do, then (16) modifications will be made. (17) The department staff prepares a document (18) called response to comments. It's a written document, (19) and all who submit formal comments during this 30-day (20) public comment period will be mailed a copy of that. (21) Response to comments is the official written response (22) from the Department of Toxic Substances Control to all (23) who have submitted formal comments. It includes a (24) restatement of all comments and the department's (25) response to each of those comments.

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(1) Staff of the department will address (2) questions tonight whenever possible in addition to (3) receiving formal comments. When we reach a final (4) decision on the draft RAP and proposed negative (5) declaration, we'll place a copy of that final remedial (6) action plan in the information repositories for (7) review. And if it wasn't clear already, this response (8) to comments is part of that final remedial action (9) plan. (10) The primary purpose of tonight's meeting (11) is, in fact, to listen and receive all of your formal (12) comments on the two documents that we have addressed (13) tonight relating to the current site mitigation (14) activities at the site. I can recognize speakers one (15) at a time for you to give us your formal comments. (16) We would ask that you come up and use the (17) microphone in the audience and speak slowly and (18) clearly, as that will help the court reporter to hear (19) and record your comments, and please state your name (20) for the record. (21) Also, we have the room reserved tonight (22) until 10:00. We can use as much of that time for your (23) participation this evening or as much of that time as (24) is needed. (25) I can recognize folks one at a time.

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(1) The gentleman coming up. (2) MR. KANE: Good evening. I'm Murray Kane. I'm (3) an

attorney for Commercial Reality Projects, Inc.

(4) I wanted to clarify the record. It was (5) stated that they are the owner of the site and the (6) owner of the security interest. The accurate (7) statement would be, and the record should reflect, (8) that they hold a security interest in the site and (9) that they are not, as we speak, the owner of the site. (10) So I just wanted to clarify the record. (11) Thank you. (12) DR. SCHUMACHER: Thank you very much. I'll (13) recognize the person - (14) MR. COLBOTH: Gary Colboth, C-o-l-b-o-t-h, of (15) Carson, California. (16) Please take my comments as community (17) input that should be made part of the official file in (18) this matter to the extent allowed by state laws (19) regarding administrative procedures. (20) I raised a number of issues by letter to (21) you dated June the 15th, 1995, four months ago, and (22) many of those issues are not resolved by the remedial (23) action plan, which is very general. The public needs (24) a specific RAP to be able to make meaningful (25) comments.

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(1) My four-page letter to you, of June 15th, (2) raises some 15 categories of questions, many of which (3) I've not received any specific response. For the (4) department to say "We don't know" or "We don't have (5) that data" does not meet your obligation to respond to (6) public input. Unless citizens receive specific (7) answers, these meetings to invite public input are (8) mere charades. (9) I'll highlight some of the questions (10) asked earlier. (11) How will dangerous dust be avoided during (12) the cleanup and construction since the - since the (13) cap has only 3 foot of dirt, and if you start moving (14) in there and doing construction, you're going to be (15) stirring up some of this dangerous waste. (16) Some of us are concerned that we do not (17) know the extent of the contamination. There's no (18) record of what was dumped on that site for a 19-month (19) period, and the borings and monitor wells have been on (20) the perimeter and interior roads, places that would (21) not measure the worse contaminants. If it's too (22) dangerous for testing and evaluation to bore into the (23)

heart of the landfill, would it also not be too (24) dangerous to drive thousands of construction piles (25) into the same fill? We appear to be in the situation

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(1) talking about cleanup without knowing the precise (2) nature of the contamination to be cleaned up. (3) Has the department concluded that a (4) landfill gas collection and treatment system will not (5) be initially required? It's put on the chart as a (6) given, a done deal, but in the flier that was mailed (7) out, you talked about it appears to be necessary.

(8) How did the department come to the (9) conclusion without boring into the heart of the (10) landfill and collecting samples whether or not we're (11) going to need the gas collection and treatment (12) system?

(13) How many other contamination sites in (14) California have been cleaned up using this (15) vertically-phased approach without cleaning up the top (16) half and proceeding with construction without cleaning (17) up the lower half?

When would the lower half be (18) cleaned up? What is the extent of the contamination (19) of the lower half? How would the cleaning of the (20) lower half be financed?

(21) Is it the practice of the department, (22) when faced with a project of, quote, in your words, (23) size and complexity, close quote, to, quote, divide it (24) into two operable units, close quote? Is it, (25) further, the practice of the department to only clean

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(1) up half of the project when they're of great size and (2) complexity?

(3) In the past four months, has there been (4) attempts to hold any of the other 12 PRPs, potentially (5) responsible parties, liable for any cleanup costs?

(6) Are we on a course by which the shopping (7) center tenants or bond holder, in the event of (8) default, will pay for the upper unit and no one will (9) pay for the lower unit because it will not be cleaned (10) up; thus, none of the polluters would end up paying (11) any of the costs of cleanup?

(12) In what way has the department (13) coordinated with the regional water quality control (14) board about the vertically-phased, two-tier approach (15) of cleaning the top and not the bottom? What is the

(16) opinion of the water board about the vertical-phasing (17) of the cleanup?

(18) The soil at the site will be unstable in (19) the event of an earthquake. Does the department have (20) data to conclude that the proposed gas cap barrier, (21) gas collection system, if we're going to have such a (22) thing, and structures can withstand an earthquake (23) which may produce significant debris consolidation, (24) settlement and liquefaction? (25) What will be done to the two abandoned

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(1) wells on the site? What is the extent of the danger (2) that the wells might become channels to allow (3) contaminants to flow down into the lower aquifer and (4) damage the drinking water supply?

What specific (5) provision is made for the RAP? It seems to me the RAP (6) should address some of those kinds of issues.

(7) Have experts other than those being paid (8) by developers been involved in providing data to the (9) department? Are the experts involved influenced by (10) having a financial interest in having the project go (11) forward?

(12) For example, you write that, quote, as a (13) potentially responsible party, BKK has conducted the (14) remedial investigation for the portion of the site (15) known as the upper operable unit. Is this not (16) analogous to asking the fox to investigate the chicken (17) coop? Does not BKK have an enormous financial (18) interest in having this project go forward so shopping (19) mall tenants or, in the event of default, bond (20) holders, will spend the millions of dollars to clean (21) up the site rather than having BKK spend its own (22) money to clean up the site?

(23) What person concluded that the site (24) cleanup could be accomplished without significant (25) environmental impacts? Did that person realize that

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(1) there would be massive truck traffic, earthmoving, (2) dust, driving of thousands of piles into the ground (3) adjacent to residential areas, pumping and treating of (4) water that could contaminate groundwater and related (5) activities?

(6) It seems that a negative declaration in (7) the face of all

this seems wildly inappropriate. (8) I'll give you this, the writing, for your (9) file.

(10) DR. SCHUMACHER: Okay. All of these questions (11) and comments will be entered into the record and be (12) addressed in response to comments. But I think our (13) branch chief wanted to be able to answer questions (14) when possible tonight as to some information that we (15) already have.

(16) And, Hamid, maybe I can ask you if you (17) had a response to some of the questions tonight. I'll (18) also give you some additional information, and I'll (19) give this to Hamid so he can look at the written copy.

(20) MR SAEBFAR: I'm not going to try and attempt (21) to answer all questions tonight, but as Ed says, we (22) will go ahead and respond to these in the final RAP.

(23) To answer questions about the regional (24) quality control board involvement with this project, (25) their involved with the project - they're assisting

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(1) us in reviewing documents, so they're involved.

(2) Concerning about the other concerns you (3) raised about gas collection system, the gas collection (4) system is part of the final remediation. When we (5) started investigating the site, we were somewhat (6) surprised to see the amount of gas we were collecting (7) on the site, the amount of gas that's being generated (8) from the site, and that's why the language was put in.

(9) But usually when you deal with landfills, you deal (10) with them three ways: You put a cap on it, you have a (11) soil and gas collection system and you've got a (12) groundwater leachate collection system and treatment (13) system; and that's what you're having - that's what (14) we're doing for this project. So it's pretty much (15) consistent with closures of landfills. (16) Concerning the dust, truck traffic and (17) all those issues, they really have been addressed in (18) the EIR that was done. It - that's part of the (19) negative declaration we did. The negative declaration (20) really dealt with the soil, gas and groundwater (21) treatment system. That's what we're dealing with as (22) far as the negative dec. The rest of it is dealt (23) with - the cap itself is dealt with in the EIR.

(24) And also, I should point out that during (25) our investigation and remediation there will be a

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(1) health and safety plan that monitors the site to make (2) sure the dust is adequately contained. And, again, (3) when we do any excavation treatment, you would need (4) permits from the South Coast Air Quality Management to (5) make sure that's being adhered to. Those things will (6) be addressed. (7) I couldn't write fast enough, but let me (8) just tell you this, that we will go ahead and respond (9) to your comments. It's an official document that you (10) have submitted, and we will respond to them.

(11) MR. COLBOTH: When will that

-

(12) I raised a bunch of issues.

(13) MR. SAEBFAR: We will give you comments within (14) the next two weeks. We also include your comments in (15) the final RAP.

(16) MR. COLBOTH: Okay.

(17) MR. McHALE: My name is Marcy McHale.

(18) The state of the art is a term that has (19) been bandied around an awful lot here today. Today (20) state of the art, and tomorrow it becomes obsolete and (21) inadequate and doesn't perform and can't fulfill its (22) job, its performance is nil.

(23) The gas collection system is one area I'm (24) very worried about. It's only good as long as it's (25) maintained. Has there been a long-range commitments

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(1) for some responsible party to maintain this gas (2) collection system or is it going to be like a lot of (3) them, five years from now the thing is not running and (4) it's obsolete? That's what I'm concerned about.

(5) MR. SAEBFAR: As I mentioned earlier, that (6) operation and maintenance is going to be addressed, (7) the gas collection system and the cap at this site and (8) the groundwater, we will have an agreement in place (9) which includes financial assurances that this system (10) is going to operate.

(11) Given landfills, this system probably is (12) going to operate for a number of years, but that is (13) going to be part of the operation and maintenance (14) agreements that we're going to have to make sure (15) that's being done.

(16) MR. McHALE: What recourse

will this public (17) have to, say, 10 years from now, 12 years from now, we (18) find out that - I'm a neighbor of this project - (19) that my home is full of methane, what recourse do I (20) have to that?

(21) MR. SAEBFAR: Well, hopefully we're doing the (22) job. Again, our mission is to protect public health (23) and the environment. We're going to make sure that (24) responsible parties address it or the department will (25) take action.

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(1) MR. McHALE: It's a long-range commitment?

(2) MR. SAEBFAR: Yes.

(3) MR. McHALE: Thank you.

(4) DR. SCHUMACHER: Did that answer your question, (5) Mr. McHale?

(6) MR. McHALE: Yes. Thank you.

(7) DR. SCHUMACHER: Are there other questions? I (8) didn't see too many hands out there this evening.

(9) MR. WARNER: I'm Rodney Warner.

(10) First, I'm a little confused with who the (11) owner of the site is, since all the questions came up (12) about securities and et cetera.

Who's the owner of (13) the site?

(14) MR. WEINGARTEN: The owner of the site is -

(15) well, the owner's in bankruptcy, World Industrial (16) Center.

(17) There's a bankruptcy and, perhaps, the (18) attorney for Sierra Peak can explain this better than (19) I can, but there is a - there was a note, I think (20) owned by the FDIC, security on the property, all (21) right? And the bankruptcy trustee allowed that note (22) to be purchased, okay, by Carson Realty Projects.

(23) Carson Realty Projects owns the security (24) interest in the property. Okay. They are not the (25) titled owner of the property. The titled owner of the

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(1) property would still presently be World Industrial (2) Center until such time as the note is foreclosed upon.

(3) DR. SCHUMACHER: Did that answer that question?

(4) MR. WARNER: Yes, it did.

(5) Ed said earlier, when the site was first (6) opened, all the proper documents and permits where (7) had, and what was - was there any illegal dumping at (8) the site during this period?

(9) MR. WEINGARTEN: Well, that's actually a (10) controversial question. What's meant by "illegal"?

(11) You're actually calling for a legal conclusion about (12) the activities.

(13) Remember, these activities - this was a (14) permitted landfill during the period of, I believe, (15) 1959 through 1965. It was permitted to take many of (16) these materials.

(17) MR. WARNER: Sure.

(18) MR. WEINGARTEN: Superfund law actually (19) postdates these activities, and there's obviously some (20) argument.

(21) I'm not going to state the department's (22) position on whether these activities would, in our (23) view, be considered legal. We believe that we have (24) the legal authority to force potentially responsible (25) parties to pay for the investigation and cleanup of

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(1) these hazardous substances released there.

(2) The argument about whether this -

(3) whether the activity at the time was legal is still (4) controversial in the legal community and in the (5) courts, but it's not really, at this point, material (6) to our authority to enforce, especially under federal (7) law.

(8) MR. WARNER: The discussion about - I forget (9) who was having the discussion about the city water (10) versus the Bellflower aquifer. The Bellflower (11) aquifer, is that drinking water?

(12) MR. COTA: No, it's not.

(13) DR. SCHUMACHER: Tom.

(14) MR. COTA: First of all, the Bellflower is an (15) aquifer, it doesn't produce enough water to be used (16) to be beneficial as an aquifer. It is not a drinking (17) water source. The drinking water source is found (18) approximately 1000 or so feet below mean sea level, (19) that would be the Silverado aquifer.

(20) MR. WARNER: As far as intake doses that were (21) discussed, what is the radius of that study? I mean, (22) what radius is that going to be consumed? What area, (23) one mile, two miles, 50 feet from the site? What is (24) the radius going to be as far as studies to (25) determine -

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(1) DR. KLEIN: The assessment that was performed (2) for the site was bounded by the site boundaries

itself (3) for all of the scenarios that I described except for (4) the off-site residents; that is to say, the person (5) that's living off-site. So that's -

(6) MR. WARNER: Is that realistic?

(7) DR. KLEIN: It's realistic in the sense that -

(8) well, you say in terms of what - when I talked about (9) the risk assessment, I said that the two primary (10) pathways is breathing air, and I presume that by your (11) question you're saying is it realistic to say that air (12) is going to stay on top of that site and not move (13) anywhere?

(14) MR. WARNER: Or even water pathways.

(15) DR. KLEIN: Let's talk about the air first.

(16) In terms of the air, common sense will (17) tell you that even if you - the most conservative (18) estimate of the exposure by breathing contaminated air (19) would be to - assume that a house is being built (20) right next to the site or a house exists right next to (21) the site and the people that live in that house would (22) be breathing the highest concentration of air coming (23) off of that site. (24) And that, indeed, what that risk (25) assessment - what our risk assessment says in regard

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(1) to the drinking - in regard to the Bellflower (2) Aquitard, as Tom says, the Bellflower Aquitard is not (3) really a source of drinking water; however, to be very (4) conservative and to assess the content of (5) contamination in that groundwater, we assumed that - (6) that it was a drinking water source.

(7) We assumed that there was enough water (8) there that you could pull up and actually use as a (9) drinking water source. But, in fact, that was a very (10) conservative assumption, because there's just simply (11) not enough water there to act - to provide drinking (12) water at all.

(13) Does that answer your questions?

(14) MR. WARNER: Basically.

(15) DR. KLEIN: I can try to restate it to make (16) it -

(17) MR. WARNER: Basically answered the question.

(18) I mean, like you said, there's not much you can do (19) about air, so -

(20) There was some discussion about public (21) acceptance of the implementation. How is that going

(22) to be determined? Is it going to be some big massive (23) vote in the South Bay area, or I didn't - I don't (24) really know how the determination is going to be made (25) that the public is going to accept this plan.

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(1) DR. SCHUMACHER: Well, the first answer - then (2) I'll yield to Dan - is the public participation plan (3) for the site includes public participation in the (4) process that you're participating in right now.

(5) The public comment period lasts for 30 (6) days. And we had public notice with a quite extensive (7) mailing list, 1800 addresses as well as large quarter (8) page of the L.A. Times and also the Daily Breeze; so (9) we have the requirement of public notice and the (10) public comment period. So you are participating right (11) now in that.

(12) There's no referendum or formal voting (13) that will go on on any segment of this in the larger (14) community, but I think Dan and Hamid will have (15) something to add to that, but I wanted to start with (16) that answer in terms of public participation (17) program.

(18) MR. WEINGARTEN: It is a legal requirement for (19) the department to engage the public in responding to (20) the plans that may, indeed, effect them. The (21) decision-maker here is the department, but one of the (22) requirements is we do take into account public (23) participation and public comments in our final (24) decision, which is embodied in the final RAP.

(25) The draft RAP is a draft document. We

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(1) are legally bound to take into account your comments, (2) to respond appropriately. And where we deem it (3) appropriate, to change elements of that draft RAP.

(4) It's entirely feasible that that can happen. That (5) would be reflected in the final RAP or in changes in (6) the final RAP.

(7) Part of the process is not a voting (8) process, and it is limited to the fact of (9) communication in terms of public participation.

(10) MR. WARNER: I guess my last question is why (11) not - well, the scenarios up there - one extreme (12) would be excavation of the entire site, basically.

(13) Why wasn't that taken into consideration? Why was it (14) not

chosen for implementation?

(15) MR. COTA: We evaluated excavation of the site (16) and shipping it off-site to an off-site incinerator.

(17) When you look at the implementability, the (18) effectiveness and the cost in that scenario, the cost (19) was in the neighborhood of hundreds of millions of (20) dollars to do that. (21) That scenario - the risk assessment also (22) showed if we were going to excavate that site, it (23) would take - or just the opening and exposing of the (24) waste to the atmosphere, we would have a significant (25) risk in that scenario. So that was another reason why

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(1) it would not be an effective method for handling that (2) site. (3) Typically with landfills you want to (4) protect human health by preventing those exposures, (5) not digging them up and creating an exposure pathway.

(6) So we did study that in the feasibility study, and it (7) was screened out due to cost and also potential risk (8) of excavation of the waste itself.

(9) MR. WARNER: What is the risk after everything (10) is said and done, capped, et cetera? That - unless I (11) missed, that wasn't discussed. What is the risk, at (12) the point everything is done?

(13) DR. KLEIN: The risk would be exceedingly (14) small, because as you - I'll just put this up (15) again. (16) Because really what Tom is saying is that (17) they - what they've decided - what they think that (18) they can do is - really they're going to put a cap (19) here, and that will effectively make all of these (20) arrows disappear; that is to say, the cap is going to (21) prevent significant evaporation of chemicals that (22) exist in the site, and it's going to - well, that's (23) basically what the cap will do.

(24) The gas collection system will then (25) prevent that other - the land - the generation of -

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(1) landfill gases will be - the landfill gases, as they (2) are generated, will be collected by the landfill gas (3) system, and it will be - it will be incinerated in (4) the flare. And so those two - those two things, (5) which are here graphically depicted by the arrows, (6) effectively disappear. So the risk will now - due to (7)

the inhalation of chemicals that are in the air will (8) be virtually nil. (9) In regard to the groundwater, Tom was (10) discussing the treatment system on the perimeter of (11) the site that - I don't know, did you want to go into (12) that or -

(13) MR. WARNER: Since he says that's not drinking (14) water, I've been only concerned about the Silverado, (15) which is another 900 feet.

(16) MR. WEINGARTEN: Kind of in commonsensical (17) terms, this remedy has three components to it. Each (18) of those components is designed to address health and (19) environment issues. Each of those will minimize (20) existing problems at the landfill as it currently (21) exists.

(22) The cap will minimize those kinds of -

(23) you've got gaseous emissions because, remember, these (24) chemicals, particularly the volatiles, exist both in (25) the liquid and vapor phase. And in the vapor phase

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(1) they can escape the landfill, they can be inhaled by (2) nearby residents. The dust can be inhaled by (3) neighboring residents. Liquids or particulates like (4) metals can be carried in the dust. All that will be (5) reduced significantly by having a cap. This has been (6) well-established in many site - many landfills.

(7) The gas collection system is needed as (8) the gas might be funneled under the cap. This is a (9) form of capturing all that gas and destroying it. As (10) it exists right now, you've got a problem where you (11) have water - rain water and groundwater that moves (12) through the site. And by having a capture system (13) downgradient, you will be able to pick up all this (14) contaminated leachate pump it into a treatment (15) system, treat it and then discharge water either to (16) the sewer or to the - or perhaps through what we call (17) an NPDA permit can be discharged to the storm drain (18) permitted at safe levels.

(19) This, in our view, is an ideal solution (20) for the site. It will have great benefits to the (21) local public in terms of public health and safety and (22) at protecting future groundwater sources by minimizing (23) off-site migrations. I think this is what, in our (24) view, must be

kept in mind. And we feel this is (25) important and we think it is a very fine remedy for

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(1) this site.

(2) In the ideal world, if there was (3) unlimited amounts of funds, maybe you could dig up all (4) of this material and take it somewhere else, and that (5) might be a Superfund problem at some other location.

(6) And it has already been indicated that kind of (7) scenario poses its own serious risks.

(8) So boiling down some of the science into (9) a commonsensical approach, this is commonsensical and (10) will have a great benefit for the city in terms of (11) lowering the risk to the neighbors.

(12) DR. KLEIN: I just want to make a comment (13) about - you said the Bellflower is not a drinking (14) water source, and so why are we worried about it.

(15) MR. WARNER: Everybody missed everything I (16) said. I asked about the Silverado.

(17) DR. KLEIN: The concern that we have is that (18) the drinking water - the contaminants that are in the (19) Bellflower Aquitard could move down into the lower (20) aquifers over time, over, you know, many, many years, (21) and so it's better to treat it now and just pull it (22) off rather than allowing that type of downward -

(23) MR. WEINGARTEN: You must understand the (24) presence of the cap minimizes what drives contaminant (25) from the waste zone downwards. The rain water

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(1) percolating down doesn't inherently fall. There needs (2) to be a driving force.

(3) By placing the cap over it, we are (4) minimizing, to a great extent, the ability of any (5) percolating water to get into the waste zone and to (6) draw it down. The horizontal movement of the (7) groundwater through the waste zone can be picked up by (8) the waste water in the treatment system.

(9) MR. WARNER: That answers the question.

(10) Last question, and then I'll sit down.

(11) I think the site has been dormant for awhile. What (12) political business - or what's the knee-jerk reaction (13) to the situation? What started it up to cause the -

(14) why not 20 years from now to even clean it up?

(15) I don't know what started all this. The (16) site was closed and we realized then we needed to (17) clean this up. How come something wasn't started in (18) 1968? Is that when it was closed?

(19) MR. SAEBFAR: '69.

(20) MR. WARNER: That's quite a long period of (21) time.

(22) MR. WEINGARTEN: We've had ongoing (23) investigation on this site in the last - I think (24) someone talked about the number of years. We had an (25) order that was issued in 1988 to identify potentially

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(1) responsible parties. Only BKK, of those parties, came (2) forward and came up to bat, so to speak, and had (3) people - consultants go on-site and begin to (4) investigate the site.

(5) We are, like most agencies, limited in (6) our resources. We do not have infinite resources. If (7) we have one party - to, perhaps, address a comment (8) made earlier - who's coming forward to comply, we (9) normally, at that point, do not take all our (10) litigation resources and our manpower and try to (11) litigate against other potentially responsible parties (12) who will tend to take advantage of the fact we have a (13) complying party and try to get as much out of that as (14) possible.

(15) And this site now really has, I think, (16) resources which are eventually going to be committed (17) to the site to do what otherwise probably would not (18) take place. It's very limited resources to - in (19) fact, we don't have this money to spend. I will say (20) about six or seven or eight years ago we had a fairly (21) significant bond expenditure plan which gave us a (22) great advantage.

(23) We could spend - we could have (24) identified PRPs, so we'd order them to do something.

(25) If they would do nothing, we could then spend our own

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(1) money in cost recovery. We had a big hammer. We (2) could spend our own money and then cost recover. We (3) don't have that hammer.

(4) The legislature has not seen fit to have (5) another huge expenditure plan where we can have - at (6) that time we had

millions of dollars to put towards (7) the site, now we have to look to other kinds of (8) enforcement mechanisms and other kinds of mechanisms (9) to clean up these sites, and this is certainly a good (10) example of that kind of a process.

(11) MR. WARNER: Thank you very much.

(12) DR. SCHUMACHER: Can I have a show of hands for (13) any additional questions?

(14) Some of us will remain for a few minutes (15) after the close of tonight's meeting if you do have (16) any after-meeting questions for us.

(17) We want to thank you for your time and (18) participation tonight. And we will take all the (19) comments that you have spoken into the record tonight (20) and they will be responded to in the document that I (21) described earlier.

(22) On behalf of both the DTSC staff and (23) Mr. Neff from BKK, still with us in the back, I want (24) to thank you and ask you to please drive safely and (25) wish you a good night.

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# INITIAL STUDY CHECKLIST FOR

## CAL COMPACT LANDFILL FINDINGS

The purposes of this checklist is to identify any reasonable possibility of "significant effect on the environment" as that term is used in Section 21068 of the Public Resources Code.

		Substantial or potentially substantial adverse change		
		<u>Yes</u>	<u>Maybe</u>	<u>No</u>
1.	Earth Will the project result in:			
a.	Unstable earth conditions or in changes in geologic structures?	<u>X</u>	___	___
b.	Disruptions, displacements, compaction or overcovering of the soil?	<u>X</u>	___	___
c.	Change in topography or ground surface relief features?	<u>X</u>	___	___
d.	The destruction, covering or modification of any unique geologic or physical features?	___	___	<u>X</u>
e.	Any increase in wind or water erosion of soils, either on or off the site?	___	<u>X</u>	___
f.	Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	___	___	<u>X</u>

- g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards? \_\_\_\_\_ X

Explanation: The City of Carson prepared and certified an Environmental Impact Report (EIR), entitled Final Project and Program Environmental Impact Report, Metro 2000; November 1993, which addressed potential impacts associated with the approval of the Metro 2000 Project (Metro Project). A portion of the Metro Project entails the importation of 2,032,500 cubic yards of soil associated with the construction of a landfill cap.

The City of Carson identified in the EIR potential impacts associated with grading activities proposed in the development of Phase I Project (which includes construction of the landfill cap). The Phase I activities would serve to alter on-site topography and raise the overall grade of the project site to accommodate installation of the landfill cap and specific project design features.

The City of Carson found and identified several mitigation measures that would minimize the potential impact from the grading operations. The mitigation measures identified include:

- 1) A grading permit for the project shall be approved by the City of Carson Department of Building and Safety.
- 2) The project shall adhere to the recommendations of the geotechnical reports as approved by the Department of Building and Safety for foundation, excavation, subdrain system and other geotechnical components of the project design.
- 3) An erosion control plan shall be prepared by a California registered Civil engineer and implemented.
- 4) All excavation deeper than five feet shall be conducted in accordance with state and federal laws.
- 5) Construction of a temporary berm along the west and south boundaries of the project site adjacent to surrounding residential uses prior to the initiation of any on-site grading or other type of on-site construction activity.
- 6) Applicant shall obtain a haul route permit. All staging shall be on the project site. No transport of imported material shall be permitted through residential neighborhoods.

- 7) Any hydrocarbon-contaminated soil identified during grading must be removed and any contaminated source must be remediated according to the recommendations of the site assessment as approved by CAL/EPA.
- 8) No fill shall be placed until the City Grading Inspector has inspected and approved the bottom excavations.
- 9) The fill shall be placed under the inspection and approval of the District Engineer of the City's Building and Safety Division.
- 10) Backfill shall be placed and compacted as recommended and good drainage provided.
- 11) Utilities supports shall be designed to accept differential settlement.

The proposed project, the Remedial Action Plan (RAP), before the Department of Toxic Substance Control (Department) requires the construction of the landfill cap over the existing soil cover and waste zones. The landfill cap, which will cover the entire site, will consist of several components (layers) of material acting together as a complete cover system. The landfill cap will protect human and environmental exposures and provide containment of the chemicals within the buried waste. It will also reduce the potential inhalation of landfill gases or particulates. The infiltration of surface water and the generation of additional landfill gases will be greatly reduced by the construction of the landfill cover.

The proposed landfill cap will consist of the following components:

1. Foundation Layer - A compacted foundation layer to support the cover system. The foundation layer will have a thickness of 24 inches. It will be constructed of 12 inches of existing soil cover and 12 inches of imported soil.
2. Clay Layer - A clay layer (barrier layer) will be constructed over the entire site. The barrier layer will be a minimum thickness of 24 inches. The clay will have a permeability of  $1 \times 10^{-6}$  cm/sec or less.
3. Protective Soil Cover - A layer of compacted soil cover serves to protect the clay barrier layer. The protective cover will be placed above the barrier layer and have a thickness of 18 inches. The protective soil cover will be constructed from suitable imported soil.
4. Top Soil - A top soil layer of suitable soil to support vegetation, with a root system less than the depth of the top soil layer will be constructed in landscape areas only.

The top soil will have a thickness of 12 inches and may replace 6 inches of protective soil cover.

The City of Carson concluded, in section V.B. page V.B.1 - 16, that the grading activities associated with the Metro Project would alter on-site topography and raise the overall grade of the site. Given the location of the site within an urbanized area, and the additional separation the project site and adjacent residences (due to the raising of on-site finishing grade), proposed grading activities unto themselves are not concluded to be adverse or significant. However, the import of 2,032,500 cubic yards of fill material would cause temporary impact from dust, vehicle emissions and noise during the grading operations for about 334 working days. With the mitigation measures the impacts would be reduced.

The mitigation measures found in the Metro Project EIR have been incorporated into the RAP. The Department concurs with the findings of the City of Carson with regards to significant impact associated with the landfill cap activities. The Department finds that the significant impacts identified above cannot be feasibly mitigated to a level of insignificance through mitigation measures or project alternatives.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

	<u>Yes</u>	<u>Maybe</u>	<u>No</u>
2. Air Will the project result in:			
a. Substantial air emissions or deterioration of ambient air quality?	<u>X</u>	___	___
b. The creation of objectionable odors?	___	<u>X</u>	___
c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	___	___	<u>X</u>

Explanation: The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000; November 1993, which addressed potential air impacts associated with the construction of the Metro 2000 Project.

The EIR, Section V.D, page V.D.1, identified that the development of the Merto Project Phase I (which includes the landfill cap) and the Phase II project (which is beyond the scope of the RAP) would result in a significant direct impact to air quality in the South Coast Air Basin. Development of Phase I project would generate peak daily construction emissions from truck hauling and grading related to the construction of the landfill cap.

In evaluating the hauling of fill material and grading operations the City of Carson found:

1) Total estimated daily emissions from truck hauling of fill material for each of the five criteria pollutants are as follows: (1) carbon monoxide -- 460.6 pounds, significance threshold of 550 pounds per day; (2) nitrogen oxides -- 189.8 pounds, significance threshold of 100 pounds per day; (3) reactive organic compounds -- 43.1 pounds, significant threshold of 75 pounds per day; (4) sulfur oxides -- 14 pounds, significant threshold of 200 pounds per day; and (5) particulate matter -- 1,337.7 pounds, significant threshold of 150 pounds per day. For the particulate emissions, approximately 75.7 % of the daily emissions are associated with truck travel on unpaved areas, 14.9% with the filling of haul trucks, 6.1% with emptying of the haul trucks, and the remaining 3.3 due to truck travel on paved roads.

2) For grading operations the project applicant has agreed to limit grading operations to a maximum of three acres per day. The daily fugitive dust emissions attributed to project grading operations would not exceed 79.2 pounds of PM 10 emissions on a daily basis. This emission level from a single source of grading operations is below the SCAQMD PM 10 significance threshold of 150 pounds per day.

The City of Carson established the following mitigation measures related to the construction equipment and fugitive dust resulting from the fill material and grading operations:

- 1) Control Technologies: Apply NOx control technologies, such as fuel injection timing retard for diesel engines and air-to-air after cooling.
- 2) Alternative Fuels: Any construction equipment using diesel drive internal combustion engines shall use diesel fuel with a maximum of 0.05% sulfur and a four degree retard.
- 3) Diesel-powered construction equipment rather than gasoline-powered equipment shall be used, to reduce exhaust emissions and evaporative and crankcase hydrocarbon (HC) emissions.
- 4) Construction Practices: Use only well maintained equipment, utilize proper planning to reduce rework and multiple handling, select equipment that is properly sized to minimize trips/use, consolidate deliveries, and maximize off-site construction (i.e., prefabbing and repainting).
- 5) Record Keeping: Log fuel use, hours of operation and periodic maintenance of all construction equipment to ensure proper maintenance.
- 6) Watering: Apply water sprays at regular and frequent intervals as required to reduce fugitive dust, but not less than twice per day.
- 7) Soil Stabilization: For disturbed dirt areas which remain inactive over a one-week period, soil stabilization measures should be undertaken such as application of moisture retaining binders which pull moisture out of the air to form a cohesive soil binder. Such measures shall be in accordance with SCAQMD Rule 403.
- 8) Road Clearing: Roads must be cleaned, swept, or scraped at regular intervals, but not less than once a working day, in accordance with a haul route permit if required, or other appropriate instrument satisfactory to the Director of Engineering Services.

9) Grading Activities: All grading activities shall cease during periods of high wind (i.e., greater than 25 mph for an extended period of time at the project site) and during Stage 2 or 3 ozone episodes.

10) All fill material carried by haul trucks shall be covered by a tarp or other means.

11) All construction vehicles tires shall be washed at the time these vehicles exit the project site.

12) Haul trucks exiting the site shall be visually inspected by a dust control monitor stationed at the guard gate entrance to check for residual dirt and to ensure that the haul trucks have been adequately sprayed to wash dirt off. As trucks leave the fill material source site, the contractor shall ensure that trucks are tarped and that tarps are adequately fastened.

13) Haul trucks shall, to the extent possible, only travel on paved or regularly watered roadways. Watering of these designated roadways shall be provided by the applicant.

The Department has incorporated the Metro 2000 EIR mitigation measures associated with the construction of the landfill cap into the RAP. The Department concurs with the findings of the City of Carson with regards to the landfill cap activities. The Department finds that significant impacts identified above cannot be feasibly mitigated to a level of insignificance through mitigation measures or project alternatives.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

3. Surface & Ground Water Will the project result in:
- |    |   |          |          |          |
|----|---|----------|----------|----------|
| a. | Changes in currents, or the course of direction of water movements, in either marine or fresh waters?   | ___      | ___      | <u>X</u> |
| b. | Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?   | <u>X</u> | ___      | ___      |
| c. | Alterations to the course or flow of flood waters?  | ___      | ___      | <u>X</u> |
| d. | Change in the amount of surface water in any water body?  | ___      | ___      | <u>X</u> |
| e. | Discharge into surface waters, or in any alteration of surface water quality, including but not limited to, temperature, dissolved oxygen or turbidity? | ___      | <u>X</u> | ___      |
| f. | Alteration of the direction or rate of flow of ground waters?   | ___      | ___      | <u>X</u> |
| g. | Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?  | ___      | ___      | <u>X</u> |
| h. | Substantial reduction in the amount of water otherwise available for public water supplies?   | ___      | ___      | <u>X</u> |
| i. | Exposure of people or property to water related hazards such as flooding or tidal waves?  | ___      | ___      | <u>X</u> |

Explanation: The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000;



November 1993, which addressed potential surface and ground water impacts associated with the construction of the Metro 2000 Project.

Storm water quality during the construction of the landfill cap will result in some soil loss due to sheet erosion of exposed soils. This erosion would be most serious along freshly-graded slopes. However, after completion of the proposed project the total debris production from the site would be lower than existing conditions. The EIR concluded in Section V.C, page V.C.1-9, that the proposed system provides greater protection against storm water runoff than the present system. Since the storm drain system currently in place was determined to be adequate by the Los Angeles County Department of Public Works based on an assumption of 100 percent imperviousness, the new system is considered to be adequate for the proposed Metro 2000 project. Therefore, there would be no environmental impact related to hydrology or the quantity of surface runoff.

Since only a temporary increase in soil erosion may occur during the construction of the landfill cap mitigation measures have been incorporated into the Metro 2000 Project.

The Department concurs with the findings of the City of Carson with regards to these findings. No additional measures are necessary to mitigate these impacts. The Department finds that significant impact identified above can be feasibly mitigated to a level of insignificance through mitigation measures or project alternatives.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

4. Land Use Will the project result in a substantial alteration of the present or planned land use of an area?

\_\_\_ \_\_\_ X

Explanation: The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000; November 1993, which addressed potential land use impacts associated with the construction of the Metro 2000 Project.

The EIR concluded in Section V.A, page V.A.-21, that the implementation of the Project Buildout, Phase I & Phase 2, (which includes the construction of the landfill cover) is not expected to result in significant adverse impacts to surrounding land use. Furthermore, no changes in the General Plan designations would be required as a result of the proposed Phase I project and no adverse impacts were anticipated.

The Department concurs with the findings of the City of Carson with regards to these findings. The Department finds that no significant land use impact should result for this project.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

5. **Natural Resources** Will the project result in an increase in the rate of use of any natural resources?        X

Explanation: The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000; November 1993, which addressed potential natural resources impacts associated with the construction of the Metro 2000 Project.

The EIR concluded in Section V.K, page V.K.-8, that Phase I of the project (which addressed construction of the landfill cap) would result in a increase in the amount of non-renewable resources consumed through the use of electricity, natural gas, gasoline and diesel fuel. However, the construction of the landfill cap is only a small portion of the Phase I project which includes the construction of a 1.8 million square foot shopping mall. Mitigation measures were identified for the construction and operation of the shopping mall that would mitigate impacts to natural resources to an acceptable level.

The Department concurs with the findings of the City of Carson. The Department finds that the mitigation measures contained in the Merto 2000 EIR will mitigate the impacts to natrual resources to an acceptable level.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

6. Risk of Upset      Will the project  
involve:

- a.    A risk of an explosion or the  
release of hazardous substances  
(including, but not limited to,  
oil, pesticides, chemicals or  
radiation) in the event of an  
accident or upset conditions?      \_\_\_      \_\_\_      X
- b.    Possible interference with an  
emergency response plan or an  
emergency evacuation plan?      \_\_\_      \_\_\_      X

Explanation:    The City of Carson prepared and certified  
an Environmental Impact Report (EIR), titled Final Project  
and Program Environmental Impact Report, Merto 2000;  
November 1993, which addressed potential from risk of upset  
impacts associated with the construction of the Metro 2000  
Project.

The EIR identified in Section V.I, potential sources of  
concern for risk of upset. They included the buried waste,  
groundwater and landfill gases. The installation of a  
landfill cover (cap) would reduce, minimize, or eliminate  
the following: 1) infiltration of surface water through the  
waste zone, 2) generation of additional landfill gases,  
human exposure to contaminants of concern present in the  
landfill, and potential inhalation of landfill gases or  
particulates.

The EIR for the MetroMall Project contained several  
mitigation measures, they included the following:

1.    The Applicant shall receive approval for the proposed  
project's remediation program from the State of California  
Environmental Protection Agency, Department of Toxic  
Substances Control.

2.    Prior to final project approval, the Applicant shall  
record a deed restriction granting Cal-EPA and/or its  
assignee a permanent right of access to specified areas of  
the project site for the purposes of monitoring, testing and  
treating of groundwater in the Gage, Lynwood and Silverado  
Aquifers. This right of access shall include the permission  
to construct and maintain wells and treatment facilities on  
the site.

3. Prior to issuance of any building permits the Applicant shall submit certification from Cal-EPA authorizing said permits and stipulating that the proposed dynamic compaction of the project site prior to installation of the landfill cap would not adversely impact successful implementation of the second operable unit of the site's remediation program addressing potential groundwater contamination of the Gage and/or Silverado deep drinking water aquifers.

4. All components of the Applicant's remediation program shall be approved by Cal-EPA and implemented prior to receipt of the Certificate of Occupancy from the City of Carson for the Phase I development. All collection and treatment facilities shall be in operation prior to project occupancy.

5. Collection and treatment facilities operated by the Applicant shall be maintained for the life of the project, unless the Department, RWQCB and SCAQMD establish that these facilities are no longer necessary for the remediation of groundwater and landfill gases.

The City of Carson concluded that "With implementation of the proposed mitigation measures, no adverse impacts are anticipated to occur with development of either the Phase I or Phase II projects.

The Department concurs with the findings of the City of Carson. The Department finds that significant impacts identified above can be feasibly mitigated to a level of insignificance through mitigation measures.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

7.	Transportation/Circulation	Will the project result in:			
	a.	Generation of substantial additional vehicular movement?	<u>X</u>	___	___
	b.	Effects on existing parking facilities, or demand for new parking?	___	___	<u>X</u>
	c.	Substantial impact upon existing transportation systems?	___	<u>X</u>	___
	d.	Alterations to present patterns of circulation or movement of people and/or goods?	___	___	<u>X</u>
	e.	Alterations to waterborne, rail or air traffic?	___	___	<u>X</u>
	f.	Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	___	<u>X</u>	___

Explanation: The City of Carson Certified EIR for the MetroMall Project found that the proposed construction of the landfill cover would require a net import of 2,032,500 cubic yards (CY) of fill material. The applicant indicated that the fill material would be obtained from the MertoRail Red Line in the Hollywood area of the City of Los Angeles or other alternate sites. The importation of fill is proposed to occur between the hours of 7 a.m. and 7 p.m. Monday through Saturday (12 hours per day), and between the hours of 8 p.m. and 6 a.m. (10 hours per day). Based on the proposed program, importation of fill material to the project site would occur 22 hours a day. It is estimated that 334 working days would be required to complete the construction of the landfill cover. Based on this information, it was determined that a total of 145,179 truck carrying and average of 14 CY of fill material would be required to complete a necessary import of 2,032,500 CY of fill material. Approximately 55% of the fill material would be transported during the daytime period (7 a.m. to 7 p.m.), while the remaining 45% would occur during the nighttime period (8:00 p.m. to 6:00 a.m.).

Haul routes for the imported fill material are shown in Figure V.B.1-4, on page V.B.1-12 of the EIR. The specific

haul routes may vary depending on the origin of the fill material (MetroRail source or Baldwin Canyon dam site), all haul trucks would utilize the same route south of the I-110/I-405 freeway interchange. Trucks would exit the Harbor freeway (I-110) at the Del Amo exit and then proceed north on Hamilton Avenue until reaching Del Amo Boulevard. The trucks would turn right on Del Amo and continue on this street until entering the project site. The returning trucks would exit the site by del Amo going west bound until reaching Figureora Street. The vehicles would make a left turn on figureora until reaching the northbound entrance ramp to the Harbor Freeway (I-110). The trucks would then proceed north to the two donating sites.

By utilizing this haul route trucks avoid driving through areas lined by residential housing. As part of the requirement of the EIR and the Draft RAP the applicant is required to obtain haul route approval for all imported material from the City of carson Department of Engineering Services and all agencies with jurisdiction along the haul route. All project staging shall be on the project site. The transportation of imported materials is not permitted through residential neighborhoods.

The EIR identified that the construction associated with the landfill cover development would result in a significant direct impact to air in the South Coast Air Basin. Development of the landfill cover, which is proposed in the Remedial Action Plan, would generate construction emissions associated with the hauling of fill material over the SCAQMD significant threshold levels for nitrogen oxides and particulate matter (less that 10 microns in diameter--PM 10).

The City of Carson concluded that with implementation of the mitigation measures contained in the Merto 2000 EIR, impacts are anticipated to be significant with development of the Metro 2000, Phase I and Phase II projects.

The Department concurs with the findings of the City of Carson. The Department finds that significant impacts identified in the Metro 2000 EIR cannot be feasibly mitigated to a level of insignificance through mitigation measures or project alternativies.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

8. **Public Services**   Will the project have an effect upon, or result in a need for new or altered governmental services in any or the following areas:
- |   |     |     |          |
|---|-----|-----|----------|
| a.   Fire protection?                                   | ___ | ___ | <u>X</u> |
| b.   Police protection?                                 | ___ | ___ | <u>X</u> |
| c.   Schools?   | ___ | ___ | <u>X</u> |
| d.   Parks or their recreational facilities?            | ___ | ___ | <u>X</u> |
| e.   Maintenance of public facilities, including roads? | ___ | ___ | <u>X</u> |
| f.   Other governmental services?                       | ___ | ___ | <u>X</u> |

Explanation:   The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000; November 1993, which addressed potential public service impacts associated with the construction of the Metro 2000 Project.

Section V. J. of the EIR studied the potential impacts on public service. The EIR concluded that the development of the proposed project would increase the need for fire protection and emergency services in the area. With the implementation of the mitigation measures (associated with the operation of the Metro 2000 project) adverse effects associated the development of Phase I project would be reduced to acceptable levels.

The Department concurs with the findings of the City of Carson with regards to these findings. The Department finds the implamentation of the mitigation measures in the Metro 2000 EIR will reduce the impact on public service to an acceptable levels.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address



the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

9. **Energy**   Will the project result in:

- a.   Use of substantial amounts of  
fuel or energy?                      X
- b.   Substantial increase in demand  
upon existing sources of energy,  
or require the development of  
new sources of energy?                            X

Explanation:   The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000; November 1993, which addressed potential energy resource impacts associated with the construction of the Metro 2000 Project.

The proposed project will result in an increase in diesel fuel consumption during the construction of the landfill cover. The construction is expected to take 334 working days. This will be a temporary increase in fuel consumption. As identified in the Certified EIR for the Metro 2000 project, it is expected that 435 haul trucks per day will deliver imported soil to the project site. The proposed project should not have a significant impact on the diesel fuel consumption due to the short duration of the proposed project.

The City of Carson concluded that with implementation of the mitigation measures contained in the Merto 2000 EIR, impacts are anticipated to be mitigated to an acceptable level.

The Department concurs with the findings of the City of Carson. The Department finds that impacts identified in the Metro 2000 EIR were related to the development of the MetroMall not the construction of the landfill cap. The Department finds that the mitigation measures contained in the EIR for the Metro 2000 Project will reduce the impacts on energy resources to an acceptable levels.

The Department prepared an Initial Study and a

Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

10. **Utilities**   Will the project result in  
a need for new systems, or substantial  
alterations to any utilities?                            X  

Explanation: The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000; November 1993, which addressed potential utility services impacts associated with the construction of the Metro 2000 Project.

The EIR for the MetroMall did not identify any required utilities for the construction of the landfill cover. Therefore, no substantial adverse impacts are anticipated.

The Department concurs with the findings of the City of Carson. The Department finds that no significant utility services impacts will result from the construction of the landfill cap.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

11. Noise   Will the project result in:

- |    |  |              |              |             |
|----|--|--------------|--------------|-------------|
| a. | Increases in existing noise levels?        | <u>  X  </u> | <u>    </u>  | <u>    </u> |
| b. | Exposure of people to severe noise levels? | <u>    </u>  | <u>  X  </u> | <u>    </u> |

Explanation: The City of Carson prepared and certified an Environmental Impact Report (EIR), titled Final Project and Program Environmental Impact Report, Merto 2000; November 1993, which addressed potential noise impacts associated with the construction of the Metro 2000 Project.

The EIR for the Metro 2000 Project identified specific activities during the construction phase that would result in potential noise impacts. These activities included: importation of soil for grading, grading of the site, dynamic compaction, construction of the landfill cap, installation of the infrastructure, and pile-driving (of which pile driving and dynamic compaction are not include in the RAP). In addition, night time importation of soil would also result in an adverse significant impact to the residents to the south of the Project site. Mitigation measures have been required in, or incorporated into the Metro 2000 Project which reduce the noise levels during the construction to the extent possible. These mitigation measures include the following:

1. The Applicant shall create a temporary berm, 15 feet above on-site grade, along the length of the landfill slope across from existing residential areas. This sound berm shall be completed first and constructed during daytime hours, before any night hauling is allowed to commence.
2. The Applicant shall maintain the temporary construction berm at 15 feet above on-site grade during construction of the southerly portion of the Phase I project structure.
3. Night operations regarding fill importation will be strictly limited to unassisted (by dozers) bottom dumping and unload assist tractors.
4. Prohibited night-time activities will include: (a) operation of any machinery or equipment other than bottom dumping semis with trailers (in forward motion only); (b) no spreading or compaction activities; (c) no backing up of

equipment fitted with safety alarm.

5. The Applicant shall indemnify and hold harmless the City of Carson with regard to all claims by local property owners pertaining to structural or any other type of property damage as a result of on-site construction activities.

6. Pile drivers used on the site shall be equipped with noise control having a quieting factor of 10 dBA.

7. Loading and staging areas must be located on-site and away from the most noise sensitive uses surrounding the site as determined by the Department of Community development.

8. Construction contracts shall require project contractors to use electric power construction equipment with noise shielding and muffling devices.

9. During construction, the project shall comply with the City's Noise Ordinance and associated ordinances.

10. Information shall be provided to adjacent residents on a regular basis regarding construction activities and their duration.

11. Prior to the initiation of construction activities involving dynamic compaction, the Applicant and/or its contractors shall submit a report for City approval with documents preconstruction surveys of existing conditions of adjacent facilities.

12. Seismographs shall be developed of initial dynamic compaction activities to develop a permanent record of vibration levels at adjacent structures.

13. The Applicant shall notify adjacent property owners prior to the initiation of on-site dynamic compaction activities.

The City of Carson concluded that during construction, site activities such as pile driving, grading, and dynamic compaction would have an adverse and significant noise impact upon adjacent residential areas to the south and west of the site. In addition, night time importation of soil by dump trucks would also result in an adverse significant impact upon residential areas to the south of the site. The potential noise impacts of the construction activities would only occur for the duration of the construction phase, and would terminate, once construction has been completed.

The Department concurs with the findings of the City of Carson. The Department finds that significant impacts identified in the Metro 2000 EIR cannot be feasibly

mitigated to a level of insignificance through mitigation measures or project alternatives.

The Department prepared an Initial Study and a Supplemental Negative Declaration (SCH# 9508161) to address the impacts associated with the construction, operation and maintenance of the proposed landfill gas collection and treatment system and groundwater treatment system associated with the Upper Operable Unit at the Cal Compact landfill. The potential impacts of these system were not fully addressed in the City of Carson's EIR for the Metro 2000 Project. The Department has determined that the construction, operation and maintenance of these systems will not result in a significant impact to the environment.

## DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4  
245 West Broadway, Suite 425  
Long Beach, CA 90802-4444



FINDINGS  
PURSUANT TO THE  
CALIFORNIA ENVIRONMENTAL QUALITY ACT  
for Use of a Local Agency Environmental Impact Report  
by the California Department of Toxic Substances Control  
as a Responsible Agency  
In Approving a Remedial Action Plan  
for the  
Cal Compact Landfill Site  
Carson, California

The Department of Toxic Substances Control (DTSC) carefully reviewed the Final Environmental Impact Report (EIR) prepared and certified by the City of Carson (City) entitled *Project and Program Environmental Impact Report, Metro 2000 December 1993*, (SCH# 93011037). DTSC, using its independent judgment, finds:

1. The EIR for the Metro 2000 project:
  - a) Adequately complied with the provisions of the California Environmental Quality Act (CEQA).
  - b) Adequately addressed the impacts of a portion of the remedial project now before DTSC for decision.
  - c) Is adequate for DTSC to assess potential impacts for construction of the landfill cap portion of the Remedial Action Plan (RAP) now before DTSC for approval. DTSC concurs with the findings made by the City of Carson in the EIR.

BKK Corporation is requesting DTSC to approve a draft RAP for the Cal Compact Landfill Upper Operable Unit (Upper OU). The RAP is in accordance with Section 25356.1 of the California Health and Safety Code, and Subpart E of the National Oil and Hazardous Substances Pollution Contingency Plan, Title 40 Code of Federal Regulations Part 300 et. seq. The draft RAP addresses final remediation of the Upper OU and includes: construction of a landfill cap; construction and operation of a landfill gas collection and treatment system; and construction of a groundwater collection and treatment system.

Pursuant to CEQA, DTSC prepared a Supplemental Negative Declaration (SCH# 95081061) for approval of the RAP for the Cal Compact Upper OU. The proposed remedial project for which DTSC is acting addresses the construction of the landfill gas collection and





treatment system and the groundwater treatment system.

2. Significant Impacts Identified in the Metro 2000 EIR:

a) Degradation of Air Quality - The EIR identified that the construction associated with the landfill cap development would result in a significant direct impact to air in the South Coast Air Basin. Development of the landfill cap, which is proposed in the draft RAP, would generate construction emissions in excess of SCAQMD thresholds recommended for determining significant air quality impacts. Mitigation measures have been required in, or incorporated into the Metro 2000 project which reduce the air impacts during the construction to the extent possible, however, the impacts are still significant.

b) Significant Operation and Construction Noise Impact - The EIR identified that during the construction, the site preparation activities such as pile driving (not a part of the RAP), grading, and dynamic compaction would have an adverse and significant noise impact upon adjacent residential areas to the south and west of the project site. In addition, night time importation of soil would also result in an adverse significant impact to the residents to the south of the project site. Mitigation measures have been required in, or incorporated into the project which reduce the noise levels during the construction to the extent possible, however, the impacts are still significant. The significant construction noise impacts attributable to the development of the Phase I project are in large part due to the construction of the landfill cap and the proximity of the existing residences to the project site. The construction of a landfill cap would be a prerequisite for any development on the project site. DTSC concurs with the findings made by the City in the Metro 2000 EIR.


3. Departments of Toxic Substances Control - Statement of Overriding Considerations:

DTSC finds that some environmental impacts associated with the construction of the landfill cap cannot be feasibly mitigated to a level of insignificance through mitigation measures or project alternatives. In addition to the individual findings contained in Section 2 above, DTSC finds that the individual and collective benefits provided by the construction of the landfill cap will outweigh the adverse impacts caused by the project. These benefits are determined by DTSC to include the following:

a) The construction of the landfill cap provides containment of the waste zones. The landfill cap isolates the landfill contents and mitigate off-site migration through the use of engineering controls.

- b) The landfill cap will provide surface controls designed to control direct surface water runoff and to prevent off-site surface water from running onto the site. These features will also reduce water infiltration into the waste zones thus minimizing leachate generation.
- c) The landfill cap will control emissions of gas and odors from the landfill.
- d) Reduction of water infiltration through the waste zones also serves to minimize the generation of landfill gases.
- e) The construction of the landfill cap will enable the site to be redeveloped. The project site is the location of the proposed Metro 2000 project. The development of the Metro 2000 project is expected to generate 5,000 permanent jobs after Phase I and an additional 4,292 jobs after Phase II. The Cal Compact landfill has been a vacant non-productive parcel in the City of Carson. The redevelopment of this land would result in the generation of millions of dollars in tax revenue to the City of Carson and the State of California.
4. The significant impacts from the construction of the landfill cap have already been identified, described and full disclosed in the City of Carson EIR for the Metro 2000 Project. RAP approval will not involve any additional significant environmental impacts from the proposed landfill gas collection and groundwater treatment systems.
5. A Notice of Determination (NOD) indicating the results of the above findings will be filed with the State Clearinghouse of the Governor's Office of Planning and Research pursuant to CEQA Guidelines Section 15096(i).

Certified for DTSC by:

  
\_\_\_\_\_  
Hamid Saebfar, Chief  
Site Cleanup Operations Branch  
Southern California Branch

Date: 10/25/95

# INITIAL STUDY CHECKLIST FOR

CAL COMPACT LANDFILL  
UPPER OPERABLE UNIT  
20400 MAIN STREET  
CARSON, CALIFORNIA

The purposes of this checklist is to identify any reasonable possibility of "significant effect on the environment" as that term is used in Section 21068 of the Public Resources Code.

		Substantial or potentially substantial adverse change		
		<u>Yes</u>	<u>Maybe</u>	<u>No</u>
1.	Earth	Will the project result in:		
	a.	Unstable earth conditions or in changes in geologic structures?		
		___	___	_X_
	b.	Disruptions, displacements, compaction or overcovering of the soil?		
		___	___	_X_
	c.	Change in topography or ground surface relief features?		
		___	___	_X_
	d.	The destruction, covering or modification of any unique geologic or physical features?		
		___	___	_X_
	e.	Any increase in wind or water erosion of soils, either on or off the site?		
		___	___	_X_
	f.	Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?		
		___	___	_X_

- g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?

\_\_\_ \_\_\_ X

Explanation: The construction of the landfill gas collection and treatment system will consist of the following:

1. A series of vertical gas control wells located within the outer edges of the waste cells along the site boundaries.
2. A thermal destruction unit (Flare) for the final treatment of the collected gases.

The vertical gas extraction wells will be connected by a series of pipes. The collected gases will be transported through these pipes to the flare system. Installation of these extraction wells will have a minimal impact on the landfill. Well installation will be conducted through the use of a hollow stem auger drilling rig or equivalent. The installation of these wells is to be deeper than 30 feet below ground surface. All waste generated during the installation of the extraction wells will be treated as hazardous waste until analysis indicates otherwise.

The proposed groundwater collection and treatment system will not have a substantial adverse effect on the earth due to the fact the groundwater extraction wells shall be installed along the perimeter of the southern and western boundary of the site. The wells will be installed using a hollow stem auger drilling rig, standard for the construction of groundwater extraction wells. All waste generated from the installation of the wells will be treated as hazardous waste until analytical analysis proves different.

The installation of the groundwater treatment system will not result in the movement of large amounts of soil or the stockpile of large amounts of soil. The extraction wells will be connected by a series of pipes. The extracted groundwater will be transported to the treatment system, treated water will then be discharged to the local sewer system or flood control channel. Some of the treated groundwater may be used for local irrigation onsite. The Remedial Action Plan has specific requirements for dust suppression in the event that any field activity generated dust. Real-time air monitoring for dust is also required in the Remedial Action Plan.

DTSC concludes that approval of this project as proposed would not result in a significant effect on the earth resources.

Substantial or  
potentially substantial  
adverse change

	<u>Yes</u>	<u>Maybe</u>	<u>No</u>
2. Air Will the project result in:			
a. Substantial air emissions or deterioration of ambient air quality?	___	___	<u>X</u>
b. The creation of objectionable odors?	___	___	<u>X</u>
c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	___	___	<u>X</u>

Explanation: The proposed operation of the landfill gas treatment system will require permits to construct and operate from the SCAQMD (see ARARs Feasibility Study for Cal Compact Landfill). The proposed gas collection system will consist of a series of vertical gas extraction wells on the perimeter of the waste zones. The landfill collection system will be connected to a flare for 98 percent destruction of the collected gas. All SCAQMD's discharge requirements shall be met. Air pollution control devices such as scrubbers shall be used, if required. The landfill collection wells and groundwater extraction and monitoring wells installation should not generate a significant amount of fugitive dust. Fugitive dust will be suppressed by the aid of water suppression or other related activities as needed. SCAQMD fugitive dust limitations will be adhered to during the construction of these wells.

In 1990, a vapor monitoring event was conducted at the project site. Two Calderon compounds were detected during the sampling event. Calderon compounds are chemicals established in California as indicators for hazardous waste landfills. Analytical results from five vadose wells detected vinyl chloride in concentrations ranging from 2 ppm (parts per million) to 20.5 ppm and benzene from 1.4 ppm to 8.8 ppm. Methane a non-Calderon compound was detected in the range of 26.7% to 64.4%. Other non-Calderon compounds detected included ethylbenzene, toluene, xylene and dichlorodifluoromethane.

An additional landfill gas survey is proposed as part of the remedial actions. A landfill gas survey workplan will be submitted to the SCAQMD and DTSC for approval. Once the landfill gas survey has been conducted, a detailed

report shall be prepared and submitted. Based on the results of the survey, a detailed design of the landfill gas collection and treatment system will be submitted to DTSC for review and approval.

The remedial design for the landfill gas collection system and the groundwater treatment system shall meet all applicable building code, and fire code standards. All applicable permits shall be obtained (e.g. SCAQMD permits) prior to the construction and/or operation of the remedial system.

The groundwater treatment system should not result in a significant impact to the environment because it is a closed treatment system. Groundwater is extracted and transported to the treatment system through a series of pipes. The water is then passed through a equalization tank, a filter, precipitation unit, a clarification unit to remove solids, a series of carbon absorbers and a polishing filter. The treated water will be analyzed for volatile organic compounds prior to being discharged.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

3. **Surface & Ground Water** Will the project result in:
- a. Changes in currents, or the course of direction of water movements, in either marine or fresh waters?    \_\_\_    \_\_\_    X
  - b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?    \_\_\_    \_\_\_    X
  - c. Alterations to the course or flow of flood waters?    \_\_\_    \_\_\_    X
  - d. Change in the amount of surface water in any water body?    \_\_\_    \_\_\_    X
  - e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to, temperature, dissolved oxygen or turbidity?    \_\_\_    \_\_\_    X
  - f. Alteration of the direction or rate of flow of ground waters?    \_\_\_    \_\_\_    X
  - g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?    \_\_\_    \_\_\_    X
  - h. Substantial reduction in the amount of water otherwise available for public water supplies?    \_\_\_    \_\_\_    X
  - i. Exposure of people or property to water related hazards such as flooding or tidal waves?    \_\_\_    \_\_\_    X

Explanation: The proposed groundwater collection and treatment system will have an effect on the direction and

rate of flow of the groundwater beneath the site. The groundwater treatment system will improve the quality of groundwater in the Bellflower Aquitard. The groundwater beneath the project site has been contaminated with volatile organic compounds, semi-volatile organic compounds and heavy metals from past landfill activities. The proposed groundwater collection and treatment system will capture contaminated groundwater at the southern and western portions of the site. The groundwater flow in the Bellflower Aquitard is in the southwesterly direction. Installing a groundwater collection system along the southern and western boundary should prevent further off-site migration. The groundwater collection and treatment system will not have an significant adverse effect on the regional groundwater flow due to its proposed size and flow rate.

The direction of the flow of groundwater should only be effected along the perimeter of the site and in this localized area. The extraction flow rate at each well is estimated to be at 3 to 5 gallons per minute, for a total estimated extraction rate of 78 to 130 gallons per minute.

The quality of groundwater should improve with the collection and treatment of the contaminated groundwater from the landfill. Although the groundwater in the Bellflower Aquitard is not of drinking water standards, remedial action goals established in the Draft RAP require groundwater leaving the project site to meet the drinking water standards or established background concentrations.

The treated groundwater will be discharged to either the storm drain system or to the sewer system. Treated groundwater shall meet the RWQCB discharge requirement prior to discharge from the site (see remedial action goals for treated groundwater contained in the Draft RAP and ARARs section of the Feasibility Study).



Substantial or  
potentially substantial  
adverse change  
Yes Maybe No

4. **Plant Life** Will the project result in:
- |   |          |     |          |
|---|----------|-----|----------|
| a. Change in the diversity of species, or number of any species of plant (including trees, shrubs, grass, crops, and aquatic plants)? | ___      | ___ | <u>X</u> |
| b. Reduction of the numbers of any unique, rare or endangered species of plants?  | ___      | ___ | <u>X</u> |
| c. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?               | ___      | ___ | <u>X</u> |
| d. Reduction in acreage of any agricultural crop?   | ___      | ___ | <u>X</u> |
| e. Deterioration of existing plant habitat?   | <u>X</u> | ___ | ___      |

Explanation: The Cal Compact landfill is a closed class II landfill located in the City of Carson, California. The project is located in an area zoned CR-D-ORL (Commercial, Regional-Design Overlay Review-Organic Refuse Landfill) and ML-D-ORL (Manufacturing, Light-Design Overlay Review-Organic Refuse Landfill). The landfill has not operated since December 1964. General maintenance requires that indigenous species of weeds growing on the site be cleared. Weeds are cleared in accordance with the local fire department regulations. Weed control activities recently (August 1995) cleared the site of these indigenous species of weeds. Contact with the Department of Fish and Game's Biologist, Ms. Canulae Davis requesting information regarding endangered plants, revealed no known endangered plants at project site.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

5. **Animal Life** Will the project  
result in:

- |    |  |     |     |          |
|----|--|-----|-----|----------|
| a. | Change in the diversity of species,<br>or numbers of any species of animals<br>(birds, land animals including<br>reptiles, fish and shellfish,<br>benthic organisms or insects)? | ___ | ___ | <u>X</u> |
| b. | Reduction of the numbers of any<br>unique, rare or endangered<br>species of animals?   | ___ | ___ | <u>X</u> |
| c. | Introduction of new species of<br>animals into an area, or result<br>in a barrier to the migration or<br>movement of animals?  | ___ | ___ | <u>X</u> |
| d. | Deterioration to existing fish<br>or wildlife habitat?   | ___ | ___ | <u>X</u> |

Explanation: The Cal Compact landfill is a closed Class II landfill located in the City of Carson, California. The project is located in an area zoned CR-D-ORL (Commercial, Regional-Design Overlay Review-Organic Refuse Landfill) and ML-D-ORL (Manufacturing, Light-Design Overlay Review-Organic Refuse Landfill). The landfill has not operated since December 1964. DTSC contacted the Department of Fish and Game requesting information on known endangered species of animals in the area of the site project. Fish and Game Biologist, Ms. Canulae Davis stated that to her knowledge there was no known endangered species of animals at the location of the proposed project. No endangered species or habitats of endangered animals are known to be present or have been encountered at the site, therefore, this project should not have an impact to endangered species.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

6.   **Land Use**   Will the project result  
in a substantial alteration of the  
present or planned land use of an  
area?

\_\_\_   \_\_\_   X

Explanation:   The Cal Compact landfill is a closed class II landfill located in the City of Carson, California. The project is located in an area zoned CR-D-ORL (Commercial, Regional-Design Overlay Review-Organic Refuse Landfill) and ML-D-ORL (Manufacturing, Light-Design Overlay Review-Organic Refuse Landfill). The proposed project will not alter the present or planned land use because it is zoned for landfill uses.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

7. **Natural Resources** Will the  
project result in an increase in  
the rate of use of any natural  
resources?

\_\_\_ \_\_\_ X

Explanation: The project proposed will not result in an increase in the rate of use of any natural resource because the groundwater in the Bellflower Aquitard has been contaminated from past landfill operations. The proposed project will extract the contaminated groundwater and treat it to acceptable standards prior to discharge. The extraction and treatment should prevent the possible contamination of lower aquifers. No other natural resource should be effected as the result of this proposed project.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

8. Risk of Upset Will the project  
involve:

- a. A risk of an explosion or the  
release of hazardous substances  
(including, but not limited to,  
oil, pesticides, chemicals or  
radiation) in the event of an  
accident or upset conditions?      \_\_\_ \_\_\_ X
  
- b. Possible interference with an  
emergency response plan or an  
emergency evacuation plan?      \_\_\_ \_\_\_ X

Explanation: The potential sources of concern for the risk of upset include the construction equipment use during the installation of the groundwater and landfill gas collection and treatment systems, and the landfill gas flare unit.

To minimize the chance of upset resulting from the equipment use during the construction of the proposed remedial systems, the contractor is required to use well maintained equipment capable of performing the required task. The landfill flare unit will be equipped with a blower switch off-valve, flame arrestor, flame sensor, burner control relay switch, and pressure regulators. These safety measures will be inspected and maintained in accordance with the operation and maintenance plan approved by the Department of Toxic Substances Control (DTSC). The system shall meet all fire codes and the construction shall meet the Uniform Building Codes. Design features for the system will permit periodic inspections for integrity of the gas handling equipment. The operation and maintenance plan shall include procedures for periodic equipment inspections and repairs that will reduce any risk of additional gas migration due to subsidence or earthquakes.

The groundwater extraction system will utilize 4-inch extraction well, submersible pumps, and 2-inch conveyance pipes. For operation safety concern, the extraction system will be equipped with standard safeguard control devices to monitor operating status and automatically shut off the system upon abnormal/emergency conditions. The system shall be designed to withstand the maximum credible earthquake and meet all applicable building codes.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

9.    **Transportation/Circulation**    Will the project result in:
- |    |  |     |     |          |
|----|--|-----|-----|----------|
| a. | Generation of substantial additional vehicular movement?                           | ___ | ___ | <u>X</u> |
| b. | Effects on existing parking facilities, or demand for new parking?                 | ___ | ___ | <u>X</u> |
| c. | Substantial impact upon existing transportation systems?                           | ___ | ___ | <u>X</u> |
| d. | Alterations to present patterns of circulation or movement of people and/or goods? | ___ | ___ | <u>X</u> |
| e. | Alterations to waterborne, rail or air traffic?                                    | ___ | ___ | <u>X</u> |
| f. | Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?          | ___ | ___ | <u>X</u> |

Explanation: The construction and installation of the groundwater and landfill gas collection and treatment systems as proposed should not have a significant impact on the State's transportation system in the project area or surrounding area. During the construction of these systems no oversize vehicles will be used. The construction of the groundwater extraction wells and landfill gas extraction wells may require two to three drilling rig with sport vehicles. It will require approximately 2 to 3 months to construct the systems. A transportation route plan will be approved by the City of Carson for the MetroMall project and will be followed during the remedial activities at the site (see MetroMall EIR).

No over-size equipment is proposed during the construction of either the groundwater treatment system or the landfill gas collection and treatment system. The required on-site worker for the construction of the two systems is approximately 50 persons.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

10. **Public Services**   Will the project have an effect upon, or result in a need for new or altered governmental services in any or the following areas:
- |    |  |     |     |          |
|----|--|-----|-----|----------|
| a. | Fire protection?                                   | ___ | ___ | <u>X</u> |
| b. | Police protection?                                 | ___ | ___ | <u>X</u> |
| c. | Schools?   | ___ | ___ | <u>X</u> |
| d. | Parks or their recreational facilities?            | ___ | ___ | <u>X</u> |
| e. | Maintenance of public facilities, including roads? | ___ | ___ | <u>X</u> |
| f. | Other governmental services?                       | ___ | ___ | <u>X</u> |

Explanation: The proposed project should not have a substantial impact on required public service because, the proposed project requires the installation and operation of a landfill gas and groundwater collection and treatment system. The local fire department and police department will be notified of the proposed site activities. The local fire department already provides service to the project site. They require the annual removal of the weeds and small brush from the site in accordance with the fire code. The local fire department would be notified of the operation of the landfill flare unit and have access to inspect the unit upon request. Police protection should not be impacted due to the fact that the site is fenced and the project applicants will provide site security during the construction phase of the proposed project.

Schools, parks or other recreational facilities should not be impacted because this project does not cause a local population increase. The proposed project will not involve the construction of new dwelling or increase the site access to the public.

The local governmental agencies currently working on the remediation or regulating the proposed project site include DTSC, SCAQMD, the Regional Water Quality Control Board, and the Los Angeles County, Department of Health Services, Solid Waste Program.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

11. **Energy**   Will the project result in:

- |    |   |     |     |          |
|----|---|-----|-----|----------|
| a. | Use of substantial amounts of<br>fuel or energy?  | ___ | ___ | <u>X</u> |
| b. | Substantial increase in demand<br>upon existing sources of energy,<br>or require the development of<br>new sources of energy? | ___ | ___ | <u>X</u> |

Explanation:    The proposed project should not result in a significant increase in the demand for fuel or energy. It is estimated that two 15-hours power engines will be required to operate the landfill gas collection system. The projected power requirements for operating the proposed remedial systems are estimated at 900 and 540 Kwhr per day for the groundwater and landfill gas systems, respectively. The electrical power will be supplied by the Southern California Edison Company. The projected amount of electrical power should not have a significant impact during the life of this project.



Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

12. **Utilities**   Will the project result in  
a need for new systems, or substantial  
alterations to any utilities?                            X  

Explanation: The proposed project should not result in the need for new utilities systems or the substantial alterations to existing utilities. The proposed project will require an electrical connection for the proposed landfill gas and groundwater collection systems. The power should be supplied by Souther California Edison Company and require an electrical box connection. The landfill flare will require a natural gas connection for the operation of the flare. The maximum volume of natural gas required for operation of the flare is within the capacity of existing gas service in the area. The operation of the flare will be dependent on the production of landfill gases.

Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

13. **Noise**   Will the project result in:

- |    |  |     |              |              |
|----|--|-----|--------------|--------------|
| a. | Increases in existing noise levels?        | ___ | <u>  X  </u> | ___          |
| b. | Exposure of people to severe noise levels? | ___ | ___          | <u>  X  </u> |

Explanation: The proposed groundwater and landfill gas collection and treatment systems should not have a significant increase in the noise levels at the project site. The proposed project is to install gas extraction wells at the perimeter of the waste zones and install groundwater extraction wells along the southern and western boundaries of the project site. Activities related to the construction of these systems will occur during the day time hours. The equipment proposed is standard environmental drilling equipment. A noise monitoring program will be established and based on the noise levels, engineering controls such as noise mufflers will be required (see mitigation measures contained in the Draft RAP). Construction activities for the wells is anticipated to last approximately 2 months.

The operation of the gas flare should not generate a significant increase in noise to the local residents due to the proposed location is in the northeast portion of the site, close to the 405 freeway. The groundwater treatment system will be located in a treatment compound. The operation of the groundwater and landfill gas collection and treatment systems will be required to be below the City of Carson's nuisance noise levels.



Substantial or  
potentially substantial  
adverse change

Yes   Maybe   No

15. Aesthetics

- a. Will the project result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view? Will the proposal produce new light or glare?

\_\_\_\_\_   \_\_\_\_\_     X  

Explanation: The project site is a vacant open landfill with indigenous weed covering the waste zones. The proposed project will not result in the obstruction of any scenic vista or view open to the public, or create an aesthetically offensive site because the landfill gas and groundwater collection system will be under the ground surface. The landfill flare will be located in an area away from the local residents and should not cause significant flashes of light or glare. The groundwater treatment compound will also be located along the Torrance Lateral Channel in the southwest portion of the project site.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

16. Cultural/Paleontological

- a. Will the project result in the alteration of or the destruction of a prehistoric or historic archaeological site? \_\_\_ \_\_\_ X
  
- b. Will the project result in adverse physical or aesthetic effects to a prehistoric or historic building structure, or object? \_\_\_ \_\_\_ X
  
- c. Does the project have the potential to cause a physical change which would affect unique ethnic cultural values? \_\_\_ \_\_\_ X

Explanation: The proposed project will not result in the destruction of prehistoric and historic archaeological site. The project is the location of a closed landfill. During the landfill operation, the site was excavated and subsequently filled with municipal and industrial waste. There area no known prehistoric or historic archaeological artifacts at the project site.

Substantial or  
potentially substantial  
adverse change

Yes Maybe No

## 17. Cumulative Effects

- a. Will the project result in air or water contamination which by themselves are not significant, but when considered in light of other local sources, may be cumulatively significant?

\_\_\_ \_\_\_ X

Explanation: As stated above, the groundwater beneath the site is contaminated with volatile organic compounds, semi-volatile organic compounds and heavy metals. The result of previously conducted vadose zone air monitoring detected vinyl chloride, benzene, methane, ethylbenzene and other volatile organic compounds. The proposed project will collect the gasses that are generated and transport them to a landfill flare for destruction. Thus the potential for release into the atmosphere is reduced. The groundwater treatment system will collect the contaminated groundwater at the site's southern and western property boundary. The treated groundwater will be filtered and the chemical compounds striped from the water. The treated groundwater will then be discharged.

Additional projects in the area involving activities that could combine with this project activities to cause potentially significant adverse impacts include:

1. Remediation at the Former Golden Eagle Refinery
2. Remediation of the Lower Operable Unit, Cal Compact

The remediation of the groundwater at the Former Golden Eagle refinery is being conducted under the oversight of DTSC and the RWQCB. The thermal treatment units have been permitted to operate by the SCAQMD. The units have been operating within the permit requirements. The remedial investigation for the Lower Operable Unit has not been conducted at this time. The limited information on the Gage Aquifer indicated low levels of contamination. A separate remedial investigation and remedial action plan shall be developed for the Lower Operable Unit.

As proposed the cumulative effects of the proposed treatment system should not have a significant effect on the environment.

Yes      No

**Summary of Findings** Based on study findings as explained here in, justification is made for the following conclusions:

- |  |   |          |
|--|---|----------|
| a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | — | <u>X</u> |
| b. Does the project have the potential to achieve short-term, to the disadvantage of long-term environmental goals?  | — | <u>X</u> |
| c. Does the project have impacts which are individually limited, but cumulatively considerable?  | — | <u>X</u> |
| d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?  | — | <u>X</u> |
| e. Do the activities of this project have an influence on recreation, aesthetics, noise, cultural resources, or any other environmental issues which have not been included in this checklist?   | — | <u>X</u> |

Determination of Significant Effect

check one

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

X

The project has been revised to incorporate special changes which assure that there will be no reasonable possibility of significant environmental effects, and a NEGATIVE DECLARATION will be prepared.

\_\_\_\_\_

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet will be added to the project and listed in the Negative Declaration. A MITIGATED NEGATIVE DECLARATION will be prepared. Before the Negative Declaration is approved, the Department of Toxic Substances Control will develop a monitoring program to insure the implementation of these mitigation measures by this agency. All responsible agencies should develop monitoring programs for mitigation measures which are identified under their discretionary authority.


\_\_\_\_\_

I find the proposed project MAY have a significant effect on the environment, an ENVIRONMENTAL IMPACT REPORT shall be prepared to determine if significant effects would result.

\_\_\_\_\_

Signature   
Thomas M. Cota  
Project Manager

Date 10/25/95

Signature   
Hamid Saebfar, Chief  
Site Mitigation Operations Branch  
Southern California Regions

Date 10/25/95



## DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4  
245 West Broadway, Suite 425  
Long Beach, CA 90802-4444

INITIAL STUDY

CAL COMPACT LANDFILL  
UPPER OPERABLE UNIT  
20400 SOUTH MAIN STREET  
CARSON, CALIFORNIA 90745

October 1995

I. Project Background:

The Cal Compact Landfill (the Site), located in Carson, California (see Figure 1), operated as a 157-acre municipal Class II landfill from April 1959, and continued until December 1964, with an approximated date of closing of February 1965. During the period of operations, an estimated 6.2 to 6.3 million cubic yards of municipal solid waste and 2.6 million barrels (unit of measure, not a container, equivalent volume 540,540 cubic yards) of liquid industrial waste were disposed of at the landfill. On the basis of available records, BCL Associates estimated that approximately 4 percent of the material received (50,815,395 gallons or 251,611 cubic yards) may now be considered hazardous by the State of California (Brown & Root 1995).

Prior to landfill operations, the Site was used for grazing, dairy operations, and agricultural uses. Surface elevations prior to landfill operations ranged from 7 to 21 feet above mean sea level (MSL). The current elevation at the Site vary from 19 feet to 58 feet above MSL. The change in elevation is a result of past landfill operations conducted at the Site.

According to Los Angeles County records, Cal Compact, Inc., a California corporation, was issued an industrial waste disposal permit on July 17, 1959, which authorized Cal Compact to operate a Class II landfill on Site. Los Angeles County records show that Cal Compact, Inc., was operated by Ben Kazarian and his son, Ben Kazarian, Jr. (commonly known as BKK Corporation).

The Department of Toxic Substances Control (Department) issued a Remedial Action Order, Docket No. HSA 87/88-040, under the jurisdiction of Section 25355.5(a)(1)(B) of the California Health and Safety Code, on March 18, 1988. In issuing the Remedial Action Order the Department required that any release or threatened release of a hazardous substance or hazardous waste to the air, soil, surface water and groundwater at or from the Site be thoroughly investigated and appropriate remedial actions taken.

Due to the size and complexity of the Site, the Department is using a phased approach and has divided the Site into two operable units. The Upper Operable Unit is composed of the top

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Cal Compact Landfill  
Upper Operable Unit

soil at the Site, the waste zone embedded in the recent alluvium and saturated soils of the Bellflower Aquitard, and the saturated soils and groundwater of the Bellflower Aquitard, down to the Gage Aquifer. The Lower Operable Unit is composed of the Gage, Lynwood and Silverado Aquifers, and all other areas impacted by the areal extent of any hazardous substances which may have migrated either from the aforementioned areas or may have migrated from the Upper Operable Unit. The remediation of the Lower Operable Unit will not be addressed in this document. A separate remedial investigation shall be conducted on the Lower Operable Unit.

The City of Carson conducted an Environmental Impact Report (EIR) for the Metro 2000 Project, (SCH #933011037) for the propose of complying with the California Environmental Quality Act. The Draft EIR was circulated to interested agencies between September 14, 1993, and October 29, 1993, for a 45-day comment period. Several public meetings were held during the comment period to accept comments on the draft EIR. The City of Carson adopted and certified the EIR Final Report for the Metro 2000 Project on December 21, 1993.

The certified EIR conducted by the City of Carson addressed the Department's role in the remediation of the project and outlined the proposed remediation components for the project Site. The proposed remedial activities are: 1) installation of a landfill cap to reduce the amount of percolation through the Site which in turn would reduce the production of leachate, 2) installation of groundwater extraction wells to pump and treat contaminated non-potable groundwater, and 3) installation of a gas collection system in each landfill cell.

The construction of the landfill cover requires the importation of approximately 2.1 million cubic yards of soil over a period of 334 working days. The City of Carson identified several mitigation measures required to lessen the impact of the proposed landfill cover. As part of the Draft Remedial Action Plan, mitigation measures identified for the construction of the landfill cover, transportation of soil, and grading activities have been incorporated into the Draft RAP.

## II. Project Description:

BKK Corporation is requesting approval of a draft Remedial Action Plan (RAP) for the Cal Compact Landfill, Upper Operable Unit from the Department. This draft RAP is in accordance with Section 25356.1 of the California Health and Safety Code, and

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Subpart E of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 Code of Federal Regulations 300.400 et seq. The Department is acting as a Responsible Agency as that term is defined in the Title 14, California Code of Regulations, Section 15381.

The proposed project for which the Department is acting on addresses the construction and operation of a landfill gas collection and treatment system and a groundwater treatment system (see Figure 2). The construction of the landfill cover is not addresses in this document, however, it was addressed in the City of Carson's EIR for the Metro 2000 project. The Department as a Responsible Agency has carefully reviewed the Final EIR entitled Final Project and Program Environmental Impact Report, MetroMall 2000, dated December 1993. The Department, using its independent judgement found that (a) the EIR for the Metro 2000 project adequately complied with the provisions of the California Environmental Quality Act, (b) adequately addressed the proposed construction of the landfill cover, (c) is adequate for the Department for assessing potential impacts for the Remedial Action Plan. The Department, after reviewing the Final EIR, concurred with the findings of the City of Carson. The Department drafted a Statement of Overriding Considerations addressing significant impacts from construction of the landfill cover that were not feasibly mitigated to a level of insignificant with the mitigation measures found in the EIR.

The objective for this project is to reduce or eliminate the potential threat to human health and the environment. The project objectives for the remediation of contaminated groundwater in the Bellflower Aquitard are to (1) limit production of leachate through control of surface water infiltration and minimize the impact to groundwater, (2) control and prevent off-site migration of groundwater contaminated from waste in the saturated zones, and (3) draw back and contain the contaminant plume that is off-site. The remedial objectives for the landfill gas collection and treatment system are (1) control production of landfill gases through control of surface water infiltration, (2) control or prevent off-site migration of landfill gases, and (3) to prevent future releases of landfill gases to the atmosphere under proposed land use scenarios.

The landfill gas system will consist of a series of vertical extraction wells installed at the perimeter of the waste zone. The extraction wells will be connected by conveyance piping to a landfill flare. The collected landfill gasses will be transported through the a series of pipes to the landfill flare

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for thermal destruction. The landfill flare will be one unit with a maximum 750 cfm capacity.

In 1990, a vapor monitoring event was conducted at the project Site. Two Calderon compounds were detected during the sampling event. Calderon compounds are chemicals established in California as indicators for hazardous waste landfills. Analytical results from five vadose wells detected vinyl chloride in concentrations ranging from 2 ppm (parts per million) to 20.5 ppm and benzene from 1.4 ppm to 8.8 ppm. Methane, a non-Calderon compound was detected in the range of 26.7% to 64.4%. Other non-Calderon compounds detected included ethylbenzene, toluene, xylene and dichlorodifluoromethane.

Landfill gas extraction wells will be installed using standard drilling practices such as a hollow stem auger drill rig. The design of the system shall be developed by a registered California civil engineer, submitted to the Department for review and approval. A Department approved quality control/quality assurance program shall be strictly followed by the contractors.

The proposed groundwater treatment system consists of a series of groundwater extraction wells installed along the western and southern portions of the project Site. The groundwater extraction wells will be installed in the Bellflower Aquitard saturated zone. The groundwater collection and treatment system will be designed to contain contaminated groundwater migrating from the Bellflower Aquitard beneath the Site and to capture contaminated groundwater off-site in the Bellflower Aquitard.

The remedial investigation identified groundwater contamination in the Bellflower Aquitard. Volatile organic compounds, semi-volatile organic compounds, and heavy metals were detected in the groundwater in the Bellflower Aquitard. The remedial investigation also concluded that some off-site contamination has occurred. The proposed groundwater collection and treatment system will be designed to control and contain both on-site and off-site contamination.

The groundwater system includes extraction wells, associated piping, dedicated wells pumps, a water equalization tank, filters, precipitation and clarification units, carbon absorbers units, and a final polishing filter unit.

The treated groundwater will be used for on-site irrigation, or discharged to the sewer system or storm drain system. The

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Upper Operable Unit

system is anticipated to treat approximately 100 to 150 gallons per minute. The spent activated carbon will be managed as hazardous waste and be transported to a permitted recycling center or disposal facility.

**III. Project Location:**

The Cal Compact Landfill is located at 20400 Main Street in the City of Carson, County of Los Angeles, California. The Site is located in the western portion of the City of Carson. It is bounded by Del Amo Boulevard to the north, the San Diego Freeway (I-405) to the east with the Dominguez Channel located just east of the San Diego Freeway (I-405), the Torrance Lateral Channel to the south with residential development just south of the Torrance Lateral Channel, and Main Street and residential development on the west. The primary freeway access to the Site is by means of the Main Street ramps to the San Diego Freeway (I-405) and the Torrance Boulevard ramps to the Harbor Freeway (I-110). The Site is located within the City of Carson's Redevelopment Project Area No. 1.

**IV. Identification of Environmental Setting:**

The project will take place at the 157 acre Cal Compact Landfill Site. The Site is bounded by Del Amo Boulevard to the north, the San Diego Freeway (I-405) to the east with the Dominguez Channel located just east of the San Diego Freeway (I-405), the Torrance Lateral Channel to the south with residential development just south of the Torrance Lateral Channel, and Main Street and residential development on the west (see Figure 3). The Site is currently vacant except for three trailers used by the developer for their offices. The environmental setting of the project locale can generally be described as follows:

**Noise**

Existing ambient noise levels in the project locale are mostly the product of traffic along local streets, arterials, and freeways (I-405 and I-110). Existing noise levels measured during the afternoon peak travel hours range from approximately 54 dBA to almost 70 dBA (Metro 2000 EIR, September 1993). Noise levels are lower in the vicinity of the residential street than near the freeway and local streets. Noise levels are influenced by the freeway travel to varying degrees depending upon Site location.

**Transportation/Circulation**

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Regional access to the Site vicinity is provided by the San Diego (I-405) and Harbor (I-110) freeways. From the San Diego Freeway, the project area is accessible via interchange at Carson Street, Avalon Boulevard, Wilmington Avenue, and Main Street. From the Harbor Freeway access to the area is provided by interchanges at the Figueroa Street, Hamilton Avenue, and Carson Street.

Existing traffic volumes peak in the morning and evening hours. Three public transit systems (the Carson Circuit, the metropolitan Transit Authority, and Torrance Transit) link the project area with California State University - Dominguez Hills, downtown Long Beach, Del Amo center, Redondo Beach Pier, UCLA-Medical Center and other locations.

**Public Services/Infrastructure**

Public and private utility infrastructure and services provided to the project area include water, wastewater, electricity, natural gas, telephone, cable television, fire and police protection, recreational facilities, schools, and libraries. Existing utility infrastructure and services on-site include water, sewer, telephone, electricity, and storm drain system.

**Atmospheric Conditions** - The Los Angeles Metropolitan area, located within the South Coast Air Basin is characterized by relatively poor air quality.

**Topography, Geologic, and Hydrogeologic Setting** - The Cal Compact Landfill lies between the relatively flat, central portion of the Los Angeles Basin about five miles north of the Pacific Ocean. In its natural condition, the project area was part of a natural inland drainage, known as the Dominguez Slough. The Dominguez Channel, from Century to Sepulveda Boulevards to Los Angeles Harbor, was built to drain water from the western portion of the South Bay. The current elevation at the Site varies from 19 feet to 58 feet above MSL.

On-site investigations have identified the presence of three abandoned wells; two oil wells and one water well. No evidence presently exists which indicates that these wells are a source of groundwater contamination. The possibility of these wells serving as a conduit for leachate into the Lower Operable Unit shall be investigated as part of the remedial investigation of the Lower Operable Unit.

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Cal Compact Landfill  
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The subsurface material beneath the Site shows changes in thickness resulting from their depositional history and in response to the Pleistocene Lakewood Formation. These soils are older alluvium, flood plain, and late Pleistocene marine and non-marine terrace deposits. The alluvial soils on-site consist primarily of silty clay, sandy clay, silt, clayey silt, sandy silt, and silty sand. Groundwater beneath the Site is relatively shallow, approximately 50 feet below MSL.

The Newport-Inglewood Fault Zone is the active fault zone nearest to the Site. This is one of the largest fault in Southern California. Specifically, the Avon-Compton segment of the Newport-Inglewood Fault Zone is located approximately 2.5 miles northeast of the Site. The next nearest active fault zone in the area is the Palos Verde Fault Zone, located approximately 5 miles southwest of the Site. The Site is located in the Unified Building Code seismic zone 4.

#### **Bellflower Zone**

The Bellflower Zone is the upper portion of the Lakewood Formation found throughout the Site from the ground surface to a depth of about 70 feet to 100 feet below ground surface. It contains a significant amount of fine grained sediments such as silts, sands and clays. As a result, it has historically been referred to as the Bellflower Aquiclude or Aquitard. The Bellflower Aquitard is not a source of drinking water generally due to its poor water quality and yield. The range of hydraulic conductivity values of the fine-graded Bellflower Zone soils are  $4.2 \times 10^{-7}$  cm/sec to  $1.1 \times 10^{-4}$  cm/sec.

#### **Gage Aquifer**

The Gage Aquifer is the lower portion of the Lakewood Formation. It contains primarily fine sand deposits. The California Department of Water Resources reported the transmissivity of the Gage Aquifer in the vicinity of the Site to be approximately 20,00 gpd/ft (gallons per day per foot). In the vicinity of the Site, the thickness of the Gage Aquifer is about 75 to 80 feet thick and its maximum depth is approximately 175 feet below ground surface. Due to the relative low yield and poor water quality, the Gage Aquifer is not currently used for municipal or industrial water supply.

#### **Lynwood Aquifer**

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The Lynwood Aquifer is located in the upper portion of the San Pedro Formation. It is a confined aquifer, separated from the overlying Gage Aquifer and the underlying Silverado Aquifer by silt and clay deposits that range in thickness from 75 to 125 feet. It contains marine and non-marine deposits, and is characteristically composed of gravel or sand and gravel. In the vicinity of the Site, the Lynwood Aquifer is about 100 feet thick. Because of high well yields and adequate water quality, it is extensively used for industrial and municipal water supplies.

**Silverado Aquifer**

The Silverado Aquifer is located in the middle portion of the San Pedro Formation. It is regionally the largest and most productive aquifer in the Los Angeles Coastal Plain. It contains primarily gravel and sand, and in the vicinity of the Site it is about 200 feet thick. The top of the Silverado Aquifer is at a depth approximately 425 feet below ground surface. Because of its high yield to wells and good water quality it is extensively used for industrial and municipal water supplies.

The closest drinking water well is the Dominguez Water Company's Well No. 19A, located approximately near the intersection of Carson Street and Avalon Boulevard, approximately 0.5 miles southeast of the Cal Compact Landfill. The design of the well includes perforated casing at depths ranging from 510 feet to 665 feet below ground surface and has a sanitary seal from the depth of 200 feet to the ground surface. Based on the design, it is evident that the well used groundwater from the regional Silverado Aquifer and is sealed below the shallow Gage Aquifer.

**V. Significant Effects and Mitigation Measures:**

The project should not have a significant effect on the environment as that term is defined in Public Resources Code Section 21068. Conditions and/or controls on the project will be implemented through the RAP and through compliance with other public agency laws, ordinances, regulations and standards as described in, but not limited to, the Initial Study. Assuming full compliance with these controls, they are sufficient to limit project impacts to an insignificant level. Thus no additional mitigation measures are required. The attached checklist was used to identify possible significant effects.

No mitigation measures are proposed for this project.



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Upper Operable Unit

VI. Consistency with Zoning Plans and Other Applicable Land Use Control:

The project Site is unoccupied, except for three trailers use by the MetroMall developer for offices. The project Site is located in an area zoned CR-D-OIL (Commercial, Regional-Design Overlay Review-Organic Refuse Landfill) and ML-D-OIL (Manufacturing, Light-Design Overlay Review-Organic Refuse Landfill).

The proposed remedial activities are consistent with the existing zoning at the project Site. The implementation of the RAP will allow use of the Site for its designated land use. A deed restriction shall run with the property; the deed restriction will restrict residential uses, school, day care center, and hospital uses, and excavation activities. Remedial activities will be consistent with Applicable or Relevant and Appropriate Requirements identified in the Feasibility Study and RAP for the proposed project.

VII. Names of People Participating in this Initial Study:

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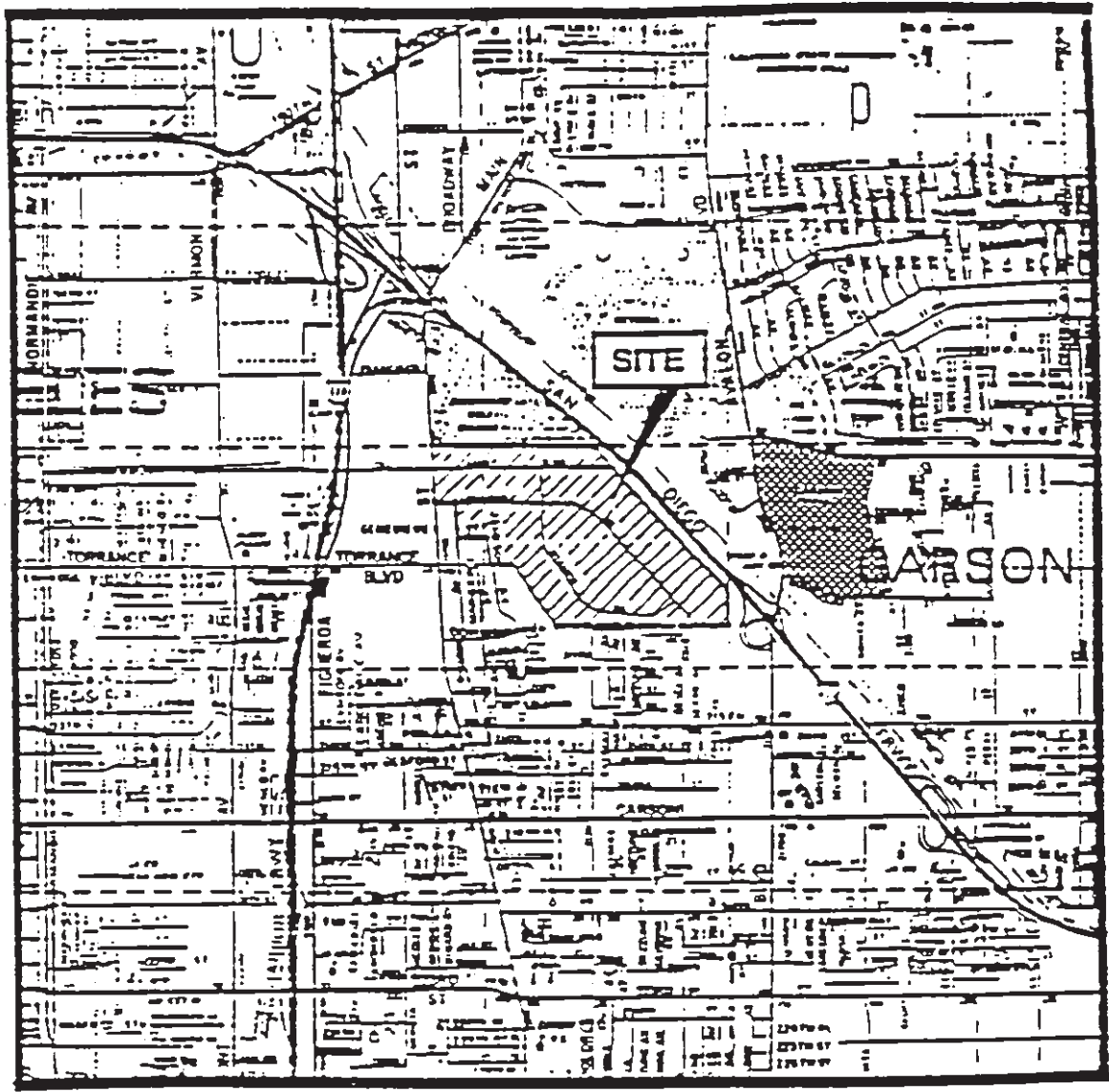
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400 P Street  
P.O. Box 806  
Sacramento, California 95812-0806

VIII. List of Reference Materials Supporting the Initial Study Findings Regarding Potential Environmental Effects:

The technical reports which served as the source of information in preparing this document included: (1) Remedial

Initial Study  
Cal Compact Landfill  
Upper Operable Unit

Investigation for the Cal Compact Landfill, Brown & Root Environmental, Volumes 1 through 8, July 1995; (2) Feasibility Study for the Cal Compact Landfill, Brown & Root Environmental, August 1995, (3) Final Report Baseline Risk Assessment for Cal Compact Landfill, Brown & Root Environmental, August 1995, (4) Draft Remedial Action Plan for Cal Compact Landfill, Brown & Root Environmental, August 1995, (5) Final Project and Program Environmental Impact Report Metro 2000, SCH #933011037, dated December 1993; City of Carson, City Council Resolution No. 93-128, dated December 21, 1993.



CAL COMPACT SITE LOCATION MAP

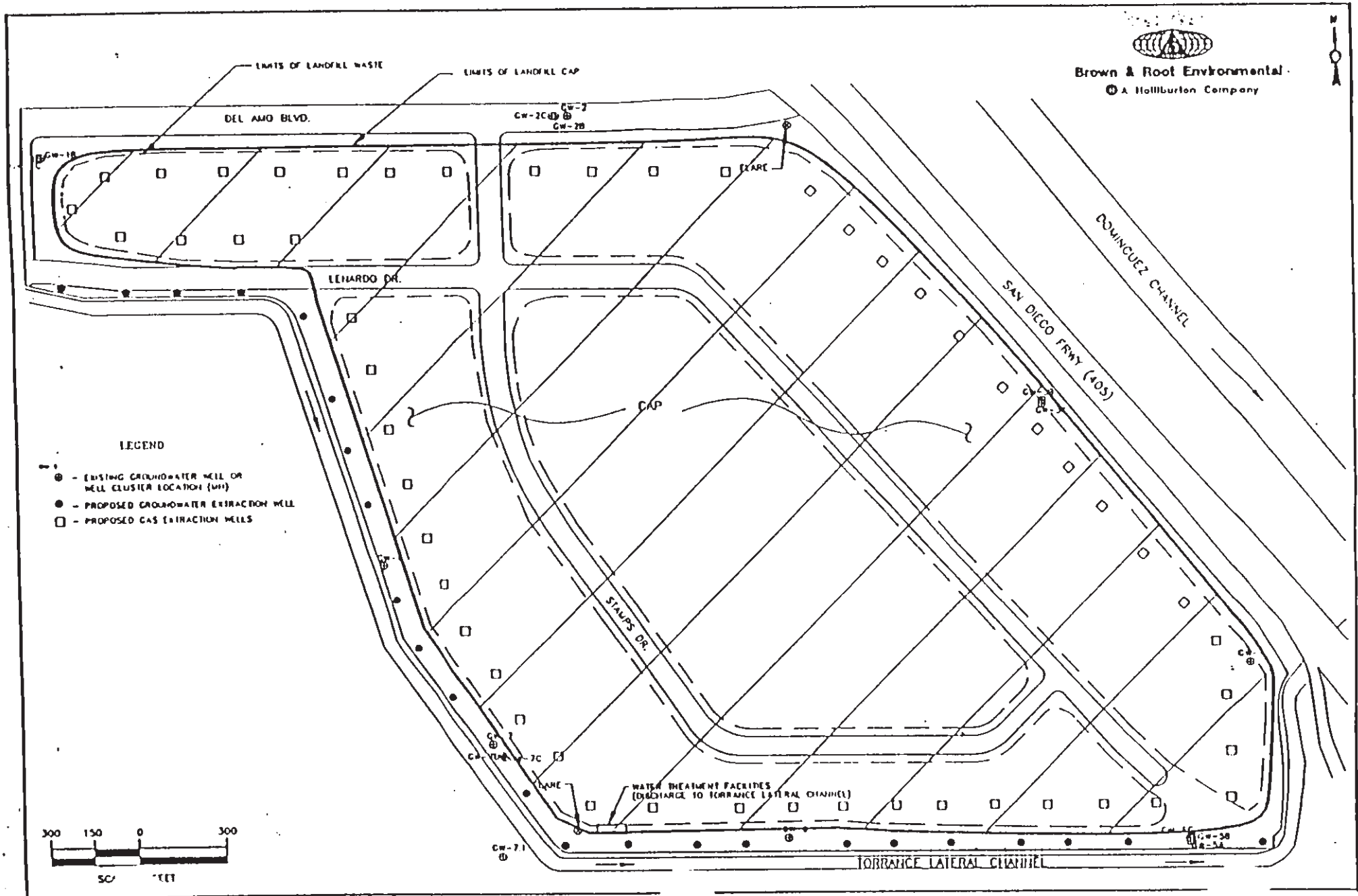
Figure 1

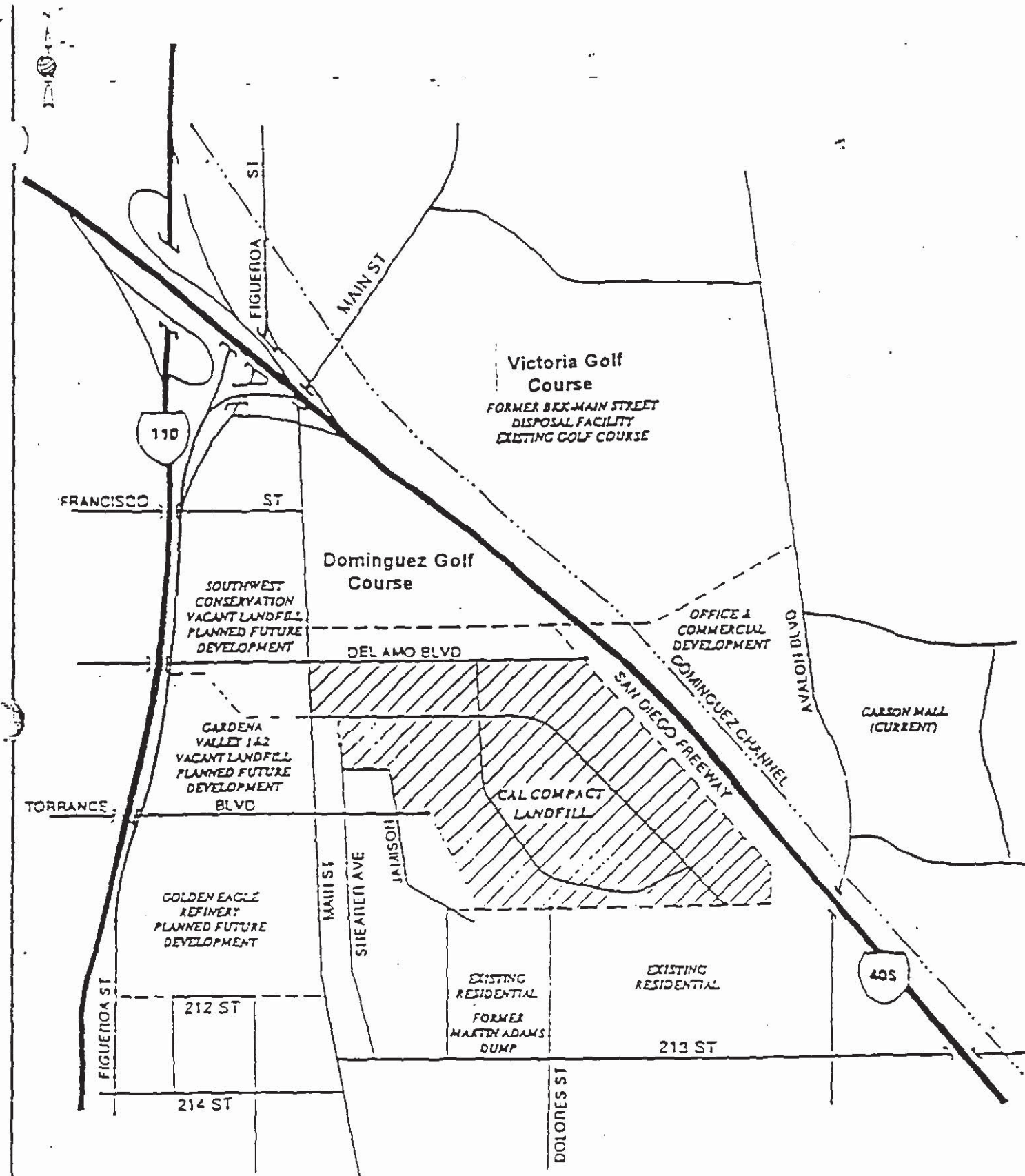
LEGEND

 CAL COMPACT LOCATION



# CONTAINMENT, COLLECTION & TREATMENT OF GROUND WATER AND LANDFILL GAS CAL COMPACT LANDFILL





SOURCE: McLAREN/HART (1992)

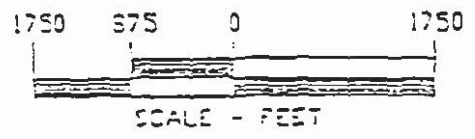


Figure 3

LAND USE IN THE VICINITY OF THE CAL COMPACT LANDFILL



Brown & Root Environmental  
 A Halliburton Company

## DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4  
245 West Broadway, Suite 425  
Long Beach, CA 90802-4444



SUPPLEMENTAL NEGATIVE DECLARATION  
for

CAL COMPACT LANDFILL  
UPPER OPERABLE UNIT  
20400 South Main Street  
Carson, California 90745

PROJECT PROPONENT:

Department of Toxic Substances Control  
245 West Broadway, Suite 350  
Long Beach, California 90802-4444

Contact: Thomas M. Cota (310) 590-4898

PROJECT DESCRIPTION:

BKK Corporation is requesting approval of a draft Remedial Action Plan (RAP) for the Cal Compact Landfill Upper Operable Unit from the Department of Toxic Substances Control (DTSC). This draft RAP is in accordance with Section 25356.1 of the California Health and Safety Code, and Subpart E of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 Code of Federal Regulations 300.400 et seq. DTSC is acting as a Responsible Agency as that term is defined in the California Code of Regulations, Title 14, Section 15381.

The proposed project for which DTSC is acting on addresses the construction and operation of a landfill gas collection and treatment system and a groundwater treatment system. The construction of the landfill cover is not addressed in this document, however, it was addressed in the City of Carson's EIR for the Metro 2000 project. DTSC as a Responsible Agency has carefully reviewed the Final EIR entitled Final Project and Program Environmental Impact Report, MetroMall 2000, dated December 1993. DTSC, using its independent judgement, found that (a) the EIR for the Metro 2000 project adequately complied with the provisions of the California Environmental Quality Act, (b) adequately addressed the proposed construction of the landfill cover, and (c) is adequate for DTSC to assess potential impacts

for the Remedial Action Plan. DTSC, after reviewing the Final EIR, concurred with the finding of the City of Carson. DTSC drafted a Statement of Overriding Conditions addressing significant impacts that were not feasibly mitigated to a level of insignificance with the mitigation measures found in the EIR.

The project objectives for this project is to reduce or eliminate the potential threat to human health and the environment. The project objectives for the contaminated groundwater in the Bellflower Aquitard are (1) limit production of leachate through control of surface water infiltration to minimize impact to groundwater, (2) control and prevent off-site migration of groundwater contaminated from waste in the saturated zone, and (3) draw back and contain the contaminant plume that is now off-site. The project objectives for the landfill gases are (1) control production of landfill gases through control of surface water infiltration and (2) control or prevent off-site migration of landfill gases and future releases of landfill gases to the atmosphere under proposed land use scenarios.

The landfill gas system will consist of a series of vertical extraction wells installed at the perimeter of the waste zone. The extraction wells will be connected by HDPE conveyance piping to a landfill flare. The collected landfill gasses will be transported through the series of pipes to the flare for thermal destruction. The landfill gas flare will be one unit with a maximum 750 cfm capacity.

In 1990, a vapor monitoring event was conducted at the project site. Two Calderon compounds were detected during the sampling event. Calderon compounds are chemicals established in California as indicators for hazardous waste landfills. Analytical results from five vadose wells detected vinyl chloride in concentrations ranging from 2 ppm (parts per million) to 20.5 ppm and benzene from 1.4 ppm to 8.8 ppm. Methane, a non-Calderon compound, was detected in the range of 26.7% to 64.4%. Other non-Calderon compounds detected included ethylbenzene, toluene, xylene and dichlorodifluoromethane.

Extraction wells will be installed using standard drilling practices such as a hollow stem auger drill rig. The design of the system shall be developed by a registered California civil engineer, submitted to DTSC for review and approval. A

Department approved quality control/quality assurance program shall be strictly followed by the contractors.

The proposed groundwater treatment system consists of a series of groundwater extraction wells installed along the western and southern portions of the project site. The groundwater extraction wells will be installed in the Bellflower Aquitard saturated zone. The groundwater collection and treatment system will be designed to contain contaminated groundwater migrating from the Bellflower Aquitard beneath the site and to capture contaminated groundwater off-site in the Bellflower Aquitard.

The remedial investigation identified groundwater contamination in the Bellflower Aquitard. Volatile organic compounds, semi-volatile organic compounds, and heavy metals were detected in the groundwater in the Bellflower Aquitard. The remedial investigation also concluded that some off-site contamination has occurred. The proposed groundwater collection and treatment system will control and contain both on-site and off-site contamination.

The groundwater system includes extraction wells, associated piping, dedicated wells pumps, a water equalization tank, filters, precipitation and clarification units, carbon absorbers units, and a final polishing filter unit.

The treated groundwater will be used for on-site irrigation, or discharged to the sewer system or storm drain system. The system is anticipated to treat approximately 100 to 150 gallons per minute.

#### PROJECT LOCATION DESCRIPTION:

The Cal Compact Landfill (the Site) is located at 20400 Main Street in the City of Carson, County of Los Angeles, California. The Site is located in the western portion of the City of Carson. It is bounded by Del Amo Boulevard to the north, the San Diego Freeway (I-405) to the east with the Dominguez Channel located just east of the San Diego Freeway (I-405), the Torrance Lateral Channel to the south with residential development just south of the Torrance Lateral Channel, and Main Street and residential



development on the west. The primary freeway access to the Site is by means of the Main Street ramps to the San Diego Freeway (I-405) and the Torrance Boulevard ramps to the Harbor Freeway (I-110). The Site is located within the City of Carson's Redevelopment Project Area No. 1.

FINDINGS OF SIGNIFICANT EFFECT ON ENVIRONMENT:

DTSC has determined that the project will not have a significant effect on the environment as that term is defined in the Public Resources Code Section 21068.

A copy of the Initial Study which supports this finding is attached.

MITIGATION MEASURES:

No mitigation measures have been proposed for this project.

Signature:




Thomas M. Cota, Project Manager

Date:

10/25/95

Signature:



Hamid Saebfar, Chief  
Site Mitigation Cleanup Operations  
Southern California Branch

Date:

10/25/95

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**

Region 4  
245 West Broadway, Suite 425  
Long Beach, CA 90802-4444

**Supplemental Negative Declaration Approval****Project Title:**

Cal Compact Landfill, Remedial Action Plan, Upper Operable Unit

**State Clearinghouse Number:**

95081061

**Contact Person and Telephone:**

Thomas M. Cota - (310) 590-4898

**Project Location:**

20400 Main Street, City of Carson, County of Los Angeles, State of California

**Project Description:**

BKK Corporation is requesting approval of a draft Remedial Action Plan (RAP) for the Cal Compact Landfill Upper Operable Unit from the Department of Toxic Substances Control (DTSC). This draft RAP is in accordance with Section 25356.1 of the California Health and Safety Code, and Subpart E of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 Code of Federal Regulations 300.400 et seq. DTSC is acting as a Responsible Agency as that term is defined in the California Code of Regulations, Title 14, Section 15381.

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significant impacts that were not feasibly mitigated to a level of insignificance with the mitigation measures found in the EIR.

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Extraction wells will be installed using standard drilling practices such as a hollow stem auger drill rig. The design of the system shall be developed by a registered California civil engineer, submitted to DTSC for review and approval. A Department approved quality control/quality assurance program shall be strictly followed by the contractors.

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The groundwater system includes extraction wells, associated piping, dedicated wells pumps, a water equalization tank, filters, precipitation and clarification units, carbon absorbers units, and a final polishing filter unit.

The treated groundwater will be used for on-site irrigation, or discharged to the sewer system or storm drain system. The system is anticipated to treat approximately 100 to 150 gallons per minute.

**Project Approval:**

DTSC of Toxic Substances Control has found on the basis of the Initial Study and the Supplemental Negative Declaration that there is no substantial evidence that the construction and operation of the landfill gas collection and treatment system and the groundwater treatment system will have a significant effect on the environment.

I hereby approve the Supplemental Negative Declaration for this project.

Signature: \_\_\_\_\_

Hamid Saebfar, Chief  
Site Mitigation Cleanup Operations  
Southern California Branch

Date: 10/25/95

**TABLE 3.1**  
**Page 1 of 3**  
**VOLUMES OF LIQUID INDUSTRIAL WASTES DISPOSED OF AT THE CAL COMPACT LANDFILL**  
*(Source: McLaren/Hart, 1992 after BCL Associates, Inc., 1981)*

WASTES	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
<b>1960</b>													
Drilling fluid/muds <sup>1</sup>	NA	NA	NA	NA	NA	0	0	20,775	2,700	0	14,800	16,345	54,620
Paint wastes/sludges	NA	NA	NA	NA	NA	22	146	180	110	2,158	276	282	2,744
Tank bottoms <sup>2</sup>	NA	NA	NA	NA	NA	0	0	50	0	0	100	0	150
Line and water	NA	NA	NA	NA	NA	0	0	0	0	0	210	500	710
Waste oil	NA	NA	NA	NA	NA	0	0	0	0	80	0	0	80
Acetylene sludge	NA	NA	NA	NA	NA	0	0	0	0	0	0	0	0
Solvents	NA	NA	NA	NA	NA	0	0	0	0	0	0	0	0
Oil and water	NA	NA	NA	NA	NA	0	0	0	0	0	80	0	80
Totals by Month	--	--	--	--	--	22	146	21,005	2,810	1,238	15,486	17,127	
Total for Year													57,904
<b>1961</b>													
Drilling fluid/muds <sup>1</sup>	NA	2,100	13,200	9,700	2,340	10,850	6,855	3,443	19,210	122,560	20,970	25,125	236,353
Paint wastes/sludges	NA	257	6,112	363	253	286	214	102	190	168	144	40	8,129
Tank bottoms <sup>2</sup>	NA	107	72	32	0	0	0	15	0	40	300	0	566
Line and water	NA	104	400	1,300	0	300	860	520	501	400	300	700	5,185
Waste oil	NA	0	0	0	0	0	0	0	0	0	0	0	0
Acetylene sludge	NA	60	0	0	0	0	0	0	0	0	0	0	60
Solvents	NA	0	0	0	0	6	0	0	0	0	0	0	6
Oil and water	NA	37	0	0	4	0	0	0	70	0	0	0	111
Totals by Month	--	2,665	19,784	11,395	2,597	11,442	7,929	4,080	19,971	123,168	21,714	25,865	
Total for Year													250,610

<sup>1</sup> - Volumes expressed in barrels.

<sup>2</sup> - 1/33 x figures for June 1960 - June 1964.

<sup>3</sup> - Drilling fluid and muds consist primarily of water and clay mixtures with minor heavy metal additives and oily residue.

**TABLE 3.1**  
**Page 2 of 3**  
**VOLUMES OF LIQUID INDUSTRIAL WASTES DISPOSED OF AT THE CAL COMPACT LANDFILL**  
 (Source: McLaren/Hart, 1992 after BCL Associates, Inc., 1981)

WASTES	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
<b>1962</b>													
Drilling fluid/muds <sup>1</sup>	33,525	35,015	53,111	37,792	25,095	33,045	28,385	29,120	15,008	33,808	23,536	12,124	359,564
Paint wastes/sludges	144	66	165	125	196	252	26	223	121	176	110	122	1,726
Tank bottoms <sup>2</sup>	110	122	195	242	100	350	137	0	0	1,595	1,030	572	4,453
Lime and water	0	300	600	800	600	800	800	500	300	300	0	200	5,200
Waste oil	0	0	0	0	0	0	0	0	0	0	0	0	0
Acetylene sludge	0	60	0	0	0	0	0	0	0	0	0	0	60
Solvents	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil and water	50	0	0	0	0	0	0	0	0	0	0	0	50
<b>Totals by Month</b>	<b>33,829</b>	<b>35,563</b>	<b>54,071</b>	<b>38,959</b>	<b>25,991</b>	<b>34,447</b>	<b>29,348</b>	<b>29,843</b>	<b>15,429</b>	<b>35,879</b>	<b>24,676</b>	<b>13,018</b>	
<b>Total for Year</b>													<b>371,053</b>
<b>1963</b>													
Drilling fluid/muds <sup>1</sup>	10,853	5,433	4,365	1,640	5,655	4,225	2,465	24,182	14,421	13,529	1,930	11,805	100,503
Paint wastes/sludges	119	84	105	81	247	1,540	1,518	630	996	1,206	385	342	7,253
Tank bottoms <sup>2</sup>	322	1,760	2,240	4,550	1,780	385	1,936	2,984	55	5,903	1,125	100	23,140
Lime and water	800	400	300	1,900	0	700	416	500	600	260	0	600	6,476
Waste oil	0	0	0	0	0	0	0	0	0	0	118	0	118
Acetylene sludge	0	0	0	0	0	360	108	30	0	0	0	0	498
Solvents	0	0	0	0	0	0	0	0	0	60	0	0	60
Oil and water	0	0	0	0	0	0	0	0	60	100	700	0	860
<b>Totals by Month</b>	<b>12,094</b>	<b>7,677</b>	<b>7,010</b>	<b>8,171</b>	<b>7,682</b>	<b>7,210</b>	<b>6,443</b>	<b>28,326</b>	<b>16,132</b>	<b>21,058</b>	<b>4,258</b>	<b>12,847</b>	
<b>Total for Year</b>													<b>138,905</b>

<sup>1</sup> Volumes expressed in barrels.

<sup>2</sup> - 133 x figures for June 1960 - June 1964.

<sup>3</sup> - Drilling fluid and muds consist primarily of water and clay mixtures with minor heavy metal additives and oily residue.

**TABLE 3.1**  
**Page 3 of 3**  
**VOLUMES OF LIQUID INDUSTRIAL WASTES DISPOSED OF AT THE CAL COMPACT LANDFILL**  
 (Source: McLaren/Hart, 1992 after BCL Associates, Inc., 1981)

WASTES	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
<b>1964</b>													
Drilling fluid/muds <sup>1</sup>	8,277	14,190	9,815	18,165	15,383	18,446	NA	NA	NA	NA	NA	NA	84,226
Paint wastes/sludges	425	189	380	200	1,127	514	NA	NA	NA	NA	NA	NA	2,835
Tank bottoms <sup>2</sup>	332	1,085	782	15	810	200	NA	NA	NA	NA	NA	NA	3,224
Lime and water	0	50	300	240	0	0	NA	NA	NA	NA	NA	NA	590
Waste oil	0	0	0	67	0	0	NA	NA	NA	NA	NA	NA	67
Acetylene sludge	0	0	0	0	100	100	NA	NA	NA	NA	NA	NA	200
Solvents	0	0	0	50	0	0	NA	NA	NA	NA	NA	NA	50
Oil and water	0	0	25	0	0	0	NA	NA	NA	NA	NA	NA	25
Totals by Month	8,984	15,514	11,302	18,737	17,420	19,260	--	--	--	--	--	--	--
Total for Year													91,217

TOTAL AMOUNTS OF LIQUID INDUSTRIAL WASTE DISPOSED OF AT THE CAL COMPACT SITE			
Wastes	Totals for June, 1960 Through June, 1964 in Barrels	Estimated Total for April, 1959 - February, 1965 <sup>3</sup> in Barrels	% of Estimated Total
Drilling fluids and muds <sup>1</sup>	835,266	1,110,904	92%
Paint wastes or sludges	22,187	29,509	2%
Tank bottoms	31,533	41,939	3%
Lime and water	18,381	24,447	2%
Waste oil	265	352	<1%
Acetylene sludge	818	1,088	<1%
Solvents	116	154	<1%
Oil and water	1,126	1,498	<1%
Totals	909,692	1,209,890	100%

<sup>1</sup> - Volumes expressed in barrels.  
<sup>2</sup> - 133 x figures for June 1960 - June 1964.  
<sup>3</sup> - Drilling fluid and muds consist primarily of water and clay mixtures with minor heavy metal additives and oily residues.

**TABLE 3.2**

**ADDITIONAL WASTE REPORTEDLY RECEIVED AT THE CAL COMPACT  
LANDFILL THAT CAN CURRENTLY BE CONSIDERED HAZARDOUS  
(DHS<sup>a</sup>, 1982 in BKK Corp., 1990).**

Reported Waste Type	Amount of Waste		
	Barrels	Gallons <sup>b</sup>	Cubic Yards <sup>c</sup>
Paint sludge, paint strip tank	15,412	647,304	3,204
Sulfur tar, shell tar	74,985	3,149,370	15,589
Lime soda water, lime, acetylene sludge, spent caustic, felt and soda ash, mud and lime, calcium and water	28,348	1,190,616	5,894
Tank Bottoms, oil sludge	27,505	1,155,210	5,718
Mud, oil and water, crude oil, waste oil	1,030	43,260	214
Styrene	200	8,400	42
Tile glaze	994	41,748	206
Kerosene, water and oil, degreasing solvent, solvent sludge	266	11,172	55
Dye and water	30	1,260	6
Lint and chemicals	110	4,620	23
Ink and trichloroethylene, oil and tric. (sic)	1,099	46,158	228
<b>TOTAL</b>	<b>149,979</b>	<b>6,299,118</b>	<b>31,179</b>

<sup>a</sup> Now the California Department of Toxic Substances Control.

<sup>b</sup> Assumes 42 gallons per barrel.

<sup>c</sup> Assumes 0.00495 gallons per cubic yard.



TABLE 3.3

EXISTING OR POTENTIAL GROUNDWATER PRODUCTION WELLS WITHIN A  
TWO MILE RADIUS OF THE CAL COMPACT LANDFILL

Well Name	State Well Number	Original Owner	Address	Year Drilled	Total Depth (ft)	Depth of Perforated Interval (ft)	Well Type	Status
795	4S 14W 01P01	Stauffer Chemical Co.	Normandie and Del Amo Blvd.	1943	727	486-560 603-650 673-714	Industrial Supply	Capped 1967 Recapped 1969
814A	4S 13W 06Q1	George Branning	19825 S. Main	1937	70	NA	Domestic and Irrigation	NA
818A	4S 13W 18P01	C.F. Fiescl	Ocean and Figueroa	1900	250	NA	Domestic and Irrigation	Capped 1950
818B	4S 13W 19B01	General Petroleum	Ocean and Main	1922	251	NA	NA	NA
825	4S 13W 07H01	Del Amo Estate	0.3 miles east of Main St. 750 ft. north of E. East Road	1948	720	676-672 644-640 636-570 562-555	Dairy	Capped 1961
834	4S 13W 05L01	Victoria Golf Course	Victoria and Avalon	1918	749	640-735	NA	Capped 1959
836A (DWC#19A)	4S 13W 05L01	Dominguez Water Corp.	418 E. Carson, Carson, CA	1991	685	510-665	Supply	Supply
860	NA	Frank Walter	Compton Ave and Main St.	1902	332	NA	NA	NA
865G	4S 13W 10E03	Shell Oil Co.	Wilmington and Dominguez St.	1955	1000	NA	NA	NA
865K	4S 13W 09H02	Shell Oil Co.	Wilmington and Dominguez St.	1968	1040	765-775 785-805 815-823 826-834 928-982	Industrial Supply	NA
888 (DWC#79)	4S 13W 20C01	Dominguez Water Corp.	228th Street, Carson, CA	1979	925	480-652	Supply	Supply
816	4S 13W 07L01	Sunset Oil	Figueroa and East Rd.	1946	580	528-580	Industrial Supply	NA
NA	4S 13W 06K07	Ray Buealy	NA	NA	NA	50-60	NA	NA

NA = Information Not Available.

Data Sources: Los Angeles County Department of Public Works, Hydraulic/Water Conservation Division  
Dominguez Water Corporation  
Water Replenishment District of Southern California  
BKK (1990)

**TABLE 4.1**

**SUMMARY OF REPORTS ON THE CAL COMPACT LANDFILL**

<b>Date</b>	<b>Author</b>	<b>Title</b>
April 4, 1975	Robert Stone & Associates, Inc.	Draft Environmental Impact Report for the Silver Oaks Mobile Home Park, City of Carson
October 26, 1977	Converse Davis Dixon Associates	Soil Permeability Investigations for the (Proposed) Silver Oaks Mobile Home Park, Main Street and Del Amo Boulevard
July 1978	Engineering-Science Inc.	Report of Investigation of Landfill Related Problems at the 180 acre site
March 1981	BCL Associates	Environmental Assessment of Soils, Perched Groundwater, and Vapor Impacts at the Former Cal Compact Landfill Site in the City of Carson
April 1981	Engineering-Science Inc.	Report of Review of Environmental Assessment at Proposed Casa del Amo Mobile Home Park
September 1984	BCL Associates, Inc.	Geotechnical Exploration of the Proposed "A" Street and Del Amo Boulevard at the WIC Site Located in Carson, California
March 1985	J. H. Kleinfelder & Associates	Boring Logs for Cal Compact Site Southern California World Industrial Center Carson, California
January 1990	BKK Corporation	Final Draft Workplan to Perform a Remedial Investigation/Feasibility Study (RI/FS) at the Cal Compact Landfill, 20300 South Main Street, Carson, California.
April 2, 1991	Western Laboratories	Supplemental Evaluation of Geotechnical Considerations Pertaining to the Proposed Crushing Operation at the Cal Compact/Metro 2000 Landfill Site
September 18, 1991	Western Laboratories	Recreational Vehicle Storage for Interim Use of the Metro 2000 Landfill Site, West End of Lot 3, 20300 Main Street, Carson, California
October 31, 1991 (and addendums)	Western Laboratories	Rough Grading Recommendations Cal Compact/Metro 2000 Landfill Site, 20400 Main Street, Carson, California Addendum No. 1 November 22, 1991 Addendum No. 2 January 22, 1992
January 10, 1992	McLaren/Hart	Integrated Remedial Investigation Report of Cal Compact Landfill 20300 Main Street Carson, California
March 19, 1992	Western Laboratories	Settlement Modeling of the Refuse Zone at the Cal Compact landfill Site, 20400 Main Street, Carson, California
August 17, 1992	McLaren/Hart	Revised Integrated Remedial Investigation Report Cal Compact Landfill 20300 Main Street Carson, California
November 25, 1992	Western Laboratories	Geotechnical Engineering Report and Geological Review for the Proposed Metro Mall to be Constructed at 20400 Main Street, Carson, California

TABLE-4.2

BACKGROUND METAL CONCENTRATIONS IN SOILS

Sample Number	GW-2B	GW-2B	GW-4	GW-4	Mean 95%	Title 22 Total
	10'	30'	10'	30'		
Analyte	mg/l	mg/l	mg/l	mg/l	UCL	Threshold Limit
					mg/l	Criteria (mg/l)
Aluminum	9,000	15,000	17,000	16,000	29,800	none
Antimony	1.4	2.6	1.8	1.6	3.6	500
Arsenic	48	86	74	84	145	500
Barium	60	130	260	98	595	10,000
Beryllium	<0.05	<0.05	<0.05	<0.05	0.05	75
Cadmium	0.2	<0.2	2.5	0.4	10.3	100
Calcium	2,500	6,100	3,800	5,000	11,400	none
Chromium	18	11	10	14	26	2,500
Cobalt	4.7	8.8	8.7	10.0	18.9	8,000
Copper	16	32	26	31	59	2,500
Iron	16,000	23,000	24,000	23,000	35,000	none
Lead	<0.5	<0.5	<0.5	<0.5	0.50	1,000
Magnesium	3,200	8,500	12,000	10,000	35,700	none
Manganese	270	490	640	470	1,160	none
Molybdenum	<0.1	<0.1	<0.1	<0.1	0.10	3,500
Nickel	10	11	10	15	19	2,000
Potassium	1,500	4,400	3,600	3,900	11,300	none
Selenium	<0.2	<0.2	<0.2	<0.2	0.20	100
Silver	<0.05	<0.05	<0.05	<0.05	0.05	500
Sodium	160	2,600	1,900	3,600	55,000	none
Thallium	<0.2	<0.2	<0.2	<0.2	0.20	700
Vanadium	27	36	30	46	63	2,400
Zinc	34	54	50	67	105	5,000

UCL = Upper Confidence Limit.

A value of 1/2 the detection limit was used to calculate the 95% UCL concentration.

Any cell with the less than < is equal to the detection limit.

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

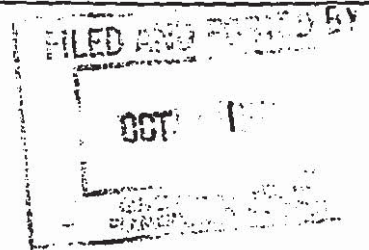
Region 4  
245 West Broadway, Suite 425  
Long Beach, CA 90802-4444



NOTICE OF DETERMINATION

To: Office of Planning and Research  
1400 Tenth Street  
Sacramento, CA 95814

Los Angeles County Clerk  
P.O. Box 592  
Los Angeles, California 90053



From: Department of Toxic Substances Control  
245 West Broadway, Suite 350  
Long Beach, California 90802-4444

Subject: FILLING OF NOTICE OF DETERMINATION IN COMPLIANCE WITH  
SECTION 21108 or 21152 OF THE PUBLIC RESOURCE CODE.

Project Title: Remedial Action Plan, Cal Compact Landfill

State Clearinghouse Number: 93011037 and 95081061

Lead Agency Contact Person and Telephone Number:

Thomas M. Cota, (310) 590-4898

Project Location: 20400 Main Street, City of Carson,  
County of Los Angeles, State of California

Project Description: Approval of the Remedial Action Plan (RAP) for the Cal Compact Landfill Site. The RAP includes construction of a landfill cap, construction and operation of a landfill gas collection and treatment system, and construction of a groundwater treatment system.

This is to advise that the Department of Toxic Substances Control (DTSC) has approved the above described project on 10/25/95 and has made the following determinations regarding the above described project.

Action As A Responsible Agency: The Final Environmental Impact Report (EIR) prepared and certified by the City of Carson entitled Project and Program Environmental Report, Metro 2000 December 1993 (SCH# 93011037) is adequate for assessing the impacts of the landfill cap portion of the RAP.

1. The landfill cap portion of the project will have a significant effect on the environment.
2. An Environmental Impact Report was prepared for the landfill cap

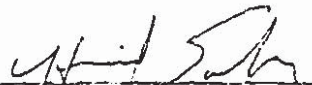
portion of the project pursuant to the provisions of California Environmental Quality Act (CEQA) .

3. Mitigation measures were made a condition of the approval of the landfill cap portion of the project by the City of Carson.
4. A statement of Overriding Considerations was adopted for this project by the City of Carson in approving the Metro 2000 EIR.
5. Findings were made by DTSC pursuant to the provisions of CEQA which concur with those made by the City of Carson for the Final Metro 2000 EIR.

**Action As A Lead Agency:** Pursuant to CEQA, DTSC prepared a Supplemental Negative Declaration (SCH# 95081061) for approval of the portion of the RAP which addresses construction of the landfill gas extraction and treatment system and the groundwater treatment system.

1. Construction and operation of the landfill gas collection and treatment system, and the groundwater treatment system will not have a significant effect on the environment.
2. A supplemental Negative Declaration was prepared for the landfill gas collection and treatment system, and the groundwater treatment system portion of the project pursuant to the provisions of CEQA.
3. Mitigation measures were not made a condition of the approval for the construction and operation of the landfill gas collection and treatment system, and the groundwater treatment system.
4. Findings were made pursuant to the provisions of CEQA.

This is to certify that the final EIR and the final Supplemental Negative Declaration, with comments and responses and record of project approval, are available to the general public at: Carson Public Library, 151 East Carson Street, Carson, California 92335 (310) 830-0901; and the Department of Toxic Substances Control 245 West Broadway, Suite 350, Long Beach, California 90802-4444 (310) 390-4868.

	10/25/95	Branch Chief
Signature (Public Agency)	Date	Title

Date received for filing at OPR:

## DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4  
245 West Broadway, Suite 425  
Long Beach, CA 90802-4444



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**NOTICE OF DETERMINATION**

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2. An Environmental Impact Report was prepared for the landfill cap

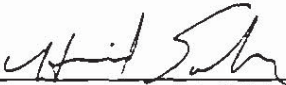
portion of the project pursuant to the provisions of California Environmental Quality Act (CEQA) .

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4. A statement of Overriding Considerations was adopted for this project by the City of Carson in approving the Metro 2000 EIR.
5. Findings were made by DTSC pursuant to the provisions of CEQA which concur with those made by the City of Carson for the Final Metro 2000 EIR.

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1. Construction and operation of the landfill gas collection and treatment system, and the groundwater treatment system will not have a significant effect on the environment.
2. A supplemental Negative Declaration was prepared for the landfill gas collection and treatment system, and the groundwater treatment system portion of the project pursuant to the provisions of CEQA.
3. Mitigation measures were not made a condition of the approval for the construction and operation of the landfill gas collection and treatment system, and the groundwater treatment system.
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This is to certify that the final EIR and the final Supplemental Negative Declaration, with comments and responses and record of project approval, are available to the general public at: Carson Public Library, 151 East Carson Street, Carson, California 92335 (310) 830-0901; and the Department of Toxic Substances Control 245 West Broadway, Suite 350, Long Beach, California 90802-4444 (310) 590-4868.

	10/25/95	Branch Chief
Signature (Public Agency)	Date	Title

Date received for filing at OPR:

TABLE-4.3  
 BACKGROUND METAL CONCENTRATIONS IN GROUNDWATER  
 FROM BELLFLOWER AQUITARD MONITOR WELLS  
 (SOURCE: REMEDIAL INVESTIGATION OF THE CAL COMPACT LANDFILL)

ANALYTE	BELLFLOWER AQUITARD MONITOR WELL GW-1C								BELLFLOWER AQUITARD MONITOR WELL GW-2C								BELLFLOWER AQUITARD MONITOR WELL GW-3C								BELLFLOWER AQUITARD MONITOR WELL GW-4							
	NOV. 90	DEC. 90	JAN. 91	APR. 91	AUG. 91	JAN. 92	APR. 92	MAY 93	NOV. 90	DEC. 90	JAN. 91	APR. 91	AUG. 91	JAN. 92	APR. 92	MAY 93	NOV. 90	DEC. 90	JAN. 91	APR. 91	AUG. 91	JAN. 92	APR. 92	MAY 93	NOV. 90	DEC. 90	JAN. 91	APR. 91	AUG. 91	JAN. 92	APR. 92	MAY 93
ALUMINUM	1.2	0.91	1.3	1.5	<.2	0.32	<0.20	NR	0.4	6.4	1.1	0.72	<.20	<0.20	<0.20	NR	0.18	0.82	1.2	4.1	<0.20	<0.20	<0.20	NR	22	420	3.2	12	<0.20	<0.20	<0.20	NR
ANTIMONY	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
ARSENIC	0.017	<0.05	<0.05	<0.05	<0.05	<0.10	<0.10	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.10	NR	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.10	<0.01	0.15	0.72	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10
BARIIUM	0.03	0.08	0.088	0.077	0.082	0.085	0.088	NR	0.07	0.12	0.082	0.071	0.055	0.046	0.045	NR	0.04	0.04	0.11	0.062	0.027	0.057	0.18	NR	0.24	0.43	0.12	0.18	0.058	0.049	0.049	NR
BERYLLIUM	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
CADMIUM	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
CALCIUM	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
CHROMIUM	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.041	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.44	0.074	0.65	<0.01	<0.01	<0.01	0.05
COBALT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	NR	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	NR	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	NR	0.02	0.01	<0.01	<0.01	<0.01	<0.02	<0.02	NR
COPPER	<0.01	<0.01	<0.05	<0.01	<0.01	<0.02	<0.02	NR	<0.01	0.34	<0.05	<0.01	<0.01	<0.02	<0.02	NR	<0.01	<0.01	<0.05	0.012	<0.01	<0.02	<0.02	NR	<0.01	<0.01	<0.01	0.038	0.052	<0.02	<0.02	NR
IRON	0.82	1.1	1.5	1.8	<0.10	0.39	0.12	NR	0.1	12	1.3	0.87	<0.10	7.8	8.8	NR	0.11	1.1	1.4	6	<0.10	<0.10	0.10	NR	25	56	3.7	19	<0.10	<0.10	<0.10	NR
LEAD	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MAGNESIUM	93	120	120	120	120	120	120	NR	220	320	310	360	340	340	350	NR	350	480	490	360	400	340	210	NR	430	820	510	520	540	560	540	NR
MANGANESE	1.5	0.29	0.82	0.84	0.54	0.52	1.5	NR	3.4	4.7	4.8	4.5	3.8	3.8	3.1	NR	2.3	3	3.5	2.8	2.8	2.4	1.6	NR	3	3.8	4.2	5	5.4	6.2	6.3	NR
MOLYBDENUM	<0.01	<0.01	0.01	<0.01	<0.01	<0.02	<0.02	NR	<0.01	0.03	0.033	0.023	0.015	<0.02	<0.02	NR	<0.01	0.02	0.028	0.015	0.028	0.025	0.024	NR	0.05	0.2	0.2	0.21	0.14	0.11	0.12	NR
NICKEL	<0.01	0.02	0.011	0.021	0.013	<0.02	<0.02	NR	0.01	0.07	0.031	0.04	0.046	<0.02	<0.02	NR	0.04	<0.01	0.039	0.018	0.018	<0.02	<0.02	NR	0.3	2.58	0.23	0.28	0.17	0.18	0.13	NR
POTASSIUM	12	14	13	11	12	10	12	NR	23	23	21	21	24	21	30	NR	29	26	28	22	28	22	19	NR	38	64	38	34	46	37	68	NR
SELENIUM	<0.02	<0.02	<0.02	<0.05	<0.05	<0.10	<0.10	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.10	<0.10	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.10	<0.10	<0.01	0.01	<0.02	<0.02	<0.05	<0.05	<0.10	<0.10	<0.01
SILVER	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
SODIUM	28	230	210	200	210	790	240	NR	1200	930	740	840	920	940	1200	NR	2100	2200	1940	1500	2100	1900	1100	NR	4500	9000	5100	5000	5800	5000	6300	NR
THALLIUM	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
VANADIUM	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	NR	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	NR	<0.01	<0.01	0.03	0.013	<0.01	<0.02	<0.02	NR	0.01	<0.01	0.012	0.037	<0.01	<0.02	<0.02	NR
ZINC	0.04	0.07	0.18	<0.02	<0.02	<0.02	<0.02	NR	0.32	0.84	0.12	<0.02	<0.02	<0.02	<0.02	NR	0.84	0.43	2.86	0.068	<0.02	<0.02	<0.02	NR	0.18	2.18	<0.02	0.028	<0.02	<0.02	<0.02	NR

BELLFLOWER GROUNDWATER  
 BACKGROUND METAL CONCENTRATIONS

ANALYTE	MEAN 85% UTL CONCENTRATIONS mg/l	CALIFORNIA PRIMARY MCL(1) mg/l	CALIFORNIA SECONDARY MCL(2) mg/l
ALUMINUM	420	1.0	0.2
ANTIMONY	NR	0.008	
ARSENIC	0.14	0.05	
BARIIUM	0.23	1.0	
BERYLLIUM	NR	0.004	
CADMIUM	NR	0.005	
CALCIUM	NR	not specified	
CHROMIUM	0.28	0.05	
COBALT	0.02	not specified	
COPPER	0.14		1.0
IRON	58.00		0.3
LEAD	NR	0.05	
MAGNESIUM	884	not specified	
MANGANESE	10.2		0.05
MOLYBDENUM	0.18	not specified	
NICKEL	0.30	0.10	
POTASSIUM	58.0	not specified	
SELENIUM	0.11	0.05	
SILVER	NR		0.10
SODIUM	9000	not specified	
THALLIUM	NR	0.002	
VANADIUM	0.03	not specified	
ZINC	0.63		1.0

NR = NOT ANALYZED

UTL = UPPER TOLERANCE LIMIT.

(1) MCL = CALIFORNIA PRIMARY DRINKING WATER STANDARD-MAXIMUM CONTAMINANT LEVEL.

(PRIMARY MCLs ARE DERIVED FROM HEALTH BASED CRITERIA. WATER CONTAINING SUBSTANCES EXCEEDING THESE MCLs PRESENTS A RISK TO THE HEALTH OF HUMANS WHEN CONTINUALLY USED FOR DRINKING OF CULINARY PURPOSES).

(2) MCL = CALIFORNIA SECONDARY DRINKING WATER STANDARD-MAXIMUM CONTAMINANT LEVEL.

(SECONDARY MCLs ARE BASED ON CONSUMER ACCEPTANCE CRITERIA, SUCH AS TASTE, ODOR, AND APPEARANCE; DISTRIBUTION SYSTEM WATER CONTAINING SUBSTANCES EXCEEDING THESE MCLs MAY BE OBJECTIONABLE TO AN APPRECIABLE NUMBER OF PEOPLE, BUT IS NOT GENERALLY HAZARDOUS TO HEALTH).


DRAWN BY	L. KIZZIE	BACKGROUND METAL CONCENTRATIONS IN GROUNDWATER FROM BELLFLOWER AQUITARD MONITOR WELLS	 <b>Brown &amp; Root Environmental</b> A Division of Brown & Root, Inc.				
DATE:	07/19/95						
DESIGNED BY:	K. HALL						
DATE:	07/19/95						
CAD DWG. NO.	TABLE.DWG	SCALE:	NONE	PROJ. NO.:	NQ-MU23	REV.:	0

TABLE-4.3/07/1995



**TABLE 4.4**  
**CONSTITUENTS IN STORM WATER RUNOFF**  
**AT THE CAL COMPACT LANDFILL**  
 (Source: McLaren/Hart, 1992)

Parameter	Concentrations (ppm)	
	Dissolved	Total
Arsenic	<0.002	<0.002
Barium	0.03	0.08
Cadium	<0.01	<0.01
Chromium	<0.03	<0.03
Chromium +6	<0.02	<0.02
Copper	0.02	0.05
Iron	0.22	3.8
Lead	0.02	0.07
Manganese	0.10	0.28
Mercury	<0.001	0.003
Nickel	0.010	0.02
Selenium	<0.002	<0.002
Silver	<0.01	<0.01
Zinc	0.28	0.39
Oil and Grease		4.3
Total Organic Carbon		9.3
Biological Oxygen Demand		11.5
Total Suspended Solids		177
Volatile Suspended Solids		42

Cations	mg/l	meg/l	Anions	mg/l	meg/l
Ammonium	0.65	0.036	Bicarb.	40.504	0.664
Calcium	11.3	0.564	Carb.	0	0.000
Magnesium	3.7	0.304	Chloride	20	0.564
Potassium	2.5	0.064	Fluoride	0.26	0.014
Sodium	12.4	0.539	Nitrate	5.1	0.082
			Sulfate	10.2	0.212
Total		1.508	Total		1.536

Values prefixed with < are the method detection limit

**TABLE 4.5**  
**METALS CONCENTRATIONS IN SURFACE RUNOFF**  
**RAINWATER AND WATER COLLECTED FROM THE VADOSE ZONE**  
**EPA METHOD 6010 (Concentrations in parts per billion)**  
**(Source: McLaren/Hart, 1992)**

		Al	Na	Ca	K	Mg	Fe	Mn	Cr	Mo	Ni	Pb	Cd	Ba	B	Sb	Tl	V	Zn	Cu(c)
State MCL(a)		1000	NS(b)	NS	NS	NS	300(c)	30(c)	50	NS	1000(c)	50	NS	1000	NS	NS	NS	NS	5000(c)	1000(c)
Date																				
<b>Surface Water</b>																				
SWC-1	2/28/91	1800	32,000	24,000	7300	6800	2200	49	15	10	<10	<50	<10	56	<5	<20	<100	12	86	22
SWC-2	2/28/91	13,000	6500	18,000	5300	7500	14,000	260	23	<10	12	<50	12	110	<5	<20	<100	38	130	27
SWC-3	1/04/91	NA(d)	NA	NA	NA	NA	NA	NA	<10	<10	<10	<50	<10	60	<5	<20	<100	20	160	<50
	2/28/91	35,000	41,000	28,000	9200	19,000	47,000	660	56	20	40	<50	22	260	<5	30	130	100	180	59
<b>Vadose Wells</b>																				
VW-2	3/05/91	48,000	130,000	30,000	10,000	17,000	210,000	2900	78	<10	67	280	32	1300	11	36	<100	55	970	97
VW-3	3/05/91	6600	3,400,000	11,000	200,000	180,000	49,000	350	40	<10	54	<50	29	210	<5	<20	<100	16	180	13
(a)	Maximum Contaminant Level (State primary drinking water standard)										Values prefixed with < are the method detection limit									
(b)	Not Specified																			
(c)	Secondary Drinking Water Standard																			
(d)	Not Analyzed																			

**TABLE 4.6**  
**Page 1 of 5**  
**VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER SAMPLES**  
**FROM THE BELLFLOWER AQUITARD (Concentrations in parts per billion)**  
**(Source: McLaren/Hart, 1992)**

		Benzene	Toluene	Ethyl Benzene	Xylenes	1,2-DCA (a)	TCE (b)	PCE (c)	Chlorobenzene
State MCL (d)		1	100 (e)	680	1750	0.5	5	5	30
WELL	DATE								
GW-1B	Nov., 1990	<1	1	<1	<1	72	30	15	112
	Dec., 1990 (l)	6	6	2	10	6	32	17	130
	Jan., 1991 (g)	2	1	<1	<1	54	30	16	124
	Apr., 1991(h)	<1	<1	<1	<1	44	38	18	124
	Aug., 1991(i)	<10	<10	<10	<10	46	<10	15	120
	Jan., 1992 (k)	<10	<10	<10	<10	34	29	13	99
	Apr., 1992 (n)	<10	<10	<10	<10	40	31	12	100
GW-1C	Nov., 1990	<1	4	<1	<1	<1	15	2	<1
	Dec., 1990	1	4	<1	6	<1	17	3	1
	Jan., 1991	<1	<1	<1	<1	<1	17	3	<1
	Apr., 1991	<1	<1	<1	<1	<1	17	2	<1
	Aug., 1991	<5	<5	<5	<5	<5	17	<5	<5
	Jan., 1992 (l)	<5	<5	<5	<5	<5	24	3	<5
	Apr., 1992	<5	<5	<5	<5	<5	20	2	<5
GW-2C	Nov., 1990	<1	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	1	<1	<1	6	<1	1	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	1	1	3
	Apr., 1991	<1	<1	<1	<1	<1	8	<1	<1
	Aug., 1991 (j)	<5	<5	<5	<5	<5	14	<5	<5
	Jan., 1992 (m)	<5	<5	<5	<5	<5	7	<5	<5
	Apr., 1992 (o)	2	6	2	7	<5	8	2	2

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- (a) 1,2 - Dichloroethane  
 (b) Trichloroethylene  
 (c) Tetrachloroethylene  
 (d) State Maximum Contaminant Level (Primary Drinking Water Standard)  
 (e) State Action Level  
 (f) 26 ppb Vinyl Acetate  
 (g) 84 ppb vinyl chloride, 8 ppb 1,1-Dichloroethane  
 5 ppb Trans 1,2-Dichloroethylene, 4 ppb 1,1-Dichloroethylene  
 6 ppb 1,2-Dichloropropane  
 (h) 0 ppb 1,1-Dichloroethane, 4ppb Trans 1,2-Dichloroethylene  
 (i) 46 ppb Vinyl Chloride, 240 ppb cis-1,2-Dichloroethane,  
 30 ppb 1,4-Dichlorobenzene, 15 ppb cis-1,2-Dichlorobenzene  
 (j) 20 ppb cis-1,2-Dichloroethane  
 (k) 9 ppb 1,1-Dichloroethane, 200 ppb cis-1,2-Dichloroethane,  
 4 ppb trans-Dichloroethane, 13 ppb Methylene Chloride,  
 4 ppb 1,2-Dichloropropane, 16 ppb 1,2-Dichlorobenzene,  
 26 ppb 1,4-Dichlorobenzene 56 ppb Vinyl Chloride  
 (l) 6 ppb Methylene Chloride  
 (m) 12 ppb cis-1,2-Dichloroethane, 5 ppb Methylene Chloride  
 (n) 9 ppb 1,1-Dichloroethane, 190 ppb cis-1,2-Dichloroethane,  
 2 ppb trans 1,2-Dichloroethane, 31 ppb 1,4-Dichlorobenzene,  
 17 ppb 1,2-Dichlorobenzene, 48 ppb Vinyl Chloride  
 (o) 14 ppb cis-1,2-Dichloroethane

**TABLE 4.6**  
**Page 2 of 5**  
**VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER SAMPLES**  
**FROM THE BELLFLOWER AQUITARD (Concentrations in parts per billion)**  
**(Source: McLaren/Hart, 1992)**

		Benzene	Toluene	Ethyl Benzene	Xylenes	1,2-DCA (a)	TCE (b)	PCE (c)	Chlorobenzene
State MCL (d)		1	100 (e)	680	1750	0.5	5	5	30
WELL	DATE								
GW-2B	Nov. 90-Apr. 92 (f)	-	-	-	-	-	-	-	-
GW-3B	Nov., 1990 (g)	<1	<1	<1	<1	<1	3	<1	<1
	Dec., 1990	<1	<1	<1	<1	<1	3	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	2	<1	<1
	Apr., 1991	<1	<1	<1	<1	<1	3	<1	<1
	Aug., 1991	<5	<5	<5	<5	<5	<5	<5	<5
	Jan., 1992	<5	<5	<5	<5	<5	3	<5	<5
	Apr., 1992	<5	<5	<5	<5	<5	3	<5	<5
GW-4	Nov., 1990	<1	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	11	53	9	70	<1	<1	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Apr., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Aug., 1991	<5	<1	<5	<5	<5	<5	<5	<5
	Jan., 1992	<5	<5	<5	<5	<5	<5	<5	<5
	Apr., 1992	<5	<5	<5	<5	<5	<5	<5	<5
GW-5A	Nov., 1990	<1	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	<1	<1	<1	4	<1	<1	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Apr., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Aug., 1991	<5	<5	<5	<5	<5	<5	<5	<5
	Jan., 1992	<5	<5	<5	<5	<5	<5	<5	<5
	Apr., 1992	<5	<5	<5	<5	<5	<5	<5	<5

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(a) 1,2 - Dichloroethane

(b) Trichloroethylene

(c) Tetrachloroethylene

(d) State Maximum Contaminant Level (Primary Drinking Water Standard)

(e) State Action Level

(f) Not Sampled due to Insufficient Water in Well

(g) 26 ppb Vinyl Acetate

**TABLE 4.6**  
**Page 3 of 5**  
**VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER SAMPLES**  
**FROM THE BELLFLOWER AQUITARD (Concentrations in parts per billion)**  
**(Source: McLaren/Hart, 1992)**

		Benzene	Toluene	Ethyl Benzene	Xylenes	1,2-DCA (a)	TCE (b)	PCE (c)	Chlorobenzene
State MCL (d)		1	100 (a)	680	1750	0.5	5	5	30
WELL	DATE								
GW-3C	Nov., 1990	3	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	<1	<1	<1	2	<1	<1	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Apr., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Aug., 1991	<5	<5	<5	<5	<5	<5	<5	<5
	Jan., 1992	<5	<5	<5	<5	<5	<5	<5	<5
	Apr., 1992	<5	<5	<5	<5	<5	<5	<5	<5
GW-5B	Nov., 1990	<1	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	<1	<1	<1	<1	<1	<1	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Apr., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Aug., 1991	48	30	8	17	<5	<5	<5	<5
	Jan., 1992 (r)	<5	<5	<5	<5	<5	<5	<5	<5
Apr., 1992	<5	<5	<5	<5	<5	<5	<5	<5	
GW-5C	Nov., 1990	<1	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	<1	<1	<1	3	<1	<1	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Apr., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Aug., 1991	<5	<5	<5	<5	<5	<5	<5	<5
	Jan., 1992	<5	<5	<5	<5	<5	<5	<5	<5
Apr., 1992	<5	<5	<5	<5	<5	<5	<5	<5	
GW-6	Nov., 1990 (p)	<1	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	<1	<1	<1	<1	<1	<1	<1	<1
	Jan., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Apr., 1991	<1	<1	<1	<1	<1	<1	<1	<1
	Aug., 1991	<5	<5	<5	<5	<5	<5	<5	<5
	Jan., 1992	<5	<5	<5	<5	<5	<5	<5	<5
Apr., 1992	<5	<5	<5	<5	<5	<5	<5	<5	
GW-7B	Nov., 1990	3500	380	610	870	<25	<25	<25	<25
	Dec., 1990 (q)	2000	424	380	1300	<1	6	1	57
	Jan., 1991	2800	50	<20	1600	<20	<20	<20	<20
	Apr., 1991	3500	720	670	1500	<1	7	<1	70
	Aug., 1991	2800	100	590	240	<100	<100	<100	<100
	Jan., 1992	2600	<100	520	<100	<100	<100	<100	<100
	Apr., 1992 (s)	3100	61	640	<100	<100	<100	<100	63

(p) 9 ppb Chloroform  
(r) 21 ppb Styrene

(r) 6 ppb Methyl  
chloride  
(s) 100 ppb Methyl  
chloride

E9206003

**TABLE 4.6**  
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**VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER SAMPLES**  
**FROM THE BELLFLOWER AQUITARD (Concentrations in parts per billion)**  
**(Source: McLaren/Hart, 1992)**

		Benzene	Toluene	Ethyl Benzene	Xylenes	1,2-DCA (a)	TCE (b)	PCE (c)	Chlorobenzene
State MCL (d)		1	100 (e)	600	1750	0.5	5	5	30
WELL	DATE								
GW-7C	Nov., 1990	6700	18000	8300	9900	<100	<100	<100	<100
	Dec., 1990	6700	16000	1400	11000	<50	<50	<50	<50
	Jan., 1991	8200	20400	12600	12400	<100	<100	<100	<100
	Apr., 1991	5000	14000	1500	8400	<1	7	<1	10
	Aug., 1991	6300	5500	1800	4600	<500	<500	<500	<500
	Jan., 1992	7500	16000	2300	8300	<500	<500	<500	<500
	Apr., 1992	7200	15000	2200	9100	<500	<500	<500	<500
GW-8	Nov., 1990 (t)	<1	<1	<1	<1	<1	<1	<1	<1
	Dec., 1990	<1	<1	<1	<1	19	<1	<1	<1
	Jan., 1991 (u)	3	<1	<1	18	<1	<1	<1	<1
	Apr., 1991	<1	<1	48	<1	40	<1	<1	<1
	Aug., 1991	<5	<5	8	<5	51	<5	<5	<5
	Jan., 1992 (v)	<5	<5	30	<5	60	<5	<5	<5
	Apr., 1992	<5	<5	29	<5	56	<5	<5	<5
GW-7.1	Sep., 1991	<5	<5	<5	<5	<5	<5	<5	<5
	Oct., 1991	<5	<5	<5	<5	<5	<5	<5	<5
	Jan., 1992	<5	<5	<5	<5	<5	<5	<5	<5
	Apr., 1992	<5	<5	<5	<5	<5	<5	<5	<5

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(t) 2 ppb Chloroform

(u) 47 ppb 1,1-Dichloroethane

(v) 5 ppb Methylene Chloride

**TABLE 4.6**  
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**VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER SAMPLES**  
**FROM THE BELLFLOWER AQUITARD (Concentrations in parts per billion)**  
**(Source: McLaren/Hart, 1992)**

		Benzene	Toluene	Ethyl Benzene	Xylenes	1,2-DCA (a)	TCE (b)	PCE (c)	Chlorobenzene
<b>State MCL (d)</b>		1	100 (e)	680	1750	0.5	5	5	30
<b>WELL/BAT</b>	<b>DATE</b>								
CCPT-1 @ 74' (f)	Aug. 1991 (h)	<0.5	<0.5	<0.5	<0.5	4.6	8.8	1.6	6
CCPT-7C @ 59' (g)	Aug. 1991 (i)	5000	9600	720	3500	40	2.1	<0.5	5.9
CPT-3 @ 61' (g)	Aug. 1991 (j)	1.2	0.94	<0.5	<0.5	0.89	0.54	<0.5	72
DCPT-1.1 @ 72' (g)	Aug. 1991	<0.5	0.77	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DCPT-5.1 @ 65'	Aug. 1991	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DCPT-7.1 @ 59' (g)	Aug. 1991	<0.5	0.98	<0.5	1.02	<0.5	<0.5	<0.5	<0.5
DCPT-7.2 @ 59'	Aug. 1991	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
UCPT-3 @ 65' (g)	Aug. 1991	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

(a) 1,2-Dichloroethane

(b) Trichloroethene

(c) Tetrachloroethene

(d) State Maximum Contaminant Level (Primary Drinking Water Standard)

(e) State Action Level

(f) EPA Method 601

(g) EPA Methods 601 and 602

(h) 11 ppb cis-1,2-DCA; 0.65 ppb 1,1-DCA; 0.62 ppb 1,2-Dichlorobenzene; 1.2 ppb 1,4-Dichlorobenzene

(i) 17 ppb cis-1,2-Dichloroethene

(j) 7.0 ppb cis-1,2-Dichloroethene; 1.7 ppb 1,2-Dichlorobenzene; 7.1 ppb 1,4-Dichlorobenzene

**TABLE-4.7**

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SCPT- 02-78'	SCPT- 03-85'	SCPT- 04-72'	SCPT- 05-65'	SCPT- 05-80'
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	<0.5	<0.5	0.7	<0.5	<0.5
1,1-Dichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	<0.5	<0.5	1.0	<0.5	<0.5
1,2-Dichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	NR	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR	NR
4-Methyl-2-pentanone	<2.5	<2.5	<2.5	<2.5	1.2
2-Butanone	<5.0	<5.0	<5.0	<5.0	16
Acetone	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<0.5	2.0	<0.5	<0.5
Ethyl Benzene	<0.5	<0.5	<0.5	<0.5	1.7
Methylene Chloride	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethylene	<0.5	<0.5	2.9	<0.5	1.3
Toluene	0.56	<0.5	<0.5	3.4	3.7
trans-1,2-Dichloroethene	<0.5	<0.5	0.5	<0.5	<0.5
Trichloroethene	<0.5	<0.5	15.0	<0.5	8.3
Vinyl Chloride	<0.5	<0.5	10.0	<0.5	1.9
Xylenes	<1.0	<1.0	<1.0	<1.0	3.8
Total	0.6	NA	32.1	3.4	37.9

Note:

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

NR = No Analysis for this compound.



**TABLE-4.7**

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SCPT- 6-82'	SCPT- 7-77'	SCPT- 08-54'	SCPT- 8-68'	SCPT- 8-88'
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<12.5	<50	<0.5
1,1,2-Trichloroethane	<0.5	<0.5	<12.5	<50	<0.5
1,1-Dichloroethane	<0.5	<0.5	<12.5	570	0.6
1,1-Dichloroethylene	<0.5	<0.5	<12.5	<50	<0.5
1,2-Dichlorobenzene	NR	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	<0.5	<12.5	<50	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR	NR
4-Methyl-2-pentanone	<2.5	<2.5	<125	<250	<2.5
2-Butanone	<5.0	<5.0	<62.5	<500	<5.0
Acetone	<5.0	<5.0	<125	<500	<5.0
Benzene	0.8	1	4,800	16,000	16
Chlorobenzene	<0.5	<0.5	<12.5	<50	<0.5
Ethyl Benzene	<0.5	<0.5	1,600	1,500	5
Methylene Chloride	<5.0	<5.0	<125	<500	<5.0
Tetrachloroethylene	<0.5	<0.5	<12.5	<50	<0.5
Toluene	0.6	0.6	6,400	420	2.7
trans-1,2-Dichloroethene	<0.5	<0.5	<12.5	<50	<0.5
Trichloroethene	<0.5	<0.5	<12.5	<50	<0.5
Vinyl Chloride	<0.5	<0.5	<12.5	<50	<0.5
Xylenes	<1.0	<1.0	2,900	2,400	10
<b>Total</b>	<b>1.4</b>	<b>1.6</b>	<b>15,700</b>	<b>20,890</b>	<b>34.3</b>

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol < is equal to the detection limit.

**TABLE-4.7**

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**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SCPT- 09-66'	SCPT- 10-61'	SCPT- 11-68'	SCPT- 12-65'	SCPT- 12-82'	SCPT- 13-77'
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<2.5	<0.5	<0.5	<0.5	0.5
1,1,2-Trichloroethane	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	<0.5	<2.5	<0.5	<0.5	<0.5	2.2
1,2-Dichlorobenzene	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR	NR	NR
4-Methyl-2-pentone	<2.5	<12.5	<2.5	<2.5	<2.5	<2.5
2-Butanone	<5.0	<25	<5.0	<5.0	7.5	<5.0
Acetone	<5.0	<25	<5.0	<5.0	<5.0	<5.0
Benzene	150	300	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5
Ethyl Benzene	170	520	<0.5	<0.5	<0.5	<0.5
Methylene Chloride	<5.0	<25	<5.0	<5.0	<5.0	<5.0
Tetrachloroethylene	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5
Toluene	6.6	36	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	<0.5	<2.5	<0.5	<0.5	<0.5	10
Trichloroethene	<0.5	<2.5	<0.5	<0.5	<0.5	35
Vinyl Chloride	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5
Xylenes	12.1	14.4	<1.0	<1.0	<1.0	<1.0
<b>Total</b>	<b>338.7</b>	<b>870.4</b>	<b>NA</b>	<b>NA</b>	<b>7.5</b>	<b>47.7</b>

Note:

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

NR = No Analysis for this compound.

TABLE-4.7

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**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number Analyte	SCPT-	SHP-	SCPT-	SHP-	SCPT-	SCPT-
	14-55'	15-69'	16-85'	17-84'	18-74'	19-68'
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	<0.5	14	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR	NR	NR
4-Methyl-2-pentanone	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
2-Butanone	<5.0	11	<5.0	<5.0	<5.0	<5.0
Acetone	<5.0	6.2	<5.0	<5.0	<5.0	<5.0
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethyl Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	0.7
Methylene Chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethylene	<0.5	<0.5	<0.5	<0.5	<0.5	1.3
Toluene	<0.5	<0.5	<0.5	<0.5	<0.5	0.9
trans-1,2-Dichloroethene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	<0.5	<0.5	<0.5	<0.5	<0.5	2
Vinyl Chloride	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	1.4
<b>Total</b>	NA	31.2	NA	NA	NA	6.3

## Notes:

NA = Not Applicable.

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol &lt; is equal to the detection limit.

TABLE-4.7

Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples

Sample Number	SCPT- 19-77'	SCPT- 19-94'	SCPT- 20-65'	SCPT- 20-74'	SHP- 21-74'	SCPT- 22-59'
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<50
1,1,2-Trichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<50
1,1-Dichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	1,000
1,1-Dichloroethylene	<0.5	<0.5	<0.5	<0.5	<0.5	<50
1,2-Dichlorobenzene	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<50
1,4-Dichlorobenzene	NR	NR	NR	NR	NR	NR
4-Methyl-2-pentanone	<2.5	<2.5	<2.5	<2.5	<2.5	<250
2-Butanone	<5.0	<5.0	<5.0	11	<5.0	<500
Acetone	<5.0	<5.0	<5.0	6.5	<5.0	<500
Benzene	<0.5	<0.5	<0.5	0.7	<0.5	13,000
Chlorobenzene	<0.5	<0.5	310	<0.5	<0.5	<50
Ethyl Benzene	<0.5	<0.5	2.2	0.8	<0.5	1,400
Methylene Chloride	<5.0	11	<5.0	<5.0	<5.0	<500
Tetrachloroethylene	<0.5	<0.5	<0.5	<0.5	<0.5	<50
Toluene	<0.5	<0.5	2.1	0.8	<0.5	5,500
trans-1,2-Dichloroethene	<0.5	<0.5	<0.5	<0.5	<0.5	<50
Trichloroethene	<0.5	<0.5	<0.5	<0.5	<0.5	<50
Vinyl Chloride	<0.5	<0.5	<0.5	<0.5	<0.5	<50
Xylenes	<1.0	<1.0	<1.0	1.8	<1.0	6,400
Total	NA	11.0	314.3	21.6	NA	27,300

Notes:

NA = Not Applicable.

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol < is equal to the detection limit.

**TABLE-4.7**

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SCPT- 22-70'	SCPT- 22-87'	SCPT- 23-59'	SCPT- 23-70'	SCPT- 24-61'	SCPT- 24-62'D
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<50	<0.5	<100	<25	<50	<50
1,1,2-Trichloroethane	<50	<0.5	<100	<25	<50	<50
1,1-Dichloroethane	<50	51	<0.5	280	<50	<50
1,1-Dichloroethylene	<50	<0.5	<0.5	<0.5	<50	<50
1,2-Dichlorobenzene	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	430	<0.5	<100	<25	1,700	1,700
1,4-Dichlorobenzene	NR	NR	NR	NR	NR	NR
4-Methyl-2-pentanone	<250	<2.5	<500	<125	<250	<250
2-Butanone	<500	<5.0	<1000	<250	<500	<500
Acetone	<500	<5.0	<1000	<250	<500	<500
Benzene	15,000	7.9	16,000	270	21,000	21,000
Chlorobenzene	<50	<0.5	<100	<25	<50	<50
Ethyl Benzene	1,600	1.7	2,300	140	1,200	1,200
Methylene Chloride	<500	<5.0	<200	<250	<500	<500
Tetrachloroethylene	<50	<0.5	<100	<25	<50	<50
Toluene	18,000	6.5	21,000	790	5,800	5,800
trans-1,2-Dichloroethene	<50	<0.5	<100	<25	<50	<50
Trichloroethene	<50	<0.5	<100	<25	<50	<50
Vinyl Chloride	<50	<0.5	<100	<25	<50	<50
Xylenes	8,300	6.9	11,000	760	2,300	2,300
<b>Total</b>	<b>43,330</b>	<b>74.0</b>	<b>50,300</b>	<b>2,240</b>	<b>32,000</b>	<b>32,000</b>

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol < is equal to the detection limit.

**TABLE-4.7**

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SCPT-	SCPT-	SHP-	SCPT-	SCPT-	SHP-
	24-70'	25-61'	26-88'	27-62'	27-86'	28-67'
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<50	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	<50	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	<50	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	<50	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	1,600	<0.5	<0.5	2.4	<0.5	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR	NR	NR
4-Methyl-2-pentanone	<250	<2.5	<2.5	<2.5	<2.5	<2.5
2-Butanone	<500	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone	<500	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	18,000	0.7	<0.5	1.1	0.8	<0.5
Chlorobenzene	<50	<0.5	<0.5	<0.5	<0.5	<0.5
Ethyl Benzene	980	<0.5	0.5	<0.5	<0.5	1.3
Methylene Chloride	<500	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethylene	<50	<0.5	<0.5	0.9	<0.5	<0.5
Toluene	1,400	0.8	2.8	<0.5	0.6	8.0
trans-1,2-Dichloroethene	<50	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	<50	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	<50	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	1,100	<1.0	2.8	<1.0	<1.0	8.2
<b>Total</b>	<b>23,080</b>	<b>1.5</b>	<b>6.1</b>	<b>4.4</b>	<b>1.4</b>	<b>17.5</b>

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol < is equal to the detection limit.

**TABLE-4.7**

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SCPT-	SCPT-	SCPT-	SCPT-	SCPT-	SCPT-
	28-57'	29-59'	30-66'	31-56'	32-63'	33-69'
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<5.0	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	<0.5	<0.5	<5.0	<0.5	<0.5	<0.5
1,1-Dichloroethane	4.1	<0.5	<5.0	1.2	<0.5	<0.5
1,1-Dichloroethylene	<0.5	1.0	<5.0	1.7	<0.5	<0.5
1,2-Dichlorobenzene	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	0.7	<5.0	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR	NR	NR
4-Methyl-2-pentanone	<2.5	<2.5	<25	<2.5	<2.5	<2.5
2-Butanone	<5.0	<5.0	<50	<5.0	<5.0	<5.0
Acetone	<5.0	<5.0	<50	<5.0	<5.0	<5.0
Benzene	2.2	0.7	13	69	<0.5	0.5
Chlorobenzene	<0.5	<0.5	110	2.1	<0.5	<0.5
Ethyl Benzene	0.7	<0.5	<5.0	<0.5	<0.5	<0.5
Methylene Chloride	<5.0	<5.0	<50	<5.0	<5.0	<5.0
Tetrachloroethylene	<0.5	5.8	<5.0	49	0.5	<0.5
Toluene	1.6	0.6	<5.0	0.6	<0.5	<0.5
trans-1,2-Dichloroethene	<0.5	0.6	<5.0	1.2	<0.5	<0.5
Trichloroethene	<0.5	64	<5.0	31	1.8	<0.5
Vinyl Chloride	<0.5	<0.5	8.6	39	<0.5	<0.5
Xylenes	2.3	<1.0	<10	1.6	<1.0	<1.0
<b>Total</b>	<b>10.9</b>	<b>73.4</b>	<b>131.6</b>	<b>196.4</b>	<b>2.3</b>	<b>0.5</b>

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol < is equal to the detection limit.

TABLE-4.7

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**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SCPT-	SHP-	SHP-	SHP-	SHP-	SHP-
	33-90'	34-62'	34-71'	34-88'	35-68'	35-77'
Analyte	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	<0.5	<0.5	1.4	<0.5	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR	NR	NR
4-Methyl-2-pentone	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
2-Butanone	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	<0.5	<0.5	<0.5	<0.5	0.8	0.8
Chlorobenzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethyl Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methylene Chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethylene	<0.5	<0.5	<0.5	1.0	1.1	<0.5
Toluene	<0.5	0.6	0.5	0.5	0.5	<0.5
trans-1,2-Dichloroethene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	<0.5	<0.5	0.9	5.5	2.3	<0.5
Vinyl Chloride	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>Total</b>	NA	0.6	1.4	8.4	4.7	0.8

## Notes:

NA = Not Applicable.

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol &lt; is equal to the detection limit.



**TABLE-4.7**

**Detection of Volatile Organic Compounds  
Groundwater From Bellflower Aquitard Hydropunch Samples**

Sample Number	SHP- 35-90'	SCPT- 36-62'	SHP- 36-90'	SCPT- 37-59'
Analyte	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	NR	NR	NR	NR
1,2-Dichloroethane	<0.5	0.5	<0.5	<0.5
1,4-Dichlorobenzene	NR	NR	NR	NR
4-Methyl-2-pentanone	<2.5	<2.5	<2.5	<2.5
2-Butanone	<5.0	<5.0	<5.0	<5.0
Acetone	<5.0	<5.0	<5.0	<5.0
Benzene	10.0	1.0	0.5	0.5
Chlorobenzene	<0.5	<0.5	<0.5	<0.5
Ethyl Benzene	<0.5	<0.5	<0.5	<0.5
Methylene Chloride	<5.0	<5.0	<5.0	<5.0
Tetrachloroethylene	<0.5	<0.5	<0.5	<0.5
Toluene	0.9	0.5	<0.5	<0.5
trans-1,2-Dichloroethene	<0.5	<0.5	<0.5	<0.5
Trichloroethene	<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	<0.5	<0.5	<0.5	<0.5
Xylenes	<1.0	<1.0	<1.0	<1.0
<b>Total</b>	<b>10.9</b>	<b>2.0</b>	<b>0.5</b>	<b>0.5</b>

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40 CFR Method 624.

Any cell with the less than symbol < is equal to the detection limit.

TABLE-4.8

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**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-1B**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	6	2	<1	<10	<10	<10	16
Chlorobenzene	112	130	124	124	120	99	100	<0.5
cis-1,2-Dichloroethene	NR	NR	NR	NR	240	200	190	NR
1,2-Dichlorobenzene	NR	NR	NR	NR	15	16	17	NR
1,4-Dichlorobenzene	NR	NR	NR	NR	30	28	31	NR
1,1-Dichloroethane	<1	<1	8	8	<10	9	9	8.5
1,2-Dichloroethane	72	6	54	44	46	34	40	22
1,1-Dichloroethylene	<1	<1	4	<1	<10	NR	NR	0.9
1,2-Dichloropropane	<1	<1	6	<1	<10	4	NR	<5.0
Ethyl Benzene	<1	2	<1	<1	<10	<10	<10	3.6
Tetrachloroethylens	15	17	16	18	15	13	12	7.4
Toluene	1	6	1	<1	<10	<10	<10	6.4
trans-1,2-Dichloroethene	<1	3	5	4	<10	4	2	3.8
Trichloroethene	30	32	30	38	<10	29	31	22
Vinyl Chloride	<5	<6	84	<1	46	56	48	90
Xylenes	<1	10	<1	<1	<10	<10	<10	7.1
<b>Total</b>	<b>230</b>	<b>212</b>	<b>546</b>	<b>236</b>	<b>748</b>	<b>488</b>	<b>480</b>	<b>187.7</b>

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40CFR Method 624.  
Any cell with the less than symbol < is equal to the detection limit.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-1C**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	1	<1	<1	<5	<5	<5	8.9
Chlorobenzene	<1	1	<1	<1	<5	<5	<5	0.8
1,2-Dichloroethane	<1	<1	<1	<1	<5	<5	<5	1.2
Ethyl Benzene	<1	<1	<1	<1	<5	<5	<5	1.9
Tetrachloroethylene	2	3	3	2	<5	3	2	2.5
Toluene	4	4	<1	<1	<5	<5	<5	3.5
Trichloroethene	15	17	17	17	17	24	20	24
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	6.2
Xylenes	<1	6	<1	<1	<5	<5	<5	3.9
<b>Total</b>	<b>21</b>	<b>32</b>	<b>20</b>	<b>19</b>	<b>17</b>	<b>27</b>	<b>22</b>	<b>52.9</b>

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40CFR Method 624.  
Any cell with the less than symbol < is equal to the detection limit.

TABLE-4.8

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-2B**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	NR	NR	NR	NR	NR	NR	NR	2.3
1,1-Dichloroethane	NR	NR	NR	NR	NR	NR	NR	1.9
1,1-Dichloroethylene	NR	NR	NR	NR	NR	NR	NR	3.9
1,2-Dichloroethane	NR	NR	NR	NR	NR	NR	NR	5.9
Tetrachloroethene	NR	NR	NR	NR	NR	NR	NR	11
Toluene	NR	NR	NR	NR	NR	NR	NR	0.5
trans-1,2-Dichloroethene	NR	NR	NR	NR	NR	NR	NR	2.1
Trichloroethene	NR	NR	NR	NR	NR	NR	NR	88
Vinyl Chloride	NR	NR	NR	NR	NR	NR	NR	36
Total	NA	NA	NA	NA	NA	NA	NA	151.6

Notes:

NR = No analysis of the groundwater from any sampling event except in May 95.

NA = Not Applicable.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-2C**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	1	<1	<1	<5	<5	2	3
Chlorobenzene	<1	<1	3	<1	<5	<5	2	11
cis-1,2-Dichloroethene	NR	NR	NR	NR	20	12	14	<1
1,1-Dichloroethane	<1	<1	<1	<1	<5	NR	NR	3.4
1,2-Dichloroethane	<1	<1	<1	<1	<5	<5	<5	3.6
Tetrachloroethylene	<1	<1	1	<1	<5	<5	2	4.8
Toluene	<1	<1	<1	<1	<5	<5	6	0.8
trans-1,2-Dichloroethene	NR	NR	NR	NR	<5	NR	NR	0.9
Trichloroethene	<1	1	1	8	14	7	8	32
Vinyl Chloride	<5	<5	<6	<5	<5	NR	NR	85
Xylenes	<1	6	<1	<1	<5	<5	7	<1
Total	NA	8	5	8	34	19	41	144.5

Notes:

NR = No Analysis for this compound. Laboratory used added compounds beyond those listed in the 40CFR Method 624.

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-3B**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	<1	<1	<1	<5	<5	<5	0.7
Ethyl Benzene	<1	<1	<1	<1	5	<5	<5	1.5
Toluene	<1	<1	<1	<1	<5	<5	<5	1.1
Trichloroethene	3	3	2	3	<5	3	3	3.2
Vinyl Acetate	26	NR	NR	NR	NR	NR	NR	<5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	<1	<1	<1	<1	<5	<5	<5	3.8
<b>Total</b>	29	3	2	3	NA	3	3	10.3

**Notes:**

Any cell with the less than symbol &lt; is equal to the detection limit.

NR = No analysis for this compound.

NA = Not Applicable.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-3C**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	3	<1	<1	<1	<5	<5	<5	1
Ethyl Benzene	<1	<1	<1	<1	<5	<5	<5	0.6
Toluene	<1	<1	<1	<1	<5	<5	<5	1.3
Trichloroethene	<1	<1	<1	<1	<5	<5	<5	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	<1	2	<1	<1	<5	<5	<5	1.8
<b>Total</b>	3	2	NA	NA	NA	NA	NA	4.7

**Notes:**

Any cell with the less than symbol &lt; is equal to the detection limit.

NA = Not Applicable.

NR = No analysis for this compound.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-4**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	11	<1	<1	<5	<5	<5	<0.5
Ethyl Benzene	<1	9	<1	<1	<5	<5	<5	<0.5
Toluene	<1	53	<1	<1	<5	<5	<5	<0.5
Trichloroethene	<1	<1	<1	<1	<5	<5	<5	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	<1	70	<1	<1	<5	<5	<5	<1
<b>Total</b>	NA	143	NA	NA	NA	NA	NA	NA

**Note:**

Any cell with the less than symbol &lt; is equal to the detection limit.

NA = Not Applicable.

TABLE-4.8

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-5A**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	1	1	1	1	<5	<5	<5	<0.5
Ethyl Benzene	<1	<1	<1	<1	<5	<5	<5	0.9
Toluene	<1	<1	<1	<1	<5	<5	<5	0.7
Trichloroethene	<1	<1	<1	<1	<5	<5	<5	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	<1	4	<1	<1	<5	<5	<5	2.1
<b>Total</b>	NA	4	NA	NA	NA	NA	NA	3.7

Note:

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-5B**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	<1	<1	<1	48	<5	<5	<0.5
2-Butanone	NR	NR	NR	NR	NR	NR	NR	79
Ethyl Benzene	<1	<1	<1	<1	8	<5	<5	<0.5
Toluene	<1	<1	<1	<1	30	<5	<5	0.7
Trichloroethene	<1	<1	<1	<1	<5	<5	<5	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	<1	<1	<1	<1	17	<5	<5	1.1
<b>Total</b>	NA	NA	NA	NA	103	NA	NA	80.8

Note:

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

NR = No analysis for this compound.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-5C**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	<1	<1	<1	<5	<5	<5	<0.5
Trichloroethene	<1	<1	<1	<1	<5	<5	<5	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	<1	3	<1	<1	<5	<5	<5	<1
<b>Total</b>	NA	3	NA	NA	NA	NA	NA	NA

Note:

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

TABLE-4.8

Page 5 of 6

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-6**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	<1	<1	<1	<5	<5	<5	<0.5
Trichloroethene	<1	<1	<1	<1	<5	<5	<5	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Chloroform	9	NR	NR	NR	NR	NR	NR	<5
Total	9	NA	NA	NA	NA	NA	NA	NA

## Note:

Any cell with the less than symbol &lt; is equal to the detection limit.

NA = Not Applicable.

NR = No analysis for this compound.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-7.1**

Analyte	Sep. 1991	Oct. 1991	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<5	<5	<5	<5	<0.5
Toluene	<5	<5	<5	<5	<0.5
Ethyl Benzene	<5	<5	<5	<5	<0.5
Xylenes	<5	<5	<5	<5	<1.0
1,2-Dichloroethane	<5	<5	<5	<5	<0.5
Trichloroethene	<5	<5	<5	<5	<0.5
Tetrachloroethene	<5	<5	<5	<5	<0.5
Vinyl Chloride	<5	<5	<5	<5	<0.5
Chlorobenzene	<5	<5	<5	<5	<5
Total	NA	NA	NA	NA	NA

## Note:

Any cell with the less than symbol &lt; is equal to the detection limit.

NA = Not Applicable.

NR = No analysis for this compound.

**Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-7B**

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	3500	2000	2800	3500	2800	2600	3100	7.8
2-Butanone	<250	<10	<200	<10	<500	NR	NR	26
Chlorobenzene	<25	57	<20	70	<100	<100	63	1
Ethyl Benzene	610	380	<20	670	590	520	640	1.2
Styrene	<1	21	<1	<1	<5	NR	NR	<0.5
Tetrachloroethylene	<25	1	<20	<1	<100	<100	<100	<0.5
Toluene	380	424	50	720	100	<100	61	5.8
Trichloroethene	<25	1	<20	<1	<100	<100	<100	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	870	1300	1600	1500	240	<100	<100	1
Total	5360	4184	4450	6460	3730	3120	3864	13.6

## Note:

Any cell with the less than symbol &lt; is equal to the detection limit.

NR = No analysis for this compound.

TABLE-4.8

Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-7B Dup

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	NR	NR	NR	NR	NR	NR	NR	3.5
2-Butanone	NR	NR	NR	NR	NR	NR	NR	<5.0
Chlorobenzene	NR	NR	NR	NR	NR	NR	NR	<0.5
Ethyl Benzene	NR	NR	NR	NR	NR	NR	NR	<0.5
Stryene	NR	NR	NR	NR	NR	NR	NR	<0.5
Tetrachloroethylene	NR	NR	NR	NR	NR	NR	NR	<0.5
Toluene	NR	NR	NR	NR	NR	NR	NR	2.7
Trichloroethene	NR	NR	NR	NR	NR	NR	NR	<0.5
Vinyl Chloride	NR	NR	NR	NR	NR	NR	NR	<0.5
Xylenes	NR	NR	NR	NR	NR	NR	NR	<1.0
Total	NA	NA	NA	NA	NA	NA	NA	6.2

Note:

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

NR = No analysis for this compound.

Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-7C

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	6700	6700	8200	5800	6300	7500	7200	260
Chlorobenzene	<100	<50	<100	10	<500	<500	<500	<1
1,2-Dichloroethane	<100	<50	<100	<1	<500	<500	<500	4.8
Ethyl Benzene	8300	1400	12600	1500	1800	2300	2200	360
Toluene	18000	16000	20400	14000	5500	16000	15000	270
Trichloroethene	<100	<50	<100	7	<500	<500	<500	<10
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<1
Xylenes	9900	11000	12400	8400	4600	8300	9100	760
Total	42900	35100	53600	29717	18200	34100	33500	1654.8

Note:

Any cell with the less than symbol < is equal to the detection limit.

Detection of Volatile Organic Compounds  
in Groundwater From Bellflower Aquitard Monitor Well GW-8

Analyte	Nov. 90	Dec. 90	Jan. 91	Apr. 91	Aug. 91	Jan. 92	Apr. 92	May 95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	<1	<1	3	<1	<5	<5	<5	5.7
2-Butanone	<10	NR	NR	NR	NR	NR	NR	10
1,2 Dichloroethane	<1	19	<1	40	51	60	56	0.6
Ethyl Benzene	<1	<1	<1	48	8	30	29	1.2
Toluene	<1	<1	<1	<1	<5	<5	<5	2.2
Trichloroethene	<1	<1	<1	<1	<5	<5	<5	<0.5
Vinyl Chloride	<5	<6	<5	<5	<5	NR	NR	<0.5
Xylenes	<1	<1	18	<1	<5	<5	<5	2.2
Total	NA	19	21	88	59	90	85	21.9

Note:

Any cell with the less than symbol < is equal to the detection limit.

NA = Not Applicable.

NR = No analysis for this compound.

**TABLE 5.1  
CONTAMINANTS OF CONCERN  
UPPER OPERABLE UNIT  
CAL COMPACT LANDFILL**

	SOIL	GROUNDWATER	VAPOR
<b>METALS</b>			
Antimony	X	X	
Arsenic	X	X	
Barium		X	
Beryllium	X	X	
Chromium		X	
Manganese		X	
Molybdenum		X	
Nickel		X	
Selenium		X	
Vanadium		X	
Zinc		X	
<b>ORGANICS</b>			
Benzene		X	X
Benzo(a)anthracene	X		
Benzo(b)fluoranthene	X		
alpha-BHC	X		
beta-BHC			
Bis(2-ethylhexyl)phthalate	X	X	
1,4-Dichlorobenzene			X
1,1-Dichloroethane		X	
1,2-Dichloroethane (EDC)		X	X
1,1-Dichloroethylene			X
Ethylbenzene		X	
Naphthalene		X	
Tetrachloroethylene (PCE)		X	X
Toluene		X	X
Trichloroethylene		X	X
Vinyl Chloride		X	X
Xylenes		X	X



TABLE 7.1

## COMPARATIVE ANALYSIS OF ALTERNATIVES

ALTERNATIVES	OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	COMPLIANCE WITH ARARs	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT	SHORT-TERM EFFECTIVENESS	IMPLEMENTABILITY	PRESENT WORTH COST ( \$1,000s)
NO ACTION	Not Protective	Not applicable	Not effective - No action taken.	None - Does not treat.	Not effective - No action taken.	No implementation - No action taken	0
CONTAINMENT OF BURIED WASTE, COLLECTION AND TREATMENT OF GROUNDWATER AND LANDFILL GAS	More Protective	Complies with ARARs	Most effective - risk of exposure to buried waste reduced. Groundwater and landfill gas removed.	Provides long-term treatment of groundwater and landfill gas. No treatment of buried waste, <u>but reduces mobility.</u>	Effective - buried waste stays on site reducing exposure/risk to on-site workers and public. Provides treatment of groundwater and landfill gasses, <u>but workers exposed to soil, water, and vapors during construction of extraction systems.</u>	Implementable - <u>construction equipment, materials, and methods to implement surface cover and extraction wells are proven</u>	<u>27,193</u> <u>38,969</u>
CONTAINMENT OF BURIED WASTE, COLLECTION AND TREATMENT OF GROUNDWATER AND MONITORING OF GROUNDWATER AND LANDFILL GAS	Protective <u>pending compliance with landfill gas levels</u>	Complies with ARARs for buried waste and <u>groundwater</u> , but monitoring must trigger future response actions for long-term compliance with ARARs for landfill gas and <u>groundwater.</u>	Effective - risk of exposure to buried waste and <u>landfill gasses</u> reduced. <u>Groundwater removed</u> <u>Does not reduce risk associated with groundwater.</u>	<u>Provides long-term treatment of groundwater.</u> No treatment of buried waste, but reduces mobility. No treatment of groundwater or landfill gasses.	Effective - buried waste stays on site reducing exposure/risk to on-site workers and public. <u>Provides treatment of groundwater, but workers exposed to soil and water during construction of groundwater extraction system.</u> <u>Minor exposure to gas vapors</u>	More Implementable - <u>construction equipment, materials, and methods to implement this alternative are proven. No gas extraction means less construction effort required</u>	<u>23,838</u> <u>25,126</u>

**TABLE 7.2 PROPOSED OFF-SITE DISCHARGE LIMITATIONS**

Constituent	Typical NPDES Permit Requirements for Discharge of Treated Groundwater <sup>(a)</sup> Monthly Average/Maximum	Industrial Wastewater Effluent Limitations for Joint Outfall Districts Phase I <sup>(b)</sup>
Suspended Solids (mg/l)	50/75	-
BOD <sub>5</sub> @20°C (mg/l)	20/30	-
Oil and Grease (mg/l)	10/15	-
Turbidity (TUs)	50/75	-
Settleable Solids (ml/l)	0.1/0.2	-
Sulfides (mg/l)	-/1.0	-
Phenols (mg/l)	-/1.0	-
Chlorinated Phenolic Compounds (ug/l)	-/1.0	-
Benzene (ug/l)	-/1.0	-
Toluene (ug/l)	-/10.0	-
Xylene (ug/l)	-/10.0	-
Ethylbenzene (ug/l)	-/10.0	-
Carbon Tetrachloride (ug/l)	-/0.5	-
Tetrachloroethylene (ug/l)	-/5.0	-
Trichloroethylene (ug/l)	-/5.0	-
1,4-Dichlorobenzene (ug/l)	-/5.0	-
1,1-Dichloroethane (ug/l)	-/5.0	-
1,2-Dichloroethane (ug/l)	-/0.5	-
1,1-Dichloroethylene (ug/l)	-/6.0	-
Vinyl Chloride (ug/l)	-/0.5	-
Lead (mg/l)	-/0.05	40
Arsenic (mg/l)	-/0.05	3
Chromium (mg/l)	-/0.05	10 (total)
Silver (mg/l)	-/0.05	5
Cadmium (mg/l)	-/0.01	15
Selenium (mg/l)	-/0.01	-
Mercury (mg/l)	-/0.002	2
Copper (mg/l)	-/1.0	15
Zinc (mg/l)	-/5.0	25
Cyanide (total) (mg/l)	-	10
Nickel (mg/l)	-	12
Total Identifiable Chlorinated Hydrocarbons (mg/l)	-	Essentially None
Volatile Organics (total) (mg/l)	-	1.0

(a) California Regional Water Quality Control Board - Los Angeles Region, Discharges of Ground Water to Surface Waters, Order No. 91-092, Revised July 5, 1991.

(b) Sanitation Districts of Los Angeles County. (Rev. 120892)

TABLE 7.3

**REMEDIAL ACTION GOALS  
FOR GROUNDWATER  
UPPER OPERABLE UNIT  
CAL COMPACT LANDFILL**

Contaminant	Baseline Groundwater Risk <sup>(a)</sup>	Background Level (95% UTL) <sup>(b)</sup> mg/l	MCLs <sup>(c)</sup> mg/l	Proposed PRGs for Groundwater mg/l	Criterion Reference
<b>METALS</b>					
Antimony	X	NR	0.006 (Fed.)	0.006	MCL
Arsenic	X	0.14	0.05	0.05*	MCL
Barium	O	0.23	1.0	1.0	MCL
Beryllium	X	NR	0.004 (Fed.)	0.004	MCL
Chromium (total)	X	0.28	0.05	0.05*	MCL
Manganese	X	10.2	0.05 (Secondary)	10.2	Background
Molybdenum	X	0.16	-	0.16	Background
Nickel	X	0.3	0.1 (Fed.)	0.3	Background
Selenium	X	0.11	0.01	0.11	Background
Vanadium	X	0.03	-	0.03	Background
Zinc	X	0.63	5.0 (Secondary)	5.0	MCL
<b>ORGANICS</b>					
Benzene	X	-	0.001	0.001	MCL
Bis(2-ethylhexyl)phthalate	O	-	-	0.0052	Risk Based <sup>(d)</sup>
1,1-Dichloroethane	X	-	0.005	0.005	MCL
1,2-Dichloroethane (EDC)	X	-	0.0005	0.0005	MCL
1,1-Dichloroethylene	X	-	0.006	0.006	MCL
Ethylbenzene	O	-	0.68	0.68	MCL
Naphthalene	X	-	-	0.015	Risk Based <sup>(d)</sup>
Tetrachloroethylene (PCE)	X	-	0.005	0.005	MCL
Toluene	X	-	1.0 (Fed.)	1.0	MCL
Trichloroethylene	X	-	0.005	0.005	MCL
Vinyl Chloride	X	-	0.0005	0.0005	MCL

NR = Not Analyzed; UTL = Upper Tolerance Limit; \* Required by DTSC and RWQCB.

- (a) X denotes site-specific baseline risk calculated at greater than 1.0E-06 for cancer risk or 1.0 for noncancer risk; O denotes risk calculated at less than 1.0E-06 and greater than 1.0E-07 for cancer risk or less than 1.0 and greater than 0.2 for noncancer risk. Risk scenario is for on-site residential child who ingests groundwater.
- (b) Ref: Table 3.1.B, Remedial Investigation Report, B&R Environmental, July 1995.
- (c) California Maximum Contaminant Level (Primary Drinking Water Standards) except noted.
- (d) Proposed RAG is calculated based on referenced concentration reflecting site-specific target cancer risk level of 1.0E-06 or noncancer hazard index of 1.0 for on-site child (most conservative) who ingests groundwater.

TABLE 7.4

REMEDIAL ACTION GOALS  
FOR LANDFILL GAS  
UPPER OPERABLE UNIT  
CAL COMPACT LANDFILL

Contaminant	Baseline Vapor Risk <sup>(a)</sup>	Referenced Vapor Concentration <sup>(b)</sup> ug/m <sup>3</sup>	Proposed PRGs for Landfill Gas ug/m <sup>3</sup> (ppmv)
ORGANICS			
Benzene	X	60	60 (0.020)
1,4-Dichlorobenzene	X	190	190 (0.030)
1,2-Dichloroethane (EDC)	X	70	70 (0.020)
1,1-Dichloroethylene	O	40	40 (0.010)
Tetrachloroethylene (PCE)	X	360	360 (0.050)
Toluene	X	29,500	20,000 (5.0)
Trichloroethylene	X	690	500 (0.10)
Vinyl Chloride	X	20	25 (0.010) <sup>(c)</sup>
Xylenes	X	57,500	40,000 (10.0)
Methane	-(d)	5 percent	5 percent <sup>(e)</sup>

- (a) X denotes site-specific baseline risk calculated at greater than 1.0E-06 for cancer risk or 1.0 for noncancer risk; O denotes risk calculated at less than 1.0E-06 and greater than 1.0E-07 for cancer risk or less than 1.0 and greater than 0.2 for noncancer risk.
- (b) Referenced vapor concentrations are calculated based on site-specific target risk value of 1.0E-06 of cancer level or 1.0 of noncancer hazard index for on-site child (most conservative) who inhales air at the surface level.

$$\text{Vapor Conc., } C_{sg} (\mu\text{g}/\text{m}^3) = J_s \times L / D_e \times 10\text{E}+09 \quad \text{Ref: Farmer Vapor Model and Box Model (Baseline Risk Assessment, B\&RE, 1995)}$$

where,  $J_s$  = vapor emission rate (mg/cm<sup>2</sup>-sec) at surface  
 $D_e$  = effective gas diffusion coefficient (cm<sup>3</sup>/cm-sec)  
 $L$  = thickness/distance of soil buffer between soil gas and surface (assumed 3 feet)

- (c) CCR Title 17, Section 70200 California Ambient Air Quality Standards.  
 (d) Methane is not a COC; however, it is an ARAR limit.  
 (e) CCR Title 14, Section 17783 Gas Monitoring and Control.

TABLE 7.5

PROPOSED ACTION LEVELS FOR DUST AND PARTICULATE MONITORING

Airborne Substance	Proposed Action Level	Duration of Averaging Period	Criterion Reference
PM <sub>10</sub>	50 µg/m <sup>3</sup> (ambient air)	24-hour average	CCR 17 Ambient Air Standards
PM <sub>10</sub>	50 µg/m <sup>3</sup> (difference between down- and up-wind at perimeter)	5-hour average	SCAQMD Rule 403
PM <sub>10</sub>	100 µg/m <sup>3(a)</sup> (difference between down- and up-wind at perimeter)	Instantaneous real-time measurement	Proposed to meet SCAQMD Rule 403
Lead	1.5 µg/m <sup>3</sup>	30-day average	CCR 17 Ambient Air Standards
Hex-Chromium	4.1x10 <sup>-4</sup> µg/m <sup>3(b)</sup>	Daily average	Proposed based on site-specific risk assessment calculations for risk level of 1x10 <sup>-6</sup>

- (a) Proposed action level will be adjusted based on results of the actual field data to meet SCAQMD Rule 403 requirements.
- (b) Proposed action level for Chromium (VI) is calculated based on daily particulate concentration reflecting target cancer risk level of 1x10<sup>-6</sup> for off-site child (most conservative) who constantly inhales particulate under a 2-yr construction period.

$$\text{Cancer Risk Level} = 1 \times 10^{-6} = \text{Conc. particulate (Cr)} \times (\text{RF} \times \text{IR}_{\text{air}} \times \text{EF} \times \text{ED} \times \text{B}) / (\text{BW} \times \text{AT}) \times \text{CSF}$$

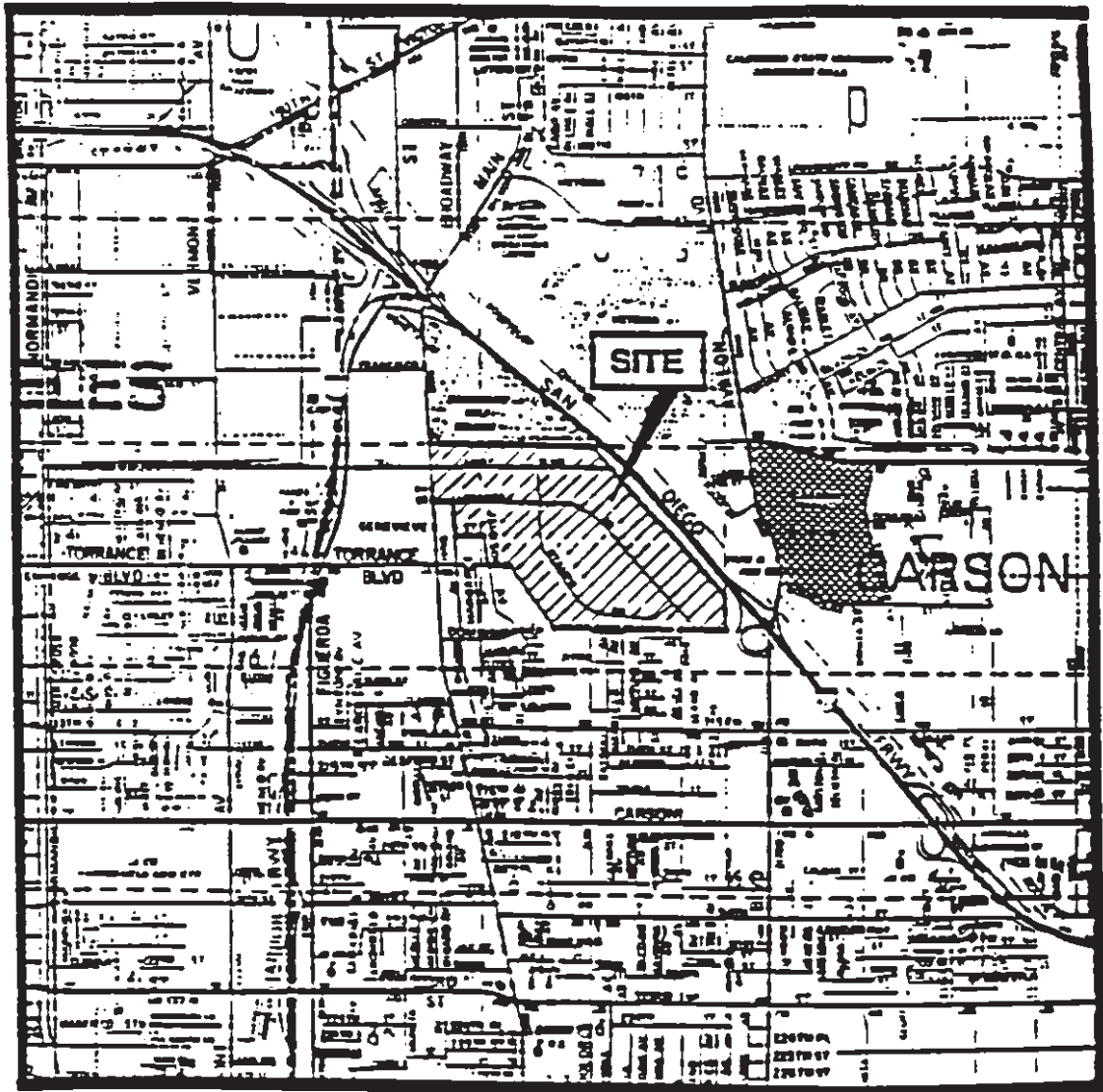
$$\text{Conc. particulate, Cr (vi)} = 1\text{E-}06 / (\text{RF} \times \text{IR}_{\text{air}} \times \text{EF} \times \text{ED} \times \text{B}) \times (\text{BW} \times \text{AT}) / \text{CSF}$$

$$= 1\text{E-}06 / (0.125 \times 20 \text{ m}^3/\text{day} \times 1 \times 2 \text{ yr} \times 1) \times (15 \text{ kg} \times 70 \text{ yrs})$$

$$/ 5.1\text{E+}02 \text{ (mg/kg/day)}^{-1}$$

$$= 4.1\text{E}10^{-7} \text{ (mg/m}^3\text{)}$$

(Ref: Table 3-8, Baseline Risk Assessment, B&R Environmental, 1995)



SOURCE: McLAREN/HART (1992) FROM 1990 THOMAS BROTHERS GUIDE  
LOS ANGELES COUNTY PAGES 68, 69

LEGEND

 CAL COMPACT LOCATION

FIGURE 1.1

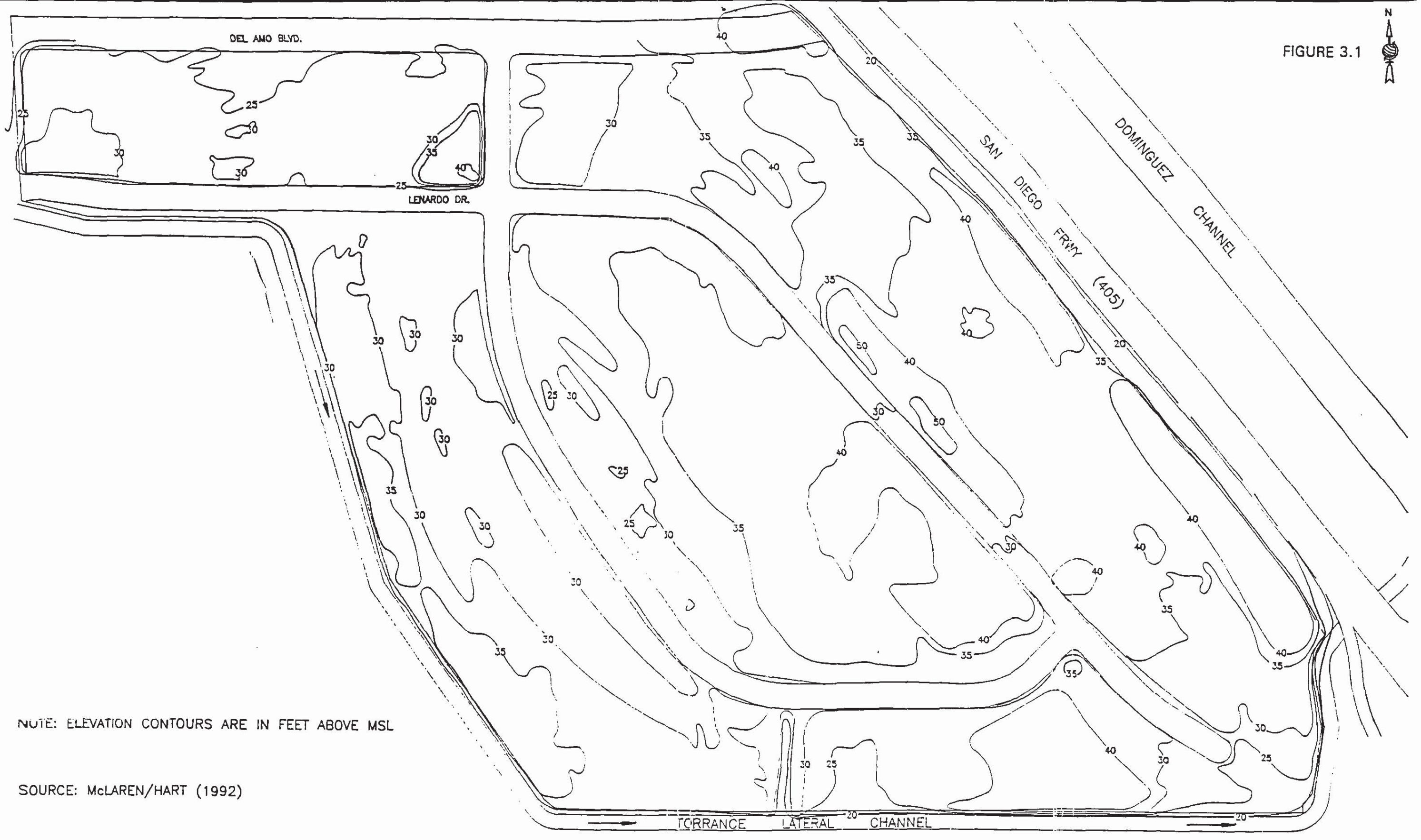
SITE LOCATION MAP OF THE  
CAL COMPACT LANDFILL  
20300 MAIN STREET  
CARSON, CALIFORNIA



**Brown & Root Environmental**  
A Halliburton Company



FIGURE 3.1



NOTE: ELEVATION CONTOURS ARE IN FEET ABOVE MSL

SOURCE: McLAREN/HART (1992)

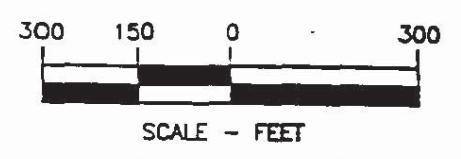
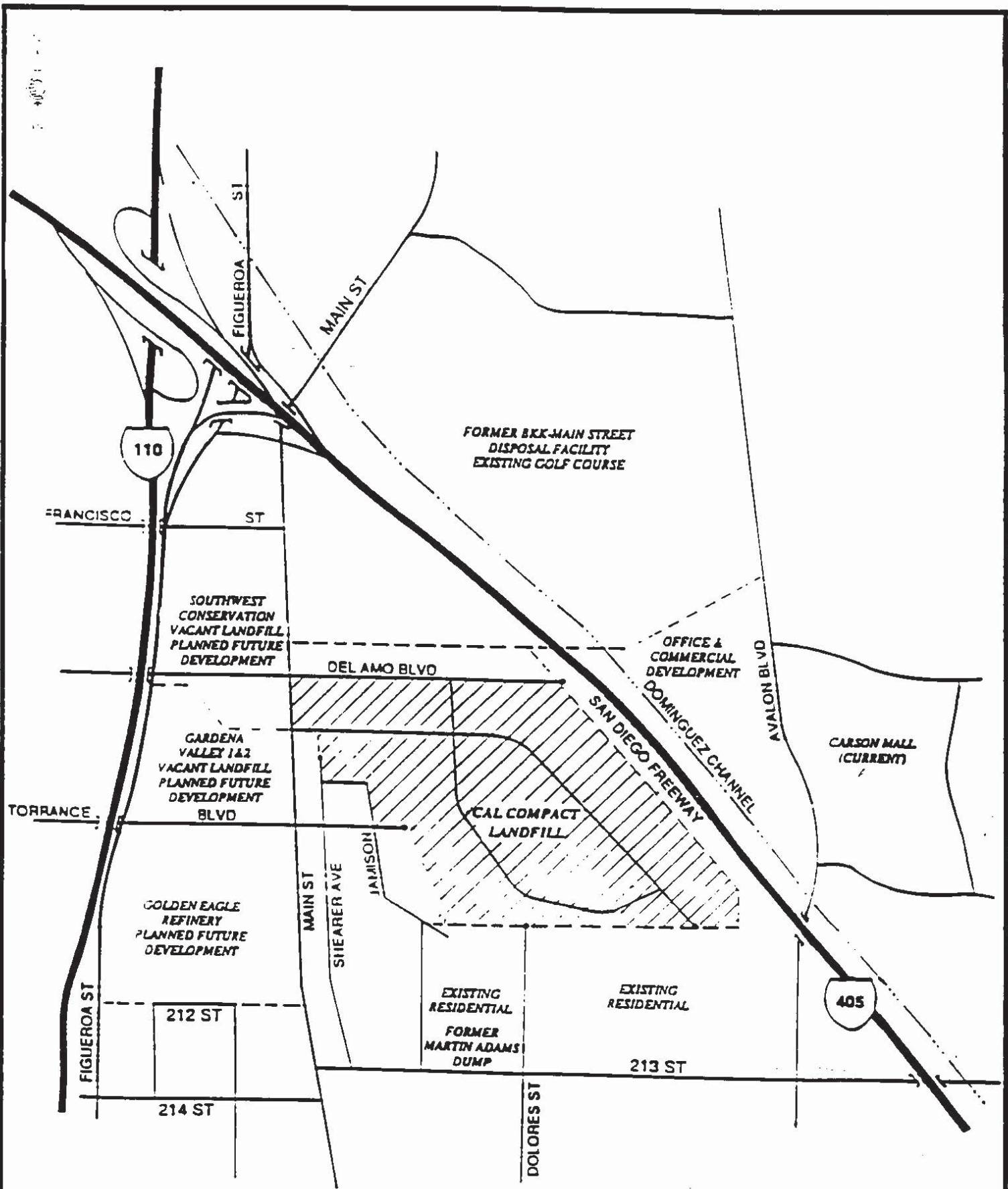


FIGURE 3.1  
TOPOGRAPHIC MAP OF  
THE CAL COMPACT LANDFILL



**Brown & Root Environmental**  
A Halliburton Company



SOURCE: McLAREN/HART (1992)



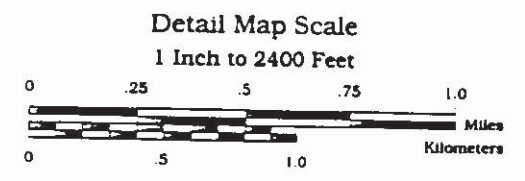
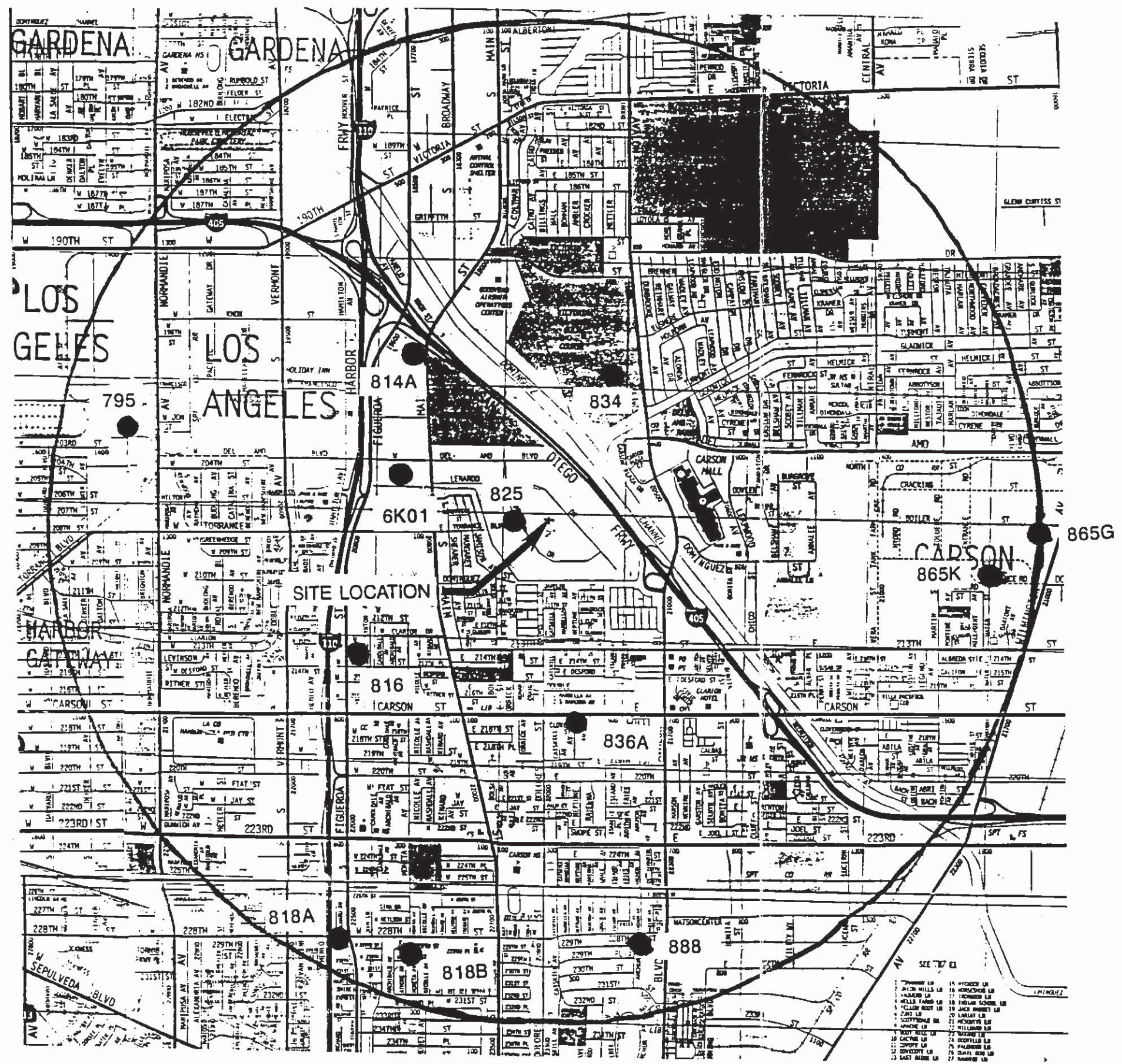
FIGURE 3.2  
 LAND USE IN THE VICINITY  
 OF THE CAL COMPACT LANDFILL

DATE: 10/15/92



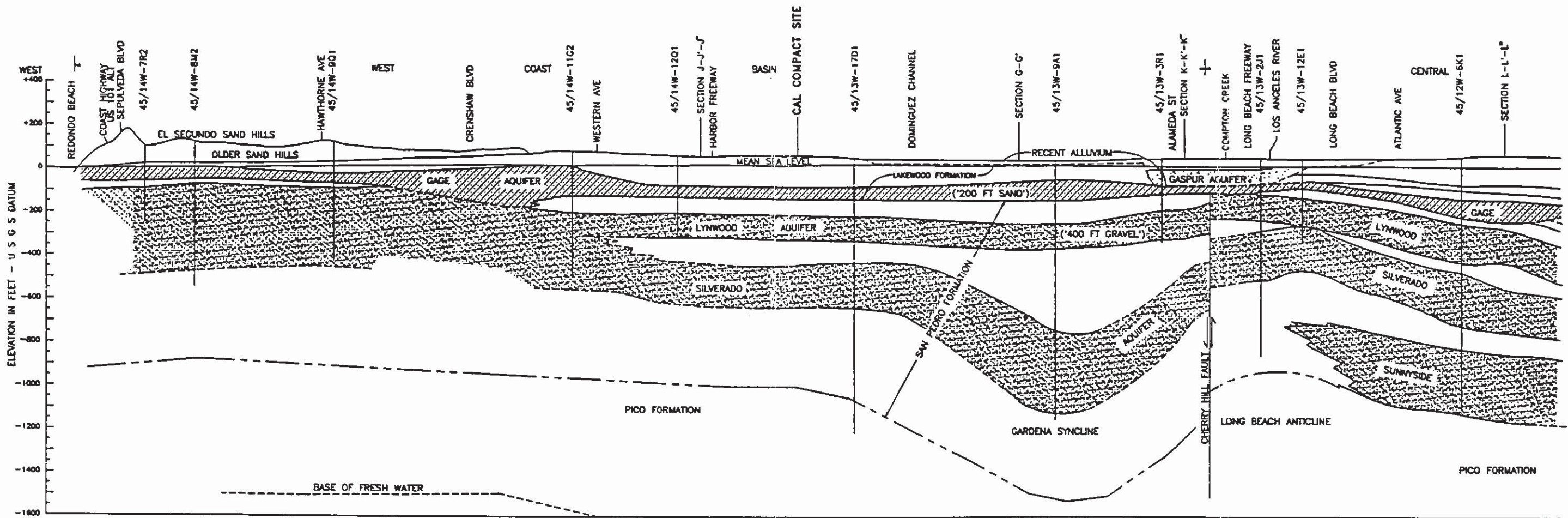


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**FIGURE 3.3**  
**GROUNDWATER WELLS WITHIN**  
**A TWO MILE RADIUS OF**  
**CAL COMPACT LANDFILL**  
**CARSON, CALIFORNIA**

FIGURE 3.4



SOURCE: McLAREN/HART (1992) ADOPTED FROM: DEPARTMENT OF WATER RESOURCES BULLET 104-APPENDIX A. 1961 IN IDEALIZED GEOLOGIC SECTION E-E'-E"

**LEGEND**

- AQUICLUDES AND DEEPER UNDIFFERENTIATED FORMATIONS
- AQUIFERS IN RECENT ALLUVIUM (INCLUDES THE GASPUR AND BALLONA AQUIFERS)
- AQUIFERS IN LAKEWOOD FORMATION (INCLUDES THE ARTESIA, EXPOSITION, GAGE, AND GARDENA AQUIFERS)
- AQUIFERS IN SAN PEDRO FORMATION (INCLUDES THE HOLLYDALE, JEFFERSON, LYNWOOD, SILVERADO, AND SUNNYSIDE AQUIFERS)
- WATER WELLS
- OIL WELLS
- FAULTS

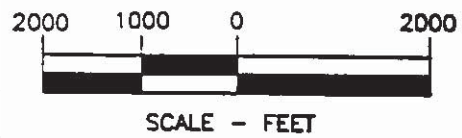


FIGURE 3.4

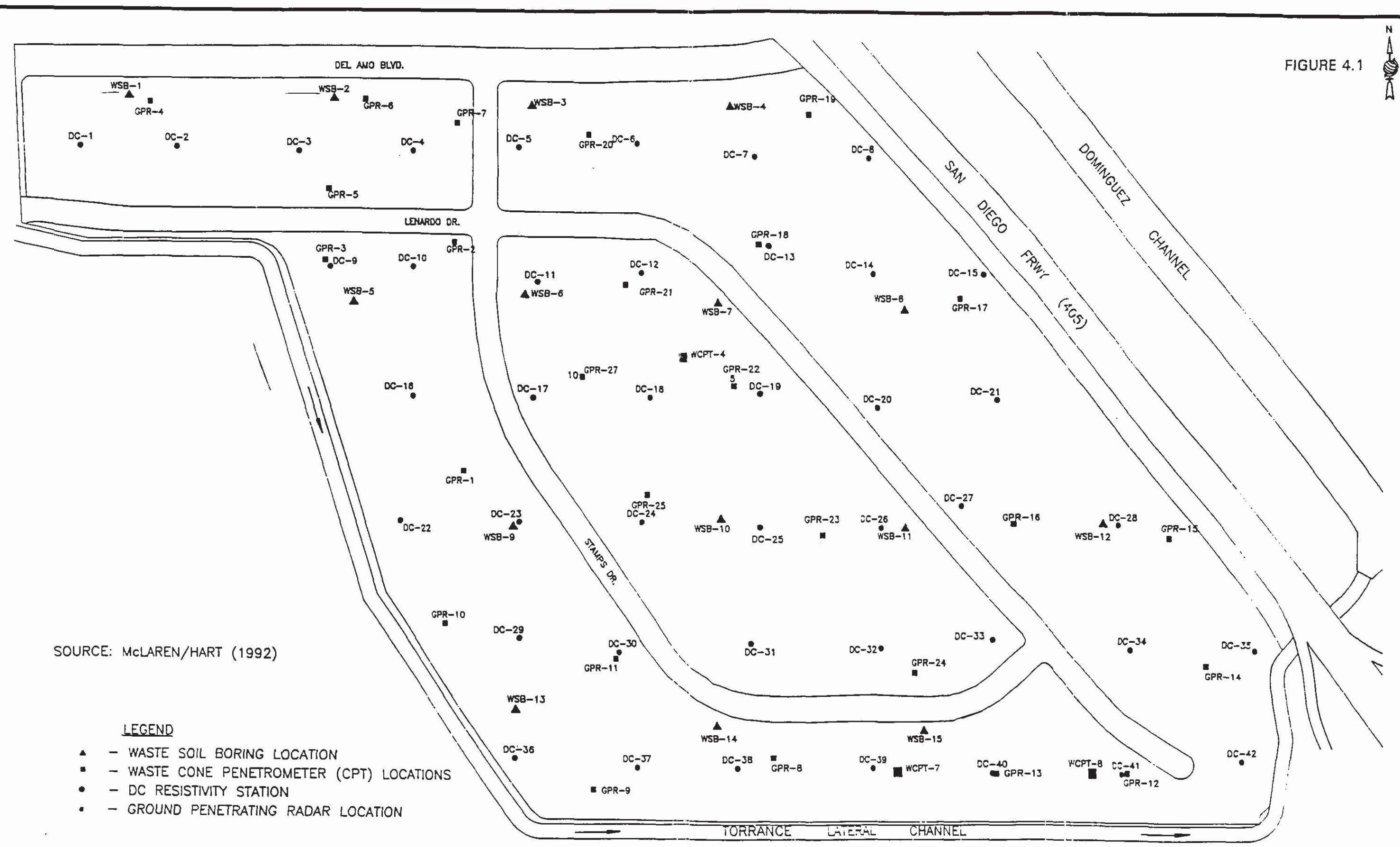
IDEALIZED GEOLOGIC CROSS SECTION THROUGH THE WEST COAST BASIN REGION IN THE VICINITY OF THE CAL COMPACT LANDFILL



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DC/S-EIABV/G/08/09/99

FIGURE 4.1



SOURCE: McLAREN/HART (1992)

**LEGEND**

- ▲ - WASTE SOIL BORING LOCATION
- - WASTE CONE PENETROMETER (CPT) LOCATIONS
- - DC RESISTIVITY STATION
- - GROUND PENETRATING RADAR LOCATION

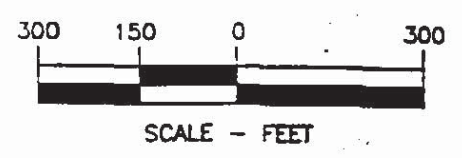


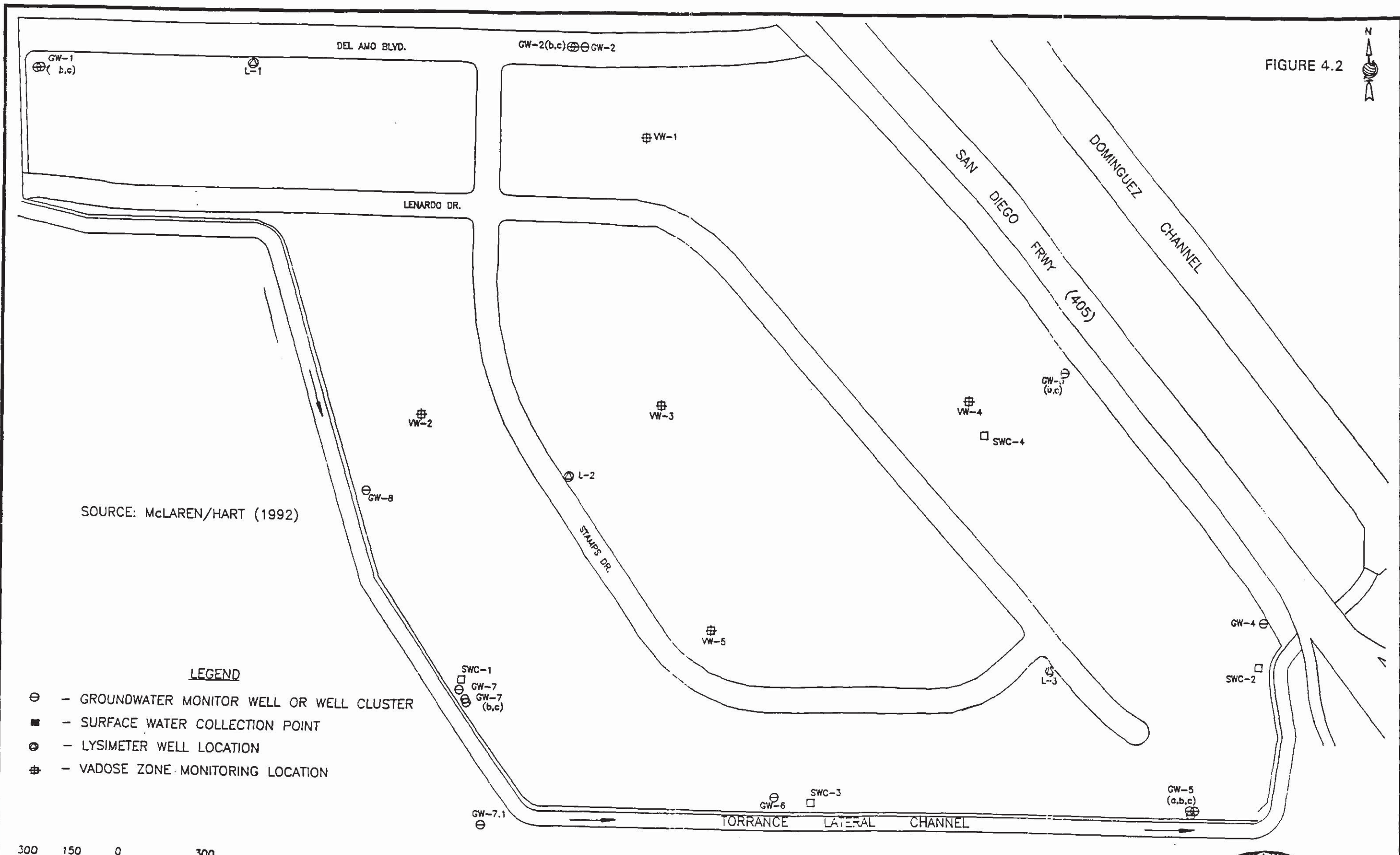
FIGURE 4.1  
WASTE SOIL BORING, WASTE CONE PENETROMETER, AND  
GEOPHYSICAL SURVEY LOCATIONS AT THE CAL COMPACT LANDFILL



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LX/7-103/DC/08/09/98

FIGURE 4.2

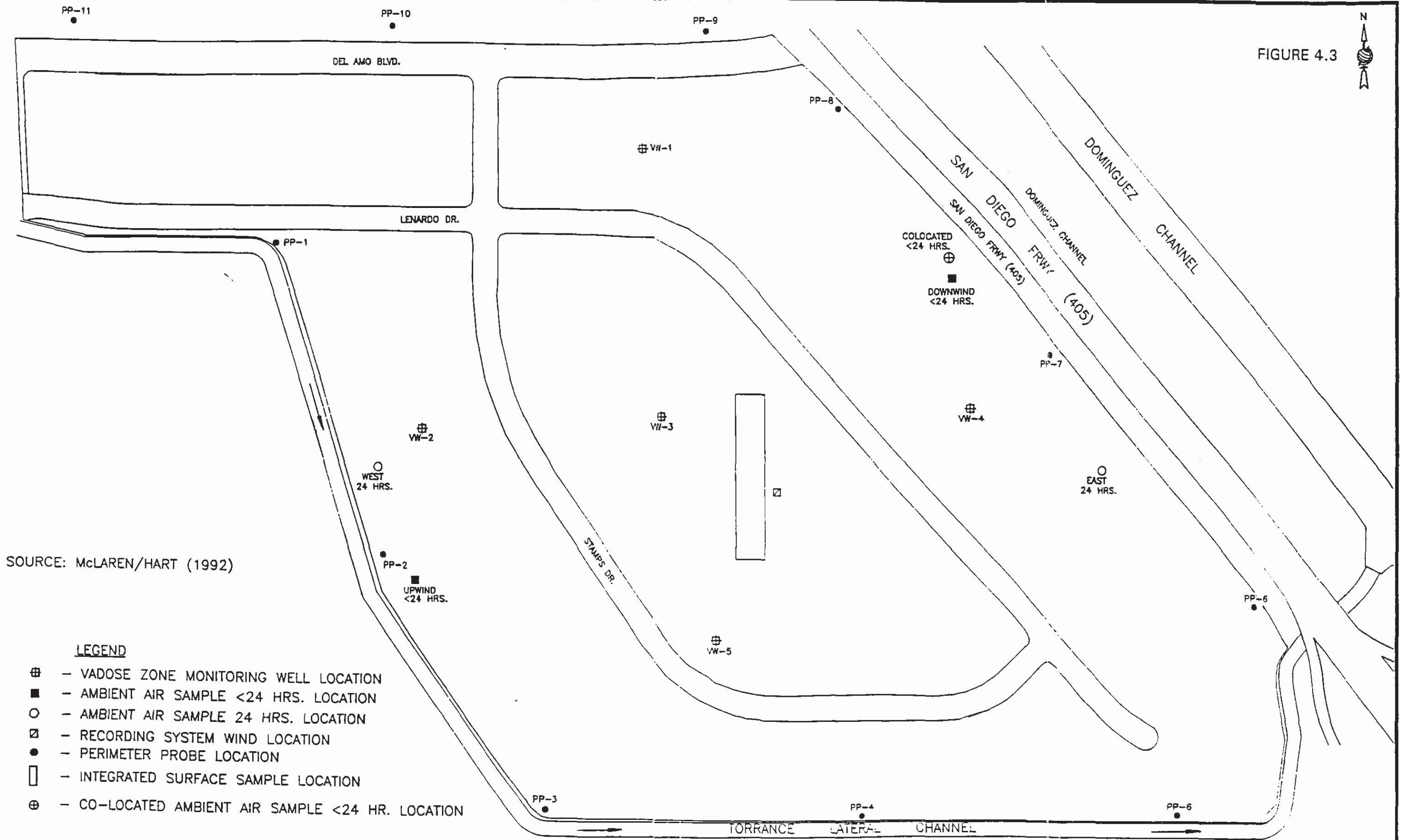


SOURCE: McLAREN/HART (1992)

FIGURE 4.2  
SURFACE WATER COLLECTION POINT, VADOSE ZONE WELL,  
LYSIMETER, AND MONITOR WELL LOCATIONS AT THE CAL COMPACT LANDFILL

55/70/00/DAL/011-5/08

FIGURE 4.3



SOURCE: McLAREN/HART (1992)

**LEGEND**

- ⊕ - VADOSE ZONE MONITORING WELL LOCATION
- - AMBIENT AIR SAMPLE <24 HRS. LOCATION
- - AMBIENT AIR SAMPLE 24 HRS. LOCATION
- ⊠ - RECORDING SYSTEM WIND LOCATION
- - PERIMETER PROBE LOCATION
- ▭ - INTEGRATED SURFACE SAMPLE LOCATION
- ⊕ - CO-LOCATED AMBIENT AIR SAMPLE <24 HR. LOCATION

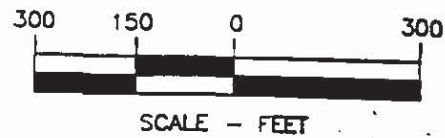


FIGURE 4.3  
AIR QUALITY AND PERIMETER LANDFILL GAS SAMPLING LOCATIONS  
AT THE CAL COMPACT LANDFILL



**Brown & Root Environmental**  
A Halliburton Company

54-60-00-00-00-00-00

FIGURE 4.4



SOURCE: McLAREN/HART (1992)

**LEGEND**

- ⊖ - GROUNDWATER MONITOR WELL OR WELL CLUSTER
- - CONE PENETROMETER (CPT) LOCATIONS
- - WASTE CPT LOCATIONS
- (BAT) - BAT ENVIROPROBE SAMPLES COLLECTED AT CPT LOCATIONS

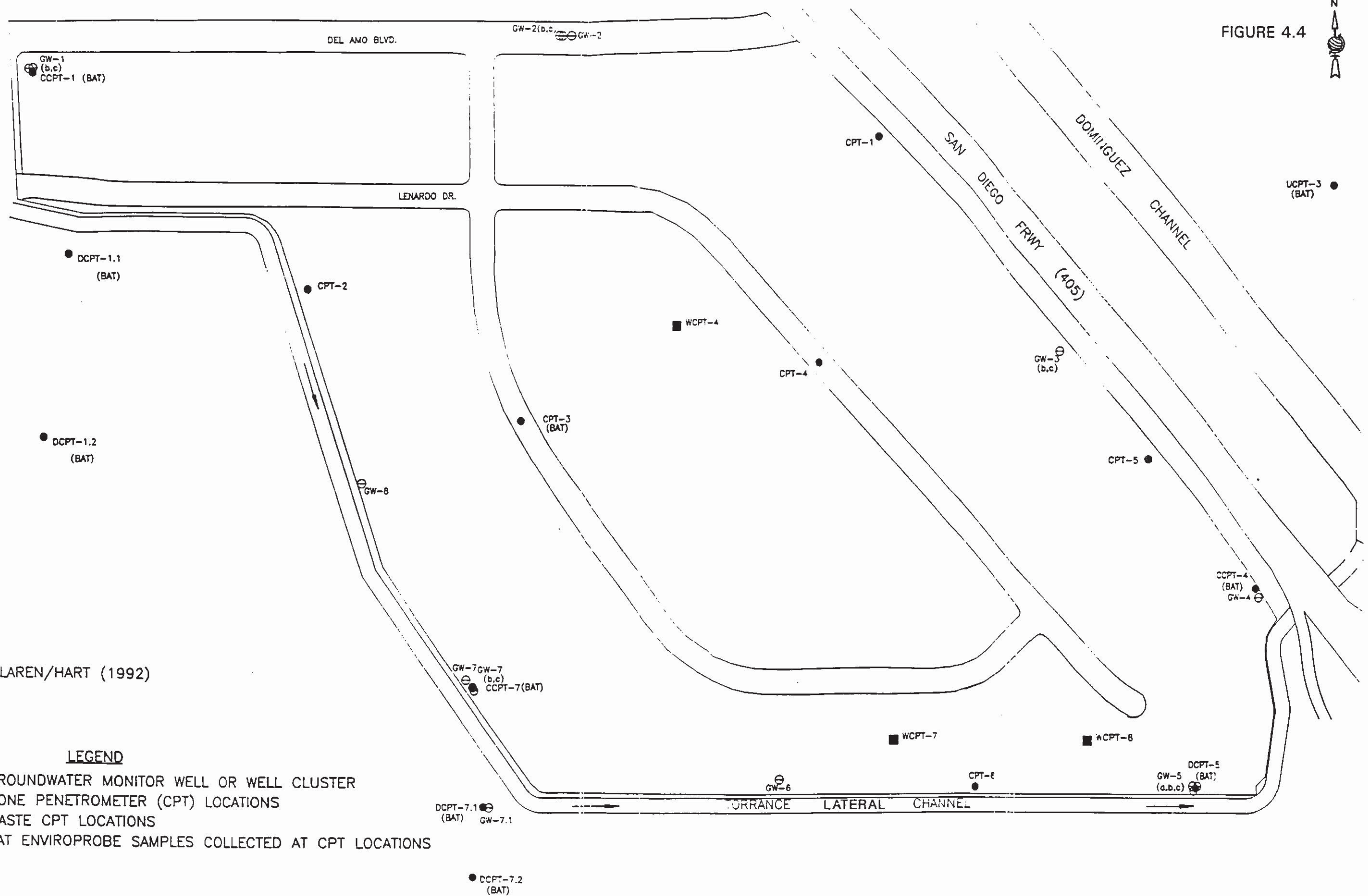
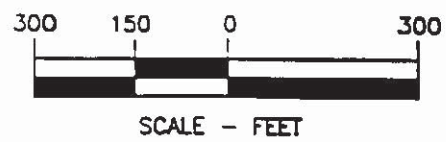


FIGURE 4.4

GROUNDWATER MONITOR WELL, CONE PENETROMETER, AND BAT ENVIROPROBE SAMPLING LOCATIONS AT THE CAL COMPACT LANDFILL

DCPT-5.1 (BAT)



**Brown & Root Environmental**

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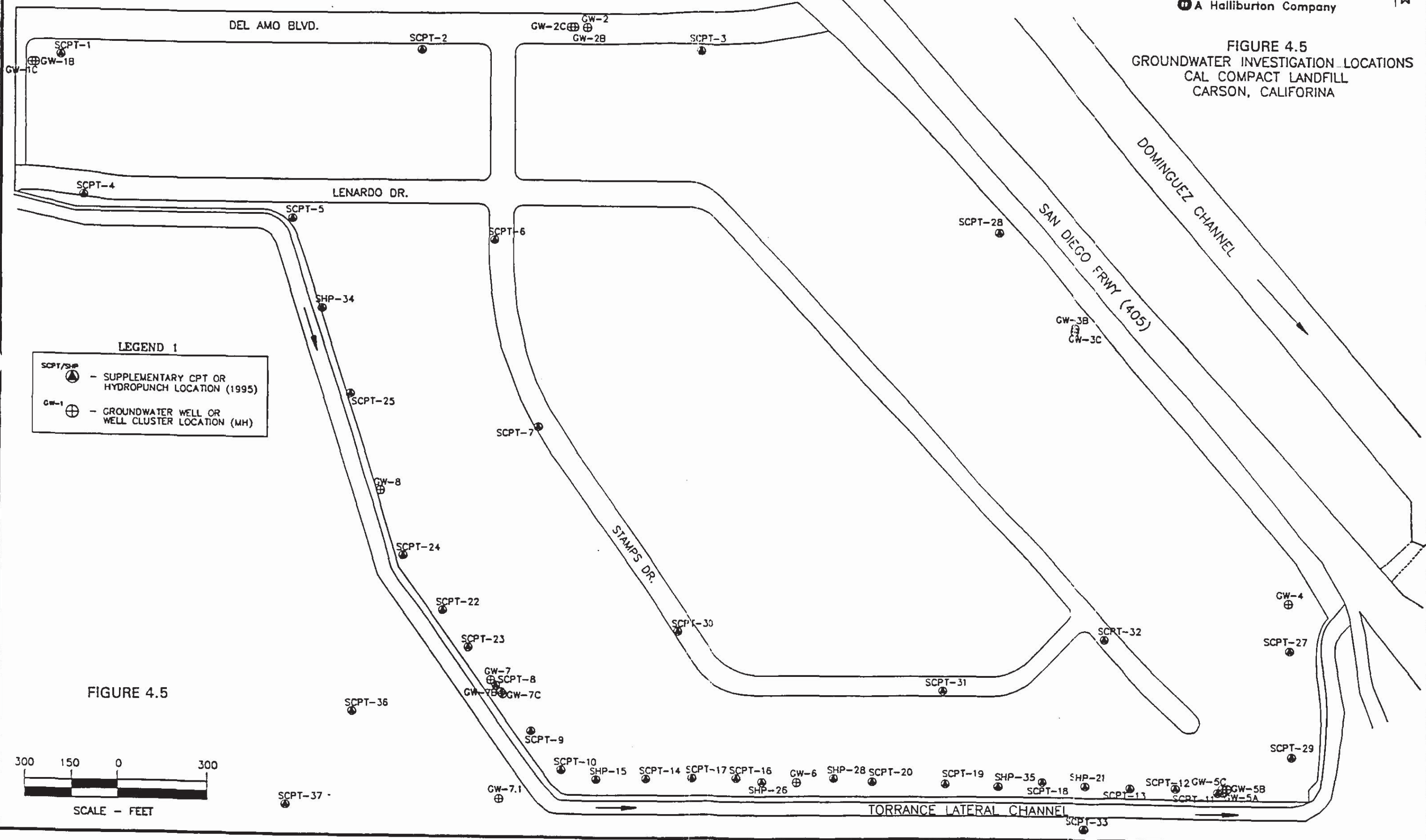
LX/S/03/02/05/95



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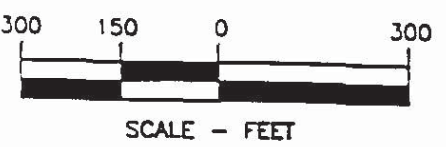
**FIGURE 4.5**  
 GROUNDWATER INVESTIGATION LOCATIONS  
 CAL COMPACT LANDFILL  
 CARSON, CALIFORNIA



**LEGEND 1**

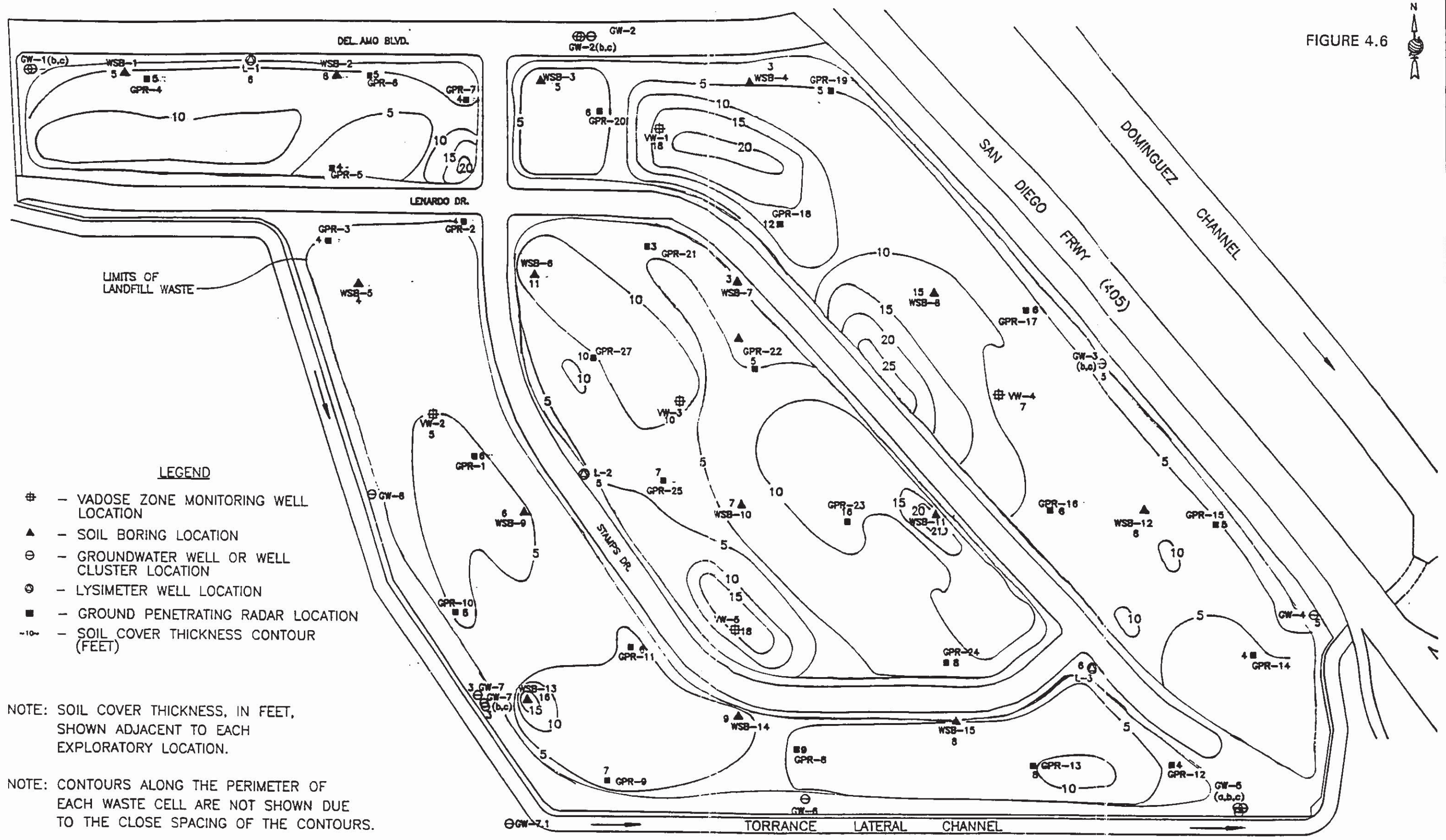
- - SUPPLEMENTARY CPT OR HYDROPUNCH LOCATION (1995)
- ⊕ - GROUNDWATER WELL OR WELL CLUSTER LOCATION (MH)

**FIGURE 4.5**



11/15/98 DWG/001/001/001

FIGURE 4.6

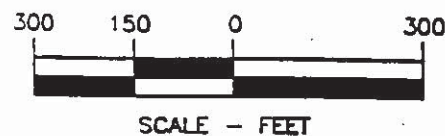


**LEGEND**

- ⊕ - VADOSE ZONE MONITORING WELL LOCATION
- ▲ - SOIL BORING LOCATION
- ⊖ - GROUNDWATER WELL OR WELL CLUSTER LOCATION
- ⊙ - LYSIMETER WELL LOCATION
- - GROUND PENETRATING RADAR LOCATION
- 10- - SOIL COVER THICKNESS CONTOUR (FEET)

NOTE: SOIL COVER THICKNESS, IN FEET, SHOWN ADJACENT TO EACH EXPLORATORY LOCATION.

NOTE: CONTOURS ALONG THE PERIMETER OF EACH WASTE CELL ARE NOT SHOWN DUE TO THE CLOSE SPACING OF THE CONTOURS.



SOURCE: McLAREN/HART (1992)

FIGURE 4.6  
SOIL COVER THICKNESS (ISOPACH)  
MAP OF THE CAL COMPACT LANDFILL

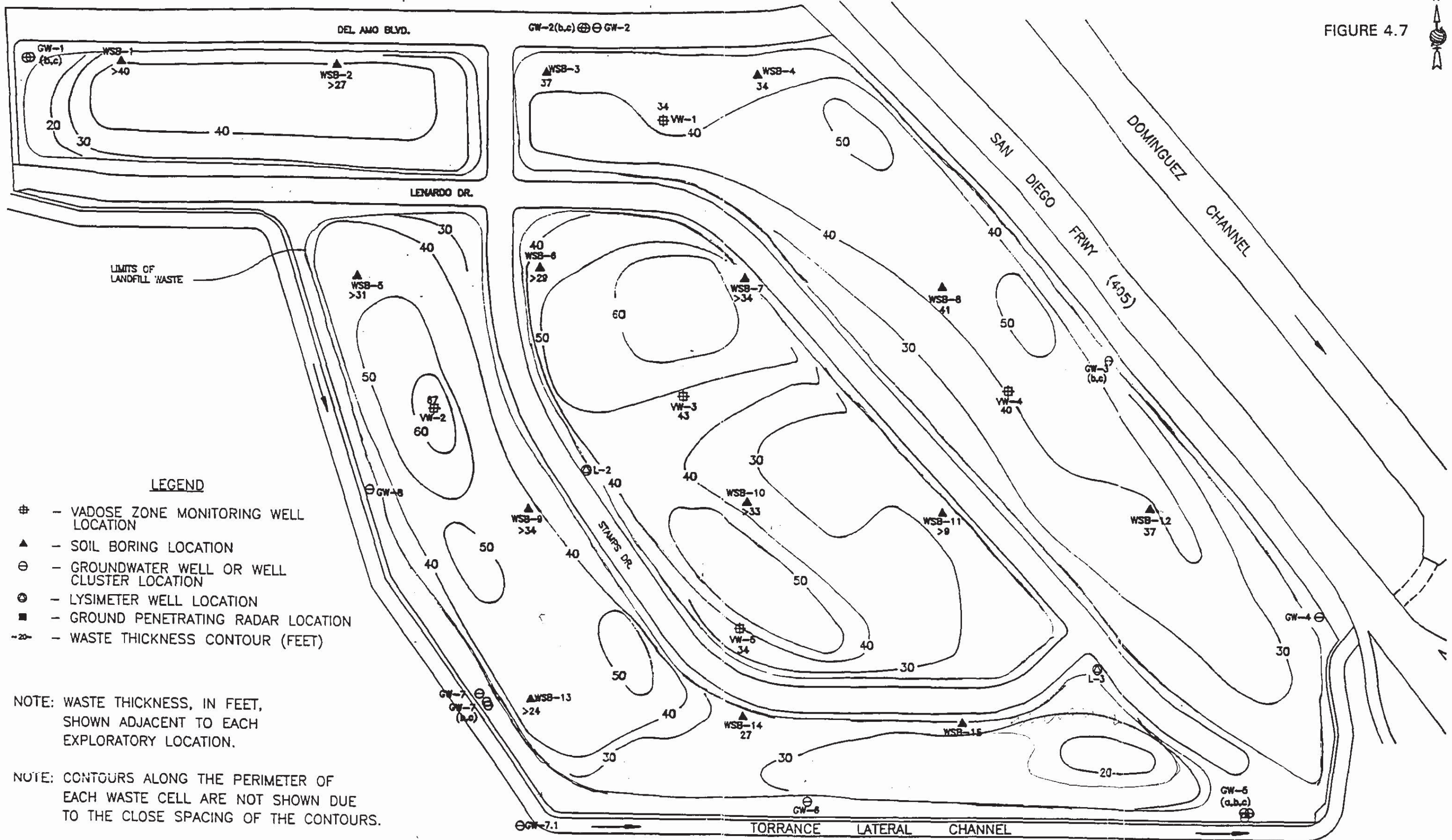


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BR/S-3A.DWG/08/07/92



FIGURE 4.7

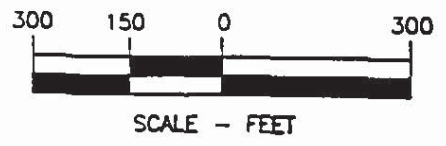


**LEGEND**

- ⊕ - VADOSE ZONE MONITORING WELL LOCATION
- ▲ - SOIL BORING LOCATION
- ⊖ - GROUNDWATER WELL OR WELL CLUSTER LOCATION
- ⊙ - LYSIMETER WELL LOCATION
- - GROUND PENETRATING RADAR LOCATION
- 20- - WASTE THICKNESS CONTOUR (FEET)

NOTE: WASTE THICKNESS, IN FEET, SHOWN ADJACENT TO EACH EXPLORATORY LOCATION.

NOTE: CONTOURS ALONG THE PERIMETER OF EACH WASTE CELL ARE NOT SHOWN DUE TO THE CLOSE SPACING OF THE CONTOURS.



SOURCE: McLAREN/HART (1992)

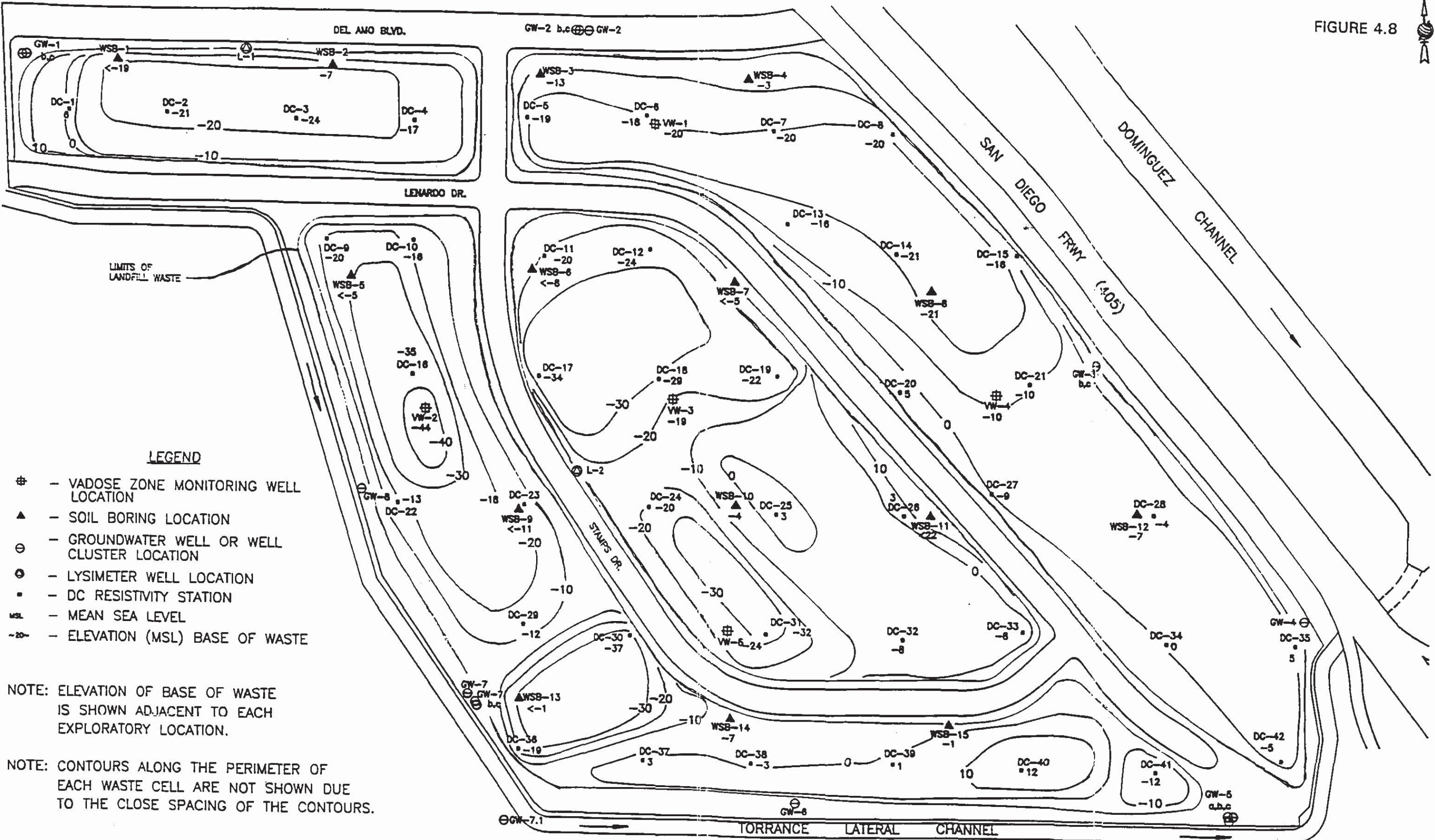
FIGURE 4.7  
WASTE THICKNESS (ISOPACH)  
MAP OF THE CAL COMPACT LANDFILL



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BR/5-13AD/VG/08/09/95

FIGURE 4.8

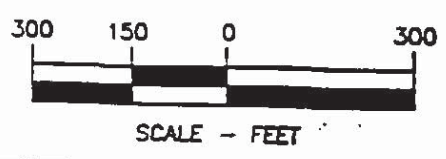


**LEGEND**

- # - VADOSE ZONE MONITORING WELL LOCATION
- ▲ - SOIL BORING LOCATION
- ⊖ - GROUNDWATER WELL OR WELL CLUSTER LOCATION
- ⊙ - LYSIMETER WELL LOCATION
- - DC RESISTIVITY STATION
- MSL - MEAN SEA LEVEL
- 20 - ELEVATION (MSL) BASE OF WASTE

NOTE: ELEVATION OF BASE OF WASTE IS SHOWN ADJACENT TO EACH EXPLORATORY LOCATION.

NOTE: CONTOURS ALONG THE PERIMETER OF EACH WASTE CELL ARE NOT SHOWN DUE TO THE CLOSE SPACING OF THE CONTOURS.



SOURCE: McLAREN/HART (1992)

**FIGURE 4.8**  
SUBSURFACE STRUCTURE MAP OF THE BASE OF THE WASTE/NATIVE MATERIAL CONTACT AT THE CAL COMPACT LANDFILL



**Brown & Root Environmental**  
A Halliburton Company

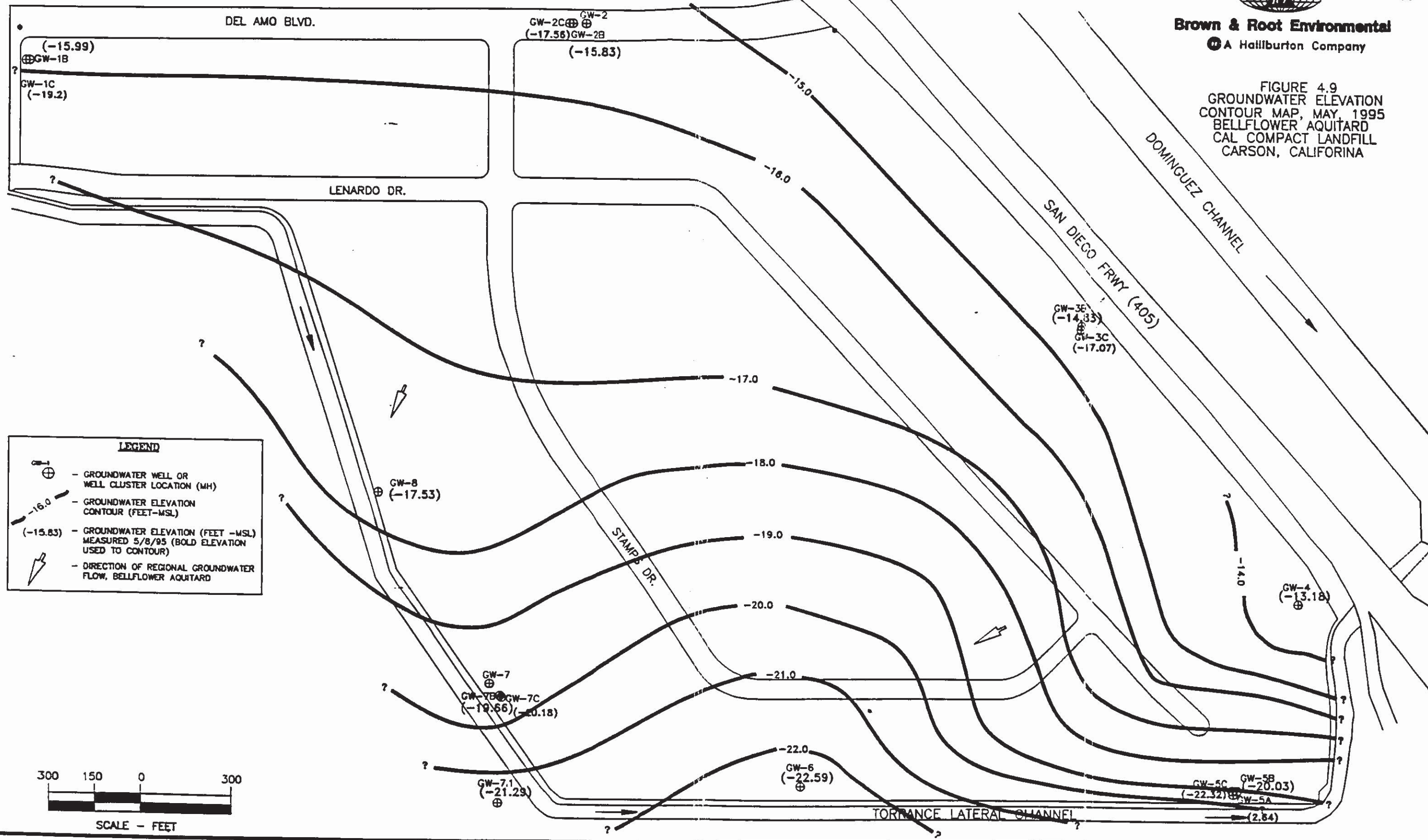
B07-12A/DWG/08/09/95



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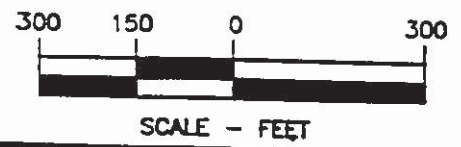


FIGURE 4.9  
 GROUNDWATER ELEVATION  
 CONTOUR MAP, MAY, 1995  
 BELFLOWER AQUITARD  
 CAL COMPACT LANDFILL  
 CARSON, CALIFORNIA



**LEGEND**

- GROUNDWATER WELL OR WELL CLUSTER LOCATION (MH)
- GROUNDWATER ELEVATION CONTOUR (FEET-MSL)
- (-15.83)** - GROUNDWATER ELEVATION (FEET -MSL) MEASURED 5/8/95 (BOLD ELEVATION USED TO CONTOUR)
- DIRECTION OF REGIONAL GROUNDWATER FLOW, BELFLOWER AQUITARD



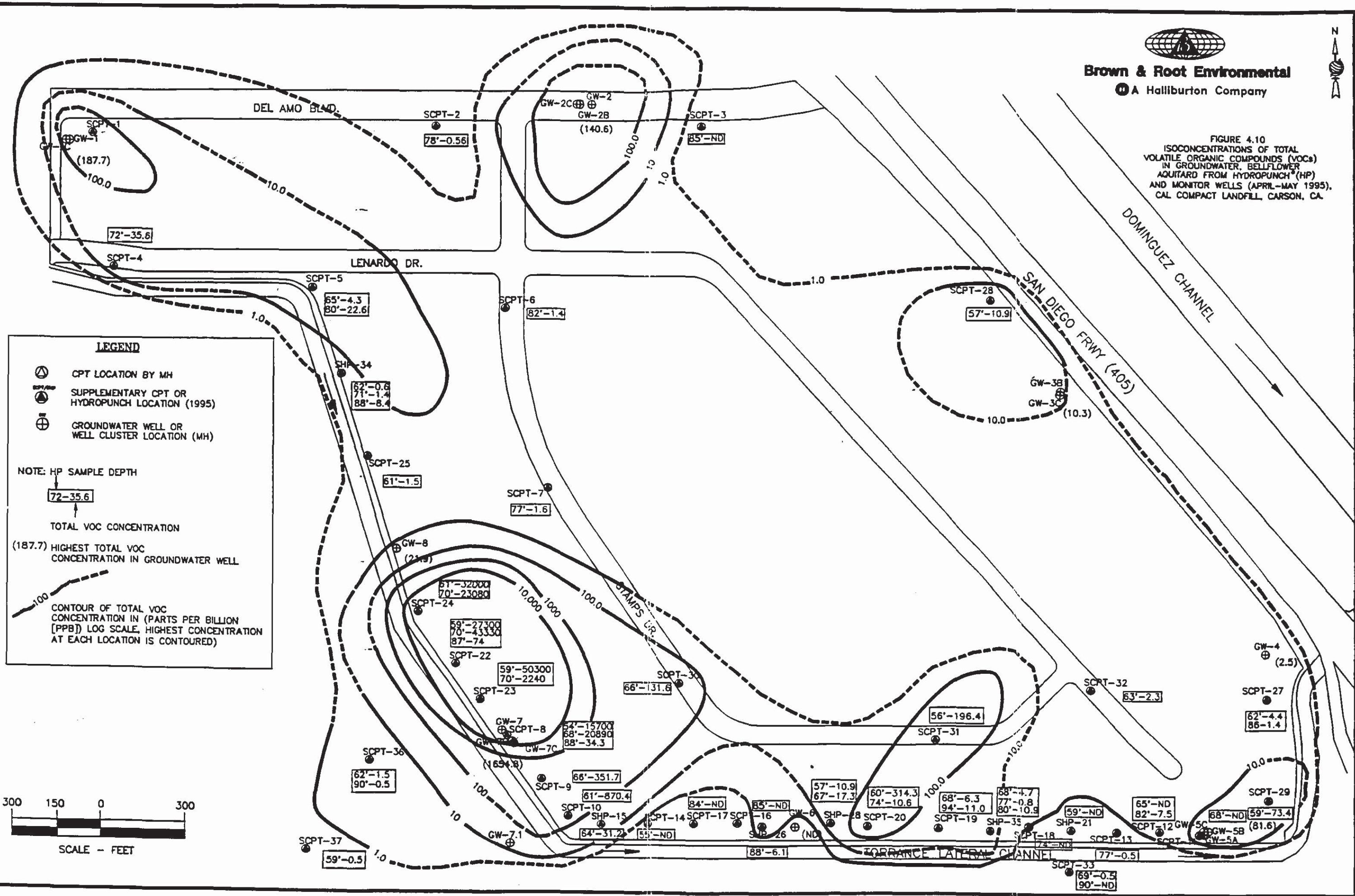
02/28/96/02/03-23



**Brown & Root Environmental**  
 A Halliburton Company



FIGURE 4.10  
 ISOCONCENTRATIONS OF TOTAL  
 VOLATILE ORGANIC COMPOUNDS (VOCs)  
 IN GROUNDWATER, BELFLOWER  
 AQUITARD FROM HYDROPUNCH® (HP)  
 AND MONITOR WELLS (APRIL-MAY 1995),  
 CAL COMPACT LANDFILL, CARSON, CA.



**LEGEND**

- CPT LOCATION BY MH
- SUPPLEMENTARY CPT OR HYDROPUNCH LOCATION (1995)
- GROUNDWATER WELL OR WELL CLUSTER LOCATION (MH)

NOTE: HP SAMPLE DEPTH

72'-35.6

TOTAL VOC CONCENTRATION

(187.7) HIGHEST TOTAL VOC CONCENTRATION IN GROUNDWATER WELL

CONTOUR OF TOTAL VOC CONCENTRATION IN (PARTS PER BILLION [PPB]) LOG SCALE. HIGHEST CONCENTRATION AT EACH LOCATION IS CONTOURED



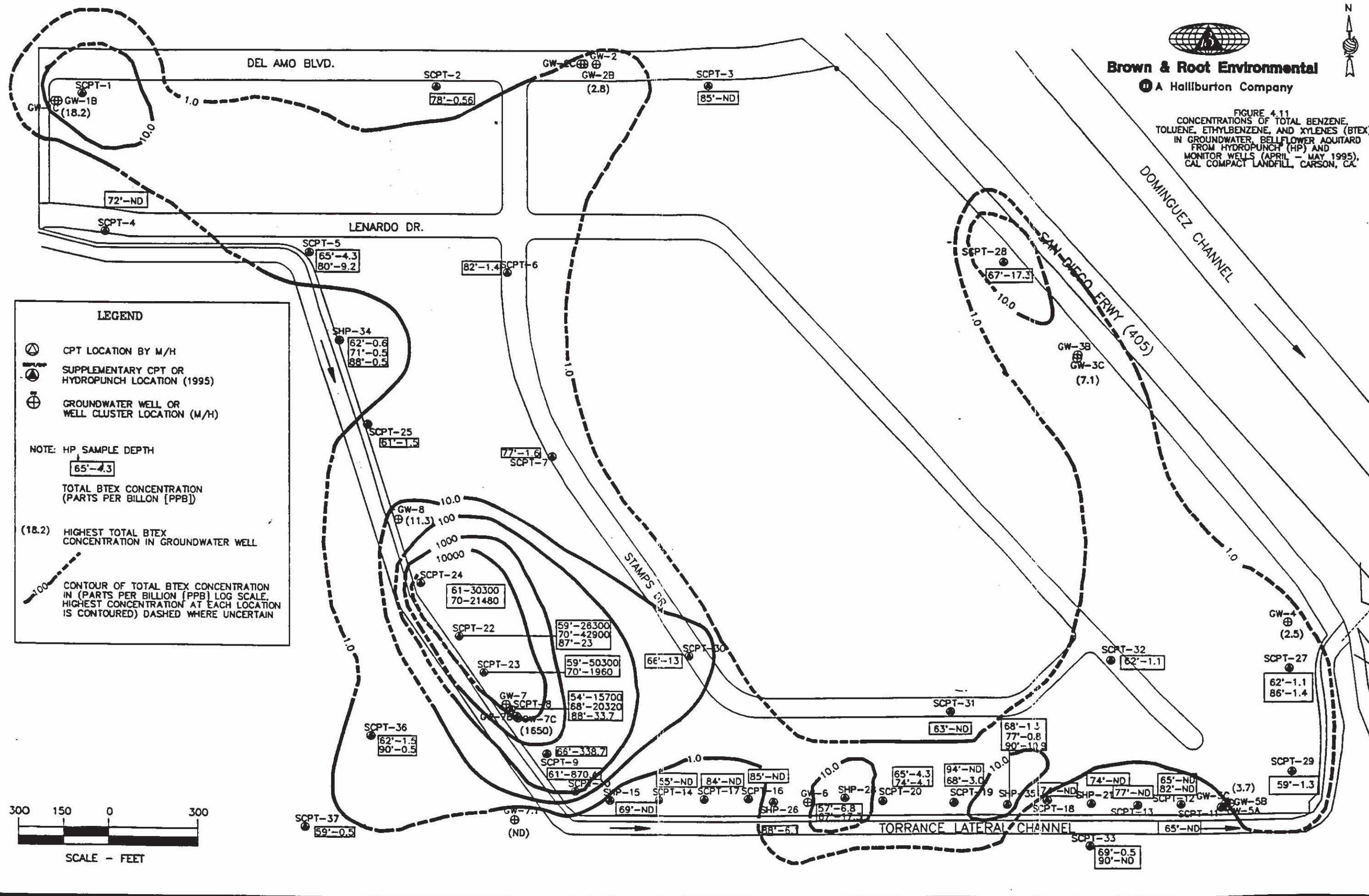
SCALE - FEET

82/3-4212.DWG/06/95/75



**Brown & Root Environmental**  
 A Halliburton Company

FIGURE 4.11  
 CONCENTRATIONS OF TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES (BTEX) IN GROUNDWATER, BELFLOWER AQUITARD FROM HYDROPUNCH (HP) AND MONITOR WELLS (APRIL - MAY 1995), CAL COMPACT LANDFILL, CARSON, CA



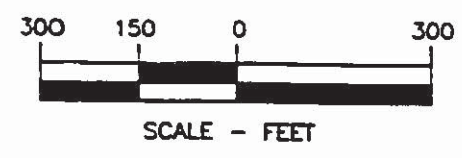
**LEGEND**

- CPT LOCATION BY M/H
- SUPPLEMENTARY CPT OR HYDROPUNCH LOCATION (1995)
- GROUNDWATER WELL OR WELL CLUSTER LOCATION (M/H)

NOTE: HP SAMPLE DEPTH  
 65'-4.3

TOTAL BTEX CONCENTRATION (PARTS PER BILLION [PPB])  
 (18.2) HIGHEST TOTAL BTEX CONCENTRATION IN GROUNDWATER WELL

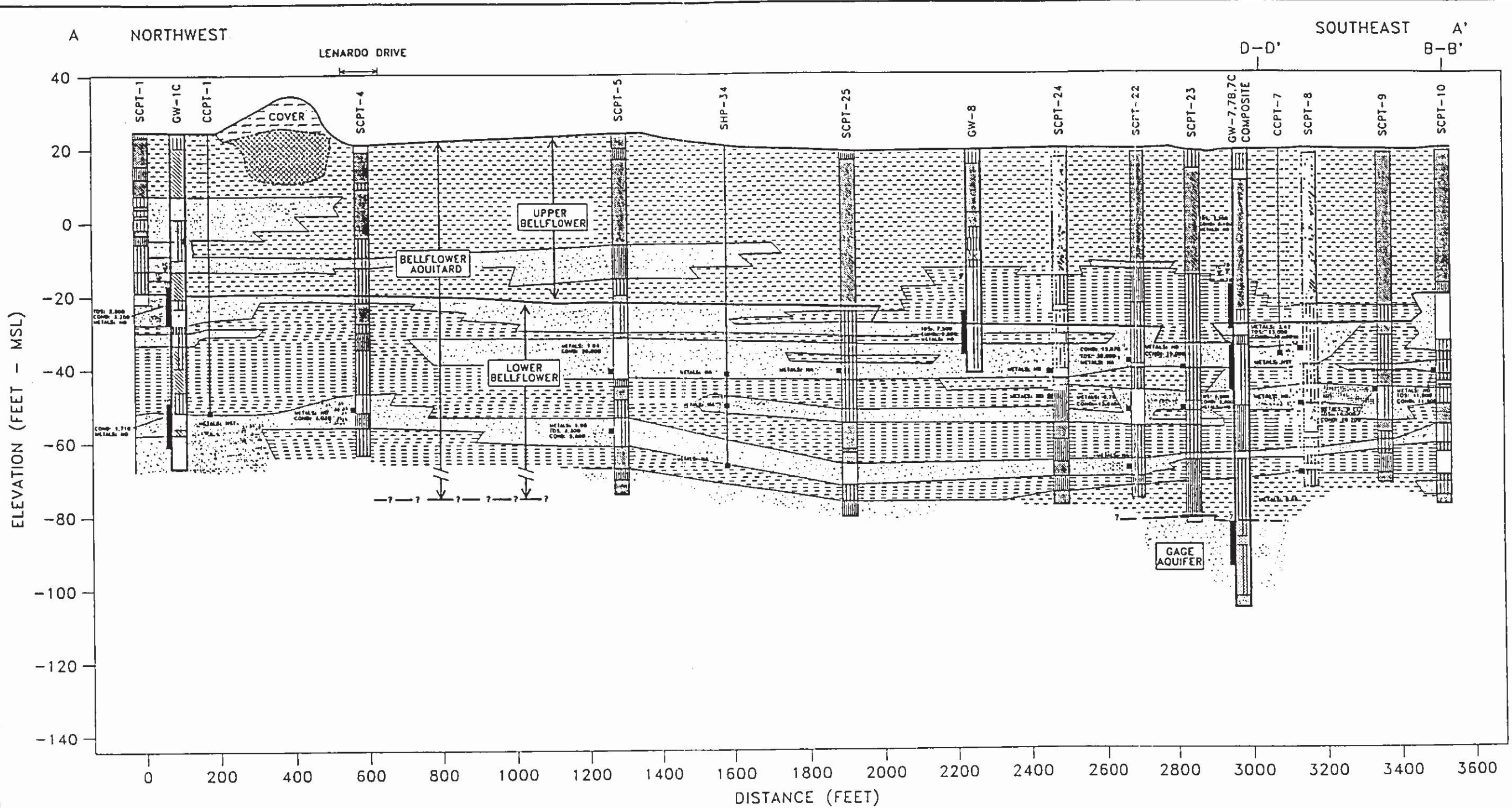
100 CONTOUR OF TOTAL BTEX CONCENTRATION IN (PARTS PER BILLION [PPB]) LOG SCALE. HIGHEST CONCENTRATION AT EACH LOCATION IS CONTOURED) DASHED WHERE UNCERTAIN



LK/S-ERADVC/08/05/95







NOTES:  
 - SCPT LITHOLOGIC LOGS CONSTRUCTED USING USC'S CLASSIFICATION  
 - MONITOR WELL LITHOLOGIC LOGS BASED ON FIELD INTERPRETATION OF SOIL  
 - STRATIGRAPHIC CORRELATIONS BASED ON GEOPHYSICAL PARAMETERS OF CPT LOGS  
 - STRATIGRAPHIC CORRELATIONS PREPARED BY: CAROLINIAN ENVIRONMENTAL, INC.  
 FOR: BROWN & BOOD (ENVIRONMENTAL)  
 \*\* SOME LOGS SHOWN FOR GW-7 IS A COMPOSITE LOG WHICH COMBINES DESCRIPTIONS FOR GW-7 AND GW-7C. THE DESCRIPTION FOR GW-7C IS CONSIDERED SUPERIOR FROM 0 TO 125 FEET DEPTH. FROM 125 TO 300 FEET DEPTH THE DESCRIPTION FOR GW-7 IS USED FROM 125 TO 300 FEET DEPTH. STRATIGRAPHIC CORRELATIONS THROUGH THE GW-7/7C WELL ARE, IN PART, BASED ON THE CPT LOG FROM SCPT-7.

CPT LOG EXPLANATION		MONITOR WELL EXPLANATION	
0-100	CLAY	0-100	CLAY
100-200	CLAY SAND	100-200	CLAY SAND
200-300	SAND	200-300	SAND
300-400	SAND GRAVEL	300-400	SAND GRAVEL
400-500	GRAVEL SAND	400-500	GRAVEL SAND
500-600	GRAVEL	500-600	GRAVEL
600-700	GRAVEL SAND	600-700	GRAVEL SAND
700-800	SAND GRAVEL	700-800	SAND GRAVEL
800-900	SAND	800-900	SAND
900-1000	CLAY SAND	900-1000	CLAY SAND
1000-1100	CLAY	1000-1100	CLAY
1100-1200	CLAY SAND	1100-1200	CLAY SAND
1200-1300	SAND	1200-1300	SAND
1300-1400	SAND GRAVEL	1300-1400	SAND GRAVEL
1400-1500	GRAVEL SAND	1400-1500	GRAVEL SAND
1500-1600	GRAVEL	1500-1600	GRAVEL
1600-1700	GRAVEL SAND	1600-1700	GRAVEL SAND
1700-1800	SAND GRAVEL	1700-1800	SAND GRAVEL
1800-1900	SAND	1800-1900	SAND
1900-2000	CLAY SAND	1900-2000	CLAY SAND
2000-2100	CLAY	2000-2100	CLAY
2100-2200	CLAY SAND	2100-2200	CLAY SAND
2200-2300	SAND	2200-2300	SAND
2300-2400	SAND GRAVEL	2300-2400	SAND GRAVEL
2400-2500	GRAVEL SAND	2400-2500	GRAVEL SAND
2500-2600	GRAVEL	2500-2600	GRAVEL
2600-2700	GRAVEL SAND	2600-2700	GRAVEL SAND
2700-2800	SAND GRAVEL	2700-2800	SAND GRAVEL
2800-2900	SAND	2800-2900	SAND
2900-3000	CLAY SAND	2900-3000	CLAY SAND
3000-3100	CLAY	3000-3100	CLAY
3100-3200	CLAY SAND	3100-3200	CLAY SAND
3200-3300	SAND	3200-3300	SAND
3300-3400	SAND GRAVEL	3300-3400	SAND GRAVEL
3400-3500	GRAVEL SAND	3400-3500	GRAVEL SAND
3500-3600	GRAVEL	3500-3600	GRAVEL

METALS REPORTED IN mg/l  
 CONDUCTIVITY REPORTED IN  $\mu$ S/cm  
 TOTAL DISSOLVED SOLIDS (TDS) REPORTED IN mg/l

- ND = NO CONCENTRATIONS DETECTED ABOVE THE BACKGROUND CONCENTRATION
- NS = NO SAMPLE TAKEN
- NA = NOT ANALYZED
- ▽ = GROUNDWATER ELEVATION MEASURED 5/8/95
- = HYDROPHONIC SAMPLE
- FC = SCREENED INTERVAL, GROUNDWATER MONITORING WELL

STRATIGRAPHIC EXPLANATION	
ND	NO DATA
NS	NO SAMPLE TAKEN
NA	NOT ANALYZED
▽	GROUNDWATER ELEVATION MEASURED 5/8/95
■	HYDROPHONIC SAMPLE
FC	SCREENED INTERVAL, GROUNDWATER MONITORING WELL

FIGURE 4-14

CAL COMPACT LABORATORY

TOTAL PCRA METALS

CROSS-SECTION A-A'

VERTICAL SCALE: 1" = 25'  
 HORIZONTAL SCALE: 1" = 250'  
 VERTICAL (GAGE) ZERO = 10.0'

NQ-MU23



NOTE:  
REPLACE TOP 6" OF PROTECTIVE SOIL COVER WITH  
6" MIN. TOP SOIL FOR LANDSCAPE AREAS  
(RESULTING IN 18" COVER)

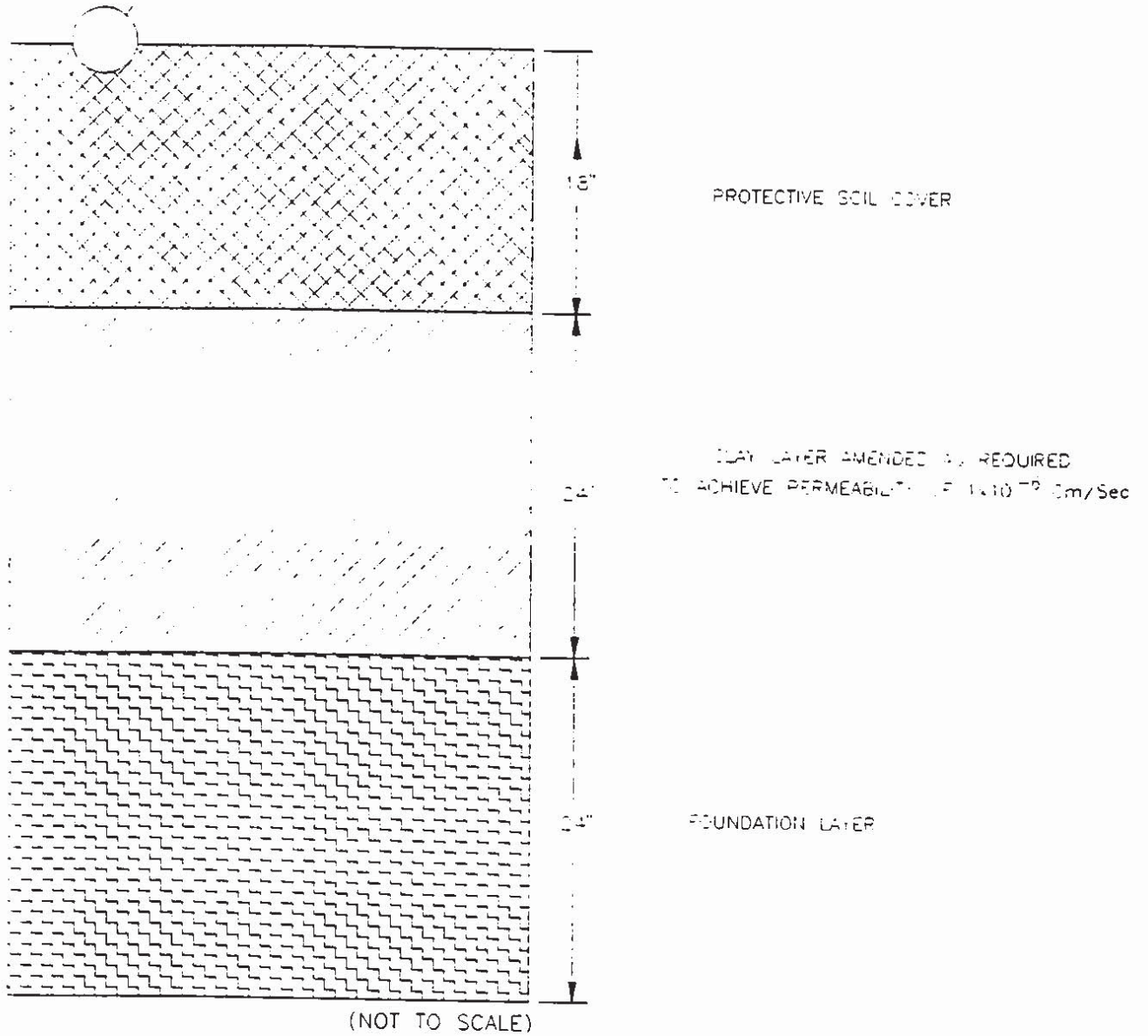


FIGURE 7.1  
LANDFILL COVER

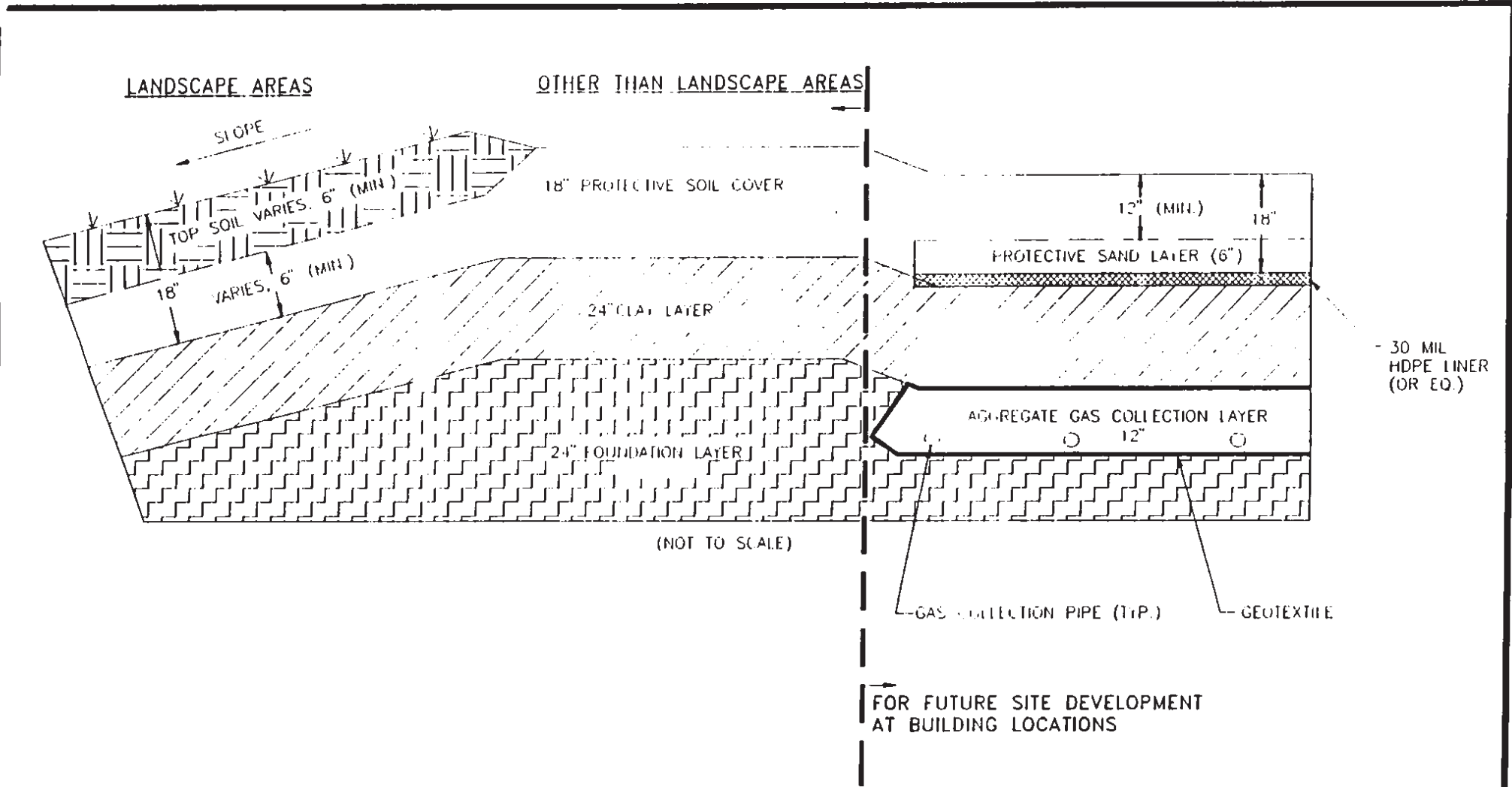


FIGURE 7.2  
LANDFILL COVER TRANSITIONS



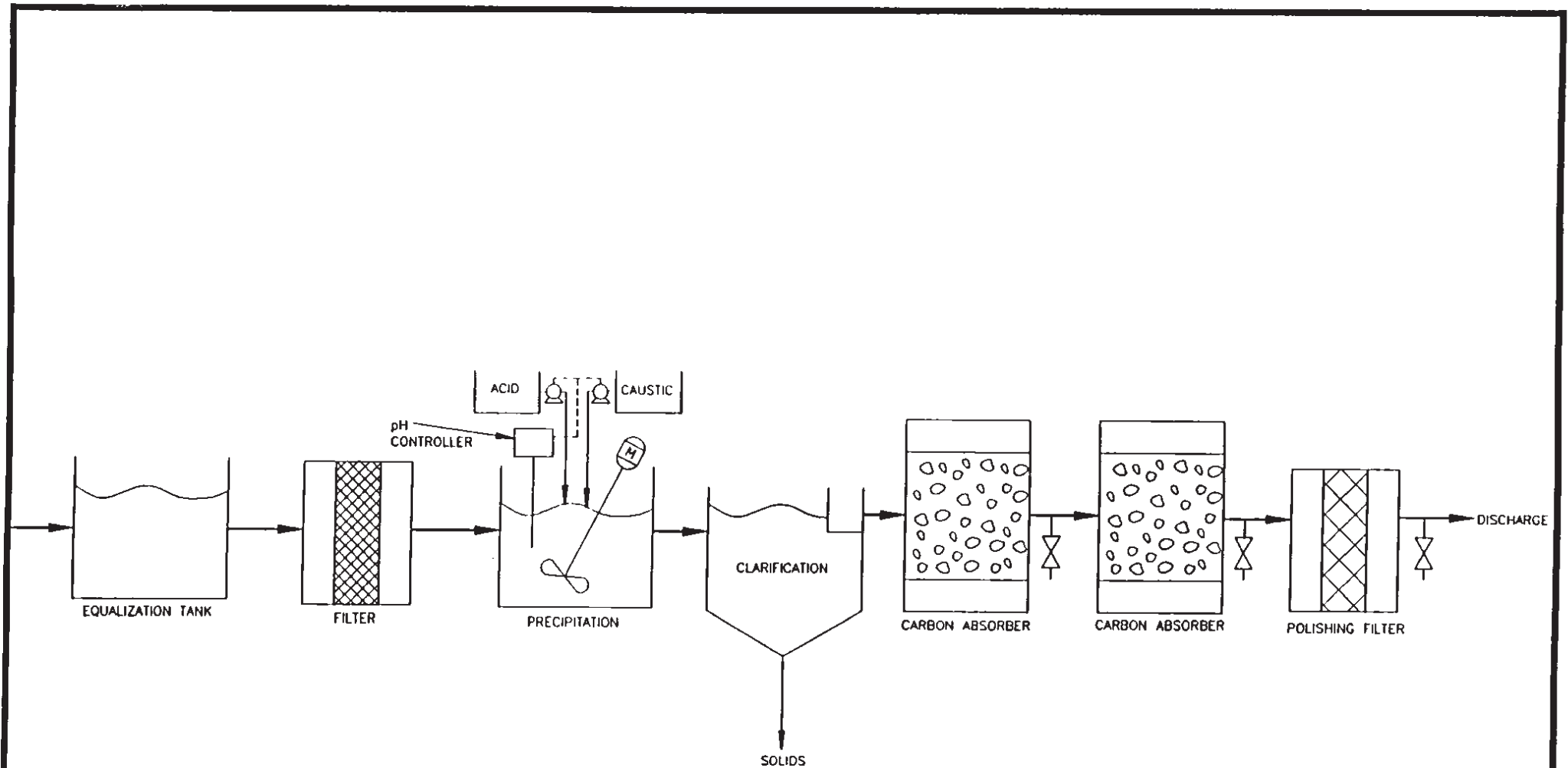


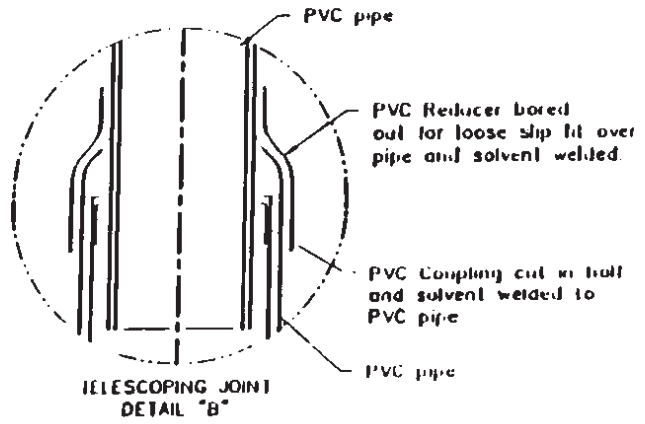
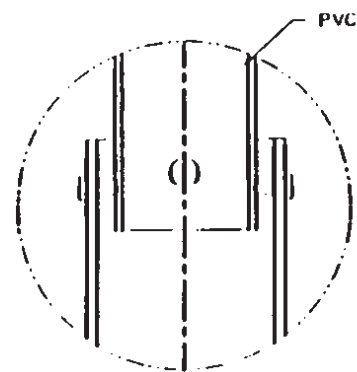
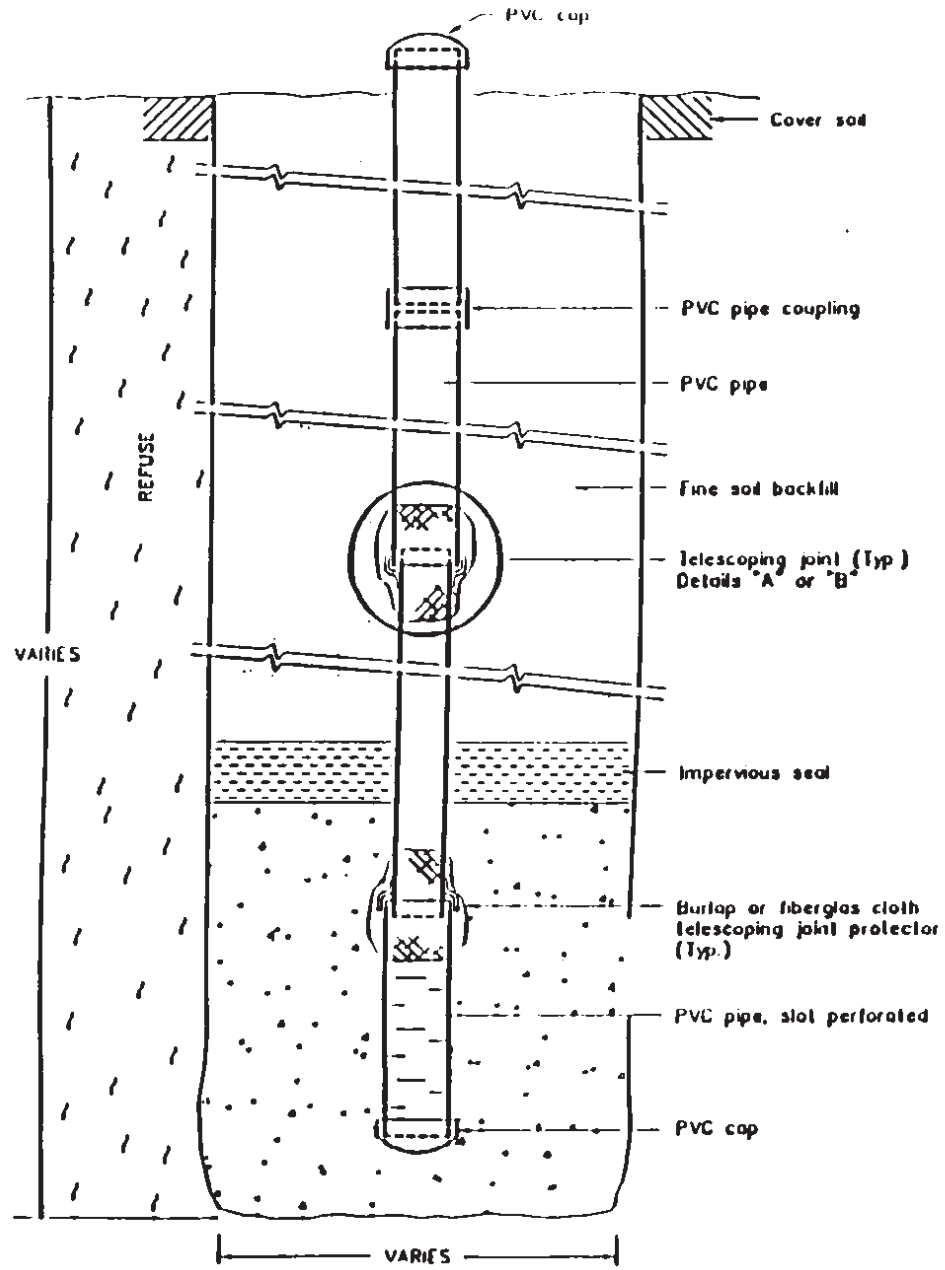
FIGURE 7.4

DRAWN BY: L.K.
DATE: 06/01/95
ENGINEER: D. THICK
DATE: 06/01/95
CAD DWG NO: S-28 DWG

CONCEPTUAL GROUNDWATER TREATMENT SYSTEM		
SCALE: NONE	DWG. NO. NO-MU23	REV. 0

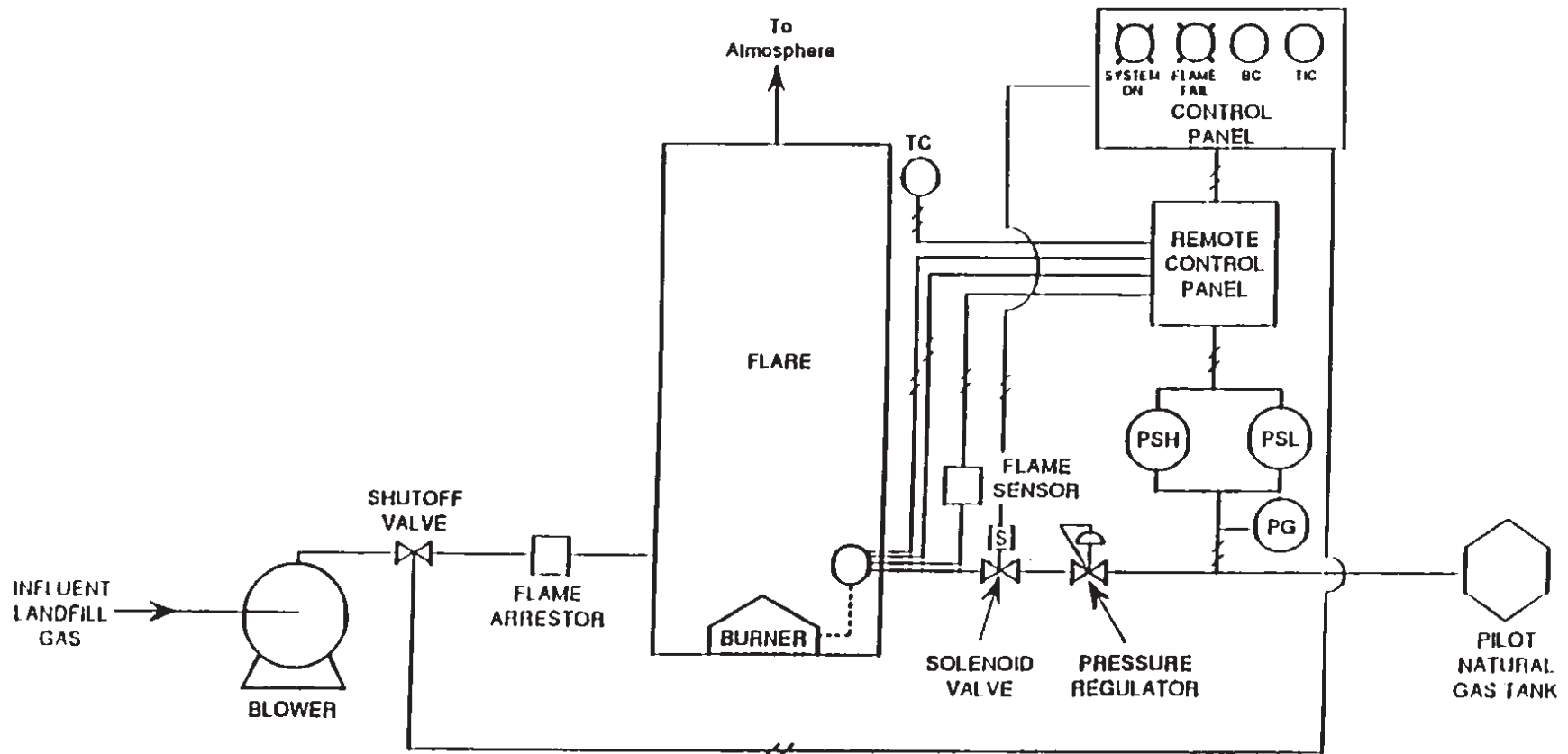


**Brown & Root Environmental**  
A Halliburton Company



Not to scale

FIGURE 7.5  
CONCEPTUAL GAS EXTRACTION WELL



- PSH - PRESSURE SWITCH HIGH
- PSL - PRESSURE SWITCH LOW
- PG - PRESSURE GAUGE
- BC - BURNER CONTROL/RELAY
- TIC - TEMPERATURE INDICATING CONTROLLER
- TC - THERMOCOUPLE
- ⚡ - ELECTRIC SIGNALS

NTS

FIGURE 7.6  
CONCEPTUAL FLARE SYSTEM DESIGN



**Brown & Root Environmental**

A Halliburton Company

FIGURE 7.7

CAL COMPACT LANDFILL  
CARSON, CALIFORNIA  
PROPOSED GROUNDWATER  
AND LANDFILL GAS  
MONITORING WELL  
LOCATIONS

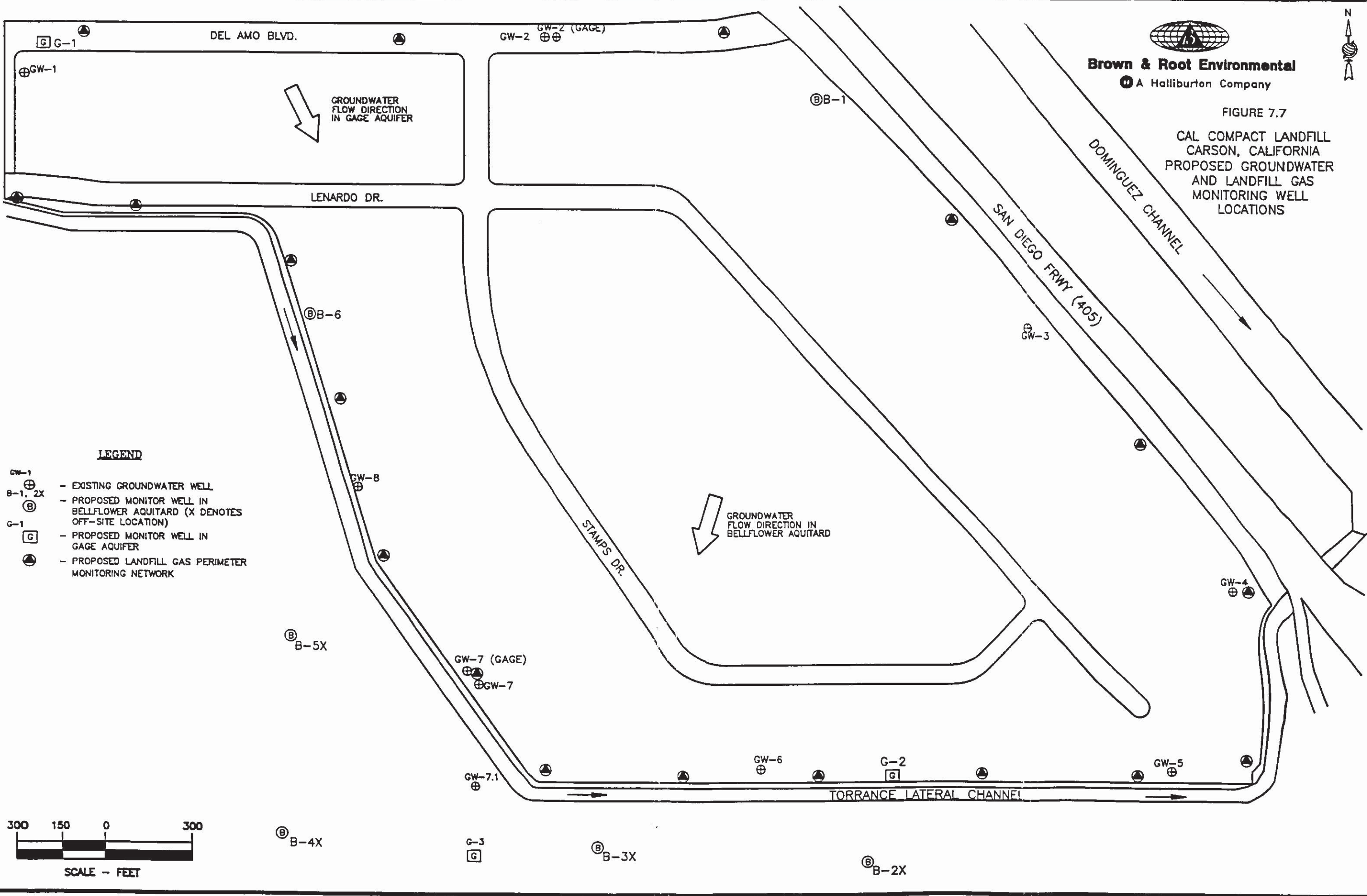
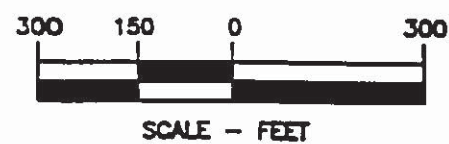


GROUNDWATER  
FLOW DIRECTION  
IN GAGE AQUIFER

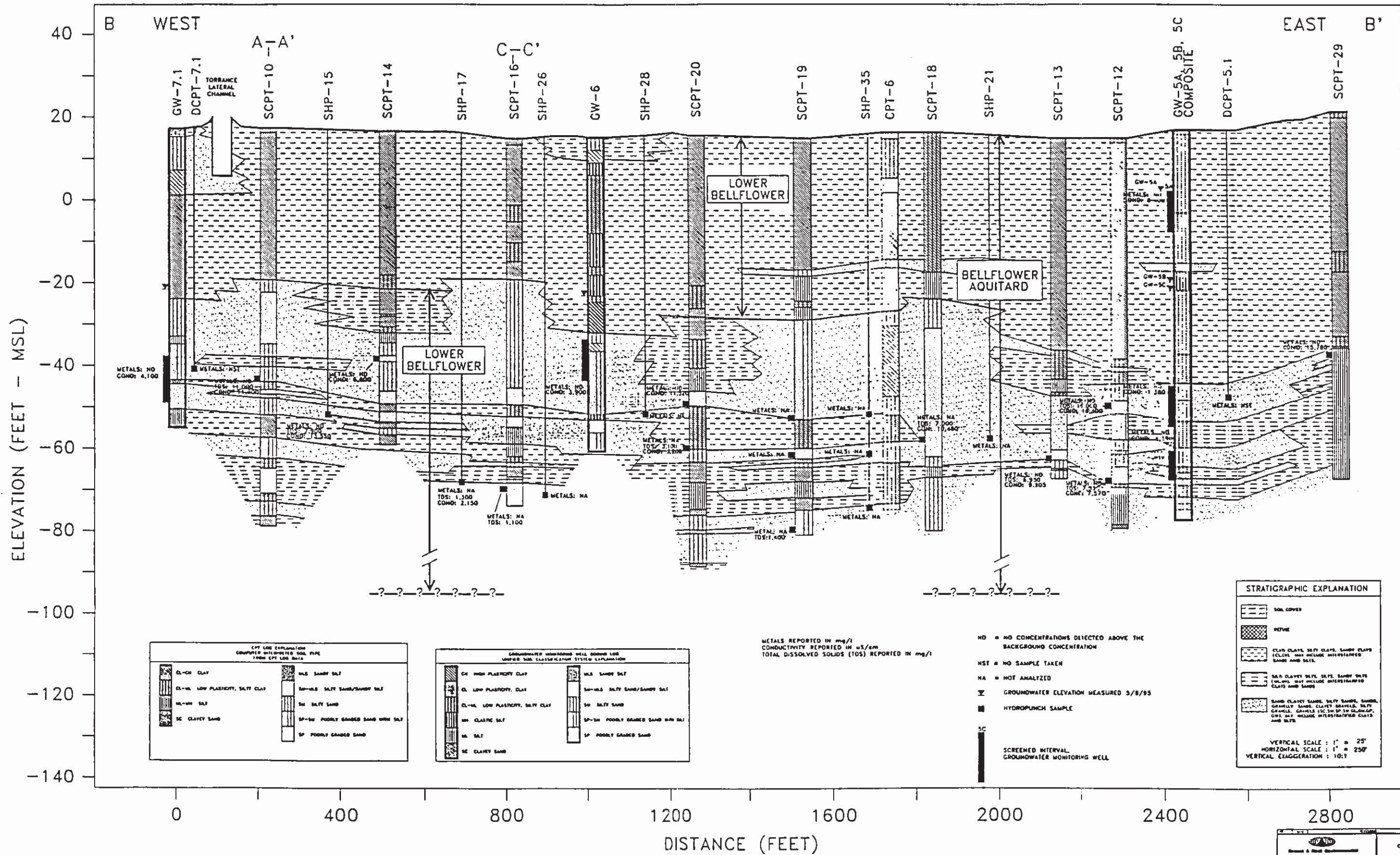
GROUNDWATER  
FLOW DIRECTION  
IN BELLFLOWER AQUITARD

**LEGEND**

- GW-1 ⊕ - EXISTING GROUNDWATER WELL
- B-1, 2X ⊕ - PROPOSED MONITOR WELL IN BELLFLOWER AQUITARD (X DENOTES OFF-SITE LOCATION)
- G-1 ⊕ - PROPOSED MONITOR WELL IN GAGE AQUIFER
- - PROPOSED LANDFILL GAS PERIMETER MONITORING NETWORK



LU-8-85-BUL/07/25/75



**NOTES:**

- SCPT LITHOLOGIC LOGS CONSTRUCTED USING USCS CLASSIFICATION
- MONITOR WELLS LITHOLOGIC LOGS BASED ON FIELD INTERPRETATION OF SOIL
- STRATIGRAPHIC CORRELATIONS BASED ON GEOPHYSICAL PARAMETERS OF CPT LOGS
- STRATIGRAPHIC CORRELATIONS PREPARED BY: GROUNDWORKS ENVIRONMENTAL, INC. FOR: BROWN & ROOT ENVIRONMENTAL

FIGURE 4.15

		<b>CAL COMPACT LAMFEL</b>	
<p><b>TOTAL RCRA METALS</b></p> <p><b>CROSS-SECTION B-B'</b></p>			
DATE:	BY:	REVISION:	SCALE:
1/5	[Signature]		NO-MU23



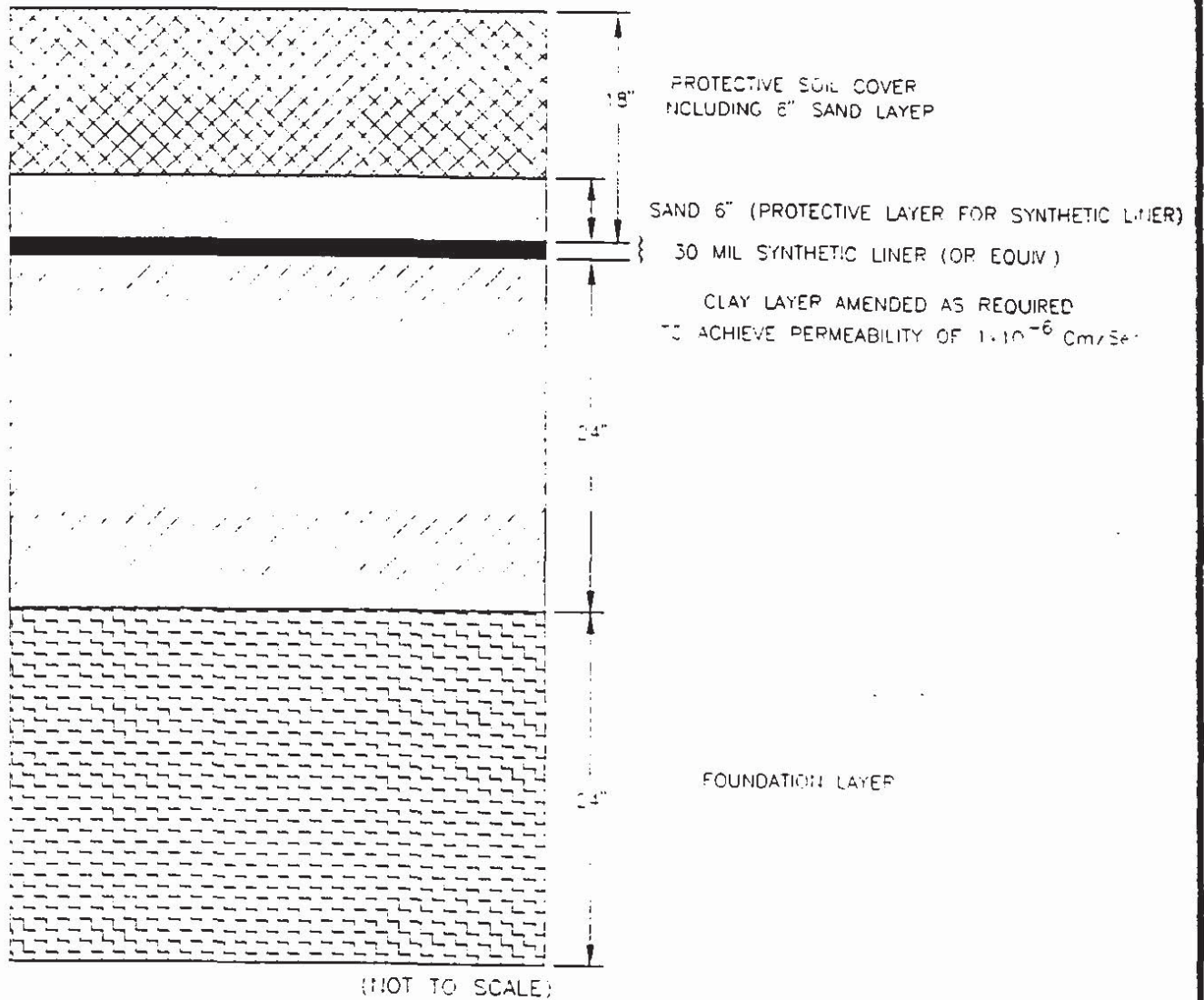


FIGURE 8.1  
 LANDFILL COVER WITH SYNTHETIC LINER  
 (FOR FUTURE SITE DEVELOPMENT AT BUILDING LOCATION)

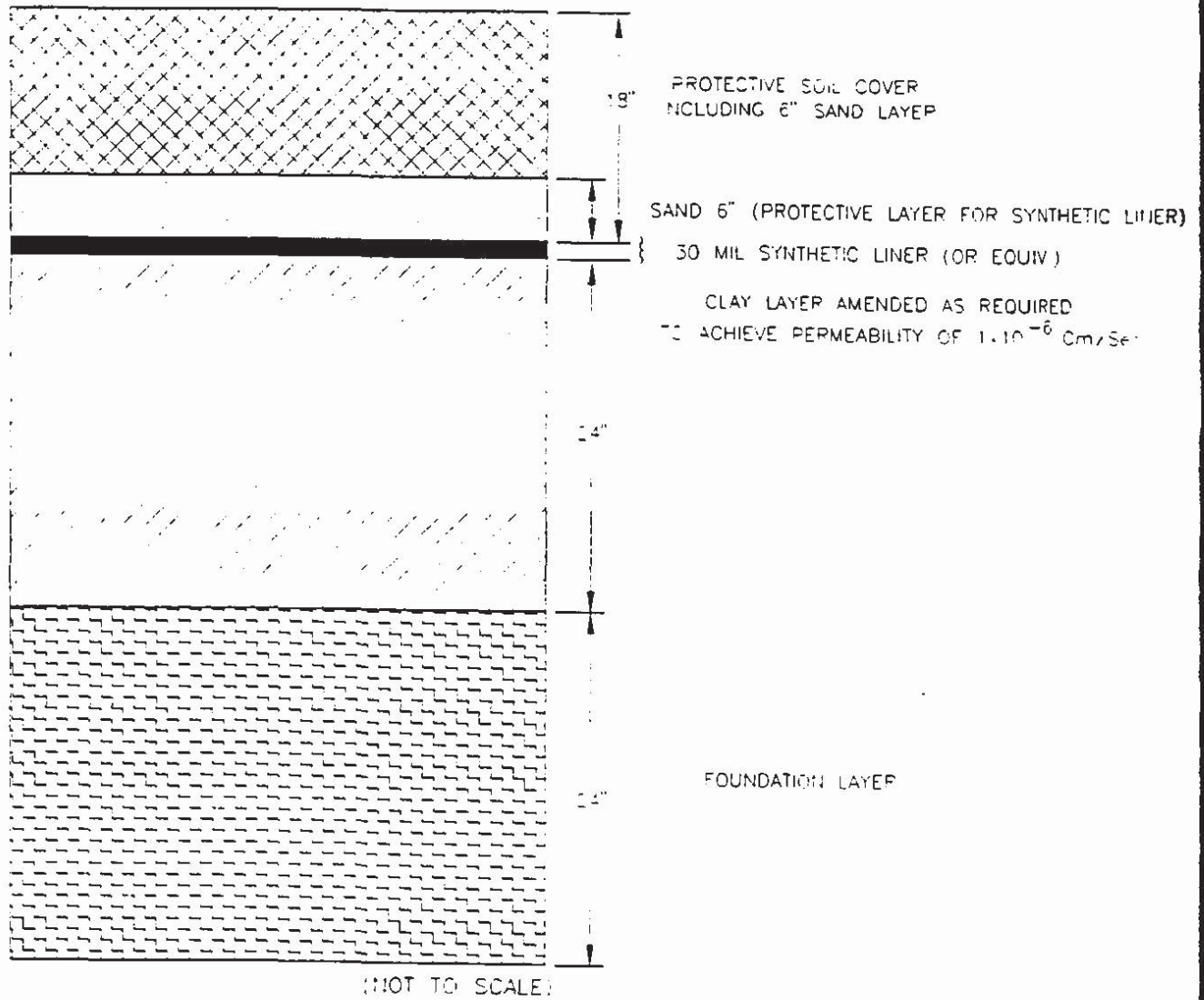


FIGURE 8.1  
 LANDFILL COVER WITH SYNTHETIC LINER  
 (FOR FUTURE SITE DEVELOPMENT AT BUILDING LOCATION)