Appendix A

Identification of Applicable or Relevant and Appropriate Requirements

A.1. Groundwater ARARs

The following legal requirements are determined by this ROD to be applicable or relevant and appropriate requirements (ARARs) for the selected remedial action pursuant to CERCLA Section 121 (d)(2), 42 U.S.C. Section 9621 (d)(2). Only substantive portions of the requirements in the cited provisions below are designated as ARARs for this Record of Decision (as contrasted with administrative requirements, including permitting requirements, which are not ARARs). Where all of an ARAR, or some of the provisions of an ARAR, is/are waived as a result of the technical impracticability waiver of ARARs discussed in Section 10 of the Decision Summary this ROD, it is discussed within the text below in context.

1. DTSC Hazardous Waste Regulations, Title 22 Ch. 14 Article 6 as discussed and specified below.

The DTSC Hazardous Waste Regulations, Title 22, Ch. 14, Article 6 as discussed and specified below. (Implementing relevant portions of the California Hazardous Waste Control Act, California Health and Safety Code Section 2500 et seq. and the Solid Waste Disposal Act, 42 U.S.C. Section 6901 et seq. under EPA authorization pursuant to 42 U.S.C. Section 6926).

The provisions of California Code of Regulations (C.C.R.) Title 22, Chapter 14, Article 6 set out below are relevant and appropriate ARARs for the response actions selected in this Record of Decision. See U.S. EPA, CERCLA Compliance with Other Laws Manual: Interim Final, at 2-4 to 2-7 (EPA 540/G-89/006)(August 1988).

Pursuant to 22 C.C.R. Section 66264.94(c),(d) and (e)(1) and the supporting analysis contained in Appendix F of the Joint Groundwater Feasibility Study, concentration limits for the Joint Site are set at the ISGS levels established in Section 9 of the ROD, except where waived below with regard to the Technical Impracticability Waiver Zone. See e.g., Table 9-1.

A. 22 C.C.R. Section 66264.92(a) Water Quality Protection Standard.

This ARAR is waived within the Technical Impracticability Waiver Zone established in this ROD. This waiver is granted based on the authority contained in 40 C.F.R. Section 300.430(f)(1)(ii)(C)(3) and 42 U.S.C. Section 9621(d)(4)(C). The technical justification for the waiver is contained in Section 10 of this ROD.

B. 22 C.C.R. Section 66264.93 Constituents of Concern and Section 66264.94(a)(3), (c),(d),(e)(1) Concentration Limits.

These sections are waived within the Technical Impracticability Waiver Zone established in this ROD. This waiver is granted based on the authority contained in 40 C.F.R. Section 300.430(f)(1)(ii)(C)(3) and 42 U.S.C. Section 9621(d)(4(C). The technical justification for these waivers is contained in Section 10 of this ROD.

In that this ROD finalizes portions of the Del Amo Site Waste Pit Operable Unit ROD, this ROD also selects these sections as ARARs for the unsaturated zone at the Del Amo Site Waste Pit Operable Unit. However, this ROD waives these two ARARs for the unsaturated zone at the Del Amo Site Waste Pit Operable Unit based on the authority and analysis cited above.

These sections are not designated by this ROD as ARARs for the unsaturated zone at the Montrose Site or Del Amo Site outside the Waste Pit Operable Unit. With the exception of the Del Amo Site Waste Pit Operable Unit, the selection of any vadose zone response actions is beyond the scope of this ROD.

C. 22 C.C.R. Section 66264.95(a)(first two sentences only) Monitoring Point and Point of Compliance.

These sections are waived within the Technical Impracticability Waiver Zone established in this ROD. These waivers are granted based on the authority contained in 40 C.F.R. Section 300.430(f)(1)(ii)(C)(3) and 42 U.S.C. Section 9621(d)(4)(C). The technical justification for these waivers is contained in Section 10 of this ROD.

As a result, the point of compliance is established at the outer boundaries of the Technical Impracticability Waiver Zone as established in this ROD.

D. 22 C.C.R. Section 66264.97(b)(1)(A), (b)(1)(D), (b)(3-7), (d)(2)(A), (d)(2)(D) General Water Quality Monitoring and System Requirements.

Section 66264.97(d)(2)(A) + (d)(2)(D) are selected as ARARs solely for the purpose of establishing unsaturated zone monitoring requirements for the Waste Pit Operable Unit. As noted above, selection of response actions with respect to the unsaturated zone at the other areas of the Del Amo and at the entirety of the Montrose Site is beyond the scope of this ROD.

E. 22 C.C.R. Section 66264.100(b)(first sentence only), (c)(first sentence), (c)(second sentence- for the Del Amo Waste Pits Operable Unit, as explained below), (d).

Section 66264.100(b)(first sentence) and (c)(first and second sentence) are waived within the Technical Impracticability Waiver Zone established in this ROD. These waivers are granted based on the authority contained in 40 C.F.R. Section 300.430(f)(1)(ii)(C)(3) and 42 U.S.C. Section 9621(d)(4)(C). The technical justification for these waivers is contained in Section 10 of this ROD.

Section 66264.100(c) (second sentence) is selected as an ARAR for the Waste Pit Operable Unit. This ROD also determines that response actions, including but not limited to soil and vadose zone cleanup standards, selected in the Waste Pit ROD comply with this ARAR.

Regarding the application of Section 66264.100(d), EPA will base the monitoring program on EPA guidance rather than employ an evaluation monitoring program as set out in Section 66264.99. EPA believes that the EPA guidance is more relevant and appropriate to the circumstances of the Joint Site than are the requirements of Section 66264.99.

2. Other DTSC Hazardous Waste Regulations, 22 C.C.R., as discussed and specified below.

Other DTSC Hazardous Waste Regulations, 22 C.C.R., as discussed and specified below. (Implementing relevant portions of the California Hazardous Waste Control Act, California Health and Safety Code Section 2500 et seq. and the Solid Waste Disposal Act, 42 U.S.C. Section 6901 et seq. under EPA authorization pursuant to 42 U.S.C. Section 6926).

The following provisions of Title 22 of the California Code of Regulations are applicable ARARs for the response actions selected in this ROD[1]. Once it is extracted for treatment, groundwater contaminated with hazardous substances at the Joint Site is classified as hazardous waste, and must be managed accordingly. Once the extracted groundwater is treated to ISGS levels, the groundwater is no longer classified as hazardous waste[2].

---

[1]See U.S. EPA, CERCLA Compliance with Other Laws Manual: Interim Final, at 2-4 to 2-7 (EPA 540/G-89/006) (August 1988). The determination that contaminated groundwater, once it is extracted for treatment, must be managed as state and federal hazardous waste is based on site specific information contained in the Administrative Record for this ROD. See e.g., Section 2 of this ROD and Section 1.3 of the Final Remedial Investigation Report for the Montrose Site (May 1998) (Montrose Site RI Report) regarding the use and releases of hazardous substances at and from the Montrose Plant Property, the Del Amo Plant Property and other nearby properties. See also Montrose RI Report, Chapter 5 and Dames & Moore, Final Remedial Investigation Report; Del Amo Study Area Chapter 5 (May 1998) regarding the concentrations of hazardous substances found at the Joint Site. EPA finds that groundwater which is extracted from the Joint Site for management and treatment in accordance with this ROD is classified as hazardous waste because the groundwater:

- may contain levels of hazardous substances that meet or exceed state and federal hazardous waste toxicity criteria for specific hazardous wastes (including but not limited to RCRA waste # D021 chlorobenzene, D018 benzene, D022 chloroform, D0271,4 dichlorobenzene, and D040 trichloroethylene) and for specific California wastes (including but not limited to DDT and its isomers DDE and DDD). 40 C.F.R. Section 261.24 and 22 C.C.R. Section 66261.24; and

- will contain one or more of the following RCRA listed hazardous wastes-F002 (spent solvents including chlorobenzene), F003 (spent solvents including benzene and xylene), F005 (spent solvents including toluene), and U-listed commercial chemical products, intermediates or off specification products - U019 benzene, U037 chlorobenzene, U061 DDT, U239 xylene, U165 naphthalene, U220 toluene, U228 trichloroethylene, and U056 cyclohexane.

[2]See Memorandum "Status of Contaminated Groundwater and Limitations on Disposal and Reuse" from Sylvia Lowrance, Director Office of Solid Waste, U.S. EPA, to Jeff Zelikson, Director Toxics and Waste Management Division, U.S. EPA Region IX (dated January 24, 1989).

A. 22 C.C.R. Part 261 Criteria for Identifying Hazardous Waste.

B. 22 C.C.R. Section 66262.11 Hazardous Waste Determination by Generators.

C. 22 C.C.R. Section 66262.34 Accumulation Time.

D. 22 C.C.R. Section 66264.13(a)(1), (b) General Waste Analysis.

E. 22 C.C.R. Section 66264.14(a), (b) Hazardous Waste Facility General Security Requirements.

F. 22 C.C.R. Section 66264.15 General Facility Inspection Requirements.

G. 22 C.C.R. Section 66264.17 Hazardous Waste Facility General Requirements for Ignitable Reactive or Incompatible Wastes.

H. 22 C.C.R. Section 66264.18 Location Standards.

I. 22 C.C.R. Section 66264.25 Hazardous Waste Facility Seismic and Precipitation Standards.

J. 22 C.C.R. Section 66264.31 Preparedness & Prevention-Design and Operation of Facility.

K. 22 C.C.R. Section 66264.32 Preparedness & Prevention-Required Equipment.

L. 22 C.C.R. Section 66264.33 Preparedness & Prevention-Testing and Maintenance.

M. 22 C.C.R. Section 66264.34 Preparedness & Prevention-Access to Communications or Alarm System.

N. 22 C.C.R. Section 66264.35 Preparedness & Prevention-Required Aisle Space.

O. 22 C.C.R Section 66264.37 Preparedness & Prevention-Arrangements With Local Authorities.

P. 22 C.C.R. Section 66264.51 Contingency Plan-Purpose and Implementation.

Q. 22 C.C.R. Section 66264.52 Contingency Plan-Content.

R. 22 C.C.R. Section 66264.53(a) Contingency Plan-Copies of Plan.

S. 22 C.C.R. Section 66264.54 Contingency Plan-Amendment.

T. 22 C.C.R. Section 66264.55 Contingency Plan-Emergency Coordinator.

U. 22 C.C.R. Section 66264.56 Contingency Plan-Emergency Procedures.

V. 22 C.C.R. Section 66264.111 Hazardous Waste Facility Closure Performance Standard.

W. 22 C.C.R. Section 66264.112 (a)(1), (b) Closure Plan.

X. 22 C.C.R. Section 66264.114 Hazardous Waste Facility Closure-Disposal and Decontamination of Equipment, Structures and Soils.

Y. 22 C.C.R. Section 66264.117(a)(b)(1) and (d) Hazardous Waste Facility Postclosure Care and Use of Property.

Z. 22 C.C.R. Section 66264.119(a) (regarding notice to the local zoning authority) and (b)(1) Hazardous Waste Facility Post Closure Notices.

AA. 22 C.C.R. Sections 66264.171-178 Use and Management of Containers.

BB. 22 C.C.R. Section 66264.192 New Tanks.

CC. 22 C.C.R. Section 66264.193(b),(c), (d), (e) and (f) Containment and Detection of Releases.

DD. 22 C.C.R. Section 66264.194 General Operating Requirements.

EE. 22 C.C.R. Section 66264.195 Inspections.

FF. 22 C.C.R. Section 66264.196 Response to Leaks or Spills and Disposition of Leaking Or Unfit-for Use Tank Systems.

GG. 22 C.C.R. Section 66264.197 Closure and Post Closure Care.

HH. 22 C.C.R. Section 66264.1052 Standards-Pumps in Light Liquid Service.

II. 22 C.C.R. Section 66264.1053 Compressors.

JJ. 22 C.C.R. Section 66264.1057 Standards-Valves in Gas Vapor Service or Light Liquid Service.

KK. 22 C.C.R. Section 66264.1058 Standards-Pumps and Valves in Heavy Liquid Service.

LL. 22 C.C.R. Sections 66264.1061 and 66264.1062 Alternate Standards.

MM. 22 C.C.R. Section 66264.1063 Test Methods and Procedures.

NN. 22 C.C.R. Section 66264.1101 Containment Buildings-Design and Operating Standards.

OO. 22 C.C.R. Section 66264.1102 Closure and Post Closure Care.

PP. 22 C.C.R. Section 66268.3 Hazardous Waste Dilution Prohibition as a Substitute for Treatment.

This provision is established as an ARAR for any onsite activity that generates a hazardous waste that will be sent offsite for disposal and/or treatment.

3. South Coast Air Quality Management District (SCMD) Rules and Regulations, as specified below

South Coast Air Quality Management District (SCAQMD) Rules and Regulations, as specified below (Implementing relevant portions of Division 26 of the California Health and Safety Code and the Clean Air Act, 42 U.S.C. Section 7401 et seq.).

A. Regulation XIII New Source Review (including but not limited to Rule 1303).

B. Regulation IV, Prohibitions -

i. Rule 401 Visible Emissions,
ii. Rule 402 Nuisance,
iii. Rule 403 Fugitive Dust, and
iv. Rule 473 Disposal of Solid and Liquid Waste.

C. Regulation X NESHAP (Benzene).

D. Rule 1401 New Source Review of Carcinogenic Air Contaminants.

4. Other ARARs, as discussed and specified below

A. State and Federal Maximum Contaminant Levels

As discussed in the ROD, state and federal maximum contaminant levels (MCLs) for hazardous substances found in the groundwater at the Joint Site are established as relevant and appropriate ARARs for the remedial actions selected in this ROD. These ARARs establish both in-situ groundwater cleanup standards and treated groundwater reinjection standards. CERCLA Section 121(d)(2)(A), 42 U.S.C. Section 9621(d)(2)(A) requires that a remedial action attain MCLs where MCLs are determined to be relevant and appropriate. EPA guidance states that MCLs are relevant and appropriate ARARs in situations where the groundwater is or may be used for drinking water. See U.S. EPA, CERCLA Compliance with Other Laws Manual: Interim Final, at 4-8 (EPA/540/G-89/006) (August 1988). Although contaminated groundwater at the Joint Site is not currently being used to supply drinking water, the State of California has designated the groundwater bearing units at the Joint Site as potential sources of drinking water. See California Regional Water Quality Control Board, Los Angeles Region, Water Quality Control Plan - Los Angeles Region - Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, Chapter 2 (1994) (implementing S.W.R.C.B. Res. 88-63). Accordingly, EPA in this ROD is selecting the state and federal MCLs set out in Table 9-1 of this ROD as appropriate and relevant ARARs for the remedial actions selected in this ROD. State MCLs are derived from the R.W.Q.C.B Basin Plan which applies specified State standards for chemical constituents to groundwaters that are designated by the Basin Plan as potential sources of drinking water. See California Regional Water Quality Control Board, Los Angeles Region, Water Quality Control Plan - Los Angeles Region at 3-18 (1994).

These MCL ARARs, as in-situ groundwater treatment standards, are waived within the Technical Impracticability Waiver Zone established in this ROD. These waivers are granted based on the authority contained in 40 C.F.R. Section 300.430(f)(1)(ii)(C)(3) and 42 U.S.C. Section 9621(d)(4)(C). The technical justification for these waivers is contained in Section 10 of this ROD. However, state and federal MCLs, as ARARs for reinjecting treated groundwater, are not waived inside the Technical Impracticability Waiver Zone. EPA finds that there

is no acceptable basis for waiving these ARARs as reinjection standards - given that it is technically feasible to treat the hazardous substances found in groundwater at the Joint Site to state and federal MCLs and that the lowering, to MCLs, contaminant levels in treated groundwater that is reinjected in the containment zone will not hinder, compromise or complicate the containment measures selected as remedial actions in this ROD.

B. S.W.R.C.B. Resolution 68-16.

State Water Control Board Resolution 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California", is an applicable ARAR with respect to the reinjection of groundwater that has been extracted from the Joint Site as the result of remedial actions required by this ROD.

C. S.W.R.C.B. Regulation, 22 C.C.R. Chapter 15, Article 5, Section 2550.7(b)(5) General Water Quality Monitoring and System Requirements.

D. S.W.R.C.B. Resolution 92-49 Section III. (H).

This Record of Decision does not identify California State Water Resources Control Board Resolution Section III (H) (regarding the establishment of containment zones) as an ARAR for the remedial actions selected in this ROD nor does this ROD rely on this provision as authority for issuing the technical impracticability ARAR waivers previously identified above. However, EPA believes that the Technical Impracticability Waiver Zone for the Joint Site established by this ROD is consistent with S.W.R.C.B Resolution 92-49 Section III (H).

5. Guidance and Advisories To Be Considered

Certain non-promulgated advisories or guidance that are otherwise not legally binding may be identified in a Record of Decision as guidance or advisories "to be considered" (TBC) particularly to aid the design and implementation of the selected remedial actions. See U.S. EPA, CERCLA Compliance with Other Laws Manual: Interim Final, at 1-76 (EPA 540/G-89/006) (August 1988). For this Record of Decision the following guidance or advisory is determined to be a TBC for the selected remedy:

South Coast Air Quality Management District, Best Available Control Technology Guidelines Document

A.2. Other Legal Requirements of Independent Legal Applicability

The remedial actions selected in this ROD may trigger additional legal requirements. These requirements are not identified as ARARs in this ROD either because such requirements do not meet the definitional prerequisites (as established by CERCLA Section 121(d)(2)) to be identified as an ARAR for onsite activities or because such requirements are triggered by offsite activities. See generally 42 U.S.C. Section 9621(d)(2). The legal requirements identified below are presented for informational purposes only. Any determination of the legal applicability of such requirements (as well as any implementing regulations) ultimately rests with the governmental entity charged with implementing and enforcing compliance with such requirements.

- CERCLA Section 121 (d)(3), 42 U.S.C. Section 9621(d)(3) requirements regarding offsite disposal of material contaminated with hazardous substances.

- CERCLA Section 103, 42 U.S.C. Section 9603 notification requirements and comparable provisions of California law.

- Provisions of Title 22 of the California Code of Regulations and parallel provisions of federal RCRA regulations relating to offsite shipments of hazardous waste, including but not limited to manifest requirements, pretransport requirements, transportation requirements, and offsite disposal, treatment and land ban prohibitions and requirements.

- Provisions of the California Porter Cologne Act (implementing both state law and the federal Clean Water Act NPDES program) concerning the issuance of waste discharge requirements for point source discharges of treated groundwater water to offsite storm sewer conveyances.

- Federal and State Occupation Health and Safety Act requirements.

- Los Angeles County Sanitation District Wastewater Ordinance, as amended, concerning offsite discharges of treated groundwater to the LACSD sanitary sewer system.

Appendix B

Explanations Pertinent to the Approach to Characterization of Intrinsic Biodegradation for the Benzene and Chlorobenzene Plumes

The following discussion summarizes why (1) EPA did not pursue detailed studies of intrinsic biodegradation rates of the chlorobenzene plume, and (2) EPA did not require highly rigorous direct field measurements of the biodegradation rate for the *benzene* plume. It is important to note that EPA evaluated the potential value of performing extended field studies on chlorobenzene biodegradation, not as to whether such studies could produce useful information, but as to whether the information would be sufficient and accompanied by sufficient certainty to allow for selecting and relying upon intrinsic biodegradation of chlorobenzene in lieu of some other remedial action.

It is noted that showing that a compound can be made to biodegrade in the laboratory under specific conditions does not demonstrate that it is biodegrading in the field at any given location. In principle, field studies could be designed with the intention of evaluating the presence of intrinsic biodegradation of chlorobenzene at the Joint Site. However, the mere presence of intrinsic biodegradation is not a sufficient foundation upon which to base a remedy; rather, it must be shown to be reliable as a remedial mechanism for the long term, in the context of remedial decisionmaking.

In light of the specific characteristics discussed above pertaining to chlorobenzene and the chlorobenzene plume, such studies would have to demonstrate, at a minimum:

1. That intrinsic biodegradation of chlorobenzene is possible and, with significant certainty, by what chemical pathways it occurs;

2. That it is actually occurring in the chlorobenzene plume in all locations in the chlorobenzene plume;

3. That the *rate* of intrinsic biodegradation is sufficient, at all locations throughout the extensive groundwater contamination in the chlorobenzene plume, to attain the remedial objectives of the remedy; and

4. That the rate of intrinsic biodegradation would be reliable for the very long term over

which the remedy will need to be effective, to achieve all remedial objectives.

To accomplish these with a study of chlorobenzene biodegradation, the certainty in the direct field measurements of the rate of intrinsic biodegradation of chlorobenzene at all points in the chlorobenzene plume would have to be extraordinarily high to overcome the fact that most observations about the chlorobenzene plume not only fail to provide support for reliable intrinsic biodegradation of chlorobenzene, but discount it.

Counterposed with this need for high certainty is the fact that studies of the field rate of the intrinsic biodegradation of chlorobenzene at the Joint Site would almost certainly be associated with extraordinarily high *un*certainty. Methods for performing direct field measurements of biodegradation rate require determining the water quality and aquifer characteristics at a (potentially large) number of locations, and measuring how the concentrations change with time between one point and the next. These tests require numerous assumptions and are associated with significant uncertainties. Primary uncertainties among these are associated with (1) attributing the concentration difference from one point to the next as being due to intrinsic biodegradation as opposed to other potential mechanisms, (2) differentiating measured degradation of the target chemical with degradation of another degrading chemical, (3) heterogeneities in aquifer and hydraulic properties, (4) spatial variability in the distribution of geochemical and water quality parameters, (5) temporal variability in the same parameters. The uncertainties in direct field measurements of intrinsic biodegradation rate increase dramatically as:

1. The size of the affected groundwater contaminant distribution increases;

2. The degree of heterogeneity in aquifer parameters and hydraulic parameters increases;

3. The complexity of chemistry in the aquifer (e.g. number of chemicals, etc.) increases;

In large aquifer systems, such studies require significant periods of time (on the order of years) in order to resolve actual concentration changes due to degradation. The time and number of sampling points necessary to run an adequate study of this type increases as the size of the affected groundwater concentration increases. Such studies are more typically run for relatively small groundwater plumes with simple chemistry which can be relatively well-characterized by a reasonable number of sampling points. In most systems, the costs of large numbers of wells in deep hydrostratigraphic units becomes prohibitive.

The extent of the chlorobenzene plume both laterally and vertically, is very large, covering several square miles, extending 1.3 miles from the source and through six hydrostratigraphic units to depths exceeding 200 feet. The aquifers exhibit relatively large heterogeneities and the

chlorobenzene plume contains several potentially degradable compounds. All of these factors imply that relatively high uncertainty would be associated with direct field measurements of intrinsic biodegradation rate in the chlorobenzene plume.

Because multiple and independent lines of evidence support the presence of reliable intrinsic biodegradation in the *benzene* plume, the importance of any single line of evidence, such as direct field measurements of biodegradation rate, is correspondingly less than if it were the *only* line of evidence. In contrast, because there are no independent lines of evidence supporting reliable biodegradation of *chlorobenzene*, direct field measurements would be the *only* means available to provide evidence of such biodegradation. The degree of certainty required to rely on such measurements would therefore be higher, at the very same time that, if such studies were to be performed, the degree of certainty would be much lower for the reasons already discussed.

Given this situation, EPA concluded that, while such studies for the chlorobenzene could produce results which would be of interest, they could not provide a basis for selecting a remedial action that relied on intrinsic biodegradation for the chlorobenzene plume. EPA therefore did not require their performance prior to remedy selection.