remedial activity. The majority of the source removal occurs in the initial years. At this point, the system should be reevaluated to assess if continued operation is a cost-effective as treatment at the point-of-use only.

Because the model is the basis of the majority of the extraction scenarios, it will need to be updated with actual hydraulic information collected and refined if an extraction scenario is chosen. No discussion is included to address the fact that the extraction remedy will need to be evaluated over time to measure the efficiency of the system during operation. Because this model is based on very limited data, data acquired as extraction systems are placed on line will provide much of the needed hydraulic data. Future data acquired from extraction wells and additional well data from sources throughout the basin will need to be used to refine the model and determine if the extraction scenario is effective. Most likely a hydraulic barrier which will require installation of additional wells and possible closure of some wells to meet the objectives described in the FS.

Evaluation of VOC concentration data from the system in the initial stages will potentially indicated if separate phase residuals (DNAPL) are present in the aquifer. Since this was not considered in the objectives of the FS, it would need to be reevaluated.

EPA RESPONSE: EPA disagrees. See EPA Responses to ITT Comments 86, 87 and 137.

155. (Section 4.3.3) The extraction scenarios, with the exception of the "no action" scenario, are all based on the groundwater model, which is based on limited data and will be substantially changed in the future. Therefore, to select a scenario at this point appears to be premature, and the effort to estimate costs for the associated ROW, infrastructure, and other costs seems to be futile.

One scenario was selected as a reasonable option based on this very preliminary model. The potential exist that a very different extraction scenario may be more appropriate.

There is no consideration given to the impact of any remedial actions in the other OUs that EPA considers to be "upgradient," and it is not valid to say that there would be no change as a result of remedial actions in the other OUs.

EPA RESPONSE: See EPA Responses to ITT Comments 94, 137 and 149.

156. (FS Page 4-18) The extraction well sites appear to be chosen primarily by the location of chemical "highs" which are biased by well locations within the GSA, with little consideration of the hydraulic properties that need to be considered to optimize the locations. Additionally, significant hydraulic data needs to be

collected to site the extraction wells. Also, as stated earlier, the mass recovery is impossible to predict without operational data.

EPA RESPONSE: See EPA Responses to ITT Comments 49 and 137. Again, the exact locations of extraction wells will be determined during the design phase of the remedy.

157. (FS Page 4-53) Again, the preferred treatment for nitrates would be blending, which has been accepted elsewhere in the basin. Should blending meet with institutional or public resistance, then the government would be expected to pay the cost for treatment.

EPA RESPONSE: Blending was included in the South OU FS and has been carried through detailed analysis.

158. (FS Section 5) In general, the evaluation of all the alternatives is inadequate, because it is based on very limited data and the resulting inadequate modeling effort. Further, it is impossible to make a relevant and adequate comparison of the various alternatives when four of the alternatives (alternatives 2-5) do not even include provisions for nitrate treatment. See Table 5.1-1.

EPA RESPONSE: See EPA Response to ITT Comments 86, 87, 94, and 137.

159. (FS Page 5-2) The costing for the alternatives assumes the plan will be implemented within three years. The timing is optimistic considering the limited data on which the alternatives are based. A contingency or an escalation factor for delays based on the inflation rate of the 1990 dollar should have been added to fully inform the public.

EPA RESPONSE: See Appendices C and D of the Glendale South FS for a description of how the present worth factor was calculated. It will be apparent that a contingency or escalation factor was considered for the projected 3-year delay.

160. (FS Page 5-2) Although there is no demonstrated basis to require nitrate treatment beyond blending, alternatives 2 through 5 included a reference regarding ion exchange costs, but no calculations are included for these costs. Consequently, commenters would not necessarily focus on "changes" that would be made to those alternatives. The additional costs for additional nitrate treatment would make the referenced alternatives as infeasible as alternatives 8 and 9. Moreover, the failure to consider such costs means that the referenced alternatives cannot be compared to alternatives 8 and 9, which include nitrate treatment costs.

EPA RESPONSE: Ion exchange costs for Glendale South FS Alternatives 2 through 5 would be the same as those quoted for

Alternatives 8 and 9.

161. (FS Page 5-2) Section 5.2 discusses the screening of the alternatives. The evaluation of the alternative based on the model which, in turn, is based on limited data and is of questionable accuracy. Again, the model will need to be updated and refined with additional data to make more informed decisions on the alternatives when more data are made available. However, the model still should be considered a planning tool. See comments on the Model.

EPA RESPONSE: See EPA Response to ITT Comments 86, 87, 94, and 137.

162. (FS Page 5-2) The feasibility study screening of remediation alternatives is based on short-term effectiveness and the inhibition of the movement of the contaminant during a 12-year period. This evaluation is based on the model, which has not taken into consideration the potential of a pump and treat system in other areas to the north of this OU. These other systems would potentially factor into the costs and the time period evaluations.

EPA RESPONSE: See EPA Responses to ITT Comments 94, 139, 149, and 150.

163. (FS Page 5-3) Although the chemical concentrations in the groundwater in the South Plume are not as high as observed in other parts of the San Fernando Superfund site, the potential of residuals (DNAPL) in the vadose zone or aquifer exists. The presence of separate phase material in either the vadose zone or the aquifer may greatly increase the time to remove the majority of VOC mass in the aquifer.

EPA RESPONSE: See EPA Responses to ITT Comments 86, 87, 94 and 137.

164. (FS Page 5-3) Exact locations for extraction, injection and monitoring wells and the treatment facility are not determined, and approximate locations were used for screening. The purpose of the FS is to provide accurate comparisons based on similar evaluation criteria. The locations will have substantial cost impact depending on piping distances and rights of way, among other factors, and need to be considered as part of the FS. Again, those locations which have been costed are based on a preliminary model using limited data which will need to be revised to provide better assumptions on which to base the choice of remedial alternatives. This is a problem that goes to the heart of the feasibility and implementability of any alternative.

EPA RESPONSE: Again, the exact locations of extraction wells will be determined during the design phase of the remedy.

Also see EPA Responses to ITT Comments 86, 87, 94 and 137.

165. (FS Page 5-4) The no action scenario describes the effect on the basin if both the North and South Plume do not have mass removal systems. If there is a groundwater mass removal system required for the North Plume its impact and effect on the distribution and downgradient transport of chemicals to the South Plume must be considered. More importantly, the effect of other upgradient source removal systems has not been modeled to asses the effect if no action is taken in the South Plume.

EPA RESPONSE: See EPA Responses to ITT Comments 94, 139, 149 and 150.

166. (FS Page 5-8) Numerous options depend on the acceptance of the treated water by the City of Los Angeles, as described for the example in Section 5.2.3. Should the City reject the treated water, the costs for alternative water disposal options could potentially be significantly increased, unless alternative technologies like the UVB system were considered.

EPA RESPONSE: Although in situ treatment technologies may be applicable for source control, these technologies are generally not applicable for large-scale, area-wide remedial action as they have a limited radius of influence. Disposal options other than reuse were considered in the South OU FS.

167. (FS Page 5-19) The accuracy of the assumptions regarding standards for discharging treated water, particularly as to nitrate levels, is significant because any additional treatment will significantly increase costs. The FS does not adequately disclose or discuss such additional costs, or evaluate whether such a change would result in any such alternative meeting the requirements of the NCP. In fact, the FS qualifies these assumptions by stating that the recharge "...may have to meet all requirements applicable at the time of such recharge." The lack of certainty undermines the ability of the public to evaluate and comment in a meaningful way, and could result in significant changes in the implementability and costs of any remedy incorporating recharge.

EPA RESPONSE: The requirements potentially associated with the recharge of treated groundwater are described in detail in Section 5.2.6.2 (Page 5-19).

168. (FS Page 5-21) As the FS addresses an interim remedy and no ARARs are established for the aquifer, the potential of a variance should be discussed to recharge the aquifer with water containing low VOC concentrations which are below the concentration of the quality of water into which it is recharged. This scenario should be considered for the cost savings which then could be used for a point-of-use treatment system as a part of a basin-wide management approach. It is not discussed whether the Headworks Spreading Ground could accept the volume of treated groundwater from the South Plume and potential discharge from the North Plume, and no contingency is discussed for periods of extended rainfall and its

potential impact on the ability to discharge treated groundwater to the Spreading Grounds.

EPA RESPONSE: The Headworks Spreading Grounds has a capacity of 12,400 gpm (FS, Page 4-5).

169. (FS Pages 5-19 and 5-23) To treat the groundwater for nitrates is not cost-effective, especially when the nitrates are present at background levels above the MCLs and the water will be recharged into the very same system from which it was pumped. The nitrate problem is basinwide in the shallow zone and would be only wasting funds which would be better used, if necessary, for treatment at the point of use.

EPA RESPONSE: Blending, which is a relatively low-cost option for reducing nitrate levels, has been included in the South OU FS and has been carried through detailed analysis of alternatives.

170. (FS Page 5-25) Implementability of nitrate treatment is a technical and administrative problem for <u>any</u> alternative. However, the point that must be stressed in the FS is that nitrate treatment is very expensive, and although the technology is available, the operation of this technology can be very complicated and problematic. Blending is much less problematic, and given the basinwide nature of the nitrate problem, blending is a much more sensible treatment.

EPA RESPONSE: See EPA Response to ITT Comment 169.

171. (FS Page 5-26) The last line has a typo; it should be 5,769,000 for total annualized costs per Table D-16. Using ion exchange for the treatment of nitrates for alternatives 8 and 9 would not be feasible because of the cost of ion exchange and the intensive maintenance required for these types of systems.

EPA RESPONSE: See EPA Response to ITT Comment 169.

172. In general, the costing has not addressed the additional requirements/contingency to design the system, especially the conveyance systems, to accommodate potential seismic activity.

EPA RESPONSE: A detailed analysis of costs is presented in Sections 5.0 and 6.0 for those technologies that were carried through alternative development. The cost estimates have an accuracy of +50 percent to -30 percent, as required by the <u>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA</u> (USEPA, 1988). See the cost estimate assumptions outlined in Appendices C and D. Engineering and design costs were included in the cost estimates for the detailed analysis of alternatives.

173. (FS Page 6-4) Cost is more than just an estimate -- it is an effectiveness issue also.

EPA RESPONSE: See EPA Response to ITT Comment 172.

174. (FS Page 6-5) State and public acceptance are significant issues that must be addressed adequately. Issues regarding state and public acceptance could result in changes in remedial actions for which there would be no opportunity for further review and comment. This problem also applies to any changes EPA decides to make, including those based on additional data.

EPA RESPONSE: See EPA Responses to ITT Comments 73, 74 and 75.

175. (FS Page 6-6) Table 6.2-1 states alternatives 4 and 6 may not require nitrate treatment; however, the FS states that "[n]itrate treatment may be required if...water is discharged to the river or recharged at the Headworks Spreading Ground." The issue of the treatment of nitrate may be a significant one and nitrate treatment must be discussed consistently for each alternative.

Certain alternatives do not have exact locations for wells or treatment facilities. EPA's consultant states that "flexibility to chose the exact locations and to adjust on the specific design criteria during the remedial design phase, when further information is available, is necessary to maximize the efficiency, reliability, and cost-effectiveness of the remedial action." It is not clear what additional data will be available, how it will be used to complete and improve the evaluation and why these data were not incorporated into this FS. The public must be allowed a more reasonable period to comment on this document. Additional data should be provided to better substantiate the approach presently recommended.

EPA RESPONSE: The issue of nitrate treatment has been carried through the detailed analysis of alternatives. For the reuse option, blending to reduce nitrate levels is feasible, and it was not necessary to consider other nitrate treatment options for this groundwater disposal option.

See EPA Responses to ITT Comments 94 and 136. Again, the exact locations of extraction wells will be determined during the design phase of the remedy.

176. (FS Page 6-8) ITT asserts that the FS derives the wrong remedial objectives from the risk assessment. The FS does not evaluate the detected risk drivers identified in the RI risk assessment (which were primarily benzene and methylene chloride for cancer risk) and, therefore, the wrong conclusions are reached regarding evaluation of the "no action" alternatives. Further, and of significant concern, is the potential that human health may not be protected. In addition, the elimination of several metals from the COC list and the exclusion of arsenic from the remedial objectives list (e.g., risk drivers) results in a remedial strategy which does not remove the metals from the groundwater and

potentially results in groundwater "treated" for domestic uses, which may also still pose a health risk.

EPA RESPONSE: See EPA Response to ITT Comment 87.

177. Sections 6.2.4.6 and 6.2.5.6 ITT states that blending or ion exchange costs should be included for comparison to the alternatives, which includes nitrate treatment options, especially excessive and unwarranted costs.

EPA RESPONSE: Blending and ion exchange are both carried through the detailed analysis of alternatives.

178. (FS Page 6-20) In addition, consideration by the City of Los Angeles Watermaster could result in a greater impact.

EPA RESPONSE: This comment is unclear. Consideration of what by the City of Los Angeles Watermaster?

179. (FS Page 6-29) The no action alternative must be reconsidered if the industrial areas which contain the chemicals which contribute most significantly to the risk assessment are not considered in the SP FS. The chemicals which drive the health risk are benzene, methylene chloride, arsenic and naphthalene (over 90% of the health risks are due to these chemicals; TCE and PCE represent approximately 1% of the total health risks). As these risk driving chemicals are found in "specific industrial sites and are not prevalent throughout the South Plume area" (FS at 1-23), the remedial activities should focus on these same specific industrial areas. If these industrial areas are to be omitted from the remedial objectives of the FS, then they should also be omitted from the risk assessment. If they are eliminated from the risk assessment, the no action alternative should be reconsidered and is likely to be the most acceptable option.

EPA RESPONSE: See EPA Responses to ITT Comments 105, 106 and 107.

180. (FS Page 6-31) Nitrates should not be considered for treatment as these materials are present throughout the basin, are not source-specific, and must be dealt with by blending or at government cost.

EPA RESPONSE: Nitrate treatment, including blending, is carried through the detailed analysis of alternatives. See EPA Response to Comments 81 and 169 and Comment 22 from Part I of this Responsiveness Summary.

181. (Appendix B) The calculation worksheets for remedial treatments are provided in Appendix B. However, references for the costs and the calculations are not well documented. The worksheet for absorption of radon onto Liquid-Phase GAC provides one of the few references, but no date of the reference. In addition, the worksheet does not reference or justify the input concentration for