

Aerojet General Superfund Site Responsiveness Summary to OU-5 Proposed Plan Public Comments

The comments listed below are summarized from comments submitted directly to EPA via letter or email, or provided during the 08/11/2009 public meeting.

There were several general topics that came up in a number of comments, which warrant a general discussion as well as specific responses to each comment.

General Response #1 - The groundwater cleanup values proposed are not adequate: In considering comments received during the Proposed Plan comment period, USEPA has reclassified the groundwater cleanup as an interim remedy which will contain the contaminant plume until USEPA develops the final cleanup standards for restoration of the groundwater in the final Sitewide remedy selection.

Final cleanup levels for water in the aquifer are based on the objective of restoring the resource to its beneficial use. The aquifer surrounding the Aerojet site is used as a source of drinking water. The lower of either the promulgated federal or state drinking water standard (Maximum Contaminant Level or MCL) is used for chemicals that have been through the lengthy public process to balance scientific information and other societal values. For contaminants with federal or state MCLs, USEPA maintains a general policy of establishing Superfund groundwater cleanup standards at the MCL. At the time of selecting the final Sitewide remedy, USEPA will evaluate whether any state Applicable or Relevant and Appropriate Requirements (ARAR) may require an *in situ* groundwater cleanup level lower than the MCL.

The Superfund program also must address risk above the general range of one additional case of cancer per 10,000 (10^{-4}) to one additional cancer per one million (10^{-6}). For chemicals without a promulgated standard, the Superfund program considers what is known about risk to public health, ideally to clean up each chemical of concern to reach a one in a million (10^{-6}) risk for cancer or a protective level for non-carcinogens (Hazard Index = 1). A similar evaluation is done for the cumulative risk from all contaminants of concern at the site. USEPA calculated that the cumulative cancer risk would remain within the acceptable risk range in OU-5 if all COCs were at the cleanup levels.

Often the risk information for chemicals without drinking water standards is not “settled” and the Agency must rely on estimates based on published risk information, public health advisories or public health goals which can be contradictory particularly for chemicals with relatively limited health research. Even for chemicals with formal drinking water standards, the health information continues to develop.

Coordination and integration of USEPA's cleanup and the State's remediation efforts and cleanup objectives for IRCTS and White Rock Road North Dump will be reviewed in the Sitewide remedy selection. An evaluation of the effectiveness of the OU-5 groundwater remedy during the five year reviews will specifically address these issues. USEPA is required to review the protectiveness of the remedy every five years at a site. The Agency anticipates that the five year review for the Aerojet site will occur in 2015 or 2016. The review checks for changes in environmental standards and other new information that might affect the protectiveness of the remedy. It also evaluates effectiveness of the action in attaining the objectives of the ROD.

General Response #2 - The proposed soil cleanup levels may not be protective, particularly for residential use of the land: There are no promulgated cleanup standards for soil. For surface soil, the most critical exposure pathway is the dirt and dust that a child will ingest, for example, from putting their hands and toys to their mouths. Some chemicals can be absorbed through skin. Garden vegetables may also take up chemicals through their roots, and food consumed from back-yard gardens may be an important pathway for some chemicals and for some people. If the contaminated soil is within ten feet of the ground surface, the contamination may eventually reach the surface through digging, including construction projects. Some chemicals like perchlorate salts can dissolve in water from rain or irrigation that percolates through the soil, eventually reaching the groundwater. In that case, the Superfund program must consider both surface soil and groundwater objectives. Soil will also "breathe" and allow vapor to reach the surface. Soil vapor intrusion into buildings has been a major issue at some cleanup sites, particularly where the groundwater with volatile chemicals is fairly close to the ground surface. The risks from this pathway involve many site-specific factors including the type of soil, how well the chemical vapor can move through open space between the soil particles, and the type of structures on the site. The objective for soil vapor intrusion is to prevent exposure to unsafe levels of chemicals indoors. As for many chemicals of concern, removing the source of the contamination is ideal. If it proves infeasible to remove the source sufficiently, other means, such as indoor air mitigation systems, must be used to prevent exposure. The cleanup levels in the ROD (Table 2.12) are established to achieve a one in a million (10^{-6}) risk level for cancer or a protective level for non-carcinogens (Hazard Index = 1).

General Response #3 - Land use restrictions are not protective: One alternative to preventing or limiting exposure to chemicals of concern is to restrict how water or land can be used for those areas where it is infeasible to remove source materials sufficiently to protect against exposure to unsafe levels of chemicals of concern. As a number of commenters have correctly pointed out, this is not ideal because of the challenges faced in enforcing the way land is used and how permits are followed. The long time required to reach the cleanup goals could also erode confidence in regulatory restrictions often called "Institutional Controls". In the region around Aerojet, groundwater used for public water supply is monitored for changes in

water quality and water levels in the aquifer. This provides some assurances about groundwater restrictions. EPA will ensure the protectiveness of the engineering controls and institutional controls through monitoring and Five Year Reviews.

General Response #4 - The remedy inadequately addresses impacts on surface water such as the American River: Impacts on surface water involve consideration of a complex set of issues that include the volume of water discharged to surface water, the volume in the receiving water and how it mixes, the chemistry of both waters and what effects might occur. Transport directly from groundwater into surface water does not occur at OU-5. EPA respects the site-specific effort that has been made by the State of California in developing standards (National Pollution Discharge Elimination Standards) for the water from the treatment plants that incorporate these considerations specifically for the local water bodies. The Record of Decision (ROD) cites the NPDES permit as the basis for treatment objectives for water that will be released to surface water.

General Response #5 - The remedy inadequately addresses ecological risks: Evaluation of ecological risks for the contaminated soil areas at OU-5 posed some challenges. USEPA is concerned about the potential risk to sensitive plant and animal populations from the existing contamination and the effects of the cleanup on these populations. Section 4.3.2 of the 2009 Remedial Investigation/ Feasibility Study provides further information supporting the statement for no action for ecological risks. No action is warranted at OU-5 to address ecological risks due to the absence of suitable habitat in impacted areas, and Aerojet's plans to develop much of OU-5 for commercial and residential uses. USEPA recognizes that the local, county and city agencies are following processes that are not under the direct control of the Superfund program which could lead to eventual commercial and residential development on part of OU-5. This change in land use may affect the ecosystem at the Site.

General Response #6 - The groundwater contamination is neither fully contained nor sufficiently monitored, threatening the public water supply: USEPA remains committed to rigorous evaluation of the effectiveness of the contaminant containment and long-term restoration of the aquifer. The Agency has initiated the formal evaluation of the OU-3 remedy. The OU-5 evaluation process may be combined with that for OU-3 for coordination and timeliness. For both OU-3 and OU-5, USEPA and the State actively search for any indication that either the containment system or monitoring program requires augmentation.

A. WRITTEN COMMENTS RECEIVED BY MAIL OR EMAIL

Commenter: Alex MacDonald, Senior Engineer, California Central Valley Regional Water Quality Control Board

1. The proposed cleanup value for TCE (5 µg/L) which is the current Maximum Contaminant Level [MCL]) of is not consistent with those that are being applied at the adjacent Inactive Rancho Cordova Test Site, at which Aerojet is a responsible party, and which will be affected by the containment levels proposed for OU-5. By allowing concentrations up to 5 µg/L to continue to migrate from Aerojet, the remedy for the IRCTS will be extended an indeterminate length of time having to remove the extra TCE that is above 0.8 µg/L or even 1.7 µg/L if the new PHG were used. Is USEPA willing to fund the regulatory oversight costs for the extended period of time it will take to cleanup at the IRCTS due to the addition of TCE from the Superfund site?

USEPA Response to Comment #1: As indicated in the ROD, the groundwater remedy at OU-5 is an interim remedy. USEPA is not attempting to set a cleanup standard in the aquifer at this time. See General Response #1. The Superfund program uses promulgated drinking water MCLs as cleanup goals whenever possible because the adoption of formal drinking water standards incorporates a wide range of factors in a more thorough public and scientific process. The protectiveness and effectiveness of the OU-5 interim remedy will be reviewed at the five year review, and USEPA will work with the State regarding the protectiveness of the OU-5 and OU-3 remedies and the relationships with IRCTS. The Agency will review and develop the final cleanup standards for the groundwater in the final Sitewide remedy selection. Coordination and integration of USEPA's cleanup and the State's remediation efforts and cleanup objectives for IRCTS and White Rock Road North Dump will be reviewed in the final Sitewide remedy selection. The question about funding of oversight may be addressed after future cleanup actions are in place and can be evaluated.

2. The cleanup value for TCE is not consistent with that being applied at the remediation of the adjacent White Rock North Dump (WRND) where Aerojet is the responsible party and includes ground contamination associated with the Aerojet-General Superfund Site. The State Order for the WRND requires Aerojet, the remaining responsible party for the WRND, to clean up the plumes of pollutants underneath and down gradient from the WRND, to 0.8 µg/L TCE and 6 µg/L perchlorate, among other pollutants.

USEPA Response to Comment #2: USEPA notes the difference between USEPA and the State of California's policy to set groundwater cleanup levels below the drinking water standard.

3. The proposed remedy for Zone 1 does not fully take into account ARARs in establishing cleanup values. The RWQCB may consider revision of Order No. 96-230 to assure that cleanup in the American River Study Area (ARSA) will be according to State requirements.

USEPA Response to Comment #3: The State has the authority to establish enforceable drinking water standards and may take other regulatory and permitting actions consistent with its authority. USEPA is not setting a cleanup standard in the aquifer at this time. USEPA will review the cleanup goals in the final Sitewide remedy selection. The Agency will also examine the effectiveness and protectiveness of the OU-5 interim remedy in the five year review process.

4. Institutional controls should not be used unless it is clearly demonstrated that active soil remediation is not technically feasible;

USEPA Response to Comment #4: USEPA agrees with this comment and the alternative selected in the ROD is consistent with this view.

5. The perchlorate cleanup level for soil remediation specified in the Record of Decision should be 0.06 mg/kg and not the 0.6 mg/kg found in the proposed plan.

USEPA Response to Comment #5: This inadvertent error has been corrected in the ROD and noted in the ROD as a significant change from the Proposed Plan. The state's risk-based soil cleanup goal for perchlorate for protection of groundwater is 60 µg/kg, which equates to 0.06 mg/kg, as presented in Table 7-4 of the RI/FS.

6. Remediation of soils at C41 should require use of ex-situ bioremediation of the soils after excavation and returning the soils back to the excavation or alternate location on Aerojet, following remediation. Thus, a majority of the soils that are proposed for excavation (outside of the landfill) would be retained on-site and not require transport to a disposal facility.

USEPA Response to Comment #6: EPA agrees that ex-situ bioremediation would have certain advantages over disposal. Treatment and replacement of the soil from site C41 is included as an option in the ROD. This will be a consideration in the remedial design phase.

7. Groundwater cleanup levels in general should be below the Maximum Contaminant Levels in order to fully restore the functionality of the groundwater to beneficial uses;

USEPA Response to Comment #7: This ROD is selecting an interim containment remedy. USEPA is not setting cleanup standards in the aquifer at this time. USEPA will evaluate cleanup standards at the time of the final Sitewide ROD. As a matter of policy, USEPA sets cleanup standards for groundwater at the MCL. Our criteria for evaluating whether that level is consistently achieved will use a

conservative analytical approach to account for variability in measurement and other sources of uncertainty. Under the Safe Drinking Water Act, water treated to at or below federal MCLs is safe for human consumption. At the time of selection of the final remedy, USEPA will evaluate whether any state ARARs will require an in situ groundwater cleanup level lower than the MCL. USEPA understands that state and local policies and other considerations will affect whether or not the treated groundwater is used as a source of drinking water.

8. One ppb (1 µg/L) should be considered when developing the cleanup values for groundwater. The Proposed Plan has a cleanup value for chloroform in groundwater of 80 µg/L, which is based on the MCL for total trihalomethanes. Allowing the remaining concentration of chloroform to be 80 µg/L would not only allow the incremental cancer risk arising from using the groundwater for domestic purposes associated solely with chloroform to be 8×10^{-5} , it would not allow any additional chloroform to be formed during the chlorination of the water in preparing it for public consumption

USEPA Response to Comment #8: The federal MCL does establish a limit of 80 µg/L for the sum of the concentrations of all five trihalomethanes and the language in ROD clearly reflects this. The toxicological information for chloroform and the other three trihalomethanes will continue to be developed over time. This will be reviewed before setting final Sitewide cleanup (restoration) levels for the Site.

9. The cleanup value for hexavalent chromium in soils is proposed to be 1.4 mg/kg, based on a construction worker exposure. The cleanup level also needs to be protective of groundwater and should consider the recent completed toxicological studies of hexavalent chromium that were used by OEHHA in developing the draft public health goal of 0.06 µg/L and by the New Jersey Department of Environmental Protection in drafting proposed soil cleanup levels.

USEPA Response to Comment #9: It is our understanding that the draft PHG for hexavalent chromium was released in August 2009, after the preparation of the RI/FS and the Proposed Plan. The April 2009 USEPA Regional Screening Level (RSL) for protection of groundwater was 2.1 mg/kg, which is above the construction worker cleanup value. In the December 2009 RSL table, the soil value for protection of groundwater is 0.83 mg/kg for Chromium VI, which is based on a tap water RSL of 0.043 µg/L. Adjusting this value to the OEHHA draft public health goal of 0.06 µg/L results in a soil value of 1.2 mg/kg, which is numerically similar to the construction worker cleanup value. Thus, the existing cleanup level for chromium VI is expected to be protective of the groundwater pathway. The State has reviewed the draft ROD and does not object to the hexavalent chromium cleanup value for OU-5.

10. Placement of contaminated soils beneath roadways and applying an institutional control in the form of a deed restriction should not be a remedial alternative. With roadways subject to disturbance and relocation from time to time, it would be best to place the soils in an area on-site where it is easier to maintain isolation of the wastes. With Aerojet performing remediation of soils at subsequent OU's, the establishment of a facility on Aerojet where the soils can be stored should be considered.

USEPA Response to Comment #10: EPA agrees that soil treatment is a preferable alternative to institutional controls such as deed restrictions. The description of the relevant soil remedy in the ROD specifies: "Treat the excavated soil to remove the contaminants to cleanup levels or transport contaminated soil to an approved landfill."

Commenter: Larry Ladd, citizen

11. Nitrosodimethylamine, nitrosomethylethylamine, and nitrosodiethylamine are all detected by method 521 at levels comparable to the neutron bombardment method we now use for nitrosodimethylamine alone, but method 521 is significantly cheaper. It is unclear if the NDMA-specific frequency of the UV oxidation treatment system breaks up the other nitrosamines likely to be in groundwater beneath Aerojet. Aerojet should use method 521 at Aerojet to protect public health and reduce analytical costs.

USEPA Response to Comment #11: USEPA appreciates this information and the Agency will consider the comment during the remedial design phase. USEPA has been in the process of reviewing quality assurance information for alternative analytical methods for NDMA.

Commenter: Cynthia Crowley, Gold River resident

12. Citizen's health is in jeopardy because acceptable cleanup levels for perchlorate have not been established.

USEPA Response to Comment #12: USEPA is using the State of California's drinking water standard for perchlorate as the containment objective for OU-5. The MCL is based on the State's current Public Health Goal for perchlorate. Any changes in the State MCL or establishment of a more stringent federal MCL for perchlorate will be examined and incorporated in the final Sitewide remedy selection process if scientific evidence indicates that the original level is no longer considered protective of human health.

13. Water supply protection needs to come before Aerojet property development.

USEPA Response to Comment #13: USEPA agrees with this prioritization. Development may be possible while the groundwater cleanup is proceeding. Land use has continued along with groundwater remediation at many cleanup sites in California and throughout the US. Construction and development has continued in areas above the Aerojet off-property plume and other construction projects have continued on the Aerojet property.

14. Aerojet has an obligation to clean up the site and insure water supply quality, and the government needs to hold them accountable.

USEPA Response to Comment #14: USEPA continues to require Aerojet to implement cleanup activities through enforceable orders. The State of California uses its authority to require Aerojet to clean up outside the Superfund site. USEPA and the state recover oversight costs from Aerojet.

Commenter: Warren Truitt, President of Save the American River Association

15. Contamination plume is still spreading and new strategies are needed to control and cleanup groundwater.

USEPA Response to Comment #15: USEPA's interim containment remedy is intended to prevent the plume from spreading. USEPA and the State actively oversee the cleanup. Due to a better understanding of subsurface conditions (i.e., groundwater plume extent, hydrogeology of contaminated aquifers), the groundwater containment strategies for OU-5 will improve the effectiveness of the plume capture using existing GETs. Groundwater modeling techniques have also improved which has enhanced the ability to design more effective extraction systems. Methods for monitoring extraction system effectiveness have also improved to allow necessary revisions to optimize containment and eventual restoration of the aquifer.

16. Current plume monitoring is inadequate and needs to be expanded.

USEPA Response to Comment #16: Methods for monitoring extraction system effectiveness are improving. System revisions that may be needed can be more readily identified. Recent EPA guidance for effectively monitoring the pump and treat systems (i.e.; Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems, 2008) is currently being implemented.

17. Aerojet and Boeing have yet to accept their responsibility and provide any meaningful proposal to resolve the very serious damages to the area's water supply.

USEPA Response to Comment #17: USEPA continues to require Aerojet to implement the cleanup activities through enforceable orders. The State of California uses its authority to require Aerojet to clean up outside the Superfund site. USEPA and the State recover oversight costs from Aerojet.

Commenter: Stephen Green, Immediate Past President, Lake Natoma Heights Neighborhood Assn.

18. Contamination plume is still spreading and new strategies are needed to control and cleanup groundwater.

USEPA Response to Comment #18: See response to Comment 15.

19. Current plume monitoring is inadequate and needs to be expanded.

USEPA Response to Comment #19: See response to Comment 16.

20. The time frame of 150 to 350 years that is needed to clean up the aquifer is too long and this alternative should be stricken from the proposed plan.

USEPA Response to Comment #20: USEPA acknowledges that the estimated length of groundwater restoration is significant. Immediate actions to prevent exposure to unacceptable levels of the contamination have been in place at the site and will continue to operate until no longer necessary for public health protection. The Agency will continue to review the effectiveness and efficiency of the OU-5 remedy through five year reviews and make any adjustments warranted by new information.

21. There is an urgent need to address contaminants leaking into Buffalo Creek. Deformed species have been observed.

USEPA Response to Comment #21: Buffalo Creek was not included in the OU-5 remedy because it is located upgradient and outside of OU-5, as shown in Figure 2 of the Proposed Plan. The RI states that groundwater does not discharge to Buffalo Creek. Buffalo Creek will be addressed, if warranted, in the RODs for OUs-6 through 9.

22. An approach to protect federally listed threatened species (Valley Elderberry Longhorn Beetle) and state-listed threatened species (Swainson's hawk) needs to be included in the plan.

USEPA Response to Comment #22: The screening level ecological risk assessment considered threatened and endangered species, including the Valley Elderberry Longhorn beetle and the Swainson's Hawk, as receptors of concern. No threatened and endangered species were directly observed during the site-specific habitat characterization, though habitat suitable for use by these species was observed. Though not detailed in the proposed cleanup plan, the protection of endangered species during implementation will be included in the remedial design. In addition, a Resource Conservation Management Plan (RCMP), which ties together all the resource, mitigation, enhancement, education, and recreation elements of the development project, is a component of Aerojet's proposed redevelopment. Aerojet's proposed development plans include implementation of compensatory mitigation for project-related effects to waters of the United States, potential habitat for special-status species (vernal pool branchiopods, Valley elderberry longhorn beetle, and Swainson's hawk), and other sensitive resources such as oak trees.

23. If the soil cannot be cleaned up to residential standards then it cannot be safe for commercial use either.

USEPA Response to Comment #23: Residential standards are considered to be the most protective maximum beneficial use of a property. Residential standards account for daily 24 hour exposure throughout the calendar year by both a child and an adult, while commercial standards take into account more limited durations for exposure based adult exposure during work hours. Thus a residential cleanup standard and a commercial cleanup standard are different but each is protective for the intended use.

24. No development of Aerojet land should be allowed until the soil and water on this Superfund site is restored to safe levels.

USEPA Response to Comment #24: See response to Comment 13.

25. EPA should become a party to the County of Sacramento suit that was filed on 1 July 2009.

USEPA Response to Comment #25: USEPA is aware of this legal action, which may be driven, in part, by a requirement that Aerojet ensure replacement water supplies. USEPA can require remedial action at the Aerojet site without becoming a party to the July 2009 lawsuit. Provisions for water supply replacement arrangements are included in both OU-3 and OU-5 RODs.

Commenter: Tom Gray, Fair Oaks Water District

26. Although the RI/FS is dated June 2009, most of the technical appendices that are summarized in the RI/FS or used to derive conclusions in the RI/FS are dated to prior years. The information and analysis developed as part of the 2008 Agreement appears to not have been used to perform the analysis specific to the preferred alternative Z1-3. FOWD is concerned that the chosen remedial action has not recognized FOWD operations and therefore may not protect FOWD public water supply wells, especially the Town well. For instance, Appendix H is dated August 1, 2005. This particular appendix documents *the Groundwater Flow Simulations Conducted in Support of the Perimeter Groundwater Operable Unit Feasibility Study*, including the analysis focused in Zone 1, which is inclusive of much of the FOWD service area.

USEPA Response to Comment #26: As stated in Section 4.2 of the PGOU RI/FS, the preparation of the report has occurred over a multi-year timeframe and therefore the RI/FS may not reflect the latest data for the site. Groundwater modeling was conducted as part of the OU-5 RI/FS to assess and compare potential remedial alternatives for Zones 1 through 4. However, EPA believes that the FS-level evaluations provided in the report are adequate for selection of the remedial actions identified, as critical information will be updated during the remedial design phase. The final number, location and flow rates of the remedial extraction wells for each zone will be determined during the remedial design phase by incorporating the current and projected flow rates of surrounding water supply wells into the groundwater model.

27. Section 1.2.2.4 of the RI/FS notes that FOWD operates two public water supply wells within 1-mile of the PGOU boundary. On the accompanying table, the wells are listed as “Town” and “Chicago” (Aerojet has numbered these wells as 1047 and 1049, respectively). As of the 2008 Agreement the Chicago well is now owned by Aerojet and is no longer operated. FOWD is very concerned that continued operations of the Town well will be adversely impacted without immediate installation of the planned remedial wells up-gradient of the Town well. Without remedial wells in place a full year and a half after signing the 2008 Agreement, and the need for FOWD to continue to operate the Town well to help meet customer demands, the potential for TCE to be discovered in the Town well is increasing daily.
- a. In the 2008 Agreement, Aerojet and FOWD both agreed to operate supply and remediation wells in a manner to minimize any adverse impact to remediation and to FOWD operations. Without remedial wells in place these operational agreements cannot be realized.

USEPA Response to Comment #27 a.: A critical component of both the OU-3 and OU-5 remedies includes thorough evaluation of information to ensure the effectiveness of the containment systems. USEPA plans to coordinate

the evaluations of the two OUs to expedite an evaluation of Zone 1 of OU-5 upgradient from where the Town well is located.

- b. As also agreed to by Aerojet in the 2008 Agreement, if TCE is found in the Town well, replacement water supplies will need to be provided. FOWD greatly prefers to maintain operations of the Town well and not need to work with Aerojet to find costly replacement water.

USEPA Response to Comment #27 b.: A major objective of the OU-5 remedy is to contain the contaminant plume to protect downgradient water supplies such as the groundwater critical to FOWD.

28. Though the RI/FS indicates two remedial wells to be located up-gradient of the Town well (namely Z1-C1 modeled at 500 gpm, and Z1-D1 modeled at 600 gpm), it is unclear if these well locations and flows are the same as modeled during development of the 2008 Agreement. Therefore, it is unclear whether these wells will provide the desired remediation. FOWD would like to be provided with a comparison of the information modeled in the RI/FS and that represented during the 2008 Agreement negotiations.

USEPA Response to Comment #28: See EPA response to Comment #26.

29. Because the California Department of Health Services, Office of Drinking Water has established a Public Health Goal (PHG) of 0.8 µg/L for TCE, FOWD believes that the EPA preferred alternative in the Plan should accommodate this PHG.

USEPA Response to Comment #29: See USEPA's General Response #1 and responses to Comments 1, 2 and 3 regarding the State's use of PHGs and other non-promulgated standards versus MCLs.

30. In several locations within the RI/FS there is mention of alternative considerations that would send extracted groundwater to a treatment facility next to the FOWD Town well instead of pumping the remedial water to the ARGET treatment facility. During early discussions with Aerojet for development of the 2008 Agreement, FOWD offered an opportunity to locate a treatment facility on property within the FOWD service area. Aerojet declined. There have been no further discussions on this matter with FOWD. FOWD requests that representation of this option in the RI/FS and supporting appendices be removed.

USEPA Response to Comment #30: USEPA no longer considers an additional treatment facility within the FOWD service area to be necessary based on a

preliminary evaluation of the containment effectiveness in Zone 1. The alternative for constructing a treatment system within the FOWD service area was considered during conceptual development of alternatives in the RI/FS report several years before the proposed plan was published. If this approach is evaluated during the design phase, further discussions with FOWD will be needed.

31. The cost to install the preferred alternative (Z1-3) indicated in the RI/FS (section 5.2.3.7) is not consistent with the detailed cost information included in Appendix I.
- a. The cost table included in Appendix I does not include the cost for potential treatment at a location other than the ARGET facility (e.g. as stated in comment #5 above, the RI/FS indicates the potential for treatment located at or near the FOWD Town well). The cost table in Appendix I for the Z1-2 alternative did include this additional cost, listed to be \$395,000. This cost is missing from the estimate for Z1-3.

USEPA Response to Comment #31 a.: Although the Alternative Z1-3 cost table in Appendix I does not repeat the itemized cost estimate for the optional treatment system near Well 1047, this cost is included in the cost summary in Section 5.2.3.7 (page 94) of the RI/FS. The estimated capital cost of \$3,500,000 for construction of a treatment system adjacent to the FOWD Town well (Well 1047) is the same for Alternatives Z1-2 and Z1-3. This is because: 1) the additional extraction wells that would be included in the mass removal option are existing wells; and 2) the additional groundwater extracted from these wells would be treated at the ARGET treatment facility.

- b. The cost listed for treatment at the FOWD well of \$395,000 does not include any cost that might associate with the routing of the treated water to and through storm water discharge facilities. Pumping to the storm water system of a constant stream of 1,100 gpm (the combined rate from the Z1-C1 and Z1-D1 new extraction wells) may require various modifications to channels, culverts and other ancillary facilities as the water is conveyed from the treatment location to the American River. If the water were to be directly used by FOWD after treatment, there may also be costs associated with the connection to the FOWD potable water delivery system.

USEPA Response to Comment #31 b.: The feasibility study costs are estimated within the +50%/-30% accuracy range specified in EPA's RI/FS guidance. During the design phase more detailed estimates will be prepared.

Commenter: Kenneth Payne, City of Folsom

32. Remediation goals in the Plan are not adequate. Maximum protection of human health should be the primary criteria to be considered in the development of the cleanup goals for the Plan. Therefore, the applicable, relevant and appropriate requirement (ARAR) for the cleanup goals for the contaminants of concern (COC) should be the Maximum Contaminate Level Goal (MCLG), not the Maximum Contaminate Level (MCL) as proposed in the Plan. California Department of Health (CDPH), who has primacy over the water quality regulations in California, specifically requires that water from extremely impaired sources must be treated to the MCLG to even be considered as a source of supply. Remediation goals presented in the Plan, MCLs, do not provide the requisite level of protection for human health.

Treating the contaminated groundwater to the individual MCL value does not fully restore the groundwater basin to its beneficial use. If the City of Folsom attempted to develop a groundwater supply from the basin, the water would still have to be treated to meet requirements of the CDPH.

Treating to the MCLs compromises the assimilative capacity of the groundwater basin when considering the individual and cumulative risks associated with the various COCs.

USEPA Response to Comment #32: In considering comments received during the Proposed Plan comment period, USEPA determined that the groundwater cleanup is an interim remedy. USEPA will review the final cleanup standards for the groundwater in the final Sitewide remedy selection. See the USEPA's General Response #1 at the start of this Responsiveness Summary. USEPA is required to review the protectiveness of the remedy every five years at a site after the remedy is in place.

33. Both the California Water Code (CWC) and Federal Water Pollution Control Act (Clean Water Act) require the preparation and adoption of water quality control plans (basin plans). Basin plans are a comprehensive document that designates the beneficial uses of the water to be protected, water quality objectives and implementation actions to achieve the water quality objectives. The Central Valley Basin Plan as adopted must conform to statewide policies in accordance with the CWC. State Water Resources Control Board Resolution No. 92-49 (Resolution 92-49) contains policies and procedures related to oversight and regulation of cleanup or abatement activities from all types of discharges. Resolution 92-49 directs the Regional Board to ensure that dischargers are required to cleanup in a manner that promotes attainment of background water quality or highest water quality reasonable.

Cleanup to the MCL level is not the highest water quality and does not provide the maximum benefit to the people of the region and state and unreasonable impacts present and future beneficial uses of the water in this basin. The City of Folsom would seek to use this water for any possible purpose.

USEPA Response to Comment #33: Both USEPA and the State have identified drinking water use of the groundwater as the primary beneficial use of the water in the aquifer. Containment levels in the ROD are based on MCLs rather than on background levels consistent with USEPA policy. USEPA will review the final standards for the groundwater in the final Sitewide remedy selection. See USEPA's General Response #1.

34. It is stated in the Plan that incorporation of the management of the treated groundwater into the overall water supply picture for this area of Sacramento County could minimize the need for major new facilities to divert and treat surface water from the Sacramento River. However, it also states that all costs above the basic remediation action (MCL) costs, necessary to allow for integration of the this water source into the regional water supply picture would be become part of the new developments financing program.

The costs for remediation to allow for beneficial use of the groundwater basin should be borne by Aerojet who created the problem, not existing and future water rate payers. The City of Folsom could use this groundwater for potable supply, and non-potable purposes absent cleanup to the highest possible levels, and the ratepayers will suffer while Aerojet will benefit from a reduced standard.

USEPA Response to Comment #34: There are a number of successful projects in California where Superfund cleanup actions are fully integrated with the public water supply systems. The OU-5 remedy does not preclude use of the extracted water as a source of drinking water supply following treatment, despite the lack of any current plans for use as a potable water supply. USEPA appreciates the perspective of water purveyors regarding obstacles and challenges to providing potable water supply. The language in the ROD clarifies that state drinking water policies regarding impaired sources will be important considerations for use of the water as a potable supply.

35. The Plan is replete with the statement that the “Treated groundwater could be used as the source of water for the Aerojet industrial water system in lieu of the untreated surface water.” This can only be accomplished if the water is either delivered to the City of Folsom, as we are the water purveyor, or contractual arrangements made for Aerojet to be self supplied. In either case this will require a significant amount of coordination with the City, GenCorp and CDPH, which to date has not occurred.

The Plan is deficient in that it makes speculative statements regarding permitting requirements from CDPH, but provides no history of correspondence or other evidence that this use would be allowed, and if so under what conditions.

USEPA Response to Comment #35: USEPA agrees that the provision of treated groundwater as drinking water will need to meet the requirements of CDPH. See response to Comment #34.

36. The overall goal of any remediation alternative considered, as stated, is to protect human health and the environment. One of the Remedial Action Objectives (RAOs) listed in the Plan is as follows: “*Protect public drinking water wells and provide treatment or alternative supply for those drinking water wells that have been or potentially may become impacted by chemicals at unacceptable levels.*” Public drinking water wells have already been impacted by chemicals at unacceptable levels and treatment is currently being provided with the water being discharged to the American River. In light of the current political and market climate in California, with regard to water rights and availability, an alternative water supply needs to be identified and potentially secured.

USEPA Response to Comment #36: USEPA agrees with the basic concern expressed in the comment. A requirement for contingency plans for alternative water supply is incorporated into the remedy. More detailed development of such plans will occur in subsequent phases of the design and implementation of the remedy.

Commenter: Herbert Niederberger, Sacramento County Water Agency

37. Using Maximum Contaminant Levels (MCLs) as the cleanup goal does not provide sufficient protection for present and future beneficial uses of the basin. SCWA recognizes that many trade-offs are considered during the development of an MCL, but limiting clean-up operations to the MCL not only eliminates any future assimilative capacity for contaminants within groundwater basin, it is also not protective of human health. With this in mind, clean-up goals are more appropriately reflected in the Maximum Contaminant Level Goals (MCLG) as established by the United States Environmental Protection Agency or Public Health. In the event remediated water is used for drinking water purposes, as proposed by the plan, treating to the MCLG level is consistent with California Department of Public Health’s Policy Memo 97-005, “Policy Guidance for Direct Domestic Use of Extremely Impaired Sources.” In accordance with this policy Memo, proposed treatment of extremely impaired sources should be designed and operated to meet the MCLG or less. While treating to the MCLGs will not guarantee that the remediated groundwater can be used directly for domestic purposes, it is the first step that will be required for any reuse proposal.

USEPA Response to Comment #37: See USEPA’s General Response #1 and response to comments #33, #34 and #35.

38. The Remedial Investigation/Feasibility Study (RI/FS) for the Plan states that:
“[I]ncorporation of the management of the treated groundwater into the overall water supply plans for the eastern portion of the County could be used to minimize potential investment by Sacramento County and would delay if not eliminate the need for a new major Sacramento River diversion and accompanying treatment and pumping facilities at least for service to the portions of eastern Sacramento County that are farthest from the river. It would allow for staged development of water supply facilities meeting all public health and environmental requirements. All costs above the basic remedial action cost would become part of the new development financing program with potentially significant savings to both the remediating and development efforts.”

Absent groundwater contamination, SCWA would not have to consider making significant additional investments in surface water facilities to convey water to areas proposed to be developed by Aerojet. Cost related to contaminated groundwater impacts should be the responsibility of Aerojet and not part of a new development financing program.

USEPA Response to Comment #38: See response to comments #25, #33, #34 and #35.

39. The RI/FS for the Plan identifies several possible process options for: *“[M]anagement and/or possible reuse of untreated or treated groundwater produced by any hydraulic containment or groundwater collection/treatment alternatives. “ This can only be accomplished if agreements are reached on the disposition of the remediated groundwater and any damages are addressed that are associated with the presence of groundwater contamination.*

USEPA Response to Comment #39: *A requirement for management of the groundwater and reuse is incorporated into the remedy. USEPA’s experience with implementation of the OU-3 remedy has made us aware of the many challenges involved in subsequent phases of the design and implementation of the remedy. The Agency is also aware of legal actions between Sacramento County and Aerojet.*

40. The RI/FS for the Plan states that: *“[T]he long-term yield of the basin is unaffected by the extraction and/or recharge of the quantities of water described in this report.”* This is a false conclusion since very little of the groundwater extracted and treated as part of the proposed OU-5 plan will actually recharge the basin. Furthermore, while the amount of groundwater extracted and treated as part of the proposed OU-5 plan is relatively small the current extraction rate for on-going remediation activities is approximately 20,000 acre-feet per year or about 7 percent of the sustainable yield of the basin. This is a significant amount, and it will continue to increase as other Operable Units are brought on line. In addition, this statement does not take into account the impacts of water supplies lost due to contamination. If purveyors replaced the 20,000 acre-feet per year with groundwater pumped from other areas in the basin, the impact is essentially double. Currently, the majority of the remediated groundwater is discharged to surface water streams and is lost to

the basin. In order to keep this groundwater in the basin and to minimize impacts to its long-term sustainable yield, appropriate agreements for the replacement of water supplies lost due to contamination and the re-use of this water should be reached so that this valuable resource will not simply be discharged to waste.

USEPA Response to Comment #40: USEPA agrees that long-term management of the groundwater resource is an important consideration and such a requirement is incorporated into the remedy. As in the response to comment #39, there will be challenges to developing and implementing a management program.

41. SCWA requests a description of how the operations of surrounding water purveyors were incorporated into the design of the proposed containment and remediation strategy for contaminated groundwater, as well as contingencies for changes in their future operations. Detections of contaminants at increasing distances from Aerojet have, unfortunately, demonstrated that past strategies may have been inadequate to arrest movement of contaminants in the aquifer. Several regional factors will potentially result in increased reliance on the groundwater basin, particularly in drier periods in the future. SCWA is interested in seeing that the plan can demonstrate effective capture under near-term and long-term public water supply operations in the underlying groundwater basin.

USEPA Response to Comment #41: Groundwater modeling was conducted as part of the OU-5 RI/FS to assess and compare potential remedial alternatives for Zones 1 through 4. The final configuration of the remedial extraction system for each zone will be determined during remedial design phase which will commence following completion of the OU-5 ROD. During the remedial design phase, the current and projected flow rates of surrounding water supply wells will be incorporated into the groundwater model.

Commenter: Steve Nugent, Carmichael Water District

42. OU-5 Potential Multi-Basin/Multi-Jurisdictional area of environmental impact.
 - a. The National Environmental Policy Act (NEPA) Environmental Impact Study was completed at a time that containment within the existing Aerojet site was considered possible. CWD requests EPA require an update to the NEPA cumulative impact evaluation addressing expanded scope of the cleanup to an area well beyond the Aerojet plant site. This effort should include, but not be limited to, impact of the MCL cleanup goal on future beneficial use by public and private water purveyors.

USEPA Response to Comment #42 a.: USEPA agrees that the Aerojet contaminant plume extends beyond the property boundary of the Aerojet facility. OU-5 and OU-3 are intended to address the contamination

beyond the property boundary, in a CERCLA process that is considered the functional equivalent of NEPA. As mentioned in response to comment # 41, the interaction of the remedy with the surrounding basin will be examined.

- b. The clean-up and containment approach was in part based on the groundwater south of the American River being unique and separate from the groundwater north of the American River and that the American River formed a boundary condition.

CWD requests EPA require that NEPA documents address cumulative impacts both south of the American River and north of the American River.

USEPA Response to Comment #42 b.: *The remedies for both OU-5 and OU-3 extend north of the American River. See the response to comment #42a regarding CERCLA functional equivalency to NEPA.*

- c. The gross regional extent of the contaminant plume impacts multiple local special districts and private water providers who rely on the groundwater as a key element to meeting existing and future water supply demands.

CWD requests EPA require evaluation of cumulative impacts on maintaining and management of the groundwater resource as a viable water supply considering the impacts of the Aerojet cleanup on the viability of conjunctive use.

USEPA Response to Comment #42 c.: *A critical component of both the OU-3 and OU-5 remedies includes thorough evaluation of information to ensure the effectiveness of the containment systems, as well as consistency with basin management considerations. USEPA will consider coordinating the evaluations of the two OUs to expedite an evaluation of Zone 1 of OU-5.*

- d. The State of California Department of Water Resources is advocating increased use of groundwater as one key strategy to addressing climate uncertainty and change. The State of California Regional Water Quality Control Board is enforcing an anti-degradation policy for direct injection using aquifer storage and recovery wells disallowing public water purveyors from using potable waters meeting all Maximum Contaminant Levels (MCL) for recharge.

CWD requests EPA acknowledge that the use of the MCL as the clean-up standard is inconsistent with State of California ASR well use policy enforcing an anti-degradation standard for public water purveyors managing conjunctive use programs.

USEPA Response to Comment #42 d.: *See response to comment #34.*

- e. CWD requests that until such time as the NEPA Cumulative Impacts evaluation update is completed the EPA require additional redundancy in extraction well coverage and capacity combined with increased density of monitoring wells, aquifer characterization test holes and water purveyor supply sentry wells to reduce the uncertainty as to the adequacy of the OU-5 plan being protective of existing and future beneficial use of the basin as a public water supply.

USEPA Response to Comment #42 e.: USEPA and the State will oversee the design and implementation of the remedy, including a requirement for rigorous evaluation of the systems' effectiveness. USEPA will examine the need for additional monitoring points and alteration of the hydraulic containment action to optimize the effectiveness of the containment.

- 43. OU-5 plan establishes clean up goals based on current drinking water Maximum Contaminant Levels (MCL) for those constituents where an MCL exists. The use of the Federal MCL as OU-5 Clean-up Goals transfers the economic risk for uncertainty and additional groundwater treatment as a drinking water supply to the local public water system rate payers. The State of California MCL treatment compliance enforcement through California Department of Public Health (CDPH) for public water supplies will likely require additional treatment before issuing a Water Supply Permit for water marginally at the MCL. The clean up goals should be significantly below the State of California MCL to be protective of future beneficial uses of the waters of the State of California and to prevent shifting the economic legacy for cleanup to the local public and private water system rate payer.

USEPA Response to Comment #43: See General Response #1 and responses to comments #1, #2 and #3.

- a. Public and Private water purveyors are responsible for monitoring and providing a safe and reliable water supply under the regulatory jurisdiction of the CDPH. CDPH policy is, where alternate water supplies are unavailable, to require a groundwater treatment design goal for public water supplies of approximately 20% below the MCL to provide for treatment upset and uncertainty.

CWD requests EPA acknowledge that the MCL limit may be insufficiently protective of existing beneficial use for public and private water purveyors under the CDPH jurisdiction for enforcement of Drinking Water Maximum Contaminant Levels.

USEPA Response to Comment #43a.: The process for developing and promulgating both federal and State MCLs considers uncertainty from many sources.

- b. Drinking water MCL standards are set in California though set in Code of California Regulations Title 22 and are often more conservative than the Federal MCL to address members of the population that are more highly susceptible to health risk.

CWD requests EPA acknowledges that California MCL health based criteria is more conservative than Federal MCL health based criteria.

USEPA Response to Comment #43b.: USEPA is required by CERCLA to adopt more-stringent State MCLs in developing final cleanup objectives. The OU-5 groundwater action is an interim remedy that will contain the existing contamination. Final cleanup objectives will be set at the time of the final Sitewide ROD.

- c. EPA established and amends MCL's at the Federal level and in practice address uncertainty with regard to health risk through including Factors of Safety.

CWD requests EPA acknowledge that there is no Factor of Safety provided in the use of the Federal MCL as the cleanup criteria for uncertainty as to future beneficial use by public and private water purveyors.

USEPA Response to Comment #43c.: The process for developing and promulgating both federal and State MCLs considers uncertainty from many sources.

44. California Division of Drinking Water and Environmental Management Policy Memo 97-005 Section A General Philosophy states the following: "... only the best quality sources of water reasonably available to a water utility should be used for drinking." In addition, the Policy Memorandum further states:

"Water utilities (including wholesalers) should be encouraged to minimize the concentration of man-made toxic substances, natural occurring contaminants, and pathogenic microorganisms in drinking water supplies, maximum contaminant levels (MCLs) notwithstanding."

And further:

"...sources that contain or are likely to contain high concentrations of contaminants, multiple contaminants, or unknown contaminants (such as groundwater subject to contamination from a hazardous waste disposal site) should not be considered for direct human consumption where alternatives are available."

USEPA Response to Comment #44: See response to comments #34 and #35.

- a. CWD requests EPA acknowledge that water purveyors are held to a much higher resource management standard than an MCL for multi-contaminant and contaminated groundwater as part of Water Supply Permitting of new public water supply wells. This includes replacement wells exempt from the California Environmental Policy Act.

USEPA Response to Comment #44a.: See response to comments #34 and #35.

- b. CWD requests EPA acknowledge that the OU-5 plan provides no allowance for lost resource management for maintaining existing public water supply planning for impaired groundwater supplies.

USEPA Response to Comment #44b.: *USEPA agrees that short- and long-term replacement of water supplies and the management of the groundwater resource are important considerations of this large groundwater remedy. Such requirements are incorporated into the remedy, but will involve further development for specific details. As in the response to comment #39, there will be challenges to developing and implementing a management program.*

- c. CWD requests that the EPA require Aerojet collaborate with local water purveyors or the Regional Water Authority, or the Sacramento Groundwater Authority to complete replacement water supply plans for all groundwater supplies within limits of groundwater at risk of containing man-made contaminants, multiple contaminants, or unknown contaminants from Aerojet, consistent with the General Philosophy section of California Division of Drinking Water and Environmental Management Policy Memo 97-005 Policy Guidance for Direct Domestic Use of Extremely Impaired Sources with special emphasis on the following: “...sources that contain or are likely to contain high concentrations of contaminants, multiple contaminants, or unknown contaminants (such as groundwater subject to contamination from a hazardous waste disposal site) should not be considered for direct human consumption where alternatives are available.”

USEPA Response to Comment #44c.: *Groundwater management outside the Superfund Site must comply with all applicable regulations including permitting activities required by state and local authority. USPEA has included a requirement for OU-5, similar to that for OU-3, for management of water levels to prevent the spread of contamination beyond the current extent of the plume.*

- d. CWD requests EPA require a sustaining funding mechanism for funding the public cost of collaboration and participation in the replacement water supply planning of groundwaters at risk as described above.

USEPA Response to Comment #44d.: USEPA expects details of developing and implementation of short- and long-term water replacement contingency plans, including funding for public participation in technical aspects, will be addressed during the design phase of the project.

- e. CWD requests EPA specifically request participation and comments from CDPH regarding suitability of OU-5 with regard to protecting future beneficial use and conjunctive use as interpreted through Policy Memo 97-005.

USEPA Response to Comment #44e.: USEPA's experience at other large groundwater sites in California has shown that CDPH is closely involved in the potable use of groundwater or treated groundwater extracted from a Superfund site. Use of water outside the NPL site must comply with all applicable federal, state and local regulations.

- 45. The extraction of groundwater for remediation is a significant percentage of the potential groundwater basin yield that is not currently integrated into the regional conjunctive use and groundwater management plans. Combined pumping with transfers for indirect reuse using surface water provides a benefit to the responsible party. This potential benefit is contradictory to the potential liability shift of long term groundwater treatment for groundwater users contending with CDPH permitting authorities.

USEPA Response to Comment #45: See response to comment #44c.

- a. CWD requests that EPA prohibit OU-5 groundwater extractions direct or indirect reuse benefits to the responsible party until all public water supply options, including, but not limited to, groundwater banking and upstream storage credits for critically dry years for CWD.

USEPA Response to Comment #45a.: The details of groundwater management as required to "...Create a groundwater management zone within OU-5 to maintain water levels and to prevent adverse impact on the remedy..." will be developed during subsequent stages of the design and implementation of the remedy.

- b. CWD requests the EPA require the OU-5 plan address the loss of groundwater recharge potential due to contamination of the Aerojet Site as it relates to the long term decline in the regional groundwater table and sustainability of the groundwater supply as a public resource.

USEPA Response to Comment #45b.: See response to comment #45a. USEPA will consider these comments during review of the remedial design for OU-5.

Commenter: Janis Heple, Citizens Advisory Group for the Aerojet Superfund Site (CAG-AJ)

The CAG-AJ reviewed comments made by Alexander MacDonald, on behalf of the Water Quality Control Board, and concurs with the issues raised in his letter.

46. Cleanup values for OU-5 should address the following issues:

- a. Proposed cleanup value for TCE is not consistent with the neighboring Inactive Rancho Cordova Test Site;

USEPA Response to Comment #46a.: USEPA is grateful for the thoughtful participation of the Citizens' Advisory Group during all stages of the Aerojet Superfund project. EPA has addressed many of the comments below in General Response #1 at the start of this Responsiveness Summary and in the earlier comments cited. See also response to comment #1.

- b. Proposed cleanup value for TCE is not consistent with the remediation of the White Rock Road North Dump;

USEPA Response to Comment #46b.: See response to comment #2.

- c. Perchlorate cleanup level for soil remediation in ROD should be 0.06 mg/kg;
USEPA Response to Comment #46c.: USEPA agrees and the language in the ROD corrects this typographical error in the proposed plan fact sheet.

- d. Groundwater cleanup levels should be below the MCL;

USEPA Response to Comment #46d.: Please see General Response #1.

- e. The draft Public Health Goal for chloroform should be considered;

USEPA Response to Comment #46e.: See response to comment #8.

- f. The cleanup value for hexavalent chromium in soils should consider recent studies.

USEPA Response to Comment #46f.: See response to comment #8.

47. The use of institutional controls instead of active remediation should be minimized.

USEPA Response to Comment #47: Whenever possible EPA prefers active remediation instead of institutional controls. In areas 7D, 33D and the Former Company Store, the RI concluded that neither soil excavation nor soil vapor extraction would be effective until levels of VOCs in the groundwater are reduced by controlling sources outside OU-5. In this case institutional controls would be needed until the groundwater cleanup is achieved.

48. CAG-AJ requests that EPA require the use of EPA method 521 to evaluate the presence of NDMA and other nitrosamines. EPA method 521 is considerably cheaper than the current method used to detect nitrosodimethylamine in groundwater, and just as sensitive in terms of detection level. The current detection method is not approved nationally by the EPA. Unlike the current detection method, EPA method 521 detects nitrosamines other than NDMA that might be formed by degrading methylated hydrazine rocket fuels, like nitrosomethylethylamine and nitrosodiethylamine. The issue of additional chemicals produced by the degradation of rocket fuel is an important issue to the CAG-AJ, and any steps that may be taken to further identify breakdown products should be introduced to the process.

USEPA Response to Comment #48: See response to comment #11.

49. In terms of the soil contamination, Mr. MacDonald has additionally noted the difficulties in maintaining institutional controls, particularly in regards to roadway issues. Institutional controls are a major concern of the CAG-AJ. Institutional controls should not be used unless it is clearly demonstrated that active remediation is not technically feasible. It has not been shown that soil remediation to protect groundwater or direct or indirect soil contact is not economically feasible. At the Aerojet site the remediation effort will exceed a century, making institutional controls very difficult and costly to enforce. While institutional controls may be adequately implemented in the first 10 years or in the first set of real estate documents, in later years it becomes much more difficult to implement them. People's memories fade, and the extra verbiage gets buried deeper in real estate documents. The life-cycle cost for institutional controls needs to be taken into consideration as part of the institutional control evaluation, not just the first 30 years. If institutional controls continue to be included as a control strategy, the Record of Decision (ROD) should stipulate that all institutional controls will be reviewed against technical feasibility as part of the OU-5 remedy 5 year reviews.

USEPA Response to Comment #49: Whenever possible EPA prefers active remediation instead of institutional controls. During the five year reviews USEPA considers the adequacy of any institutional controls to reliably protect human

health and the environment. USEPA may recommend amendment of the ROD to include new or feasible technical remedies to improve the protectiveness.

50. In regards to the use of contaminated soil for the building of roadways, if contaminated soils are to be used for road fill, what are the contaminants of concern and what scientific assurance is there that the contaminants will remain immobile?

USEPA Response to Comment #50: Section 7.6.2.4 of the Lands RI/FS states that only non-hazardous soil would be used as backfill and only if there is no threat to groundwater. If soil reuse is proposed in the remedial design, USEPA and the state would need definitive assurances of effective and reliable means to prohibit direct contact and minimize the potential for contaminant migration.

51. Continuing with the issue of unresolved cleanup levels, the future re-use of the property creates difficulties in specifying the cleanup standard. It is difficult to agree to a cleanup remedy when it is stated "If the cleanup does not attain unrestricted use levels, the land would be restricted to commercial use with a land use covenant." When would they assess this and would the community have an opportunity to be involved in the decision? Instead of restricting to commercial property, the assessment should again show that soil remediation to protect groundwater or direct or indirect soil contact is not economically feasible. And what is not economically feasible today could change in the future. Future cleanup strategies could emerge that would provide alternatives; during the 5 year review of the OU-5 remedy the technical feasibility of new alternatives could be evaluated.

USEPA Response to Comment #51: USEPA has attempted to resolve the cleanup levels as much as possible while clarifying potential contingencies. The community would be notified of any significant change or amendment to the ROD. As mentioned in response to comment #49, EPA prefers active remediation instead of institutional controls whenever possible. During the 5-year reviews USEPA considers the adequacy of any institutional controls to reliably protect human health and the environment. USEPA may recommend amendment of the ROD to include new or feasible technical remedies to improve the protectiveness.

52. There is yet another strong argument for cleanup versus institutional controls, and that is the perchlorate cleanup level for soil remediation in the ROD. We agree with Mr. MacDonald that the cleanup level should be 0.06 mg/kg rather than the 0.6 mg/kg as currently stated. As you are aware, site remediation experience has shown that source material remediation is the key to expedited site restoration. The Proposed Plan clearly demonstrates that the groundwater cleanup will take longer than 100 years because of the perchlorate source material existing in the soil. Thus, before Aerojet reaps the benefit of releasing the land for development, priority needs to be given to removing the perchlorate source material to at least 0.06 mg/kg to adequately protect the groundwater. It has not been demonstrated that the added cost of perchlorate soil remediation to 0.06 mg/kg is not justified.

USEPA Response to Comment #52: See EPA response to Comment #5 as well as General Responses #1 and #2.

53. The C4 and C41 Proposed Plan specified final remedy is a list of options and needs to be more specific. The remedy selected needs to remediate the contaminated soil on-site to residential soil action levels unless it is not technically feasible to do so. If Aerojet wants to develop the land, contaminated soil that is not technically feasible to be remediated should be stored on-site in areas that are not planned for residential or commercial development. Moving the contaminated soil to an off-site landfill just perpetuates the problem and needlessly exposes the community to risk. During the remedy 5-year-reviews, remedial technology improvements can be assessed for any stored on-site contamination.

USEPA Response to Comment #53:

EPA agrees that soil treatment, such as ex-situ bioremediation, would have advantages over disposal. Treatment and replacement of the soil from site C41 is included as an option in the ROD. Soil treatment will be a strong consideration in the remedial design phase.

54. In areas 7D and 33D, VOCs will be allowed to go into the air without cleanup. The plan proposes vapor barriers; but the VOCs still go into the air via diffusion. How will maintenance workers and people working in the commercial buildings or living in residential buildings be protected? What is "appropriate monitoring?" Again, we do not consider land use covenants as an effective strategy in the long run, and, as indicated by the fact sheet, this area could include either residential or commercial properties.

USEPA Response to Comment #54: Vapor mitigation systems are proposed until the groundwater contamination sources outside OU-5 are remedied. These systems restrict movement of vapors into indoor air, similar to a radon reduction system. Land use covenants are needed to ensure vapor mitigation system are used. Monitoring must be performed with USEPA and State oversight to ensure the system is operating properly and that it is protective.

55. In regards to the contaminants in areas 7D, FCS and 33D it is noted on page 10 of the fact sheet that "the only viable remedy for residential use is vapor mitigation beneath buildings constructed in the areas to prevent movement of contaminants into the buildings." If commercial development were to occur, institutional controls would be required. Is this a suggested remedy? This does not appear to be an appropriate remedy, and should not be approved.

USEPA Response to Comment #55: USEPA agrees that it is preferable to utilize permanent solutions to the maximum extent possible and to reduce toxicity,

mobility or volume mitigation rather than mitigate the risks from exposure. In the case of certain soil areas in OU-5, information developed during the RI indicates that the alternatives for a permanent solution to VOCs in the vadose zone may be limited and may entail a long time period before the objectives for unrestricted use can be attained. USEPA has experience at other Superfund sites, including sites in California, where appropriate land use can proceed with proper mitigation of soil vapor risks, including careful monitoring.

56. The vadose zone issues within the OU-5 soil contamination properties are discussed and strategies of control are proposed. Are there vadose zone issues also in existence off of the Aerojet property? Do vadose zone issues exist in the slickens beneath Gold River, Sunriver (Citrus Ponds), and Sacramento Bar? The Proposed Plan did not make this clear.

USEPA Response to Comment #56: A considerable amount of effort was expended in assessing the risks for vapor intrusion throughout OU-5 including the communities mentioned. This effort delayed the completion of the RI/FS for several years while over 300 subsurface monitoring stations were installed and the results analyzed. USEPA attempted to explain these results in summary in the Proposed Plan presentation on August 11, 2009. The risks within OU-5 from vapor intrusion were limited to those VOC locations identified in the proposed plan.

Commenter: Allen Tsao, citizen

57. Page 5. Summary of Ecological Risk. The text states, "...the ecological health assessment determined there are no ecological risks within OU-5 that require action."
- a. This statement does not appear to be quite technically correct. According to the screening-level ecological risk assessment in Section 4.3.1.10 of the Remedial Investigation/Feasibility Study (Aerojet, 2009), the ecological risk model acknowledges that "there is a potential for constituents in soil to pose an adverse risk to ecological receptors under the exposure conditions assumed at Sites 4D, FCS, and C29 in Area 20; Sites D(e) and C32 in Area 21; and Sites C14 and C15 in Area 49." The real reason for no action seems to be in the next sentence, which states "However, currently planned development of the property (Easton project) into residential and commercial land may [emphasis added] eliminate the available habitat for these receptors, with the possible exception of Site C15. Hence, no significant ecological risk is likely in the future [emphasis added]." (p. 4-39 of the RI/FS [Aerojet, 2009]). Please revise the statement because the assessment is based on current conditions, not on future developments.
- USEPA Response to Comment #57a.: Section 4.3.2 of the Remedial Investigation/Feasibility Study (Aerojet, 2009) provides further information supporting the statement on no action for ecological risks. Future*

development is only one of several reasons supporting no ecological remediation in addition to that required for protection of human health. Other reasons include current lack of suitable habitat in impacted areas, and the current exposure of the ecological receptors to elevated background levels of COPCs that are not associated with releases of hazardous substances.

- b. Based on the assessment by Aerojet, there is potential for chemicals to pose adverse effects to ecological receptors under current conditions. Given the current economy, I'd venture to say that any development may not be realized until 10 years later or perhaps more. Thus, please explain what the agencies plan to do to protect ecological receptors, including listed species and species of special concern, before development begins.

USEPA Response to Comment #57b.: USEPA does not anticipate that habitat suitable for ecological receptors will become available in contaminated and disturbed areas of OU-5 prior to remedial activities nor prior to development of the area. The evaluation of exposure to background levels of COPCs should also be unaffected by economic delays in development. It is reasonable to assume that remedial activities would commence prior to major land development. EPA has determined that it will be necessary to comply with regulations governing the protection of special status species and their habitat during remediation activities for the protection of human health.

58. Areas 21 and 49 appear to be in an area that provide potential foraging and nesting for special-status species (p. 4-27 of the RI/FS [Aerojet, 2009]. On p. 4-40, Aerojet states that the future development of the area will be "limited to dredger tailings and previously disturbed areas." The remaining habitat will be encompassed by the Easton Open Space Preserve "having the potential to support the greatest diversity of plant and wildlife species with the proposed area of development." So, based on Comment 1a above, it appears that even if it were to be developed, it will not be developed in areas of suitable habitat for wildlife. Accordingly, the ecological risk would continue to pose adverse effects to ecological receptors in the absence or presence of the development of the Easton Open Space Preserve.

USEPA Response to Comment #58: The Easton Open Space Preserve will encompass mostly undisturbed areas. The previously disturbed areas, where the significant majority of contamination is found, will be developed into a commercial and residential area with minimal habitat. The contamination within the areas of suitable habitat (i.e., undisturbed areas) is de minimis, thus posing no significant risk to ecological receptors.

59. According to the RI/FS (Aerojet, 2009), under Section 4.3.1.9, Identification of Limitations and Uncertainties, the text states “Bioaccumulative constituents such as PCBs, dioxins and furans, and mercury were found in soil, presenting the possibility of exposure through the food chain. However, as described above, the sampling was conducted primarily in disturbed areas where significant exposure potential is unlikely. Migration of bioaccumulative constituents through the ditches into adjacent habitats may present a food chain exposure under current conditions, but is unlikely to be a concern in the future given the elimination of habitat that will occur as a result of development of the property.”

- a. It appears that very limited sampling was conducted in un-disturbed areas. Thus, it appears that potential data gap exist on what the hazard is in the un-disturbed areas.

USEPA Response to Comment #59a.: Soil and groundwater characterization at Aerojet has been ongoing since the early 1980s. Numerous studies have been conducted within OU-5 to determine source areas and define nature and extent. All sampling plans underwent various agency reviews prior to implementation in the field. It is common practice in environmental investigations to focus sampling in areas expected to be impacted by hazardous substances (i.e., recognized environmental conditions (RECs)). Sampling undisturbed areas other than for analysis of background conditions is not warranted since such conditions in those areas would not be considered as RECs.

- b. Aerojet assumes that contamination in the un-disturbed habitat can only be reached by migration but does not account for contaminants that may already exist in the undisturbed areas. For samples that were taking in habitat areas, levels of contaminants exceeded ecological benchmarks. Table 4-6 of the RI/FS indicates that several metals exceeded the plant benchmarks in three different types of habitats. Of those chemicals that exceeded benchmark, the hazard quotients range was 1.1 to 880 (for chromium). It is remarkable that the maximum zinc concentration was 1160 mg/kg whereas the maximum zinc concentration samples in California (UC-Riverside, 1996) were 236 mg/kg. Obviously, zinc exceeded the plant benchmark as well. It appears that the next step should have been to conduct more samples to delineate the extent of contamination and assess any potential hotspots. It is unclear if the site or risk was adequately characterized before risk management decision was made.

USEPA Response to Comment #59b.: The native and disturbed soils at the Aerojet site are known to contain naturally elevated concentrations of some elements. Section 4.3.1.10 of the Remedial Investigation/Feasibility Study (Aerojet, 2009) discusses the contribution of background levels of elements to ecological risk. The results of statistical background evaluation found that several metals, including chromium and zinc, appear to represent

background conditions rather than contamination resulting from site-related activities. Background information is important to risk managers because the CERCLA program, generally, does not clean up to concentrations below natural or anthropogenic background levels.

- c. The future elimination of habitat is contradictory with the intent of the Easton Open Space Preserve (see Comment 2). Please clarify.

USEPA Response to Comment #59c.: The habitat referred to in this text selection is in the disturbed area and includes areas proposed for redevelopment. The contamination within the areas of suitable habitat (i.e., undisturbed areas) is de minimis, thus posing no significant risk to ecological receptors.

60. Page 6. Table 2.

- a. Unrestricted Use Level vs. Restricted Use. Please clarify that the “unrestricted use” is a land development terminology, and does not necessarily mean that cleanup numbers under this scenario is suitable for ecological receptors or their habitats.

USEPA Response to Comment #60a.: “Unrestricted use” and similar terminology is used to describe potential exposure conditions for human health risk assessment. The term makes no reference to the suitability of the land for ecological receptors or habitat.

- b. The proposed perchlorate cleanup level was 55 mg/kg under “unrestricted use”. It does not appear that perchlorate was assessed in the ecological risk assessment portion of previous documents. Therefore, there is a knowledge gap on the level of hazard perchlorate is posing on ecological receptors. Although the USEPA appears to have no official position what the unacceptable level of perchlorate would be for ecological receptors, it seems that USEPA in its draft perchlorate assessment would consider a lowest observable adverse effects level of 25 mg/kg/d and a no observable effects level of 2.5 mg/kg/d (USEPA, 2002) . Given the high propensity for perchlorate to bioaccumulate in plants and that perchlorate affects the developmental phases of vertebrates, please ensure that perchlorate is not at an unacceptable level to ecological receptors at current and future habitat areas, as well as areas that are currently habitat (I would consider any non-pavement area would be habitat for ecological receptors).

USEPA Response to Comment #60b.: Table 2 in the Proposed Plan presents a perchlorate cleanup goal for protection of groundwater quality, since corrected to 0.06 mg.kg soil, which is well below the USEPA screening levels. Thus, the perchlorate cleanup level is also protective of ecological receptors. The Screening Level Ecological Risk Assessment (SLERA) states “Perchlorate was only detected in soil samples collected at Site C41...”

Perchlorate concentrations in the surface soils (0 to 1 foot below ground surface) ranged from less than 10 µg/kg to 1,900 µg/kg. No screening level was presented in the SLERA for perchlorate. USEPA (2002) presents a soil invertebrate threshold for soil community effects at 1 mg/kg and a screening benchmark of 4 mg/kg for terrestrial plants. The soil cleanup level for perchlorate is well below these levels, and will be protective for ecological receptors.

Commenter: John Woodling, Sacramento Groundwater Authority

61. We are concerned that proposed cleanup to the current maximum contaminant level (MCL) is not protective enough of the basin's beneficial uses. An MCL includes many trade-offs that are considered during its adoption process. Cleanup to the MCL provides no future assimilative capacity for contaminants in the groundwater basin. We believe that the cleanup goal should be to maximize protection of human health, which is more appropriately reflected in the State Water Quality Objectives. The Proposed Plan indicates (Table 3 of Proposed Plan) that the incremental cost between containment and containment with mass removal is not that different. We believe that further consideration should be given to the next increment of cleanup to basin water quality objectives.

USEPA Response to Comment #61: Please see General Response #1 at the start of this Responsiveness Summary, as well as USEPA's responses to Comment #1 and #3.

62. We request a description of how the operations of adjacent water purveyors were incorporated into the design of the proposed containment and remediation strategy for contaminated groundwater, as well as contingencies for changes in their future operations. Our experiences of detections of contaminants at increasing distances from Aerojet have, unfortunately, demonstrated that past strategies may have been inadequate to arrest movement of contaminants in the aquifer. Several regional factors will potentially result in increased reliance on the groundwater basin, particularly in drier periods, in the future. We are interested in seeing that the Proposed Plan can demonstrate effective capture under near-term and long-term public water supply operations in the underlying groundwater basin.

USEPA Response to Comment #62: See EPA response to Comment 41.

63. SGA is currently commencing a study using a regional groundwater flow model to better understand the movement of water over the long-term in the basin. The results of this study may better inform whether sufficient facilities are in place for capture and

containment of the Aerojet plumes. We request that the results of our study, which are expected in mid-2010, be included in any future review of the remediation system in place to address the Aerojet contamination.

USEPA Response to Comment #63: EPA would appreciate the opportunity to review the findings of your study. Depending on the completion date of your study, EPA should be able to review the results before the OU-5 remedial design is completed by Aerojet. It should be noted that the OU-5 remedial design will be completed following preparation of the OU-5 ROD.

Commenter: Darrell Eck, Sacramento Central Groundwater Authority

64. Using Maximum Contaminant Levels (MCLs) as the cleanup goal does not provide sufficient protection for present and future beneficial uses of the basin. SCGA recognizes that many trade-offs are considered during the development of an MCL and that limiting clean-up operations to the MCL eliminates any future assimilative capacity for contaminants within the groundwater basin. With this in mind, clean-up goals should be set to maximize protection of human health, which are more appropriately reflected in the Maximum Contaminant Level Goals (MCLG) as established by the United States Environmental Protection Agency (EPA) or Public Health Goals (PHG) as established by the California Department of Public Health. In the event remediated water is used for drinking water purposes, as proposed by the Plan, treating to the MCLG (or PHG, as applicable) level is consistent with California Department of Public Health's Policy Memo 97-005 "Policy Guidance for Direct Domestic Use of Extremely Impaired Sources." In accordance with this Policy Memo, proposed treatment of extremely impaired sources should be designed and operated to meet the MCLG or less. While treating to the MCLGs will not guarantee that the remediated groundwater can be used directly for domestic purposes, it is the first step that will be required for any reuse proposal. Additionally, using PHGs is not inconsistent with the Plan as they are being proposed by as the goal for NDMA.

The disposal alternatives of non-potable use and discharge to surface water of groundwater treated to the MCL has the potential to further exacerbate the groundwater contamination issue. In the Plan, it is acknowledged that in several locations treated groundwater that is discharged to surface waters infiltrates back into the groundwater basin. This practice is therefore in conflict with the beneficial uses outlined in the Basin Plan, and in particular the State Water Resources Control Board (SWRCB) Resolution 68-16 "Anti-degradation Policy" which requires maintenance of existing water quality that is better than that required by other policies. This practice therefore impacts the reliability and suitability of the groundwater in the basin, which is contrary to the adopted GMP, and the Basin Plan.

The Plan indicates that the incremental cost between “containment” and “containment with mass removal” is not that different. SCGA believes that further consideration should be given to set clean-up goals based on appropriate Federal MCLGs and State PHGs.

USEPA Response to Comment #64: Please see General Response #1 at the start of this Responsiveness Summary, as well as USEPA’s responses to Comment #1 and #3.

65. SCGA requests a description of how the operations of adjacent water purveyors were incorporated into the design of the proposed containment and remediation strategy for contaminated groundwater, as well as contingencies for changes in their future operations. Detections of contaminants at increasing distances from Aerojet have, unfortunately, demonstrated that past strategies may have been inadequate to arrest movement of contaminants in the aquifer. Several regional factors will potentially result in increased reliance on the groundwater basin, particularly in drier periods, in the future. SCGA is interested in seeing that the Plan can demonstrate effective capture under near-term and long-term public water supply operations in the underlying groundwater basin.

USEPA Response to Comment #65: See EPA response to comment #41.

66. In order to provide for consideration and incorporation of the latest science and information on the fate and transport of contaminants within the basin, the Record of Decision needs to be reopened on a frequent basis. Various agencies and authorities that are responsible for the management of impacted basins are committing a considerable amount of effort and resources to better understand the impact of this ever changing contamination issue, in an effort to develop management strategies. Thus the value of this effort and its potential benefit to the region should not be overlooked or ignored, and should be used by the EPA and the Central Valley Regional Quality Control Board to continually evaluate the effectiveness of the remediation efforts.

USEPA Response to Comment #66: The Five Year Review process includes consideration of new science. Please the General Responses at the start of this Responsiveness Summary, as well as USEPA’s responses to Comments #8, #20 and #49.

Commenter: Robert Roscoe, Sacramento Suburban Water District,

67. Staff at SSWD is concerned that proposed cleanup to the current maximum contaminant level (MCL) is not protective enough of the basin’s beneficial uses. An MCL includes many trade-offs that are considered during its adoption process. Cleanup to the MCL provides no future assimilative capacity for contaminants in the groundwater basin.

Furthermore, since it is not possible to monitor all locations, once any monitoring network shows concentrations have dropped to the MCL there will undoubtedly remain areas above the MCL, as it is extremely unlikely that the monitoring network has pinpointed every location of maximum concentration. We believe that the cleanup goal should be to maximize protection of human health, which is more appropriately reflected in the State Water Quality Objectives. The Proposed Plan indicates (Table 3 of Proposed Plan) that the incremental cost between containment and containment with mass removal is not that different. We believe that further consideration should be given to the next increment of cleanup to basin water quality objectives.

USEPA Response to Comment #67: Please see General Response #1 at the start of this Responsiveness Summary, as well as USEPA's responses to Comment #1 and #3.

68. SSWD is concerned about how the operations of adjacent water purveyors were incorporated into the design of the proposed containment and remediation strategy for contaminated groundwater, as well as what contingencies for changes in their future operations were considered. Unfortunately detections of contaminants at increasing distances from Aerojet have demonstrated that past strategies may have been inadequate to arrest movement of contaminants in the aquifer. Regional water supply planning includes increased reliance on the groundwater basin, particularly in drier periods, in the future. We are interested in seeing that the Proposed Plan can demonstrate effective capture under near-term and long-term public water supply operations in the underlying groundwater basin.

USEPA Response to Comment #68: See EPA response to comment #41.

69. SSWD is participating in studies using regional groundwater flow models to better understand the movement of water over the long-term in the basin. The results of these studies may better inform whether sufficient facilities are in place for capture and containment of the Aerojet plumes. We request that the results of these studies, which are expected in mid to late 2010, be included in any future review of the remediation system in place to address the Aerojet contamination.

USEPA Response to Comment #69: EPA would appreciate the opportunity to review the findings of your study. Depending on the completion date of your study, EPA should be able to review the results before the OU-5 remedial design is completed by Aerojet. It should be noted that the OU-5 remedial design will be completed following preparation of the OU-5 ROD.

Commenter: Dave Brent, City of Sacramento

American River Cumulative Risk:

70. It is unclear to the City whether the impacts of the remedy on the Lower American River have been evaluated. There needs to be a clear review of impacts to the American River. Cumulative impacts on the Lower American River are occurring from both the Western Groundwater and Perimeter Groundwater remedies. If the Inactive Rancho Cordova Test Site (IRCTS) remedy is combined with PGOU and results in a discharge to the Lower American River, then it should be added to the cumulative assessment as well.

USEPA Response to Comment #70: Ecological and human health impacts on the American River have been considered in the RI/FS. Treatment requirements for discharges to the River, both directly and indirectly, are established at the State's NPDES levels.

71. In the RI/FS there is a discussion on the alternatives to satisfy varying demands with respect to treated groundwater management. There are four options outlined, including the potential to discharge more water to surface water in winter. The City would like to stress the importance of limiting treated groundwater discharges to account for actual flows in the American River or its tributaries and ensure appropriate dissipation. The City recommends incorporating minimum river flows when determining suitability of increased discharges. We also recommend that EPA evaluate surface water discharges and suitable river conditions using quantifiable conditions such as river flow, precipitation, reservoir releases, and other operational and hydrologic information rather than a general approach assuming flows are higher during winter months, which is not always the case on the Lower American River.

USEPA Response to Comment #71: USEPA appreciates these insights on American River issues and will evaluate these flow management concerns during the design and implementation phases of the project.

72. In the RI/FS it is stated that several areas of groundwater contamination are not well understood and will be further delineated when additional wells are developed. Well development water from the Aerojet site should be monitored appropriately to characterize its risk and not automatically classified as a "low-threat" discharge under the Aerojet National Pollutant Discharge Elimination System (NPDES) permit for the GETs and low threat discharges. The City recommends that these flows be managed so as to not result in contamination of storm drains or surface waters.

USEPA Response to Comment #72: USEPA agrees with the essence of this comment and will work with the State regarding requirements for management of well drilling and development water.

Alder Creek

73. In the RI/FS and supporting appendices there appears to be conflicting information related to the quality of Alder Creek and the potential impact from groundwater seeps located on the adjacent south hillside. The report documents the possible impact of the groundwater seeps, through the upward movement of groundwater, either from surface saturation or actual flow from contamination Layer A. There has been limited monitoring of Alder Creek, which has resulted in detectable NDMA and perchlorate, as well as other organics and high levels of iron and manganese. There is discussion on why the levels of detectable constituents in Alder Creek are considered insignificant, based on lack of detection and low levels.

The City is concerned that insufficient investigation may have been conducted regarding the water quality of the seeps and the potential impact on Alder Creek. Clearly, there is a source (or sources) of contamination to Alder Creek that should be identified and managed to protect public health and the environment. Alder Creek is tributary to the American River; and the drinking water beneficial use applies to this creek as well as recreation; therefore, the Alder Creek evaluation should be expanded to include drinking water considerations.

USEPA Response to Comment #73: The human health assessment (HHA) evaluated recreational exposure to surface water and seep concentrations in Alder Creek. Risks were evaluated for groundwater that potentially discharges to Alder Creek, which provides a conservative evaluation of potential risks from using the creek as a drinking water source. The HHA determined that exposures to constituents in Alder Creek would be negligible and limited to occasional dermal contact under a recreational scenario. The maximum incremental lifetime cancer risk was less than 10^{-7} and the Health Index was less than 0.0007.

Facility Implementation

74. It is important that a sufficiently long public review and comment period is provided related to any new or revised NPDES permits to account for the potential changes caused by the Proposed Plan and allow for input by drinking water utilities.

USEPA Response to Comment #74: NPDES permits are issued by the Regional Water Quality Control Board following its public review and comment requirements.

75. All proposed alternatives will result in a significant amount of new piping. Some of these pipelines may transport untreated groundwater and will cross or come in close contact with surface waters. These pipelines should be designed, operated, and maintained to ensure that spill risk is minimized. Also, there should be specific procedures in place to monitor the

flow in the pipelines and provide notification to impacted agencies, such as the water utilities, in the event of a failure that impacts receiving waters.

USEPA Response to Comment #75: USEPA agrees that the operation of transmission pipelines must be monitored for the reasons expressed by the commenter. The monitoring procedures will be reviewed during development of the designs and operating plans, with oversight by USEPA and the State.

76. All proposed alternatives will result in increased flows at the existing GET facilities. The majority of the increases will bring the facilities up to near design capacity. The increase in flows should be monitored and paced carefully to ensure that the facility performance is not degraded by the increase in flow.

USEPA Response to Comment #76: Treatment system effluent concentrations will be closely monitored as required by the NPDES permit.

77. Appendix G of the RI/FS provides a copy of Facility Reports for the GET facilities. Most of the Reports or Operation and Maintenance Manuals for the GETs are listed in the references as being greater than 10 years old. These reports and plans should be required to be modified to include all current facilities as well as plans and procedures to ensure the consistency of treated water quality. This should include required elements, including as a minimum operational parameters, preventative maintenance, planning for emergencies (power outages, alarms), and notification procedures providing notification to the downstream water utilities.

USEPA Response to Comment #77: USEPA agrees that routine review and necessary updating of O&M procedures should occur.

78. The RI/FS states that the air stripping process at ARGET has a design capacity of 3,800 gallons per minute (gpm). The flows at this GET have never been this high, so performance at this level has not been proven. For that reason, we request that EPA and Central Valley Regional Water Board (Regional Board) reconsider approval of treatment flows in excess of design capacity (as indicated under alternative Z1-3) or consider requiring a plan to ensure safe implementation and monitoring of the increased flows and resultant water quality in an incremental manner. We believe that the increased flows should be proven to be treatable prior to amending the NPDES permit, or consideration be given to allow a temporary increase in flow in the permit with such safety features, prior to a permanent amendment.

USEPA Response to Comment #78: USEPA will work with the Water Board to consider this request during the review of design and operation plans.

79. GET A treated groundwater has been historically discharged to Rebel Hill Ditch. Under alternatives Z4-2 and Z4-3 there may be an expansion of GET A or construction of a new

GET facility. This new GET may discharge to Alder Creek under a new permit or discharges may be used onsite as non-potable water. This should be evaluated carefully to ensure that the beneficial uses of Alder Creek are not impaired any further and that this additional flow to the American River is included in the cumulative impact analysis.

USEPA Response to Comment #79: During the development of a design that includes alternative discharges to Alder Creek, USEPA and the State will review the adequacy of the current analysis of potential impacts.

Constituents of Concern

80. The first Remedial Action Objective (RAO) is to protect public health and the environment. We agree that this is the intent of the remedy, but if drinking water Maximum Contaminant Levels (MCLs) are the basis for cleanup levels, then the remedy is actually only meeting acceptable levels of risk in drinking water as defined by EPA. Whenever feasible it is preferred to further reduce the risk to public health, and we support the use of California Public Health Goals (PHGs) and EPA Maximum Contaminant Level Goals (MCLGs) where appropriate for the Superfund cleanup.

USEPA Response to Comment #80: Please see General Response #1 at the start of this Responsiveness Summary, as well as USEPA's responses to Comment #1 and #3.

81. The fact sheet provides a table of the groundwater cleanup levels (Table 1). There are three trihalomethanes (THMs) listed on the table; bromodichloromethane, chloroform, and dibromochloromethane. Each of these has a cleanup level shown of 80 micrograms per liter ($\mu\text{g/L}$) based on the Federal MCL. We believe that this is inaccurate since the Federal MCL applies to Total THMs (TTHMs). The TTHM MCL includes the three THMs listed above as well as bromoform. The standard should be clarified in the table, and EPA should clarify if the proposed remedy continues to meet the combined standard.

USEPA Response to Comment #81: The federal MCL does establish a limit of 80 $\mu\text{g/L}$ for the sum of the concentrations of all four trihalomethanes.

82. The RI/FS states that the American River Groundwater Extraction and Treatment (ARGET) facility utilizes an analytical method for 1,4-dioxane with a detection level of 10 $\mu\text{g/L}$. This level is above the cleanup level, 3 $\mu\text{g/L}$ based on the Federal Public Health Advisory. The detection limit of 10 $\mu\text{g/L}$ seems insufficient to evaluate compliance with cleanup goals and determine impact to public health. We request consideration of requiring the detection limit to be reduced to below the cleanup level.

USEPA Response to Comment #82: USEPA will review quality assurance information for alternative analytical methods for 1,4-dioxane prior to approval of improved methods to attain an appropriate quantitation limits for 1,4-dioxane.

83. The RI/FS states that GETs A and B have non-detectable NDMA, at 0.012 µg/L. This level is higher than the cleanup level, 0.003 µg/L based on the PHG, as well as the California Department of Public Health (DPH) Notification Level of 0.01 µg/L. The detection level of 0.012 µg/L seems insufficient to evaluate compliance with cleanup goals and determine impact to public health. We request consideration of requiring the detection limit to be reduced to below the cleanup level.

USEPA Response to Comment #83: USEPA is in the process of reviewing quality assurance information for alternative analytical methods for NDMA.

84. The RI/FS states that both Zones 1 and 3 have tentatively identified compounds (TICs) as well as detected unknown compounds in the contaminated groundwater. These have not been identified as constituents of primary concern (COPCs) and are not being addressed in this Proposed Plan. These compounds should continue to be investigated in some manner to ensure that if harmful chemicals are identified at a later time, they can be addressed through review of the remedy and modifications to actions or treatment. Monitoring at some reasonable frequency also seems warranted during the long length of the clean-up, as analytical methods may improve and provide more information on these contaminants.

USEPA Response to Comment #84: An approach to identifying TICs will be incorporated into future monitoring plans.

85. The selected alternatives should include contingency plans to address detects above the levels approved by the Regional Board or DPH. If additional chemicals of concern arise that were not previously identified, they should be addressed immediately and included in revisions to the remediation plan and associated implementation permits. Contingencies should be in place to cease discharge as appropriate until such issues are satisfactorily reviewed by the regulatory agencies and addressed.

USEPA Response to Comment #85: Specific contingencies to address exceedence of treatment requirements are incorporated into Operation and Maintenance Plans as well as monitoring requirements.

86. In the RI/FS the EPA mentions several on-going studies or evaluations that are on-going as part of the interim solution. The City would like to request that EPA provide on their website information related to on-going research and evaluations at the Aerojet site, such as potential health impacts, groundwater seep investigations, and pilot testing of in-situ treatment technologies.

USEPA Response to Comment #86: USEPA notes this request for information access and will attempt to provide as much updated information though the webpage as feasible. The URL for the website is www.epa.gov/region09/aerojet.

Monitoring and Reporting Program

87. The Monitoring Program needs to continue to include the receiving waters, including the American River upstream and downstream of Buffalo Creek. This monitoring should be timed to coordinate with GET effluent monitoring so that the results can be compared if there are detections in the treated groundwater. Also, if any discharges are planned for Alder Creek, Alder Creek should be added to the list of receiving waters.

USEPA Response to Comment #87: USEPA will consider this advice during review of the monitoring plan.

88. Detection limits, methods, constituents or other factors should be appropriate to ensure that collected data provides appropriate information to protect human health. These parameters should be adjusted to keep current with future water quality standards and guidelines and available laboratory technology. The monitoring program should include an expanded list of all potential chemicals of concern on a reasonable frequency to ensure that if present at levels of concern, additional chemicals of concern are identified and addressed.

USEPA Response to Comment #88: Updated monitoring plans will consider the recommendations in this comment

89. The City acknowledges the helpfulness and information provided by Aerojet Staff over the past several years in providing notification of NPDES permit exceedences for the Interim Groundwater Extraction and Treatment Systems. The Plan should continue to include notification procedures to contact downstream water purveyors when monitoring results exceed MCLs, detects are found in the American River, or there are any significant problems with the discharge or remediation activities that may affect American River water quality. The notification needs to occur in a timely manner to allow water diverters the ability to respond to changes in source water quality. The discharge should also be immediately ceased in cases of potential significant issues. This is essential to ensure protection of public health.

USEPA Response to Comment #89: See response to comment #85.

90. The Plan should include ongoing monitoring, inspections, and evaluation of site conditions, including the physical equipment utilized for the clean-up to ensure that it is functioning correctly.

USEPA Response to Comment #90: The five year review process requires the inspection and evaluation of ongoing remedies. USEPA agrees with this comment and will consider the recommendation in the development of future monitoring programs for the site.

Commenter: Mike Finnegan, US Department of the Interior

General Comments

91. The discharges of extracted or remediated water to the streams must be clarified by quantities and constituents, rather than generalized that discharges meet standards. Water quality parameters of concern include temperature as well as perchlorate, N-Nitrosodimethylamine NDMA, and trichloroethylene TCE.

USEPA Response to Comment #91: The treatment standards for discharge to surface water onsite shall meet the substantive requirements of the NPDES permit or in the case of discharge off the Superfund site, shall require compliance with all applicable requirements of the NPDES permit. The values have been specified in the ROD.

92. The Bureau of Reclamation does not support discharges of remediated water to any tributaries to the American River upstream from Nimbus Dam or the American River Fish Hatchery including Alder Creek.

USEPA Response to Comment #92: USEPA does not anticipate any changes in the current locations of discharge for remediated water in compliance with an NPDES permit. Treated groundwater from ARGET and GET E/F is discharged to Buffalo Creek and treated groundwater from GETs A and B, located in Zone 3, is discharged to the Rebel Hill Ditch, where it infiltrates into the ground along the southern boundary of the Aerojet Site.

93. Additional alternatives should be developed to provide discharge of extracted or remediated water to Morrison Creek and Laguna Creek to the south, rather than to the American River. In particular, opportunities of the proposed project for discharge and remediation of extracted groundwater may be improved by conveyance of the water in the channel of Morrison Creek and coordination with the Sacramento Regional County Sanitation District for use of the lands, water and facilities of the Sacramento Regional Wastewater Treatment Plant near Morrison Creek and the Sacramento National Wildlife Refuge. Although some water from Beach and Stone Lakes is pumped over the levee to the Sacramento River, floodwaters in the Morrison Creek basin will likely flush discharged water into the eastern Delta during the rainy seasons.

USEPA Response to Comment #93: USEPA appreciates these suggestions and will consider specific alternatives in the design phase.

94. Remediated water may be used in landscaping for certain developments in the general area.

USEPA Response to Comment #94: The ROD allows for such uses of treated water, provided the treatment meets the appropriate discharge requirements.

95. On page 2, Figure 2 shows that the OU-5 approximately underlies Reclamation's Nimbus Dam, headworks structure, and a portion of the Folsom South Canal. Does the EPA foresee any impacts from the proposed cleanup activities upon these structures? If EPA does foresee any impacts, what are they? These impacts need to be more fully understood.

USEPA Response to Comment #95: EPA does not foresee any impacts from the proposed cleanup activities upon these structures. The proposed groundwater extraction wells shown on Figure 2 are more than 1500 feet from these structures and the screened intervals for these extraction wells range from 50 feet to 228 feet below groundwater surface. Existing pipelines will be used to convey groundwater beneath the Folsom South Canal to the treatment system that will remove the contaminants prior to discharge.

Specific Comments

96. Reclamation is concerned that given the fact that residence time in Lake Natoma is not well understood that there is the potential for contaminants, especially perchlorate and NDMA, to accumulate in recreation areas, the fish hatchery, or the Folsom South Canal. Reclamation is also concerned that unintended releases of contaminants could impact this larger and highly used lake for a long period of time and would result in expensive regulation and clean-up costs. Given the regulatory uncertainty of these contaminants and the length of the proposed clean up, such an accumulation would have serious and long-term impacts to Lake Natoma. Therefore, Reclamation requests that United States Environmental Protection Agency require a study of residence time and mixing dynamics related to use of an Alder Creek outfall prior to proposing use of this location, and allow Reclamation to better understand the risks of using Alder Creek as a discharge location. Such a study should consider the maximum cumulative use of the discharge location and should consider a variety of operational and hydrologic conditions in Lake Natoma.

USEPA Response to Comment #96: Potential impacts due to the discharge of treatment system effluent are fully evaluated as part of the NPDES permit process.

97. The documents reviewed indicate that a bio-treatment system may be used to treat perchlorate in the water to be discharged into Alder Creek. The bacteria used in the process to remove perchlorate could be carried in the discharge water and negatively impact the habitats in Lake Natoma and the Fish Hatchery. It is not clear from the information received if there will be secondary treatment that would remove the bacteria. If non-native bacteria are carried in the water to the discharge point in Alder Creek, a Biological Assessment should be conducted to assess the ecological impact of introducing non-native bacteria (or increased concentrations of native bacteria) into Alder Creek which flow into Lake Natoma and subsequently the Fish Hatchery.

USEPA Response to Comment #97: Perchlorate-reducing bacteria are not generally exotic. Inefficient operation of biological treatment systems has the potential to

discharge increased concentration of bacteria. Appropriate monitoring and contingency plans for treatment disruption should decrease the chances of release of bacteria. Potential impacts due to the discharge of treatment system effluent are fully evaluated as part of the NPDES permit process.

98. The impacts resulting from introducing warmer waters from the discharge into Lake Natoma must be evaluated. These impacts could reduce Reclamation's cold water storage and ultimately negatively affect the Fish Hatchery downstream.

USEPA Response to Comment #98: See response to comment #91. The NPDES permit requirement for off-site discharge does include a provision for temperature control.

99. Many of the concentrations of contaminants that are proposed to be established for discharge limitations exceed Public Health goals. Examples of these are NDMA limits at 0.007 µg/L when the California Environmental Health Hazard level is 0.003 µg/L (and a Public Health Goal of 0.002 µg/L), trichloroethylene at 0.8 µg/L, and copper at 11 to 17 mg/L (based on their effluent limits and historic records at other discharge points) when the American River goal is 0.01 mg/L. Aerojet should provide Reclamation with a table that lists of all proposed discharge concentrations and compares them to all Public Health goals and/or policies that these concentrations will exceed. This would allow Reclamation to better evaluate the impact of allowing the discharge. A copper accumulation study may be required to determine the impacts of allowing copper to be discharged into Alder Creek above the American River goal.

USEPA Response to Comment #99: See response to comment #91 as well as General Response #1 at the start of this responsiveness summary regarding use of advisory values that have not been formally promulgated. Results of past and current monitoring data can be provided. The Water Board may be a convenient local source for the monitoring data.

100. Since discharging into Alder Creek does have the potential to negatively impact a significant sensitive habitat managed by Reclamation and the Fish and Wildlife Service, the action should have been evaluated within the National Environmental Policy Act NEPA process. During this review we noticed references to California Environmental Quality Act CEQA, but has Aerojet completed a full Environmental Assessment (EA) and completed the NEPA process? If they have completed this process please provide it to Reclamation. If Aerojet has not completed the NEPA process, Reclamation request this NEPA process be undertaken before further decisions are made involving/impacting any of Reclamation's facilities or projects.

USEPA Response to Comment #100: OU-5 is intended to address the contamination beyond the Aerojet property boundary but still within the Superfund site, in a

CERCLA process that is considered the functional equivalent of NEPA. Provisions of CERCLA require a review of the effectiveness and protectiveness of the remedy every five years, including potential ecological impacts.

101. Site background (Page 3-final paragraph). “The investigation also thoroughly examined the potential risks due to Volatile Organic Compounds vapors from contaminated groundwater to residents and workers.” Did investigations include harm to aquatic communities? If so, what measures are being recommended in the interim to protect aquatic life?

USEPA Response to Comment #101: A Screening Level Ecological Risk Assessment (SLERA) was conducted to evaluate exposure of ecological receptors from groundwater discharge to Alder Creek, the only surface water feature that supports ecological receptors that could potentially receive discharge from OU-5 groundwater. The SLERA indicated that no significant ecological risk was associated with the positively detected COPCs in surface water.

102. Page 4 paragraph 3; Site characteristics. What did the remedial investigation find in terms of groundwater contamination in Buffalo Creek—if Buffalo Creek is not included in OU-5 please state why not.

USEPA Response to Comment #102: The RI states that groundwater does not discharge to Buffalo Creek. This creek was not included because it is not located within OU-5, as shown in Figure 2 of the Proposed Plan.

103. Page 4 (Scope and role...). Chemicals of concern are confirmed in Zone 4. Why do you not include the landfill clean-up in the proposed actions for OU-5? Please explain why the landfill closure is not included in the proposed actions for OU-5.

USEPA Response to Comment #103: The landfill cleanup is not included in the Proposed Plan because this area is expected to be cleaned up under State and local authority. USEPA had expected this process to be completed or underway prior to development of the ROD. USEPA has indicated that it will review the schedule for completion of the cleanup and will evaluate the protectiveness of the landfill cleanup. USEPA will consider an amendment of the ROD if the landfill cleanup is inadequate.

104. Page 4 (last paragraph). “Remedial investigations of five other Operable Units in the source areas must be completed before final remedies are selected for the entire Aerojet Superfund Site.”

- a. How are the remedial investigations of the five Operable Units being coordinated with the implementation of the Proposed Plan for OU-5?

USEPA Response to Comment #104a.: Due to the size and complexity of the Aerojet Superfund Site, a phased approach is being implemented so that the groundwater extraction and treatment systems for the off-site groundwater contamination in OU-3 and OU-5 are constructed as soon as possible. USEPA, State and Aerojet staff are working together so the remedial investigations for the five other source area OUs obtain the information needed to integrate the remedies selected for each OU, and to effectively address the entire Site.

- b. Will they be requesting comments on the five Operable Unit investigations before implementing final remedies under the Proposed Plan for Operable Unit 5 (OU-5)? As the final remedies for the entire Aerojet site won't be selected until the completion of the investigations on the five other OUs, there is interdependency with what is selected under the Proposed Plan for OU-5.

USEPA Response to Comment #104b.: The remedial design for the OU-5 GETS will commence following issuance of the OU-5 ROD. The proposed plans for any of the remaining OUs are not expected until after the OU-5 ROD is signed. The OU-5 GETs will be designed to provide hydraulic containment for groundwater plumes originating from the Aerojet property source areas. The design for the OU-5 GETs will not be dependent on development of remedial designs for the Source Area OUs.

105. Page 5 (1st paragraph; “summary of site risk”). “Human health and ecological risk assessments were performed to identify and estimate potential risks to people and the environment from Aerojet’s contamination of groundwater and soils, assuming current conditions and unrestricted future use of the land within OU-5.” What was looked at to determine ecological risk? What risk management range was used in the ecological health assessment?

USEPA Response to Comment #105 A Screening Level Ecological Risk Assessment (SLERA) was conducted consistent with USEPA’s current guidance for performing Ecological Risk Assessments. The SLERA characterized potential risks to ecological receptors that may be exposed to chemicals present in groundwater and soil. The SLERA focused on exposure of ecological receptors from groundwater discharge to Alder Creek, the only surface water feature that supports ecological receptors that could potentially receive discharge from OU-5

groundwater. Surface water and seep concentrations were compared to Agency criteria (e.g., promulgated surface water quality standards) and ecological benchmarks. Additional evaluation of potential risks to the aquatic community within Alder Creek was assessed based on the results of a bioassessment. Characterization of the potential for adverse effects to occur in ecological receptors as a result of exposure to constituents detected in soil was conducted by comparing reported constituent concentrations with ecotoxicity benchmarks (i.e., the hazard quotient method). Based on the HQs and the habitats, each site within OU-5 was evaluated for potential for constituents in soil to pose an adverse risk to ecological receptors.

106. Page 5 (“Groundwater”). “The on-property and off-property cancer risk for all four zones exceeds EPA’s target risk range. The Hazard Indices are well over 1. Remedial action to prevent further contamination and cleanup of the drinking water aquifer is justified by the potential risks.”

- a. What is the risk range that was used to gauge harm to aquatic species?

USEPA Response to Comment #106a.: See response to comment 105.

- b. What remedial action is being recommended—if referenced in the document can they point to it (e.g., see preferred alternative on page “x”)?

USEPA Response to Comment #106b.: As summarized on page 8, the preferred remedial action for groundwater is groundwater containment with mass removal. The existing and proposed groundwater extraction wells are shown on Figure 2.

107. Page 6 (continued from Page 5- “surface soil and near-surface soil”). “The contaminants found in these areas include lead, zinc, cadmium, polychlorinated biphenyls (PCBs), dioxins, furans, chloroform and TCE. Table 2 shows the cleanup goals for each COC based on the lowest cancer or non-cancer risks for potential land uses (residential or commercial).”

- a. TCE is not listed in Table 2; what is the risk basis for this chemical in the soil?

USEPA Response to Comment #107a.: TCE poses a risk in soil due to soil vapor. It is not listed in Table 2 because it did not pose a direct contact risk (i.e., ingestion, outdoor inhalation, and dermal absorption). The ROD states that the Soil Vapor levels of TCE protective of residential inhalation cancer risk is 1.2 µg /m³.

- b. Also, under Table 2, “The state has estimated that a soil perchlorate concentration of 0.6 mg/kg would protect the groundwater. Why is this COC listed as “non-cancer” on Table 2 under the “risk basis” column at a soil contamination concentration of 55 mg/kg (residential unrestricted use)?

USEPA Response to Comment #107b.: The risk-based cleanup goal of 55 mg/kg listed in Table 2 is based on protection of a residential receptor directly contacting this non-carcinogenic chemical in soil. Perchlorate toxicity levels are established to protect thyroid function. A cleanup number for perchlorate based on an additional exposure pathway, leaching from soil to groundwater, is provided in the footnote as corrected in the ROD.

- c. Later on, on this same page (Page 6) there is a statement as follows, “The soil action levels (Table 2) are calculated to reduce human health risks to protective levels.” Why not list 0.6 mg/kg in the soil concentration column of this table for perchlorate if this is the level that will reduce the risk to protective levels?

USEPA Response to Comment #107c.: See response to #107b. The two perchlorate values are presented separately because the exposure pathways differ (direct contact versus protection of groundwater).

108. Page 7 (Groundwater RAOs). “Complete cleanup of the entire Aerojet Superfund Site will require coordination of all seven groundwater and source operable units.” Earlier the Proposed Plan indicated that there were five other Operable Unit investigations (besides OU-5) in the source areas that must be completed before final remedies are selected for the entire Aerojet Superfund Site (see Page 4 comments above). What is the seventh groundwater and source OU?

USEPA Response to Comment #108: Operable units currently associated with the Site include OU-3 through OU9. OU-3 is referred to as the Western OU which addressed groundwater plumes west of the Aerojet property. OU4 includes Area 41 (Cavitt Ranch) located east of the Aerojet property. OU6 through OU9 are source areas located on Aerojet property.

109. Figure 3—Soil contamination areas (page 7). How did they select the soil contamination sites that are shown on this figure—why aren’t there any sites nearby proposed/existing extraction wells; in particular, proposed extraction wells in Zone 1 of OU-5 (see Figure 2)?

USEPA Response to Comment #109: The OU-5 soil areas were selected from potential source and contaminated soil sites that transect, border, or are surrounded by lands removed from the boundary of the Aerojet Superfund site (“carve-out lands”). The reason that the OU-5 soil areas are not adjacent to the OU-5 extraction wells is because the groundwater contaminant plumes that are

extracted by the existing and proposed Zone 1 wells are from source areas located within the Aerojet property boundary.

110. Surface water/ground water interaction. In a recent draft decision by the State Water Resources Control Board (SWRCB, 2003) regarding the American River, the SWRCB concluded that from Nimbus Dam to about 6,000 feet below the dam, groundwater elevations and surface water elevations were similar enough to each other that groundwater could be tributary to the American River. This statement was excerpted from the Sacramento Groundwater Authority Groundwater Management Plan, December 2003. How will the pumping under either the Groundwater Containment and Containment with Mass Removal alternatives account for this surface water/groundwater interaction in the area of Zone 1 remedial actions?

USEPA Response to Comment #110: The results of ongoing groundwater modeling will be examined for indications of significant interaction between groundwater and the American River since this would potentially compromise the effectiveness of the containment remedy.

111. On page 8, it states, “Many of the details, such as final well location and pumping rates, will be determined in the design phase of the project.” Are they required to seek public review on the design phase of the Proposed Plan for OU-5?

USEPA Response to Comment #111: USEPA is committed to continue open communication and to seek input from the public throughout the cleanup process. The Community Advisory Group provides regular feedback from stakeholders and these meetings are open to any interested community member or agency. EPA also publishes fact sheets and press releases that invite input from the community. During the design phase, landowners located adjacent to proposed extraction well locations will be able to provide additional input regarding the final extraction well locations. This has been the standard procedure for activities outside Aerojet’s property boundary.

112. Page 8 (“summary of groundwater alternatives). “The estimated 30-year cost for Groundwater Containment is \$57 million...The estimated 30-year cost for Groundwater Containment with Mass Removal is over \$61 million. How did they arrive at these costs for clean-up; what are the variables in the calculation that could change and will the true costs only be revealed during implementation phase?

USEPA Response to Comment #112: The 30-year cleanup costs were estimated by summing the projected costs for installation of extraction wells, piping and treatment system installation, as well as operation, maintenance and monitoring costs for a 30 year period. Numerous variables were evaluated to estimate the project cost for the groundwater remedial alternatives including number of

extraction wells needed, conveyance piping size, treatment system requirements. Detailed cost estimates are provided in Appendix C of the ROD. Although the true costs will only be developed during the implementation phase, the cost estimates in the RI/FS and the Proposed Plan are suitable for selecting the preferred remedial alternatives.

113. Page 8 (“summary of soil and soil vapor alternatives”). “More than 25 soil areas of potential concern in OU-5 were investigated (Figure 3 on page 7).” Reclamation didn’t see 25 areas of potential concern noted on the Figure, unless the numbers that appear to indicate buildings (inset) are included. Therefore, are the “majority of the soil areas” meeting residential use requirements?

USEPA Response to Comment #113: The building numbers do indicate soil areas that were investigated in OU5. Soil samples were collected adjacent to Buildings 49001, 49002, 49003, 49004, 49011, 49017, 49020, 49021, 49023, and 49026 to assess the presence of lead in soil resulting from the historical use of lead-based paint. Septic tanks associated with Buildings 49007, 49011 and 49022 were also investigated. By including the individual buildings, a total of 36 areas were investigated and 21 areas met residential use requirements.

114. Page 8 (“summary of soil and soil vapor alternatives”). “All options, including the No Action option, would require careful and thorough monitoring to ensure effectiveness and protectiveness.” What are the requirements for monitoring (state/federal) and wouldn’t they vary depending on the COC that’s being remediated? Please provide more details on the monitoring plan so Reclamation can evaluate this further.

USEPA Response to Comment #114: Monitoring requirements will vary depending on several factors including the COCs to be remediated, the location of the area to be monitored and the remedial method selected. Monitoring requirements will be specified in the Remedial Design/Remedial Action (RD/RA) Statement of Work to be prepared by USEPA following issuance of the ROD.

115. Page 8 (“summary of groundwater alternatives”). “The water will be piped to one of several treatment systems (see Figure 2) where a series of standard, reliable treatment systems remove the various contaminants.” The treatment system that is in existence for Zone 3 (GET B) does not appear to capture the flow of the groundwater south of this Zone—the treatment system is north of the extraction wells.

USEPA Response to Comment #115: The groundwater extraction pumps in each of the Zone 3 extraction wells are designed to capture the impacted groundwater and pump the water back to GET B for treatment. During the design phase, we will

assess the need for new extraction wells to capture the plume in addition to those shown on Figure 2.

116. Page 8 (“summary of soil and soil vapor alternatives”). “The Groundwater Containment with Mass Removal alternative includes additional extraction of more highly contaminated groundwater nearer the source areas to reduce the mass of contaminants more effectively.” The statement above describes the Groundwater Containment with Mass Removal alternative as a viable alternative that will reduce the time the clean-up takes. What about the methods required for this more thorough extraction—is this more complicated, more costly, more time intensive (initially)? Should these differences be characterized under table 3 (page 10) “implementability”?

USEPA Response to Comment #116: The primary difference between “Groundwater Containment” and “Groundwater Containment with Mass Removal” is that additional groundwater extraction wells located up-gradient of the toe of the plume would be utilized to contain the more highly contaminated groundwater. The Groundwater Containment with Mass Removal alternative uses the same technology as Groundwater Containment, and therefore is no more complicated. The alternative that includes mass removal is more costly in the first 30-year period because more groundwater is treated and more wells would need to be maintained. Because many of the existing extraction wells and pipelines would be utilized for mass removal, the mass removal alternative installation is not significantly more costly or time intensive to initially construct. Both alternatives are considered to meet the criteria for implementability.

117. Page 10 (“soil areas”). “Proven methods for treating perchlorate in the surface soils at area C41 pose the risk of flushing some of the contaminant into the groundwater and would not meet EPA’s protectiveness criteria.”
- a. What Zone is area C41 in? Can they overlay the Zones on top of the soil areas shown on Figure 3?

USEPA Response to Comment #117a.: Soil area C41 is located within the Aerojet property boundary and is located east of Zone 1 and south of Zone 4.

- b. Later on, the sub-surface soil treatment in C41 is discussed and it is noted that some of the Perchlorate may get into the groundwater, but if it does they can treat it through the proposed groundwater remediation methods. See page 12: “If (new Vadose Zone) treatment methods do not prove viable for this location, the perchlorate could gradually move into the groundwater where it would be captured and treated with the groundwater remedial action.” Is subsurface soil viewed differently under EPA’s protectiveness criteria?

USEPA Response to Comment #117b.: Cleanup goals that are protective of human health and the environment can vary depending on the intended use of the property. Perchlorate concentrations in soil at Area C41 are below residential and commercial cleanup goals but exceed cleanup goals that are protective of ground water. Because perchlorate concentrations extend below an excavation depth of 10 feet, impacted soil below this depth may represent an on-going source to groundwater unless treated in place. Since an effective subsurface treatment for perchlorate has not been demonstrated, perchlorate will be captured and treated once it has migrated into the groundwater with necessary monitoring.

118. Page 11- Table 4 (“7D, 33D and FCS” column).

It was unclear from Table 4 that the preferred alternative only considers commercial restricted use in areas 7D, 33D, and FCS. See page 10: “The RI /FS indicated that SVE would not be effective for cleaning up the low concentrations of VOCs measured in soil vapor in areas 7D, FCS and 33D to meet the goals for unrestricted use.”

Given the uncertainty regarding the ability to extract perchlorate in sub-surface (Vadose zone) soils within Area C41, Table 4’s evaluation criteria should reflect this with regard to “long-term effectiveness” and “reduction of toxicity, mobility or volume by treatment”; i.e., suggest that these evaluation criteria be changed to “partially meets criterion.” Perhaps this Area (C41) could be broken out separately.

USEPA Response to Comment #118: The term “deed restriction” in the heading for areas 7D, 33D and FCS implies commercial use, as described under Soil and Vadose Zones on page 7 of the plan. The evaluation criteria presented in Table 4 are standard criteria used to evaluate all Superfund sites. The areas were grouped by remedial alternative. As discussed in “Soil Areas” on page 10 of the plan, vadose zone perchlorate cleanup methods are being considered separately for Area C41.

119. Page 11 (“groundwater”). “Monitoring of the effectiveness and protectiveness of the remedy is required to ensure that the remedial action objectives are met.” The effectiveness and protectiveness monitoring criteria should be described to ensure a full understanding of the alternatives being proposed.

USEPA Response to Comment #119: Remedy effectiveness and protectiveness criteria are described in Figure 4 of the proposed plan under evaluation criteria 1, 3 and 5. The Remedial Action Objectives (RAOs), as provided on pages 6 and 7 of the proposed plan, describe what the remedy is expected to accomplish in order to effectively protect human health and the environment.

120. Page 11 (“groundwater”). “The State of California supports the alternative for cleanup of groundwater, with the exception that the Regional Water Quality Control Board prefers lower cleanup goals for TCE and chloroform based on final or draft California Public Health Goals.” As per an earlier comment, TCE levels don’t appear in Table 2 (page 6).

USEPA Response to Comment #120: See response to comment #107a.

121. Top of Page 12 (continued from Page 11 “soil areas”). “Soil areas 32D, 34D, 35D and 38D, covering a total of approximately 11 acres in close proximity to each other...Contaminants in the vapors would be captured and treated by granulated carbon or destroyed using an existing catalytic oxidation system. If the cleanup does not attain unrestricted use levels, the land would be restricted to commercial use with a land use covenant.” Which COCs are they trying to contain with this methodology? Also, the column in table 4 containing the preferred alternative does not include the deed restriction clause. The wording here is confusing as it indicates, “the land would be restricted to commercial use with a covenant”.

USEPA Response to Comment #121: Volatile organic compounds (VOCs) including TCE; PCE; chloroform; 1,1-DCA; 1,2-DCA; 1,1-DCE; cis/trans 1,2-DCE; vinyl chloride; and/or benzene have been detected in soil vapor samples at areas 32D, 34D, 35D and 38D. The preferred alternative would be to extract and treat the soil vapor to levels that would enable unrestricted use of the property. A land use covenant would only be required if operation of the soil vapor extraction system is unable to attain soil vapor cleanup levels that meet the requirements of unrestricted use.

122. Page 12 (paragraph 2). “Perchlorate contamination in soil area C41 extends beneath the excavation depth and may represent an ongoing source to groundwater.” Are effectiveness and protectiveness monitoring criteria going to be recommended to assuage this potential problem as the clean-up progresses?

USEPA Response to Comment #122: Groundwater sampling will be conducted down-gradient of area C41 to monitor the potential impact of perchlorate concentrations in soil leaching to groundwater.

123. Page 12 (paragraph 2). Vadose zone perchlorate cleanup methods are being developed and, if successful, may be used at area C41. If treatment methods do not prove viable for this location, the perchlorate could gradually move into the groundwater where it would be captured and treated with the groundwater remedial action.” Is this vadose zone clean-up being proposed as part of the preferred alternative—it’s not reflected in the table of alternatives (Table 4-page 11)? Does this mean it’s not viable?

USEPA Response to Comment #123: See response to comment 117b.

124. Page 12- last paragraph (“soil areas”) “The State of California supports the preferred alternatives for cleanup of the soil areas, with the exception that the Regional Water Quality Control Board prefers a lower cleanup goal for hexavalent chromium based on a draft California Public Health Goal.”

- a. According to Table 4 (page 11), the non-preferred alternative for soil areas 32D, 34D 35D and 38D are not in compliance with State and Federal requirements. All other alternatives listed in the table are in compliance, with the exception of “no-action” alternatives. Does this mean that the hexavalent chromium clean-up goal is in compliance with the HHA at the various soil sites?

USEPA Response to Comment #124a.: The non-preferred alternative for soil areas 32D, 34D, 35D, and 38D not being in compliance relates to trichloroethene (TCE), not hexavalent chromium. In regards to the hexavalent chromium cleanup level, this metal was found in soil areas 10D, 11D and C4 and the cleanup goal is in compliance with the HHA.

- b. How will this State-specified level be factored in, given that there are Federal MCL levels specified for hexavalent chromium (See Table 1—groundwater clean-up levels) but no State of CA MCLs specified. See discussion on page 6 regarding clean-up levels; i.e., state MCL levels to be used if specifying a lower concentration.

USEPA Response to Comment #124b.: Hexavalent chromium is not a COC in groundwater at OU-5.

125. Definitions

- a. What is a multiple completion well—listed in the legend of Figure 2 “proposed extraction well/multiple completion well”?

USEPA Response to Comment #125a.: A multiple completion well is two or more wells that are installed adjacent to each other that are screened (with openings to allow groundwater to enter) at different depth often using a single drilling operation.

- b. What is “soil vapor extraction”—see page 10 “soil areas”?

USEPA Response to Comment #125b.: Soil vapor extraction (SVE) is a soil remediation method that physically separates contaminants from soil in a vapor form by exerting a vacuum through the soil formation. SVE removes volatile organic compounds (VOCs) from soil, which is then typically treated at the surface using activated carbon or thermal treatment.

- c. What is “RAO”– see page 10 “soil areas”?

USEPA Response to Comment #125c.: RAO is an acronym for Remedial Action Objective.

- d. What do the risk-based thresholds “non-cancer” and “cancer” mean when applied to the two categories of use (residential restricted and commercial non-restricted) on Table 2?

USEPA Response to Comment #125d.: Exposure to chemicals can result in either cancer or non-cancer health effects. The term “non-cancer” is used to indicate a cleanup goal based on non-cancer health threats while “cancer” is used to indicate a cleanup goal based on cancer risk. These categories are provided because not all chemicals are carcinogenic. In some cases, the non-cancer health threat of a chemical is greater than its cancer risk.

Commenter: Angel and Greg Ball, residents

126. I would like to see your plans implemented ASAP. I find special interests such as water companies are not concerned about the best interest of the community of Rancho Cordova just "their water and money".

USEPA Response to Comment #126: USEPA is grateful for the thoughtful participation and support from community members.

Commenter: Lisbet Gullone, resident

127. I generally support the preferred cleanup alternative (including Groundwater Containment and Mass Removal). However, I believe that in order to meet one of the long term goals of EPA (to allow beneficial uses of the contaminated areas), the contaminants should be reduced to the levels identified in the Public Health Goals for the State of California. Is it possible to form a partnership with the State that will allow for more extensive cleanup of TCE and chloroform (as recommended by the Regional Water Quality Control Board)?

USEPA Response to Comment #127: Please see General Response #1 on Page 1 of this Responsiveness Summary and the responses to the Water Board comments, particularly #1, #2 and #3. USEPA has great respect for the Water Board and other State agencies, and the agencies work together collaboratively on the Aerojet cleanup, including review of cleanup objectives during the final Sitewide remedy selection process. Differences in specific authority and policy determination can usually be bridged.

128. Regarding the removal of contaminated soil, I believe that the excavated soil should be treated to remove contaminants before it is replaced/relocated (this option will prevent future health concerns and inflated cleanup costs). I am also concerned about the portion of OU-5 that has been excluded from the proposed actions (Zone 4). Will the State of California/County of Sacramento be required to coordinate the landfill closure process for this part of the Superfund Site with EPA?

USEPA Response to Comment #128: See response to comments #6 regarding the treatment of excavated soil, and the response to comment # 103 about the coordination of the landfill closure in Zone 4.

129. I would like to know more about the groundwater extraction and treatment (GET) system that was installed in the mid 1980s. Based on the continued northerly expansion of the groundwater contamination plume, it appears that this effort has not been effective. If the future cleanup efforts include the pumping of contaminated groundwater to the same treatment systems, how could the removal of contaminants be improved?

USEPA Response to Comment #129: The GET systems installed in the mid 1980's were interim systems that were designed by Aerojet prior to its signing the Partial Consent Degree which required Aerojet to perform a RI/FS for the site. Data obtained during the RI/FS for OU-3 and OU-5 has significantly improved the understanding of site conditions (i.e., groundwater plume extent, hydrogeology of contaminated aquifers) which enables the construction of effective extraction and treatment systems to contain the plume. Groundwater modeling techniques have also improved over that last 20 years which has enhanced the ability to design more effective extraction systems. Methods for monitoring extraction system effectiveness have also improved so that once the proposed systems are installed, system revisions that may be needed can be more readily identified.

130. Finally, I am also curious about the public notification requirements for this type of project.

USEPA Response to Comment #130: See response to comment #111.

Commenter: Rick Bettis, CAG member

131. Generally I think it appears comprehensive, reasonable and sufficient. However I do concur with the SWQCP regarding the use of the California Public health goals for TCE. I believe that while the study results for the PHG are not final and may be conservative that we should utilize the "precautionary principle" for TCE since it is so prevalent in the project area. I also agree with the SWQCB concerning the use of PHG for chromium. Hopefully these upgrades can be achieved in a reasonably economical manner. It is critical that we maintain the sustainable yield of the groundwater basin for water supply purposes.

Accordingly I urge that emphasis should be given monitoring and containment since we must prevent further spread of the plume.

USEPA Response to Comment #131: Thank you for your thoughtful support. Please see the General Responses at the start of this Responsiveness Summary and responses to comments #1, #2, #3, #9 and #127 regarding use of State PHGs. Also see responses to comments #39, #40 and #41 regarding maintaining a sustainable yield from the aquifer.

B. ORAL COMMENTS RECEIVED DURING 08/11/2009 PUBLIC MEETING

Comments from unidentified audience members

132. Will the Aerojet site be cleaned up to residential cleanup levels and how do we decide when to excavate the soil versus use soil vapor extraction?

USEPA Response to Comment #132: USEPA prefers that impacted soil is cleaned up to meet the risk-based cleanup goals for unrestricted use such as residential development. Soil vapor extraction can be effective in areas with contaminants that volatilize (i.e., TCE) but soil excavation proposed for other areas with non-volatile contaminants (i.e., elevated metals or perchlorate concentrations).

133. In areas where additional pumping is required to clean up the groundwater before you can clean up the overlying soil, are there any estimates of how long that pumping might take?

USEPA Response to Comment #133: Because the time needed to clean up the soil in the source area OUs is still to be determined, the time needed to clean up the groundwater has not been estimated but could be over 100 years in some areas.

134. Is Aerojet's process still producing contaminants? Aerojet is still operating.

USEPA Response to Comment #134: Aerojet is still operating and must comply with all applicable State and federal regulations.

135. What is the estimated amount of acre feet that will be pumped per year?

USEPA Response to Comment #135: The total groundwater extraction rate from the four zones in OU-5 will updated during remedial design but assuming a total flow rate of 8,000 – 10000 gallons per minute, approximately 12000 – 16000 acre feet would be pumped per year.

136. Because groundwater is a limited resource, has aquifer recharge been considered?

USEPA Response to Comment #136: The preferred alternative does not include direct recharge. USEPA and Aerojet recognize that there will be an impact on the groundwater table in every alternative. It is USEPA's assessment that extraction of groundwater in this complicated aquifer and discharged to surface water will be more effective than extraction and reinjection. If the groundwater were recharged on Aerojet's property, the size of the on-property containment system would have to be significantly increased and may not be economically viable.

137. What soil cleanup levels are protective?

USEPA Response to Comment #137: Risk-based soil cleanup goals are listed in Table 2 of the Proposed Plan.

138. If Aerojet is no longer adding contaminants and the source of the contamination has been identified, is the contaminated area of soil continuing to seep in to the groundwater, or has that already taken place and we are cleaning up a reservoir of contaminated water?

USEPA Response to Comment #138: Contaminated areas of soil that have not been remediated continue to have the potential to impact groundwater. Several factors can affect the potential for contaminated soil to impact groundwater, including rate of stormwater infiltration (i.e., area paved or unpaved) and the type and concentration of the contaminants present (i.e., high concentrations of solvents can migrate to groundwater without stormwater infiltration). Contaminants have reached the groundwater so groundwater containment and cleanup is needed in addition to remediation of contaminated soil.

139. What is a deed restriction for commercial versus residential use?

USEPA Response to Comment #139: A deed restriction is recorded in the property records to restrict the use of the property in certain ways. For example, it could restrict the property to commercial or industrial use and not permit residential use. Or it could require certain engineering controls (i.e., operation of soil vapor extraction system, maintain pavement in areas of impacted soil). These restrictions transfer with the land ownership, and cannot generally be removed by new owners.

140. Who is paying for the cleanup and do we care how much it will cost?

USEPA Response to Comment #140: Aerojet is paying for the cleanup. Controlling the cleanup costs are important so Aerojet can continue to afford to pay for the cleanup. USEPA regulations require consideration of cost in selecting a remedy.

141. Why does a well get shut down? Is that when we were giving people water and we weren't checking and then we found out later? How does that happen that when you end up giving people water for a long period of time and then you find out you were giving them water that was hurting them?

USEPA Response to Comment #141: A well is shut down when groundwater contaminants are detected that are not acceptable for the intended use such as drinking water. For some chemicals such as perchlorate, cleanup levels and adequate analytical testing methods were not available 10 years ago. Since that time groundwater analytical methods have significantly improved and cleanup

levels have been established in order to effectively evaluate groundwater conditions.

142. In the 1970's there were chemicals in that water that we did not know about. Could there still be something in the water today that we don't know about?

USEPA Response to Comment #142: There will always be the potential that unknown chemicals could be present in water but in general the major chemicals that could potentially cause health problems can be identified. USEPA will continue to monitor for and investigate significant tentatively identified compounds (TICs).

143. In the 1980's we were never told there was anything wrong with the water. We have lived here since then and raised our children. Families have thyroid issues and other health problems. Are any studies being conducted?

USEPA Response to Comment #143: The primary objective of the OU-5 remedy is to protect public health now and in the long-term. USEPA cooperates with and has encouraged research to increase our understanding of the risks faced from the Aerojet site and similar situations. The Agency for Toxic Substances and Disease Registry (ATSDR) with California's Department of Public Health have performed a series of independent public health assessments at the Aerojet site beginning with reports in the late 1990's. These reports are part of the public record for the Aerojet site. Other specific studies have been conducted and more will be conducted in the future. For example, UC Davis and the US Centers for Disease Control and Prevention (CDC) conducted a study of 181 women from 20 to 50 years of age to assess potential exposure to perchlorate. These individuals resided in three communities west and northwest of the Aerojet facility.

144. How many more people have to get sick before something is done?

USEPA Response to Comment #144: USEPA's primary goal is to protect the public. The drinking water meets Department of Health Services (DHS) requirements. The contaminated wells have been shut down. The water purveyors routinely monitor all of the drinking water wells, under the supervision of the DHS.

145. Why shouldn't we be doing something else to find out how much it's affecting us?

USEPA Response to Comment #145: See response to comment 143.

146. Why is Aerojet allowed to continue to operate or they are not moved out someplace else so they don't hurt anymore families?

USEPA Response to Comment #146: Ongoing releases from Aerojet that would impact human health have not been identified. Even if Aerojet were to leave the facility, the contamination would still need to be cleaned up.

Commenter: Andy Soule

147. Is there any soil contamination in Rancho Cordova outside of the Aerojet property or in Sailor Bar?

USEPA Response to Comment #147: Soil contamination has not been identified in Sailor Bar. Areas outside of the Aerojet property boundary that are being addressed by other operating units include Areas 39, 40 and 41 located east of the Aerojet property.

148. Why can't you focus on cleaning up the groundwater at the source so it would be simpler to clean up the groundwater downstream?

USEPA Response to Comment #148: Groundwater extraction from the proposed extraction wells will help to contain and remediate the plume. The preferred groundwater remedial alternatives include "mass removal" which will extract groundwater that has higher contaminant concentrations within OU-5 as compared to concentrations at the down-gradient edge of the plume. Evaluation of the upgradient source areas located on the Aerojet property is ongoing but the first priority is to safeguard the public drinking water.

Commenter: Connie Berry

149. I have family members with health issues. Has anybody done a survey of the people who have lived for a long period of time in these areas where these wells have been shut down?

USEPA Response to Comment #149: See response to comment #143. USEPA also cooperates with State, federal and academic researchers interested in the relationship with past exposures and health issues.

Commenter: David Berry

150. I've lived in Rancho Cordova for the vast majority of time since 1958. I have a twin sister who died of cancer. I have a daughter who has Grave's disease, which is hyperthyroid. I have a brother with prostate cancer. And the day after tomorrow, I go to see if I have thyroid cancer. You absolutely need to do that public health assessment by doing a survey to see how many people have already been affected.

USEPA Response to Comment #150: See response to comment #149. The Agency for Toxic Substances and Disease Registry (ATSDR) with California's Department of Public Health have performed a series of independent public health assessments at the Aerojet site beginning with reports in the late 1990's. These reports are part of the public record for the Aerojet site.

151. Page 4 of the Proposed Plan indicates that Aerojet is in the process of applying for zoning modifications to its special planning area designation by Sacramento County ordinance for its land within OU-5 to allow for mixed residential and commercial use. My comment is that that is ludicrous. It's criminal; should not be allowed.

USEPA Response to Comment #151: This comment among others regarding land use decisions led USEPA to research the local procedures for land use planning and permitting and the current stages of the process regarding the Aerojet property. A firm of expert consultants interviewed Aerojet, Sacramento County, Rancho Cordova and Folsom officials and staff. The results were incorporated into the ROD and a presentation will be available at the USEPA website for Aerojet: www.epa.gov/region09/aerojet.

152. The issue of liability and compensation needs to be address. The law that you're acting under is called Comprehensive Environmental Response Compensation and Liability Act. And I haven't heard a word about compensation and not much about liability. The damage already done to people medically and physically needs to be addressed.

USEPA Response to Comment #152: The CERCLA statute reference to compensation concerns payment and recovery of costs related to the cleanup response to a release of contamination and for the recovery of natural resource damages. Aerojet is paying for the cleanup costs including State and federal costs to oversee the cleanup. Aerojet's liability for the cleanup is defined in CERCLA and in the judicial and administrative enforcement documents related to this Site.

Commenter: Larry Ladd

153. Comment was also submitted via email. See Mr. Ladd's comments above.

Commenter: Ellissa Callman

154. Will the remedial investigation and feasibility study and tonight's presentation be available electronically?

USEPA Response to Comment #154: Yes, the URL for the website with the Proposed Plan presentation is www.epa.gov/region09/aerojet.