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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

January 25, 2005

Kirk C. Rodgers, Regional Director
U.S. Bureau of Reclamation
Mid-Pacific Region
2800 Cottage Way
Sacramento, CA 95825-1898

Subject: EPA Comments on the Draft Environmental Impact Statement (DEIS) for
Renewal of Long Term Contracts for San Luis Unit Contractors
(CEQ# 040565)

Dear Mr. Rodgers:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. Our detailed comments are enclosed in Attachment A. EPA has rated this DEIS as 3 - Inadequate Information (see enclosed "Summary of Rating Definitions" in Attachment B).

We recognize that this DEIS tiers from the Central Valley Project Improvement Act (CVPIA) PEIS; however, the necessary project-specific analyses that were deferred at the programmatic stage are not provided in this document. Based on our review of this document and our extensive involvement in the CVPIA PEIS and the CALFED Bay Delta Program, we have concluded that the environmental analysis is inadequate. This rating indicates EPA's belief that the DEIS should be formally revised to provide the identified additional information, data, and analyses, and made available for public comment in a Revised or Supplemental DEIS. On the basis of the potential significant impacts involved, this proposal is a candidate for referral to CEQ under Section 309 of the Clean Air Act. We believe there is sufficient time for the DEIS to be formally revised or supplemented without delaying the contract renewals as the earliest of these contracts expires on December 31, 2007.

We have worked extensively with the Bureau of Reclamation (Reclamation) since 1988 on the renewal of Central Valley Project (CVP) long-term water supply contracts. Over these years, EPA has consistently urged Reclamation to undertake a rigorous analysis of alternatives for contract renewals in order to reduce environmental impacts, consistent with the CVPIA and the CALFED Bay Delta program.

We have identified the following deficiencies with the information and analysis in the DEIS:

- 1) The DEIS does not evaluate the environmental impacts of full delivery of contract quantities.

The proposed action enables full delivery of contract quantities each year, amounting to almost 1.4 million acre feet per year for a period of up to 40 years. However, the DEIS relies on analyses in the PEIS and Operations Criteria and Plan (OCAP) to determine environmental effects and these documents evaluate the delivery of far lower water quantities. The DEIS assumes the continuation of current conditions, which equal average annual deliveries of approximately 50 to 60 percent of the full contract amount. Information in other Reclamation documents indicates that it is reasonably foreseeable that there will be higher annual deliveries especially in future years. It is critical that the Revised or Supplemental DEIS include a complete analysis of the impacts of full contract deliveries. We raised a similar issue in our December 15, 2004 comments on the Draft Environmental Assessment for the Renewal of the Long-Term Contracts for the Delta Mendota Canal.

- 2) The existing conditions and the environmental impacts of the future “no action” condition are not fully evaluated or disclosed.

The future “no action” condition is assumed to be identical to the existing condition despite evidence and statements throughout the DEIS that water quality is increasingly degraded and agricultural lands are being retired due to this degradation. Without accurate information on existing and future environmental conditions, the impacts of the proposed federal action and the no action alternative could be significantly underestimated.

- 3) The DEIS does not address the impacts of water deliveries under the contracts and drainage service on water quality.

The DEIS does not fully evaluate the direct, indirect and cumulative impacts to water quality attributable to project activities. This is significant because the project area includes waters that are listed as impaired pursuant to the Clean Water Act Section 303(d). In part, the impairments are associated with the area’s long-standing drainage problems. Additionally, the DEIS does not analyze future drainage service, which may change water supply needs and management. Reclamation is preparing a separate plan for drainage service (the San Luis Feature Re-evaluation) that may alter the irrigation land base, surface-groundwater management practices, water supply requirements of water users, and quality of surface water and groundwater. However, these effects are not reflected in the evaluation of proposed contract renewals and the DEIS assumes that existing drainage management would continue even though changes may be necessary.

Water supply conditions in California have changed significantly in the 40 years since these contracts were originally signed. Water quality and beneficial uses have been adversely affected. We recommend that a Revised or Supplemental DEIS be prepared that evaluates the impacts of full contract deliveries, the future “no action” condition, and impacts to water quality and supply. Once these impacts are fully analyzed, Reclamation may need to consider additional alternatives or contract provisions to directly address sustainable water use in the Central Valley.

While we recognize that the preparation of a Revised or Supplemental DEIS may extend the NEPA process, this would provide for a much stronger document and would be achievable in the time frame of the current contracts.

We appreciate the opportunity to review this DEIS and offer our assistance and technical expertise to your office as you proceed in addressing these complex issues. We are available to meet with you to discuss our comments. My staff is also available to review a Preliminary Revised or Supplemental EIS, or provide feedback on technical reports if that would be helpful as you proceed. Please send two copies of any future NEPA document to the address above (Mail Code: CMD-2) at the same time it is officially filed with EPA Headquarters. If you have any questions, please call me at (415) 947-8702 or Enrique Manzanilla, Director of the Cross Media Division at (415) 972-3843, or have your staff contact Summer Allen at (415) 972-3847.

Sincerely,

/s/

Wayne Nastri
Regional Administrator

Main ID# 4477

Enclosures:

Attachment A: EPA’s Detailed Comments

Attachment B: Summary of Rating Definitions

cc: Arthur Baggett, State Water Resources Control Board
Mike Chrisman, California Secretary for Resources
Ken Landau, Central Valley Regional Water Quality Control Board
Lester Snow, California Department of Water Resources
Steve Thompson, U.S. Fish and Wildlife Service
Patrick Wright, California Bay Delta Authority
Anne Miller, EPA, Office of Federal Activities
Joe Thompson, Bureau of Reclamation

**ATTACHMENT A:
EPA DETAILED COMMENTS FOR THE DEIS RENEWAL OF LONG-TERM
CONTRACTS FOR SAN LUIS UNIT CONTRACTORS, CA, JANUARY 24, 2005**

Scope of Analysis

Evaluation of the Proposed Federal Action

The proposed federal action enables full delivery of the contract quantities each year for the contract term. However, the Draft Environmental Impact Statement (DEIS) does not evaluate the impacts of full delivery of contract quantities. Instead, the DEIS relies on analyses in the Central Valley Project Implementation Act (CVPIA) Programmatic EIS (PEIS) and Operations Criteria and Plan (OCAP) which represent substantially lower water deliveries on average. Based on the PEIS preferred alternative, San Luis Unit Agricultural and Municipal and Industrial (M&I) contractors might expect full deliveries in only 15 percent and 40 percent of years, respectively. The OCAP Biological Evaluation, which addresses impacts to listed species under current conditions, assumes full deliveries to agricultural contractors in 50 percent of years, and full deliveries to M&I contractors between 60 and 70 percent of years.

To determine water delivery amounts, the DEIS assumes the continuation of “existing conditions,” and that the preferred alternative from the CVPIA PEIS will occur. In either case, these delivery amounts are less than full contract deliveries. Other Reclamation documents and plans suggest that over the term of these contracts, the average annual deliveries will increase. For example, Reclamation’s rate setting process assumes that project annual deliveries for the San Luis Unit will rise from an average of 60 percent of contract amounts in 2001-2005 to an average of 100 percent of contract amounts in 2026-2030 (Reclamation Mid-Pacific website, rate setting documents, Schedule A-12A, at page 25, note 9). Actions planned by the CALFED Program, such as the South Delta Improvements and additional water storage, are anticipated to improve water supply reliability as well. However, the potential environmental effects associated with increased delivery amounts have not been analyzed in the DEIS.

The DEIS states that deliveries averaged 92 percent of contract amounts in 1991, but declined to around 50 percent in the later 1990s due to changes in the “regulatory baseline described in the CALFED Bay-Delta Record of Decision” (p. 1-7). We are concerned that changes to that regulatory regime by the State Water Resources Control Board or the National Oceanic and Atmospheric Administration (NOAA) Fisheries, for example, could allow substantially increased deliveries under these contracts without further action or NEPA review on the part of Reclamation.

Recommendations:

The Revised or Supplemental EIS should include an analysis of the environmental impacts of full contract deliveries, as permitted under these contracts. If that scenario is not reasonably foreseeable, the basis for assuming less than full contract delivery should be clarified. In particular, the analysis of full, reliable contract deliveries should include

the following: changes to irrigated land base; trends in groundwater quality and levels with implementation of drainage management; and quality of applied irrigation water, given the salt loads in Delta water.

Evaluation of the No Action Alternative

The DEIS equates conditions under the future No Action Alternative with the Preferred Alternative of the Central Valley Project Implementation Act (CVPIA) (p. 2-13) and concludes that future conditions under the No Action Alternative will be the same as the existing condition baseline. There are two major problems with the DEIS approach.

First, the DEIS does not adequately evaluate the environmental degradation that characterizes the existing conditions. The DEIS assumes the continued use of groundwater as a supply substitute (p. 3.9-5) while acknowledging that pumping has caused depressions to form and that every subbasin is experiencing some overdraft (p. 3.8-3). Agricultural use of groundwater is impaired due to naturally and artificially elevated total dissolved solids (TDS) in the groundwater (p. 3.8-4). The DEIS does not fully analyze the existing groundwater quality conditions that are in decline (pp 3.2-11 and p. 3.8-8) and therefore understates the effects, including cumulative effects, that may occur as a result of the implementation of the No Action Alternative or the Action Alternatives.

Second, the DEIS is inconsistent in its analysis of the No Action Alternative and existing conditions. For example, the DEIS states that the western and southern portions of the San Joaquin Valley produce agricultural drainage with high levels of salt as well as potentially toxic trace elements such as arsenic, boron, molybdenum, and selenium (p. 3.7-3). The DEIS also concludes that under the No Action Alternative, there would be continued degradation of groundwater quality with respect to salt buildup in the water (p. 3.2-11). It notes that continuation of current practices and conditions seriously threaten the sustainability of farmland (3.7-3) and that the limited supplies of fresh water, in combination with saline groundwater, result in salt buildup (p. 3.7-3). Despite these statements, the DEIS concludes that the No Action Alternative would “not result in any alteration to surface water quality” and “would not lead to further degradation in water quality” (3.9-15).

These problems in characterizing the existing conditions and future conditions under the No Action Alternative carry through in the evaluation of the other alternatives. For example, the DEIS concludes that since the two action alternatives are similar in their terms to the No Action Alternative, there would be no alteration to surface water quality. With this conclusion, the DEIS mischaracterizes the environmental impacts of both the No Action and the Action Alternatives. Each alternative will have impacts on water quality. The full analysis of environmental impacts resulting from the No Action Alternative should provide a point of comparison among alternatives. Especially in the context of water quality, “No action” is not synonymous with “no impacts,” nor is it the same as “existing conditions.”

Recommendations:

The Revised or Supplemental DEIS should include an accurate description of the No Action Alternative and report existing trends of water quality degradation. This description should be consistent with the description provided for the CVPIA PEIS Preferred Alternative. The Revised or Supplemental DEIS should also provide an accurate description of the existing conditions, focusing on surface water quality and groundwater quality. If Reclamation continues to assume that environmental conditions do not change in the future, these assumptions should be supported with data, analysis, and appropriate forecasts.

Tiering to the CVPIA PEIS

The San Luis Canal Unit DEIS is “tiered” to the CVPIA PEIS. Agencies “are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision...” (40 CFR Part 1502.20). However, this site-specific DEIS does not provide the necessary site-specific analyses that it should, but paraphrases relevant portions of the programmatic CVPIA PEIS and programmatic OCAP Biological Assessment. In contrast, the Sacramento River Settlement Contractors DEIS (October 2004) tiered from the same programmatic documents, but augmented the programmatic analyses with site-specific evaluations. We note that neither the CVPIA PEIS nor the DEIS includes an in-depth cumulative impact analysis, making it difficult to determine long-term impacts associated with the project.

Moreover, although this document is tiered to the CVPIA PEIS, the contract periods for the San Luis Unit extend beyond the timeframe addressed in the PEIS. The CVPIA PEIS period of analysis extends to 2025, whereas the 40-year time frame for M&I contracts ends in 2045 and the 25-year time frame for Agricultural contracts ends in 2030. The DEIS should provide the data to close this gap in the analysis between the tiered documents.

Recommendations:

The Revised or Supplemental DEIS should include the site-specific information and analyses not included in the programmatic documents. The Revised or Supplemental DEIS should disclose future conditions and evaluate the potential impacts of the CVPIA PEIS Preferred Alternative from 2025 to 2045, as the No Action Alternative.

In order to provide the additional information needed in this site-specific document, the Revised or Supplemental DEIS should also document the status of ESA consultation with U.S. Fish and Wildlife Service (FWS) for the San Luis Unit contract renewals and the related CVP OCAP. The National Oceanic and Atmospheric Administration-Fisheries Biological Opinion on the OCAP should also be included. Similarly, ongoing efforts of the Interagency Mitigation Working Group for the San Luis Drainage Feature Re-evaluation regarding impacts to wildlife, which may be outside of ESA consultation processes, should be incorporated into mitigation and monitoring plans and described in the Revised or Supplemental DEIS.

Water Quality Impacts of the Proposed Action

The project area includes portions of both the San Joaquin River Basin and the Tulare Lake Basin. The San Joaquin River is listed as impaired under Clean Water Act (CWA) Section 303(d). Existing water quality problems in the project area are well-documented.¹ Although municipal point sources may contribute to some of these water quality problems, the primary sources affecting the project area include agricultural drainage and reduced flows. Surface agriculture discharges account for 26 percent (280,000 tons) of the mean annual salt load to the Lower San Joaquin River and subsurface agricultural drainage represents the most concentrated source of salt and boron in the watershed (San Joaquin Water Quality Control Plan, 2004).²

The DEIS does not adequately evaluate the available information concerning water quality impacts and drainage problems affecting the project area and nearby hydrologically affected areas. The CVPIA PEIS did not address these region-specific resources and impacts. We recognize that this DEIS provides an analysis of groundwater; however, it does not address the impacts of water diversion and use on water quality, aquatic resources, and downstream uses. In particular, it presents no critical information on the quality of applied surface waters and associated aquatic resources that could be affected by San Luis Unit districts irrigation drainage.

The proposed action may exacerbate mobilization of pollutants and movement (through shallow groundwater) into areas where there could be fish and wildlife exposure. These potential impacts are not addressed in the DEIS. Some sources of selenium in soils from the San Luis Unit are mobilized by irrigation and storm run-off (1990 Drainage Management Plan for the West San Joaquin Valley, California, Fig. 6, p. 28). The highest concentrations of salts and selenium in shallow groundwater are located downslope (Fig. 2.5, Drainage Feature Reevaluation Preliminary Alternatives Report, Dec. 2001). There is evidence that subsurface drainage flow comes, in part, from Westlands Water District and other water districts upgradient of the northerly districts with high selenium/TDS concentrations (Plan Formulation Report Addendum, July 2004).

The DEIS does not address the proposed action's consistency with the Central Valley Regional Water Quality Control Board actions to address water quality impairments in the San Joaquin River or the potential implications for water contractors (p. 3.2-7). For example, the

¹The San Joaquin River is impaired for electrical conductivity (salinity), boron, mercury, DDT, and other pesticides. Many related tributaries have also been listed for unknown toxicity, salinity, and selenium.

²More information regarding salt loading from agricultural drainage is available at: <http://www.waterboards.ca.gov/centralvalley/programs/tmdl/salt_boron/appendix1.pdf>

discussion of the Grasslands Bypass Project does not reference the criteria for meeting total maximum daily loads (TMDLs) (p. 3.7-3; 3.10-19). Although the Westlands Water District does not discharge to surface waters, the Grasslands Bypass Project (which includes Panoche and Pacheco Districts) discharges tile water that empties into Mud Slough. Mud Slough is also impaired for selenium (DEIS, p. 3.12-5). While the Grasslands Bypass Project is discussed in the DEIS, the applicable water quality standards and progress towards meeting these standards are not disclosed.

We also note that many of the San Luis Unit contractors experience water quality-associated problems with agricultural drainage (Drainage Feature Re-evaluation, Plan Formulation Report (PFR) Addendum (July 2004)). However, the DEIS does not address the associated environmental impacts of agricultural drainage, land being taken out of production, and water quality degradation. The San Luis Unit is in an area where drainage problems have impaired sustainable agricultural production. The PFR Addendum concludes that by 2050, the shallow groundwater area needing drainage is expected to be 335,000 acres (over half the irrigated land base in the Unit). The PFR Addendum presents revised alternatives which include substantial land retirement and estimates that the Drainage Feature Re-evaluation EIS (which is under development) will evaluate retiring up to 308,000 acres. The PFR Addendum also suggests that surface and groundwater supplies, would be altered under a drainage service program. Regardless of the drainage plan that is implemented, the agricultural land base, water supply needs, and water management may change, affecting the proposed action. The San Luis Unit contracts should incorporate drainage service solutions that meet the objectives of the Drainage Feature Re-evaluation. The DEIS does not discuss whether the renewed contracts would be adjusted if the agricultural land base and water requirements change.

Lastly, the DEIS does not address whether continuing the current practices of managing agricultural drainage will have adverse impacts on groundwater and surface water quality, and beneficial uses including fish and wildlife, potential drinking water supplies, and agriculture. The PFR Addendum acknowledges that there are drainage flows (uncontrolled seepage into deep drains, tailwater, and storm run-off) that “could reach the adjacent wildlife refuges on the San Joaquin River, resulting in adverse effects to water quality and wildlife” (p. 3-19).

Recommendations:

The Revised or Supplemental DEIS should include an updated and detailed analysis of water quality conditions and San Joaquin River impairments. The impact analysis should include water quality data and program information to address impairments, including the selenium TMDL and irrigated land waivers. The Revised or Supplemental DEIS should provide updated information on the salt/boron Basin Plan Amendment for the northern portions of the San Luis Unit. It should clearly explain the surface and groundwater nexus between the Westlands Water District and northern districts. We also recommend that the Revised or Supplemental DEIS specifically address the San Luis Unit’s role in groundwater accretions and discharges of pollutants into wetland channels and the San Joaquin River.

The Revised or Supplemental DEIS should include the recent history of federal-state drainage programs, beginning with the San Joaquin Valley Drainage Program, 1990 (Management Plan for Agricultural Drainage and Related Problems on the Westside San Joaquin Valley, Final Report). The Revised or Supplemental DEIS should explain how the contractors in the northern portion of the San Luis Unit have altered their water management or land use practices as a result of the Grassland Bypass Project to achieve water quality goals.

Reclamation should consider incorporating drainage planning for the San Luis Unit, which is currently being conducted as a separate NEPA process (i.e., the Drainage Feature Re-evaluation DEIS) in the Revised or Supplemental DEIS. The Drainage Feature Re-evaluation is scheduled to be completed before the current contracts expire. If this is not feasible, Reclamation should incorporate alternatives and impact analysis in a Revised or Supplemental DEIS to address reasonably foreseeable changes in environmental conditions that would occur with drainage plans. At least one alternative should assume an outer range of permanent land retirement being considered in the Drainage Feature Re-evaluation (308,000 acres), which would result in a reduced irrigated land base. (Drainage Feature Re-evaluation, Plan Formulation Report Addendum, July 2004, p. E-11) The DEIS should disclose the agricultural water supply requirements for this alternative and associated water quality impacts.³

The Revised or Supplemental DEIS should describe the role of San Luis Unit water, agricultural drainage and return flows, and conveyance facilities in the management of the San Luis National Wildlife Refuge, the Mendota Wildlife Management Area, and the North Grasslands Wildlife Management Area. Water quality conditions and any pollutants of concern in the refuges and wetlands (including the private wetlands in the Grasslands) should be incorporated into the information on page 3.10-5. Due to unsustainable drainage conditions, the resulting loss of agricultural lands and fish and wildlife impairments should be discussed.

Needs Assessment

The needs analysis in the DEIS (Appendix H) used to establish future demands for water supply is not supported by information reflecting anticipated future conditions, such as agricultural drainage, water use efficiencies, and water marketing. For example, drainage problems in the San Luis Unit and other factors may reduce agricultural water demands. The water needs analysis assumes that land would remain in production although increasing salt balance problems are forcing some lands out of production. Either with a drainage service program, or with the status quo (no comprehensive program), the irrigated land base and surface-ground water management regime are likely to change. Assuming the continuation of existing

³The DEIS assumes that if lands are retired the contract water supply would not be changed (p. 3.8-8). In contrast, the PFR Addendum refers to Drainage Re-evaluation alternatives to examine retention of water for other uses, such as fish and wildlife (p. 3-5, Table 3.1).

conditions, up to 300,000 acres of land within the agricultural service area may become unusable. We note that the Westlands Water District is proposing to retire 200,000 acres to address chronic water shortages (p. 3.2-9). However, the needs assessment shows expansion of the land base from approximately 600,000 acres (1989) to 691,000 acres (2025).

Further, the agricultural water demands calculated for the Unit are inconsistent with the analyses being developed by the State Department of Water Resources (DWR) for the State Water Plan. These analyses project a future trend of substantially declining agricultural water demand in the Central Valley, particularly the San Joaquin River Basin (briefings by DWR to the Bulletin 160 State Water Plan Advisory Committee on October 14, 2004, and to the CALFED Agency Coordination Team on October 26, 2004).⁴ The CVP analysis appears to project increasing deliveries for agricultural use during the same time period (Reclamation Mid-Pacific Region website, rate setting documents).

The calculation of CVP supply needs may also be overstated because the water needs analysis does not reflect recent conditions in the districts with respect to use of other supply options, such as transfers and assignments, and conservation practices. Appendix H shows that many of the districts used 1989 data to represent existing water use and sources. This precedes both CVPIA and changes in regulatory conditions which have prompted use of alternative practices, such as transfers. Therefore, analyses for districts that have engaged in additional transfers are inaccurate. We note that significant portions of the San Luis Unit water may be transferred. Also, the Westlands Water District proposes to acquire Broadview Water District lands and water supply. (Reclamation Mid-Pacific Region website, rate setting documents).

Recommendations:

The Revised or Supplemental DEIS should clearly explain the basis of the water needs assessment, including assumptions regarding drainage management, surface and groundwater management, crop patterns and water use efficiency practices. It should include a description of the influence of urban development and transfers of water to urban use on specific irrigation districts. It should also describe how conservation, transfers, and other alternatives to CVP supplies are factored into agricultural and urban water needs. The assumptions underlying the projected expansion of the agricultural land base (2025) should be explicitly stated.

Modifications to Alternatives

Given that the impacts of the proposed federal action would likely be substantial if fully analyzed, Reclamation may need to consider revising the alternatives in the DEIS or analyzing additional alternatives that would allow for sustainable conjunctive use of CVP water or include a discussion of means to mitigate adverse environmental impacts (40 CFR Part 1502.16(h)). Modified or new alternatives should reflect reasonable future actions to address the drainage problems inherent with the existing condition. Possible future actions to address drainage

⁴Additional information on the water demand trends is available at the State Water Plan website: <http://www.waterplan.water.ca.gov/landwateruse/wateruse/wuoverview.htm>.

problems include land retirement as well as environmental protection through water conservation and environmental restoration. We note that a reduction in contract quantities may be needed to account for the land that is forced into retirement due to environmental degradation.

The earliest of these contracts (Westlands Water District) does not expire until December 31, 2007. Information from the Drainage Feature Re-evaluation DEIS (currently being prepared), as well as the ESA consultation on these contracts, should be incorporated into revised alternatives or more flexible contract provisions which include mitigation for project impacts. The DEIS notes that reductions in contract quantities are not required for Reclamation to implement the CVPIA. However, a full analysis of restoration and mitigation requirements, as well as a more comprehensive needs analysis, may raise questions about the quantities of water that should be appropriately subject to long-term contracts.

Recommendations:

The Revised or Supplemental EIS should include modified alternatives that:

- Coordinate the timing of the DEIS with drainage plan development. The drainage plan should precede and inform decisions on contract renewals. If this is not possible, the DEIS should be consistent with elements of drainage planning which would affect land base, water management, and water supply and explain how contract commitments can be adjusted to accommodate for these changes. Contract provisions should allow flexibility to incorporate elements of the drainage plan implementation and should commit to doing so.
- Include the following features: full contract deliveries; reduced water demand in the event of a high level of land retirement (e.g., the 308,000-acre limit set by the Drainage Plan).
- Include specific conservation provisions to promote water conservation and environmental protection. EPA recently recommended that a conservation alternative be considered in the Delta-Mendota Canal NEPA process (December 15, 2004 letter to Joe Thompson). EPA supports the evaluation of a conservation alternative, even if this alternative is outside the scope of Reclamation's statutory authority (see CEQ's 40 Most Asked Questions, 2A).
- Incorporate the full range of water supply and demand management options available to contractors in addition to CVP supplies such as water transfers, adjustments of contract terms (i.e., "reopener clauses"), project repayment, farm gate measuring devices, and environmental monitoring.
- Articulate conservation and environmental restoration goals such as water quality standards and provide commitments to these in the contract provisions. Water quality limitations on water transferred into the Valley should be considered as well as strengthened shortage provisions that will allow increased flexibility to meet the established restoration and water quality goals.

- Incorporate monitoring and reporting of the quality of surface and groundwater and drainage flows affected by San Luis Unit water use.
- Consider incentives for water conservation, such as more aggressive pricing mechanisms (including lowered pricing tiers and volumetric pricing) that will be able to be implemented in most years.
- Consider more aggressive land retirement and incorporate strategies that would avoid further impairment to the aquatic ecosystem and provide high quality water for refuges, wetlands, and the San Joaquin River. These strategies should allow for adaptive management to changing conditions such as population, land use, and climate conditions. We note that FWS recommends land retirement that is not based solely on groundwater considerations to reduce habitat fragmentation and its effects on listed species (FWS's Recovery Plan for Upland Species on the San Joaquin Valley, 1998). Therefore, retirement of large contiguous blocks of land that are protected through a conservation easement and managed for conservation should be considered. This alternative should also provide opportunities to enhance environmental water supplies, including allocating water previously used on retired lands to other needs, such as environmental restoration.