APPENDIX P3

Federal Agency Comments and Responses

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ALPHABETICAL TABLE OF COMMENTERS

COMMENT F-01. U.S. DEPARTMENT OF THE INTERIOR OFFICE OF THE SECRETARY, PATRICIA SANDERSON PORT

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1111 Jackson Street, Suite 520
Oakland, CA 94607-4807

July 29, 2005

Ms. Claire Jacquemin
Bureau of Reclamation
2800 Cottage Way, MP-720
Sacramento, CA 95825

RE: San Luis Drainage Feature Re-evaluation Draft Environmental Impact Statement: Comments from DOI OEPC Region IX

Dear Ms. Claire Jacquemin,

The following comments are for your consideration in determining and implementing a preferred alternative in the Final Environmental Impact Statement and Record of Decision.

We would suggest that Land Retirement alternatives are preferable to Out-of-Valley Disposal alternatives, as land retirement would keep selenium, salt, and other water quality issues restricted to agricultural land within the San Luis Unit, preventing adverse impacts from extending to coastal and marine environments. Negative environmental impacts could be minimized and more easily mitigated using an In-Valley/Land Retirement alternative.

Please consider the following features for inclusion in the Final EIS:

F-01-1 1) The Final EIS should adequately analyze adaptive management strategies and principles for selected alternatives. Adaptive management can provide a systematic way of evaluating progress of the drain system by specifically noting the extent and nature of environmental impacts as well as assuring the drain is functioning properly and performing as expected into future.

F-01-2 It would be beneficial to include adaptive management practices in the discussion of a preferred alternative to assess feasibility and benefits of constructing and implementing such a system. Including adaptive management in the preferred alternative can increase environmental mitigation and be useful in minimizing

environmental impacts. We suggest a comprehensive analysis to measure benefits and drawbacks of adaptively managing the San Luis drain.

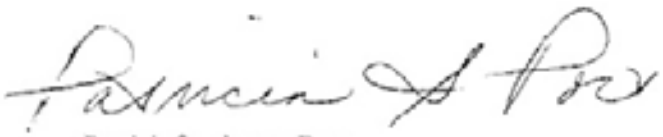
F-01-3 A schedule needs to be developed for drainage system evaluation. Regular system evaluation should include inspection of the system from an objective and technical standpoint and a forum for stakeholders to discuss new developments or concerns pertaining to the drainage system.

F-01-4 2) Alternatives should be inventoried for Historic Properties and cultural resources. The Final EIS should include more information on the protection of possibly-affected historic properties.

F-01-5 3) Retired lands need long-term management planning, including restoration for wildlife habitat, plans for recreational use, and mitigation for socio-economic losses from the land retirement.

If you have any questions or comments please do not hesitate to contact us.

Sincerely,



Patricia Sanderson Port
Regional Environmental Officer

RESPONSES TO COMMENT F-01

F-01-1, F-01-2

See Master Response MIT-1 in regard to adaptive management and monitoring.

F-01-3

Adaptive management strategies for the In-Valley Alternatives are described in Appendix J, Section J6. This strategy will include periodic monitoring and performance evaluation of the drainage system.

F-01-4

In accordance with Section 106 of the Historic Preservation Act and related California laws, site-specific cultural resource field surveys are not required at this stage of environmental review. These surveys would be conducted for the preferred alternative during engineering design.

F-01-5

See Master Response ALT-L1 in regard to long-term management planning of retired lands.

COMMENT F-02. U.S. CONGRESS HOUSE OF REPRESENTATIVES, LOIS CAPPS

LOIS CAPPS
23RD DISTRICT, CALIFORNIA

COMMITTEE ON
ENERGY AND COMMERCE

COMMITTEE ON THE BUDGET

DISTRICT OFFICES
SAN LUIS OBISPO, CA 93401
SANTA BARBARA, CA 93101
SALINAS, CA 93901

Congress of the United States

House of Representatives

August 30, 2005

Kirk Rodgers
Regional Director
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Dear Director Rodgers:

Thank you for granting my request to extend the San Luis Drainage Re-evaluation Draft Environmental Impact Statement (DEIS) comment period to Sept. 1, 2005. I know the extension has given my constituents the time they needed to fully understand the implications of the Ocean Disposal alternative.

I submit these comments concerning the DEIS in addition to my previous request for an extension to the comment period.

F-02-1 I strongly oppose any proposal that includes dumping selenium into the delta or ocean. The solution should be dealt with at the source and not exported to other regions of California by spreading the contamination. It is inappropriate to burden San Luis Obispo County residents with pollution problems created in the Central Valley.

We have a pristine coastal environment unique to California that supports numerous protected species as well as providing a productive recreational and commercial fishery, which contributes to a vibrant tourism industry. The San Luis Obispo County coastline cannot afford an unqualified risk to its habitat, neither environmentally or economically

F-02-2 The draft environmental impact statement inadequately analyses the cost of the project without assessing the cost of environmental impacts and mitigations, which I believe are significant. At the forefront of concern is the establishment of a pipeline through a

F-02-3 seismically active coastline. The DEIS does not address seismic activity and how monitoring and breakages will be managed. Also not included in the cost is the escalation

F-02-4 of energy costs from pumping to the coast and the decreased costs of new technology on In-Valley disposal.

F-02-5 Besides the inadequate cost analysis, I am concerned by the presence of unknown contaminants in the discharge.

The assessment assumes that only selenium will be dumped into Estero Bay and does not assess what other toxic discharges will be included and from the source those substances originate.

F-02-6 Another environmental and economic impact not properly assessed is that affecting our county farmers. Currently they are monitored for their agricultural runoff, but with an added discharge into the coastal waters farmers justly believe the standards for acceptable runoff will be increased. This will have an impact on one of our economic staples in San Luis Obispo County.

F-02-7 Numerous constituents from the public and private sectors have contacted my office voicing their concerns and assessment of this project. I have reviewed many of their comments and come to the conclusion the Ocean Disposal alternative presents too many unknowns to be considered a viable alternative.

Thank you for your consideration of my comments to the San Luis Drainage Re-evaluation DEIS.

Sincerely,

Lois Capps

LOIS CAPPS
Member of Congress

RESPONSES TO COMMENT F-02

F-02-1

Comment noted. No response necessary.

F-02-2

Appraisal-level cost estimates for construction (including right-of-way and land acquisition), annual operation and maintenance (including energy), and replacement costs were included for all alternatives analyzed in the Draft EIS, as discussed in Master Response GEN-1. The analysis of project costs is adequate for an appraisal-level design. Mitigation cost estimates are presented in Appendix O of the Final EIS.

F-02-3

See Master Responses GEO-1 and SW-15.

F-02-4

See Master Response EC-1 in regard to the economic analyses of the project alternatives. Costs and escalation factors for energy were developed based on accepted practices for Reclamation projects.

F-02-5

More detailed information has been included in the Final EIS to address the constituents that may be present in the Ocean Disposal Alternative discharge. See Master Response SW-13 for additional discussion.

F-02-6

See Master Response AG-1 in regard to the potential for the Ocean Disposal Alternative discharge to cause a change in agricultural discharge requirements.

F-02-7

Comment noted. No response necessary.

COMMENT F-03. U.S. ENVIRONMENTAL PROTECTION AGENCY, ENRIQUE MANZANILLA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

September 1, 2005

Ms. Claire Jacquemin
US Bureau of Reclamation
Mid-Pacific Regional Office
2800 Cottage Way MP-700
Sacramento, CA 95825

Subject: Draft Environmental Impact Statement (DEIS) for the San Luis Unit Drainage Feature Re-evaluation Project, Central Valley Project, California (CEQ# 20050216)

Dear Ms. Jacquemin:

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.

F-03-1 Based on our review, we have rated the In-Valley Disposal Alternatives as Environmental Concerns - Insufficient Information (EC-2) and the Delta and Ocean Disposal Alternatives as Environmental Objections - Insufficient Information (EO-2). EPA supports the Bureau of Reclamation's (Reclamation) expected selection of a drainage management system that is self-contained within the San Joaquin Valley and one that is environmentally protective. Please see

F-03-2 the enclosed Detailed Comments for a description of our objections, concerns, and recommendations. A *Summary of EPA Rating Definitions* is enclosed.

We commend Reclamation for the expanded analyses of selenium bioaccumulation and ecological risk, studies of innovative selenium and agricultural drainage treatment technologies, and for the clearly written DEIS. We also commend Reclamation for developing a drainage system, the Delta-Mendota Canal Drainage Collection/Reuse feature, which will eliminate drain water discharged to the Mendota Pool and the Delta Mendota Canal that contributes to elevated selenium concentrations in the San Joaquin River and nearby wetlands.

EPA provided scoping comments in response to the October 2, 2001 Notice of Intent (NOI) to prepare an Environmental Impact Statement. These scoping comments incorporated by reference EPA's comments on Reclamation's 1992 DEIS for the San Luis Unit Drainage Program. EPA rated the 1992 DEIS EO-2 because the proposed project would discharge drain water to the San Joaquin River (River) and San Francisco Bay Delta (Delta), perpetuating discharge of high total loads of selenium into these important water systems and undermining

incentives to reduce both the overall volume of agricultural drainage and the need for drainage service. EPA has attended numerous interagency meetings and workshops since 2001 to share these concerns and recommendations.

F-03-03 The Ocean and Delta disposal alternatives proposed in the current DEIS contain inadequate safeguards against selenium and other toxic contamination of the exposed ecosystems. Water quality in the Delta and San Francisco Bay (Bay) is already impaired by San Joaquin River selenium and industrial discharges. The DEIS acknowledges that, by increasing salinity and adding contaminants near water supply intakes, Delta disposal would further impair the quality of waters which are a source of drinking water for two-thirds of California. Ocean disposal would discharge untreated effluent from Point Estero into Estero Bay, which encompasses Morro Bay, which, along with the Bay and Delta, are designated sites in U.S.

F-03-04 EPA's National Estuary Program. Additional nutrient loading and contamination could impair the water quality, habitat, wildlife and recreational values of Morro Bay, which EPA and others have enhanced through the National Estuary Program.

F-03-05 Although we support an In-Valley disposal solution, we remain concerned with certain aspects of the In-Valley Disposal alternatives because of uncertainties regarding effective and safe treatments to remove selenium from drainage water. As proposed, the evaporation ponds

F-03-06 can pose a significant hazard to wildlife. Appropriate protocols to mitigate impacts of these ponds have not been established. In addition, the DEIS has insufficient information regarding the contaminant profile and disposal options for the selenium biotreatment biosolids and reverse

F-03-07 osmosis brine, contaminant profile of the drainage effluent, as well as the potential impacts to water and air quality. Despite these concerns, we recommend incremental implementation of an

F-03-08 In-Valley disposal and land retirement strategy that avoids and minimizes environmental effects, includes a commitment to further pilot testing and technological development, and incorporates rigorous water quality monitoring.

EPA appreciates the opportunity to review this DEIS. We look forward to working with Reclamation, other agencies, and stakeholders in identifying a preferred alternative in the Final EIS (FEIS) that meets environmental objectives and achieves a water and salt balance in the San Joaquin Valley. When the FEIS is released for public review, please send two copies to the address above (mailcode: CED-2). If you have questions, please contact me or Laura Fujii, the lead reviewer for this project. Laura can be reached at 415-972-3852 or fujii.laura@epa.gov.

Sincerely,

Enrique Manzanilla, Director
Communities and Ecosystems Division

Enclosures:
Summary of EPA Rating Definitions
EPA's Detailed Comments

cc: Michael Nepsstad, Bureau of Reclamation, Mid-Pacific Region
Michael Delamore, Bureau of Reclamation, South-Central California Area Office
Steve Deweiler, US Fish and Wildlife Service
Joy Winkel, US Fish and Wildlife Service
Theresa Presser, U.S. Geological Survey
Lester Snow, California Department of Water Resources
John Beam, California Department of Fish and Game
Jim Branham, California Environmental Protection Agency
Celeste Cantu, State Water Resources Control Board
Steve Moore, Regional Water Quality Control Board 2
Gerhardt Hubner, Regional Water Quality Control Board 3
Rudy Schnagl, Regional Water Quality Control Board 5
Joe Grindstaff, California Bay-Delta Authority
Marcia Brockbank, San Francisco National Estuary Program
Daniel Berman, Morro Bay National Estuary Program

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR SAN LUIS UNIT DRAINAGE FEATURE RE-EVALUATION PROJECT, CENTRAL VALLEY PROJECT, SAN JOAQUIN VALLEY, CA, SEPTEMBER 1, 2005

Project Description

In response to a court order (*Summer Peck Ranch, Inc. et. al. v. Bureau of Reclamation et. al.*), the Bureau of Reclamation (Reclamation) has re-evaluated options for providing drainage service to the San Luis Unit of the Central Valley Project (CVP) in the San Joaquin Valley, California. This region has a 100+ year history of subsurface drainage problems that adversely affect agriculture, wildlife, and fish from water contamination from salts, selenium, and toxic metals. The project area includes five Water Districts in the San Luis Unit, including the Westlands Water District, which have CVP water supply contracts for approximately 1.4 million acre feet/year (af/yr) of water, and the Grasslands drainage area within the Northerly Area of the proposed project. In this Draft Environmental Impact Statement (DEIS) Reclamation evaluates seven action alternatives: one Ocean Disposal, two San Francisco Bay Delta (Delta) Disposal, and four In-Valley Disposal alternatives. Three of the In-Valley Disposal Alternatives include various degrees of land retirement, which would end irrigation of drainage-impaired agricultural land. The action alternatives assume voluntary on-farm and within water district actions to install drainage tiles and manage shallow groundwater that feeds into the Federal drainage service facilities.

Proposed Alternatives

Out-of-Basin Disposal Alternatives

The Ocean Disposal and Delta Disposal alternatives are considered "out-of-basin" alternatives. The Ocean Disposal Alternative would discharge untreated drainage effluent into the ocean and the Delta Disposal Alternative would discharge drainwater that has been treated to reduce selenium levels. Appendix C indicates that drain water could contain toxic pollutants, in addition to selenium, at levels exceeding applicable water quality standards. However, the DEIS does not fully profile contaminants that could be present in discharge water and does not address the question of meeting applicable water quality standards at proposed discharge points. EPA discourages reliance on disposal of drainage water Out-of-Basin into the Pacific Ocean, San Joaquin River, or Delta. We have the following comments and recommendations for the Ocean and Delta Disposal alternatives:

F-03-9

F-03-10

Ocean Disposal Alternative

The DEIS states that effluent discharged into the ocean would reach levels of 220 parts per billion (ppb) selenium (p. 2-52). It is probable that the effluent could also contain high levels of nutrients and pesticides associated with agricultural use. As proposed, the Ocean Disposal Alternative would transfer adverse effects from one location to another. Although not noted in the DEIS, Estero Bay includes the Morro Bay National Estuary Program, which focuses on the protection of estuarine resources by implementing a Comprehensive Conservation and Management Plan (CCMP). This alternative would directly impact Estero Bay. Additional nutrient loading and contamination could impair the water quality, habitat, wildlife and

F-03-11

1

F-03-11 cont. recreational values of Morro Bay, which EPA and others have enhanced through the National Estuary Program.

F-03-12 **Recommendations:**
The FEIS should describe the Morro Bay National Estuary Program and evaluate how a discharge to Estero Bay would affect implementation of the CCMP developed under the Morro Bay National Estuary Program. The FEIS should specifically identify impacts to the ocean and estuarine resources in Estero Bay from the Ocean Disposal Alternative.

F03-13 Disposal into the Pacific Ocean requires an evaluation of permit requirements, including identification of contaminants in the discharge water and explanation of how applicable water quality standards will be met. The FEIS should include this analysis.

F-03-14 The risk of bioaccumulation of the diluted toxic constituents by marine organisms in Estero Bay should be analyzed. The Ocean Disposal alternative relies on use of a diffuser to meet existing water quality standards for selenium. However, dilution of a toxic which bioaccumulates does not resolve issues of potential food chain impacts. Information gaps regarding biological resources in the affected coastal area and food chain processes should be identified in the FEIS.

F-03-15 If the Ocean Disposal Alternative continues to be included as a reasonable alternative in the Final EIS (FEIS), Reclamation should consult with the U.S. Fish and Wildlife Service (FWS) and National Oceanic & Atmospheric Administration - Fisheries Service (NOAA - Fisheries) for Endangered Species Act compliance (e.g., protection of sea otters and other threatened marine mammals and fisheries). Consultation should include discussion of, and commitment to, measures to mitigate adverse impacts.

Delta Disposal Alternatives

The disposal of agricultural drainage water into the San Francisco-San Joaquin Delta (Delta) will potentially increase the selenium, salinity, heavy metals and pesticide loads to this water body. The San Francisco Bay and Delta have been part of EPA's National Estuary Program for over a decade and, through CALFED and other efforts, are the focus of extensive recovery projects. Areas of the Delta and Bay that would receive additional loads of selenium from this project are already listed as impaired, as defined by the Clean Water Act (CWA), for this contaminant. **State and Federal water quality standards and implementation requirements are under review and may become more stringent.** The US Geological Service Luoma-Presser

model[1] indicates that there would be adverse effects to the Delta from additional disposal of agricultural drainage water.

F-03-16a According to the DEIS, the selenium concentration in the treated effluent would be approximately 10 parts per billion (ppb) (e.g., p. 2-59), which is double the current California Toxics Rule (CTR) standard. We note that while selenium biotreatment reduces the concentration of selenium, it also converts selenium to a more bioavailable organic form. The projected level of selenium loading proposed in these alternatives may not be practicable for the following reasons:

F-03-16b
- EPA is currently working with the Fish and Wildlife Service, NOAA-Fisheries, and the U.S. Geological Service to develop selenium criteria for the Bay Delta and for the State of California. These new criteria are based on the Luoma-Presser model and would be protective of wildlife, in addition to aquatic life. The projected selenium loads for the proposed project may not be compatible with these new criteria.
- The use of a mixing zone for a bioaccumulative contaminant to meet water quality standards may not be feasible. The State Implementation Plan for point source permitting states that where bioaccumulative compounds are on the CWA 303(d) list, a Regional Water Quality Control Board (Region Board) should consider limiting mass-loadings to current levels.

F-03-17 Disposal of agricultural drainage water within the Delta could degrade drinking water quality for two-thirds of California by increasing salinity and adding contaminants near drinking water supply intakes. This impact would run counter to State and CALFED objectives to reduce the loads and/or impacts of bromide, total organic carbon, pathogens, nutrients, salinity, and turbidity in the Delta (p. 5-28). Reducing and controlling salinity levels is a priority for the agricultural community, State, CALFED, and many municipal water districts.

F-03-18 **Recommendation:**
The FEIS should provide information on the potential regulatory and policy limitations of the proposed selenium discharge levels and how these changes may affect the alternatives. The FEIS should also explain how the proposed Delta discharge affects the goals of "continuous improvement in Delta water quality" adopted by State and Federal agencies in the CALFED process.

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[1]Sam Luoma and Theresa Presser, *Forecasting Selenium Discharges to the San Francisco Bay-Delta Estuary: Ecological Effects of a Proposed San Luis Drain Extension*, Department of Interior, U.S. Geological Service, Open-File Report 00-416, 2000.

In-Valley Disposal Alternatives

The DEIS states that Reclamation expects to select an In-Valley/Land Retirement Disposal alternative (p. ES-9). EPA supports the selection of an environmentally preferred In-Valley alternative that includes:

Watershed management:
- Reduce downslope impacts of runoff during storm events (such as on the Panoche Fan)
- Reduce bare soil exposure to minimize adverse effect to air and water quality

Integrated groundwater management:
- Reduce or minimize degradation of aquifer quality
- Arrest and reduce occurrence of drainage problem areas
- Use groundwater pumping to manage the shallow groundwater

F-03-19

Land retirement:
- Phased implementation
- Consideration of land retirement on a scale to minimize the need for evaporation ponds and concentrated reuse
- Consideration of a full range of alternative uses for lands removed from irrigation

Development of technology:
- Include a commitment to further pilot testing

Protection of wildlife habitat:
- Avoidance of toxics exposure in waters
- Mitigation for habitat losses or other adverse impacts to biota

Protection of water quality:
- Incorporation of rigorous water quality monitoring.

F-03-20 EPA further supports the In-Valley disposal approach, provided that adverse impacts can be avoided, minimized, or mitigated, and that necessary water management actions, such as irrigation water reuse, by the Water Districts (Districts) and water users are pursued. We have the following comments on key elements of the In-Valley Disposal alternatives as described in the DEIS:

Watershed Management

The DEIS does not analyze the irrigation of upslope lands as sources of selenium mobilization into drainage water. In fact, proposed land retirement would allow a redirection of irrigation water to upslope areas, which could contribute to continued drainage problems (p. 13-15). Information cited in the DEIS (p. 1-6) and other recent studies of San Joaquin Valley Drainage Implementation Program (SJVDIP) suggests that limitations placed on upslope irrigation and coordinated management of groundwater are important to a successful drainage program.

F-03-21

F-03-22

Recommendation:
The FEIS should identify areas that significantly contribute to downslope drainage problems and selenium hot spots. The FEIS should include a specific management strategy for minimizing selenium loading from these areas, including measures to assure that continued or new irrigation would be managed to avoid creating or exacerbating drainage problems. Information from the 1990 Management Plan for Agricultural Subsurface Drainage and subsequent studies could be used to develop this management strategy. The FEIS should estimate the environmental benefits of adopted management strategies to minimize impacts from upslope sources of selenium and selenium hot spots.

Integrated Groundwater Management

F-03-23

The DEIS states that groundwater recharge has increased dramatically in the past 40 years as a result of imported irrigation water. Irrigated agriculture has altered both groundwater flow and quality (p. 6-11). The cumulative effect has been a rise in the water table and salinization of soil and groundwater in this region (p. 6-35). While the DEIS provides information on shallow groundwater and considers operation of reuse facilities as underground regulating reservoirs (p. 2-8), the DEIS does not fully analyze groundwater management as a possible component of a drainage service project.

F-03-24

Recommendation:
The FEIS should evaluate the use of coordinated groundwater management to address the high shallow groundwater table in crop root zones and the need, at times, for water to supplement surface water deliveries. We urge Reclamation and stakeholders to consider creation of a regional ground water management district to develop and implement a shallow groundwater management plan. The FEIS should estimate the environmental benefits of an adopted groundwater management plan.

Land Retirement

Land retirement can reduce the quantity of drainage water by fallowing farmland that is marginal, or overlies difficult-to-drain soils, or shallow groundwater containing high levels of selenium or other toxic contaminants. Land retirement would also benefit severe air quality conditions in San Joaquin Valley by reducing agricultural fugitive dust emissions (p. 11-20) and could significantly further the goals of the *Recovery Plan for Upland Species of the San Joaquin Valley, CA* (USFWS 1998), if appropriate retired land is managed for upland species habitat.

F-03-25

Retired lands may also provide the opportunity to reallocate limited surface water supplies to those lands and uses that maximize beneficial uses of this limited water source. EPA endorses land retirement as a means of addressing contaminant hot spots and the quantity and quality of drainage water.

Northerly Area

The proposed action alternatives do not include land retirement in the Northerly Area. However, this area has significant shallow, contaminated groundwater problems. For instance, the Panoche Water District is known to have high selenium levels and is working aggressively to reduce drainage volume and selenium loads. Retiring lands in the Northerly Area could provide

F-03-26 significant benefits to the environment and regionally sustainable agriculture.

Recommendation:
The FEIS should specifically evaluate the environmental benefits and costs of a land retirement option in the Northerly Area, focusing on areas with significant drainage and contaminated groundwater problems.

Productive Uses of Retired Lands

Lands removed from irrigation have the potential for a number of alternative, productive uses. The DEIS identifies wildlife habitat (p. 7-75), dry land farming, controlled irrigation for grain or feed production (p. I-9), recreation, hunting, cultivation of native plants or non-irrigated agriculture as potential uses of retired lands. Westlands Water District (Westlands) has sponsored an economic study of land retirement[2] that considers more intensive commercial uses. It is not clear whether the DEIS considered a full range of potential uses of retired lands in its calculation of benefits and costs of retiring lands from irrigation. Since there are substantial advantages to reducing drainage production and the need for treatment and disposal by converting drainage impaired irrigated lands to other uses, a more complete evaluation of alternative uses of the retired land is appropriate.

F-03-27

Recommendations:
The FEIS should expand the evaluation of retired lands to include a more complete analysis of potential uses of these lands and the subsequent benefits and costs. For example, EPA recommends the FEIS describe how the *Recovery Plan for Upland Species of the San Joaquin Valley, CA.* may be integrated into the development of management plans for retired lands. The FEIS should consider a) retirement of drainage problem farmlands and subsequent restoration of natural habitat, and b) implementation of a voluntary "safe harbor" program to establish wildlife friendly habitat areas on active farmlands. A project goal should be the creation of a contiguous mosaic of existing natural lands, retired and restored farmland, and active farmlands integrated with wildlife habitat areas (ES-10, FWS Planning Aid letters). The FEIS should specify the environmental benefits of an adopted land retirement use strategy.

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[2]"Analysis of Economic Impacts of Proposed Land Retirement in Westlands Water District," Westlands Water District, May 2003.

Development of Technology to Treat, Manage, and Dispose of Agricultural Drainage

Selenium Biotreatment and Reverse Osmosis

F-03-28 Treatment technologies to reduce water concentrations of selenium to safe levels, which could be as low as 1 ppb selenium, have only been pilot tested and are not demonstrated at the large-scale proposed in this project. EPA has two concerns regarding the proposed technology: 1) it may not be reliable and, as such, may still expose water birds to selenium, and 2) through the biotreatment and reverse osmosis process, selenium may be converted to the more

F-03-29 bioavailable organic form, raising concerns about safe sludge disposal. The DEIS is not explicit about the expected concentration or form of selenium in the biomass sludge but states that there would be appropriate disposal (p. 2-21). Based on information in Appendix C, we are concerned that the selenium concentration could exceed the 100 ppb threshold classified a hazardous waste.

Recommendations:

F-03-30 The FEIS should include an analysis of the long-term effectiveness and reliability of the proposed treatment methods. EPA recommends a peer review of results of the pilot projects prior to a commitment to large-scale investment and implementation of the proposed treatment technology. At a minimum, the FEIS should state whether or not Reclamation will conduct a peer review and commit to providing this peer review, if there is one, to the public when it is available.

F-03-31 The FEIS should provide detailed information on the expected contaminants and quantities of selenium biotreatment and reverse osmosis biosolids, brines, and process wastes. The FEIS should also describe waste disposal requirements and options, and evaluate the potential effects on landfills or hazardous waste repositories. The evaluation should include information on storage, monitoring measures, and potential transportation and disposal costs. The costs of treatment and waste disposal should be included in the cost analyses for the alternatives.

Evaporation Ponds

Groundwater. The DEIS notes that evaporation ponds and reuse areas would lead to increased concentration of salts, selenium, boron and other constituents in the groundwater beneath and downgradiant of these facilities (p. 6-28). Although the extent of contamination could be limited by interceptor drains and vertical cut-off walls (p. 6-29), the State Water Resources Control Board generally prohibits activities which would degrade groundwater quality (Resolution 68-16). Furthermore, progressive degradation of groundwater quality, such as increasing salinity, reduces the long-term viability of agriculture in the region. Because the north portion of the project area contains extensive wetlands that rely on surface and groundwater supplies, all possible steps should be taken to preserve groundwater quality.

Recommendations:

F-03-32 The FEIS should identify all feasible mitigation measures to minimize groundwater contamination effects in the evaporation ponds and reuse areas. The FEIS should describe the implementation of design features that intercept

F-03-32 cont.

movement of degraded groundwater away from pond and reuse sites and incorporate these features as part of the In-Valley Disposal alternatives. The location and scale of evaporation ponds should be designed to reduce adverse impacts to biota and ground water quality. The FEIS should estimate the environmental benefits of adopted measures to minimize groundwater contamination effects in the evaporation ponds and reuse areas.

F-03-33

Potential Impacts to Biota. The proposed In-Valley Disposal alternatives rely upon evaporation ponds for salts disposal. EPA has significant concerns regarding the feasibility and environmental safety of evaporation ponds because of 1) the hazards they pose to wildlife through increases in selenium exposure and 2) management challenges. The predicted mean selenium concentrations in dietary tissue exceed the effects threshold of 4mg/kg for all four evaporation basins during the water bird breeding season (p. 8-51). Thus, the DEIS anticipates adverse effects to water birds during operation of evaporation basins (p. J-3, Appendix J Implementation of In-Valley Disposal Alternatives). The DEIS also states that avoidance and mitigation measures for upland species would reduce, but may not entirely eliminate, the potential for selenium bioaccumulation (p. 8-51).

F-03-34

Mitigation and Management. Evaporation ponds present a number of significant management challenges, including permitting, concentration of contaminants, and high maintenance and monitoring costs. Adequate mitigation related to evaporation ponds has been problematic as noted in Reclamation's "Draft White Paper: Mitigation Requirements Related to Evaporation Ponds in the San Joaquin Valley of California, July 2002," and Appendix M of this DEIS.

F-03-35

Recommendations:
The FEIS should fully evaluate the feasibility of evaporation ponds as a long-term solution to the agricultural drainage problem, especially in light of current knowledge regarding characteristics of the influent and potential impacts to biota. The FEIS should evaluate the presence of contaminants in the evaporation pond and reuse areas and, if contaminants are present, evaluate possible disposal options such as disposal in landfills, hazardous waste sites, or in-place. The evaluation should include additional information on the potential effects and disposal of brines and evaporates, especially those high in selenium and metals; implementation and enforcement protocols (e.g., for wildlife protection measures); and the permitting process.

F-03-36

The FEIS should also provide a detailed description of long-term requirements for monitoring and assessment to evaluate actual ecological risk of the evaporation ponds and to refine mitigation measures. The description should include evaluation of the mitigation measures' effectiveness with data demonstrating the ability of the mitigation in reducing exposure of birds and terrestrial species.

8

F-03-37 The FEIS should include a discussion of FWS's "Alternative Habitat Protocol and Compensation Habitat Protocol" (1995) and the status of efforts to expand and update mitigation protocols. The FEIS should also discuss options for providing reliable water supplies for substitute habitat.

F-03-38 Safe closure of the evaporation ponds, or other In-Valley locations where concentrated materials may be disposed, should be described and evaluated. Closure often requires in-situ burial, capping, and monitoring of the underlying groundwater. Given that shallow groundwater management is an issue in the project area, the FEIS should address management and monitoring requirements to ensure "containment" of the buried deposits.

Reuse areas

Conveyance of Drainage Water. The In-Valley Disposal alternatives provide for up to 16 drain water reuse areas, covering up to 19,000 acres (p. 2-10). Design features that minimize spills and wildlife exposure to waters with concentrated contaminants are critical. On several occasions in the Grasslands Bypass Project area, wet weather periods have led to spikes of selenium discharges into Mud slough, Salt slough, nearby wetlands, and the San Joaquin River. While the exact causes of these events are not certain, they are clearly associated with upland storm flows entering and discharging from the project site. In some areas, ponding of reuse water has also posed a hazard to biota.

F-03-39 **Recommendation:**
If an In-Valley Disposal alternative is pursued, it will be necessary to design, manage, and monitor reuse areas to ensure drainage is conveyed, applied and held to avoid the uncontrolled ponding and discharge of contaminated water. The FEIS should describe design measures, management commitments, and environmental benefits of adopted measures to address unintentional and uncontrolled ponding and discharge events.

F-03-40 *Contamination of the Terrestrial Environment.* The proposed In-Valley Disposal Alternatives would reuse drainage water on salt tolerant crops, such as eucalyptus trees and salt grass. While EPA supports the concept of recycling and reuse of drainage water, we are concerned that contaminants may be transferred from the aquatic environment to the terrestrial environment.

F-03-41 **Recommendation:**
The FEIS should describe the status of research regarding potential environmental hazards and management challenges of agroforestry and salt tolerant crops. For instance, the FEIS should describe issues regarding management and disposal of concentrated drainage water, transfer of contaminants into plant foliage, and marketability of agroforestry products.

Delta-Mendota Canal Drainage Collection/Reuse

Agricultural drain water discharged to the Mendota Pool and the Delta Mendota Canal contributes to elevated selenium concentrations in water supplied to nearby wetlands and the San Joaquin River. Reclamation has developed the Delta-Mendota Canal Drainage Collection/Reuse common feature for all action alternatives which will address disposal of agricultural drain water discharged to the Mendota Pool and the Delta Mendota Canal (pps. 2-8, 2-26).

F-03-42

Recommendation:
EPA strongly supports the proposed collection/reuse system and recommends the FEIS commit to implementation of the Delta-Mendota Canal Drainage Collection/Reuse component, regardless of the selected preferred alternative.

F-03-43

On-Farm and In-District Voluntary Measures

Tile drain systems are a physical prerequisite of utilizing the Federal drainage service. Currently, on-farm tile drain systems and irrigation measures to minimize drainage are not universally used throughout the project area. The DEIS assumes both voluntary on-farm installation of tile drain systems and implementation of irrigation measures to minimize drainage quantities. EPA is concerned with these assumptions because they rely on independent actions that may or may not actually occur.

F-03-44

Recommendation:
Reclamation should continue to work with the Districts and water users to develop incentives to modify current irrigation and drainage practices to support environmentally sound solutions to agricultural drainage. The FEIS should identify specific, multi-party strategies, at the farm and district levels, to reduce the quantity of drainage needing disposal and to promote beneficial reuse of drainage water. Further, the FEIS should identify the environmental benefits of reducing the quantity of drainage water and improving its quality.

Environmental Measurement, Monitoring, and Mitigation

F-03-45

Complete Contaminant Profile

For all alternatives, there are significant concerns regarding the potential impacts of contaminants that may be in the agricultural drainwater, selenium biotreatment biosolids, and reverse osmosis brine, but are not analyzed in the DEIS. Potential sources of pollutants are the native geology, which may include mercury from the new Idrea mine, and agricultural practices that introduce nutrients, trace metals, and chemicals such as pesticides. These contaminants have the potential to pollute groundwater and concentrate in agricultural drainwater.

F-03-46

Recommendations:
The FEIS should provide a complete analysis of contaminants in the agricultural drainage water before and after reuse, selenium biotreatment, reverse osmosis, and evaporation ponds. The FEIS should state whether information and technology

F-03-46 cont.

are available to profile contaminants in drainage water, such as trace metals introduced from fertilizers or soils, pesticides, and nutrients. If information or detection technology are not available, describe steps which would be taken to obtain this information. The FEIS should describe the types of process materials and waste products generated by reuse, reverse osmosis, and selenium biotreatment. To the extent information is available, identify expected concentrations of contaminants in these process materials and waste products, particularly selenium and other bioaccumulative toxics such as mercury, nutrients, and pesticides.

Monitoring

Long-term, systematic monitoring of the drainage problem and corrective systems are essential. Detailed monitoring strategies need to be developed for the following: drainage water quality, water quality in reuse areas, evaporation ponds, treatment process residues, and process water. Monitoring is appropriate for groundwater levels, soil conditions, water quality, quality and quantity of drainage, effectiveness of source control measures, conditions of evaporation ponds, affects on biota, and public health risks. Information on a broader array of potential contaminants, including organics and metals in fertilizers and other agricultural-use chemicals, is important, especially in light of recorded toxicity events in the Grasslands drainage project area.

F-03-47 Given the long time frame for implementation of any drainage program (i.e., 50- year project period), a sustained commitment to implementation and funding of monitoring, research, and development of drainage management, drainage treatment, and beneficial reuses of agricultural drainage is necessary.

Recommendation:
The FEIS should describe implementation, monitoring, and funding commitments. If phased implementation is proposed, we recommend the FEIS, at a minimum, describe the framework and schedule for providing detailed information on implementation, monitoring, treatment technologies, mitigation protocols, and funding. We urge Reclamation to continue to work with other entities in developing and implementing a comprehensive research and monitoring program which would address short- and long-term monitoring, research and funding needs.

Mitigation

The DEIS states that specific mitigation measures, such as a Biological Survey Plan, Monitoring and Adaptive Management Plan, and Compensation and Mitigation Habitat, will be

F-03-48 developed for the preferred alternative (Section 20 Environmental Mitigation). Since a preferred alternative has not been selected, the DEIS does not include specific mitigation plans or the costs for mitigation of environmental effects (p. 2-79, and Tables e.g. p. 2-26).

11

F-03-48 cont.

Recommendation:
These specific mitigation plans and other mitigation measures and commitments should be included in FEIS in either the Environmental Mitigation Section or as appendices. The FEIS should estimate the costs and environmental benefits of these mitigation measures. At a minimum, the FEIS should include reasonably foreseeable mitigation measures and an estimate of their costs.

Air Quality

Conformity Determination

General Conformity. The San Joaquin Valley is nonattainment for particulate matter less than ten microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and ozone, and the preferred alternative must conform to the federally approved State Implementation Plan (SIP). The DEIS does not describe requirements of Section 176 of the Clean Air Act regarding general conformity, nor does it state *de minimus* levels that trigger the need for a general conformity determination.

F-03-49

8-Hour Ozone. The ozone National Ambient Air Quality Standards (NAAQS) was revised on July 18, 1997 (62 FR 38856) by promulgating an ozone standard of 0.08 ppm as measured over an 8-hour period. EPA's final rule designating nonattainment areas under the 8-hour NAAQS for ozone was published in the Federal Register on April 30, 2004 (effective June 15, 2004). In accordance with Clean Air Act Section 176(c)(6), the conformity requirements for projects located within the newly designated ozone nonattainment areas do not apply until one year from the effective date of the area's designation.[3] Now that the grace period has passed, conformity for ozone now applies for the new federal 8-hour ozone standard in the San Joaquin Valley.

Recommendation:
The FEIS should describe the general conformity requirements of Section 176 of the Clean Air Act, state the *de minimus* levels that trigger a general conformity determination for each applicable NAAQS for which the area is in nonattainment, and whether a general conformity determination is required for the proposed project. The FEIS should include a general conformity determination if it is required. All such analyses should be done in accordance with applicable general conformity regulations.

[3] The one-year grace period for conformity determinations only applies with respect to the National Ambient Air Quality Standard for which an area is newly designated non-attainment and does not affect the area's requirements with respect to all other National Ambient Air Quality Standards for which the area is designated non-attainment or has been redesignated from non-attainment to attainment with a maintenance plan pursuant to section 175A of the Clean Air Act (including any pre-existing national ambient air quality standard for a pollutant for which a new or revised standard has been issued).

Particulate Matter

PM_{10}. The DEIS states that emissions associated with the large evaporation basins, reverse osmosis plants, and landfilling requirements of the In-Valley Alternatives would have significant effects on air quality compared to No Action (p. 11-19). Installation of the drainage collection system including pipelines and installation of tile drains, could also generate significant amounts of PM_{10}.

Recommendations:
The FEIS should include a thorough analysis of impacts from the construction and operation of the proposed alternatives. The analysis should include projected monitoring requirements, any anticipated exceedances of NAAQS, and estimates of all criteria pollutant emissions and diesel particulate matter (DPM).

EPA recommends the following mitigation measures be included, where feasible, in the Construction Emissions Mitigation Plan developed for the selected preferred alternative in order to reduce impacts associated with emissions of PM_{10} and other toxics from construction-related activities:

F-03-50

- Use particle traps and other appropriate controls to reduce emissions of diesel particulate matter (DPM) and other air pollutants. Traps control approximately 80 percent of DPM, and specialized catalytic converters (oxidation catalysts) control approximately 20 percent of DPM, 40 percent of carbon monoxide emissions, and 50 percent of hydrocarbon emissions;
- Visible emissions from all heavy duty off road diesel equipment should not exceed 20 percent opacity for more than three minutes in any hour of operation;
- Minimize construction-related trips of workers and equipment, including trucks and heavy equipment and establish an activity schedule designed to minimize traffic congestion around the construction site,
- Lease or buy newer, cleaner equipment (1996 or newer model) and utilize low sulfur fuel (diesel with 15 parts per million or less);
- Employ periodic, unscheduled inspections to ensure that construction equipment is properly maintained at all times, is tuned to manufacturer's specifications, and is not modified to increase horsepower, except in accord with established specifications;
- Coordination with the San Joaquin Valley Air Pollution Control District to: 1) identify a construction schedule to minimize cumulative impacts from multiple development and construction projects in the region, if feasible to minimize cumulative impacts, and 2) adopt appropriate construction dust control procedures;
- Locate construction equipment and staging zones away from sensitive receptors such as children and the elderly, as well as, away from fresh air intakes to buildings and air conditioners.

$PM_{2.5}$. EPA issued revised standards for $PM_{2.5}$ in July 1997. The fine particulates NAAQS was established on July 18, 1997 (62 FR 38652). The standards include an annual standard set at 15 micrograms per cubic meter (based on the 3-year average of annual mean $PM_{2.5}$ concentrations) and a 24-hour standard of 65 micrograms per cubic meter (based on the 3-year average of the 98th percentile of 24-hour concentrations). Possible sources that may contribute to high levels of $PM_{2.5}$ emissions include construction equipment, mobile sources, and high volumes of diesel truck traffic. San Joaquin Valley is designated a $PM_{2.5}$ nonattainment area. The adverse health effects of $PM_{2.5}$ are well known.

F-03-50 cont.

Recommendations:
The FEIS should evaluate the potential of the proposed project to release significant amounts of $PM_{2.5}$. The Air Quality section should include a description of the $PM_{2.5}$ standards, their health effects, and disclose what, if any, monitoring has been done in the project area for this pollutant.

The FEIS should identify sensitive receptors. These include children (schools, preschools, parks, playgrounds), elderly (retirement homes), infirm (hospitals), and athletes (gymnasiums, tracks, pools).

We encourage mitigation to the maximum extent possible. Mitigation measures may include air emission credits, implementing seasonal control programs, investigating opportunities to minimize land clearing, and implementation of the contruction emissions mitigation plan discussed above.

Clean Water Act Section 404 Requirements

F-03-51

Proposed action alternatives, especially the Out-of-Basin alternatives, could potentially affect waters of the United States. For instance, for the Ocean Disposal Alternative, the DEIS states that there could be 102 stream crossings in the conveyance alignment (p 7-46). Specific acreages of potential impacts are not provided for the major crossings such as the Salinas River, Paso Robles Creek, Estrella River, and Cholame Creek.

F-03-52

Recommendation:
The FEIS should provide a more detailed evaluation of potential impacts to jurisdictional waters of the United States from all components of the proposed project (e.g., evaporation ponds, reuse areas, conveyance systems, pipelines, treatment facilities). Identify impacts to water, floodplains, and wetlands, including identification of Section 404 Clean Water Act (CWA) requirements, and management and mitigation proposals to ensure compliance with these requirements. Wetlands and wildlife refuges are defined as "special aquatic sites" under the 404(b)(1) Guidelines. As such, they are provided with additional protection under the law.

Cumulative Impacts Analysis

Federal and Non-Federal Actions

Although the DEIS describes elements common to all action alternatives including on-farm, in-District actions, land retirement, and federal drainage service facilities, it does not provide an environmental evaluation of other federal and non-federal actions that would contribute to an overall drainage service solution for the San Joaquin Valley. Under NEPA, the cumulative effects analysis must consider the incremental impacts of an action when added to other past, present, and reasonably foreseeable actions, regardless of who undertakes those actions (40 CFR 1508.7). F-03-53

Recommendations:
The cumulative impact analysis should include a description and evaluation of relevant past, present, and reasonably foreseeable actions which could affect the ability to address the San Joaquin Valley drainage problem. For example, although on-farm, in-District actions may not be part of the federal action, they are integral to a complete drainage service alternative (pg. ES-3). Thus, the FEIS should evaluate the indirect and cumulative impacts and benefits of these elements.

F-03-54 The FEIS should consider the potential cumulative impact of changes in water quality, quantity, and circulation. The FEIS should further analyze these effects on fish and wildlife and the transport of the selenium discharged into the San Joaquin River and other waterbodies. Actions to consider are elements of the San Joaquin River Water Quality Group's draft proposal, such as the West Side Regional Drainage Plan and managed refuge releases, CVP contract renewals, and conjunctive surface-groundwater management plans. F-03-55

San Joaquin River

Implementation of drainage service has impacts on the San Joaquin River, improving certain aspects of water quality but reducing flows. The FEIS does not identify and discuss cumulative impacts of other conditions and actions which could affect water quality and flows in the San Joaquin River.

Recommendation:
The FEIS should evaluate and describe the potential cumulative impacts to water quality and flows in the San Joaquin River from: sediment removal from the San Luis Drain, rerouting drain water under the various alternatives, mercury loads coming from sources such as the New Idria Mine located in Panoche watershed, and, to the extent information is available, other actions being considered by water users in the San Joaquin River Basin to address water quality impairments. F-03-56

General Comments

Full Project Costs

The DEIS provides preliminary estimated present value and annual equivalent costs for the major facilities of the proposed alternatives. To clearly define the alternatives for informed decisionmaking, it is important to provide the complete cost of the project, including management, disposal options, mitigation, and monitoring requirements. EPA has consistently supported using a "beneficiary pays" approach to allocating project costs and benefits, where those who benefit from the Federal project help fund the project.

F-03-57

Recommendation:
The FEIS should provide a full accounting of the costs and benefits of the actions–regardless of the cost allocation–so that choices are clear to decision-makers and the public. For instance, the FEIS should describe and evaluate the costs and benefits of the proposed actions, describe principles for distinguishing between federal and other (e.g., local) costs, and describe mechanisms for paying for these costs. Specifically include costs of mitigation for reuse areas and evaporation ponds, disposal of byproducts and waste, energy for the selenium biotreatment and reverse osmosis, monitoring and adaptive management, and other reasonably foreseeable mitigation measures (e.g., mitigation for wetland impacts of Out-of-Basin disposal alternatives).

The FEIS should address the applicability of its "ability-to-pay" policy and recent Congressional mandates for CVP cost recovery for any chosen alternative.

Section 7 Endangered Species Act Consultation

The DEIS states that Reclamation will complete Endangered Species Act Section 7 consultation with the FWS prior to signing the Record of Decisions (p. 20-15). Reclamation will develop and implement appropriate avoidance measures, conservation protocols, construction Best Management Practices (BMPs), and construction monitoring procedures to avoid or minimize potential adverse effects to listed and protected species (p. 20-15). In addition, the DEIS states that additional studies and monitoring will occur on potential adverse exposure of upland species to selenium bioaccumulation from elevated selenium in preferred dietary items due to reuse areas and increased selenium in soils (p. 8-51).

F-03-58

Recommendation:
The FEIS should include a description of the status of FWS and NOAA Fisheries Section 7 consultations. Provide additional information in the FEIS on next steps and potential reasonable and prudent measures to address potential effects to threatened and endangered species.

San Luis Unit Long-Term Contract Renewals

Reclamation and the San Luis Unit are currently negotiating the long-term renewal of the San Luis Unit water service contracts for CVP water. We understand that Reclamation will reissue a revised DEIS for Renewal of Long Term Contracts for the San Luis Unit Contractors.

F-03-59

Recommendation:
The San Luis Unit CVP contract renewal and drainage feature re-evaluation DEISs should be consistent so that the public can clearly understand the relationships between the two actions in terms of Reclamation policies, water management, and environmental impacts. We recommend the San Luis Unit Drainage Feature Re-Evaluation FEIS describe how it is consistent with the San Luis Unit CVP Contract Renewal EIS regarding the existing environment, and baselines used for water use, land retirement, land conversion from agriculture to urban, water quality, and water conservation. Long-term contract renewal terms and conditions should be consistent with the need to ensure a long-term sustainable salt and water balance in the San Joaquin Valley in order to support sustainable agriculture in the San Luis Unit.

RESPONSES TO COMMENT F-03

F-03-1, 2

Comment noted. No response necessary.

F-03-3

The potential for Se and other toxic contamination to ecosystems is discussed in Master Responses SW-8, SE-1, and SW-9 for the Ocean Disposal Alternative and Master Response SW-2 for the Delta Disposal Alternatives.

F-03-4

See Master Response SW-11 for a discussion of nutrient loading under the Ocean Disposal Alternative. Also see Master Responses SW-13, SW-8, SE-1, SW-9, and SW-10 in regard to effects on water quality, habitat, wildlife, and recreational values of Morro Bay.

F-03-5

Comment noted. See Master Response ALT-T1 in regard to the evaluation of treatment options and technologies.

F-03-6

Appendix J of the Final EIS has been updated to include additional information regarding mitigation and adaptive management for evaporation basins. Also see Master Response MIT-2.

F-03-7

See Master Response ALT-T1 in regard to the contaminant profile and disposal options for the Se biotreatment biosolids and RO brine. Additional data on water quality from the Northerly Drainage Area have been included in Appendix C, Table C2-7a.

F-03-8

The comment is noted. Reclamation's plans for pilot studies, evaluation of technologies, and monitoring are described in Appendices B and J. Additional information about phased adaptive management for the In-Valley Alternatives has been included in Section 20 and Appendix J of the Final EIS.

F-03-9

See Master Responses SW-13 and SW-3 for additional information on constituents in drainwater and compliance with water quality standards for the Ocean Disposal and Delta Disposal Alternatives, respectively.

F-03-10

Comment noted. No response necessary.

F-03-11

See Master Response SW-11 for a discussion of nutrient loading under the Ocean Disposal Alternative. Also see Master Responses SW-8, SE-1, SW-9, and SW-10 in regard to effects on habitat, wildlife, and recreational values of Morro Bay.

F-03-12

See Master Responses SW-8, SE-1, and SW-9 in regard to effects of the Ocean Disposal Alternative on ocean and estuarine resources in Morro Bay. A discussion of the Morro Bay National Estuary Program and Comprehensive Conservation and Management Plan has been added to Appendix L, Section L-3.1.

F-03-13

See Master Response REG-1 for a discussion of permit requirements and water quality standards that may apply to the Ocean Disposal Alternative. Master Response SW-13 provides additional information about constituents in drainwater.

F-03-14

See Master Responses SW-8 and SE-1 for detailed discussions of the diffusion zone and the potential for bioaccumulation.

F-03-15

Reclamation has completed consultation under Section 7 of the ESA for the In-Valley Alternatives. The findings of the Biological Opinion have been incorporated into the Final EIS, and the opinion is included as Appendix M2. There is no requirement under NEPA or ESA for Reclamation to conduct consultation for all alternatives retained in the Final EIS. If, and only if, Reclamation intends to select the Ocean Disposal Alternative, will Reclamation complete the necessary consultations on it prior to signing the ROD.

F-03-16a

As discussed in Appendix G, Section G5.2, a study conducted by Amweg et al. (2003) indicated that Se bioavailability may increase during treatment. However, as noted in this section, this study provided limited information, and the design of the treatment system has been modified substantially since then. Reclamation is currently conducting a new pilot study of the treatment system as well as bioaccumulation in evaporation cells. Results of this study will be incorporated into the Final EIS. See Master Response SE-2 regarding the bioavailability of organic and inorganic forms of Se resulting from biological treatment.

F-03-16b

See Master Response REG-3 in regard to the compatibility of Se levels under the Delta Disposal Alternatives with new Se criteria and the use of a mixing zone to meet water quality standards.

F-03-17

Modeling results predict that any increase in contaminant concentrations from the proposed project would be negligible compared to the existing concentrations, and the EIS analysis has concluded that effects to drinking water quality would not be significant. See Appendix C and Master Response SW-3 in regard to the quality of effluent water that would be discharged under the Out-of-Valley Disposal Alternatives and Section 5 for water quality modeling results.

F-03-18

See Master Response REG-3 in regard to compliance of the Delta Disposal Alternatives with the Se-based TMDL.

F-03-19, 20

Comment noted. No response necessary.

F-03-21

In the drainage study area, groundwater movement is primarily downward, resulting from the combined response to deep percolation of irrigation water and pumpage from deep water supply wells. From a drainage study areawide perspective, much more water moves in the vertical direction than horizontally, and groundwater level and quality impacts in any given field occur primarily as the result of irrigation of the field. In general, the Draft EIS analysis and current hydrologic understanding of the system indicate that irrigation of upslope lands is generally not a significant source of dissolved constituents to drainwater collected in the downslope drainage-impaired area. In fact, the lateral downslope movement of groundwater is very slow. However, hydraulic pressure effects can affect groundwater levels and drainage volumes in downslope areas. In this way, redirection of surface water previously applied to proposed retired lands to upslope areas may affect downslope groundwater levels.

The Draft EIS used a three-dimensional numerical groundwater-flow model to analyze how shifts in applied water and land use potentially affect groundwater levels and flow in upslope and downslope areas. From a drainage study area perspective, the extent of upslope acreage that can be irrigated without impacting downslope lands is determined primarily by the irrigation water source. For example, irrigation with local groundwater can have beneficial effects relative to shallow water table conditions. The extraction and consumption of local groundwater increases the forces driving groundwater movement into deeper portions of the aquifer, decreases the total volume of water storage beneath the subsurface, and lowers the elevation of the water table. In contrast, upslope irrigation solely with imported surface water reduces local groundwater consumption and can exacerbate shallow water table conditions.

For areas that do not receive sufficient surface water, pumping is the only (or supplemental) source of irrigation water. For alternatives that include a land retirement component, the Draft

EIS analysis assumes that local groundwater use remains constant, regardless of whether or not surface-water supplies are redirected within the districts. In this way, the pumping benefit is maintained and total applied water necessarily decreases as lands are taken out of production. More intensive groundwater management was considered during development of the alternatives, but after deliberation it was concluded that there were too many uncertainties about the quality of the pumped water to assess its appropriate use. Inclusion of groundwater management as part of an alternative requires commitments on the part of local entities to accept and use the groundwater. Lacking more extensive field and pilot testing for the development of optimal pumping and delivery relative to groundwater quality constraints, groundwater management was not considered a proven technology and was not included in the alternatives. It should be noted that a separate groundwater pumping project is currently being pursued by the local agencies.

F-03-22

To our knowledge, no plans exist for new lands to be irrigated. The Draft EIS used a three-dimensional numerical groundwater-flow model (originally developed by the U.S. Geological Survey [USGS]) to analyze groundwater levels and flow in upslope and downslope areas. In general, model results and current hydrologic understanding of the system indicate that continued irrigation of upslope lands will generally not cause increased adverse affects on downslope retired or drained areas because the primary groundwater impact in any given area is irrigation and artificial drainage of that area. The results of our analysis indicate that additional drainage service, reduced deep percolation, and land retirement will reduce the area underlain by shallow groundwater. Se hot spots in Westlands are identified for retirement in the Land Retirement Alternatives.

F-03-23

Groundwater management was considered in the Draft EIS development at some length. The primary uncertainty is groundwater quality; salinity, boron, and Se are the primary constraints on use of pumped groundwater. After some deliberation, it was concluded that additional data collection and analysis would be required to fully develop a project that effectively integrates extensive groundwater pumping into current water management practices. Proposal of groundwater management as part of the action alternatives requires commitments on the part of local entities to accept and use the groundwater. Additional deep well installation, exploration, and water yield and quality analysis is needed to determine pumping and delivery strategies relative to the groundwater quality constraints. Local agencies are pursuing these analyses as a water supply project.

F-03-24

Coordinated surface and groundwater use was incorporated into the Draft EIS to the extent that the project assumes that local groundwater use remains constant at the safe yield of 175,000 acre-feet per year (AF/year). The remaining irrigation need for lands in production after inclusion of groundwater pumping is covered by available surface supplies (up to 70 percent of contracted delivery rates). As lands are retired the total surface supply needed to irrigate lands remaining in production decreases. Irrigation with local groundwater can have beneficial effects

relative to shallow water table conditions. The extraction and consumption of local groundwater increases the forces driving groundwater movement into deeper portions of the aquifer, decreases the total volume of water storage beneath the subsurface, and lowers the elevation of the water table.

More intensive groundwater management was considered during development of the action alternatives, but after deliberation it was concluded that it was not a proven technology (see Responses to Comments F-03-21 and F-03-23).

F-03-25

Comment noted. No response necessary.

F-03-26

Land retirement in the Northerly Area was evaluated in the PFR. See Master Response ALT-L2 for additional discussion.

F-03-27

An expanded analysis of potential uses of retired lands and related benefits and costs would require separate environmental analysis, as described in Master Response ALT-L3.

F-03-28

See Master Response ALT-T1 in regard to the evaluation of water treatment options and technologies.

F-03-29

Reclamation is currently investigating the Se concentration in biomass sludge as part of the pilot testing program. Results of the testing are presented in the Final EIS. For the purpose of cost analysis, the biomass sludge was assumed to require disposal at a Class 1 landfill. It should be noted other sludge recycling and management strategies will be investigated as a part of the adaptive management strategy.

F-03-30

See Master Response ALT-T1 in regard to the evaluation of water treatment options and technologies. Reclamation plans to develop and implement a demonstration-scale Se treatment system and to conduct a peer review of the Se treatment technology as part of the implementation of the technology.

F-03-31

See Master Response ALT-T1 in regard to the evaluation of treatment options and technologies. Recent pilot data collected through December 2005 are included in the Final EIS and include an evaluation of biotreatment sludge and disposal requirements. For the purpose of cost analysis,

the biomass sludge was assumed to require disposal at a Class 1 landfill. It should be noted other sludge recycling and management strategies will be investigated as a part of the adaptive management strategy.

F-03-32

Design features for reuse areas and evaporation basins are described in Sections 2.3.2.3 and 2.4.1.3. Reuse areas will be drained to capture subsurface groundwater and convey it to the treatment facilities. Evaporation basins will be sited and designed to minimize seepage losses and in most cases will be surrounded by reuse areas that would serve as an additional means to recover seepage losses. Groundwater monitoring wells would be included in the designs to monitor seepage.

F-03-33

See Master Response GW-1 in regard to the effect of evaporation basins on migratory waterfowl and other species.

F-03-34

Comment noted. No response necessary.

F-03-35

Potential effects of evaporation basins on biological resources are evaluated in Sections 7 and 8 of the Draft EIS. For additional discussion, see Master Responses GW-1 and BIO-3. Sections 7 and 8 of the Final EIS have been updated to include changes in project design features to avoid impacts and a revised estimate of mitigation requirements.

F-03-36

See Master Response MIT-2 in regard to mitigation planning for biological and other resources.

F-03-37

The Final EIS has been revised to include a discussion of the Service's 1995 Alternative Habitat Protocol and Compensation Habitat Protocol in Appendix J and the revised Service Coordination Act Report (which includes a discussion of efforts to update protocols) in Appendix M1. Reclamation would need to purchase water supplies for mitigation habitat similar to any other project implemented by Reclamation.

F-03-38

Containment, closure, and monitoring of evaporation basins are described in Section 2.4.1.3 of the Final EIS.

F-03-39

Section 2.3.2.3 provides a description of reuse facility operation and control measures to minimize ponding. These measures include infrastructure improvements, climate and soil-based irrigation management, drainage systems, tailwater recycling, and monitoring systems. Storm event management will be developed as part of the Implementation Plan. Also see Master Response MIT-1 in regard to adaptive management and monitoring.

F-03-40, 41

See Master Response GW-2.

F-03-42

All action alternatives include constructing conveyance facilities to transport drainage to reuse, treatment, and disposal facilities from the Firebaugh sumps that currently discharge to the Delta-Mendota Canal.

F-03-43

Although actions to address the required source control measures are up to the growers, Reclamation will not accept more drainage than is discussed in the EIS.

F-03-44

Reclamation will continue to work with districts to encourage implementation of cost-effective source control measures to control drainage. However, implementation of source control measures is a local action, and the specific actions that are implemented are up to the local agencies and landowners. Note that the EIS included costs to support irrigation system improvements on non-drainage-impaired lands as a further means of supporting source control and water use efficiency.

F-03-45, 46

See Master Responses SW-3 and SW-13 for additional information about contaminants in agricultural drainwater.

Waste products from the reuse, treatment, and disposal systems are limited to spent granular activated carbon (GAC) from bioreactors and regenerate solutions from the reverse osmosis system. RO systems are established technology and have predictable waste components with established methods for handling and disposal. As such, discussion of RO waste handling is not needed for the environmental analysis. Review of other full-scale biotreatment facilities indicates that GAC has a long useful lifetime and would only be replaced every few years. Reclamation conducted preliminary waste characterization testing on GAC from bioreactors as a part of the pilot testing program. Results of the characterization are presented in Appendix B. Reclamation and the ABMet patent holder are currently evaluating methods to reuse and recycle GAC.

F-03-47

See Master Response MIT-2 in regard to long-term monitoring of project facilities. Funding of the action alternatives is discussed in Master Response ALT-M1.

F-03-48

Additional information on mitigation planning has been added to Section 20, and mitigation cost estimates are provided in Appendix O of the Final EIS.

F-03-49

Section 11.1.4 of the Final EIS has been revised to include a discussion of Clean Air Act (CAA) Section 176(c)(1) and the requirement for Federal agencies to assure that their actions conform to applicable implementation plans for achieving and maintaining the National Ambient Air Quality Standards for criteria pollutants. See Master Response AIR-1 in regard to the need for a conformity determination. Future permitting for the selected and funded alternative would be required to comply with CAA Section 176(c)(1).

F-03-50

See Master Responses GEN-1 in regard to the level of analysis in the EIS and AIR-1 in regard to emissions estimates for the construction and operation of the project. Analysis of potential effects of project alternatives on air quality was conducted in a qualitative manner to allow comparisons among alternatives.

F-03-51

See Master Response GEN-1 in regard to the level of detail of the pipeline alignments. If an Out-of-Valley Disposal Alternative were selected as the preferred alternative, additional feasibility and final design studies would provide more detailed information about crossings of waters of the United States and other waterbodies.

F-03-52

As stated in Section 7.2.8.2 of the Draft EIS, once final conveyance alignments and related facility locations have been selected, preconstruction wetland delineations and other requirements, pursuant to Sections 401 and 404 of the CWA, would be completed on all wetlands, stream crossings, adjacent riparian habitat, floodplains, and other waters of the United States likely to be affected by project construction.

F-03-53 - 56

See Master Response CUM-1 in regard to the analysis of cumulative impacts.

F-03-57

Appendix N includes the National Economic Development analysis of costs and benefits of the project alternatives. See also Master Response EC-3 in regard to repayment of project costs.

F-03-58

See Master Response BIO-2 in regard to the status of agency consultations and assessment of potential effects to special-status species.

F-03-59

The comment is noted. Assumptions used in the Long-Term Water Contracts Renewal EIS and this EIS have been reviewed and made as consistent as possible given each project's different purpose and need. See Master Response GEN-6 in regard to water contract renewals.

COMMENT F-04. SANCTUARY ADVISORY COUNCIL, MONTEREY BAY NATIONAL MARINE SANCTUARY, DEBORAH STREETER

Sanctuary Advisory Council
Monterey Bay National Marine Sanctuary
299 Foam Street
Monterey, CA 93940
(831) 647-4201

August 25, 2005

Ms. Claire Jacquemin
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
FAX: (916) 978-5094
Email: cjacquemin@mp.usbr.gov

RE: San Luis Unit of the Central Valley Project
Public Comment on the Draft EIS

Dear Ms. Jacquemin,

At the August 5, 2005 meeting of the Monterey Bay National Marine Sanctuary Advisory Council, members learned of a plan proposed by the Bureau of Reclamation to discharge agricultural drainage from the San Luis Unit of the Central Valley Project into Estero Bay at a site 13 miles south the Sanctuary's southern boundary. The Sanctuary Advisory Council heard public comment from staff for a federal congressional representative and county supervisor and from the local estuary director and general public members, all of whom expressed deep concern for the ecological impacts of the ocean discharge. Sanctuary Advisory Council members also expressed concern for the potential ecological impacts based on their knowledge and expertise of ocean health and water quality issues.

The Sanctuary Advisory Council agreed to voice their strong and serious concern about the proposal to discharge these wastes into the ocean. Specifically, the Sanctuary Advisory Council wishes to convey the following concerns:

- The export of historically retained agricultural runoff from one water basin to another is inconsistent with the obligation of regional responsibility imposed on agriculture by the California State Water Quality Control Board. The adverse impact of accumulated selenium, known for its toxicity to wildlife, as well as other possible agricultural runoff, poses a threat to the marine environment. **F-04-1**
- The population growth of the Southern Sea Otter, a threatened species under the Endangered Species Act, is sluggish and uncertain due in large measure to elevated mortality. Contaminants and disease contribute significantly to this mortality. **F-04-2**

Monterey Bay National Marine Sanctuary

F-04-3

- Nutrient loading is known to lead to locally enhanced primary productivity that can lead to hypoxic conditions in the vicinity of the effluent. Contaminants in this effluent can be bioaccumulated in the marine food chain and be transferred to migrating marine mammals, birds and fish impacting marine ecosystems far beyond the point of discharge.

F-04-4

- The central coast agricultural community has demonstrated their very strong commitment to maintaining and improving water quality in nearshore marine ecosystems in particular in the Monterey Bay National Marine Sanctuary. The proposed discharge could overwhelm and undo the very positive outcomes of this partnership.

F-04-5

In conclusion, the Sanctuary Advisory Council expresses its strong and serious concerns over the potential impacts this project will likely have over our Sanctuary and marine resources far beyond the point of discharge.

F-04-6

We request an extension of time to make further public comment on this project. Please keep us informed about deadlines for public participation with this proposed project. We strongly encourage the Bureau of Reclamation to fully evaluate the potential impacts from ocean discharge of this drainage, including

F-04-7

but not limited to the serious concerns we have identified above. We also encourage you to explore alternatives to ocean discharge of the San Luis Unit of the Central Valley Project drainage.

Sincerely,

Deborah Streeter, Chair
Monterey Bay National Marine
Sanctuary Advisory Council

RESPONSES TO COMMENT F-04

F-04-1

See Master Responses SW-8, SE-1, and SW-9 in regard to the effects of the Ocean Disposal Alternative on the discharge vicinity and the potential for bioaccumulation and ecotoxicity effects.

F-04-2

Potential effects of the Ocean Disposal Alternative on the southern sea otter are discussed in Master Response SW-12.

F-04-3

See Master Response SW-11 for a discussion of nutrient loading under the Ocean Disposal Alternative. Also see Master Responses SW-8, SW-13, and SE-1 in regard to the effects of Ocean Disposal Alternative discharge on water quality in Estero Bay and bioaccumulation in marine life.

F-04-4

The comment is noted. No water quality changes are expected to result from the Ocean Disposal Alternative that would affect agricultural discharge requirements for Central Coast farmers. See Master Response AG-1 for additional discussion.

F-04-5

See Master Responses SW-8, SW-13, SW-11, SW-9, SE-1, and SW-10.

F-04-6

See Master Response GEN-4.

F-04-7

As discussed in Master Response GEN-1, the Draft EIS was prepared at an appraisal level of design, and as such, the analysis for the Ocean Disposal Alternative is considered adequate for differentiating alternatives based on their environmental effects. The alternative selection process is described in the PFR.

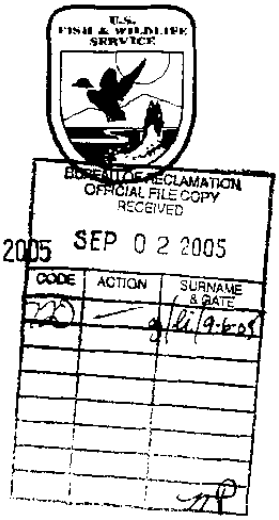
COMMENT F-05. U.S. FISH AND WILDLIFE SERVICE, MICHAEL HOOVER

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:

SEP 0 1 2005



Memorandum

To: Regional Director, U.S. Bureau of Reclamation, Sacramento, California

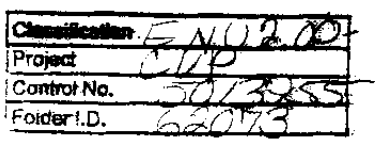
From: Acting Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: National Environmental Policy Act Comments on the Draft Environmental Impact Statement for San Luis Drainage Feature Re-Evaluation Project

This memorandum transmits U.S. Fish and Wildlife Service (Service) comments on the U.S. Bureau of Reclamation's (Reclamation) Draft Environmental Impact Statement (DEIS) for the San Luis Drainage Feature Re-Evaluation (SLDFR), dated May 2005. The Service provides these comments under authority of, and in accordance with, provisions of the National Environmental Policy Act (NEPA)(40 CFR Part 1500), our role as a Cooperating Agency under NEPA, and associated guidance from the President's Council on Environmental Quality. Our focus is to assist Reclamation in its efforts to "...make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment" (40 CFR Part 1500.1[c]).

The focus of these comments are meant primarily to supplement comments already provided via previous Planning Aid Memoranda and NEPA comment letters (which appear in the DEIS as Appendix M); however, some of the most salient points from these documents may be repeated for emphasis herein.

TAKE PRIDE IN AMERICA



DESCRIPTION OF THE PROJECT

Reclamation currently envisions the proposed project beginning with on-farm, and in-district drainage reduction actions to include subsurface drainwater recycling, shallow groundwater management, and canal seepage reduction. On-farm, and in-district actions would be followed by interception and collection of drainage (from farms), drainage reuse (at regional reuse facilities), drainage treatment (reverse osmosis followed by selenium removal), and finally disposal in evaporation basins—all operated, funded, and managed by Reclamation.

F-05-1 The DEIS describes three primary drainage service options: 1) In-Valley disposal (varying acreages of evaporation ponds), 2) Sacramento/San Joaquin River Delta (Delta) discharge, and 3) ocean discharge. We believe that terrestrial, marine, and/or freshwater aquatic habitats, including the Bay/Delta ecosystem, could be significantly affected, directly or indirectly, by implementing any of the current alternatives.

Selection of a Preferred Alternative

The DEIS does not identify a preferred action, but all current alternatives have a partial or complete focus upon drainage service. The DEIS states that its purpose is directed by the "Sumner-Peck" lawsuit (Firebaugh Canal Co. v. U.S. Dept. of Interior, Nos. 95-15300 and 95-16641 [9th Cir. 2000]; D.C. No. CV-88-00634-OWW) court order to provide drainage service to the San Luis Unit (SLU). However, as mentioned in the DEIS, the lawsuit decision does not eliminate non-interceptor drain solutions to the drainage problem, under the discretion of the Department of Interior (Department).

F-05-2 Given the partial to total reliance on interceptor drainage service (i.e., drainwater disposal) within all presented alternatives, we believe the current investigation is not consistent with other on-going state-wide efforts to protect, enhance, and restore healthy ecosystems in California. In addition, we believe many of these efforts to improve aquatic, terrestrial, and marine

F-05-3 environments could be compromised, to varying degrees, by each of the presented alternatives. It

F-05-4 is our view that no current project alternative adequately provides equal consideration of fish and wildlife resources with other project purposes, nor meets the project objective to minimize

F-05-5 adverse social and/or environmental effects. We believe selection of any of the existing

F-05-6 alternatives would not meet our understanding of the extent of the directive in NEPA to "...take actions that protect, restore, and enhance the environment" (40 CFR Part 1500.1[c]).

DISCUSSION

F-05-7 The Service is encouraged to see the DEIS include land retirement as a drainage reduction tool. We affirm that retirement from irrigated agriculture is a real and permanent solution to the drainage problem, since it functions as a drainage avoidance measure that acts at the source of the issue.

F-05-8 Because NEPA directs lead agencies to, "[I]nclude reasonable alternatives not within the jurisdiction of the lead agency" (1502.14[e]), we believe a more prudent range of reasonable alternatives should include, to the best of our abilities, a range of options spanning the court directed action.

F-05-9 We believe the project EIS should not unnecessarily restrict the range of alternatives to meet the identified purpose and need. Inclusion of a drainage elimination alternative that completely retires all drainage impaired lands would not only remove the drainage need, but would also avoid, to the maximum possible extent, the negative environmental consequences of subsurface agricultural drainage.

F-05-10 We believe inclusion of this broader range of drainage management options is more in line with the intent of NEPA, would meet the court directive, and would provide the decision maker a more complete range of alternatives to evaluate through the detailed environmental review process. Further, the Service believes an alternative that retires all drainage impaired land is consistent with the project purpose, aligns with provisions of the San Luis Act, the Central Valley Project Improvement Act (CVPIA)[1], goals of CALFED Bay Delta Program (CALFED), and may be environmentally and economically superior to the other alternatives considered in the DEIS.

Relationship to Other Environmental Initiatives and Regulations

F-05-11 The DEIS does not sufficiently include other related actions and decisions. Actions involving allocation, use, and (potentially) disposal of water have a bearing on related actions within a given watershed. At the scale of the currently proposed SLDFR project, we believe the influence upon, and from these other actions is significant.

F-05-12 It is the Service's view that the impacts of this project are not limited to those associated with subsurface drainage management, but also include possible allocations and use of "retired" water made available by the permanent cessation of Federal water delivery to up to one half of the current Westlands Water District (WWD). To date, Reclamation has not explicitly identified

F-05-13 how water freed up through the retirement of lands within the WWD would be allocated. Table 12.8 of the DEIS mentions that "the In-Valley/Drainage-Impaired Area Land Retirement Alternative results in water that can be available for uses beyond the Unit's irrigation needs."

F-05-14 Reclamation should address how this water would revert to the CVP for allocation to other beneficial uses as identified under authorities like the CVPIA[2].

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[1] The CVPIA directs the Department to provide "substantial deference" to the SJVDP recommendations (Section 3405(e)(3) - Water Conservation Standards).

[2] "Overall, the CVPIA 'seeks to achieve a reasonable balance among competing demands for use of [CVP] water, including the requirements of fish and wildlife, and agricultural, municipal and industrial, and power contractors.'" (*Implementation of the Central Valley Project Improvement Act Ten-Year Report. Fiscal Years 1993-2002*, Oct 2002, U.S. Department of the Interior).

F-05-15 The reallocation of SLC water (whether this reapportionment is internal or external) represents a significant project impact when compared to the No Action Alternative and should be fully, and explicitly evaluated. Table 12-14 of the DEIS indicates that the economic value of this water (calculated as a project benefit through avoiding the cost of providing supplemental water) renders the maximal retirement option (presented in the DEIS at 308,000 acres) the most cost-effective. The potential environmental benefits of appropriate reallocation of this water, when weighed against current and future critical shortages State-wide, would make such an alternative all the more attractive. This benefit would be amplified in the circumstance of a full retirement scenario. We therefore would like to see this alternative fully evaluated in comparable detail to the other In-Valley alternatives.

Ecological Monitoring and Mitigation

F-05-16 The DEIS is currently lacking in detail regarding the specific elements of the Adaptive Operation and Monitoring Plans associated with project mitigation for both evaporation basins and reuse facilities. We acknowledge that these will be prepared in future consultations with the Service, California Central Valley Regional Water Quality Control Board, and California Department of Fish and Game; and that timing and other project particulars have delayed derivation of these

F-05-17 specific elements to the level of detail that all parties would have preferred. We expect that all alternatives in the DEIS would require extensive ecological monitoring programs on at least the same scale as that necessary for the Kesterson Program, Grassland Bypass Project, or the CVPIA Land Retirement Demonstration Program. Moreover, additional research is warranted to

F-05-18 document the incidence of adult diving duck mortality associated with proposed evaporation facilities (an endpoint that has not been adequately quantified to date). We note that the costs of

F-05-19 ecological monitoring will likely be substantial, and ideally should be incorporated in the O&M cost estimates for each alternative at the earliest possible date.

F-05-20 The planning process should also anticipate contingencies for adaptively responding to episodic events (such as severe individual storms or significant "El Nino" seasons) that could result in ephemeral surface pooling of water over large areas of the reuse sites. It has been previously

F-05-21 stated that these waters would be pumped to evaporation pond facilities (i.e., that no surface ponding of reuse water would be allowed). To date, it is not clear that this aspect of the project has been adequately analyzed. The Service encourages Reclamation to initiate and/or complete the necessary hydrologic modeling, as well as engineering studies to determine the final volume, conveyance and pumping capacity needed to ensure that groundwater will not migrate to the surface during extreme flood events.

Contingencies

F-05-22 The Service remains concerned, as a cooperating agency, about the level of uncertainty
F-05-23 associated with various project elements. To date, mitigation protocols and plans are not finalized, and final commitments have not been presented to interested agencies and the public.
F-05-24 The AbMet© selenium treatment process remains in the infancy of evaluation, and very limited hard data are yet available for agency and public review. Additionally, pond design elements
F-05-25 may vary widely from established evaporative systems, and this may significantly alter wildlife use patterns. Even given sufficient time to finalize the environmental risk assessment, it is clear
F-05-26 that considerable uncertainty will be associated with implementation of this project that only monitoring and adaptive management will begin to resolve.

The risk assessment will use the best available science to derive an estimate of required compensatory mitigation, but a careful assessment of the information used in the model finds that our best estimate is bracketed by a fairly large margin of error. This may result in either an overestimate, or underestimate of mitigation acreages. In the case of the former, it would be simple to not implement "excess" project mitigation. If, however, it turns out wildlife losses are underestimated, it may prove exceedingly difficult and costly to meet mitigation objectives.

F-05-27 The Service therefore recommends that Reclamation include detailed mitigation contingency plans should additional adverse effects be encountered, and that these be included as a part of adaptive management. Such plans should outline: 1) the upper limit of clean (low selenium) mitigation water (including reliability estimates) that could be provided as part of compensation; 2) the upper limit (acreages) and general location of mitigation wetlands that could be provided; 3) discussion of financial resources required to provide such mitigation habitat, and the associated cost of operation and maintenance for these facilities.

F-05-28 Lastly, some discussion and consideration regarding the possibility (and associated expense) of ceasing or modifying alternative implementation should be included. If further iterations of the
F-05-29 Service protocols (post-project) indicate that project compensatory mitigation requirements exceed Reclamation's ability to provide such habitat, would some other alternative be sought to meet the court directive? This possibility argues for considerable caution in selecting any
F-05-30 alternative. The probability of failure should be seen as a considerable cost (associated risk) connected to each respective alternative. The greater the uncertainty associated with the environmental consequences of each respective alternative, the less certain the cost estimates will be for subsequent monitoring and management, and the higher the likelihood that project
F-05-31 mitigation may prove economically or environmentally infeasible. Accordingly, the Service suspects that full land retirement would prove the least risky of alternatives.

Public Review

F-05-32 Due to the environmental significance of the project, we believe that critical information is needed prior to selecting a preferred alternative, and more information and design elements must be determined before a full plan of action can be proposed. The court deadline notwithstanding,

Regional Director 6

F-05-32 cont. we recommend that Reclamation prepare a supplement to the DEIS for public review and comment that includes the final risk analysis, formulated monitoring plans, mitigation contingencies, and associated cost estimates. The supplement would be a practical vehicle for inclusion of the "Retire All Drainage Impaired Lands" Alternative which the Service believes should be included in the planning process. Presumably, by this time Reclamation would have selected and identified their preferred action, and could present this within the supplemental DEIS.

F-05-33

SUMMARY RECOMMENDATIONS

In summary, the Service recommends that Reclamation prepare a supplemental DEIS for public review as soon as practical, detailing:

F-05-34
1) A preferred alternative selected among the available options.
2) A complete risk assessment and mitigation plan, including more specific mitigation monitoring components.
3) An empirical assessment of the performance of the selenium pre-treatment.
4) Provisions and discussion about contingency plans given the inherent uncertainty in the risk assessment to ensure that mitigation will be feasible even under a worst case scenario.

F-05-35 Further, the Service believes that the planning process should fully evaluate the drainage service option that encompasses retirement of *all* drainage impaired acreage within the project planning area. We believe this alternative would likely represent the most efficient and cost-effective means of completely avoiding fish and wildlife resource impacts.

For further information, follow up, or questions, please contact Mark Littlefield (916) 414-6520, Steven Detwiler (916) 414-6538, or John Brooks (916) 414-6726.

cc:
California/Nevada Office, Fish and Wildlife Service, Sacramento, CA
William Luce, Bureau of Reclamation, Fresno, CA
Alan Candlish, Bureau of Reclamation, Sacramento, CA
Jerry Robbins, Bureau of Reclamation, Sacramento, CA

RESPONSES TO COMMENT F-05

F-05-1

The comment is noted. Impacts to terrestrial, marine, and freshwater aquatic habitats are discussed in Sections 5, 7, and 8 of the Draft EIS.

F-05-2

The purpose of the project is to provide drainage service, as required in the authorization of the San Luis Unit. One objective is to avoid adverse environmental effects of the project; however, restoration and enhancement are not part of the project purpose and need.

F-05-3

Known conflicts have been identified. If others exist, Reclamation is not aware of them, nor does the comment identify them.

F-05-4

See Response to Comment F-05-2. The development of alternatives included consideration of potential impacts to biological resources, as described in the PFR. Protection, enhancement, and restoration of ecosystems are not part of the purpose and need for the project.

F-05-5

Comment noted. No response necessary.

F-05-6

See Responses to Comments F-05-2 and F-05-4.

F-05-7

Comment noted. No response necessary.

F-05-8 - 10

The PFR and PFR Addendum describe the development of the project alternatives. The retirement of all drainage-impaired lands was considered but screened out, as described in Draft EIS Section 2.11.4.1. Retiring these lands from irrigated agriculture would not avoid negative impacts because uncontrolled flows and seepage would still occur that could result in adverse effects to water quality and wildlife. See Master Response ALT-L2 for additional discussion.

F-05-11

Responses to comments about specific actions and decisions are provided below.

F-05-12 - 15

See Master Response GEN-2 in regard to use of excess water.

F-05-16

Adaptive management strategies for mitigation of evaporation basins are described in Appendix J, Section J6, of the Final EIS. Also see Master Responses MIT-1 and GW-1.

F-05-17, 18

The need and plans for ecological monitoring of the evaporation basins are described in Appendix J, Section J6, of the Final EIS. Also see Master Responses MIT-1 and GW-1.

F-05-19

The costs for ecological monitoring of the evaporation ponds are included in the total project costs. Mitigation cost estimates are provided in Appendix O of the Final EIS. Also see Master Response MIT-1.

F-05-20

Storm event management will be developed as part of the Implementation Plan. Also see Master Response MIT-1 in regard to adaptive management and monitoring.

F-05-21

The Draft EIS utilized a three-dimensional numerical groundwater flow model (originally developed by the USGS) to analyze groundwater levels and flow in the drainage study area. The model uses mean annual recharge and pumpage data to project long-term (49-year) changes in annual water table elevation. The drainage-areawide modeling analysis did not address extreme flood events as it was beyond the scope of the analysis and model capability. Flood control is not the intended purpose of the drainage program. Other programs such as the proposed Panoche-Silver-Creek Detention Basin are addressing flood control issues. It should be noted the Grassland Bypass Project includes storm event operational plans intended to minimize the potential effects of flood events on drainage discharges.

F-05-22

The comment is noted. Specific concerns are addressed in the responses below.

F-05-23

Additional information about mitigation and adaptive management is provided in Section 20 of the Final EIS. Also see Master Response MIT-1 for a discussion of adaptive management and monitoring.

F-05-24

See Master Response ALT-T1 for a discussion of the evaluation of treatment technologies.

F-05-25

The EIS recognizes that uncertainty is associated with pond design elements and wildlife use patterns, and has made predictions based on the best information available. See Master Response MIT-1.

F-05-26, 27

The comment is noted. See Master Response MIT-1 for a discussion of adaptive management and monitoring. Appendix J provides a monitoring and mitigation plan for the In-Valley Alternatives, including monitoring elements and contingency planning. Appendix O provides preliminary cost estimates for mitigation actions for all alternatives. Detailed mitigation locations and costs are included in the Feasibility Study.

F-05-28

No implementation of drainage service would be the No Action Alternative, which is discussed in Section 2.2 and evaluated throughout the EIS. The potential for incorporating alternative or innovative technologies is addressed in Appendix J of the EIS. See Master Responses MIT-1 and ALT-T1, which discuss adaptive management and monitoring and the evaluation of treatment technologies, respectively.

F-05-29

Post-project evaluation of environmental impacts will be performed using actual field data in accordance with the adaptive management strategies described in Appendix J of the EIS. Also see Master Response MIT-1.

F-05-30

The comment is noted. Reclamation has developed alternatives using proven technology and will include an adaptive monitoring and management plan to assure and evaluate progress toward achieving the project objectives.

F-05-31

Comment noted. No response necessary.

F-05-32

NEPA allows Reclamation to use the best available information attainable without exorbitant cost (40 CFR 1502.22) so long as, where information is lacking, the relevance of the information to the decision is stated. The Draft EIS contains such information. Additionally, a supplement is appropriate only when there is a substantial change to a proposed action or there are significant new circumstances or information (40 CFR 1502.9(1)). Since no change is proposed and no new information has been provided, a supplement is not appropriate at this time.

F-05-33

See Response to Comment F-05-32 in regard to the need for a supplement. Retirement of all drainage-impaired lands is discussed in Master Response ALT-L2.

F-05-34

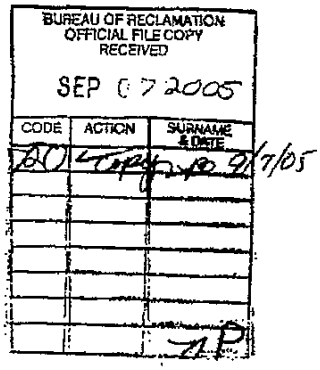
See Response to Comment F-05-32.

F-05-35

See Master Response ALT-L2 in regard to retirement of all drainage-impaired lands.

COMMENT F-06. U.S. CONGRESS HOUSE OF REPRESENTATIVES, GEORGE MILLER AND ELLEN O. TAUSCHER

Congress of the United States
Washington, DC 20515



Via Fax, US Mail, and e-mail
September 1, 2005

Ms. Claire Jacquemin
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825

RE: San Luis Drainage Feature Re-evaluation and EIS

Dear Ms. Jacquemin:

Thank you for this opportunity to comment on the Bureau of Reclamation's proposal to provide drainage service to the San Luis Unit of the Central Valley Project. We submit the following comments as representatives of the Bay-Delta region; our constituents have a direct interest in

F-06-1 the possible construction of a drain to the Delta. Such a drain would have substantial negative impacts on our state's drinking water quality, and it would likely degrade the health of the Delta estuary and its fisheries. This ecosystem has already suffered severely in recent years, including catastrophic population declines of pelagic fish populations; contaminants have been identified as a leading probable contributing factor in these declines.

Everyone involved in California water policy has known for decades of the severe drainage problems of the San Joaquin Valley. What to do with the drainwater from the area – which makes farming more difficult and is harmful to the environment – has been the subject of reports, plans, evaluations, legislation, and litigation. It is not a simple problem, and there is not a simple solution, but several general principles are clear.

F-06-2 **The problem needs to be addressed locally, without exporting selenium, salts, and other agricultural drainage to the Delta or to the ocean.** The Bureau of Reclamation has done

F-06-3 Californians a disservice by not identifying an agency-preferred alternative in this EIS. Given the

F-06-4 state and federal interest in the health of the Delta's ecosystem and the protection of our coast, it makes no sense to continue to explore the transportation of selenium and other contaminants to

F-06-5 the Bay-Delta or to the ocean. Citizens of our state – and our congressional districts – value our pristine coastline and the fish and wildlife resources of the Delta, and failure to safeguard against

F-06-6 their contamination is unacceptable. The combination of land retirement, treatment, reuse, and similar local projects is the only responsible solution to the drainage problems in the San Joaquin Valley, and an in-Valley disposal alternative should be promptly selected as the preferred

F-06-7 alternative. Congress has unequivocally rejected the idea of a Delta drain for decades, and it will continue to do so, and state and federal opposition to an ocean discharge alternative is equally firm.

F-06-8 **San Luis Unit drainage policy must be implemented in the context of broader water policy concerns.** Every alternative considered in this EIS appears to include changes to the application

and treatment of the millions of acre-feet of water represented by the Bureau's contracts with San Luis Unit contractors. As that water is owned by the citizens of the state, it is vitally important
F-06-9 that the Bureau implement its chosen alternative so that it achieves the broadest possible public benefit. Specifically, reduced land use should not go hand-in-hand with status quo water contracts; when water districts farm less land, CVP contracts should be adjusted accordingly. In
F-06-10 addition, the Bureau must ensure that its drainage program is fully reimbursed as required by federal law, and does not interfere with its CVP repayment target date. The Bureau should use
F-06-11 the current renewal process for long term water contracts with the San Luis Unit contractors to ensure that these issues are resolved.

F-06-12 Similarly, the Bureau should not allow land retirement and fallowing programs to go forward without first determining who would own the land, and what should happen to the CVP water
F-06-13 formerly applied to it. The water no longer used to irrigate contaminated lands should be applied to other beneficial uses such as those outlined in the Central Valley Project Improvement Act of 1992. Moreover, the Bureau should determine who may be allowed to use treated and recycled
F-06-14 water; San Luis Unit contractors have suggested that this water could be used to meet the outstanding needs of municipal users in the San Joaquin Valley.

The preferred alternative must minimize environmental damage. The thousands of waterfowl deaths and deformities caused by the partially-completed San Luis Drain at the Kesterson National Wildlife Refuge was a national scandal, and the public and private expense
F-06-15 committed to undoing the damage was enormous. Similar problems have been caused by other contaminated evaporation ponds in the San Joaquin Valley, leading to additional expenses and mitigation. The more comprehensive the land retirement program, and the less contaminated drainwater is created in the first place, the greater protection is provided against harm to fish and wildlife resources. The Bureau must be extremely careful that its solutions–including
F-06-16 evaporation ponds, reuse facilities, and other treatment methods–do not allow selenium, boron, salts, and other contaminants to accumulate in the food chain.

F-06-17 We are encouraged that the farmers and water districts of the westside are devising a local solution to the drainage problem, and we are pleased that the Bureau of Reclamation appears to
F-06-18 have concentrated on in-valley solutions in this EIS. But the Bureau's failure to identify a
F-06-19 preferred alternative, and its failure to coordinate this effort with the CVP contracts with the San Luis Unit, provides continuing reason for concern. Between the regional efforts and the Bureau
F-06-20 of Reclamation's program, we hope this problem can be solved without placing additional burden on the Delta, the environment, or the taxpayers.

Sincerely,

GEORGE MILLER
Member of Congress

ELLEN O. TAUSCHER
Member of Congress

RESPONSES TO COMMENT F-06

F-06-1

Impacts of the Delta Disposal Alternatives on drinking water quality and the Delta estuary and fisheries are presented in Sections 5 through 8.

F-06-2

Comment noted. No response necessary.

F-06-3

NEPA does not require identification of a preferred alternative in the Draft EIS. The agency-preferred alternative is described in Section 2.15 of the Final EIS.

F-06-–4, 5

All alternatives have been given the same level of analysis in the EIS. Impacts of the Delta and Ocean Disposal Alternatives to the resources described in the comments are discussed in Sections 5 through 8.

F-06-6

The comment is noted. An In-Valley Alternative has been identified as the preferred alternative in the Final EIS, as discussed in Section 2.15.

F-06-7

Comment noted. No response necessary.

F-06-8

The comment is noted. See Master Response P&N-1.

F-06-9

CVP water contracts are addressed in Master Response GEN-6.

F-06-10

See Master Response EC-3 in regard to repayment of project costs.

F-06-11

See Master Response GEN-6 in regard to water contract renewals.

F-06-12, 13

Land retirement can be accomplished through placement of non-irrigation covenants on the lands and does not necessarily imply a change in fee title ownership of the lands nor require identification of ownership.

See Master Response GEN-2 in regard to use of excess water.

F-06-14

Reclamation will identify appropriate users of reclaimed water in the final design phase of the selected alternative. Identification of users will take into account water quality and quantity and the availability of conveyance facilities to deliver water from the RO facilities.

F-06-15

Comment noted. No response necessary.

F-06-16

The comment is noted. See Master Response GW-1 in regard to the effect of evaporation basins on migratory waterfowl and other species and MIT-2 in regard to mitigation planning.

F-06-17, 18

Comment noted. No response necessary.

F-06-19

See Master Response ALT-A1 regarding the selection of a preferred alternative.

F-06-20

Comment noted. No response necessary.

COMMENT F-07. MONTEREY BAY NATIONAL MARINE SANCTUARY, WILLIAM J. DOUROS

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Monterey Bay National Marine Sanctuary
299 Foam Street
Monterey, California 93940

September 1, 2005

Claire Jacquemin
Planning Division
U.S. Bureau of Reclamation – Mid Pacific Region
2800 Cottage Way, MP-700
Sacramento, CA 95825

RE: San Luis Drainage Feature Re-evaluation Draft Environmental Impact Statement

CF

Dear Ms. Jacquemin:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement (DEIS) for the San Luis Drainage Feature Re-evaluation Project. We understand that the proposed project would be located approximately 10 miles from the southern boundary of the Monterey Bay National Marine Sanctuary (MBNMS), however, we remain concerned about the potential impacts of such a project discharging agricultural drainage water into the marine environment of the central California coast.

F-07-1a

We understand the purpose of the San Luis Drainage project is to provide agricultural drainage service to the San Luis Unit and that four objectives were used by the Bureau of Reclamation to identify the alternatives evaluated in the DEIS:

1) Drainage service will consist of measures and facilities to provide a complete drainage solution from production through disposal and avoid a partial solution or a solution with undefined components
2) Drainage service must be technically proven and cost effective
3) Drainage service must be provided in a timely manner
4) Drainage service should minimize adverse environmental effects and risks

We also understand that proposed action must fulfill the requirements of the February 2000 Court Order ruling that the "Department of the Interior…shall without delay, provide drainage to the San Luis Unit, pursuant to the statutory duty imposed by section 1(a) of the San Luis Act." The DEIS evaluates seven action alternatives in addition to the No-Action alternative: In Valley Disposal, In-Valley/Groundwater Quality Land Retirement, In-Valley Water Needs Land Retirement, In-Valley/ Drainage-Impaired Area Land Retirement, Ocean Disposal, Delta-Chips Island Disposal, and Delta Carquines Strait Disposal.

The ocean disposal alternative includes the common elements of a drainwater collection system, regional re-use facilities, use of the Firebaugh sumps, regional reuse facilities in addition to:

- Conveyance System – The drainwater aqueduct for the ocean disposal alternatives would include 211 miles of buried pipeline, with three tunnels through the coastal range and 23 pumping plants and sumps.
- Outfall with up to 70,000-AF/year drainage volume including one diffuser, located 1.4 miles off of Point Estero with .71 miles suspended pipeline and .73 miles of buried pipeline (approximately 10 miles south of the Monterey Bay National Marine Sanctuary).

We have reviewed the San Luis Drainage Feature Re-evaluation DEIS, and while we are concerned about potential impacts to the Sacramento Delta and San Francisco Bay Estuary habitat, flora and fauna, our comments are focused on the proposed ocean disposal alternative:

GENERAL ISSUES AND CONCERNS

F-07-1b In general, we are concerned that the Draft Environmental Impact Statement (DEIS) does not adequately describe the construction and operation of the ocean disposal alternative in order to F-07-2 accurately evaluate the environmental consequences of the proposed project. The DEIS does not include adequate figures showing the construction routes in the coastal and marine environment. Specific identification of the construction corridor and areas of disturbance are necessary to F-07-3 discuss potential impacts which makes the reviewer unable to consider the merits of the analysis, and an informed decision regarding the various alternatives is thus unattainable.

F-07-4 Moreover, the analysis of impacts from discharge of the polluted water into the marine environment is insufficient. The MBNMS regulations prohibit discharge from outside the F-07-5 sanctuary that subsequently enters and injures sanctuary resources. This alternative's discharges, being so large in volume and toxicity and relatively close to the MBNMS, may harm sanctuary resources. However, the incomplete analysis of marine impacts does not allow the Bureau of F-07-6 Reclamation to demonstrate there will not be harm to sanctuary resources.

Lack of Consideration of a Biological Selenium Treatment in Ocean Disposal Alternative

F-07-7 The DEIS does not include an alternative that allows for treatment of selenium or concentration reduction prior to discharge into the ocean. The treatment alternative must be evaluated in the DEIS. The addition of selenium treatment similar to the Delta-Chipps and Delta Carquinez disposal alternatives would raise the cost of the project by $108.1 million to a total cost of $670.8 million. The annual operating costs will also increase by including treatment before ocean disposal. If ocean discharge is to be considered as an option, the treatment system must be considered in the EIS.

Monterey Bay National Marine Sanctuary's Efforts to Address Polluted Agricultural Runoff

The proximity of the MBNMS to the California coastline makes it vulnerable to pollution problems in the watershed areas that drain to it, including contaminants such as sediments, nutrients, fecal bacteria, pesticides, oil, grease, metals, and detergents. Recognizing that water quality is key to ensuring protection for all sanctuary resources, federal, state and local agencies, as well as public and private groups have worked together to develop a Water Quality Protection Program (WQPP) for the sanctuary. This partnership is dedicated to protecting and enhancing

water quality in the sanctuary and its watersheds and, as part of the WQPP, the MBNMS is working to address polluted runoff from over 4,000 square miles of agriculture and rural lands.

The MBNMS's Agricultural and Rural Lands Plan includes a unique agreement with the Farm Bureaus representing the extensive agricultural community in coastal central California to establish industry-led working groups to reduce runoff of sediments, nutrients, and pesticides through management practices. The many partners in implementing this plan include agriculture industry groups, federal, state, and local agencies, technical experts, environmental organizations and university researchers collectively known as the Agriculture Water Quality Alliance (AWQA). The AWQA organizes watershed working groups, increases technical assistance and education, increases funding and provides economic incentives for management practices, develops permit coordination programs and improves management practices for rural roadways and public lands.

The MBNMS and the agricultural community have worked hard to cooperatively reduce pollution from agricultural runoff through these management practices including retention of sediments, nutrients, and pesticides on the farm or ranch. The implementation of these practices have successfully reduced runoff of sediments, nutrients, pesticides, herbicides, and pathogens from farm and ranch operations in a program that the MBNMS, partner agencies, and the agricultural industry consider a national example of cooperative agricultural and marine resource conservation. After cooperative development, funding and implementation of these programs, we

F-07-8 are naturally distressed that the Bureau of Reclamation is considering a project alternative whereby the solution to an agricultural drainage problem in the central valley is collection and untreated disposal of polluted agricultural runoff in the ocean just beyond the MBNMS boundaries.

CONSTRUCTION-RELATED ISSUES AND CONCERNS

F-07-9 Inadequate Description of Outfall Project and Surrounding Environment

The DEIS does not adequately describe the ocean outfall project and subsequent environmental consequences. Using a GIS database, MBNMS attempts to approximate the location of the pipeline indicate that a 1.4 mile arc from Pt. Estero does not reach a depth of 200 feet (see

F-07-10 attached figure). The lack of precise descriptions for the outfall and discharge areas is indicative of the inadequacy of the project description and analysis for public review, comparison of alternatives, and decision-making. Section 7.2.8.2 of the DEIS provides a cursory description of impacts associated with coastal and undersea construction and concludes that most construction related effects would be temporary. However, this description is inadequate to make this finding.

F-07-11 The Bureau of Reclamation must describe and provide figures that specifically identify:

- F-07-12 The conveyance pipe corridor between Point Estero and the subsea diffuser location
- F-07-13 The substrate and marine environment in which it is to be constructed
- Areas in which the conveyance pipe will be buried
- F-07-14 Areas where the conveyance pipe will be suspended

Inadequate Description of Environmental Consequences of Conveyance Pipe Installation

F-07-15 The methods and routes of installation of the 42 inch HDPE pipe must be described in an adequate manner to understand the impact on the marine mammals, invertebrate communities, fish, and their habitats. The EIS does not adequately describe this construction and subsequently how fauna and flora of the nearshore marine environment will be affected by installation of a 42-

F-07-16 inch pipe that will be either suspended or buried in this area. For instance, the kelp bed habitat surrounding Point Estero supports the threatened southern sea otter and thousands of invertebrate species while serving as nurseries for juvenile rockfishes at vulnerable stages of their lifecycle.

F-07-17 The alternative describes the project as suspending 0.71 miles and burying 0.73 miles of 42-inch HDPE pipe between the coastline and the point of discharge. The alternative does not describe the location or the construction techniques to be employed to complete this project. Does the

F-07-18 project require trenching and refilling in hard substrate and kelp beds at Point Estero? If so, the project description does not include a description of how hard substrate can be replaced to bury the pipe in the nearshore area.

F-07-19 Section 7.2.8.3 of the DEIS inadequately identifies the range of special-status species that may be affected by construction of the ocean disposal project. Any construction in the intertidal area, kelp habitat and ocean has the potential to affect marine mammals including the southern sea otter, harbor seals and northern elephant seal, marine birds including the California brown pelican, fishes such as boccacio and canary rockfish, and invertebrates such as the black abalone or owl limpets.

F-07-20 The Bureau of Reclamation cannot consider a conclusion that "no significant effects to aquatic and wetland resources are anticipated" without an EIS that includes:

- An adequate description of conveyance pipe route and installation techniques in the coastal, rocky intertidal and subsea habitat

F-07-21
- Identification of specific construction activity necessary to permanently install the pipe and diffuser

F-07-22
- Identification of the duration and timing of the construction activity

F-07-23
- A detailed biological evaluation of the nearshore and subsea corridor

F-07-24
- Identification of seasonal oceanographic conditions at the construction locations

F-07-25
- Identification of, and potential impacts to threatened, endangered, and other special status species known to inhabit the coastal and marine construction area

F-07-26 Unjustified Need for 42-inch Diameter Pipe

The DEIS does not describe the need for a pipe of such volume. The capacity of a 42-inch pipe exceeds the proposed volumes described for discharge in the ocean disposal alternative. The

F-07-27 excess diameter would cause unnecessary disturbance during construction and allow for increased volumes of discharge in the future. If the Bureau of Reclamation insists in using the

F-07-28 42-inch pipe. the impacts from discharge of the maximum volume of polluted runoff must be analyzed.

Inadequate Description of Potential Risk of Upset

F-07-29 We are concerned that the used of high density polyethylene (HDPE) pipe is not adequate to withstand the strong ocean forces associated with major storm events on the Pacific Coast. If the pipe is to be suspended in the surf zone, how will the pipeline be secured to prevent upset in high-energy wave activity which is common in the nearshore environment? Will the pipeline be equipped with check-valves or similar preventative measure to reduce the likelihood of discharging high volumes of untreated effluent into the surf zone? An adequate DEIS must describe how the pipe will be constructed and the engineering measures to be incorporated to prevent upset at the various locations where the pipe would traverse or be buried in sensitive habitat. Will the pipe be actively monitored at the pumping stations? Will the pipe be designed to be "fail-safe"? That is, if an upset occurred and the pipe broke in the nearshore or subsea area, would the pumps automatically shutdown or continue pumping the polluted water into a ruptured or broken pipe and subsequently into the environment?

F-07-30
F-07-31
F-07-32
F-07-33

DISCHARGE-RELATED ISSUES AND CONCERNS

Inadequate and Inconsistent Description of Pollutants Associated with Agricultural Drainage

F-07-34 The DEIS does not adequately describe the constituents that are intended to be discharged into the marine environment as part of the ocean disposal alternative. The ocean disposal alternative describes the average concentrations of selenium and total dissolved solids at the point of discharge but does not provide any description of other concentrations of nutrients, pesticides, herbicides, bromide, metals, or pathogens likely to be associated with this discharge. Neither the Delta or ocean disposal alternatives include a discussion of pesticides and nutrients. All of these chemicals are found in virtually all agricultural discharge in California. This is a significant omission in the analysis of a project that is draining irrigation from a cultivated agricultural operation.

F-07-35 The untreated discharge of fertilizer or nutrient rich agricultural drainage may also contribute to or exacerbate harmful algal blooms (HABs). HABs produce biotoxins and impacts of HAB phenomena include mass mortalities of wild and farmed fish and shellfish, human illness and death from contaminated shellfish or fish, death of marine mammals, seabirds, and other animals, and alteration of marine habitats or trophic structure. The potential for additional HABs in the central California marine region where HABs have occurred in the past and may be exacerbated by additional nitrate discharge must be analyzed as a part of this environmental document.

F-07-36 The Bureau of Reclamation must assess:

- The considerable adsorption to sediment particles by pesticides, herbicides and associated agricultural chemicals

F-07-37
- Impacts associated with the high loads of persistent pesticides including DDT that would be untreated prior to discharge into the marine environment.

F-07-38/39
- Effects to water quality, marine sediments, wildlife and humans.

F-07-40
- Impacts associated with the bromide concentrations as described in Delta disposal alternatives

F-07-41 • The potential for untreated discharge of fertilizer or nutrient rich agricultural drainage to cause or exacerbate periodic harmful algal blooms (HABs)

Insufficient Description of Selenium Fate After Discharge

The ocean disposal alternative describes a discharge volume of up to 69,957 AFY (22.8 billion gallons per year) into the ocean at 200 feet below sea level. The EIS estimates that resultant plume of water with a selenium concentration above 15 micrograms per liter would reach a maximum height of 20.5 to 41.0 feet, a length of 75 to 167 feet and width of 6.5 to 13 feet depending on the type of diffuser. At an initial concentration of 220 micrograms/liter, this maximum volume of discharge could result in the discharge of up to 114 pounds of selenium per day into the ocean, which equates to 20.8 tons or 41,610 pounds of selenium every year. The fate of the selenium is not described beyond the description that it would be diffused to a point of 15 micrograms per liter at points beyond the mixing zone.

The Bureau of Reclamation must assess:

F-07-42 • The fate and distribution of selenium for the life of the project – where does it go into the ocean?

F-07-43 • The bioavailability of the selenium after discharge – how do organisms "use" or ingest selenium

F-07-44 • The fate of the selenium after the project discharge is halted

Bioaccumulation of Selenium and other Pollutants

F-07-45 The DEIS uses 15 ppb selenium as a goal for dilution of the selenium concentration after release from the diffuser. Although this meets the California Ocean Plan concentration maximum, much lower levels in San Francisco Bay/Delta resulted in significant bioaccumulation in mollusks from the San Francisco Bay and from birds feeding on these mussels. Specifically, ambient selenium levels in San Francisco Bay/Delta water were 0.3 ppb but were concentrated as high as 20 ppb in mussels in the Bay and Delta. This is almost a 70-fold bioaccumulation ratio at this level. (See Linville et al, Aquatic Toxicology, 57 (2002) pp. 51-64). The DEIS should consider that while the ambient selenium level of 0.3 ppb was below the California Ocean Plan acceptable limit in this area, the consequences were deleterious to invertebrates and birds. Natural levels in ocean water of selenium are 60-80 ppt (parts per trillion). If dilution were achieved from the diffuser ports, the level outside of the mixing zone would be 15 ppb. This would result in a significant

F-07-46 increase in ambient levels of selenium of almost 6000-fold (assuming 70 ppt ambient and diluted values of 15 ppb). Given the past examples in California, we believe the most probable consequence of marine disposal of selenium is that the proposed disposal and discharge will result in significant bioaccumulation in marine organisms in the Estero Bay area.

F-07-47 The MBNMS is particularly concerned about bioaccumulation because central California is a highly diverse and productive region. The Bureau of Reclamation must assess the bioaccumulation of selenium in marine fishes, especially those harvested and eaten by humans.

F-07-48 The DEIS inaccurately dismisses ocean, commercial, and sport fishing as a beneficial use of potentially affected surface water (DEIS Table 5.1-10). These fish eat invertebrates and are eaten by birds and marine mammals that are common in this area and that move north in the MBNMS.

Therefore, marine wildlife are a likely conveyance mechanism to transport selenium into the sanctuary. Marine wildlife is also considered a sanctuary resource in and of itself.

F-07-49 The Bureau of Reclamation must assess:
- The bioaccumulation of selenium in invertebrates, marine fishes (especially those harvested and eaten by humans), marine birds and marine mammals.

F-07-50
- The bioaccumulation in marine organisms of all pollutants that will be discharged from this project

Inadequate Description of Impacts of the Freshwater Plume

F-07-51 The DEIS does not discuss the effect of the freshwater plume that would result from the discharge of more than 22 billion gallons per year of freshwater that would be much warmer than the ocean. Discharge of freshwater into the marine environment can cause changes in recruitment and growth patterns of marine life and the rise of the water in the water column would likely bring the pollutants to the surface where plankton and krill concentrate. This modeling for this massive volume of discharge assumes the adjacent water, presumably salty ocean water, mixes with the freshwater from the discharge. However, with such a high volume, continuous discharge, the adjacent water for mixing becomes the freshwater itself. Eventually, the plume is likely to continue to grow, especially in periods of calm ocean conditions. If the discharged water reaches the surface, it may subjected to greater movement from the wind, which could lead to the discharge reaching back into shore at Estero Bay.

F-07-52 The Bureau of Reclamation must assess:
- Species that are found in the area of discharge and discuss their tolerance to changes in salinity and temperature that will result from the discharge

F-07-53
- The distance from discharge at which the freshwater plume would approach ambient salinity at maximum discharge in calm water conditions

F-07-54
- The potential increases in turbidity throughout the water column that may be a result of discharging such a large amount of water into a potentially sandy or silt covered benthos

Inadequate Mitigation, Monitoring, and Reporting Plan

F-07-55 The environmental mitigation described in the DEIS does not adequately address coastal and marine impacts associated with construction and operation of the ocean disposal alternative project. The mitigation and monitoring plan must describe in detail what the construction procedures, site management and operating controls will be in order for the public, a document reviewer or decision-maker to understand. The DEIS only states that "appropriate construction procedures, site management and operating controls" will be implemented to reduce potential environmental impacts to less than significant levels. The project must include a marine water quality monitoring plan to identify changes in the water column to track biological consequences associated with construction and operation of the project.

F-07-56

F-07-57

F-07-58 The Bureau of Reclamation must develop an adequate water quality monitoring plan that includes:
- Water sampling at the surface layer, middle of the water column and at the sea bottom

F-07-59 • Marine organism sampling, from various locations at the point of disposal and extending out up-coast, down-coast, and offshore including plants and algae, benthic invertebrates such as mollusks, crabs and worms, marine and coastal birds, and marine mammals

F-07-60 • Sediment sampling from the benthic layer on a regular basis to track accumulation of selenium and other pollutants discharged from drainage pipe; again, stations must be at the point of discharge, up-coast, down-coast, and offshore of the discharge

F-07-61 The project must include a construction monitoring and mitigation plan that includes:

- Avoidance of marine mammals during construction activities and use of qualified biologists as on-site or on-ship monitors

F-07-62 • Avoidance of kelp habitat and hard substrate during marine construction activities

F-07-63 • Identification of construction vessel anchoring points to avoid sensitive habitats

F-07-64 • Control measures at the nearshore and intertidal zone to prevent future erosion

F-07-65 The project must include a systems operation monitoring plan to identify proper functioning of the conveyance, discharge and dispersal systems. At a minimum, the mitigation and monitoring plan must include:

- Regular inspection of proper diffuser operation to ensure adequate dispersal and lack of clogging of various diffuser ports

F-07-66 • A comprehensive pipeline inspection program to ensure prevention of leakage or upset in the high energy but sensitive rocky shores and kelp habitat

F-07-67 • An emergency response plan to address clean up in the event of leakage or upset in an environmentally sensitive habitat

PROJECT REVIEW BY MBNMS'S RESEARCH ACTIVITY PANEL

The MBNMS is supported by a working group of scientists from 19 regional marine science institutions that meet to discuss research issues concerning marine and coastal resources of the greater Monterey Bay region and work to advise the MBNMS on regulations and research proposals. This working group, the MBNMS Research Activity Panel, also provides advice to the MBNMS Advisory Council who, on August 5, 2005, received testimony from concerned citizens regarding the San Luis Drainage project during its general public comment period. The Sanctuary Advisory Council requested that the Research Activity Panel review the project. In a consensus statement, the Research Activity Panel provided the following comment and recommendation:

F-07-68 *The ocean discharge alternative described in the DEIS for the San Luis Drainage Feature Re-Evaluation poses significant known and unknown risks to the marine biota of the Estero Bay region specifically and of the Monterey Bay National Marine Sanctuary and the Central California nearshore marine ecosystem more generally. The panel*

F-07-69 *recommends against diversion into the waters south of, or having any chance of entering, the Sanctuary. Given the scope of this project and numerous problems seen in all*

F-07-70 *alternatives, we recommend that any disposal of this drainage material should be dealt with in the central valley, where it originated. In addition, we recommend that the*

F-07-71 *alternative of retiring all agricultural land in this selenium/boron contaminated area be*

F-07-71 cont. *given highest priority. This is also the conclusion of US Fish and Wildlife and we concur with this view.*

SUMMARY

F-07-72 We do not believe the ocean disposal alternative has been described in a manner that allows for an adequate review of the environmental consequences associated with the construction and operation of such a large drainage, conveyance and discharge project. This project would clearly

F-07-73 alter the marine environment during installation of a large pipe and diffuser, and neither the construction project nor environmental consequences have been adequately described. The project will result in discharging multiple pollutants, including persistent pesticides, into the

F-07-74 marine environment, yet the DEIS does not disclose these pollutants.

Therefore, with regards to the ocean disposal alternative, additional description of the proposed

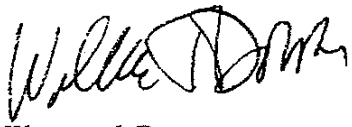
F-07-75 project, the affected environment, and the environmental consequences must be provided and analyzed if the document is to be used for the purposes of making an informed decision to address the drainage needs for the San Luis Unit. We recognize the legal requirements set forth by court order, which constrain the timing of consideration of additional alternatives. However, we feel any decision must be based on a thorough description and public disclosure of the

F-07-76 proposed alternatives, including a complete project description and adequate analysis of each alternative to make the best decision. Unfortunately, for the purposes of discussing a project that would clearly have significant effects on the marine environment, this document is insufficient. An alternative for the Bureau of Reclamation to consider, if external deadlines are too tight to

F-07-77 properly evaluate the ocean disposal alternative, is to drop the alternative from the EIS and from further consideration for draining the San Luis Unit.

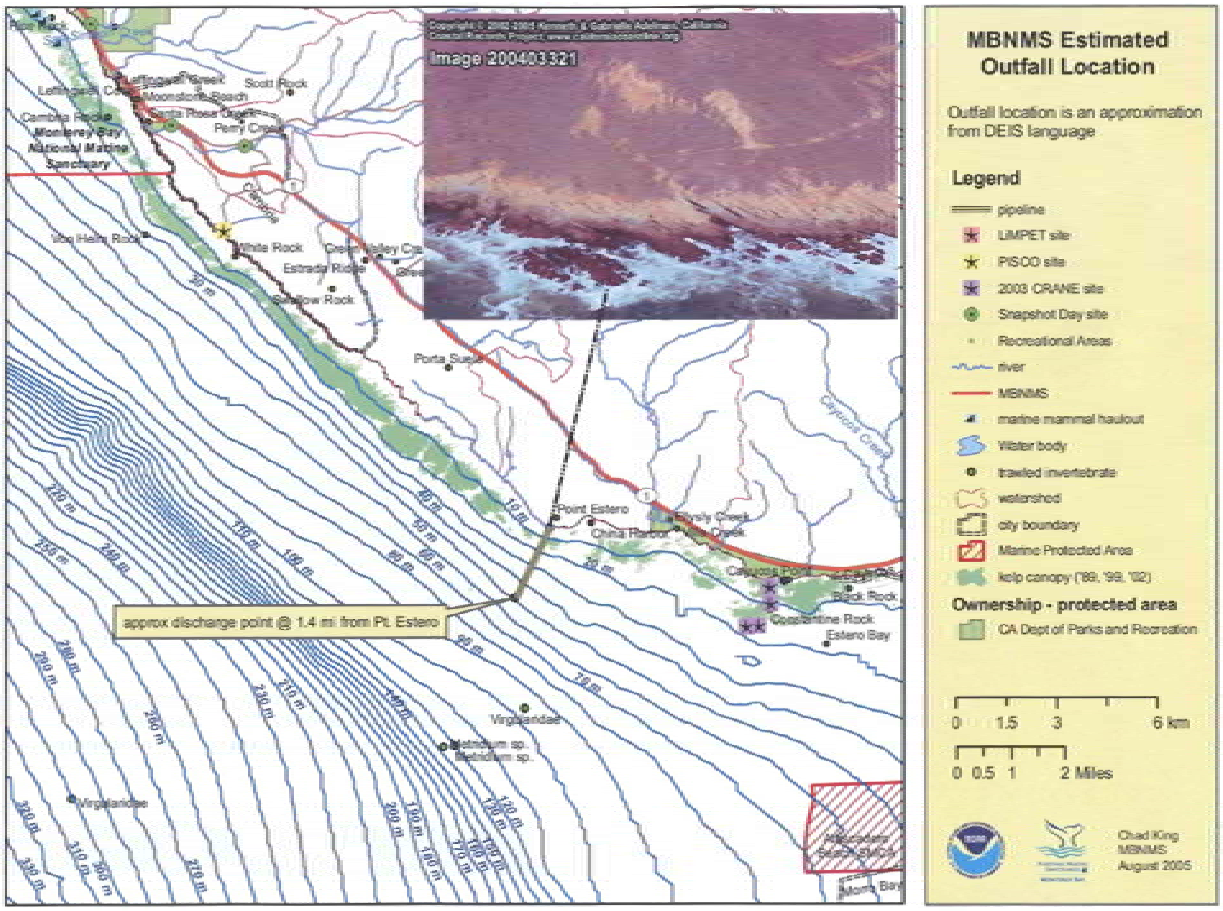
Thank you for the opportunity to comment on this project. If you would like to find out more about the Agricultural Water Quality Alliance and our efforts to work with the farmers and ranchers of California's central coast to protect the water quality of the MBNMS, please visit our website at www.awqa.org or montereybay.noaa.gov If you have any questions about this letter please contact Sean Morton at (831) 647-4217 or me at (831) 647-4201.

Sincerely,



WILLIAM J. DOUROS
Superintendent

cc: MBNMS Advisory Council
Peter Douglas, California Coastal Commission
Paul Thayer, California State Lands Commission
Roger Briggs, Central Coast Regional Water Quality Control Board
Victor Holanda, San Luis Obispo County



RESPONSES TO COMMENT F-07

F-07-1a

The comment is noted. It should be pointed out that the discharge of agricultural drainwater to the Central Coast would take place under the Ocean Disposal Alternative, which has not been identified as the preferred alternative.

F-07-1b

Reclamation has provided a sufficient level of detail in the project description to allow an adequate environmental review of the project alternatives. See Master Response GEN-1.

F-07-2, 3

See Master Response GEN-1 in regard to the level of detail of the pipeline route and design.

F-07-4

Additional information about the effects of the Ocean Disposal Alternative on the marine environment is provided in Master Responses SW-8 (discharge environment), SE-1 (bioaccumulation), SW-9 (ecotoxicity), and SW-13 (water quality).

F-07-5

As discussed in Master Response SW-13, water quality impairment of the MBNMS is unlikely given its distance from the outfall and the rapid dilution of effluent that occurs immediately after discharge. Also see Master Responses SW-9 and SE-1 in regard to the ecotoxicity and potential size of the discharge plume.

F-07-6

The Monterey Bay National Marine Sanctuary is located approximately 10 miles from the proposed discharge location under the Ocean Disposal Alternative. As shown in Master Responses SW-8, SW-13, SW-9, and SE-1, any effects that occur are expected to be very localized (within about 100 meters of the discharge point).

F-07-7

The need for Se treatment was considered during the formulation of alternatives. Based on the existing analysis of environmental impacts of the Ocean Disposal Alternative, Reclamation does not propose to add Se treatment to the Ocean Disposal Alternative at this time.

F-07-8

Comment noted. No response necessary.

F-07-9

The comment expresses concern that the level of detail provided in the Draft EIS is inadequate to conduct an analysis of the environmental impacts of constructing and operating a outfall offshore of Point Estero. Figure P-1 in Master Response SW-8 provides additional details for the location and water depth of the diffuser at the planned outfall location. This level of planning detail is adequate to assess environmental effects of the Ocean Disposal Alternative.

F-07-10

See Response to Comment F-07-9.

F-07-11

If the Ocean Disposal Alternative were advanced for further consideration, the pipeline corridor would be defined in a later design stage, as described in Master Response GEN-1.

F-07-12

For the offshore section of the Ocean Disposal Alternative pipeline, construction methods and costs were developed from similar projects. If the Ocean Disposal Alternative were advanced for further consideration, additional information on field conditions would be gathered as necessary to develop feasibility level and construction level designs, as described in Master Response GEN-1. See Master Response SW-8 for additional information on the marine environment in the proposed outfall vicinity.

F-07-13, 14

See Master Responses GEN-1 and ALT-P2.

F-07-15

The Ocean Disposal Alternative pipeline diameter would be 36 inches or less. The text of Section 2.8.1 has been revised to reflect this. See Master Response GEN-1 in regard to the level of detail of the pipeline route and design.

F-07-16

See Master Responses SW-8 and SW-12 for additional discussion of effects of the Ocean Disposal Alternative on flora and fauna in the outfall vicinity.

F-07-17

See Master Response GEN-1 in regard to the level of detail of the pipeline design. The ocean segment of the pipeline would be 18-inch diameter HDPE for the 29.1 cubic feet per second (cfs) discharge.

F-07-18

The Ocean Disposal Alternative design calls for trenching and refilling of the substrate. If this alternative were to proceed, details of the route in the area would be addressed in a later design stage. The use of directional drilling and other excavating techniques would be considered. See Master Response GEN-1.

F-07-19

See Master Response SW-12 for additional discussion of effects of the Ocean Disposal Alternative on special-status species.

F-07-20 - 22

If the Ocean Disposal Alternative were advanced for further consideration, a precise pipeline alignment would be selected and a detailed review of these resources would be conducted in later design stages, as described in Master Response GEN-1. The impact assessment presented in the Draft EIS is adequate for comparison of alternatives and selection of a preferred alternative.

F-07-23

See Response to Comment F-07-21. Also Master Response SW-8 in regard to the marine environment in the outfall vicinity.

F-07-24

Seasonal oceanographic conditions at the outfall location were accounted for in the Draft EIS analysis. A substantial quantity of ocean current data (over 200,000 data points) were collected and utilized in the Draft EIS analysis, including data for different seasons. Temperature, salinity, and current velocity data were gathered from four sources to form the basis of the discharge diffusion analysis (see Section 5.2.2.1).

F-07-25

Additional information about potential impacts to threatened, endangered, and other special-status species in the Ocean Disposal Alternative vicinity are described in Master Response SW-12. Also see Master Responses SW-8 and SE-1 in regard to the discharge location environment and the potential for bioaccumulation effect. If the Ocean Disposal Alternative were selected as the preferred alternative, ESA consultation would be initiated during the final design and permitting phases.

F-07-26 - 28

The Ocean Disposal Alternative pipeline diameter would be 36 inches or less. The text of Section 2.8.1 has been revised to reflect this. See Master Response ALT-P3 for a discussion of pipeline design.

F-07-29, 30

HDPE pipe should be excellent for this use and has been used in other outfall projects. The Ocean Disposal Alternative pipeline would be buried where high-energy waves occur.

F-07-31

The current level of design (see Master Response GEN-1) does not include check valves or other devices. Future designs would likely consider an isolation valve near the shore, but this valve would not serve the purpose of automatically closing if a leak were to occur. See Master Response SW-15 for additional information on leak detection.

F-07-32

If the Ocean Disposal Alternative were to proceed, then subsequent designs should reasonably accommodate sensitive habitats. The pipeline operators would monitor the pumping plants for pressure changes that could indicate pipeline breaches, as discussed in Master Response SW-15. The final route and exact location of the pipeline would not be determined unless the Ocean Disposal Alternative were advanced for further consideration and subject to a feasibility-level design assessment. The Draft EIS provided adequate information on the environmental impacts

of the project to facilitate the selection of the preferred alternative. If the Ocean Disposal Alternative were advanced for further consideration, additional environmental review would be conducted as necessary.

F-07-33

See Response to Comment F-07-31 and Master Response SW-15.

F-07-34

See Master Responses SW-11 and SW-13 in regard to the constituents, including pesticides, herbicides, and nutrients, that could be present in drainwater discharged under the Ocean Disposal Alternative.

F-07-35

See Master Response SW-11 in regard to stimulation of algal blooms from the Ocean Disposal Alternative.

F-07-36

See Master Response SW-13 in regard to adsorption to sediment particles by pesticide, herbicides, and associated agricultural chemicals. Evaluation of existing water quality data indicates that pesticides and herbicides are generally not present in drainwater.

F-07-37

The commenter states that Reclamation must assess impacts associated with high loads of persistent pesticides including DDT that would be untreated prior to discharge into the marine environment. See Master Response SW-13. Evaluation of existing water quality data indicates that pesticides and herbicides are generally not present in drainwater.

F-07-38

Master Response SW-13 provides additional detail about water quality and marine sediments.

F-07-39

Additional information about the effects of the Ocean Disposal Alternative on wildlife and humans is provided in Master Responses SW-8, SE-1, SW-9, and SW-10.

F-07-40

Water quality impacts relating to bromide concentrations for the Delta Disposal Alternatives are described in Sections 5.2.9 and 5.2.10 of the Final EIS.

F-07-41

See Master Response SW-11 in regard to the potential for the Ocean Disposal Alternative to stimulate algal blooms.

F-07-42, 43

Master Response SW-8 describes the environment of the outfall vicinity, and Master Response SE-1 discusses the diffusion of the discharge with specific regard to Se levels and the potential for Se bioaccumulation.

F-07-44

The comment questions the fate of the Se in waters discharged under the Ocean Disposal Alternative after the discharge into the ocean is halted. During the 50-year project planning period, assuming that the Ocean Disposal Alternative were selected as the preferred alternative, the discharge is not anticipated to be halted. If the discharge were halted, the Se that had been discharged into the ocean would circulate and possibly be redistributed into ocean sediment according to oceanic circulation patterns and specific biogeochemical properties for Se in the oceanic environment.

F-07-45, 46

See Response to Comments F-07-42, 43.

F-07-47

See Master Responses SW-8 and SE-1 in regard to Se bioaccumulation and Master Response SW-10 in regard to bioaccumulation-related human health effects.

F-07-48

This omission has been corrected in Table 5.1-10 of the Final EIS, as described in Master Response SW-10.

F-07-49

See Master Responses SW-8, SE-1, and SW-10.

F-07-50

See Master Responses SW-8, SE-1, and SW-13.

F-07-51

First, the discharged effluent would not be substantially fresher than the surrounding seawater. Seawater has an average salinity of approximately 33.5 parts per thousand (ppt), and the proposed discharge would have an average salinity of 19 ppt. According to diffuser plume

modeling, the plume would be diluted to approximately ambient salinity at the edge of the zone of initial dilution (ZID), under all conditions, even when ocean currents are zero. Second, differences between ambient and effluent temperatures would not be significant. As discussed in detail in Master Response SW-14, differences between ambient and effluent temperatures would not be significant for the Ocean Disposal Alternative. Third, even if salinity and temperature differences were more significant, the initial momentum of the effluent when discharged from the diffuser drives initial mixing, and buoyancy (governed by density differences related to salinity and temperature) is a secondary (and minor) driver of mixing for this discharge. A preliminary sensitivity analysis shows that if discharge temperatures are assumed to be equivalent to seasonally averaged ambient air temperatures for Morro Bay (12ºC in winter and 15ºC in summer), mixing conditions in the ZID would be virtually unaffected and temperature differences at the edge of the ZID would be negligible for both locations and seasons. Therefore, dilution is relatively insensitive to expected density differences between the discharge and the surrounding ocean water. Finally, long-term time-dependent effects of the plume were not explicitly accounted for in the steady-state plume modeling undertaken. Because stagnant conditions are infrequent and short in duration, little potential exists for discharge buildup in the discharge vicinity. If the Ocean Disposal Alternative were chosen as the preferred alternative in the Record of Decision, a more detailed analysis of the time-dependent effects of the plume would be conducted.

F-07-52

Species in the discharge environment are discussed in Section 7 of the EIS. As described in Sections 2 and 5, salinity of the drainwater is expected to be similar to that in the ocean. Therefore, a discussion of species sensitivity to salinity changes is not necessary.

Discharge temperatures from the Ocean Disposal Alternative, particularly once mixing has begun, would not approach upper temperature tolerances for fish, as discussed in Master Response SW-14.

F-07-53

The plume would approximate ambient salinity no farther from the diffuser than the edge of the ZID, even under maximum discharge and stagnant ocean current conditions. Further, as noted in the same comment response, the agricultural drainwater is relatively saline (19 ppt) and, thus, cannot be characterized as “freshwater.” Also, initial mixing from the diffuser is driven primarily by momentum and not by buoyancy differences between the discharge and surrounding ocean water.

F-07-54

Turbidity could result from the discharge in three different ways, none of which are expected to be significant. First, turbidity could result from high discharges of TSS into the water column, which could cloud the water directly. Given the relatively low expected TSS discharge concentrations (average of approximately 23 milligrams per liter [mg/L]), we do not expect TSS to be a significant source of ocean turbidity. Second, the flocculation that sometimes increases turbidity in estuaries (such as the Delta) when freshwater mixes with saltwater is not expected to occur for this ocean discharge. Typically, estuarine flocculation occurs at a salinity level of

approximately 2 ppt, much lower than the salinity of the Point Estero ocean diffuser discharge. Third, turbidity could occur if the high-momentum diffuser jets disturb loose sediments (i.e., sand and silt) in the ocean-floor area surrounding the diffuser. However, since the diffuser ports are expected to be located a significant distance above the ocean floor, this effect is not expected to occur. Furthermore, even when such effects have occurred near other diffusers, they are generally associated with the initial diffuser start-up. After a few hours of operation, any loose sediments that might have been disturbed will have migrated from the diffuser area and settled again, and the diffuser quickly reaches equilibrium with its surrounding environment. Overall, then, the ocean discharge is not expected to significantly affect ocean turbidity, even near the diffuser.

F-07-55

See Master Responses MIT-1, MIT-2, and SW-8 in regard to adaptive management and monitoring, mitigation planning, and water quality effects associated with the Ocean Disposal Alternative.

F-07-56 - 67

If the Ocean Disposal Alternative is selected, a monitoring, implementation, and adaptive management plan would be developed.

F-07-68

See Master Responses SW-8, SE-1, and SW-9.

F-07-69

Water quality impairment of Monterey Bay National Marine Sanctuary is unlikely given its distance from the discharge site (10 miles) and the rapid dilution of effluent that occurs immediately after discharge into the ocean, as discussed in Master Response SW-13.

F-07-70 - 72

Comment noted. No response necessary.

F-07-73

The analysis of effects from the construction of the Ocean Disposal Alternative offshore pipeline and outfall uses existing information where available. Section 7.2.8.2 discloses the potential for effects on resources as required by NEPA. If the Ocean Disposal Alternative were selected as the preferred alternative, additional feasibility and final design studies would be conducted to identify the habitat types and species potentially affected and appropriate mitigation.

F-07-74

The commenter states that the Draft EIS does not specify the pollutants, including persistent pesticides, that would be discharged into the marine environment. See Master Response SW-13 for a discussion of constituents in the drainwater and related water quality impacts.

F-07-75, 76

See Master Responses SW-8, SW-9, SE-1, SW-11, and SW-10.

F-07-77

The comment is noted. The level of analysis presented was determined by the level of design of the Draft EIS (described in Master Response GEN-1) rather than by external deadlines as the comment suggests. The Draft EIS includes an adequate evaluation of impacts in accordance with NEPA to enable consideration in selection of a preferred alternative.

COMMENT F-08. U.S. GEOLOGICAL SURVEY, JAMES F. DEVINE

United States Department of the Interior

U. S. GEOLOGICAL SURVEY

Reston, VA 20192

In Reply Refer To:
Mail Stop 423

SEP 01 2005

MEMORANDUM

To: Jerry Robbins, Project Manager
Bureau of Reclamation, Sacramento, CA

From: James F. Devine
Senior Advisor for Science Applications

Subject: San Luis Drainage Feature Re-Evaluation Draft Environmental Impact Statement

The U.S. Geological Survey (USGS) has reviewed the draft environmental impact statement (EIS) on the San Luis Drainage Feature Re-Evaluation, dated May 2005, and offers the following comments.

GENERAL COMMENTS

F-08-1 Analysis of selenium exposure and impact for the Delta-Chipps Island, Delta-Carquinez Strait, and ocean disposal alternatives is of main concern in the USGS's review of the draft EIS. Significant adverse environmental effects to aquatic resources because of selenium bioaccumulation are predicted for all the action alternatives outlined in the draft EIS (Table ES-10 beginning on page ES-22 and in Table 2.13-2 beginning on page 2-83). Notable among these effects are population-level effects to migratory waterbirds and individual-level effects to listed special-status species (e.g., green sturgeon) in the affected areas of the San Joaquin Valley and San Francisco Bay-Delta Estuary. Re-use areas, a common component to Bay-Delta and ocean disposal alternatives, are predicted to adversely affect San Joaquin kit fox, Swainson's hawk, and greater sandhill crane due to increasing exposure to elevated selenium in preferred dietary items. The significant adverse effects to waterbirds and green sturgeon are further noted in the draft EIS as unavoidable (pages 19-6 to 19-11). The no-action alternative analysis (e.g., not providing drainage service) also predicts adverse effects to aquatic receptors related to changes in selenium bioaccumulation, mainly because of the magnitude of continuing irrigation supplies affecting seepage and migration of selenium into ecosystems.

It is stated on page ES-21 of the Executive Summary that "most of these significant adverse effects can be mitigated to not significant as shown in Table 2.13-2." However, mitigation is considered only conceptually (Section Twenty) in the draft EIS and feasibility plans for the action alternatives are pending. Ecosystem effects are expected from the release of selenium at the concentrations to be discharged into the Bay-Delta (10 µg/L) and the ocean (220 µg/L)

(Table 5.2-1) (Luoma and Presser (2000). Treatment and disposal options for wastewaters containing elevated concentrations of selenium (480 µg/L, page 5-58) and are problematic and costly as is the handling of by-product concentrates. Likewise, there are complexities involved in mitigating for selenium effects to fish and wildlife. The application of the best available scientific understanding is therefore essential to the public's evaluation of all the action alternatives. If best available science is not considered, there can be a lessening of predicted severity of effects to aquatic resources and an inaccurate estimate of the total cost of remediation. For example, the scientific analysis in the draft EIS would significantly benefit from:

F-08-2 1. *Application of comprehensive selenium exposure.* For example, Luoma and Presser (2000) developed a *Bay-Delta Selenium Model,* which is highly relevant to these assessments. The main conclusions presented in this report are:

- Enhanced biogeochemical transformations to bioavailable particulate selenium and efficient uptake by bivalves and then predators characterized the San Francisco Bay-Delta Estuary system.
- Vulnerable species include white sturgeon, Sacramento splittail, starry flounder, Dungeness crab, surf scoter, greater scaup, and lesser scaup.
- If these biogeochemical conditions continue to prevail, forecasts of loading scenarios from the San Joaquin Valley to the Bay-Delta suggest the risk of adverse effects will be difficult to eliminate under an out-of-valley resolution to the selenium problem.

F-08-3 2. *Accurate comparisons to existing data for food webs.*

F-08-4 3. *Addition of scientific information on the potential exposure and risks from direct ocean disposal.*

F-08-5 4. *Assessment of recent data complied for re-use areas dedicated to managing agricultural drainage.* These data show the immediacy of food web appearance, the magnitude and duration of selenium contamination of ecological landscapes, and effects on birds as measured by selenium concentrations in bird eggs (i.e., thresholds for substantive risk are exceeded by up to 6-fold).

F-08-6 Incorporation of best-available science in the analyses of alternatives will provide more accurate assessments of potential environmental effects and support detailed environmental and engineering analysis of the feasibility of potential remedial actions.

SPECIFIC COMMENTS

Base Map

F-08-7 The map provided for the Bay-Delta in the draft EIS has changed from previous versions. The location of the Delta (e.g., Figure 8-1) is incorrectly given as encompassing Suisun and Grizzly Bays. Traditionally, the estuary delta encompasses the freshwater areas of the San Joaquin and

F-08-8 Sacramento Rivers. Corrected and more detailed maps would be useful in helping to illustrate the legal and ecological boundaries of the Bay-Delta.

3

Section 5.1.6.3, Waste Discharge Permitting Program, Pages 5-39 to 5-45

F-08-9

Concentrations of selenium are less than 1 µg/L in the Bay-Delta, which is below regulatory guidelines compiled in the draft EIS. However, selenium in food webs is sufficient to be a threat to some species and a concern to human health if those species are consumed (Luoma and Presser (2000). In terms of regulatory guidance, Luoma and Presser (2000) state:

> *The Bay-Delta is probably best suited for site-specific Se guidelines and the Bay-Delta Selenium Model could provide a framework for developing new protective criteria. If water quality criteria are to be employed in managing Se inputs, then consideration should be given to the elevated Se concentrations currently occurring in clams and fish of the Bay-Delta, even though waterborne Se concentrations in the Bay-Delta are less than recommended criteria.*
>
> *We conclude that credible protective criteria should be based on 1) contaminant concentrations in sources, such as particulate material, that most influence bioavailability; and 2) concentrations in media and organisms relevant to vulnerable food webs. Existing criteria for water, particulate material, and tissue of prey and predators should be used in-combination to evaluate risk or hazard.*

Section 8.1.4, Delta Disposal Alternatives Area, Page 8-4

F-08-10

The draft EIS includes the statement, "Se speciation and fate in the Bay-Delta Estuary are not well established." However, the following reports and the bibliographies contain within them provide insights into specific research to establish a clearer understanding of selenium exposure.

- Luoma, S.N. and Presser, T.S., 2000, Forecasting Selenium Discharges to the San Francisco Bay-Delta Estuary: Ecological Effects of a Proposed San Luis Drain Extension, U.S. Geological Survey Open-File Report 00-416, 358 p. http://pubs.water.usgs.gov/ofr00-416/)
- Presser, T.S. and Luoma, S.N., 2004, Linking Selenium Sources to Ecosystems: San Francisco Bay-Delta Model: U.S. Geological Survey Fact Sheet 2004-3091 (http://water.usgs.gov/pubs/fs/2004/3091/)
- Presser. T.S. and Piper, D.Z., 1998, Mass Balance Approach to Selenium Cycling through the San Joaquin Valley, Sources to River to Bay *in* W. Frankenberger and R.A.Engberg, eds., Environmental Chemistry of Selenium, Marcel Dekker Inc., New York., p. 153-182.

Section 8, Selenium Bioaccumulation

F-08-11

Pages 8-10 to 8-12 describe the data analysis used to predict selenium exposures in the Bay-Delta. The uncertainty in these predictions is high. For example, it is stated in the draft EIS that:

- "Correlation plots of Se concentrations in tissue versus Se concentration in sediment, dissolved Se concentration in water, and total Se concentration in water did not display any significant trends".
- If the selenium concentration associated with particulate phase is estimated from total and dissolved selenium, then "in some cases, the SPM Se concentration was negative."

- Correlations between SPM selenium concentrations and bivalve tissue concentrations "were generally weak (r2<0.15)."

- " ...because the RMP data exhibited no good correlations between Se concentrations in bedded sediment and tissue, the BSAF developed with SPM data was used to predict tissue concentrations from both the SPM Se concentration and the bedded sediment concentration...However...not enough data were available to assign BSAFs to specific regions. Therefore, the BSAFs ...were averaged to calculate a BSAF for the entire Bay-Delta Estuary."

F-08-12

The methodology used by Luoma and Presser (2000) addresses the complexities of correlating diet (food web specifics) and effects on vulnerable predators. The *Bay-Delta Selenium Model* is a linked bioaccumulation model that includes consideration of selenium speciation in both water and sediment, concepts absent from the analysis in the draft EIS. If such links are not developed or links skipped, then great uncertainties result. In essence, the links for ecosystem scale modeling are: concentration developed from source loads and volume at specified location; biotransformation including speciation and partitioning; particulate concentration; particulate form; food webs including kinetics and assimilation efficiency; bioaccumulation in dietary items; and effects analysis for predators based on risk from food and tissue.

If information for each of these links is considered in the draft EIS analysis, concentrations in dietary prey could change substantially, thus affecting prediction of predator effects from selenium.

As noted in the attached technical comments, dated August 19, 2003:

> *In the Plan Formulation Report, the highest predicted mussel or oyster concentration is 3.4 µg Se/g, far below those Se concentrations in clams found in the estuary during sampling from May 1995 to June 1997 (average, 12.94 ±0.75 µg Se/g, dry weight). The 1995-1997 mean concentration in P. amurensis exceeds the dietary threshold (10 µg Se/g) for predators that has a high certainty of producing adverse effects in predators. The USDOI (U.S. Department of Interior) has defined marginal risk to aquatic life from diet from 3-7 µg Se/g and substantive risk at dietary concentrations > 7 µg Se/g (USDOI, 1998). More recent data show Se concentrations in clams in Suisun Bay are currently higher than in previous studies, although some loads to the estuary have been reduced. Results from the Plan Formulation Report also show much lower concentrations of particulate Se (0.3 to 0.8 ppm) than actually measured in the Bay-Delta (Luoma and Presser, 2000). The range of particulate Se concentrations determined in surveys of the brackish Bay-Delta is 0.5 to 3.0 mg Se/g, dw and at the head of the Bay-Delta is 0.5 to 8.0 mg Se/g, dw. Results from the Plan Formulation Report modeling would benefit from field validated to verify that the chosen modeling is accurate in forecasting the range of particulate and consumer organism bioaccumulation in the different species and water habitats of the estuary.*
>
> *U.S. Department of the Interior (U.S. Fish and Wildlife Service, Bureau of Reclamation, U.S. Geological Survey, Bureau of Indian Affairs), 1998, R.A. Engberg (ed), Guidelines for interpretation of the biological effects of selected constituents in biota, water, and sediment: National Irrigation Water Quality Program, USDOI, BOR, Denver, Colorado, p. 139-184.*

5

For comparison, the analysis in the draft EIS predicts mean exotic bivalve tissue concentrations (4.8 to 6.7 µg Se/g based on spatial 6-month June-November average for four regions of Bay; 6.04 to 6.22 µg Se/g based maximum 30-day average over time periods of highest concern and spatial averages closest to discharge points) (pages 8-15, 8-30; 8-37). Native clam tissue is predicted as lower (1.6 to 2.2 µg Se/g 6-month June-November average; 2.01-2.07 µg Se/g maximum 30-day average. Although the selenium concentrations for exotic bivalve tissue are noted to be above the threshold adopted by the draft EIS for adverse reproductive effects (4 µg Se/g), these selenium concentrations are 2-fold below average measured concentrations of selenium in the exotic clam *P. amurensis* in the North Bay.

F-08-13 The data used in the draft EIS to predict selenium concentrations are not provided; only the results are provided. Including these data and the spatial averaging would be helpful in assessing the overall uncertainties of the predictions. Seasonal variability, flow periods, and length of temporal analyses steps (month versus 6-month period) all affect predictions. Hence, analyses need to be presented in the context of San Francisco Bay to help understand the overall effects of selenium sources, loading events, biotransformation opportunities, and hydrodynamics. For

F-08-14 example, both sets of analyses show clam tissue selenium concentrations for the South Bay (also see Figures 8-7 and 8-8) higher than that for clams in the affected northern areas of the estuary, where the discharge occurs (Tables 8-5 and 8-6). Incremental changes shown in Figures 8-4 and 8-5, however, are higher in the area of discharge. In Table 8-7 and 8-8, the South Bay comparison has been eliminated.

F-08-15 The *Environmental Effects Summary* for the Delta Disposal Alternatives (Sections 8.2.12.7 and 8.2.12.8, pages 8-53 and 8-54) states that "the highest predicted average bivalve concentrations are well below 4 mg/kg" and further states "that localized effects have the potential to occur." Generalized analysis and statements in view of available measured data and specific information identifying food webs as the drivers of risk to vulnerable species are of little use in analyzing

F-08-16 protection of predators through diet (Luoma and Presser, 2000). Also, the statement, "bioaccumulation typically does not fluctuate on this short of a time scale" on page 8-15 also should be substantiated.

F-08-17 A comprehensive risk analysis specific to the Bay-Delta is not included in the draft EIS. The analysis performed for the Bay-Delta Disposal Alternatives (e.g., page 8-38, evaluation of potential effects to shorebirds and fish) refers to toxicity data for birds in Appendix G that has been developed for the In-Valley Disposal Alternative (Appendix G, Ecological Risk Assessment In-Valley Disposal Alternative). The effects analysis uses an endpoint (a greater than 10% change is a significant effect, page 8-7) unsubstantiated in biological relevance, and

F-08-18 does not assess effects to fish. Consideration should be given to revising the analysis to include methodologies that reflect the state-of-the-science in regards to risk assessment.

F-08-19 Finally, it should be noted that the 6-month modeling period from June through November 1997 was chosen to exhibit the highest selenium concentrations in clams. However, referring to 1997 as a dry year is incorrect. Although the latter part of the year was dry, 1997 was remembered for record-setting Delta outflows into the San Francisco Estuary and is classified as a wet year by the California Department of Water Resources.

6

Sections 8.2.2.3 and 8.2.8.2, Ocean Disposal Alternative

The draft EIS concludes that there are no predicted effects to aquatic resources from the ocean disposal alternative. For example, it states on pages 8-10 and 8-27: "As discussed in Section 5.2.8, no significant increases in selenium concentrations in surface water or sediments are predicted under this alternative. Therefore, no significant increases in selenium bioaccumulation would be expected, and no quantitative bioaccumulation modeling was conducted." In terms of analysis of effects, the water-column selenium concentrations are meaningful when linked to food webs. Therefore, it is difficult to draw meaningful effects conclusions without an analysis of ocean food webs in the vicinity of a proposed discharge. Stimulation of plankton growth as a result of nutrient disposal warrants consideration, as well as speciation, potential recycling, and hydrodynamics. A literature search most likely would yield relevant data and information.

F-08-20
F-08-21
F-08-22

In-Valley/Drainage-Impaired Area Land Retirement Alternative

A summary of recent data (Table 1 below) from accidental flooding of a re-use area dedicated to managing concentrated agricultural drainage (60 to 200 µg Se/L) in the Panoche Drainage District is relevant to remediation planning. Analysis of these data is provided according to bird species (stilt, avocet, killdeer, and blackbird) and site categorization (accidentally flooded re-use area; the remainder of project re-use area; project reference; and rice field reference). In addition, overall project versus reference averages are given. For comparison, risk thresholds based on egg hatchability (dry weight) are: low risk, <6 µg Se/g; marginal risk, 6-7 µg Se/g; and high risk, >10 µg Se/g. The accidental flooding event shows the immediacy of food web appearance and selenium effects in birds as measured in bird egg selenium concentrations (i.e., thresholds for substantive risk are exceeded by up to 6-fold). Further concern is warranted because selenium concentrations in bird eggs from identified reference site were as elevated as "rest-of-project site" eggs, suggesting that the entire landscape used by birds in the vicinity of agricultural drainage re-use areas contains elevated concentrations of selenium.

F-08-23

Table 1 San Joaquin River Quality Improvement Project average Se (µg Se/g, dry weight) for bird eggs collected in April, May, and June, 2003 (San Joaquin River Water Quality Improvement Project, Phase I Wildlife Monitoring Report: Harvey and Associates, 2004). Number in parentheses = number of eggs.

	stilt	avocet	(stilt and avocet)	killdeer	blackbird
Flooded Project	46.6 (5)	68.6 (9)	60.8 (14)	15.3 (11)	
Rest-of-project	19.9 (4)	12.2 (2)	17.3 (6)	11.4 (9)	
Rice Fields Reference	5.4 (10)	---- (0)	5.4 (10)	4.1 (9)	
Project Reference (excluding rice field data)	25.3 (6)	10.6 (4)	18.4 (10)	4.4 (11)	
Project (total)	33.2 (9)	40.4 (11)	47.7 (20)	13.4 (20)	6.1 (20)
Reference (total)	15.0 (15)	10.6 (4)	12.4 (20)	4.25 (20)	5.4 (20)

Continued monitoring of invertebrates from Kesterson Reservoir during spring nesting season, when ephemeral pools form, also provide insights into the magnitude and duration of selenium contamination within ecological landscapes (Reclamation's Annual Reports, 1985-2001; 2001 Risk Assessment, and 2005 monitoring data). Preliminary results from recent monitoring, 20 years after remediation of Kesterson Reservoir, show selenium concentrations in invertebrates

F-08-24

7

ranging from 3.8 µg Se/g, dw to 80 µg Se/g, dw. The average of 19 µg Se/g exceeds the substantive risk threshold for selenium dietary items (7 µg Se/g, dw).

Section 12, Agricultural Production and Economics

The draft EIS describes project soil and ground-water conditions affecting agricultural production over the 50-year planning period. It indicates that various predictive models (Reclamation's IRDROP, USGS's MODFLOW) were used to help determine salinity, selenium concentrations, and drainage within the proposed In-Valley Disposal or Out-of-Valley Disposal Alternatives (page 12-3). Table 12-6 (Long-Term Yield Effects of Soil Salinity in the Drainage-Impaired Area) identifies some agricultural crops considered viable under action alternatives. Crops mentioned are cotton, grains, sugar beets, alfalfa, tomatoes, most vegetables and field crops.

However, although the draft EIS acknowledges selenium is an essential micronutrient[1] under normal environmental conditions, there is no indication in the document that the San Luis selenium waste stream could become an agricultural resource – providing co-contaminants of concern were mitigated. That is, as erosion and decreasing pH have a tendency to decrease the bioavailability of soil selenium to vegetation, a source of supplemental soil selenium might be useful (Lyons et al. 2003). The following discussion is offered as background in support of turning this waste product into a resource. The actual bioavailability of soil selenium from any given scenario would have to be addressed (Kabata-Pendias and Pendias, 2001) and possibly modified.

F-08-25

The following discussion focuses on human dietary selenium requirements, unmet throughout much of the world. The Food and Nutrition Board Recommended Daily Allowance (RDA) for adults is 55 µg Se per day (Food and Nutrition Board, 2000). However, the United Kingdom's Reference Nutrient Intake (RNI) recommends between 60-75 µg Se per day (gender specific) on the basis of optimal expression of antioxidant (blood glutathione peroxidase (GPx), 95 µg Se/L) activity. Medical research indicates that dietary intake of 200-600 µg Se per day could be instrumental in enhancing antioxidant protection, chemoprevention, and immune enhancement (Allen et al. 1999; Clark et al. 1996; Rayman, 2004). Figure 1, below, provides a schematic to depict general selenium nutrition dosage (Combs and Gray, 1998). Nonetheless, humans living in seleniferous areas have not been found to suffer selenium intoxication at 700 µg Se per day (Longnecker et al. 1991), but may have reached blood saturation at 800 µg Se per day (Yang and Zhou, 1994). By comparison, dietary intake in populations throughout much of Europe range between 11-67 µg/day (45-90 µg/L Se in blood) (Rayman, 2000); populations in low-selenium areas of China, Central America, and Africa (Zaire) have blood selenium concentrations of 12-23 µg/L, substantially lower than the 95 µg Se/L required for optimal GPx activity (Diplock, 1993).

[1] That is, over 100 structural selenoproteins and catalytic selenoenzymes have been identified in human metabolism. Its function in cellular antioxidation and anti-inflammation is well established. Selenium also participates in thyroid hormone production, DNA synthesis, and spermatogenesis. Its roles in chemoprevention (Clark et al. 1996) and immune function, for example, against HIV and AIDS (Baum et al. 2000, Xu et al. 2002), are increasingly recognized. Nutritional selenium depletion also has been correlated with the occurrence of cardiovascular disease, cirrhosis, and diabetes (Navarro-Alarcon and Lopez-Martinez, 2000). Despite the metabolic virtues of selenium, many soils and much of the global population is nutritionally deficient in selenium (Diplock, 1993, Rayman, 2000).

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Nutrients, including selenium, are generally acquired from food stuffs; primary dietary sources of selenium in the U.S. diet are seafish; whole grains and grain products; nuts; garlic; and meats and broccoli raised on selenium-enriched media. Agricultural crops accumulate selenium according two factors: bioavailable soil selenium (Kabata-Pendias and Pendias, 2003) and the bioaccumulation capabilities of plant families and species (Jacobs, 1989); good accumulators include cruciferous broccoli and rapeseed, the garlic and onion (allium), the legumes clover and peas, and sunflower; poorer accumulators include lettuce, wheat, and carrots. Though wheat is classified as a selenium non-accumulator, it is nearly a global foodstuff, and in seleniferous regions of the U.S. (North Dakota), under conducive soil conditions, whole-wheat grain can contain more than 2 mg Se/kg (Combs, 2001). Mining selenium through selenium-accumulating food crops, for example, allium (Whanger et al. 2000), whole grains including wheat (Lyons et al 2003, Slavin et al 2001), broccoli (Finley et al. 2000), and beef fed on high selenium forage (Hintze et al 2002), might have the potential to reduce disease. Rayman (2004) has suggested also boosting dietary selenium through the consumption of selenium-enriched yeast to 600 µg Se/day.

F-08-25 cont.

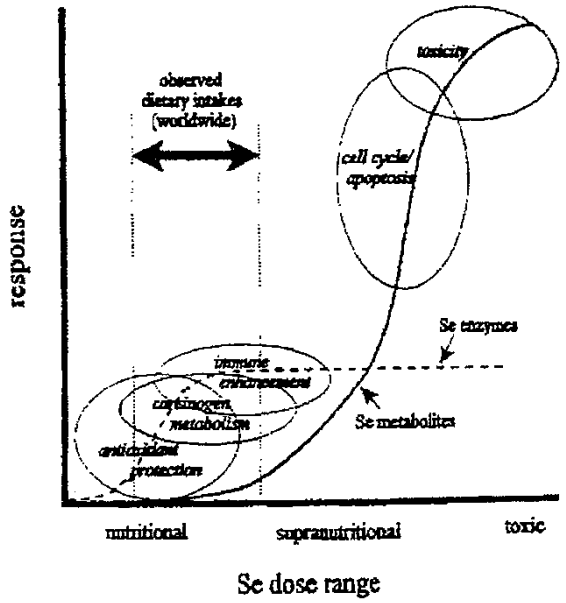

Figure 1. Two-stage model for the roles of selenium in cancer prevention (Combs and Gray, 1998), adopted here to depict general selenium nutrition dosage.

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Appendix A, Section 3.2.5, Delta Disposal, Page 19

It is stated that, "Reclamation reviewed and considered the information from the Luoma-Presser report when assessing the feasibility of the Delta Discharge." The methodology used in Luoma and Presser (2000) is much more detailed than that used in the DEIS. For example on page 8-13, reference is made to similarities to predictions made by Luoma and Presser (2000): "The average of the above BSAFs (biota-sediment accumulation factors) is 4.2, and this number was used as the Baywide BSAF for this evaluation. This BSAF is similar to the predictions made by Luoma and Presser (2000), using a kinetic bioaccumulation model. They predicted that selenium

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concentrations in bivalve tissue (mg/kg dry weight) would be 8 times greater than selenium concentrations in particulate matter for organo-selenium, the most bioavailable form, and 2 times greater for elemental selenium, the least bioavailable form. The BSAF of 4.2 used for this evaluation falls in between these values, as would be expected."

The BSAF concept was not used by Luoma and Presser (2000) in the *Bay-Delta Selenium Model*. The USGS provided technical comments to Reclamation and its contractor, dated August 19, 2003 (attached), on the *San Luis Drainage Feature Re-Evaluation Plan Formulation Report*. The important difference between Reclamation's modeling for the Delta disposal alternatives and the *Bay-Delta Selenium Model* are outlined in these comments:

> *The Bay-Delta Selenium Model considers the enhanced biogeochemical transformations to bioavailable particulate Se and efficient uptake by bivalves that characterize the Bay-Delta system. The Plan Formulation Report uses a BSAF (biota to sediment accumulation factor) and a BCF (dissolved to bivalve tissue bioconcentration factor) to model Se concentrations in the environment. The flaw of this approach is that it does not allow consideration of effects of speciation in water or of particulate material on bioaccumulation. Bioaccumulation factors can vary by as much as 50-fold for a given species in different environments, and much more than that among species. The approach used in the Bay-Delta Selenium Model, the Dynamic Multi-pathway Bioaccumulation Model or DynBaM uses different experimentally established uptake rates for different forms of dissolved and particulate Se, along with environmental concentrations of these forms, to determine bioaccumulation in tissues (Luoma et al., 1992, Luoma and Fisher, 1997, and Schlekat et al., 2002). One advantage of this approach is that bioaccumulation can be derived for different speciation regimes. The speciation consideration is important because speciation will change as sources change. and relations with total Se or individual species of Se will also change. Another substantial advantage of the approach is that model predictions can be verified by comparison to analyses of Se in tissues of resident species. Additionally, the tissue concentrations used to develop the BSAF in the Plan Formulation Report are questionable because the mussels and oysters sampled were deployed, rather than being resident bivalves. Linville et al. (2002) shows that the condition index of the bivalves declined in all transplants, suggesting the deployed bivalves were not feeding normally. As noted above, concentrations in the modeled mussels and oysters were much lower than in samples of P. amurensis taken during the same time interval.*

F-08-26

F-08-27

Thus, predicted incremental changes in the concentration of selenium in suspended particulate matter (SPM) that appear inconsequential in the Delta disposal alternatives analysis (e.g., page 5-105), become more significant when considered in light of selenium speciation conditions and in the context of how efficient selenium bioaccumulation is in a productive estuary like that for San Francisco Bay.

The attached technical comments also call attention to data for food webs and selenium concentrations for clams in the Bay-Delta (also see Stewart et al., 2004 at http://wwwrcamnl.wr.usgs.gov/tracel/bibliography.html#2004). These data provide relevance for existing conditions and are very useful for cumulative effects analysis that could address selenium loading from all sources, including from oil refineries in the vicinity of the North Bay.

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Thank you for the opportunity to review and comment on this draft EIS. If you have any questions concerning our comments, please contact Lloyd Woosley, Chief of the USGS Environmental Affairs Program, at (703) 648-5028 or at lwoosley@usgs.gov.

Attachment

USGS Memorandum, From T.S. Presser to J. Phillips and M. Delamore, Bureau of Reclamation, and S. Hootfins, URS Corp., dated August 19, 2003; Technical Comments on San Luis Drainage Feature Re-evaluation Plan Formulation Report, December 2002

Note: Reclamation acknowledges the receipt of comments previously submitted on the PFR and PFR Addendum and has already considered those comments in the development of the Draft EIS. Because the remainder of this submittal does not address the Draft EIS, it is not included in the Final EIS, but it will be included in the administrative record for this project and is available upon request.

RESPONSES TO COMMENT F-08

F-08-1

The comment is noted. See Master Responses SW-2, MIT-1, ALT-T1, SW-8, SW-4, and GEN-1.

F-08-2

The comment is noted. Site-specific data on Se uptake are discussed in Section 8.1.4, and these data were used in the EIS analysis. Luoma and Presser's (2000) Bay-Delta Selenium Model was reviewed and is included by reference in the Draft EIS. Information from this report is cited in the Draft EIS.

F-08-3

The EIS includes discussion of historical and recent data on Se concentrations in food webs, and site-specific data were used in the analyses (see Section 8). Additional recently collected data have been added to the Final EIS.

F-08-4

See Master Responses SW-8 and SE-1.

F-08-5

See Master Response GW-2.

F-08-6

The comment is noted. See responses to specific comments below.

F-08-7

The Delta averaging area used to calculate tissue Se concentrations included Suisun and Grizzly bays. Section 8.2.2.4 of the Final EIS has been modified to reflect this.

F-08-8

Figure 8.1-1 has been revised to correctly label Suisun and Grizzly bays and the Delta.

F-08-9

The comment is noted. It is recognized that existing Se levels in the Bay-Delta are above identified toxicity thresholds (see Section 8.2.9.2).

F-08-10

Section 8.1.4 describes the affected environment of the Bay-Delta for the two Delta Disposal Alternatives. The first sentence states that "Se speciation and fate in the Bay-Delta are not well established; however, several studies have investigated the matter." This section then goes on to describe studies that provide data on Se speciation and fate in the Bay-Delta, and references more than 10 sources of information specific to the Bay-Delta, including Luoma and Presser (2000) (the first reference cited in the comment). More recent data on Se concentrations in white sturgeon have been added to this section. The other two references cited in this comment (Presser and Luoma 2004; Presser and Pipaz 1998) were reviewed. Presser and Luoma (2004) is a brief fact sheet that summarizes information presented in Luoma and Presser (2000). Presser and Pipaz (1998) provides information on Se speciation and bioaccumulation in the drainage areas, tributaries, and San Joaquin River, but the focus of Section 8.1.4 is on the Bay-Delta environment.

F-08-11

The comment is noted. As discussed in Sections 8.2.2.4 and 8.2.2.5, it is recognized that uncertainty exists in the predictions of bioaccumulation.

F-08-12

In the absence of information to predict changes in speciation in the Bay-Delta due to projected Se discharges, the analysis in the EIS assumes that Se speciation and bioaccumulation rates in the Bay-Delta would remain consistent with historical conditions. As discussed in Section 8.2.2.6, this assumption is identified as an uncertainty in the results. Even if information on Se speciation in the treated effluent were available, it is likely that the speciation regime would change significantly by the time the effluent discharges in the Bay-Delta, and would change further due to ambient conditions as water moves through the Bay-Delta.

The Luoma and Presser (2000) model is a mechanistic model that accounts for changes in Se speciation regimes as well as differences in distribution coefficients and particulate bioavailability. This model was used to generate forecasts under three different hypothetical regimes: high, moderate, and low bioavailability. Several different values for Se assimilation

efficiencies for bivalves were also used in predictions. Using these scenarios, a range of predictions is presented. However, without additional information on factors such as Se speciation, no good way is available to narrow down the range of predictions. It is agreed that if site-specific predictions of Se speciation and particulate bioavailability could be made with a reasonable level of accuracy, a mechanistic model such as the Luoma and Presser model may help to generate a more accurate prediction. However, absent this site-specific information, using unsubstantiated predictions about changing speciation and bioavailability is considered speculative.

F-08-13

As referenced in Section 8.2.2.4, the Regional Monitoring Program data were used to develop the biota sediment accumulation factors that were used to predict Se concentrations in bivalves. The RMP data are publicly available on the SFEI website.

Spatial averaging methods are also described in Section 8.2.2.4, and water quality modeling methods are described in Section 5.2.2.

F-08-14

Site-specific data for Se biotransformation in the Bay-Delta are discussed in Section 8.1.4, and Se sources, loads, and hydrodynamics are discussed in Section 5. As noted in Section 8.2.9.2, Tables 8-7 and 8-8 focus on predicted increases of Se in bivalve tissue in the discharge area, because this area is where the incremental, project-related change is highest.

F-08-15

The comment is noted. Sections 8.2.12.7 and 8.2.12.8 are meant to concisely summarize the information presented in Section 8.

F-08-16

A reference to Appendix G, Section G3.1.3.3 was added to support this statement in Section 8.2.2.4.

F-08-17

Although the risk assessment in Appendix G is focused on the In-Valley Alternatives, the toxicity data presented in Appendix G are also applicable to the Delta Disposal Alternatives.

F-08-18

The commenter expresses a concern that the endpoint used for the effects analysis is unsubstantiated and does not include effects to fish. The method used to determine whether a decrease in reproduction of 10 percent or more would occur is based on toxicity data for the mallard, because adequate dose-response data exist only for this species. However, a review of the available literature indicates that Se toxicity thresholds for fish are similar to those for birds, although variability is considerable even within the same orders.

Ecologically relevant toxicological endpoints for risk assessment are typically those that affect population stability and, thus, sustainability of populations. However, population stability is not readily measurable, and it is usually evaluated using surrogate toxicological endpoints. A variety of surrogate toxicological endpoints are typically measured in controlled experiments (i.e., bioassays). At the species level, effects on survival, reproduction, and growth endpoints clearly have the potential to adversely affect populations.

Ecological populations are most often defined as the "breeding population" (Menzie and Wickwire 2001) whose sustainability is classically measured using birth and death rates (e.g., the intrinsic rate of population increase, *r*). Understanding that the breeding population is ecologically relevant for maintaining a particular species population and that the birth rate is a dominant feature associated with the stability and integrity of the population is fundamental in interpreting toxicological data. The relevant lifespan within an evaluation of potential ecological risk is not an individual's longevity (as often reported within the Agency for Toxic Substances and Disease Registry profiles) but an individual's reproductive lifespan. The importance of this concept is that an individual's survival has little impact on the sustainability and integrity of a population if the individual's offspring successfully reproduce. Thus, individual survival and longevity are not necessarily relevant in the context of adverse ecological impacts to populations of receptor species. This concept is inherent in the EPA's guidance in the use of "short-term chronic" bioassays and the Disease Registry's methods in which organisms are exposed during the most sensitive (i.e., critical) lifestage (i.e., embryo-larval or gestational), as these types of studies directly relate to reproductive success.

Because of the difficulty in relating effects levels to effects to fish and wildlife populations some conventions have been developed in administering environmental regulations based upon the ability to detect a population change using conventional laboratory and field methodology. Without detailed information on specific populations over several years it is impossible to use specific thresholds for the amount of change that a population can experience without becoming unstable. Even then, the magnitude of change that would destabilize a population could vary in time and by area.

As reported by Cook et al. (1999), "A 20% or greater reduction in one of the endpoint properties measured in the field or a 20% reduction in survivorship, growth, or reproduction in a toxicity test is considered to be potentially significant. The figure 20% is the lowest level of effects that standard field and laboratory techniques can detect with conventionally acceptable confidence. It is based on an analysis of EPA and Tennessee regulatory practices."

In a related paper Suter et al. (1999) explain, "In addition to defining the assessment endpoints in terms of environmental entities (the fish community) and properties of those entities (species richness and abundance), it is necessary to identify a level of effect on those properties to provide a benchmark for design and interpretation of studies. A 20% or greater reduction in one of the endpoint properties measured in the field or a 20% reduction in survivorship, growth, or reproduction in a toxicity test is considered to be potentially significant." They add, "This was a policy judgment concerning values, not science."

Other environmental regulatory agencies have also considered changes of less than 20% or even 50%, in the case of terrestrial organisms on industrial or commercial sites, to not result in significant effects at the population level. As dicussed by the British Columbia Ministry of Environment, Land, and Parks (1998), "However, for environmental receptors such as plants or

animals (i.e., not humans), the goal is not to protect each individual from any toxic effect, but rather to protect enough individuals so that a viable population and community of organisms can be maintained (provided other habitat factors are suitable). Therefore, a toxicity reference value is chosen from the concentration-response curve that provides reasonable protection for a specified percentage of the organisms. For terrestrial organisms on commercial or industrial sites, this is the EC_{50}, or the concentration that affects 50% of the organisms exposed (for residential sites it is the EC_{20}). For aquatic organisms at commercial, industrial or residential sites this is the EC_{20}."[1]

A review of relevant scientific studies indicates that a threshold of 10 percent decrease in reproduction would be adequately protective of most species. In a review of 41 studies that included a total of 28 species and 44 toxicants, Forbes and Calow (2002) found that in 81.5 percent of the cases considered (out of a total of 81), individual-level variables were equally or more sensitive than population growth rate. In a study by Gleason and Nacci (2001), a population model indicated that the population growth rate for the European kingfisher (*Alcedo atthis*) would experience decline when reproduction decreased by 10 to 30 percent, and that the population growth rate for the least tern (*Sterna antillarum browni*) would experience decline when reproduction decreased by 30 to 65 percent. The results of a sensitivity analysis indicated that survival would be more important than fecundity for maintaining population of k-selected species (long-lived, low fecundity, late age of reproduction), and that the reverse would be true for r-selected species (short-lived, high fecundity, early age of reproduction).

F-08-19

The text in Section 8.2.2.4 has been revised to refer to Water Year 1997 as a wet water year. Note that calibration was conducted during the dry season of 1997 (June to November), during which time minimal rainfall was recorded.

F-08-20

See Master Responses SW-8 and SE-1.

F-08-21

See Master Response SW-11, which discusses the potential for the Ocean Disposal Alternative to stimulate phytoplankton growth.

F-08-22

See Master Responses SW-8, SE-1, and SW-11.

F-08-23, 24

See Master Response GW-2.

[1] An EC_{20} or EC_{50} is an Effects Concentration that affects 50 or 20 percent of the test population, respectively. It is an endpoint that is typically used in bioassays.

F-08-25

See Master Response ALT-T1 for a discussion of the evaluation of treatment technologies.

F-08-26

The comments received from the USGS (dated 8/19/03) were considered by Reclamation. See response to Comment F-08-12 regarding the Se speciation issue. In addition to the biota-sediment accumulation factor predictions using deployed mussels and oysters, a biota-sediment accumulation factor 3 times higher for Asian clams was used in the analysis, based on the Linville (2002) results (see Sections 8.1.4 and 8.2.2.4).

F-08-27

See Response to Comment F-08-12 regarding Se speciation. Because the biota-sediment accumulation factors are based on site-specific data from the Bay-Delta, the analysis does take into account conditions specific to this estuary.

COMMENT F-09. U.S. CONGRESS HOUSE OF REPRESENTATIVES, WILLIAM THOMAS

Meeting Summary
Congressional Briefing
Congressman William Thomas

Briefing Date: Thursday, August 18, 2005

Purpose: Provide landowners information regarding the potential pipe alignment for the Ocean Disposal Alternative identified in the Draft EIS so that they can better understand the project and provide comments.

Briefing Requestor: Congressman Thomas, in coordination with the local Farm Bureau

Location: Templeton CA

Project: San Luis Drainage Feature Re-evaluation, Draft EIS

Participants: Mike Whiteford, Congressman Thomas' office; Greg Haas, Congresswoman Lois Capps' office; Debbie Arnold, Assemblyman Blakeslee's office; Joy Fitzhugh, California Farm Bureau; Jeff Oliveira, Planning Department, San Luis Obispo County; and 8 land owners

Reclamation Participants: Gerald Robbins and Sam Cervantes; via conference call Bill Thompson and Scott Irvine

F-09-1 Summary: The major concern expressed by Congressman Thomas' office is that the estimated construction cost for the Ocean Disposal Alternative, which is the least costly, wasn't sufficient and an accurate assessment/analysis of the alternative is warranted.

F-09-2 Their overall concern is that the cost estimate is so low that as this goes to Congress that the selected alternative could switch from In Valley to the Ocean alternative. In addition,

F-09-3 concerns were raised regarding the timing/need for a feasibility level study.

F-09-4 Major Landowner concerns are that the analysis of the Ocean Disposal Alternative is grossly inadequate, particularly the seismic analysis; and that the pipeline is being "over

F-09-5 sized" to allow others to use the pipeline to dispose of additional drainage concerns in the future.

Following is a list of concerns expressed by the landowners:

F-09-6
- Concern that the pipe is oversized and would allow for future use by others; will the pipe be designed to carry more than the volume projected for the drainage problem; why is it anticipated that the amount of drainage would increase over time, is this why the pipe is "oversized?"

F-09-7
- Environmental document doesn't adequately analyze the Ocean Disposal Alternative.

F-09-8 • Why aren't we looking at using existing pipe routes, i.e., Chevron and Unocal pipelines?

F-09-9 • Concern that drainage water go through tunnels without pipes or lining; concern that in instances where concrete is being considered to line tunnels, concrete isn't the proper material for areas with seismic issues;

F-09-10 • Concern that the environmental document doesn't adequately analyze seismic issues, asked if seismologist are reviewing/participating in the analysis and in the process for selecting the final alternative.

F-09-11 • Concern with slipping and slide areas.

F-09-12 • Questions were asked of the flow rate; size and location of pump houses, will pump houses be above or under ground, will there be a need for power lines; size of and process for obtaining rights-of-way, multiple uses of the rights-of-way;

F-09-13 • Landowners insisted that sites visits are necessary to adequately analyze the locations for the pipeline and offered to join crews on visits, as well as provide information of the area.

F-09-14 • Several individuals express concern that, given the current water shortage issues in the state of California, that the focus should be on trying make the drainage water "re-usable" rather than spending money on ways to dump the water.

F-09-15 • Concern that the "southerly drift" and impacts to the ocean haven't been adequately analyzed.

F-09-16 • Currently farmers and required to meet certain water quality standards. It appears that the farmers in the valley, via the Ocean Disposal Alternative, are not required to meet the local standards. Why would valley farmers not be required to operate to the same standards as local farmers?

F-09-17 • What happens if the pipe ruptures, will it be a landowner problem/responsibility? What methods will be used to detect leaks and what methods will be used to prevent them?

F-09-18 • What other elements are in the drainage water?

F-09-19 • What are the estimated costs for pumping and is the Department of Energy involved in the analysis?

Materials Distributed: None

RESPONSES TO COMMENT F-09

F-09-1

See Master Response GEN-1 regarding appraisal-level cost estimates.

F-09-2

Reclamation has identified the In-Valley/Drainage-Impaired Land Retirement Alternative as the preferred alternative in Section 2.15 of the Final EIS. The selection of the In-Valley/Drainage-Impaired Land Retirement Alternative was based on the National Economic Development (NED) Analysis (see Appendix N) conclusion that it would provide the greatest net benefit to the economy. Costs for all alternatives were developed at an equivalent level of analysis (appraisal level; see Master Response GEN-1).

F-09-3

A Feasibility Study will be conducted after Reclamation identifies a preferred alternative. See Master Response GEN-1 in regard to the levels and sequence of project design.

F-09-4

As discussed in Master Response GEN-1, the Draft EIS was prepared at an appraisal level of design, and as such, the analysis for the Ocean Disposal Alternative is considered adequate for assessment of environmental effects. In response to questions from commenters, Section 9.2.8 of the Final EIS has been revised to include additional information on geologic effects of pipeline construction and potential mitigation measures, and Section 9 and Appendix H have been updated to include discussion of the San Simeon earthquake and its effects.

F-09-5, 6

See Master Response ALT-P3 for a discussion of the pipeline size and other users of the pipeline.

F-09-7

As discussed in Master Response GEN-1, the Draft EIS was prepared at an appraisal level of design, and as such, the analysis for the Ocean Disposal Alternative is considered adequate for assessment of environmental effects.

F-09-8

See Master Response ALT-P1 regarding the use of existing rights-of-way for the Ocean Disposal Alternative pipeline.

F-09-9

Tunnels lined with concrete hold up well when subjected to seismic loadings. Unlike aboveground structures that have inertia and resonant frequencies, tunnels move with the ground. Problems can occur if a tunnel passes through an active fault. In that case, an internal flexible pipe can be used inside the tunnel to prevent breaches.

F-09-10

Section 9 has been revised to include potential design features and mitigation measures to address fault displacement, landslides, and liquefaction along the Ocean Disposal Alternative route. If selected, the design of this alternative would emphasize preventing pipeline failure rather than merely responding to it. See Master Response GEO-3 for additional discussion of mitigation.

F-09-11

Section 9 has been revised to include potential design features and mitigation measures to address fault displacement, landslides, and liquefaction along the Ocean Disposal Alternative route. If selected, the design of this alternative would emphasize preventing pipeline failure rather than merely responding to it. See Master Response GEO-3 for additional discussion of mitigation.

F-09-12

The maximum flow rate of the pipeline would be 29.1 cfs.

The exact sizes and locations of pumping plants were not determined as part of the appraisal level of design used for the Draft EIS (see Master Response GEN-1). In addition, the locations of the pumping plants would probably change if the Ocean Disposal Alternative advances to the feasibility level of assessment. Most of the pumping plants would be underground, but they would have aboveground structures. The plants would need power lines.

The right-of-way for the pipeline would probably be 75 feet wide during construction and 30 feet wide for ownership and maintenance. See Master Response ALT-P1 regarding multiple uses of the rights-of-way.

F-09-13

As described in Master Response GEN-1, the Draft EIS was prepared at an appraisal level of design, which does not typically include site visits or collection of new data. However, project designers did visit the earlier pipeline routes, allowing them to see the slopes and the general lay of the land. If the Ocean Disposal Alternative were advanced for further consideration, the pipeline alignment would be analyzed in depth and appropriate geotechnical data would be collected.

F-09-14

The In-Valley Alternatives would use RO treatment to recover 50 percent of drainage from reuse facilities. This recovered water would be available for agricultural reuse.

F-09-15

See Master Responses SW-4, SW-5, and SW-13 for detailed discussion of effluent diffusion, far-field effects, and water quality impacts under the Ocean Disposal Alternative.

F-09-16

The comment is noted. More extensive runoff controls are required for in-valley farmers than for coastal farmers. The proposed project would collect subsurface drainage rather than surface runoff. As discussed in Section 2, extensive source controls are required.

F-09-17

See Master Responses GEN-3 and SW-15 for discussion of the potential for pipeline ruptures and leak detection and monitoring, respectively.

F-09-18

See Master Response SW-13 for a discussion of the constituents expected to be present in drainwater discharged under the Ocean Disposal Alternative.

F-09-19

The cost of energy used to convey water for the Ocean Disposal Alternative is included in the Annual Project Expenditures shown in Table 17-5. Reclamation consulted with appropriate Federal agencies to develop the alternatives and the EIS.