CRWQCB-CRBR Exhibit No. 1
IID/SDCWA Petition

CRWQCB-CRBR Exhibit No. 1: Written Testimony by Phil Gruenberg, Executive Officer, California Regional Water Quality Control Board, CRBR

S5-77

Although I am not opposed to the transfer of water from Imperial Irrigation District, and recognize the need for the transfer to accommodate California's obligation to not exceed usage of Colorado River water in excess of 4.4 m af/y, I want to present some concerns relevant to the transfer.

The primary concern regards the Salton Sea. The Salton Sea is California's largest inland body of water and supports many beneficial uses including water contact and non-contact recreation, warm freshwater habitat, wildlife habitat, and threatened/endangered species. The Sea has become a critical component of the Pacific Flyway as historic wetlands have diminished. Over 400 species of birds are known to visit or reside at the Salton Sea National Wildlife Refuge. Additionally the Sea is considered California's most prolific fishery. The fishery supports multitudes of fish-eating birds plus a sport fishery. Future protection of these beneficial uses is dependent upon the Sea receiving adequate replenishment of freshwater and upon implementation of a project to stabilize the Sea's increasing salinity.

The Salton Sea is located in a closed basin, so due to evaporation, salts are concentrated. Since the 60's the salt buildup has been recognized and several studies have identified projects which if implemented could stabilize salinity. Due to the priority and cost (all viable projects are estimated at over $100 M, and many much more) there has been no action to address Salton Sea restoration until fairly recently.

On November 12, 1998, HR 3267, The Sonny Bono Memorial Salton Sea Reclamation Act became law. The law directs the Secretary of the Interior to undertake a project to restore the Salton Sea that shall 1) reduce and stabilize the overall salinity of the Salton Sea; 2) stabilize the surface

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Response to Comment S5-77

The series of observations made in the comment capture conditions that now exist in the Imperial Valley and discuss how these conditions would be altered by implementation of the Proposed Project. We refer the commenter to the Master Responses on *Hydrology-Selenium Mitigation* and *Biology-Approach to Salton Sea Habitat Conservation Strategy* in Section 3 of this Final EIR/EIS, which address concerns regarding Project impacts on selenium concentrations and on Salton Sea levels. More broadly, we are not persuaded that generating transferable water through "marginal cropland retirement" as advanced in this comment is a solution that would be more beneficial to the public interest than the Proposed Project.

In addition, please refer to the detailed responses from the Regional Water Quality Control Board (Comments S5-1 through S5-76).

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elevation of the Salton Sea; 3) reclaim, in the long term, healthy fish and wildlife resources and their habitats; 4) enhance the potential for recreational uses and economic development of the Salton Sea; 5) ensure the continued use of the Salton Sea as a reservoir for irrigation drainage. Thus the passage of this Act breathed new life into the likelihood of a Salton Sea restoration, and must be taken into account during any decision making process pertinent to the Sea.

A secondary concern regards potential degradation to the water quality of the drainageways within the Imperial Irrigation District that empty into the Salton Sea. These drainageways are almost 1500 miles of channels designated as supporting the following beneficial uses in the Regional Board's Water Quality Control Plan: freshwater replenishment; limited recreational use; warm water habitat; wildlife habitat; and threatened/endangered species habitat in some instances. These waterways and beneficial uses are primarily sustained by drainage from irrigated cropland in Imperial Valley. This Regional Board has long recognized this drainage flow as serving an important beneficial use as freshwater replenishment for natural or artificial maintenance of surface water quantity or quality. Attached for the record are staff memoranda (CRWQCB-CRBR Exhibit Nos. 2 to 4) for details on some water quality and other regulatory impacts.

Transfer of water out of Imperial Irrigation District can have a wide array of negative water quality impacts depending on how the transfer of water is accomplished. Most significantly, if it is implemented by reducing or eliminating surface runoff or tailwater off the cropland, selenium concentrations in the drains will rise. Selenium concentrations up to 300 ug/l have been detected in subsurface tile drainage feeding these drains. The selenium largely originates from drainage in Colorado, and magnifies in tile lines due to evaporation during cropland irrigation. Tailwater is thus presently diluting the selenium to more acceptable levels. However wildlife biologists have projected that increases in present selenium concentrations could have disastrous consequences in the drains and Salton Sea. CRWQCB-CRBR Exhibit No. 3 details some potential impacts.

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Thus in summary, if water conservation in Imperial Valley is pursued through a combination of either tailwater return systems, canal lining in Imperial Valley, or operational spill reduction the most significant impacts would be twofold:

- A reduction in freshwater replenishment to the Salton Sea making a restoration project more costly, and at some point unreasonable.

- An increase in selenium concentrations in Imperial Valley drainageways.

As an alternative, if the water transfer was accomplished by marginal cropland retirement, the above two impacts would be eliminated or at least reduced, with the following results:

- Selenium discharge off non-irrigated cropland would cease.

- The Sea would lose only 1/3 as much freshwater since the 2/3 used consumptively by the irrigated cropland would be transferred instead of applied to the marginal ground that is retired.

In conclusion, my point is not that a transfer should not proceed, but that the means of freeing up the water for transfer will have a tremendous bearing on the fate of the Salton Sea and its tributaries. These results need to be fully recognized and considered carefully before selecting a course of action. The fate of the Salton Sea is at a crossroads, and a decision is needed soon to provide appropriate direction on a wide array of interconnected water issues. Leadership is desperately needed to untangle the present complicated situation. Unfortunately it is unlikely that the final results are going to provide a win win outcome.

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Response to Comment S5-78

This comment expresses a series of water quality related concerns regarding the Draft EIR/EIS. We believe that the revised HCP addresses some of the concerns raised by this commenter. With respect to specific points raised in this comment, the Master Response on *Hydrology-Selenium Mitigation* (in Section 3 in this Final EIR/EIS) provides background on the selenium concentration numbers used in the Draft EIR/EIS and discusses the results of a selenium balance conducted by the RWQCB staff to which the commenter refers. The Selenium Mitigation Master Response also discusses why selenium mitigation measures described in this comment were determined to be technically infeasible for implementation in the context of the Proposed Project.

In addition, please refer to the detailed responses from the Regional Water Quality Control Board (Comments S5-1 through S5-76).

California Regional Water Quality Control Board
Colorado River Basin Region

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CRWQCB-CRBR EXHIBIT No. 2

TO: Phil Gruenberg, Executive Officer

FROM: Jose L Angel, P.E.
Watershed Protection Division Chief

SIGNATURE: 

DATE: March 22, 2002

SUBJECT: REGULATORY CONCERNS REGARDING PROPOSED IID/SDCWA WATER TRANSFER

S5-78

I am concerned that the proposed IID transfer of conserved water and resultant conservation measures as currently envisioned in the document entitled Imperial Irrigation District Water Conservation and Transfer Project, Draft Habitat Conservation Plan, Draft Environmental Impact Report /Environmental Impact Statement; January 2002 (hereafter referred to as "draft EIS/EIR") would trigger the creation or in itself create conditions that run counter to existing State and Federal laws, regulations, and policies; and against the State's Strategic Plan. Specifically, and as discussed in detail in the following paragraphs, I am concerned that the conditions would (1) exacerbate violations of the selenium water quality objective (WQO) that the State's Water Quality Control Plan for the Colorado River Basin prescribes for the surface waters in Imperial County and the Sea, and the WQO that the State's Policy for implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California prescribes for inland surface waters; (2) potentially violate State Board Resolution No. 68-16 (a.k.a. the "Antidegradation Policy"); (3) make compliance difficult with the Total Maximum Daily Load requirements contained in the Federal Water Pollution Control Act (a.k.a. the Clean Water Act; U.S.C. 1251 et seq.); and (4) explicitly run against the State's Strategic Goal No. 2, as it applies to our Region. Although largely based on the documentation and analyses presented in the draft EIS/EIR, the purpose of this memorandum is not to provide you with detailed comments on the draft EIS/EIR[1]. Its purpose is to bring to your attention relevant and significant regulatory matters that should be factored in during the upcoming State Board hearings on the transfer. CRWQCB-CRBR Exhibit Nos. 3 and 4 (attached) support this memorandum.

Discussion

The State Board's and USEPA's approved Clean Water Act Section 303(d) List for the Colorado River Region identifies the Salton Sea as water quality limited, in part, because selenium concentrations violate the 5 ppb WQO contained in the Basin Plan (CRWQCB-CRBR 1993). The List also identifies the Alamo River and Imperial Valley drains as impaired by selenium among other pollutants. The impacts of selenium on aquatic ecosystems are well documented. CRWQCB-CRBR Exhibit No. 3 details the impacts. Division staff prepared the Exhibit based on a review of published literature on the matter. Pertinent literature references are identified in the exhibit too. Suffice to say that selenium is a significant water quality issue because even at relatively low concentrations (< 3 ppb) it is toxic to biological resources. For example, adverse impacts to birds and pupfish include failure of eggs to hatch and possible compromise of bird immunity systems (Lucas et al.1999). Other well-documented impacts include bird eggshell thinning and embryo abnormalities (Bennett 1998).

[1] As you know, we are also preparing and transmitting to IID and USBR detailed comments on their draft EIS-EIR.

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The draft EIS/EIR acknowledges that the transfer as envisioned will likely cause selenium concentrations to increase from current levels and cause significant selenium impacts on the drains and rivers. That is to say, it characterizes the selenium impacts as significant for the purposes of CEQA. However, it concludes that the transfer as proposed would not likely have significant selenium impacts on the Salton Sea itself. Further, it concludes that the significant impacts in the aforementioned Salton Sea tributaries are "unavoidable" and "unmitigatable" (see Table ES-1 of draft EIS/EIR). I cannot subscribe to those conclusions. Here is why.

Regarding the projected selenium concentrations in the aforementioned waters, we estimate that the increases in selenium concentrations in the drains and in the Alamo and New River would be significantly greater than the increases projected by the draft EIS/EIR as a result of the proposed transfer. CRWQCB-CRBR Exhibit 4, prepared by Division staff under my supervision, contains our estimates and assumptions used for the estimates. Specifically, the draft EIS/EIR projects that selenium in the Alamo River outlet to Sea would be about 7.8 ppb, and that there would be no significant impact for the New River delta with the Sea. For one thing, the historic selenium data included in the draft EIS/EIR show that selenium concentration in the water column in New River outlet area is already about 7 ppb (see Table 3.1 of draft EIS/EIR), which in itself contradicts the conclusion. This notwithstanding, we estimate that selenium in the rivers' delta areas with the Sea could be as high as about 10 ppb for the Alamo River delta and as high as 7 ppb for the New River delta. Also, research conducted by USGS (Setmire et al. 1993) shows that tilewater averages about 25 ppb in selenium. As one cuts down the tailwater that currently dilutes the selenium concentrations found in tilewater, selenium concentrations in the drains could also increase significantly. In fact, the same USGS study documented that there are drains whose tilewater already has selenium concentrations of up to 300 ppb. Considering that there are over 1200 miles of open drains in Imperial County, whose beneficial uses include REC I, REC II, and WARM, the consequences of having over 1200 miles of selenium-laden drains could be of catastrophic proportions. The Region's Basin Plan selenium WQO for those waters is 5 ppb, which is the same level as the selenium objective contained in the State's Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. The difference between our calculations and the EIS/EIR's notwithstanding, both the EIS/EIR's and our projections show that the transfer as proposed would cause further water quality degradation, which fails to comply with the WQO. Based on this, we therefore believe the transfer as proposed would exacerbate current selenium impairments in the rivers and drains, which would further violate the Basin Plan WQO and violate Resolution No. 68-16;

Regarding the impacts on the Sea, the draft EIS/EIR conclusion seemingly runs counter to logic based on the acknowledged impacts on the tributaries and the preceding analysis. Perhaps more importantly, it also lacks supporting documentation for the purposes of CEQA—a fact implicitly acknowledged by the draft EIS/EIR (see p. 3.1-99 of the draft EIS/EIR). While the selenium concentrations in the Sea water column are in the order of 1-2 ppb, which suggest that selenium is precipitating and/or being volatilized, it is nevertheless impairing the Sea's beneficial uses as shown by over 15 years of fish tissue data collected through the State's Toxic Substances Monitoring(TSM) Program. That data are available online at the State Board's web site and are incorporated herein by reference. Again, the Sea is already on the Section 303(d) List because of the significantly elevated selenium concentrations in fish tissue as demonstrated by the TSM data. In fact, an advisory for consumption of fish from the Sea has been in effect since the early 90s because of the threat to public health posed by the selenium concentrations in fish tissue. That is to say, current selenium levels already impair the REC I and WARM habitat beneficial uses established for the Sea in the Basin Plan—a fact acknowledged by the Regional Board, the State Board, and USEPA through the Section

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303(d) List[2]. Another significant concern here is that uses being further impaired are defined as "Exiting Uses" pursuant to provisions contained in Title 40 of the Code of Federal Regulations (40 CFR Part 131.3(e)). Unless a more stringent use is established in lieu of the designated use, Title 40 CFR prohibits the removal of a use (i.e., cannot redesignate a use defined in the Basin Plan) if the use is an Existing Use or the use will be attained by the implementation of technology based effluent limits for point sources of pollution and implementation of BMPs to control nonpoint sources of pollution (40 CFR, Part 131.10(d)). After the implementation of limits and controls, if an Existing Use cannot be attained, a Use Attainability Analysis is required prior to modification of the use (40 CFR, Part 131.10(j)).

One has to also question the foundation of the conclusions that selenium impacts are "unavoidable" and "unmitigatable." Those statements implicitly summarily dismiss the requirements of the Section 303(d) of the Clean Water Act, which dictate implementation of BMPs to address the existing selenium impacts. Through the TMDL process we have learned that there are BMPs available to mitigate the selenium impacts that irrigated agriculture causes on surface waters. BMPs are actually being implemented in California's Central Valley and Colorado's Gunnison River Basin to address similar impacts.

Stakeholders in the Central Valley are using an algal-bacterial process to reduce selenium in surface waters in the Panoche Water District near Los Banos. Preliminary results from that project suggest that selenium reductions could be as much as 70% (Stuart 2001). Also, in the Broadview Water District near Firebaugh in the Central Valley, stakeholders are using wetland management to address selenium impairments in that area. Data from that project suggest that reductions could be as much as 90% (Agrarian Research and Management Company, Ltd. 2001). In Imperial County itself the Citizens Congressional Task Force on the New River is also implementing wetland pilot projects to address overall surface water pollution. Preliminary data from the Task Force show selenium reductions in the order of 20-50%. In Colorado, the Uncompahgre Water Users Association has been working to address the selenium impairments that 12,000 acres of irrigated farmland within the Gunnison River Basin are causing on the Upper Colorado River Basin. Specifically, the Association has established a target selenium reduction of about 6,200 lbs/year for the Uncompahgre River, which is also 303(d) listed, based on recent research conducted by the USGS. The research demonstrated that the simple lining of water laterals in the Montuose Arroyo, located in the Uncompahgre River Basin, minimizes leaching of selenium, which in turn reduces the selenium loading on the Uncompahgre River, a tributary to the Colorado River, by as much as 28% (USGS 2001). The point here is that there are BMPs available to mitigate selenium impacts. Also, consideration of farmland fallowing must be given more consideration than it has been given thus far, as it would have less selenium impacts than the proposed methods of water conservation, which relay heavily on tailwater recovery systems.

Another concern is that draft EIS/EIR proposes the creation of 5,000 acres of fishponds to mitigate certain environmental impacts. There are those who would argue that based on the Law of the River, Colorado River water cannot be used for environmental mitigation within the context of the proposed transfer. If it is not going to be fresh Colorado River water, the alternative must likely be agricultural runoff, which would be laden with selenium, which would, based on the preceding

[2] Based on the State Board decision on the TOSCO case (State Board Order WQ 2001-06, one may argue that the fact that the surface waters are 303(d) listed does not imply in itself a lack of assimilative capacity. I believe that that argument, however, is inappropriate in this case because the TSM Program data for the Sea consistently show elevated selenium concentrations and because even the draft EIS EIR projects violations of the WQO throughout the drains and at least one of the rivers.

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discussions, may also pose a hazard to the biological resources and aquatic ecosystem created by, sustained by, or using the ponds.

Conclusions and Recommendations

I believe the significance of the aforementioned concerns cannot be overlooked from a regulatory perspective. Whether the transfer can proceed or not in light of these concerns is not the point here. The purpose of raising the concerns is to alert you and the State Board of issues that must be addressed during the transfer proceedings. The transfer as proposed conflicts with our Basin Plan, the Clean Water Act Section 303(d) requirements, State Board Resolution No. 68-16, the Strategic Plan. Therefore, we respectfully suggest you bring them to the attention of the State Board during its upcoming hearings on the proposed transfer. In the meantime, and at the staff level, we are sending separate and detailed comments to the IID and United State Bureau of Reclamation addressing other significant concerns regarding their draft EIS/EIR.

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Attachments: CRWQCB-CRBR Exhibit No. 3
CRWQCB-CRBR Exhibit No. 4

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CRWQCB-CRBR EXHIBIT No. 3

TO: Jose L. Angel, Division Chief
Watershed Protection Division

FROM: Maria De La Paz Carpio-Obeso, PhD
Environmental Scientist

SIGNATURE:

DATE: March 22, 2002

SUBJECT: REVIEW OF LITERATURE REGARDING SELENIUM IMPACTS ON BIOLOGICAL RESOURCES

S5-79

At your request, I conducted a review of literature addressing selenium impacts on biological resources. This memorandum provides you with my review findings.

Findings

Selenium (Se) is widely distributed in the environment and essential in trace concentrations for human, animals, and possibly plants. The range in concentrations between "required" and "toxic" is very narrow (Jacobs, 1989). Processes that control Se distribution are intimately linked to its speciation: selenate (Se^{+6}); selenite (Se^{+4}); elemental selenium (Se^{0}), and selenide (Se^{-2}). The concentration, speciation, and association of Se are dependent on the pH, redox condition, solubility of Se minerals, Se ability, and biological interactions. Selenium can occur in all oxidation states in aquatic environments, with specific physical and biological properties determining the relative abundances of the various species. The mechanisms by which Se accumulates in plants and animals, its metabolic pathways, and its modes of action are not well known. However, Se was identified as the major pollutant in Kesterson Reservoir that caused teratogenic impacts to waterfowl due to its bioconcentration, bioaccumulation, and biomagnification in the aquatic food chain.

Bioaccumulation and Effects on Wildlife

In aquatic systems, Se commonly bioconcentrates in plant and animal life. Selenium levels in plankton typically exceed Se concentrations in water 500 to 2,000 times. Selenium levels in benthic invertebrates exceed Se concentrations in water 800 to 2,000 times, and in fish they exceed selenium concentrations in water 1,000 to 35,000 times, depending on the species and tissue sampled. Selenium concentrations in sediments typically range from 200 to 400 times concentrations in water.

The biomagnification of selenium progressively increases with successive trophic levels (Lemly, 1989). One significant effect of Se toxicity that occurs in all levels of the food chain, is a decrease in the ability to reproduce.

Algae

Selenium toxicity in algae is usually determined by measuring alteration in cell division rates. The concentration of Se in algae ranges from 0.01 to 5 ppm depending on the variety. Blue algae

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This comment is background information on the impacts of selenium on biological resources and requires no response.

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bioconcentrates 5-50 ppm Se as selenate or selenite, and is more tolerant than green algae which bioconcentrates 0.01-0.5 ppm Se as selenate (Knight, 1987, 1988). Inorganic Se is toxic to algae, more as selenite than selenate. The no-effect concentrations of Se for algae range from 0.01 to 10 ppm as selenate, and are species dependent.

Knight 1989, compared the bioavailability of selenite, selenate and selenomethionine in common freshwater algae. The Se species that accumulate in algae at the highest concentration is selenomethionine, followed by selenite and then selenate. Selenomethionine decreased algal growth at 0.1 ppm, and halted growth at 0.3 ppm. Selenite and selenate significantly decreased growth at 3 ppm, and halted growth at 5 ppm (UC Salinity Task Force, 1992).

Knight and Kiffney 1990, studied the comparative bioaccumulation of selenite, selenate and seleno l-methionine in the cyanobacterium anabaena flosaquae. They found selenite more toxic than selenate, and selenomethionine more toxic than inorganic species.

Invertebrates

Invertebrates are important components of the aquatic food chain that produce energy assimilated by primary producers. They also provide a source of food for higher tropic levels. Similar to algae, invertebrates biomagnify Se, and transfer Se to secondary consumers.

Daphnia exposed to 200 to 800 ppb Se showed decreased growth rates, and longer times for first reproduction. Decreased feeding rates among filter feeders were observed by Knight, 1988. Maier et al., 1993 evaluated the acute toxicity of inorganic and organic forms of Selenium using selenate, selenite, seleno-dl-methionine and seleno-dl-cystine. The results indicate selenate and seleno-dl-custine are equally toxic to Daphnia; selenite is highly toxic, and seleno-dl-methionine is the most toxic.

Maier et al., 1993 also evaluated the effects to Daphnia at various sulfate concentrations under the same toxicological conditions. Sulfate concentrations of 10.2 to 162.7 mg/L decreased Daphnia mortality associated with selenate. The mortality caused by selenite increased from 10.2 to 81.5 mg/L sulfate, and decreased at levels greater than 81.5 mg/L. Sulfate concentrations did not affect seleno-dl-methionine Daphnia toxicity (Maier, 1993).

Fish

The effects of Se in fish are dependent on the species. Typically, excess exposure to Se causes decreased growth, edema, and abnormal development of various tissues such as bone, liver, kidneys, and ovaries. High Se levels decrease blood iron concentrations and red cell volumes. Lesions formed from Se exposure are not reversible (Lemly, 1989). The threshold concentration that triggers symptoms of Se toxicity in warm water fishes is 12 µg/g (Saiki, 1992).

Birds

The adverse effects of Se exposure on waterfowl is widely publicized given that abnormalities in bird embryos are multiple and readily apparent. These deformities were fatal for the birds inhabiting the Kesterson Reservoir (Ohlendorf, 1990).