Based on my analysis, it appears there will not be sufficient waste material to backfill the over-excavated pits and attain the final grades as presented in the Reclamation Plan. The source and volume of backfill material required to achieve final project grades is not addressed in the DEIR; I would assume this material would need to be imported from an off-site source or the project plans and description needs to be modified. In either case, the impacts to the environment associated with fill import and/or revised project description to the environment have not been evaluated in the DEIR.

5. Potential Impacts to Existing Riparian Habitat

Under existing conditions, the Sweetwater River low-flow channel feeds into a low-lying area that currently supports dense riparian habitat (Figure 8). This habitat exists and is supported by the water deliveries carried by the low flow channel. The proposed project final grading plan indicates the land surface would be lowered to the north and northeast of the area of dense riparian habitat, creating a lower floodplain surface of comparable elevation to the upstream end of the riparian habitat area and low flow channel. Grading will retain an earthen berm bordering the north side of the existing riparian habitat. However, the proposed floodplain and low flow channel grades upstream of the berm are very similar and would allow annual flood waters and possibly flow in the low-flow channel itself to be redirected into the created floodplain north of the earthen berm.

The removal of the high ground on the north side of the low-flow channel and creation of a wider equal elevation floodplain upstream of the entrance to the riparian habitat has potential impacts to the riparian habitat area. One impact is the redirection of high flows into the floodplain north of the berm, which otherwise would have fed into the existing riparian habitat area. Another impact is the ability for the existing low flow channel to migrate into and establish a new alignment through the floodplain north of the berm. By creating an equal elevation floodplain on both sides of the low-flow channel east of the earthen berm, the low-flow channel would be free to migrate north of the earthen berm under natural geomorphic processes (Figure 8). If this occurs, all the water deliveries conveyed by the low-flow channel would no long feed into the existing riparian habitat area, with potential adverse consequences on this habitat. Therefore, it is my opinion that the DEIR has not sufficiently analyzed potential adverse impacts and mitigations for this existing riparian habitat area.

6. No Analysis on Impacts of Aggregate Wash Fines Reuse

As part of Project operations, a large volume of wash fines (byproduct of aggregate processing/washing) will be generated from the processing plant. What percentage of the waste material constitutes wash fines is not presented in the DEIR. Regardless, I'm left to assume that wash fines would then be spread onsite and incorporated into the surface as part of site backfill and final grading.

The DEIR does not evaluate the potential impacts associated with the placement of wash fines within the project area. Placing the wash fines in a concentrated manner will create a fine-grained soil veneer promoting poorly drained conditions. The resulting fine-grained soil will have a lower permeability and lower rate of infiltration relative to existing conditions. If enough clay material is contained in the fines, it may create an impermeable barrier promoting ponding that is perched above the underlying water table. This will further reduce infiltration and groundwater recharge and may also lead to increased

water loss by evaporation. Areas that experience groundwater ponding also allow for the settling and accumulation of additional clays with each storm event – further reducing infiltration rates.

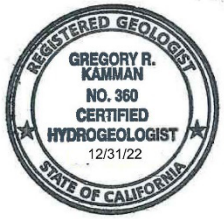
The concentration of wash fines in the surface soil also poses impacts to water quality. This practice may increase source and concentration of total dissolved solids (TDS) and naturally occurring metals. The watershed risks increased exposure to undesirable constituents contained in the fines via the following pathways: a) floodwaters that bypass the project; b) ponds, wetlands, channel habitats that become established on fines within project boundary; and c) migration of water through the fines into underlying groundwater. These pathways pose a direct risk to drinking water quality of receiving water bodies including both the Sweetwater Reservoir (located 2.8 miles downstream of the project site) and underlying groundwater aquifer that supplies residential wells surrounding the site. These potential impacts are not addressed in the DEIR.

The effects of prolonged ponding in pits lined with wash fines pose additional potential impacts to on- and off-site water quality. The wash fines will concentrate metals and other toxins that can bio-magnify in aquatic food webs. Prolonged ponding can promote algal blooms and eutrophication that cause dissolved oxygen crashes (EHC, 2016[1]). Anaerobic conditions and other biogeochemical processes that develop in the ponds can promote methylation of mercury, which could then migrate into the underlying aquifer (Ibid). All these impacts are common consequences associated with long-term ponding in alluvial quarry pits. Again, none of these potential adverse impacts have been addressed in the DEIR.

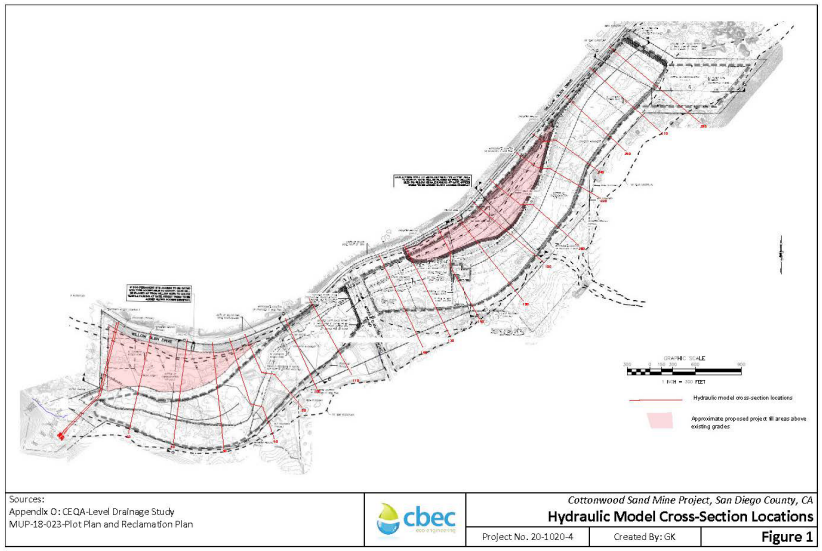
Please feel free to contact me with any questions regarding the material and conclusions contained in this letter.

Sincerely,

Greg Kamman, PG, CHG
Senior Ecohydrologist



[1] [EHC] Endangered Habitats Conservancy, 2016, Hanson Russian River Ponds Floodplain Restoration: Feasibility Study and Conceptual Design. San Diego, CA.



Sources:
Appendix O: CEQA-Level Drainage Study
MUP-18-023-Plot Plan and Reclamation Plan

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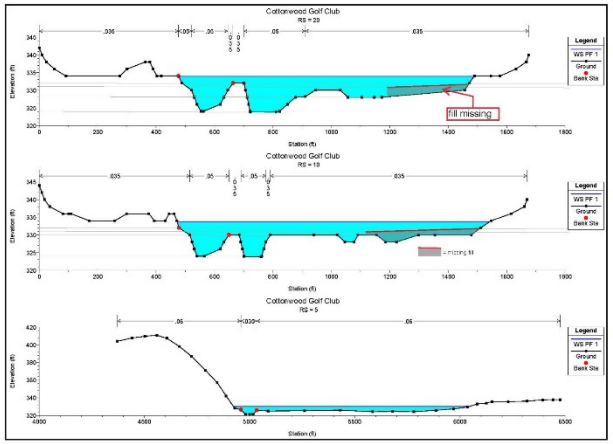
Cottonwood Sand Mine Project, San Diego County, CA

Hydraulic Model Cross-Section Locations

Project No. 20-1020-4 | Created By: GK | **Figure 1**



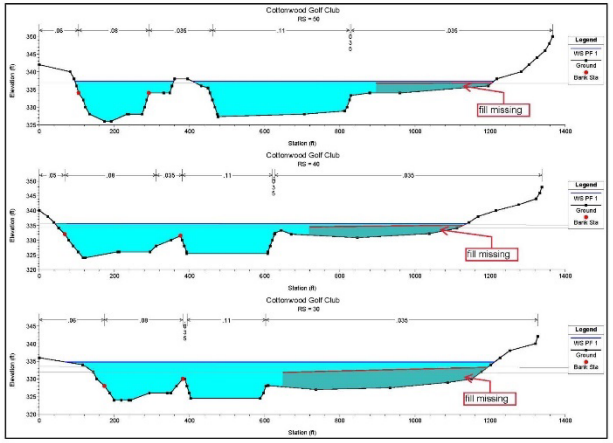
Sources:
Appendix O: CEQA-Level Drainage Study
MUP-18-023-Plot Plan and Reclamation Plan

cbec

Cottonwood Sand Mine Project, San Diego County, CA

Hydraulic Model Cross-Section Phase 4 Profiles

Project No. 20-1020-4 | Created By: GK | **Figure 2a**

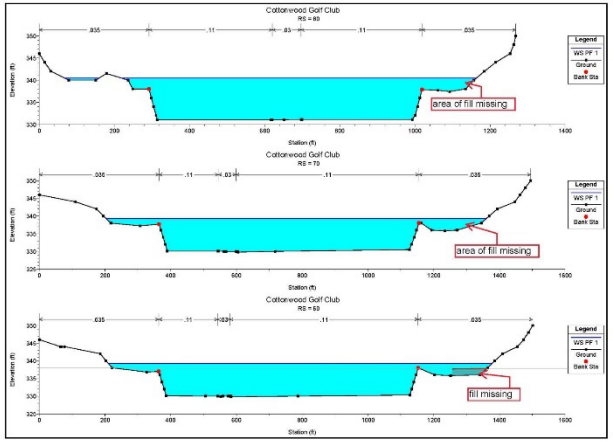


Sources:
Appendix O: CEQA-Level Drainage Study
MUP-18-023-Plot Plan and Reclamation Plan

Cottonwood Sand Mine Project, San Diego County, CA

Hydraulic Model Cross-Section Phase 4 Profiles

Project No. 20-1020-4 | Created By: GK | **Figure 2b**



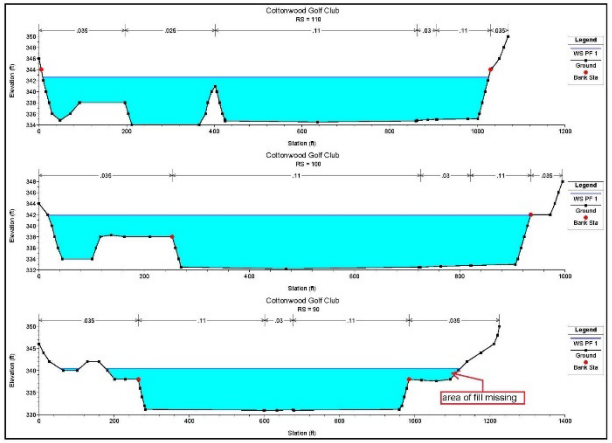
Sources:
Appendix O: CEQA-Level Drainage Study
MUP-18-023-Plot Plan and Reclamation Plan

cbec

Cottonwood Sand Mine Project, San Diego County, CA

Hydraulic Model Cross-Section Phase 4 Profiles

Project No. 20-1020-4 | Created By: GK | **Figure 2c**



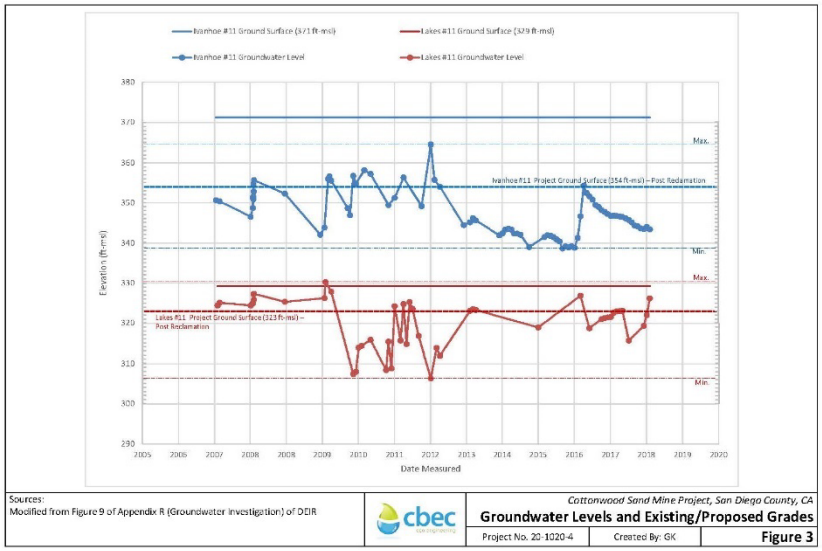
Sources:
Appendix O: CEQA-Level Drainage Study
MUP-18-023-Plot Plan and Reclamation Plan

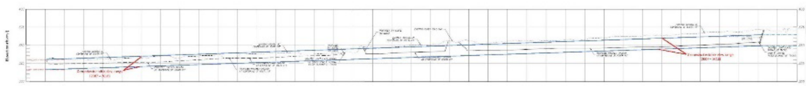
cbec

Cottonwood Sand Mine Project, San Diego County, CA

Hydraulic Model Cross-Section Phase 4 Profiles

Project No. 20-1020-4	Created By: GK	**Figure 2d**


Ivanhoe #11 Ground Surface (371 ft-msl)
Lakes #11 Ground Surface (329 ft-msl)
Ivanhoe #11 Groundwater Level
Lakes #11 Groundwater Level
Max.
Ivanhoe #11 Project Ground Surface (354 ft-msl) – Post Reclamation
Min.
Max.
Lakes #11 Project Ground Surface (323 ft-msl) – Post Reclamation
Min.
Elevation (ft-msl)
Date Measured
Sources:
Modified from Figure 9 of Appendix R (Groundwater Investigation) of DEIR
cbec
Cottonwood Sand Mine Project, San Diego County, CA
Groundwater Levels and Existing/Proposed Grades
Project No. 20-1020-4
Created By: GK
Figure 3



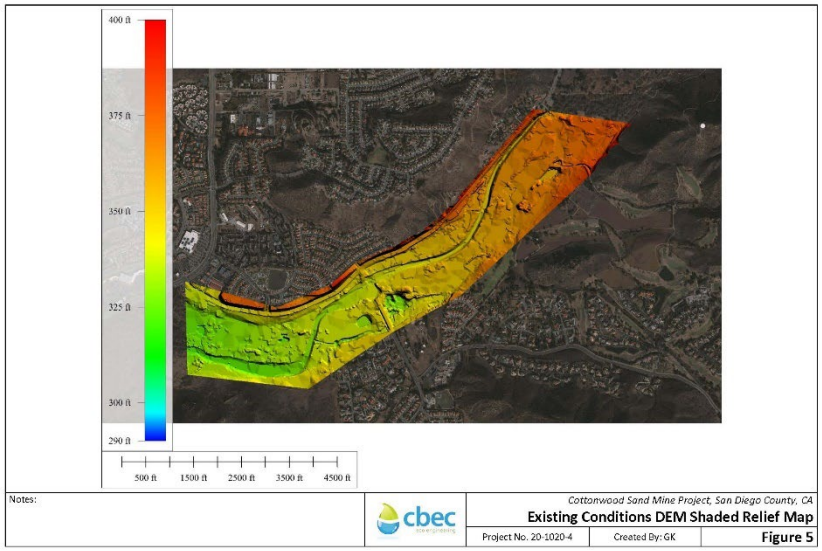
Sources:
Longitudinal profile from MUP-18-023-Plot Plan and Reclamation Plan

Cottonwood Sand Mine Project, San Diego County, CA

Groundwater Levels and Existing/Proposed Grades

Project No. 20-1030-4 | Created By: SK | **Figure 4**

E:\000 cbec\cbec Projects\20-1030-4_SMW_Cottonwood-Sand-Mine-CEQA\Reporting\Figures\Fig-4_Season GW Table profile.docx
2/25/2022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Notes:
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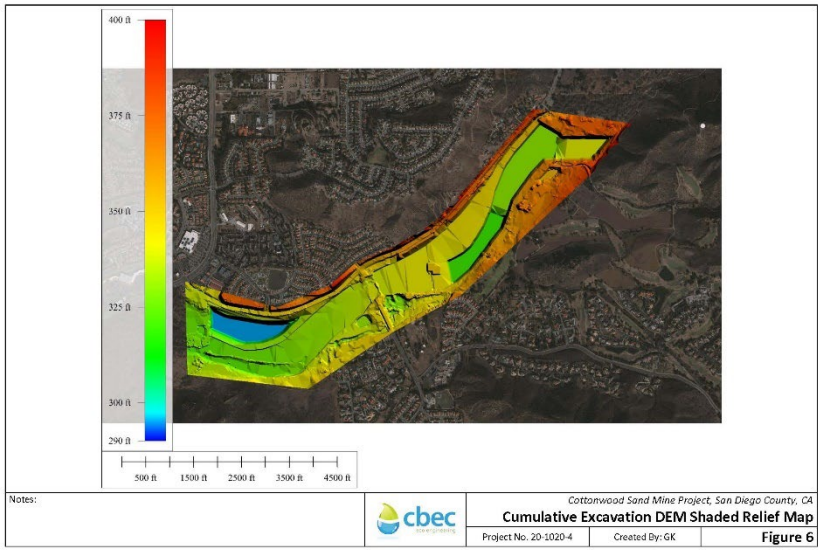
Cottonwood Sand Mine Project, San Diego County, CA
Existing Conditions DEM Shaded Relief Map
Project No. 20-1020-4
Created By: GK
Figure 5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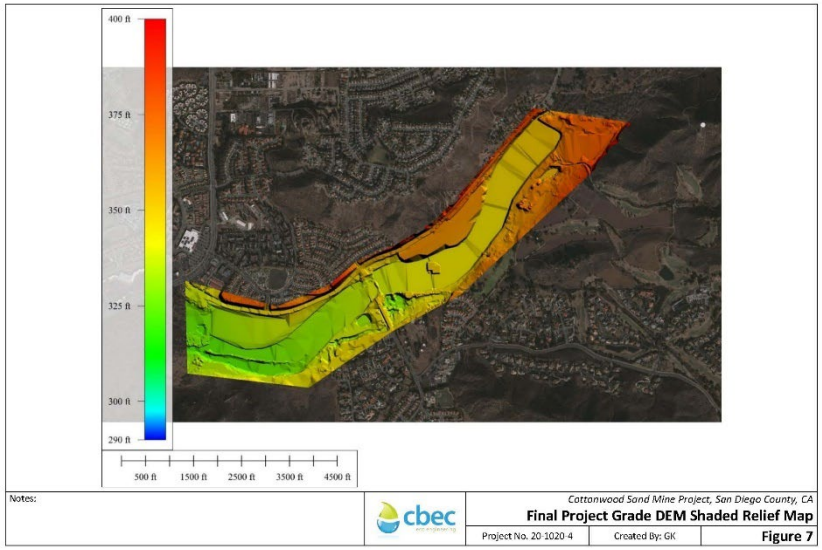
Notes:
cbec
Cottonwood Sand Mine Project, San Diego County, CA
Cumulative Excavation DEM Shaded Relief Map
Project No. 20-1020-4
Created By: GK
Figure 6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Notes:
cbec
Cottonwood Sand Mine Project, San Diego County, CA
Final Project Grade DEM Shaded Relief Map
Project No. 20-1020-4
Created By: GK
Figure 7

Notes:
Final Grade DEM at west end of Project area.

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Cottonwood Sand Mine Project, San Diego County, CA

Potential Impacts on Existing Riparian Habitat Area

Project No. 20-1020-4 | Created By: GK | **Figure 8**

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Greg Kamman, PG, CHG
Senior Ecohydrologist

Education

MS, 1989, Geology, Sedimentology and Hydrogeology, Miami University, Oxford, OH

BA, 1985, Geology, Miami University, Oxford, OH

Professional Registration

1993, Professional Geologist, California, #5737

1995, Certified Hydrogeologist, California, #360

Professional Experience

cbec, inc., eco-engineering, West Sacramento, CA, Senior Ecohydrologist, 2020-present

Kamman Hydrology & Engineering, Inc., San Rafael, CA, Principal Hydrologist/Vice President, 1997-2020

Balance Hydrologics, Inc., Berkeley, CA , Sr. Hydrologist/ Vice President, 1994-1997

Geomatrix Consultants, Inc., San Francisco, CA, Project Geologist/Hydrogeologist, 1991-1994

Environ International Corporation, Princeton, NJ, Sr. Staff Geologist/Hydrogeologist, 1989-1991

Miami University, Oxford, OH, Field Camp Instructor and Research Assistant, 1986-1989

Greg Kamman is a professional geologist and certified hydrogeologist with over 30 years of technical and consulting experience in the fields of geology, hydrology, and hydrogeology. He specializes in directing and managing projects in the areas of surface and groundwater hydrology, stream and tidal wetland habitat restoration, water supply and water quality assessments, water resources management, and geomorphology. Mr. Kamman has worked extensively throughout California's coastal watersheds and estuaries, and on multiple projects in Oregon and Hawaii.

Mr. Kamman's experience and expertise includes evaluating surface and groundwater resources and their interaction, stream and wetland habitat restoration assessments and design, characterizing and modeling basin-scale hydrologic and geologic processes, assessing watershed hydraulic and geomorphic responses to land-use change , and designing and conducting field investigations characterizing surface and subsurface hydrologic and water quality conditions. Greg commonly works on projects that revolve around sensitive fishery, wetland, wildlife, and/or riparian habitat enhancement within urban and rural environments. Mr. Kamman performs many of these projects in response to local, state (CEQA) and federal statutes (NEPA, ESA), and other regulatory frameworks. Mr. Kamman frequently applies this knowledge to the review and expert testimony on state and federal water operation plan EIR/EIS reports, Groundwater Sustainability Plans, Habitat Conservation Plans, and biological assessments.

Mr. Kamman is accustomed to working multi-objective projects as part of an interdisciplinary team including biologists, engineers, planners, architects, lawyers, and resource and regulatory agency staff. Mr. Kamman is a prime or contributing author to over 360 technical publications and reports in the discipline of hydrology, the majority pertaining to the protection and enhancement of aquatic resources. Mr. Kamman has taught the following courses: stream restoration through U.C. Berkeley Extension (2001-2008); wetland hydrology through San Francisco State University's Romberg Tiburon Center (2007 and 2012-2014); and presented webinars (2020) to California Water Boards staff on hydrologic and hydraulic modeling. He has devoted his career to the protection, enhancement and sustainable management of water resources and associated ecosystems.

SELECTED EXPERIENCE

Floodplain Management Projects

Flood Reduction, Mitigation Planning, and Design on Yreka Creek, Siskiyou County, CA
City of Yreka as subcontractor to WRA, Inc., 2008-2010

Mr. Kamman completed a series of field and hydraulic model investigations for restoration planning and design along Yreka Creek to reduce flood hazards and potential damage to the City's water treatment plant and disposal field infrastructure. This work also addresses and satisfies dike repair mitigation conditions stipulated by state resource agencies. While achieving these goals, Mr. Kamman tailored analyses and study objectives to assist the City in: enhancing the ecological floodplain restoration along Yreka Creek; providing opportunities for expanded public access and trail planning consistent with the goals of the Yreka Creek Greenway Project; and improving the water quality of Yreka Creek.

Key elements of this work included: review and synthesize existing information; identify and analyze the feasibility for three conceptual alternatives; and conceptual design and report preparation. Funding for implementation of restoration work over such a large area was a significant concern to the City. Therefore, designs identify and define phasing in a fashion that gives the City flexibility in implementation.

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West Creek Drainage Improvement Assessment, Marin County, CA
Marin County Flood Control, 2006-2008

Mr. Kamman prepared a study focused on characterizing existing flood conditions and developing and evaluating flood reduction measures along West Creek in Tiburon. The work was completed through the implementation of hydrologic and hydraulic feasibility and design assessments. The conceptual design and analysis of potential flood reduction strategies (alternatives) was completed through the development of a HEC-RAS hydraulic model that simulates historic, existing and proposed project flood conditions. It was intended that the conceptual design developed under this scope of work would be of sufficient detail and quality to initiate project permitting and the environmental compliance process and documentation. Opportunities for riparian corridor and aquatic habitat enhancement were also considered and integrated into the conceptual design. Mr. Kamman also developed and assessed six alternative flood hazard reduction measures. The hydraulic model results for each alternative were compared against baseline conditions in order to evaluate their ability to alleviate flood hazards.

Gallinas Creek Restoration Feasibility Assessment, Marin County, CA
San Francisco Bay Institute, 2003-2005

Mr. Kamman completed a feasibility assessment for restoration of Gallinas Creek in northern San Rafael. Restoration will require removal of a concrete trapezoidal flood control channel and replacement with an earthen channel and floodplain in a "green belt" type corridor. Work included the collection of field data and development of a HEC-RAS hydraulic model to evaluate and compare existing and proposed project conditions. Designs must continue to provide adequate flood protection to the surrounding community. The study also includes and evaluation of existing habitat values, potential habitat values, and restoration opportunities and constraints.

Hydrologic and Hydraulic Evaluation for Trinity County Bridge Replacement, Trinity County, CA
Trinity County Planning Department, 2002

Mr. Kamman completed technical peer review of peak flow estimates and hydraulic design parameters associated with the replacement of 4 bridges across the upper Trinity River in Trinity County, California. A primary study component was accurately predicting the magnitude and frequency of flood releases from Trinity Dam. Numerous flood frequency analytical approaches were evaluated and used throughout this study.

Restoration of Lower Redwood Creek Floodway and Estuary, Humboldt County, CA
California State Coastal Conservancy and Humboldt County DPW, 2002-2003

Mr. Kamman provided technical review for the development of a hydraulic model to evaluate river and estuary restoration alternatives along the lower portions of Redwood Creek between Orick (Highway 1) and the Pacific Ocean. This work was completed to evaluate the feasibility for creek/estuary restoration alternatives developed by the County, and effects on flood hazards along this flood-prone reach.

In order to better address and evaluate the current flood hazards along the entire floodway and identify potential flood hazard reduction measures, Mr. Kamman was retained to update HEC-2 models previously prepared by the Army Corps, and to evaluate the impacts of vegetation encroachment (increased roughness) and sediment deposition on floodway conveyance. Mr. Kamman expanded the Corps hydraulic model with newly completed channel surveys and channel roughness observations. The impetus for this work was to assist the County in identifying mutually beneficial strategies for ecosystem restoration and flood hazard reduction. Technical work was completed under close coordination and communication with county engineers. Study results and findings were presented at public meetings of local area landowners and stakeholders.

Tembladero Slough Small Community Flood Assessment, Monterey County, CA
Phillip Williams & Associates, Ltd., 1997

Mr. Kamman completed a flood information study of Tembladero Slough near Castroville on behalf of the San Francisco District Corps of Engineers. The purpose of this work was to identify and document local flood risks existing in the community and propose potential floodplain management solutions as part of the Corps 1995/1997-flood recovery process. Work centered on conducting a field reconnaissance, reviewing available historical data, and conducting discussions/ interviews with local landowners and agency personnel.

Fluvial Projects

Muir Woods National Monument Bank Stabilization Plan for Conlon Creek, Marin County, CA
Golden Gate National Parks Conservancy (GGNPC), 2018-present

Mr. Kamman developed a grading and drainage plan for the Conlon Avenue Parking Lot, located adjacent to Redwood Creek and sensitive Coho salmon habitat. More recently, he has assisted GGNPC and the NPS in assessing the planning and design for creek bank stabilization and ecological enhancement at a failed culvert on a tributary channel at the project site. This work includes constructing a HEC-RAS model to evaluate: culvert removal and channel design; fish passage; and water quality impacts. Work is currently in development of 60% engineering design.

Hydrology and Hydraulic Assessments for Design of Butte Sink Mitigation Bank Project, Colusa County, CA
WRA, Inc., 2017-2018

Mr. Kamman was retained to provide hydrology and hydraulic modeling support in the development of design and Draft Prospectus for the Butte Sink Mitigation Bank (Bank). This work entailed developing the necessary hydrology information, hydraulic model and documentation to support further design, environmental compliance and agency approvals/permitting of the Bank. The main objective of work was to develop a design that provides the necessary ecological conditions and functions for successful establishment and operation of the Bank.

Lagunitas Creek Salmonid Winter Habitat Enhancement Project, Marin County, CA
Marin Municipal Water District, 2013-2018

Mr. Kamman designed and led a study to evaluate opportunities to enhance winter habitat for coho and other salmonids in Lagunitas Creek and its largest tributary - Olema Creek. This work was done as a two-phase assessment and design effort. The first phase (completed in 2013) included a winter habitat assessment to evaluate existing juvenile salmonid winter habitat in Lagunitas Creek and lower Olema Creek. The results of this assessment were used to prioritize winter habitat needs, and identify opportunities for winter habitat enhancement to increase

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the winter carrying capacity of coho salmon and steelhead. The second phase (completed in 2017) consisted of a designing winter habitat enhancements. These enhancements focused on restoring floodplain and in-channel habitat structures. Winter habitat enhancement work also needed to consider potential impacts to or benefits for California freshwater shrimp (Syncaris pacifica), a federally endangered species.

This work included field reconnaissance, topographic surveys and the preparation of final design drawings at nine different project sites. An overall self-maintaining design approach was developed to guide individual project plan, with minimal earthwork and disturbance to existing riparian and wetland habitat. Self-sustained, natural evolution of a multi-thread channel within a more active floodplain is a desired outcome of project actions. Design elements and structures are intended to enhance or restore natural hydrologic processes to promote geomorphic evolution of more active high flow (side) channels and floodplain. Design elements include construction of 24 individual log structures.

Lower Miller Creek Management and Channel Maintenance, Marin County, CA

Las Gallinas Valley Sanitary District, 2013-2015

Mr. Kamman was commissioned to formulate and implement a plan for sediment removal and improved flood flow conveyance in the Lower Miller Creek channel. The need for improved flood and sediment conveyance is driven by the following factors. Progressive accumulation of course sediment in the project reach had reduced area wide discharge efficiencies along Miller Creek and at District outfalls. The District had an immediate need to dredge Lower Miller Creek to protect existing operations and facilities. Miller Creek supports a population of federally listed Steelhead, and adjacent wetland areas potentially support other state and federally listed special status species. Therefore, permitting requirements and cost efficiency required minimizing the extent and frequency of channel excavation/maintenance that may adversely impact habitats in the wetland and riparian corridor.

The design objective of the project was to define and optimize an integrated channel maintenance, flood, and sediment management plan, that protects existing facilities from stream and coastal flood hazards. The plan's objective was to minimize costs and ecological impacts of future anticipated and designed maintenance activities required under District operations. Working with District Staff, Mr. Kamman developed a suite of potential project alternatives and identified a preferred approach. Mr. Kamman completed all CEQA compliance (IS/MND) and permitting. Mr. Kamman also managed and directed development of engineered drawings and assisted in bid document preparation.

Mr. Kamman provided site assessment, long term management planning and channel maintenance support to the Sanitary District to maintain flood conveyance, manage sediment aggrading at District outfalls, and improve ecological values in the intertidal Baylands reaches of Miller Creek. The creek supports multiple federal and state listed endangered species. Initial work included completing hydraulic and geomorphic assessments to characterize causes of channel aggradation, and quantify sediment yields. Assessments included evaluation of climate change impacts on habitat and flood hazards, and water quality modeling of District outfalls to quantify tidal exchange and dilution. Based on this analysis and supporting biological resource assessments, Mr. Kamman identified alternatives for channel maintenance, performed a cost benefit assessment of dredging alternatives, and is assisted the District in developing short and long term management objectives. Mr.Kamman also led a multidisciplinary design team in the preparation of engineering plans and specifications as well as permits and environmental compliance documents.

Vineyard Creek Channel Enhancement Project, Marin County, CA

Marin County Department of Public Works, 2007-2013

Mr. Kamman managed the preparation of designs and specifications for a flood conveyance and fish habitat and passage improvement project on Vineyard Creek. Creek corridor modifications included replacing the box culvert at the Center Road crossing with a free span bridge or bottomless arch culvert (civil and structural design by others), providing modifications to the bed and bank to eliminate erosion risks to adjacent properties and improve water quality, promoting active channel conveyance of both water and sediment, and providing improved low and highflow fish passage, improved low flow channel form and enhanced in-stream habitat, repairing eroding banks, and expanding/enhancing adjacent channel floodplains. The riparian corridor was replanted to provide a low-density native understory, "soft" bank erosion protection, and increased tree canopy along the tops of banks. Mr. Kamman prepared the JARPA for the project and conducted permit compliance and negotiations with all participating resource agencies. Designs and permitting also address the known presence of Native American artifacts. This work was contracted under an expedited design schedule and phased construction was initiated the summer of 2008 and continued the summer of 2009.

Bear Valley Creek Watershed and Fish Passage Enhancement Project, Marin County, CA

The National Park Service and Point Reyes National Seashore Association, 2005-2013

Working on behalf of the NPS and PRNSA, Mr. Kamman completed a watershed assessment and fish passage inventory and assessment for Bear Valley Creek. Work included a geomorphic watershed assessment and completing field surveys and hydraulic modeling (including flood simulations) of ten road/trail crossings to identify and prioritize creek and watershed restoration efforts while considering and addressing current flooding problems at Park Headquarters – a major constraint to channel restoration efforts that would likely exacerbate flooding. Mr. Kamman also completed a suite of conceptual restoration designs (Phase 1) including; the replacement of two county road culvert crossings with bridges; channel creation through a ponded freshwater marsh (former tidal marsh); and replacement of 4 trail culverts with prefabricated bridges; and associated in-channel grade control and fishway structures. Engineered drawings and specifications were also developed for some of these sites to assist PORE with emergency culvert replacements after damages sustained during the New Year's Eve flood of 2005. Mr. Kamman also directed geotechnical, structural and civil design of project components.

Two projects were completed in 2006 on emergency repair basis resulting from flood damages suffered during the New Year's Eve storm of 2005. The two most recent projects were constructed in 2013, consisting of a large bank repair and adjacent to main access road/trail and culvert replacement further upstream on same road. The bank repair utilized bioengineering approaches including engineered log revetments and log diversion vanes.

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SELECTED EXPERIENCE *(CONTINUED)*

Kellogg Creek Restoration Project, Contra Costa County, CA
Olberding Environmental on behalf of the Contra Costa County Water District, 2012-2013

Mr. Kamman led the development of PS&E to restore 3,000 linear feet of riparian and associated creek corridor habitat. Project was designed as compensatory mitigation for direct and indirect impacts to jurisdictional waters from the Los Vaqueros Reservoir Expansion Project for Contra Costa Water District. Work included field investigations and data analysis to characterize hydrologic/geomorphic conditions and numerical modeling to optimize desired inundation and hydroperiods. Work was completed under subcontract to Oberding Environmental, Inc.

Miller Creek Sanitary Sewer Easement Restoration, Marin County, CA
Las Gallinas Valley Sanitary District, 2010

Working on behalf of the District, Mr. Kamman completed field surveys and technical feasibility studies to develop engineering plans and specifications for a stream bank restoration project to protect an exposed sanitary sewer pipeline, stabilize incised banks, and promote an ecologically healthy stream corridor along an approximately 50 linear foot damaged reach of Miller Creek. The design includes backfill and materials to accommodate construction of a vegetated stabilized slope. The eroded bank repair included design of a 1:1 Envirolok vegetated slope with geogrid reinforced soil lifts extending eight to ten feet back from the slope face. One-quarter-ton rock will be placed in front of the Envirolok wall at the toe of the reconstructed bank to provide added scour protection. In order to perform the work, the project site will be dewatered. An existing felled tree perpendicular to the creek flow will be relocated and secured into the right creek bank with root wad remaining in active channel. All work on the bank and within the creek bed must be completed pursuant to project permits due to presence of steelhead trout.

California Coastal Trail Planning and Design at Fitzgerald Marine Reserve, San Mateo County, CA
WRA, Inc., 2008-2009

Mr. Kamman provided hydrology and hydraulics expertise in the planning and design for the 0.25-mile segment of the California Coastal Trail at the Fitzgerald Marine Reserve. The project was overseen by the San Mateo County Parks Department. This segment of Coastal Trail provides improved access from the trailhead to the beach as well as a free span bride over Vicente Creek. Greg completed the field surveys and hydraulic modeling to assist an interdisciplinary team to design the project. Understanding the hydrology of Vicente Creek and quantifying flood conditions was critical to successfully designing and constructing the free span bridge. He also evaluated how creek hydrology and coastal wave processes interact at the beach outlet in order to identify opportunities and constraints to beach access improvements (which will include crossing the creek on the beach) during both wet and dry season conditions in order to evaluate both permanent and seasonal crossing design alternatives.

Hydrologic Assessment and Conceptual Design for Conservation and Wetland Mitigation Bank Project, Stanislaus County, CA
WRA, Inc., 2009

Working as a subcontractor to WRA, Inc., Mr. Kamman provided hydrology, geomorphology and engineering support for the planning and design for a Conservation and Wetland Mitigation Bank on the San Joaquin River, in the Central Valley near Newman, California. The property is currently owned by the Borba Dairy Farms. The primary objective of the study was to characterize the hydrologic and geomorphic controls on the spatial distribution of habitat types. To meet this objective, Mr. Kamman's assessment included: (1) collecting and synthesizing hydrologic data to characterize existing and historic streamflow, geomorphic and shallow groundwater conditions; (2) filling a data gap by collecting topographic data of hydrologic features; (3) developing a hydraulic model capable of predicting water surface profiles for a range of design flows; and (4) quantifying the linkage between surface water/groundwater conditions and specific vegetation communities and habitat types through implementation of reference site assessments. Mr. Kamman also provided conceptual design and permitting support in evaluating habitat enhancement and creation opportunities on the site.

Redwood Creek Floodplain and Salmonid Habitat Restoration, Marin County, CA
Golden Gate National Recreation Area and Golden Gate Parks Conservancy, 2005-2008

Mr. Kamman lead development of a preferred project alternative and final project design drawings and specifications for a floodplain and creek restoration and riparian corridor enhancement effort on lower Redwood Creek above Muir Beach at the Banducci Site. A primary objectives of the project was to: improve salmonid passage/rearing/refugia habitat; riparian corridor development to host breeding by migratory song birds; and wetland/pond construction to host endangered red-legged frog. The preferred design includes: excavation along the creek banks to create an incised flood terrace; engineered log deflector vanes; removing and setting back (constructing) approximately 400 feet of levee; creating in- and off-channel salmonid rearing and refugia habitat; reconnecting tributary channels to the floodplain; and creating California red-legged frog breeding ponds. Designs were completed in 2007 and the project constructed in the summer of 2007.

Considerable hydraulic modeling was completed to evaluate and develop means to help reduce chronic flood hazards to surrounding roadways and properties. Alternatives that included set-back levees and road raising were developed and evaluated. Detailed and careful hydraulic (force-balance) analyses and computations were completed as part of engineered log deflector designs. These were unique and custom designed structures, building on past project efforts and in consultation with other design professionals.

This project demonstrates Mr. Kamman's ability to work closely with the project stakeholders to develop a preferred restoration alternative in a focused, cost-effective and expedited fashion. This was achieved through close coordination with the NPS and the effective and timely use of design charrette type meetings to reach consensus with participating stakeholders. Conceptual through full PS&E were completed on-time and on-budget in 2007 and was project constructed in the fall of 2007. Mr. Kamman worked closely with NPS staff to "field fit" the project, by modifying grading plans to protect existing riparian habitat. Mr. Kamman also provided construction management and oversight to floodplain grading and installation of engineered log structures. Based on field observations, the project is performing and functioning as desired.

Pilarcitos Creek Bank Stabilization Project, San Mateo County, CA
TRC Essex, 2006-2007

Mr. Kamman directed field surveys and technical modeling analyses to develop restoration design alternatives for a Bank Stabilization Project on Pilarcitos Creek

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in unincorporated San Mateo County, California. This work included hydrology and hydraulic design and preparation of plan sheets and technical specifications as well as a revegetation plan. Due to the importance of protecting an existing gas mainline, the design package will be completed in close coordination with TRC Essex geotechnical staff and revegetation subcontractor and PG&E civil staff. Design feasibility analyses focused on developing hydraulic design criteria for the project, including: estimates of design flood flow magnitudes (2-, 5-, 10-, 25-, 50- and 100-year floods); water surface elevation estimates for a suite of design floods; associated average channel velocities and shear stresses; and estimates for riprap sizing for channel bank toe protection. Plan sheets, technical specifications and cost estimates were provided for review and approval.

Watershed Assessments

Evaluation of Project Impacts on Oregon Spotted Frog, Klamath County, OR

Oregon Water Watch and Earthjustice, 2016-2019

Mr. Kamman designed a suite of hydrologic, hydraulic and geomorphic studies to evaluate proposed change operations of the Crane Prairie, Wickiup and Crescent Lake dams and reservoirs as related to harm to Oregon spotted frogs. Work began with analyzing impacts associated with proposed water delivery operations and developing a proposed alternative prioritizing protection and enhancement of frog habitat. This work followed with a technical review and critique of the USFWS's Biological Assessment. Work included preparation of four declarations for the clients.

Tennessee Hollow Creek Riparian Corridor Restoration, San Francisco County, CA

Presidio Trust, 2001-present

Mr. Kamman has been leading and assisting the Trust and Golden Gate National Recreation Area (GGNRA) in the planning and design on over a dozen multi-objective riparian corridor restoration and watershed management projects in the Tennessee Hollow/Crissy Marsh watershed since 2001. Specific project objectives include: daylighting creeks; riparian corridor restoration; expanding Crissy Marsh; enhancing recreation, education, archeological, and cultural resource opportunities; improving water quality discharges to San Francisco Bay; and remediation of numerous landfills within the watershed. Typical initial phases of work focus on characterizing surface and groundwater conditions within each project area and identifying opportunities and constraints to restoration of natural wetlands and creek/riparian corridors. Notable challenges of this work include restoring heavily disturbed natural resources in an urban setting while integrating designs with recreation, archeology/cultural resources, education and remediation programs. Mr. Kamman has acted as lead hydrologist and designer on eight separate reaches in the 271-acre Tennessee Hollow Creek watershed and several other projects within and in the vicinity of Mountain Lake.

All task authorizations under these on-call and individual design contracts and included hydrology and water quality assessments and conceptual restoration planning and design. The project areas overlapped both the Presidio Trust and NPS-GGNRA management areas. Preliminary construction cost estimates for project alternatives within the Tennessee Hollow watershed range from $10- to $20- million. Several restoration projects are also tied to providing mitigation for the current San Francisco Airport expansion and Doyle Drive Seismic Improvement projects. Several projects have been constructed since 2012 (Thompson's Reach, El Polin Loop), two projects (East Arm Mtn. Lake and YMCA Reach) were constructed in 2014, and MacArthur Meadow restoration in 2016.

This work illustrates the Mr. Kamman's ability to complete a broad variety of hydrologic analyses, including: multiple years of rigorous and thorough surface water and groundwater hydrologic and water quality monitoring throughout the entire watershed to characterize and quantify existing hydrologic conditions; development of a detailed watershed-scale water budget for existing and proposed land-used conditions (capturing existing and proposed vegetation cover types and land use activities) to calculate groundwater recharge estimates input into the numerical watershed model; preparation of EA sections on water resources and water quality (NEPA compliance) regarding Environmental Conditions, proposed Impacts, and Proposed Mitigations associated with the project; preparing detailed alternative plans; and coordination and preparation of engineered plans/specifications for construction. All work was completed on budget and in a timely fashion.

Mountain Lake Water Budget, San Francisco County, CA

Presidio Trust, 2012-2017

Mr. Kamman was retained to develop a water balance model for Mountain Lake in the Presidio of San Francisco. Through development of a water balance model, the Trust seeks to understand: the major source(s) of inflow to both Mountain Lake; anticipated seasonal (monthly) changes in water level relative to various outflow assumptions; and the relationship of surface and groundwater interaction. This information gained from this study will be used to: 1) better understand and manage lake levels for ecological habitats; 2) identify flood storage capacity of Mountain Lake and fluctuations in lake level under various storm conditions; 3) better understand and maintain wetland habitat in the east arm; and 4) complete mass balance calculations to assess water quality in and feeding into the lake.

To implement this study, Mr. Kamman developed a water budget model to identify and quantify the primary water inputs and outputs to the lake and determine major controls over water storage. Primary water budget variables analyzed includes: precipitation; evaporation/evapotranspiration; groundwater exchange; and surface runoff. This study also included a long-term field investigation completed between 2012 and 2016 to: identify all point source inputs such as culverts and drainage outlets; identify diffused surface runoff inputs from surrounding lands, including a golf course; better characterizing the function and performance of the primary lake outfall structure; monitor groundwater levels surrounding the lake; and continuously monitor lake water level and storage over a multi0-year period. These data were used to quantify water budget variables used to build the water budget model. Precipitation and barometric pressure data used in the model was provided by the Trust maintained weather station. Model daily evaporation estimates came from a variety of local area gauges maintained by state agencies.

The water budget model developed for this study is successful in accurately simulating historic water level conditions. The model using a daily time-step appears more accurate than model using a weekly time-step, but both provide reasonable agreement with observed conditions. The model is highly sensitive to groundwater exchange with the lake. The water budget is also a proven useful tool for the design and analysis of improvements to the lake outfall structure and establishing flood storage needs to protect the adjacent highway.

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Cordilleras Creek Hydrologic Assessment, San Mateo County, CA
City of Redwood City, 2002-2003

Mr. Kamman assisted the Cordilleras Creek Watershed Coordinator in planning, seeking funding, and implementing a hydrologic and biologic assessment of the Cordilleras Creek watershed. Work completed included completing a full creek reconnaissance and channel stability assessment, preparation of a watershed assessment work plan, presentations at public meetings, and study/review of flooding issues in the watershed. Challenges faced in this predominantly privately owned watershed include removal of numerous fish passage barriers and educating/coordinating property owners.

Capay Valley Hydrologic and Geomorphic Watershed Assessment, Yolo County, CA
Yolo County RCD, 2008-2010

Mr. Kamman designed and supervised a hydrologic, geomorphic watershed assessment, and conceptual restoration design for the Capay Valley segment of Lower Cache Creek . Funding for the project was from a CALFED Watershed Program grant. The Capay Valley reach of Cache Creek experiences considerable stream bank erosion, which contributes to downstream sedimentation. The channel instability also threatens adjacent homes and can negatively impact the riparian habitat along the creek that functions as an important wildlife corridor from the Western Coastal Range to the Yolo Bypass. Additionally, a significant proportion of methylmercury transported into the Bay-Delta originates from the Cache Creek watershed. The main goal of this proposed study is to address both the causes and the aforementioned consequences of bank erosion.

The assessment was designed to evaluate and quantify changes in hydrologic and geomorphic conditions in response to historical changes in land-use and water development (e.g., diversions, reservoir construction, groundwater pumping, etc.). This assessment also evaluated how historic human induced changes in hydrologic and geomorphic conditions affect riparian ecology in terms of the lost or altered floodplain area, character, and inundation frequency. A key product of this assessment was to distinguish between "natural" and "accelerated" bank erosion, and to identify the underlying causes (both natural and anthropogenic) so that appropriate solutions can be developed. Desired outcomes of the study included: reduce bank erosion by developing restoration designs for typical trouble sites; produce a ranking system to prioritize sites for stabilization and restoration; contribute to community education through watershed science education and the Yolo STREAM Project outreach program; improve water quality through reduction in accelerated erosion; and contribute to riparian corridor restoration and support the RCD's Wildlife Conservation Board funded efforts to remove non-native tamarisk and arundo from the creek corridor. Work was completed through a broad spectrum of field and analytical investigations that received close review by the RCD, stakeholders, and a Technical Advisory Committee.

Ventura River Unimpaired Flow and Habitat Assessment, Ventura County, CA
City of Buenaventura and Nautilus Environmental, 2006-2007

Mr. Kamman completed a hydrology feasibility assessments as part of evaluating the reuse of Ojai Valley Sanitary District (OVSD) effluent for other beneficial uses. Currently, OVSD discharges treatment plant effluent to the lower Ventura River. The City and OVSD recognize that the reduction in the discharge of treated effluent to the Ventura River could have an environmental effect on sensitive and endangered species. In light of these concerns, this study was conducted to determine if a reuse project is feasible without significant environmental harm.

The assessment included hydrologic and geomorphic field and analytical assessments of past (unimpaired), current and proposed surface and groundwater flow conditions over a wide range of dry- through wet water year-types. The main objective if these analyses was to determine the linkage to water quality and aquatic habitat conditions including: flow durations; extent of gaining vs. losing reaches; low flow inundation/wetted area; and influence on barrier beach dynamics. Mr. Kamman collaborated with a team of other professionals to prepare a facility plan documenting the analyses and conclusions of respective water recycling investigations.

Hydrologic Analysis of FERC Minimum Flows on Conway Ranch Water Rights, Mono County, CA
Law Office of Donald Mooney, 2001-2002

Mr. Kamman completed a hydrologic analysis to evaluate if FERC's proposed Minimum Flow Plan for Mill Creek would interfere with the exercise of the Conway Ranch's water rights from Mill Creek. The approach to this analysis was to quantify the duration of time the Conway Water right was met under historic gaged and simulated proposed Minimum Flow Plan conditions. The primary objective of the analysis was to evaluate impacts during the winter period when flows are typically limited due to water storage as snow pack. Minimum Flow Plan conditions were simulated by developing a spreadsheet model that redistributes actual (historic) Lundy Lake releases in a fashion that maintains a minimum flow of 4 cfs to Mill Creek to accommodate the downstream Southern California Edison's (SCE) power plant. The analysis period for both historic and simulated Minimum Flow Plan conditions consisted of water years (WY) 1990 through 1998 to capture an exceptionally diverse range of wet and dry year-types.

The primary method used to quantify changes in flow between historical and simulated Minimum Flow Plan conditions was to prepare and compare flow duration curves for each condition during both the winter and summer periods during a variety of water year types. Model results were tabulated for each conditions to determine the differences in the percentage of time target flows were equaled or exceeded. Based on these findings, Greg was contracted to complete more in-depth monthly modeling.

Groundwater Management Projects

Assessments of Groundwater-Surface Water Interaction, Stanislaus County, CA
The Law Offices of Thomas N. Lippe, APC and California Sportfishing Protection Alliance, 2015-present

Since 2015, Mr. Kamman has been assessing groundwater conditions within Stanislaus County and evaluating potential impacts of groundwater pumping on surface water flow and aquatic habitat of the Stanislaus, Tuolumne and San Joaquin Rivers. Mr. Kamman completed a comprehensive review and synthesis report of available groundwater and interconnected surface water (ISW) reports and data. Using available soils, geology and hydrology information, Mr. Kamman also delineated and mapped subterranean streams and Potential Stream Depletion Areas (PSDAs) to identify stream corridors susceptible to adverse impacts from groundwater pumping. This information is intended to help Groundwater Sustainability Agencies identify potential impacts to ISW.

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Most recently, Mr. Kamman has been retained to review and comment on 7 Groundwater Sustainability Plans (GSPs) for critically overdraft groundwater subbasins within or adjacent to Stanislaus County. This review focused on how GSPs address Groundwater Dependent Ecosystems (GDE) and ISW. Comments included recommendations on monitoring and study plans to identify and quantify impacts of groundwater pumping on stream flow rates and associated ecological habitats.

Assessment of Surface Water-Groundwater Interaction, Humboldt County, CA
Friends of the Eel River (FOER), 2020-present

Mr. Kamman is currently providing technical assistance in understanding surface water-groundwater interactions in the Lower Eel River Valley. Work includes reviewing and synthesizing available reports and hydrologic data and providing a science-based opinion on the role groundwater plays in supporting stream flow and aquatic habitats. This analysis addresses conditions and changes associated with seasonal and long-term wet-dry cycles. Data gaps will be identified and documented during the analysis.

This work is being completed to support FOER efforts at protecting aquatic resources within the framework of current water management practices and the public trust doctrine under California law. Additionally, this work includes providing hydrologic and hydrogeologic review, comment and recommendations during development of the basin's Groundwater Sustainability Plan (GSP) under the California Sustainable Groundwater Management Act (SGMA).

Scott Valley Subbasin Technical Hydrogeologist Assistance, Siskiyou County, CA
Klamath Tribal Water Quality Consortium and Quartz Valley Indian Reservation, 2019-present

Mr. Kamman is providing technical review and comment on the groundwater models and associated studies in the Scott Valley groundwater subbasin under the Sustainable Groundwater Management Act (SGMA) process. Work includes: review of groundwater models; synthesis and review of available groundwater quality data; assisting to identify constituents of concern; and review of the planning and technical studies being used to develop a basin Groundwater Sustainability Plan (GSP).

Middle Russian River Valley Shallow Groundwater Storage Enhancement Study, Sonoma County, CA
Friends of the Eel River, 2016

Working on behalf of Friends of the Eel River, Mr. Kamman completed a study to identify and quantify the volume of recoverable aquifer storage along two independent 6-mile reaches within the alluvial fill valley of the Russian River. The approach to this study was to quantify how channel incision has reduced shallow groundwater levels and quantify how much aquifer storage can be increased if channel bed elevations are restored to historic levels. The goal of this investigation was to identify feasible approaches to increase groundwater storage that would off-set losses associated with the termination of out-of-basin diversions from the Eel River. This work was completed through: intensive review and mapping of available groundwater level data; quantification of aquifer hydraulic properties; and calculating the shallow aquifer storage volume. In total, reclaiming the shallow aquifers within these two areas yield a total added storage volume of over 20,000 AF.

Green Gulch Farm (GGF)/Zen Center Water Resources Investigation, Marin County, CA
Green Gulch Farm, 1998-2019

Mr. Kamman completed a multi-phase study to evaluate the short- and long-term water uses and resources at GGF. Work was initiated by developing comprehensive water usage/consumption estimates and assessing available water resources, including spring, surface water, and ground water sources. Water demand estimates included quantifying potable and agricultural water usage/demands. Once reliable water supplies were identified and water usage/demand figures calculated, Mr. Kamman provided recommendation for improvements to water storage and distribution systems, land-use practices, conservation measures, treatment methods, waste disposal, and stream and habitat restoration. The initial phase of work included: in-depth review of available reports and data; review of geology maps and aerial photography; review of water rights and historic land use records; field reconnaissance including year-round spring flow monitoring; mapping and quantifying existing runoff storage ponds; and surface water peak- and base-flow estimates.

The second phase of work included identification of possible groundwater sources and siting and installation of production wells. This included sighting three drilling locations, obtaining County and State well drilling permits for a domestic water supply; coordination and oversight of driller; and directing final well construction. Upon completion of a well, Mr. Kamman directed a well pumping yield test and the collection and analysis of water quality samples (including Title 22) for small water supply system use. The final phase of work included assisting GGF with water treatment system options at the well head and integration of the groundwater supply into an existing ultra-violet light treatment system servicing spring water sources. Work was completed in 2000 with a budget of approximately $25,000, including all driller and laboratory subcontracting fees.

Stanford Groundwater Assessments, Santa Clara County, CA
Stanford University Real Estate Division, 2012-2016

Mr. Kamman provided technical hydrogeologic services to evaluate groundwater conditions and drainage requirements associated with the construction of several new facilities on or near Page Mill Road. The main objective of this study is to determine the seasonal depth to groundwater beneath the project site under existing and potential future conditions and provide an opinion on if the project is required to comply with the City of Palo Alto, Public Works Engineering Basement Exterior Drainage Policy (effective October 1, 2008). This work included obtaining and reviewing available technical reports, maps and literature pertaining to groundwater conditions in the project vicinity. Based on this review, we have prepared a letter report of findings and recommendations.

Bodega Bay Wetland Water Supply, Sonoma County, CA
Friends of Bodega Bay, 2007

Mr. Kamman Conducted an evaluation of the groundwater underflow feeding a large coastal wetland in Bodega Bay and recommended mitigation measures for potential losses in supply associated with proposed residential development in recharge areas. Work included: long-term monitoring of ground water quality and supply; monitoring surface water and spring flow and water quality; assessing and characterizing the interaction between surface and subsurface water sources during different seasons and water year-types; developing a detailed water budget for the site to assess impacts to recharge areas; and developing a number of physical solutions to mitigate for recharge losses.

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L.A. Department of Water and Power, Groundwater Recharge Facility Operation Study, Los Angeles County, CA
ICF Consulting, 2006

Working as a subcontractor to ICF Consulting of Laguna Niguel, California, Mr. Kamman provided technical assistance in the hydraulic modeling of sediment accumulation in selected spreading ground facilities owned and operated by the Los Angeles Department of Public Works. The object of this work is to evaluate changes in infiltration and groundwater recharge rates over time within the spreading grounds in association with sediment accumulation from turbid waters.

Corde Valle Golf Club Surface-Groundwater Interaction Study, Santa Clara County, CA
LSA Associates, 2004

On behalf of LSA Associates of Pt. Richmond, CA, Mr. Kamman completed a 3rd party independent review of available reports and data sets (boring logs, well water levels, groundwater quality, aquifer pump-test, and surface water monitoring) to evaluate if pumping of the Corde Valle irrigation well is adversely impacting flow in West Llagas Creek. This investigation was implemented in response to a concern expressed by California Department of Fish and Game staff regarding the potential for differential drying of the West Branch of Llagas Creek along Highland Avenue. The analysis was also complicated by the likely effects of pumping from surrounding off-site wells.

Aquifer Testing for Tennessee Hollow Watershed Project, San Francisco County, CA
Presidio Trust, 2002

The Mr. Kamman assisted in the design and implementation of an aquifer test at the Presidio of San Francisco. We prepared an aquifer test work plan and conducted step-drawdown and constant-rate aquifer tests at the site using both manual and electronic data collection methods. This work included interpretation of the aquifer test results using software-based solution methods and prepared a written summary of methods and findings. In addition, Mr. Kamman located, coordinated and managed a drilling effort for the logging and installation of several groundwater monitoring wells in the project area to address identified data gaps.

San Joaquin River Riparian Corridor Restoration Project, San Joaquin Valley, CA
McBain-Trush, 2002

Mr. Kamman completed an assessment of historic and existing shallow groundwater conditions beneath and adjacent to the San Joaquin River between Friant Dam and the Merced River. This work focused on reviewing available reports and flow/groundwater level data to characterize surface water and groundwater interaction and implications for riparian vegetation, water quality and fishery habitat restoration. Hydrologic analyses were performed to identify the location and seasonal evolution of losing and gaining reaches an implication on future restoration planning and design efforts. The main deliverable for this analysis was a report section focused on describing the historical changes in regional and local groundwater conditions in the San Joaquin Valley and evolution of anthropogenic activities (e.g., groundwater withdrawals, irrigation drainage systems and return flows, development of diversion structures, changes in land-use; and introduction of CVP/State Water Project deliveries) and associated impacts on deep/shallow groundwater levels, surface water flows, and surface and groundwater quality.

Tidal, Estuarine & Coastal Projects

Quartermaster Reach Wetland Restoration Project, San Francisco County, CA
Presidio Trust, 2006-present

Mr. Kamman was retained in 2006 as part of a multi-disciplinary team to develop restoration alternative designs for a 10-acre filled and paved site marking the historic confluence of Tennessee Hollow Creek and Crissy Marsh adjacent to San Francisco Bay. The Trust's planning documents define the main objectives for Tennessee Hollow restoration as: a) "Restoration [of Tennessee Hollow] will expand riparian habitat and allow for an integrated system of freshwater streams and freshwater, brackish, and tidal marsh, re-establishing a connection to Crissy Marsh" and b) "Restore and protect Tennessee Hollow as a vibrant ecological corridor". The project is located within the setting of a National Park and a National Historic Landmark District. Thus, another goal for the project is to protect the area's historic buildings and sensitive cultural and archeological resources to the extent possible, to enhance visitor experience to the area, and to integrate creek restoration with other urban land uses.

Mr. Kamman provided H&H technical input and consultation to the design team to develop a restoration project consisting of a creek-brackish marsh-salt marsh interface and associated upland habitats. His work included evaluating surface water, groundwater and tidal sources. In addition, the development of a hydrodynamic model has informed and guided a preferred project design, including evaluation of storm surge, road crossing and Tsunami impacts to the project. A technical challenge addressed with the use of the model included predicting and quantifying salt/brackish marsh habitat zones within the restored wetland in response to periodically but prolonged closed-inlet conditions to Crissy Marsh - a water body that serves as the downstream connection to the proposed project.

Another unique challenge to this project includes integrating restoration planning and design efforts with the replacement and retrofit of Doyle Drive, the main on/off-ramp for the Golden Gate Bridge, being replaced along the entire northern boundary of the Presidio. Mr. Kamman is providing long-term technical review of this project to the Trust with respect to impacts to water resources and associated existing ecological habitats. The Quartermaster project also falls within the managerial jurisdiction of both the Presidio Trust and NPS-GGNRA, requiring work in close cooperation with both Presidio Trust and National Park Service (NPS) staff.

Salt River Ecosystem Restoration Project, Humboldt County, CA
Humboldt County RCD, 2005-2019

Mr. Kamman provided hydrology, engineering and environmental compliance services towards the planning and design of river and tidal wetland restoration on the Salt River (Eel River Delta plain) near Ferndale, California, in Humboldt County. The purpose of the Salt River Ecosystem Restoration Project (SRERP) is to restore historic processes and functions to the Salt River watershed. These processes and functions are necessary for re-establishing a functioning riverine, riparian, wetland and estuarine ecosystem as part of a land use, flood alleviation, and watershed management program. The Salt River Project has three components: 1) dredging the lower Salt River and lower Francis Creek from near the Wastewater Treatment Plant downstream for 2.5 miles; 2) restoring 247 acres of wetland estuary habitat in the lower Salt River within the 440-acre former

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dairy; and 9) reducing sediment inputs from tributary watersheds. The Salt River Project was designed using an "ecosystem approach" to address hydrology, sedimentation, and fish and wildlife habitat.

As part of project feasibility assessment, Mr. Kamman completed a hydrologic and water quality monitoring program, and developed a MIKE11 hydrodynamic model of the lower Salt River and Eel River estuary in Humboldt County, for the Humboldt County RCD. The purpose of this work was to complete a hydrologic, geomorphic, and hydraulic modeling assessments of the character and dominant physical processes controlling flow of water and sediment through the lower Salt River. Land use changes in the area have caused significant aggradation and infilling of the Salt River, significantly reducing tidal exchange, fish passage, and exacerbating flooding in upland areas. A primary goal of this study is to evaluate the feasibility of proposed restoration elements intended to increase tidal prism and exchange and in-channel sediment scour and transport. The desired outcome is a sustained increase in river conveyance capacity to improve drainage of surrounding flood-prone lands and improve aquatic, wetland, and riparian habitat.

As part of project development and feasibility assessment, Mr. Kamman completed a hydrologic and water quality monitoring program and MIKE11 hydrodynamic model development of the lower Salt River and Eel River estuary in Humboldt County for the Humboldt County RCD. The purpose of this work is to complete a hydrologic, geomorphic, and hydraulic modeling assessments of the character and dominant physical processes controlling flow of water and sediment through the lower Salt River. Land use changes in the area have caused significant aggradation and infilling of the Salt River, significantly reducing tidal exchange, fish passage, and exacerbating flooding in upland areas. A primary goal of this study is to evaluate the feasibility of proposed restoration elements intended to increase tidal prism and exchange and in-channel sediment scour and transport. The desired outcome is a sustained increase in river conveyance capacity to improve drainage of surrounding flood-prone lands and improve aquatic, wetland and riparian habitat.

Western Stege Marsh Restoration Project, Contra Costa County, CA
Tetra Tech, 2008-2010

Mr. Kamman provided technical hydrology and wetland hydraulics support to post-project monitoring of the Western Stege Marsh Restoration Project. His involvement began by providing an independent technical review of previous year's hydrologic monitoring results to evaluate the proposed monitoring success criteria and the rationale used to develop these criteria. This work entailed reviewing historic monitoring data and available natural slough channel geometry data-sets for San Francisco Bay area marshes. Mr. Kamman's study approach was to independently develop desired and sustainable channel geometry relationships for natural, healthy San Francisco Bay salt-marshes and compare them to the published success criteria. Greg was also retained to implement the Year 4 post-project hydrologic monitoring, with modifications to aid in better linking hydrologic processes to ecological conditions and function within the restored marsh. This work consisted of completing more targeted water level monitoring and channel geometry surveys in reference marsh areas containing desired physical and ecological attributes. These data were used to develop geomorphic success criteria (target channel geometry) more tailored to the project marsh and augment the criteria provided in available literature. Working closely with the project team of scientists, Mr. Kamman compared these hydrologic monitoring results to available vegetation surveys to better assess the overall success and evolutionary trend of the marsh.

Giacomini Wetland Restoration Project, Marin County, CA
The National Park Service and Point Reyes National Seashore Association, 2003-2012

Mr. Kamman managed a multi-year project for the NPS in the design and feasibility analysis of a tidal wetland, riparian, and freshwater marsh complex, on the 500-acre Giacomini Dairy Ranch, at the south end of Tomales Bay. The project began in 2003 and included hydraulic, hydrologic, and geomorphic assessments to characterize existing physical conditions, developing restoration alternatives, and completing hydrologic feasibility analyses. Restoration alternatives evaluated creation of a mosaic of subtidal through upland wetland and riparian habitat zones, as well as improvements to salmonid passage, red-legged frog habitat, tidewater goby habitat, and clapper-rail habitat. Emphasis was placed on completing detailed studies to quantify project-induced changes in flood frequency, magnitude and duration, impacts on water quality to local groundwater supply wells, and changes in sediment and water quality conditions in Tomales Bay.

Beginning in 2006, Mr. Kamman managed and assisted design engineers, preparing plans, specification, and cost estimates for a three phased construction schedule, that was completed in the summer of 2008. This project illustrates Mr. Kamman's ability to complete a broad variety of hydrologic feasibility analyses, including flood frequency analyses for contributing watersheds, reproducing historic flood events through numerical modeling, flow duration analysis and evaluation of environmental flow regimes, development of a water budget for created freshwater marsh and frog breeding ponds, sediment yield estimates, completing field monitoring (flow, water level, groundwater level, sediment, and water quality monitoring) to characterize existing site hydrologic and geomorphic conditions (fluvial and tidal), wind-wave setup and run-up for levee stability determination and construction design, coordinating and performing topographic and hydrographic surveys, performing hydrodynamic and water quality modeling of existing and alternative conditions, developing detailed construction cost estimates preparation of technical reports and design drawings and specifications in support of NEPA/CEQA environmental compliance, and public meeting presentation and participation. In addition, Mr. Kamman managed staff in the generation of DEM and TIN models of the existing site and all action alternatives. All work was completed on budget and in a timely fashion, despite repeated expansions to the project boundary and last minute changes driven by endangered species issues.

Critical Dune Habitat Restoration to Protect Threatened and Endangered Species, Marin County, CA
The National Park Service, 2009-2010

Mr. Kamman provided and managed engineering, design, and implementation planning support for the restoration of 300 acres of critical dune habitat at Abbots Lagoon within the NPS Point Reyes National Seashore. He developed engineered drawings, technical specifications and engineer's cost estimates, and assisted NPS in defining a range of methodologies suitable to local conditions and sensitive flora and fauna. This area of the park supports the best remaining intact dune habitat, including some of the largest remaining expanses of two rare native plant communities: American dune grass (Leymus mollis) foredunes, and beach pea (Lathyrus littoralis). European beach grass and iceplant were removed from

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the project site using mechanical removal and hand removal techniques. The project goal was to remove these invasive species from approximately 135 acres of prime dune habitat in the 300-acre project site, while not impacting sensitive species and habitats. The intended result was to remobilize this historic dune field and restore their natural form and migratory processes.

This project illustrates Mr. Kamman's ability to work closely with NPS staff to balance habitat protection and restoration across the landscape. As part of project design, he developed grading plans, and specified work flow, equipment movement and access routes which minimize impacts to special status species. Extensive fencing and exclusions zone planning was required to protect existing native habitats, and minimize tracking of plant stock to or through restored sites. In addition work elements had to be structured and prioritized to maximize ground work subject to budgetary constraints and work flow uncertainties. All work has been completed on budget and in a timely fashion, even with repeated expansions to the project boundary and affected area and last minute changes driven by endangered species issues.

Lower Gualala River and Estuary Assessment and Management Plan, Mendocino County, CA
California State Coastal Conservancy and Gualala River Watershed Council, and Sotoyome RCD, 2002-2005

Mr. Kamman worked with fisheries biologists to evaluate the hydrologic and water quality conditions in the lower Gualala River and estuary and identify and evaluate potential impacts to summer rearing habitat for salmonids and other aquatic organisms. This work included: assessing how the impacts of upstream land use (logging and water diversions) have altered water delivery and water quality to the Lower River and estuary over time; characterizing the physical coastal and riverine processes controlling opening and closure of the estuary inlet and lagoon morphology; monitoring and characterizing real-time and seasonal changes in lagoon water level and water quality; and evaluating the sediment transport capacity and geomorphic condition of the lower river and estuary. Mr. Kamman took the lead in developing and editing a management plan for the lagoon, prescribing actions to preserve, protect and enhance ecological habitats (with emphasis on salmonids) within the lagoon and lower Gualala River.

This project was completed on-time and on-budget and demonstrates Mr. Kamman's ability to integrate physical, water quality and biological data and information into a coherent and understandable description of the interrelated processes controlling the aquatic ecology of a lagoon system. A big challenge on this project was completing a high-quality and defensible field monitoring program on a "shoe-string" budget. The outcome of this study provides important understanding on how and why steelhead are surviving in a heavily logged (95% private ownership) watershed. The management plan prescribes recommendations to preserve and protect the lagoon as primary rearing habitat for steelhead.

Suisun Bay Tidal Wetland Restoration Design, Contra Costa County, CA
East Bay Regional Park District and LSA Associates, 1999-2005

Mr. Kamman provided hydrologic design services to the restoration of a 55-acre tidal wetland on Suisun Bay. The design will maximize habitat for special status fish species, and (to the extent possible) habitat for other special status animal and plant species. Working with a multi-disciplinary design team, Mr. Kamman assisted in developing a design based on analysis of habitat needs, tidal hydrodynamic and geomorphic processes, sedimentation rates and soil characteristics. Project tasks included: a site analysis defining existing ecological and hydrologic conditions; a hydrologic and biological restoration opportunities and constraints analysis to define restoration and management objectives; and hydrodynamic and sedimentation modeling to evaluate design alternatives. The final restoration and management plan included a grading plan, landscape revegetation plan and monitoring and maintenance plans. This work again illustrates his capabilities in the characterization of physical site conditions, development and feasibility analysis of project alternatives, and preparation of preliminary designs of sufficient detail to allow for environmental compliance through the CEQA/NEPA process.

Santa Clara River Estuary and Lower River Assessment, Ventura County, CA
Nautilus Environmental on behalf of the City of Ventura, Public Works Department, 2003-2004

Mr. Kamman directed a hydrologic and geomorphic assessment of the lower Santa Clara River and estuary. This work was completed for prime contractor in an effort to assist with re-permitting of treated effluent discharges to the estuary. The proposed study entailed characterizing existing and historic hydrologic and physiographic conditions and an assessment of historic changes in inflow to the estuary. This task included a comprehensive review and evaluation of available hydrologic reports and flow data within the watershed to characterize changes in flow associated with development of numerous water projects within the Santa Clara River basin. The main deliverable from this analysis was the development of a historic unimpaired flow record to the estuary based on regional regression analyses and water operations modeling. Within the estuary, Mr. Kamman designed and conducted a multi-year monitoring program of water levels, water quality (temperature, dissolved oxygen, salinity, and pH), and sand-spit morphology in order to evaluate inlet opening/closure frequency and associated changes in aquatic habitat (esp. tidewater goby) and other ecologic communities. A considerable portion of this subtask included detailed coastal process analysis (including wave power analyses and littoral sand transport), which, considered with the inflow analysis, provides a basis to evaluate the seasonal cycle of barrier beach buildup and destruction.

This project illustrates Mr. Kamman's ability to complete a broad variety of hydrologic and coastal process analyses under strict regulatory oversight. A premier study completed on this project was the development of a detailed water and salinity budget model for the estuary to evaluate the impacts of a wide variety of proposed and modified estuary inflow regimes to determine potential future water level and salinity conditions in the lagoon and impact on frequency of inlet breaching. In addition to coordinating and implementing a variety field monitoring and surveys, Mr. Kamman also provided real-time information and input to informational and negotiation meetings with state resource and regulatory agencies.

Eden Landing Ecological Reserve Restoration, Alameda County, CA
East Bay Regional Park District, 2000-2003

Mr. Kamman developed and completed hydraulic and hydrodynamic modeling assessments for the design of an approximately 1000-acre tidal marsh restoration in former Cargil salt manufacturing ponds, located a mile inland of San Francisco Bay. The restoration goals required balancing the desires to restore tidal marsh conditions to the site, while maintaining and enhancing the open water and salt

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panne habitats preferred by resident and migratory shorebirds. The restoration plan also needed to incorporate restoration objectives with remediation of high soil salinities resulting from past salt production, subsided ground elevations, dredging of new channels to the bay, existing infrastructure constraints, public access for the San Francisco Bay Trail, and preservation of several important cultural and historical sites. Hydraulic design objectives include maximizing both interior circulation and tidal exchange between the restoration parcel and the bay. A series of one-dimensional unsteady hydrodynamic models (MIKE11) were used to design the channel network, identify high velocity areas requiring erosion protection, and characterize expected habitat conditions. An important component of this design and feasibility assessment was to translate desired ecological habitat conditions identified in the EIR into specific hydrologic design criteria, considering channel velocities, scour, sediment transport, tidal water inundation frequencies and seasonality of ponding. Mr. Kamman worked closely with EBRPD civil engineers, assisting with the translation of hydraulic design criteria into final engineered drawings and specifications.

Wetland & Pond Projects

Design of California Red-Legged Frog Breeding Ponds, San Francisco Bay Area (various), CA

The National Park Service and Golden Gate National Parks Conservancy, 1997-present

Mr. Kamman has lead or provided hydrologic and engineering design assistance to the sighting and design of nearly two dozen breeding ponds for California red-legged frog throughout the San Francisco Bay Area. Work has been completed in Marin, Sonoma, Solano, Contra Costa, Alameda, and Santa Clara Counties under the auspices of numerous federal, state, and local county/city agencies. A common study approach consists of an initial site reconnaissance of watershed conditions and identification of potential sites. The reconnaissance is followed by a surface water hydrologic sufficiency analysis using available meteorologic and stream flow information. An important variable sought during pond sighting is the presence of migration corridors between known breeding areas and/or perennial water sources. Based on in-depth research and post-project monitoring, Mr. Kamman has refined or developed site-specific evapotranspiration estimates, which commonly do not match standard applied values. Accurate evapotranspiration rates are necessary if ponds are intended to periodically dry-down as a means to preclude undesired species such as bullfrog or mosquito fish. In many instances, a seasonal groundwater-monitoring program is implemented in order to better investigate and quantify potential and seasonal groundwater contributions. Other design challenges we commonly experience include: design of impermeable liners for ponds located in upland areas or highly permeable soils; hydraulic analyses and design of outfalls/spillways; sedimentation management/maintenance approaches; and requirements of inoculum and water used to line and fill the pond, respectively.

Hydrologic Feasibility Assessment for Mana Plain Wetland Restoration Project, Kauai, HI

State of Hawaii Department of Land and Natural Resources, 2010-2019

Working on behalf of the Mana Plain Wetland Restoration Partnership, Mr. Kamman completed a hydrologic feasibility assessment for the Mana Plain Wetland Restoration Project proposed by the State of Hawaii Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) on the Island of Kauai. The Mana Plain Wetland Restoration Project site is approximately 105 acres of low-lying abandoned sugarcane fields immediately north of the Kawaiele Waterbird Sanctuary and east of the Pacific Missile Range Facility. The purpose of the Mana Plain Wetland Restoration Project is to maximize the area of constructed wetlands within the restoration site. Palustrine emergent wetlands within the project will create habitat for four species of endangered Hawaiian waterbirds and other sensitive species, including: Hawaiian stilts; Hawaiian ducks; Hawaiian coots; Hawaiian moorhen; migratory waterfowl; and migratory shorebirds. The Mana Plain is of vital importance for the recovery of endangered waterbirds species. This restoration project will be designed to provide important breeding and feeding wetland habitats on an island where; 1) wetlands have been severely degraded, and 2) mongoose, an introduced predator, have not been established.

Mr. Kamman's work on this project included technical assessments and development of proposed restoration alternatives. Analyses completed included: a synthesis of the physical site setting (topography, geology, hydrogeology and soil); reviewing available data to characterize site meteorology, surface water drainage, water quality, and groundwater conditions; preparing a detailed water budget to describe the characteristics and processes of surface water and groundwater movement into and through the project area; evaluating project feasibility, water supply alternatives and costs; and completing a flood hazard impact assessment to evaluate potential project benefits and impacts to local area flooding. Working with the project partners, Mr. Kamman developed a preferred project alternative and supported in preparation of the project Environmental Assessment document. Mr. Kamman's firm was also retained by the State of Hawaii to develop engineering designs of the project.

MacArthur Meadow Wetland Restoration, San Francisco County, CA

Presidio Trust, 2013-2016

Mr. Kamman has been working on over a dozen independent wetland and creek restoration planning and design efforts within the Presidio of San Francisco since 2001. Most recently (2016), he developed a wetland restoration grading plan for the MacArthur Meadow Wetland Restoration Project in the central portion of the Tennessee Hollow watershed. As part of the site assessment, Greg characterized and modeled surface and groundwater interactions and identified a unique opportunity to restore 4 acres of mixed meadow, natural wetlands and creek/riparian corridor. This was possible due to the discovery of shallow groundwater conditions beneath this historically disturbed landscape. Various design components were integrated into the grading plan in order to enhance groundwater recharge and storage in the Meadow, while retarding runoff and drainage out of the wetland, including: daylighting storm drain runoff into the Meadow; reconfiguring internal channel alignments to enhance channel habitat and groundwater recharge; creation of wetland depressions to retain and recharge surface water; and removal of fill material to decrease the depth to the water table. Notable challenges of this work include restoring heavily disturbed natural resources in an urban setting while integrating designs with archeology/cultural resources, education and remediation programs.

Dragonfly Creek Restoration Project, San Francisco County, CA

Presidio Trust, 2007-2011

Mr. Kamman designed and managed hydrologic monitoring and analysis studies in support of planning and design for riparian and wetland habitat restoration along approximately 500-linear feet of the Dragonfly Creek corridor near Fort Scott of the Presidio of San Francisco. Work has included completing subsurface

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investigations including the installation of shallow wells and a sharp-crested weir with recorder to gauge creek flows. Mr. Kamman assisted in the development and selection of a preferred project alternative, considering on-site cultural resource protection, education and resource management issues (including flood control). Mr. Kamman prepared permit applications. Major components of the project included removal of significant fill and building foundations and installation of a new creek road crossing that will maintain the historical alignment, function and architectural character of a culturally significant roadway. Mr. Kamman oversaw development of PS&E for this project, which will create mitigation wetlands for a highway earthquake retrofit project that passes through the Park.

This project illustrates Mr. Kamman's ability to complete a broad variety of hydrologic analyses, including: surface water and groundwater hydrologic monitoring to characterize and quantify existing hydrologic conditions; rainfall-runoff modeling; hydraulic modeling of flood and scour conditions (including road crossing); preservation of existing wetland habitat and vegetation communities; integration with other Presidio Trust programs; and contracting flexibility to assist in conceptual planning and environmental compliance without increasing project design costs.

Mori Point Sensitive Species Habitat Enhancement Project, San Mateo County, CA
Golden Gate National Recreation Area and Golden Gate National Parks Conservancy, 2005-2011

Mr. Kamman provided hydrologic analyses, sighting and engineering design (PS&E) for three California red-legged frog breading ponds within the 105-acre Mori Point area. These efforts were completed in association and collaboration with a larger Coastal Trail improvement and ecosystem restoration effort. Quarrying and off-road vehicle use have left this site heavily scarred. The focus of restoration work was to protect the endangered San Francisco garter snake and the threatened red-legged frog. Most of this work will be focused on invasive species removal and enhancing endangered species habitat. As part of species habitat improvement, Mr. Kamman worked with project ecologists to design the ponds to optimize breeding habitat for California red-legged frog.

Work started with an initial site reconnaissance and study of watershed conditions and identification of potential sites. The reconnaissance was followed by a surface water hydrologic sufficiency analysis using available meteorological and stream flow information and installation and monitoring of shallow piezometers to quantify the proximity and seasonal variability in depth to water table. An important variable sought during pond sighting was the presence of migration corridors between known breeding areas and/or perennial water sources. Based on in-depth research and post-project monitoring for other ponds they created in the San Francisco Bay area, Mr. Kamman refined site-specific evapotranspiration estimates. Accurate evapotranspiration rates are necessary if ponds are intended to periodically dry-down as a means to preclude undesired species such as bullfrog or mosquito fish.

Other design challenges experienced included: design of impermeable liners for ponds located in upland areas or highly permeable soils; hydraulic analysis and design of outfalls/spillways; sedimentation management/maintenance approaches; and requirements of inoculum and water used to line and fill the pond, respectively. Mr. Kamman has designed numerous ponds for the NPS and affiliates within the Bay Area, including Mori Point (constructed 2007), Banducci (constructed 2007) and Giacomini (Phase I and Phase II constructed in 2007 and 2008) project sites.

Hydrologic Assessment and Restoration Feasibility Study for Shadow Cliffs Regional Recreation Area, Alameda County, CA
East Bay Regional Park District, 2009-2010

Mr. Kamman developed and implemented an assessment to identify groundwater levels and supplemental water supplies that will sustain seasonal wetland restoration areas and riparian habitats under an altered future hydrologic regime. This work will inform a forthcoming Land Use Plan Amendment for park occupying a series of former gravel quarry pits. Work included: obtaining and synthesizing available surface water and groundwater data to characterize existing hydrologic and water supply conditions and seasonal variability; quantifying the likely changes in groundwater conditions and quarry pit lake levels in association with changes in regional water transmission and groundwater recharge operations; and identifying, developing and evaluating a suite of ecosystem restoration alternatives. Other important project objectives include: improving habitat for waterfowl and wildlife; broadening recreational use; enhancing visitor education and wildlife interpretation; improve park aesthetics. Mr. Kamman evaluated a preferred park and ecosystem enhancement alternative that involves diverting high winter flows from an adjacent arroyo. This project demonstrates Greg's ability to characterize hydrologic conditions and quantify the relationship between groundwater, surface water and wetland habitat conditions, both under existing conditions and in predicting future hydrologic and ecologic conditions under an altered hydrologic regime (i.e., lower groundwater table).

Laguna Salada Marsh and Horse Stable Pond Restoration Project, San Mateo County, CA
Tetra Tech, 2007-2009

Mr. Kamman provided technical hydrology and hydraulics support to the planning and conceptual restoration design of Laguna Salada marsh and Horse Stable Pond, located adjacent to Sharp Park Golf Course in the town of Pacifica, California. The primary objectives of the project are: to reduce flood impacts within the project vicinity; improve sustainable ecological habitat for the endangered San Francisco garter snake and the threatened California red-legged frog; better understand and characterize the hydrologic and water quality conditions/processes affecting flood and ecological habitat conditions within the project vicinity; provide an effective pumping operation plan to meet ecological objectives; and develop appropriate hydrologic analytical approaches and models to assist Tetra Tech and the San Francisco Recreation and Park Department in the planning and design for marsh, pond, and creek restoration. The project is also a unique opportunity to connect this resource with the California Coastal Trail, the Bay Area Ridge Trail, and the surrounding GGNRA lands.

Mr. Kamman's work included completing a comprehensive review of available hydrologic and site information and implementing selected field investigations to develop and calibrate an integrated hydrology-flood routing-pond water operations model that will quantify the volume and depth of water moving through the project system. The investigation will also further characterize shallow groundwater conditions and water quality with respect to effects on Laguna Salada and Horse Stable Pond. Analytical and numerical modeling tools are being used to better characterize existing hydrologic and water quality conditions and to assist in identifying project opportunities and constraints as well as evaluate potential restoration design components - all necessary to inform a sustainable

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and successful restoration design..

Tolay Lake Restoration Feasibility Assessment, Sonoma County, CA
Sonoma County Agricultural Preservation and Open Space District, 2003

Mr. Kamman completed a detailed hydrologic feasibility analysis to evaluate a suite of potential freshwater lake and wetland restoration alternatives. Sites were evaluated under existing watershed land-use practices and under existing and forecasted water demands (in the form of existing water rights/applications). Analysis consisted of developing a detailed water budget model to simulate alternative restored lake inundation areas and depths under median and dry year conditions, as well as a 50-year historic period (1947-1997) displaying highly variable rainfall and runoff supplies. Three lake restoration alternatives were evaluated based on existing topography and likely historic lake configurations. The restoration alternatives include lakes with storage volumes equivalent to 130-, 1100-, and 2550-acre feet.

Haypress Pond Decommissioning and Riparian and Channel Restoration, Marin County, CA
Golden Gate National Recreation Area (GGNRA), 2001-2002

This project restored 170 meters of historic creek and riparian habitat through removal of Haypress Pond dam in Tennessee Valley within GGNRA. The goals of the project were to alleviate long-term maintenance needs and eliminate non-native bullfrog habitat threatening native California red-legged frog habitat in adjacent watersheds.

Working with the Park biologist, Mr. Kamman developed designs to decommission the dam and restore natural riparian and meadow habitat. This work included: characterization of existing topographic conditions; design of a channel profile through the proposed restoration project reach; preparation of a grading plan for the restoration project; and hydrologic and hydraulic analyses to evaluate the performance of the creek channel and flood plain below the former dam during a variety of flows. Challenges of this work included integrating sediment reuse into plans and construction phasing.

Damon Slough Site Seasonal Wetland Design, Alameda County, CA
Port of Oakland, 1999-2001

Working on behalf of the Port of Oakland, Mr. Kamman completed extensive surface and groundwater monitoring and data analyses to develop a detailed water budget to assist in the evaluation and design of a 7.5 acre seasonal freshwater wetland. Primary project objectives included a design that would provide shorebird/waterfowl roosting habitat, minimize impacts to existing seasonal wetland areas, and lengthen the duration of ponding through the end of April to promote use by migratory birds. In addition to developing hydrologic design criteria, responsibilities included development of grading plans to accommodate a local extension of the Bay Trail and wetland outlet works.

Water Quality Projects

Chicken Ranch Beach Soil and Groundwater Quality Investigation and Restoration Planning, Marin County, CA
Tomales Bay Watershed Council, 2007-present

Mr. Kamman is leading scientific and engineering efforts for a wetland and riparian corridor restoration project on Third Valley Creek and Chicken Ranch Beach in Inverness, California. The main project goals are to create a self-sustaining riparian and wetland system (requiring minimal operation and maintenance) and eliminate public exposure to high levels of bacteria that exist in a site drainage ditch discharging to the beach. The design will likely include establishing a blend of habitats, including: riparian stream corridor, seasonal/perennial freshwater marsh, and tidal/saltwater marsh.

Current efforts have included the development and implementation of a soil and groundwater quality investigation to delineate the source of elevated bacteria levels. This work includes: the collection and testing of depth-discrete soil samples; groundwater well installation; sampling and testing; and surface water sampling and testing; analysis of laboratory results; and reporting, including recommendations for further/expanded investigations. Mr. Kamman coordinated this time-sensitive sampling and analysis (six hour hold times) with Brulje and Race Laboratories in Santa Rosa.

Lower Miller Creek Channel Maintenance and Material Reuse Sampling Analysis Plan, Marin County, CA
Las Gallinas Valley Sanitary District, 2015

Mr. Kamman was commissioned to formulate and implement a plan for sediment removal and improved flood flow conveyance in the Lower Miller Creek channel. Accumulation of course sediment in the project reach had reduced discharge efficiencies at District outfalls. Miller Creek supports a population of federally listed Steelhead and adjacent wetland/marsh areas potentially support other state and federally listed special status species. Working with District Staff, Greg developed a suite of potential project alternatives and identified a preferred approach. Mr. Kamman completed all CEQA compliance (IS/MND), permitting and oversaw development of engineered plans and specifications.

In order to evaluate if reuse of excavated material from 2,855 feet of creek corridor in upland areas was feasible, Mr. Kamman developed and implemented a Sampling Analysis Plan (SAP) pursuant to U.S. Army Corps Guidance for Dredging Projects within the San Francisco District. Sample collection, sample handling, and analysis were performed in accordance with the SAP. Results for analytes were compared to a variety of screening criteria to determine the material's suitability for reuse in aquatic environments. A full suite of chemical and physical analyses were performed on soil samples collected from 16 locations, including: metals, PAHs, PCBs, pesticides, TOC, specific conductance, pH, sulfides, percent moisture and grain-size. Mr. Kamman managed all aspects of this effort including reporting and presentations/negotiations at multi-agency meetings through the Corps Dredge Materials Management Office (DMMO).

Lower Pitkin Marsh Hydrologic and Water Quality Monitoring, Sonoma County, CA
Sonoma Land Trust, 2008-2010

Mr. Kamman was retained to develop and implement a hydrologic and water quality monitoring program at Lower Pitkin Marsh outside of Forestville, California. The Pitkin Marsh area is one of the most valuable complexes of mixed riparian woodland and thicket, freshwater marsh, wet meadow, oak woodland and grassland in Sonoma County. The complex interaction of surface water, ground water, and scattered seeps and springs on the site creates unusual hydrologic conditions that promote a rare assemblage of plant species which includes several endemics. The primary objective of the hydrologic monitoring program was to understand the annual and season sources of both surface and ground water supplying wetlands. Hydrologic and water quality monitoring was

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initiated during the winter wet season of 2008/09 and will be conducted for a 12-month period through the ensuing summer dry-down and into the following wet season. Understanding how groundwater levels, spring flow and creek flow rates recede from winter wet to summer dry conditions will provide an important understanding and quantification of the seasonal variability in water supplies feeding selected wetland types. General water quality parameters (temperature, pH, specific conductance, and ORP) are measured at all monitoring locations during each visit. Nutrients (N and P) are measured in selected surface water and groundwater samples collected during at least three monitoring events, including a winter high flow, spring high base flow and summer low baseflow.

Pescadero Lagoon Restoration and Enhancement, San Mateo County, CA
California State Coastal Conservancy, 2005-2006

Mr. Kamman was retained to support restoration and water quality enhancement planning efforts in Pescadero Lagoon. In 2005-2006, he completed a synthesis of available hydrologic and water quality information in responding to requests for development of a hydrodynamic and water quality model of the lagoon. This model was considered as a means to identify causes for repeated fish-kills in the lagoon that occurred during initial breaching of the inlet. Mr. Kamman assisted in preparing a synthesis and model development feasibility report from this effort.

Water Temperature Simulations for Trinity River Fish and Wildlife Restoration Project, Trinity County, CA
Trinity County Planning Department, 1994-2004

For over a decade, Mr. Kamman completed a number of hydrology and water quality investigations in support of alternative feasibility studies on the Trinity River Fish and Wildlife Restoration Project in direct support of the Trinity River Restoration EIR/EIS. Studies involve assessing the effects of proposed flow alternatives on water temperature within and downstream of Lewiston Reservoir. Mr. Kamman was responsible for data collection, processing, and flow/temperature modeling of Lewiston Reservoir as part of a coordinated evaluation including other Trinity River system models. Another study included evaluating how project operations could be implemented or modified to optimize Lewiston Lake release temperatures to meet downstream temperature criteria and compensate for increased warming of the river associated with side channel and feather edge restoration activities. Mr. Kamman continues to evaluate how more recent water projects (raising Shasta Dam, Sites Reservoir, and the Waterfix tunnels) consider and integrate with the Trinity Restoration Project.

Upper Eel River Unimpaired Flow and Water Temperature Assessments, Humboldt County, CA
CalTrout, 1997-1999

Mr. Kamman evaluated changes in the natural flow regime of the upper Eel River, and developed an Upper Eel River proposed release schedule to enhance downstream Chinook and Steelhead spawning and rearing habitat. This work was triggered by proposals set forth by PG&E as part of their Potter Valley Project FERC relicensing process. Work consisted of two main investigations. The first included reviewing results of a ten year PG&E study and development of multivariate regression and stream reach (SSTEMP) temperature models to assess the effects proposed flow alternatives would have on downstream temperatures. The second investigation consisted of characterizing unimpaired flow conditions and developing a daily unimpaired flow record for use in project operation models.

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From: Peter Andersen
To: Jacobs, Christopher; BOS, District1Community; Anderson, Joel; Lawson-Remer, Terra; Desmond, Jim
Subject: [External] Cottonwood Sand Mine
Date: Thursday, August 17, 2023 1:43:53 PM
Attachments: Cottonwood REIR Final 8-14.docx

Dear Mr. Jacobs,

R-O8-1

Sierra Club San Diego appreciates the opportunity to comment on the proposed Cottonwood Sand Mine. Sierra Club represents 15,000 members and 30,000 supporters here in San Diego County.

Sierra Club strongly opposes the Cottonwood Sand Mine because of its extreme damage to the surrounding community, to the Sweetwater River basin, to the San Diego Wildlife Refuge, the McGinty Mountain Ecological Reserve, and to numerous plant and animal species.

Moreover, as we detail in the attached letter the RDEIR is deeply flawed and not in compliance with CEQA.

We urge the San Diego County Planning Department Staff, the Planning Commision, and the Board of Supervisors to reject this dangerous project.

Sincerely,
Dr. Peter Andersen, Vice Chair
Conservation Committee
Member, Legal Committee
Sierra Club San Diego

R-O8 – Sierra Club San Diego Chapter

R-O8-1 The County acknowledges the commenter's opposition to the Project. Please see Responses to Comments R-O8-2 through R-O8-33, below, for responses to specific comments provided in this letter.

SIERRA CLUB
SAN DIEGO CHAPTER

8304 Clairemont Mesa Blvd., Ste 101 • San Diego, CA. 92111
TEL: 858-569-6005 • FAX: 858-569-0968
http://sandiego.sierraclub.org

August 18, 2023

Planning & Developments Services,
Attn: Christopher Jacobs,
5510 Overland Avenue, Suite 310,
San Diego, CA 92123
Sent via email to:

christopher.jacobs@sdcounty.ca.gov

CC:

Nora Vargas, Vice Chairperson, District 1, District1community@sdcounty.ca.gov
Joel Anderson, District 2, joel.anderson@sdcounty.ca.gov
Terra Lawson-Remer, District 3, terra.lawsonremer@sdcounty.ca.gov
Jim Desmond, District 5, jim.desmond@sdcounty.ca.gov

Dear Mr. Jacobs and County Staff:

R-O8-2

This letter is to express Sierra Club's strong opposition to the Cottonwood Sand Mine as part of the California Environmental Quality Act (CEQA) process. This letter is a response to the Recirculated Draft Environmental Impact (RDEIR) for a second round of public review and comments on two portions of the previously circulated Draft EIR for the Cottonwood Sand Mine Project (hereafter Project). We also note numerous deficiencies and omissions in the RDEIR that need to be corrected prior to any hearings or approvals.

The primary purpose of CEQA is to promote a full and detailed discussion of the environmental impacts of a project. As will be documented in detail below, the REIR itself shows that the Cottonwood Sand Mine will cause **substantial environmental damage** to the environment. Additionally, this letter will demonstrate that the REIR **fails to comply with many provisions of CEQA** including a stunning lack of concurrent mitigation for an incredibly environmentally damaging project.

Sierra Club favors a **no project alternative** for the Cottonwood Sand Mine. As we stated in April 2022 in response to the original DEIR: "Sierra Club San Diego vehemently opposes the proposed Cottonwood Sand Mine and finds the Sand Mine DEIR fatally flawed. The county should reject

R-O8-2 The County acknowledges these introductory comments; however, they do not raise a specific issue concerning the environmental analysis or adequacy of the RDEIR. Please see Topical Response 2, *CEQA Requirements for Responding to Comments*, as well as the responses below to specific comments raised in this letter. Additionally, for responses to the Sierra Club's comment letter on the DEIR, please see Responses to Comments D-O11-1 through D-O11-45. To the extent this comment generally summarizes the comments that are more specifically made in the remainder of the comment letter, those comments are responded to below.

R-O8-2 cont.

the EIR and permanently stop this project." Instead, the former golf course should be turned into a park and a community open space.

As requested in the RDEIR, our comments in this letter pertain only to this Recirculated Draft Environmental Impact Report and not to the full EIR on which we commented in 2022. We reject the RDEIR because of deficiencies in the RDEIR and because new environmental impacts revealed in the RDEIR provide additional reasons for Sierra Club's opposition to this project.

R-O8-3

Damage the Environment

It is clear from the RDEIR that the project would result in significant environmental damage. The RDEIR itself admits that:

> "Together, the Draft EIR and Recirculated Draft EIR identify significant environmental impacts to the following environmental factors: Aesthetics; Biological Resources; Cultural Resources; Noise, Paleontological Resources, and Tribal Cultural Resources. Impacts to Aesthetics, even with mitigation measures, would remain significant and unavoidable."

Additionally, the RDERI states that many of the biological impacts would be significant and unavoidable even after mitigation:

> "The proposed project would result in significant impacts under above guidelines for the following reasons: Project-related grading, clearing, construction, or other activities would temporarily or permanently remove sensitive native or naturalized habitat (as listed in Table 5 in the County Guidelines for Determining Significance [County 2010b], excluding those without a mitigation ratio) on or off the Project site. Implementation of the proposed project would result in direct impacts to approximately 2.34 acres of sensitive vegetation communities. Impacts to sensitive natural communities would be considered potentially significant."

The RDEIR also admits that there will be damage to endangered and threatened plant and animal species.

> "These surveys determined there was a potential for the Project to impact three additional special status plant species (Palmer's goldenbush [Ericameria palmeri var. palmeri], San Diego sagewort [Artemisia palmeri], and southwestern spiny rush [(Juncus acutus ssp. Leopoldii]), and five additional special status animal species (white-tailed kite [Elanus leucurus], small-footed myotis [Myotis ciliolabrum], Townsend's big-eared bat [Corynorhinus townsendii pallescens], western mastiff bat [Eumops perotis], western red bat [Lasiurus blossevillii], and Yuma myotis [Myotis yumanensis])."

The RDEIR also documents that there would be indirect impacts that would create long-term harm to sensitive species. Clearly this is an environmentally harmful project.

R-O8-3 The commenter correctly notes that the DEIR and RDEIR identify potentially significant environmental impacts to aesthetics, biological resources, cultural resources, noise, paleontological resources, and tribal cultural resources. However, impacts for all resource areas except for aesthetics would be reduced to a less-than-significant level through the implementation of mitigation identified in the DEIR and RDEIR. In contrast to what is stated in this comment, impacts to biological resources would not be significant and unavoidable after the implementation of mitigation. Mitigation measures have specifically been identified and provided in the DEIR and RDEIR to reduce impacts to biological resources, including direct impacts to endangered and threatened plant and animal species and indirect impacts, to less-than-significant levels. Impacts associated with aesthetics would be minimized to the extent feasible through the implementation of Project Design Features/Conditions of Approval presented in Section 7.2 of the DEIR.

R-O8-3 cont.

> "The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would likely harm sensitive species over the long term. Potentially significant indirect impacts to sensitive species resulting from lighting, fugitive dust, human access/activity, domestic animals, and exotic species would be avoided through the following project design features and mitigation measures."

As will be documented subsequently in this letter, the proposed mitigations do not result in reductions to the harms listed above.

The RDEIR examined the cumulative impacts of other nearby projects for biological impacts and concluded:

> A total of 15 projects (including the proposed project) were reviewed for this cumulative analysis (Table 10, Cumulative Impacts on Biological Resources; Figure 20, Cumulative Impacts). Of these 15 cumulative projects, nine would result in significant or potentially significant cumulative impacts to sensitive biological resources. The project has the potential to contribute to the cumulative impact on coastal California gnatcatcher and least Bell's vireo…the loss of coastal sage scrub habitat would represent a potential cumulative impact on the coastal California gnatcatcher. This impact would be potentially significant."

Thus, the RDEIR demonstrates in numerous ways that the Project would have significant, independent and cumulative, deleterious impacts to the environment. The County of San Diego need look no further than the EIR itself to find that the Cottonwood San Mine does substantial environmental damage to the environment in both the short term and long term.

R-O8-4

Inadequate Biological Assessment

Under CEQA biological surveys must be current to meet the biological survey guidelines that are central to the environmental review process under CEQA. Sierra Club contends that the biological assessments reported in the RDEIR are invalid because they were conducted during a record drought in San Diego County. Helix conducted plant survey during the period of "August 2018 to July 2022," near the end of a record drought. Similarly, "Three motion-activated cameras were deployed within the project site for a 10-week period between May and July 2022 (Figure 8) to document wildlife use and movement within and throughout the site" during a record drought. The drought substantially suppressed the number of plant and animal species in the county. In the winter of 2022-2023 substantial rainfall occurred in San Diego County. If the biological assessment were to occur in 2023 many more plant and animal species would have been observed. To conform to CEQA requirements an additional biological assessment should be conducted this year (2023) when the number of species are not artificially suppressed by a multiyear drought.

R-O8-5

Damage to MSCP and Other Protected Lands

R-O8-4 Please see Topical Response 9, *Wildlife Corridors and Species Connectivity Impacts*, which provides summary of biological surveys completed for the Project and addresses concerns expressed related to wildlife surveys being conducted during a period of drought. Additionally, as summarized in Section 2.2.1.1 of the RDEIR and further detailed in Sections 1.4.6 and 1.4.9 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), a total of 190 plant species were identified within the Project site, including four special status species. Focused surveys for rare plants were conducted in 2019 and 2022. Above-average rainfall was received in the months leading up to the 2019 plant surveys. A nearby population of San Diego ambrosia is located south of the southwestern portion of the Project site within the SDNWR. This population was field verified in 2022 for detectability during the 2022 rare plant surveys, during which it was observed both in vegetative and flowering states within the SDNWR. Surveys for rare plants were conducted during appropriate periods and under conditions suitable for detectability.

R-O8-5 Please see Responses to Comments R-O7-54 through R-O7-66, which address the Project's conformance with the County's MSCP Subarea Plan. Additionally, the majority of the Project site is designated as Unincorporated Land in Metro-Lakeside-Jamul Segment outside of Hardline, Pre-Approved Mitigation Area (PAMA), and Minor Amendment Area. This is due to the fact that the site has supported the golf course development for decades, pre-dating the MSCP. The

R-O8-5 cont.

According to the RDEIR: "HELIX biologists conducted general biological surveys, jurisdictional delineations, rare plant surveys, southwestern pond turtle (Actinemys pallida) surveys, acoustical bat surveys, wildlife camera trapping surveys, and protocol-level surveys for arroyo toad (Anaxyrus californicus), coastal California gnatcatcher (Polioptila californica californica), least Bell's vireo (Vireo bellii pusillus), and southwestern willow flycatcher (Empidonax traillii extimus) during the period of August 2018 to July 2022. The approximately 280-acre project site supports 15 vegetation communities/habitat types: disturbed wetland, freshwater marsh, southern cottonwood-willow riparian forest (including disturbed), southern willow scrub (including disturbed), tamarisk scrub, arundo-dominated riparian, non-native grassland, open water, Diegan coastal sage scrub (including disturbed), artificial pond, eucalyptus woodland, nonnative woodland, non-native vegetation, disturbed habitat, and developed lands. Four special status plant species were observed within the project site: San Diego sagewort (Artemisia palmeri), San Diego County viguiera (Bahiopsis laciniata), Palmer's goldenbush (Ericameria palmeri var. palmeri), and southwestern spiny rush (Juncus acutus ssp. leopoldii). Additionally, U.S. Fish and Wildlife Service (USFWS) critical habitat for the federally endangered San Diego ambrosia (Ambrosia pumila) is present in the southwestern portion of the site. Twenty-three special status animal species have been observed or detected on or directly adjacent to the project site during biological surveys conducted for the project: monarch butterfly (Danaus plexippus), Belding's orange-throated whiptail (Aspidoscelis hyperythra beldingi), Cooper's hawk (Accipiter cooperii), great blue heron (Ardea herodias), oak titmouse (Baeolophus inornatus), redshouldered hawk (Buteo lineatus), green heron (Butorides virescens), turkey vulture (Cathartes aura), white-tailed kite (Elanus leucurus), peregrine falcon (Falco peregrinus), yellow-breasted chat (Icteria virens), coastal California gnatcatcher (Polioptila californica californica), vermilion flycatcher (Pyrocephalus rubinus), yellow warbler (Setophaga petechia), western bluebird (Sialia mexicana), Lawrence's goldfinch (Spinus lawrencei), barn owl (Tyto alba), least Bell's vireo (Vireo bellii pusillus), small-footed myotis (Myotis ciliolabrum), Townsend's big-eared bat (Corynorhinus townsendii), western mastiff bat (Eumops perotis californicus), western red bat (Lasiurus blossevillii), and Yuma myotis (Myotis yumanensis). Additionally, USFWS critical habitat for the coastal California gnatcatcher and least Bell's vireo occurs in the southwestern portion of the site, and critical habitat for the southwestern willow flycatcher is located immediately west of the site. The project site supports wetland and non-wetland waters of the U.S. subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the federal Clean Water Act (CWA); wetland and non-wetland waters of the State subject to the regulatory jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA; riparian vegetated and unvegetated streambed subject to the regulatory jurisdiction of the California Department of Fish and Wildlife (CDFW) pursuant to Section 1600 et seq. of California Fish and Game Code; and wetlands subject to the regulatory jurisdiction of the County pursuant to the Resource Protection Ordinance (RPO)…The project site occurs within the boundaries of the adopted South County Multiple Species Conservation Program (MSCP) Subarea Plan, within both the South County Segment and Metro Lakeside-Jamul Segment. Within the MSCP, portions of the

R-O8-5 (cont.) site is identified as a habitat linkage in the MSCP, and the extreme southwestern and southeastern portions of the Project site are located within designated BRCAs. The Project would ultimately contribute approximately 150.7 acres of preserved, rehabilitated, revegetated, and restored habitat to the preserve system through placement of these areas within a BOS easement. The post-reclamation condition of the Project site would restore and substantially improve functional connectivity of the identified habitat linkage to BRCAs and preserved lands located to the east, west, and south of the site as shown in Figure 22 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C). This is the opposite of violating protected lands as the commenter states; it is instead the reestablishment of viable Linkage habitat and creation of new protected lands where they currently do not exist and haven't ever existed under the MSCP since its inception. The Project is indeed serving the purpose of the MSCP.

R-O8-5 cont.

site along the south and southeastern boundaries occur within areas identified as Pre-Approved Mitigation Area (PAMA), and Minor Amendment lands occur in the southwestern portion of the site along Sweetwater River."

The DEIR also documents the project's indirect effects to the MSCP from a variety of detrimental impacts. "The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would likely harm sensitive species over the long term. Potentially significant indirect impacts to sensitive species resulting from lighting, fugitive dust, human access/activity, domestic animals, and exotic species would be avoided through the following project design features and mitigation measures."

The project would need a major use permit and numerous other permits and mitigation measures to exempt the Sand Mine from the County's Biological Mitigation Ordinance (BMO). "The BMO is the ordinance by which the County implements the County MSCP Subarea Plan at the project level within the unincorporated area to attain the goals set forth in the County MSCP Subarea Plan. The BMO contains design criteria and mitigation standards that, when applied to projects requiring discretionary permits, protect habitats and species and ensure that a project does not preclude the viability of the MSCP Preserve System. In this way, the BMO promotes the preservation of lands that contribute to contiguous habitat core areas or linkages. Pursuant to Section 86.503(a)(9) of the BMO, the proposed project would be exempt from the BMO requirements provided that the following measures are required as conditions of the project's Major Use Permit: a. The facility or project is consistent with the County General Plan, the MSCP Plan, and the Subarea Plan as approved by the Board of Supervisors; b. All feasible mitigation measures have been incorporated that meet the standards for mitigation required by CEQA and the State Surface Mining and Reclamation Act of 1975; c. Any wetland buffer area shall be restored to protect the environmental values of adjacent wetlands; d. In a floodplain, reclamation shall result in a net gain in functional wetlands and riparian habitat in or adjacent to the area of extraction; e. Native vegetation shall be used on steep slope lands to revegetate and landscape cut areas and fill areas in order to substantially restore the original habitat value, and slopes shall be graded to produce contours and soils which reflect a landform that is consistent with the approved Reclamation Plan; f. Mature riparian woodland may not be destroyed or reduced in size due to sand, gravel, and mineral extraction; and g. All Critical Populations of Sensitive Plant Species Within the MSCP Subarea, (Attachment C of Document No. 0769999 on file with the Clerk of the Board); Rare, Narrow Endemic Animal Species Within the MSCP Subarea, (Attachment D of Document No. 0769999 on file with the Clerk of the Board); Narrow Endemic Plant Species Within the MSCP subarea, (Attachment E of Document No. 0769999 on file with the Clerk of the Board); and San Diego County Sensitive Plant Species, as defined herein will be avoided as required by, and consistent with, the terms of the Subarea Plan." It is our opinion that these criteria would be impossible to meet by the developer and the MSCP should be protected and preserved without the intrusion of a sand mine.

R-O8-5 cont.

The entire purpose of the MSCP is to provide conservation areas that are protected from development and to give developers certainty where they can develop, mine, and build. Sierra Club opposes this development because it violates the MSCP agreements and renders them meaningless if industrial projects of this type are allowed to violate these protected lands. The MSCP and the species listed above in the RDEIR needs protection from industrial development or they will fail to thrive.

R-O8-6

Similarly, as the RDEIR indicates above, the wetlands in the Streambed of the Sweetwater River are protected by a Resource Protection Ordinance (RPO). The county should not approve any potential intrusion into the Sweetwater River streambed which is protected by the RPO. The RDEIR reveals numerous impacts on the Sweetwater River.

R-O8-7

Finally, it is unacceptable to develop or mine in a Pre-Approved Mitigation Area (PAMA) that is set aside for mitigation from other projects. This is doubling concerning. Not only does the Cottonwood Sand Mine Project fail to acquire mitigation property for the environmental damage produced by the mine, but the project also proposes to destroy PAMA lands that could be used for mitigation from other projects.

R-O8-8

Noise Impacts on the Rancho San Diego Community

The project would have huge noise impacts on a quiet suburban community that would negatively affect its residents and dramatically alter its community character in violation of CEQA. Moreover, the project would generate noise well about the normal 60db danger level causing harm to people's hearing, increasing stress, and injuring nearby schoolchildren.

The RDERI states: "The Project would generate elevated noise levels during operation of its individual components that would have the potential to affect nearby NSLUs. Prominent operational noise sources would include processing plant activities (on-site haul truck loading and stationary plant machinery); excavation area grading activities, including vegetation clearing, topsoil removal, and stockpile creation (dozer); raw material extraction, including loading and transport activities (off-road equipment and conveyor belt); and on-road haul truck activities (up to 18 trucks per hour traveling west of the Project driveway along Willow Glen Drive)."

The RDEIR concludes that "noise impacts from mining activities to exterior use areas at NSLUs are conservatively assessed as potentially significant." The noise would affect human receptors at numerous locations. The DEIR states: "Noise-sensitive land uses (NSLUs) include uses associated with indoor and/or outdoor activities that may be subject to stress and/or substantial interference from noise. NSLUs include any residence, hospital, school, hotel, resort, library, or other facilities where lower noise levels are an important attribute of the environment. NSLUs in the area include single-family residences to the north of the Project site across Willow Glen Drive, adjacent to the southern boundary of the Project site, near the northeast corner of the Project site, and near Steele Canyon Golf Course; Hilton Head County

R-O8-6 As detailed in Section 2.2.2.5 (Guideline 27) of the RDEIR and 7.2.1 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), the Project is exempt from RPO requirements based on its consistency with the measures specified in Section 86.605(d) of the RPO that would also be included as conditions of the Project's Major Use Permit (MUP). Further, all impacts to RPO wetlands and to jurisdictional aquatic resources would be fully mitigated, and applicable regulatory permits would be obtained from the appropriate agencies.

R-O8-7 The commenter expresses concern with mining or development occurring within the lands that have been identified as PAMA. The majority (94 percent) of the 280-acre Project site is outside of PAMA. As described in Section 2.2.1.1 of the RDEIR and 1.4.1 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), only 16.4 acres of the 280-acre Project site is designated as PAMA; refer to RDEIR Figure 2.2-1 and Biological Resources Technical Report Figure 4. As detailed in Section 2.2.2.5 (Guidelines 29 and 30) of the RDEIR and Section 7.2.1 of the Biological Resources Technical Report recirculated with the RDEIR, only 9.8 acres of Project impacts would occur to lands designated as PAMA. Furthermore, most of these impacts (8.8 acres) would occur to disturbed and developed land uses.

Project impacts to PAMA would be mitigated in accordance with the MSCP Subarea Plan mitigation ratios, and implementation of the Project's Conceptual Revegetation Plan (Appendix N of the Biological Resources Technical Report recirculated with the RDEIR) would restore approximately 120 acres of upland and wetland/riparian habitat within the Project site. The Project would ultimately provide additional, higher quality habitat for special status species documented to occur within the Project site, as well as increased cover and foraging opportunities for wildlife, providing opportunities for live-in habitat and connectivity for wildlife movement.

R-O8-8 Please see Topical Response 7, *Noise Impacts,* regarding the efficacy of the proposed noise mitigation, as well as discussion on the potential for noise reverberation within the valley. As stated in Topical Response 7, noise impacts would be less than significant. Further, extraction activities would not take place

Park located 0.1 mile north of the Project site; the Adeona Healthcare facility located along Steele Canyon Road to the south of the Project site; and Jamacha Elementary."

R-O8-8 cont.

One of the solutions proposed to noise mitigation in the RDEIR is the construction of an 8-foot noise barrier. The RDEIR states: "an 8-foot-high noise barrier, constructed to the specifications identified below, shall be provided between excavation activities and the off-site NSLUs, when excavation is occurring within 400 feet of each location." This is an infeasible solution. The proposed Cottonwood Sand Mine is in a valley surrounded by hills and mountains. Sound can easily pass over an 8-foot barrier, reflect off the higher elevation and reverberate throughout the valley. This is like a Band-Aid on an open wound that has no chance of working.

Environmental Impact of Truck Trips

R-O8-9

In the RDEIR we learn that an additional 58 round trip truck trips would occur each day. According to the RDEIR "an additional amount of backfill materials would also be required and would necessitate importation to the Project site. This importation of additional backfill material would generate additional truck haul trips to and from the site that were not considered in the Draft EIR circulated for public review." The RDEIR goes on to say: "This results in 57.7 average import truck trips per day, which was rounded up to 58. This is the same methodology that was used to calculate the number of outgoing haul trips from the Project site reported in the Draft EIR."

What is now missing from the RDEIR is the cumulative impact of these additional truck trips. The streets surrounding the proposed Sand Mine including Willow Glen, Steel Canyon, Jamul Drive, and others often experience heavy traffic at present. Yet, nowhere in the RDEIR is an analysis of the cumulative impact of traffic, particularly considering the 58 additional round trip truck trips. Sierra Club calls for a traffic study to determine the cumulative impact of these additional truck trips as required by CEQA.

Underestimation of Truck Trips

R-O8-10

Our analysis shows that the new number of truck trips in the RDEIR is underestimated. The RDEIR reveals that there will be increased numbers of internal trips to backfill the excavation: It says: "Washed fines and materials undesirable for processing would be transported to backfill areas in one of three ways: (1) low-profile haul truck/tractor-trailer, (2) conveyor and haul truck, and (3) haul truck." Yet nowhere in the RDEIR are these extra truck trips internal to the project accounted for. A thorough search of the EIR showed no analysis of these additional internal truck trips nor any accounting for their impact on air pollution, greenhouse gas, or the streambed of the Sweetwater River. This is a clear omission in violation of CEQA and needs to be amended in future EIRs.

Impacts to the Sweetwater River

R-O8-11

The RDEIR like the DEIR assures the reader that no disruption or pollution would occur in the streambed of the Sweetwater River, a river that feeds Sweetwater Reservoir, a source of

R-O8-8 (cont.) across the entire site at one time. Mining would progress in phases across the site, with no more than 30 acres in active mining at one time.

R-O8-9 Please see Topical Response 8, *Traffic Impacts*, under "Import Truck Trip Transportation Analysis," which concludes that, even with the addition of 58 haul trucks, a significant impact is not calculated. Please see R-O3-13 for discussion of cumulative impacts.

R-O8-10 Truck trips are not underestimated in the RDEIR. The three categories of mechanical equipment mentioned in this comment are necessary to move soil and backfill materials within the Project site were already accounted for in the original DEIR. It was only the truck trips that had been erroneously omitted from the DEIR Project description. Updates to the technical studies to clarify that the erroneously omitted truck trips do not result in new significant impacts or substantially more severe significant impacts are included in the FEIR.

R-O8-11 The streambed crossings are temporary crossings used to transport mobile equipment to and from a mining phase area, at the beginning and end of a mining phase, where areas are not accessible from any other entrance. In other words, the purpose of the crossing is the initial staging and then removal of heavy equipment. This would only apply to the Phase 1 area west of Steele Canyon Road and south of the river channel, or if the Ivanhoe Road entrance to the Project site becomes inaccessible. Additionally, the streambed would be completely dry before trucks cross the streambed and, given how few times over the entire course of the Project crossings would need to occur (again, crossing would be needed only to stage and then remove heavy equipment), avoidance of any streambed crossing when the bed is not completely dry would be easy to achieve.

R-O8-11 cont.

drinking water for several hundred thousand residents of San Diego County. The RDEIR tries to reassure readers that there will be no damage to the Sweetwater River streambed. The RDEIR states: "Up to three temporary river crossings would be utilized to transport heavy equipment across the low-flow channel during mining operations. Channel crossings would only be used when there is no water flow in the channel." However, the RDEIR fails to:

1) Specify if the streambed must be completely dry before trucks are allowed to cross the streambed.
2) Specify who will monitor the streambed to make sure it is sufficiently dry to permit truck crossing.
3) Provide details for how many weeks or months the streambed would have no flow from water releases a Loveland Reservoir.
4) Discuss whether the project could cease operations entirely when the streambed is continuously flowing from heavy rains as was the case in the 2022-2023 rainy season.

R-O8-12

Haul trucks violate the streambed of the Sweetwater River.

In the DEIR the applicant promised not to disturb the streambed of the Sweetwater River. In the RDEIR we learn that is not the case. The RDEIR clearly states: "For backfill areas north of the channel in Phase 1, the fill materials would be loaded onto a low-profile haul truck or tractor-trailer by an excavator at the processing plant and hauled along the conveyor access road (conceptual alignment shown on Figure 1-5a) to the backfill areas. Clearance under the Steele Canyon Road bridge is approximately 11 feet in height, which would allow the low-profile haul truck (approximately 9 feet in height with a capacity of 20 cy) or tractortrailer (approximately 8 feet in height with a capacity of 16 cy) to pass beneath without requiring removal of soil material beneath the bridge." The Steel Canyon Road bridge crosses the streambed of the Sweetwater River; thus, the earlier assurance that there would be no disturbance to the streambed of the Sweetwater River is obviously an error. To comply with CEQA a new analysis of the recently revealed streambed intrusions into the Sweetwater River need to be conducted.

R-O8-13

Backfill Material Section is Illegally Vague and Dangerous

The REIR revealed for the first time that imported backfill material would be introduced to the project site upon completion of the mining operation. The REIR states that: "The imported material would consist of inert debris only. Inert debris would consist of excavated soil material from development projects, clean demolition materials, and possibly concrete, asphalt, and rock. The project would be conditioned to only accept materials suitable for the end use of the site." This plan is a clear violation of CEQA:

1) A more detailed analysis of the so-called "clean" demolitions materials needs to be conducted. Such materials often contain lead, asbestos, or toxic materials. The REIR should lay out, in detail, the standards by which such infill materials will be evaluated.
2) Since the plan is purely hypothetical and would occur a decade from now, there is no assurance the materials will be "inert", "clean", or "suitable."

R-O8-11 (cont.) The Project does not propose to impact or limit water releases from Loveland Reservoir. The Project does not propose to cease operations during heavy rains as long as it is in compliance with all permit conditions. However, streambed crossings during such rains would not occur.

R-O8-12 As shown on Figure 1-5a, the conveyor alignment runs in an east-west orientation parallel to and north of the Sweetwater River channel for Phase 1. As stated on page 1-5 in Chapter 1.0 of the RDEIR, as well as in this comment, the low-profile haul truck or tractor-trailer would use an access road provided along the conveyor alignment. The Steele Canyon Road bridge perpendicularly crosses over the conveyor alignment access road and the river channel. The Project's haul truck and/or tractor-trailer would cross under the portion of the Steele Canyon Road bridge that is north of the river channel. Therefore, the haul truck and/or tractor-trailer would not travel within or disturb the river channel.

R-O8-13 Please see Topical Response 5, *Imported Material and Backfilling Process,* for additional information on the standards and requirements applicable to the backfill material that would be used by the Project. Reclamation, including backfilling, would occur when a Project phase ends and would be concurrent with mining. Additionally, the material type would be determined as part of the Inert Fill permitting process.

R-O8-13 cont.

3) Asphalt is a petroleum-based, volatile organic compound with numerous known toxic effects. Using asphalt as infill to restore a natural area is a dangerous choice and should be rejected as an option.

The final EIR must include much more detailed analysis of the content of the backfill material, analyze that it is indeed "clean", and remove asphalt from among the backfill materials.

Impacts to McGinty Mountain Ecological Reserve

R-O8-14

The REIR acknowledges that the McGinty Mountain Ecological Reserve is a core biological resource area. "The project site is shown as a habitat linkage between the McGinty Mountain/ Sycuan Peak-Dehesa Biological Resource Core Area (BRCA) to the east and Sweetwater Reservoir/San Miguel Mountain BRCA to the west, which overlap the extreme southwestern and southeastern portions of the site, respectively. These BRCAs are generally associated with the SDNWR to the west, southwest, and southeast of the site, along with open space areas to the east and southeast located within the McGinty Mountain Ecological Reserve and McGinty Mountain Preserve. The Sweetwater River and Sweetwater Reservoir are expected to be key components to the movement of wildlife in the region, namely birds and mammals."

The REIR acknowledges that the project would negatively impact these core, biological areas. It states: "The project would impact the viability of a core wildlife area," "The project would impact the viability of a core wildlife area." Additionally, the REIR states, "The project would result in direct impacts to lands mapped as BRCA and PAMA, and would impact sensitive habitats found to support, or with the potential to support, special status wildlife species."

Despite the many mentions of the McGinty Mountain Ecological Reserve, the RDEIR is deficient in that it neither mentions specific harms to the reserve, nor does suggest how the vague harms to the reserve would be mitigated as required under CEQA.

R-O8-15

Additionally, the RDEIR is deficient in that no mention is made in the entire RDEIR on air quality impacts to the McGinty Mountain Ecological Reserve and McGinty Mountain Preserve. Human receptors are not the only living things impacted by fugitive dust and air pollution. Mammals, birds, insects, and plants can be negatively affected by air pollution and dust. The McGinty Mountain Ecological Reserve and McGinty Mountain Preserve lies immediately to the east of the project and any emissions would blow right into the reserve on the prevailing westerly winds. A complete environmental impact analysis on these air-bourne impacts is required to be compliant with CEQA.

Wildlife Corridors.

R-O8-16

The present site proposed for the Cottonwood Sand Mine is an important wildlife corridor connecting McGinty Mountain Ecological Reserve, the San Diego Natural Wildlife Refuge, and other key natural reserves. The RDEIR acknowledges the importance of the former Cottonwood Golf Course as a wildlife corridor. It states: "Large mammals would also be expected to travel along the Sweetwater River valley and riparian corridor. Birds would be expected to move

R-O8-14 The McGinty Mountain Ecological Reserve (reserve) is mentioned in the context of regional preserve planning and where it lies in relation to the Project. The Project is not located within or immediately adjacent to the reserve. The reserve is located further to the north and east of the Project site, as depicted on Figures 2.2-1 and 2.2-6 of the RDEIR. An analysis of the reserve itself is not required under CEQA. The potential effects of the Project on the reserve are disclosed in relation to the Project site facilitating wildlife movement in the local area as a linkage for wildlife that potentially also use the reserve for certain life history requirements, and in relation to the Project site contributing to the regional preserve assembly, for which the reserve is a component. Mitigation is proposed that includes measures for enhancing and improving linkage functions for wildlife that potentially also use the reserve, in addition to preserving on-site open space in perpetuity that would contribute to the regional preserve assembly.

R-O8-15 As detailed in the Air Quality Technical Report provided as Appendix I to the DEIR, the USEPA has established both primary and secondary National Ambient Air Quality Standards (NAAQS) and the CARB has established the more stringent California Ambient Air Quality Standards (CAAQS). The secondary NAAQS were specifically designed to protect the public welfare from adverse effects, including those related to effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate; damage to property; transportation hazards; economic values, and personal comfort and well-being. Page 4 of the Addendum to the Air Quality Technical Report concludes the Project "would not result in a violation of the NAAQS or CAAQS." Therefore, there would be no significant effect to the flora or fauna of the McGinty Mountain Ecological Preserve or McGinty Mountain Preserve.

R-O8-16 Please refer to Topical Response 9 for a discussion on wildlife movement, habitat linkages, and connectivity. Please also see Response to Comment R-O7-9 regarding the baseline for the biological resources impacts analysis.

R-O8-16 cont.

unobstructed between key habitat blocks of coastal sage scrub and riparian habitat providing important breeding, foraging, and dispersal functions. Key blocks of coastal sage scrub where gnatcatchers are known to occur include the SDNWR, with additional habitat extending further northeast within Crestridge and Harbison Canyon, and to the southeast into Proctor Valley and areas surrounding Jamul Mountain."

The RDEIR further acknowledges this important wildlife corridor. "The Project site is shown as a habitat linkage between the McGinty Mountain/Sycuan Peak-Dehesa Biological Resource Core Area (BRCA) and Sweetwater Reservoir/San Miguel Mountain BRCA, which overlap the extreme southwestern and southeastern portions of the Project site, respectively. These BRCA are generally associated with the SDNWR to the west, southwest, and southeast of the Project site, along with open space areas to the east and southeast located within the McGinty Mountain Ecological Reserve and McGinty Mountain Preserve."

Crucially, the Cottonwood site is in the core of one of the most important MSCP sites in Southern California: "The site is identified as a linkage between these core areas in the MSCP (County 1997), and small portions of the site are identified as PAMA (16.4 acres)."

Unfortunately, after documenting the importance of the project site as a wildlife corridor, the RDEIR attempts to downplay its importance. "The Project site mainly consists of an existing golf course which lacks adequate vegetative cover preferred by many species for use of an area as a corridor… For these reasons, its current linkage/corridor functions are considered low."

This statement is not exactly true. The golf course has been closed for five years and residents report numerous sightings of birds, reptiles and mammals that were seldom seen previously. Animals are quick to reclaim an abandoned area. During the pandemic there were numerous reports of animals inhabiting urban areas while people were sheltering in place. Similarly, after the Fukushima nuclear disaster in 2011, many wild animals such as boars, macaques, raccoons, and foxes moved into the evacuated zones and thrived in the absence of human activity. Likewise, plants and trees have taken over abandoned spaces in Scotland, such as old factories, railways, and quarries, creating new habitats for wildlife. Nature has a remarkable ability to adapt and recover from human impacts. This is especially the case with the Cottonwood Golf Course since it is located near rich biological areas such as the McGinty Mountain Ecological Reserve and the National Wildlife Refuge. What will resolve this issue more definitively is a new biological survey-one that is conducted before activity resumes. Sierra Club calls for a new biological survey that documents the species that have repopulated the former golf course.

In fact, numerous species have been captured by camera. According to the RDEIR: "Species captured by the cameras include great basin fence lizard (Sceloporus occidentalis longipes), San Diego gopher snake (Pituophis catenifer annectens), black phoebe (Sayornis nigricans), Cassin's kingbird (Tyrannus vociferans), European starling (Sturnus vulgaris), great blue heron, great-tailed grackle (Quiscalus mexicanus), greater roadrunner (Geococcyx californianus), house finch (Haemorhous mexicanus), mourning dove (Zenaida macroura), northern mockingbird (Mimus

R-O8-16 cont.

polyglottos), redshouldered hawk, Say's phoebe (Sayornis saya), western bluebird, bobcat (Canis latrans), California ground squirrel, coyote, desert cottontail (Sylvilagus audubonii), long-tailed weasel (Mustela frenata), raccoon (Procyon lotor), and Virginia opossum (Didelphis virginiana). Many of the bird, reptile, and small mammal species detected within the project site are commonly observed in urbanized, residential, and disturbed settings associated with human presence. Medium-sized mammal species such as coyote and bobcat were also detected, though larger species, such as mule deer and mountain lion, were not detected. Coyotes were detected at all camera stations during both daytime and nighttime hours. In addition, coyotes were observed in groups of two and three in the eastern and western portions of the project site during daytime hours on several occasions during the 2022 biological surveys. Bobcat was detected a total of three times (June 25, June 28, and July 14, 2022) at two camera stations." Please note that these surveys were taken when animal species were suppressed during a decade long drought. Sierra Club for an updated survey conducted after our substantial rains that occurred in winter and spring of 2022-2023.

R-O8-17

Unmitigated Impacts of the Project

The RDEIR openly admits that the project would have unmitigated impacts to numerous important San Diego County Species. "The project would result in potentially significant impacts to the federally listed threatened coastal California gnatcatcher and federally and state listed endangered least Bell's vireo, further discussed below. , USFWS-designated critical habitat for the coastal California gnatcatcher, least Bell's vireo, and federally listed endangered San Diego ambrosia is present in the southwestern portion of the site (Figure 7), and critical habitat for the federally and state listed endangered southwestern willow flycatcher occurs off-site to the west of the project site within the SDNWR." Additionally, The DEIR admits that the project would have unmitigated impacts on nesting species: "The project could impact nesting success of coastal California gnatcatcher, least Bell's vireo, and tree-nesting raptors through grading, clearing, fire fuel modification, and/or other noise generating activities such as construction."

The RDEIR states that: "Impacts to nesting gnatcatchers and occupied habitat would be significant. Potentially significant impacts to coastal California gnatcatcher habitat would be reduced to a less than significant level through the implementation of mitigation measure BIO-1." This bogus mitigation measure is not a substitute for real mitigation which would require contemporaneous acquisition of habitat of equal or greater quality to that which the project is destroying.

R-O8-18

Indirect impacts

Construction-related noise from sources related to clearing, grubbing, grading, and extraction and processing activities would temporarily impact wildlife. Construction of the processing plant, aggregate extraction, and processing operations would require the daily use of heavy equipment that would elevate existing noise levels on-site. Breeding birds and mammals may

R-O8-17 Please refer to Response to Comment R-O6-7, which addresses Project impacts to coastal California gnatcatcher habitat and mitigation, including discussion on the impact and mitigation phasing.

R-O8-18 Indirect impacts to wildlife related to construction generated noise levels are analyzed in Sections 2.2.2.1 (Guidelines 1 through 3, Guideline 8, and Guideline 12), 2.2.2.4 (Guideline 22), and 2.2.2. (Guideline 33) of the RDER and Sections 3.0, 6.0, and 7.0 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C). Mitigation measures have been identified to reduce potential impacts to a less than significant level.

R-O8-18 cont.

temporarily or permanently leave their territories to avoid disturbances from human activities, which could lead to reduced reproductive success and increased mortality.

Fugitive Dust

The RDEIR recognized that probable dangerous fugitive dust emissions from the project. The RDEIR states: "Fugitive dust produced by construction and extraction operations has the potential to disperse onto preserved vegetation, which may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or diseases. This in turn could affect animals dependent on these plants. Fugitive dust also may make plants unsuitable as habitat for insects and birds. Breeding birds and mammals may temporarily or permanently leave their territories to avoid construction and/or extraction operations, which could lead to reduced reproductive success and increased mortality. The project would implement a Fugitive Dust Control Plan during mining and reclamation activities that would include fugitive dust control measures to minimize dust emissions and meet applicable dust control requirements. Dust control measures would include the watering of active construction and extraction areas, unpaved surfaces, and stockpiles to minimize dust generation; and watering of all exposed soil a minimum of twice per day. Additionally, outgoing loaded trucks would be surface watered for dust suppression."

R-O8-19

These measures are unlikely to thoroughly control dust. According to the United States Center for Disease Control and Prevention: "Fugitive dust is generated along unpaved mine roads from intermittent equipment traffic. Typically, the majority of such traffic consists of trucks hauling either mine product or waste from the surface mine pit and/or the processing plant. Fugitive dust generated along these unpaved mine roads includes particles of all sizes that become airborne. The potential hazards include the deleterious effects to human health of inhaled dust, traffic visibility hazards, and environmental impacts on the localized area by the larger-sized visible airborne dust." The RDEIR is deficient in several ways:

1) Dust control measures will be overcome by strong, dry Santa Ana Winds. While watering can help to some extent, strong winds can quickly defeat the best dust control measures.
2) The DEIR fails to guarantee that continuous dust monitoring by an independent agency will be available.
3) Some percentage of fugitive dust will escape despite control measures. Indeed, according to a published study by Sairinan, Rinne, & Selonen (2017) in the International Journal of Mining, Reclamation and Environment: "Fugitive dust constitutes one of the most severe environmental problems in quarries because it escapes capture. This review aims to provide overview of dust concentration caused by quarrying by synthesizing the current knowledge. The 25 studies explored here were conducted in open-pit quarries or mines. Three main dust sources surfaced from the studies: drilling, crushing, and hauling. Analysis revealed a range of dust concentrations caused by different quarrying operations. Crushing was the most significant dust source, while drilling caused the

R-O8-19 Please see Response to Comment R-O8-15, above. As concluded in the Air Quality Technical Report provided as Appendix I to the DEIR, the Project "would not result in a violation of the NAAQS or CAAQS." The secondary NAAQS were specifically designed to protect the public welfare from adverse effects, including those related to effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate; damage to property; transportation hazards; economic values, and personal comfort and well-being. Therefore, there would be no significant effect to nearby plants or animals. With respect to the specific points made by the commenter:

1. Windblown dust was accounted for in the emissions inventory developed for the Air Quality Technical Report provided as Appendix I to the DEIR and impacts were found to be less than significant. Additionally, the Fugitive Dust Control Plan requires that all mining activities be suspended when sustained wind speeds instantaneously exceed 25 miles per hour or when the wind speed averaged over 15 minutes is greater than 15 miles per hour.
2. The Fugitive Dust Control Plan provided as Appendix A to the Air Quality Technical Report included as Appendix I to the DEIR requires a CARB certified Fugitive Dust Control Plan Project Site Coordinator and Assistant Coordinator be designated. The Coordinator and Assistant Coordinator would be responsible for monitoring the worksite for compliance with the Fugitive Dust Control Plan.
3. The commenter is correct that some percentage of fugitive dust would escape despite control measures. The emissions inventory provided in the air quality analysis estimates the resulting emissions from sand mining activities including emissions from wind-blown dust, activity in the mining pit, storage piles, travel on unpaved roads and surfaces, as well as material loading, transfer, stacking, screening, and processing. The emissions estimates provided contain the results of the calculations after incorporation of specific dust control measures. Emissions were found to be less than significant.
4. Impacts related to fugitive dust and impacts to sensitive receptors, including nearby schools, residences, and healthcare facilities were evaluated and determined to be less than significant.

R-O8-19 cont.

highest variation. Dust concentration decrease was observed with increasing distance, but the retention was incoherent due to local dust sources."

4) The Sand Mine is in an inappropriate location because schools, residences, businesses health care facilities and pedestrians are in close proximity to the mine. Any fugitive dust will adversely affect the human receptors.

R-O8-20

Inadequate biological mitigation in violation of CEQA

The mitigation measures fail to comply with the intent of the legal requirements of CEQA.

Restoration is not Concurrent Mitigation. Most of the biological mitigation measures in the REIR and not real time mitigation at all; they are restoration for the substantial ecological damage that would occur from the destructive sand mine. Restoration can complement real time, concurrent mitigation but not substitute for it. Typically projects such as these require off-site mitigation that would occur prior to excavation. Most projects "compensate for the impact by replacing or providing substitute resources of environmental conditions." No such mitigation is proposed in the REIR; this is restoration, not true contemporaneous mitigation. Species would have to wait more than a decade for any mitigation to occur. This sham mitigation approach is used in BIO-1, BIO 3, BIO 6, BIO-7, BIO-8, BIO-9 BIO-10 that would result in over a decade long delay in mitigation. Real mitigation as defined by Merriam-Webster is "the process or result of making something less severe, dangerous, painful, harsh, or damaging." Attempting to restore an environment years after it has been destroyed is not true concurrent mitigation, but simply an attempt at restoration. Under BIO-1, 3, 7, 8, 9, and 10 no attempt is made to make something less severe or dangerous, only to attempt restoration many years later.

This approach is sham mitigation because 1) any mitigation would not occur until a decade from now when mining has stopped. The REIR suggests that we must be satisfied for species to suffer for over 10 years until mitigation will begin. 2) During this decade species may not be available to return, their wildlife corridors will have been disrupted and they will suffer from habitat segmentation or worse, extinction. 3. There is no assurance that a restored habitat will be equivalent to the original natural habitat; species may find their habitat too disturbed and impacted to return.

R-O8-21

Additionally, CEQA requires that government agencies monitor mitigations and report on progress annually through the Mitigation Monitoring and Reporting (MMR) requirement. The MMR is used to determine whether mitigation is being implemented as required and whether it is sufficient and effective. When the primary means of mitigation are delayed for over a decade it is impossible for government agencies to meet the MMR requirements because no mitigation is being done. Instead, additional mitigation property needs to be purchased outside of the project to ensure that mitigation is occurring and demonstrate through the MMR that mitigation is actually occurring.

R-O8-22

Paltry preservation is not mitigation. Among the mitigation measures that are not really mitigation at all but merely preservation of ".6 acres of Diegan coastal sage scrub." (Bio-1). In

R-O8-20 Please see Topical Response 9, which addresses mining and reclamation phasing. As stated, the proposed restoration and revegetation of native habitats would begin immediately after the first subphase of mining and conducted on a continuous basis following the subsequent completion of each mining subphase. As such, Project impacts would not occur simultaneously throughout the entire site and portions of the site that are not being actively mined or reclaimed would either remain undisturbed or be in the restoration and revegetation monitoring period. Furthermore, mining activities would predominately occur within portions of the site already disturbed and developed by the golf course development. Where Project impacts occur within sensitive habitat, the impacts would be mitigated in accordance with County requirements.

R-O8-21 Please see Response to Comment DA14, which describes how the Project site would be progressively reclaimed (and how direct impacts from extraction would be mitigated) in an ongoing process that commences when mining operations have ceased within a given area and continues until all mining-related disturbance is reclaimed and all equipment involved in these operations has been removed.

R-O8-22 The comment discounts the relative portion of Diegan coastal sage scrub that would be preserved within the Project site compared to what is existing, the quality of habitat being preserved, and the additional contribution of Diegan coastal sage scrub that the Project would provide through on-site revegetation and preservation of Diegan coastal sage scrub. A total of 1.8 acres of Diegan coastal sage scrub occurs within the Project site (refer to Table 2.2-1 of the RDEIR). As detailed in Section 2.2.2.1 (Guideline 1) of the RDEIR and Section 3.2.1 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), the Project would impact 1.2 acres Diegan coastal sage scrub consisting of small patches of habitat located along existing roadways to the south of Willow Glen Drive and west of Steele Canyon Road, and habitat at the periphery a larger block of coastal sage scrub that continues off-site. No coastal

California gnatcatchers were detected within these areas during the protocol surveys conducted in 2022, but the species was detected off-site to the east of the southeastern Project boundary (refer Figure 2.2-8 of the RDEIR). The Project would preserve the remaining 0.6 acre of Diegan coastal sage scrub located in the southwestern portion of the Project site. This patch of habitat is connected to a larger block of Diegan coastal sage scrub that continues off-site into the SDNWR. A female gnatcatcher was observed foraging with and feeding one fledgling within this area on June 11, 2019 (refer to Figure 2.2.8 of the RDEIR). As demonstrated above, the Diegan coastal sage scrub preserved by the Project represents the habitat that provides the greatest value to coastal California gnatcatcher based on the species use of the habitat, quality of habitat preserved, and its connection to additional preserved habitat located within the SDNWR.

Furthermore, as part of the Project's reclamation process, an additional 11.3 acres of Diegan coastal sage scrub habitat would be revegetated within the Project site along the cut slopes constructed at the margins of the expanded Sweetwater River floodplain and preserved within the Project's BOS easement. The expanded Sweetwater River floodplain, associated riparian corridor, and uplands slopes would also provide additional live-in, foraging, and dispersal habitat for gnatcatchers.

Please see Response to Comment R-O6-7, which addresses the phased nature of Project impacts, reclamation, and native habitat revegetation in relation to coastal California gnatcatcher habitat and mitigation.

R-O8-22 cont.

short, all the Diegan coastal sage scrub will be destroyed except for slightly more than half an acre. This is mitigation, not preservation and a paltry bit of mitigation at that. "According to the REIR: "Mitigation shall occur through the on-site preservation of 0.6 acres of Diegan coastal sage scrub and on-site revegetation of 11.3 acres of Diegan coastal sage scrub for a total of 11.9 acres of Diegan coastal sage scrub to be preserved within the biological open space easement." This preservation as mitigation in BIO-1 and BIO-10 masked the biological destruction by preserving a small portion of the habitat that the project destroys.

R-O8-23

Threats to the gnatcatcher: "In the REIR, BIO-2 mitigation measure proposes that: "Grading or clearing of vegetation within 500 feet of occupied Diegan coastal sage scrub during the breeding season of the coastal California gnatcatcher (March 1 to August 15) shall be avoided to the extent feasible. If clearing or grading would occur within 500 feet of suitable gnatcatcher habitat during the breeding season for the gnatcatcher, a qualified biologist shall conduct a pre-construction survey no more than three days (72 hours) prior to commencement of activities to determine whether gnatcatchers occur within 500 feet of the proposed impact area(s). If there are no gnatcatchers nesting (includes nest building or other breeding/nesting behavior) within that area, grading and clearing shall be allowed to proceed. If any gnatcatchers are observed nesting or displaying breeding/nesting behavior during the pre-construction survey or additional surveys within the area, construction shall be postponed within 500 feet of any location at which gnatcatchers have been observed until a qualified biologist has determined that all nesting (or breeding/nesting behavior) has ceased or until after August 15."

Mitigation measure BIO-2 is inadequate for three reasons.

1) This measure presumes that a biologist will be on hand continuously to monitor the presence of gnatcatchers. But the mitigation measure does not propose that a biologist be present. Certainly, sand miners do not have the expertise to discern the presence of gnatcatchers.
2) If gnatcatchers are detected then operations will be suspended from March 1 to August 15, severely limiting extraction from the sand mine. In such a case the EIR needs to specify if the total production of the Sand Mine will be reduced if the operations will be extended beyond the hours of years specified in the EIRs.
3) There is no promise not to harm gnatcatchers in the REIR, just to avoid them "to the extent possible." The term, "to the extent possible is vague and insufficient" and is up to the discretion of the developer offering no assurance of protection for the gnatcatcher.

R-O8-24

Threats to the Least Bell's Vireo. Mitigation measures BIO-3 and BIO-4 are inadequate to protect the Least Bell's Vireo habitat. BIO-3 proposes that: "Mitigation for impacts to 0.58 acre of potential nesting and foraging habitat for least Bell's vireo (southern cottonwood-willow riparian forest, disturbed southern willow scrub, and tamarisk scrub) shall occur at a minimum 3:1 ratio with at least 1:1 creation (establishment/reestablishment) for a total mitigation requirement of 1.74 acres. Mitigation shall occur through on-site preservation of 13.86 acres of wetland and riparian habitat, on-site rehabilitation of 7.36 acres of riparian habitat, and on-site

R-O8-23 The comment references mitigation measure M-BIO-2, included on page 2.2-84 of the RDEIR and Section 3.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), and claims that the mitigation measure is inadequate.

Pursuant to County requirements, the Project proponent would be required to obtain a qualified biologist to implement the biological monitoring program and ensure compliance with the Project's mitigation measures and permit conditions. Mitigation measure M-BIO-17, included on page 2.2-85 to 2.2-86 of the RDEIR and Section 3.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), requires that the qualified biologist "conduct pre-construction environmental training session for construction personnel prior to all phases of construction to inform them of the sensitive biological resources on site and avoidance measures to remain in compliance with Project approvals. The biologist shall monitor initial vegetation clearing, grubbing, and grading activities to ensure that activities occur within the approved limits of work and avoid impacts to nesting birds. The biologist shall periodically monitor the limits of construction and mining operations to ensure that mining and avoidance areas are delineated with temporary fencing and that fencing remains intact." As such, the construction contractor and associated personnel would be informed on the Project's sensitive biological resources and avoidance and mitigation measures. The qualified biologist would be on-site to ensure that that mining activities and operations comply with the Project's mitigation measures and other applicable permit conditions, including completion of required pre-construction surveys and monitoring of vegetation clearing and grubbing activities.

As specified in mitigation measure M-BIO-2, "If any gnatcatchers are observed nesting or displaying breeding/nesting behavior during the pre-construction survey or additional surveys within the area, construction shall be postponed within 500 feet of any location at which gnatcatchers have been observed until a qualified biologist has determined that all nesting (or breeding/nesting behavior) has ceased or until after August 15." The postponement of construction activities would only be applied to the 500-foot avoidance buffer from observed breeding/nesting gnatcatchers, not the entire Project site or the entirety of monitoring operations. Construction activities would be allowed to resume in areas located outside of the 500-foot avoidance buffer. As such, implementation

R-O8-23 (cont.) of the mitigation measure M-BIO-2 would not have a substantial effect on the overall Project timeline or require mining extraction and operations activities be extended by the hours and years specified in the RDEIR.

The commenter's concern regarding the terminology "to the extent possible" is noted. However, implementation of mitigation measures M-BIO-2 would avoid and minimize direct and indirect impacts to nesting coastal California gnatcatcher if grading or clearing of vegetation were to occur during the species' breeding season (March 1 through August 15) by requiring a pre-construction survey(s) to determine the species presence and breeding status within 500 feet of proposed impact area(s) and implementation of a 500-foot avoidance buffer from where any gnatcatchers are observed nesting or displaying breeding/nesting behavior.

As demonstrated above, implementation of mitigation measure M-BIO-2 would mitigate potential direct impacts to breeding/nesting coastal California gnatcatcher to a less than significant level. It is also noted that the mitigation measure is a standard measure implemented by the County on projects within their jurisdiction and meets the Wildlife Agency requirements.

R-O8-24 The comment references mitigation measures M-BIO-3 and M-BIO-4, included on page 2.284 of the RDEIR and Section 3.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), and claims that the mitigation measures are inadequate.

As detailed in Section 2.2.2.1 (Guideline 1) of the RDEIR and Section 3.2.1 of the of the RDEIR and Sections 2.2.2 and 3.2.1 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), the Project would impact 0.58 acre of suitable vireo habitat comprised of 0.44 acre of southern cottonwood-willow riparian forest (including disturbed), 0.13 acre of disturbed southern willow scrub, and 0.01 tamarisk scrub at the periphery existing habitat located along the Sweetwater River, including areas where vireos have been detected. In contrast, the Project would preserve 13.85 acres of existing wetland and riparian habitat and would rehabilitate an additional 7.36 acres of disturbed wetlands through the removal of exotic and invasive species and planting of riparian habitat within the BOS easement (refer to Figure 1-10 of the RDEIR). As demonstrated above, the Project would preserve a far greater amount of suitable vireo habitat than it would impact. Furthermore, following reclamation, the Project would provide additional, higher quality habitat for the species through the revegetation of approximately 110.17 acres of wetland/riparian habitat within the expanded Sweetwater River floodplain.

R-O8-24 cont.

re-establishment and revegetation of 107.62 acres of riparian habitat for a total of 128.84 acres of wetland riparian habitat to be preserved within the biological open space easement."

BIO-3 and BIO-4 in the REIR states: "Grading or clearing of riparian habitat during the breeding season of the least Bell's vireo (March 15 through September 15) shall be avoided to the extent feasible." BIO-3 and BIO-4 are inadequate because:

1) It destroys more vireo habitat than it preserves.
2) Like several mitigation measures it restores habitat only after more than a decade with little assurance that the initial destruction did not harm or eliminate the gnatcatchers permanently.
3) Like the mitigation measure for the California Gnatcatcher, it only protects Vireo habitat "to the extent possible." The term, "to the extent possible" is vague and inadequate. Ominously, the determination is up to the discretion of the developer with no biological experience, offering no assurance of protection for the gnatcatcher.
4) Operations will be stopped if Vireos are observed during the breeding season from March 15 to September 15 further limiting the time when extraction can occur. But the EIR needs to specify if the total production of the Sand Mine will be reduced or if the operations will be extended beyond the hours or years specified in the EIRs.

Threats to Birds will be Substantial.

R-O8-25

Mitigation measure BIO-5 is inadequate to protect nesting gnatcatchers, vireo, raptors, and other bird species. According to the REIR: "If pre-construction surveys determine the presence of active nests belonging to these sensitive species, then activities shall: (1) be postponed until a qualified biologist determines the nest(s) is no longer active or until after the respective breeding season; or (2) not occur until a temporary noise barrier or berm is constructed at the edge of the impact footprint and/or around the piece of equipment to ensure that noise levels are reduced to below 60 dBA or ambient, whichever is greater. The type(s) and location(s) of noise barrier(s) shall be provided to the County and Wildlife Agencies along with the associated noise measurements demonstrating compliance with required noise level reductions. Decibel output would be confirmed by a County-approved noise specialist and intermittent monitoring by a qualified biologist to ensure that noise levels remain below 60 dBA at occupied areas."

1) Since mining is a continuous activity, "intermittent monitoring" is inadequate to assess noise spikes in the DBA levels.
2) Noise and biology specialists will be under great pressure not to postpone mining activities resulting in overlooking of excessive noise levels.
3) It is unclear if noise and biology specialists will be hired by the developer (which will constitute a fatal conflict of interest) or by some impartial body.
4) Creating noise barriers to protect birds is an inadequate and pitiful mitigation measure. Bird nest in trees up to 40 or 50 feet above ground and will fly over and around the area.

R-O8-24 (cont.) Please see Topical Response 9 and Response to Comment R-O6-7 regarding the phased nature of Project impacts, reclamation, and native habitat revegetation.

Please see Response to Comment M-BIO-23 for an explanation of how the 500-foot avoidance buffer specified in mitigation measure M-BIO-4 would be implemented. Though this response is in reference to coastal California gnatcatcher, this measure for least Bell's Vireo would be implemented similarly.

Please see Response to Comment M-BIO-23 regarding the use of "to the extent possible" and overall implemented of mitigation measure M-BIO-4. Though this response is in reference to coastal California gnatcatcher, this measure for least Bell's Vireo would be implemented similarly.

As demonstrated above, implementation of mitigation measures M-BIO-3 and M-BIO-4 would mitigate potential direct impacts to breeding/nesting coastal California gnatcatcher to a less than significant level. It is also noted that the mitigation measure is a standard measure implemented by the County on projects within their jurisdiction and meets the Wildlife Agency requirements.

R-O8-25 The comment references mitigation measure M-BIO-5, included on page 2.2-82 and 2.2-83 of the RDEIR and Section 3.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), and claims that the mitigation measure is inadequate to protect nesting gnatcatchers, vireo, raptors, and other bird species.

Please see Topical Response 7, *Noise Impacts*, for a discussion of noise impacts on wildlife species, including nesting birds and raptors, noise barriers, and information regarding "amphitheater effect" or "canyon effect" of noise energy.

Regarding any potential conflict of interest, County staff and the County's third-party peer reviewer review all technical reports prepared by outside consultants and/or submitted to the County by a project applicant, as is industry standard. As demonstrated above, implementation of mitigation measure M-BIO-5 would mitigate potential direct impacts to nesting gnatcatchers, vireo, raptors to a less than significant level. It is also noted that the mitigation measure is a standard measure implemented by the County on projects within their jurisdiction and meets the Wildlife Agency requirements.

R-O8-25 cont.

a) Erecting a barrier 40-50 feet above ground is not particularly feasible. The applicant needs to demonstrate that this is feasible and effective.
b) If it were feasible, construction of such a barrier would create substantial noise during construction of the barrier.
c) The proposed Cottonwood Sand Mine is in a river valley surrounded by hills at substantially higher elevations above the project. These elevated hills would reflect sound from the opposite site of the barrier which would produce reverberations that would impact bird species.

R-O8-26

The mitigation plan proposed in BIO-7 is inadequate to project other bird species. According to the EIR: "Potential impacts to nesting birds, including but not limited to barn owl, California horned lark, Canada goose, coastal California gnatcatcher, Cooper's hawk, great blue heron, green heron, Lawrence's goldfinch, least Bell's vireo, loggerhead shrike, oak titmouse, red-shouldered hawk, vermilion flycatcher, Biological Resources Technical Report for the Cottonwood Sand Mine Project | March 2023 94 western bluebird, white-tailed kite, yellow-breasted chat, and yellow warbler would be mitigated through the implementation of the following measure BIO-7: Grubbing or clearing of vegetation during the general avian breeding season (February 15 through August 31) or raptor breeding season (January 15 through July 15) shall be avoided to the extent feasible."

This measure is clearly misleading and lacks credibility. If the collective protections recommended in the REIR are implemented the potential exists to prohibit sand mining from January 15 to September 15. The project manager will be under great pressure to keep the mine in operation, ignoring this mitigation measure. Additionally, if they avoid mining during streambed flow in the Sweetwater River (See other part of EIR) the potential mining season may be reduced to a single month (Sept 15 to October 15).

R-O8-27

Mitigation measure BIO-11 will not protect reptile and amphibian species. The REIR states: "Direct impacts to special status reptile and amphibian species not covered under the County's MSCP (including two-striped garter snake and western spadefoot), if found to occur within the proposed impact area(s), would be mitigated through the implementation of the following measure BIO-11: BIO-11 Prior to any vegetation removal, grading, and/or other ground disturbing activities, a qualified biologist familiar with special status reptile and amphibian species behavior and life history shall conduct a pre-construction survey no more than two weeks prior to commencement of activities to determine whether reptile and amphibian species designated as sensitive by CDFW, but not covered under the County's MSCP, occur within proposed impact area(s). If special status reptile or amphibian species are detected during the pre-construction survey, consultation with CDFW shall be initiated to prepare species-specific protocols for proper handling and relocation procedures."

This measure does not call for practices that would actually protect reptile and amphibian species; it only calls for consultation with CDFW. In absence of a specific protocol for protection of these species it is uncertain if, and when, consultation with CDFW would occur and what the

R-O8-26 The comment references mitigation measure M-BIO-7, included on page 2.2-83 of the RDEIR and Section 3.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), and claims that the mitigation measure is inadequate to protect other bird species.

The mitigation measure would not prohibit sand extraction and other ground disturbing activities to times outside of the general nesting bird and raptor seasons (collectively January 15 through August 31). As specified in the mitigation measure, "If grubbing, clearing, or grading would occur during the general avian breeding season within 300 feet of general nesting bird habitat or 500 feet of nesting raptor habitat, a qualified biologist shall conduct a pre-construction survey no more than three days (72 hours) prior to the commencement of activities to determine if active bird nests are present in the affected areas. If there are no nesting birds (includes nest building or other breeding/nesting behavior) within this area, clearing, grubbing, and grading shall be allowed to proceed." If nesting birds are detected during the surveys, a nest avoidance buffer around the active nests would be established and postponement of construction activities would only be applied to the nest avoidance buffer, not the entire Project site. Construction activities would continue in areas located outside of the avoidance buffer. As such, sand extraction and other ground disturbing activities would not be restricted by to certain time of year due to implementation of mitigation measure M-BIO-7 and would not be "reduced to a single month (Sept 15 to October 15)" as indicated in the comment.

Please see Response to Comment R-O8-23 regarding biological monitoring, which would ensure that that mining activities and operations comply with the Project's mitigation measures and other applicable permit conditions, including completion of required preconstruction surveys and monitoring of vegetation clearing and grubbing activities.

As demonstrated above, implementation of mitigation measure M-BIO-7 would mitigate potential direct impacts to nesting birds and raptors to a less than significant level. It is also noted that the mitigation measure is a standard measure implemented by the County on projects within their jurisdiction and meets the Wildlife Agency requirements.

R-O8-27 cont.

disposition of such consultations are. CEQA require specific plans for the protection of species; BIO-10 is hopelessly vague and provides not specific protections.

Mitigation Measure BIO-12 Fails to Project the Western Spadefoot.

R-O8-28

The REIR states: "Direct impacts to western spadefoot, if found to occur within the proposed impact area(s), would be mitigated through the implementation of the following measure: BIO-12 If western spadefoot toads, tadpoles, or egg masses are identified within the proposed impact area(s), the following measures shall be implemented: (1) A suitable relocation site(s) outside the proposed impact area(s) shall be identified by a qualified biologist. The relocation site(s) shall be located a minimum of 50 feet outside of the proposed impact area(s), or 100 feet if available, and shall be approved by CDFW; (2) All western spadefoot adults, tadpoles, and egg masses encountered in the proposed impact area(s) shall be collected and released in the identified relocation site(s); (3) The relocation site(s) shall be monitored annually for five years during and immediately following peak breeding season (late winter to March)."

This measure is inadequate for 4 reasons.

1) Spadefoot eggs and tadpoles require opportunistic harvesting. Spadefoot eggs are laid in puddles following rain and usually at night. The REIR offers no measure to ensure this sort of continuous monitoring and rapid response.
2) Bio-12 fails to project spadefoot habitat-it just attempt to protect individual animals and their eggs.
3) The relocation area may be too close to the project (50 feet) to insure survival of toads and their eggs.
4) There is no assurance that relocation sites will be monitored for 5 years.

Fencing would be environmentally damaging as recommended in BIO 12.

R-O8-29

Mitigation measure BIO 12 recommends: "To help ensure errant impacts to sensitive vegetation communities outside of the impact footprint are avoided during construction, environmental fencing (including silt fencing where determined necessary by the SWPPP), would be installed at the edges of the impact limits prior to initiation of grading. All construction staging shall occur within the approved limits of construction." Fencing in a wildlife corridor is environmentally harmful because it reduces migration and results in species segmentation. Ironically, what is included as a biological mitigation measure may result in increased environmental harm.

Bio 13 Mitigation for Bats is Disingenuous.

R-O8-30

According to the RDEIR. "A letter report summarizing the survey methods and results of the survey, including negative findings, shall be submitted to the County and CDFW for review at least two weeks prior to the commencement of Project activities. If bats are detected within the proposed impact area(s) during the initial pre-construction survey, the letter report will identify measures to be implemented to avoid and minimize potential direct and indirect impacts to roosting bats, including those identified in this measure…If bats are detected during the final

R-O8-27 Please see Response to Comment R-O3-8, which addresses implementation of mitigation measure M-BIO-11.

R-O8-28 Please see Response to Comments R-O7-24 and D-A2-16, which address implementation of mitigation measure M-BIO-12.

Potentially significant impacts to suitable habitat for western spadefoot would be reduced to a less than significant level through the implementation of mitigation measures M-BIO-8 and M-BIO-9, included on page 2.2-83 and 2.84 of the RDEIR and Section 3.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), which require reclamation and revegetation of the site following completion of mining activities and habitat-based mitigation.

R-O8-29 The comment references mitigation measure M-BIO-12 (mitigation for direct impacts to western spadefoot) but expresses concerns related to environmental fencing and includes an excerpt of mitigation measure M-BIO-16, which requires environmental fencing. Please refer to Response to Comment M-08-28 regarding previous comments related to western spadefoot.

The comment references mitigation measure M-BIO-16, included on page 2.2-85 of the RDEIR and Section 4.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), and claims that the mitigation measure would result in increased environmental harm, particularly in relation to habitat linkage and wildlife corridor functions. Implementation of mitigation measure M-BIO-17 would require that "Prior to the installation of temporary fencing, the placement design should carefully consider the potential impacts to wildlife movement patterns between the upstream and downstream riparian habitats adjacent to the Project site," and that "a qualified biologist be present to monitor the installation of environmental fencing wherever it would abut sensitive vegetation communities, jurisdictional waters or wetlands, or open space." As such, the installation of temporary fencing would not result in the increased harm to wildlife movement and habitat linkage/wildlife corridor functions.

R-O8-30 The comment references mitigation measure M-BIO-13, included on page 2.2-84 and 2.2-85 of the RDEIR and Section 3.4 of the Biological Resources Technical Report recirculated with the RDEIR (FEIR and RDEIR Appendix C), and claims that the mitigation measure is "disingenuous".

The mitigation measure does not require that an active search for bats be conducted continuously during a 4-month period (April 15 to August 15). As stated in the measure, "Prior to the removal of mature trees or existing buildings/structures with potential to support roosting bats, a qualified biologist shall conduct an initial pre-construction survey no more than 30 days and no less than two weeks prior to commencement of tree removal or demolition activities to determine if roosting bats are present in the proposed impact area(s)" and that "A final pre-construction survey shall be conducted no more than three days (72 hours) prior to tree removal or demolition activities within the proposed impact area(s)." The timing of pre-construction surveys for roosting bats would be based on the proposed construction activities and schedule.

Please see Response to Comment R-O8-23 regarding biological monitoring which would ensure that that mining activities and operations comply with the Project's mitigation measures and other applicable permit conditions, including completion of required pre-construction surveys and monitoring of vegetation clearing and grubbing activities.

This mitigation measure is based on recommendations provided by CDFW on the DEIR; see Response to Comment D-A2-17. As such, the methods and procedures identified within the mitigation measure follow the guidance of the state's Wildlife Agency.

pre-construction survey, the following avoidance measures shall be implemented, depending on the time of year, including additional measures identified in the letter report. If an active maternity roost is detected during the bat maternity season (April 15 through August 15), the biologist shall flag the active roost site and construction activities shall avoid the roost site until after the maternity season (August 16)."

R-O8-30 cont.

1) It is hard to believe that there will be an active search for Bats during a 4-month period from April 15 to August 15. In fact, nothing in the RDEIR identifying a mechanism or assigning a biologist for identifying bats.
2) In the absence of an ongoing presence of a biologist it is hard to believe that miners and construction workers would recognize a bat maternity roost if they saw one.
3) If a worker did find a bat roost there would be powerful disincentives from disclosing its presence.
4) The RDEIR is vague and unclear what construction activities would be suspended to avoid the roost site.

Draft EIRs can write whatever the authors want but the procedures in BIO-13 strain credulity.

What Will this Property become after restoration? A park? Dedicated parkland?

R-O8-31

Bio 14 and 15 According to the EIR, "BIO-14 The applicant shall dedicate 150.7 acres of biological open space to be managed by a long-term manager approved by the County in accordance with a Resource Management Plan. The biological open space easement shall include native habitat revegetation areas located within the expanded Sweetwater River floodplain and bordering constructed slopes. Permanent open space fencing and signage shall be installed around the perimeter of the biological open space as detailed in the final Resource Management Plan. BIO-15 The project requires preparation of a Resource Management Plan (RMP) for on-site biological open space to be approved by the County and Wildlife Agencies (USFWS and CDFW). The RMP would provide direction for the permanent preservation and management of the on-site biological open space in accordance with County regulations." The RDEIR needs to be much more specific regarding the restored project site and its future uses.

R-O8-32

Mitigation in this RDEIR is deficient. In sum, according to the RDEIR despite mitigation the: "Project implementation could result in potentially significant impacts to federally and state listed animal species, state Species of Special Concern animals, County List B and D plant species, County Group 1 and 2 animal species, and raptors with the potential to nest and/or forage over the site and immediate vicinity. Potential significant impacts could result from direct disturbance, loss of habitat, and noise."

The County can approve a project only if the agency adopts a Statement of Overriding Considerations detailing the specific overriding economic, legal, social, technological, or other considerations that outweigh the project's significant, unavoidable impacts. Under CEQA, the lead agency is required to mitigate all " significant" adverse environmental impacts to "**the maximum extent feasible.** and

R-O8-31 Please see Section 1.2.1.2, *Reclamation Component,* in Chapter 1.0 of the RDEIR for a detailed description of how the site would be reclaimed and restored following the completion of mining operations. Please also see Topical Response 4, *Reclamation Process, Timing, and Final Use,* for additional information and discussion. The Project's end use is described in Chapter 1.0 as open space, multi-use trails, and any other use that is consistent with the current General Plan and Zoning Code land use designations. There is no General Plan Amendment or Zoning Code amendment proposed as part of this Project. The reclamation plan proposed for the site does not include any future development pads. Future development of the site for an end use other than open space is not contemplated or anticipated. If it is contemplated in the future, it would require several discretionary permits, and likely require a General Plan or Zoning Code amendment, and separate CEQA review.

R-O8-32 The text quoted in this comment is from page 2.2-87 of the RDEIR. The text in the RDEIR immediately following the text quoted in this comment indicates the following:

"Implementation of mitigation measures M-BIO-1 through M-BIO-15 would reduce impacts to less-than significant levels through implementation of breeding season avoidance and/or pre construction surveys to avoid direct and indirect impacts to sensitive birds and raptors; pre construction surveys to avoid direct and indirect impacts to special status amphibian and reptile species not covered under County's MSCP Subarea plan; preconstruction surveys to avoid direct and indirect impacts to roosting bats; mitigation for direct impacts to suitable habitat for the coastal California gnatcatcher; mitigation for direct impacts to suitable habitat for least Bell's vireo; mitigation for direct impacts to Palmer's goldenbush, a County List B plant species; habitat-based mitigation for direct impacts to

R-O8-32 (cont.) sensitive vegetation communities with potential to support special status plant and animal species; reclamation of the Project site following completion of mining activities; placement of preserved, restored, and revegetated native habitat within BOS; and long-term management of the BOS areas in accordance with a County-approved Resource Management Plan."

Impacts to biological resources would be reduced to less-than-significant levels through the implementation of mitigation. As such, no significant unavoidable impacts would occur, and a Statement of Overriding Considerations for impacts to biological resources is not required.

R-O8-33

In conclusion, Sierra club ask for the following outcomes:

1) **That County of San Diego staff recommend against approval of Cottonwood Sand Mine.**
2) **That the San Diego County Planning Commission recommend against approval of the Cottonwood Sand Mine.**
3) **That the County of San Diego dedicate the former Cottonwood Golf Course for Open Space and a Community Park.**

Sincerely,

Dr. Peter Andersen, Vice-Chairperson
Conservation Committee
Sierra Club San Diego

R-O8-33 The County acknowledges the recommendations expressed in this comment; however, this comment does not raise a specific issue concerning the environmental analysis or adequacy of the RDEIR. No further response is required.