

Michael D. Bryan, Ph.D.
Partner / Principal Scientist

Dr. Michael Bryan has over 25 years of combined consulting and research experience focused on fisheries biology, water quality, and aquatic toxicology. Dr. Bryan's fisheries and water quality experience extends to managing and serving as principal scientist for Endangered Species Act (ESA) Section 7 consultations with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), California Environmental Quality Act (CEQA) /National Environmental Policy Act (NEPA) documents, water quality and aquatic ecology studies, and regulatory permitting.

Dr. Bryan's research background provides a strong foundation for conducting specialized water quality and fisheries studies, including experimental design, study implementation, and project documentation. This work includes conducting biological assessments of fish and benthic macroinvertebrates to identify potential effects of new wastewater outfalls and Endangered Species Act compliance.

Dr. Bryan applies his extensive knowledge of fisheries and water quality in his management and technical oversight of CEQA/NEPA assessments for water supply and conveyance, flood control, and wastewater treatment and disposal projects. Dr. Bryan has developed a deep understanding of CVP/SWP operations, and the fish resources and water quality of the American River, Sacramento River, and Sacramento-San Joaquin Delta system. Dr. Bryan's expertise in preparing CEQA/NEPA assessments includes refinement of alternatives and development of defensible assessment thresholds.

Through his work on specialized fisheries and water quality studies and regulatory permitting and compliance, Dr. Bryan has established working relationships with federal and state resource agency representatives. Dr. Bryan applies his expertise to assist clients with strategic planning; compliance monitoring; technical evaluations; project refinement and implementation; and expert witness testimony.

EDUCATION Ph.D., Environmental Toxicology & Fisheries Biology, 1993, Iowa State University

M.S., Fisheries Biology, 1989, Iowa State University

B.S., Fisheries Biology & Biology, 1986, University of Wisconsin, Stevens Point

**REPRESENTATIVE
PROJECT
EXPERIENCE**

FISHERIES BIOLOGY

BIOLOGICAL ASSESSMENT – NEW MOUNTAIN HOUSE WASTEWATER TREATMENT PLANT OUTFALL IN OLD RIVER

Prepared a Biological Assessment addressing the potential effects on Endangered Species Act-listed anadromous fish species that could result from placing a new diffuser outfall into the Old River, and operating the outfall to discharge up to 5.4 mgd of treated municipal effluent at buildout. Developed conservation measures to be implemented as part of the project to avoid/minimize effects on listed fishes. Worked closely with National Marine Fisheries Service in preparing the associated Biological Opinion.

BIOLOGICAL ASSESSMENT – IRONHOUSE SANITARY DISTRICT WASTEWATER TREATMENT PLANT OUTFALL IN THE SACRAMENTO RIVER

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Prepared a Biological Assessment addressing the potential effects on Endangered Species Act-listed anadromous fish species that could result from placing a new diffuser outfall into the San Joaquin River, and operating the outfall to discharge up to 8.6 mgd of treated municipal effluent at buildout. Developed conservation measures to be implemented as part of the project to avoid/minimize effects on listed fishes. Worked closely with National Marine Fisheries Service in preparing the associated Biological Opinion.

BIOLOGICAL ASSESSMENT – CITY OF CHICO WASTEWATER TREATMENT PLANT EXPANSION

Prepared a Biological Assessment for project to address potential project construction and operational effects on ESA listed fish species and their habitats that could result from placing a new diffuser outfall in the Sacramento River and operating the outfall to discharge up to 12 mgd of treated municipal effluent. Developed conservation measures to be implemented as part of the project to avoid/minimize effects on listed fishes.

COSUMNES RIVER FLOW AUGMENTATION PROJECT

Lead fisheries consultant on project that provides up to 5,000 acre-feet of American River water annually routed through the Folsom South Canal to pre-wet the lower Cosumnes River channel to provide earlier and more prolonged hydraulic continuity throughout the lower river during the fall-run chinook salmon spawning season. Assessed potential fish resource impacts of implementing the project on the fish resources of the lower American River, Cosumnes River, and Mokelumne River.

AQUATIC BIOLOGICAL RESOURCES ASSESSMENT OF HANGTOWN CREEK

Principal-in-charge for study design and implementation of fish sampling (electrofishing), benthic macroinvertebrate sampling, habitat assessment, and temperature monitoring. Benthic macroinvertebrate sampling was conducted using the California Department of Fish and Game California Stream Bioassessment Procedure. Study focused on evaluating the thermal effects of the Hangtown Creek Wastewater Treatment Plant's discharge on the aquatic ecology of Hangtown Creek.

PUTAH CREEK FLOW RESTORATION PROJECT

Served as principal-in-charge of the Putah Creek fisheries assessment to determine how the project, developed to address debris buildup below the Putah Creek Diversion Dam through dam and channel modifications, could incorporate elements to achieve a secondary objective of protecting, maintaining, and possibly enhancing Putah Creek's aquatic habitats and fish resources.

LOWER YUBA RIVER CALFED PROJECT

Co-Principal-in-charge and technical lead for developing a local-level Implementation Plan for Lower Yuba River anadromous fish habitat

restoration. Project involved working with the Lower Yuba River Fisheries Technical Working Group, which has representatives from all state and federal fishery agencies, to perform a comprehensive review of available fishery, ecological, and hydrologic information and to develop a conceptual model for the Yuba River aquatic ecosystem. This model is a framework to guide the refinement, evaluation, and prioritization of restoration actions proposed by Calfed's Ecosystem Restoration Program Plan, U.S. Fish and Wildlife's Anadromous Fish Restoration Program, California Department of Fish and Game's 1991 Plan, and other fish management plans already developed for the river. The conceptual model identifies testable hypotheses related to key ecosystem processes, habitat conditions, stressors, and fish population trends and behavior, including habitat use. Based on this work, restoration actions, pilot projects, and studies are prioritized for near-term and long-term implementation in a manner consistent with long-term ecosystem and watershed management goals.

LOWER AMERICAN RIVER OPERATIONS WORKING GROUP PARTICIPANT

Provided technical assistance to staff from U.S. Bureau of Reclamation, California Department of Fish and Game, U.S. Fish and Wildlife Service, and National Marine Fisheries Services in evaluating alternative Folsom Dam shutter operational scenarios for the summer/fall period to maximize thermal benefits to Lower American River fall-run chinook salmon and steelhead, and to balance benefits to these two species.

CDFG/YCWA INTERIM SETTLEMENT AGREEMENT

Initiated and led the development of a California Department of Fish and Game-Yuba County Water Agency (YCWA) Interim Settlement Agreement and Interim Study Plan for the Lower Yuba River. Facilitated negotiations between CDFG and YCWA, which were conducted to reach agreement on several issues, including minimum instream flow, water temperature, and flow fluctuation requirements associated with operation of the Yuba River Development Project. This process ultimately culminated in the Lower Yuba River Accord. The Accord resolved a nearly 20-year legal and political fight over water rights and fisheries flows. The Accord received the State's highest environmental award.

LOWER AMERICAN RIVER SALMON MORTALITY MODEL DEVELOPMENT

Project manager and technical lead for refinement of the U.S. Bureau of Reclamation's Lower American River early life stage fall-run chinook salmon mortality model. Compiled historic data defining temporal distributions of immigration and temporal and spatial distributions of spawning. Worked with Reclamation computer programmers to make code changes that resulted in an improved model that reflected the best available biological data for the river's fall-run chinook salmon population.

LOWER SACRAMENTO RIVER AND DELTA TRIBUTARIES TECHNICAL TEAM APPOINTEE

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Appointed to the Lower Sacramento River and Delta Tributaries Technical Team, as part of the Anadromous Fish Restoration Program of the Central Valley Project Improvement Act. Developed technical reports outlining the key factors currently limiting chinook salmon and steelhead populations in the Lower American and Yuba rivers. Worked cooperatively with California Department of Fish and Game and U.S. Fish and Wildlife Service biologists on the project.

CENTRAL VALLEY PROJECT RESTORATION TECHNICAL LIAISON

Served as a technical liaison between the Northern California Power Agency, a contributor to the Central Valley Project (CVP) Restoration Fund, and the state and federal fish resource agencies charged with applying these funds to restore Central Valley anadromous fish populations. Developed a strategic process for establishing a shared understanding among these and other stakeholders regarding CVP restoration goals, objectives, and criteria for prioritizing expenditures from the CVP Restoration Fund to achieve basin-wide, fish population-restoration goals.

BAY/DELTA FISHERIES REPORT

Prepared a technical report for the Northern California Power Agency that identified the major factors that have contributed to recent declines in San Francisco Bay/Sacramento-San Joaquin Delta fishery resources. The factors contributing to recent declines of anadromous and resident fish populations were ranked according to their relative importance or contribution to observed population declines.

SACRAMENTO SPLITTAIL DISTRIBUTION AND RELATIVE ABUNDANCE STUDY

Project manager and technical lead for a large interagency (Department of Water Resources, California Department of Fish and Game, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.C. Davis, State Water Contractors, and Interagency Ecological Program) gill net survey that documented the distribution and relative abundance of Sacramento splittail in the Sacramento and San Joaquin rivers and Delta. Developed the experimental design and field operating procedures for the project, and supervised field personnel. Performed all statistical analyses of catch data, and prepared the project report.

CEQA/NEPA

TERTIARY FILTRATION, ULTRAVIOLET DISINFECTION, AND BIOSOLIDS DEWATERING PROJECT CEQA INITIAL STUDY/MITIGATED NEGATIVE DECLARATION - CITY OF GALT

As principal-in-charge, assisted the City of Galt (under contract to West Yost Associates) with environmental compliance documentation, NPDES permit acquisition, and environmental permitting for the proposed Phase 1 upgrade of selected unit processes at the wastewater treatment plant. Phase I of the project provides upgraded facilities (i.e., add tertiary treatment and

ultra-violet disinfection) and will initiate a new discharge in the summer (previously permitted as a seasonal (winter) discharge). Phase II of the project involves further upgrades of the treatment facilities (improved nitrogen removal) and expansion in capacity from 3.0 million gallons per day (mgd) to 4.5 mgd. RBI prepared the CEQA Initial Study/Mitigated Negative Declaration (IS/MND) for the Phase 1 upgrades and necessary construction-related permits.

IRONHOUSE SANITARY DISTRICT WASTEWATER TREATMENT PLANT EXPANSION AND UPGRADE – CEQA AND PERMITTING

As principal-in-charge, assisted the Ironhouse Sanitary District (ISD) with environmental compliance, NPDES permit acquisition, and environmental permitting for the proposed expansion and upgrade of the ISD municipal wastewater treatment plant that serves the communities of Oakley, Bethel Island, and outlying communities. RBI prepared the water quality and the fishery and aquatic resources chapters of the environmental impact report, which was prepared by Jones & Stokes. RBI developed thresholds of significance for interpreting the effects of anticipated receiving water quality changes on aquatic resources. Addressed Endangered Species Act issues related to listed fish species.

RBI was instrumental in securing authorization of a new NPDES permit for ISD's proposed surface discharge outfall in the San Joaquin River at Jersey Island. RBI led the consulting team to negotiate and secure the NPDES permit through the Central Valley RWQCB and prepared the key elements of the Report of Waste Discharge. In addition, RBI assisted ISD in securing environmental permits to authorize the dredging and dredge-material disposal necessary to construct and install a new surface discharge outfall pipe and diffuser in the San Joaquin River. RBI prepared the sampling and analysis plan for sediment and dredge material characterization, and secured authorization under the Central Valley RWQCB's general waiver of waste discharge requirements for dredge material disposal to land. RBI provided monitoring and ongoing permit implementation services to ISD for the construction project.

IRONHOUSE SANITARY DISTRICT HIGHWAY 4 PIPELINE PROJECT CEQA COMPLIANCE

As principal-in-charge, worked with the ISD in implementing a strategic phased approach to CEQA compliance for ISD's proposed construction of a new sanitary sewer gravity trunk, and forcemain conveyance pipelines and recycled water pipeline within its service area. Phase 1 involved the upfront identification of potential project development constraints, regulatory requirements, and identification of the appropriate CEQA documentation and process. Phase 2 of the project involved preparation of an Initial Study/Mitigated Negative Declaration to meet CEQA requirements and support future regulatory permitting. Additionally, RBI managed technical subconsultants for the conduct of botanical rare plant surveys, and air

quality, noise and cultural resource assessments.

PLACER COUNTY SEWER MAINTENANCE DISTRICT 1 WASTEWATER TREATMENT PLANT UPGRADE AND EXPANSION – CEQA INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Principal-in-charge of the hydrology and water quality section of the Initial Study/Mitigated Negative Declaration for the Sewer Maintenance District 1 Wastewater Treatment Plant Upgrade and Expansion project, and assisted with the biological resources section of the document by preparing the impact assessment for fisheries and aquatic resources. RBI assessed potential construction-related impacts and direct and cumulative long-term operations-related impacts of treatment plant upgrades and the increased effluent discharge rate to Rock Creek and Dry Creek, and water bodies further downstream. RBI assessed the potential water quality impacts on a constituent-by-constituent basis, incorporating key information from the antidegradation analysis and other technical reports that RBI had prepared for Placer County under separate contracts for work on the plant's NPDES permitting compliance.

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT 2020 MASTER PLAN EIR

Lead consultant for preparing water quality and fishery and aquatic habitat chapters of the EIR. Responsible for coordinating all hydrologic and water quality modeling, and the use of modeled output for impact assessment purposes. Contributed to development of alternatives to be evaluated and thresholds of significance for the water quality and fisheries/aquatic habitat resources. Also assisted in conducting stakeholder and technical workshops associated with development of the 2020 Master Plan.

LAKE OF THE PINES WASTEWATER TREATMENT PLANT UPGRADE EIR

Lead consultant for preparing the water quality/hydrology and fishery and aquatic resources chapters of the EIR, which was prepared by EDAW for Nevada County. Contributed to development of alternatives to be evaluated and developed thresholds of significance for the water quality/hydrology and fisheries chapters. Also assisted in conducting stakeholder and technical workshops associated with development of the facilities Master Plan.

CITY OF CHICO WASTEWATER TREATMENT PLANT EXPANSION EIR

Lead consultant for preparing the fishery and aquatic resources chapter of the EIR, which was prepared by Jones & Stokes. Contributed to development of alternatives to be evaluated and developed thresholds of significance for the chapter. Also assisted in refinement of water quality assessments used to make determinations regarding potential impacts to aquatic resources in the Sacramento River.

DEL WEBB TEHAMA PROJECT

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Lead consultant for preparing the fishery and aquatic resources chapter of the EIR, which was prepared by Impact Sciences. Conducted site surveys and habitat characterizations. Consulted with National Marine Fisheries Service to obtain a concurrence letter of not likely to adversely affect steelhead using adjacent water bodies.

HANGTOWN CREEK WASTEWATER TREATMENT PLANT UPGRADES IS/MND

Principal-in-charge for preparing an Initial Study/Mitigated Negative Declaration in support of planned upgrades to the Hangtown Creek Wastewater Treatment Plant. This environmental document was prepared to meet CEQA requirements and to support application for a State Revolving Fund loan to fund, in part, the planned improvements.

LOWER CASCADE CANAL MODERNIZATION PROJECT EIR

Lead technical consultant for preparing the aquatic biological resources chapter of the EIR. Responsible for conducting detailed fisheries habitat and hydraulic assessments on the Lower Cascade Canal and presenting information to stakeholders. Contributed to the development of alternatives to be evaluated and thresholds of significance for determining impacts.

CITY OF LINCOLN WASTEWATER TREATMENT AND RECLAMATION FACILITY EIR

Provided technical review and oversight for the fisheries and aquatic biological resources chapter of EIR. Assisted project team with addressing potential impacts and preparing supplements and addendums to EIR. Consulted with National Marine Fisheries Service on anadromous fish issues, including Endangered Species Act issues, related to new wastewater discharges to Auburn Ravine.

DEER CREEK WASTEWATER TREATMENT PLANT EXPANSION EIR

Lead author for water quality and fisheries chapters of the EIR, prepared for the El Dorado Irrigation District, which involved compiling and assessing effluent and receiving water quality data and evaluating acute and chronic bioassay testing results.

EASTERN SACRAMENTO COUNTY REPLACEMENT WATER SUPPLY PROJECT

Lead consultant for preparing the water quality and fishery and aquatic resources chapters of the EIR, which was prepared by EDAW for Sacramento County. Contributed to development of alternatives to be evaluated and developed thresholds of significance for the water quality and fisheries chapters. Performed detailed analysis of effects on American River and tributary water quality and compliance with water quality standards that would result from inputting remediated groundwater into the system. Also assessed effects on fish resources in the American, Cosumnes, and Mokelumne rivers of using up to 5,000 acre-feet of remediated water, annually, to pre-wet the Cosumnes River channel to provide earlier and more prolonged hydraulic continuity throughout the lower river during the

fall-run chinook salmon spawning season.

BAY DELTA CONSERVATION PLAN EIR/EIS

Provided strategic input to HDR, lead author of the EIR/EIS, regarding assessment of the plan's effects on water quality in the Sacramento-San Joaquin Delta and primary tributaries. Developed thresholds of significance for assessing water quality effects and participated in development of the water quality assessment framework, which required analysis of multiple alternatives and future time steps to address phased implementation of project elements. Directed assessments of multiple constituent-specific assessments, including boron, pathogens, trace metals, nutrients, temperature, PCBs, pesticides, constituents of emerging concern, and DBP formation potential.

SUCTION DREDGING PERMITTING PROGRAM SUPPLEMENTAL EIR, CALIFORNIA DEPARTMENT OF FISH AND GAME

Principal-in-charge of water quality and toxicology impacts assessment for the Initial Study and supplemental EIR, which was prepared by Horizon Environmental. The EIR addresses the potential project-level environmental impacts of statewide suction dredging activity regulations. The focus of the analysis was on effects of dredging-related discharge of mercury in streams that have remnant contamination from historic gold mining activity.

EL DORADO IRRIGATION DISTRICT WATER SUPPLY MASTER PLAN EIR

Lead technical consultant for preparing the hydrology, water quality, and aquatic biological resources chapters of the programmatic EIR. Responsible for evaluating Master Plan demands and District operations to meet projected demands to determine how such operations could impact these resources. Provided strategic guidance for integrating other District facilities into the assessment to produce a more real-world assessment.

EDWPA SUPPLEMENTAL WATER RIGHTS PROJECT EIR

Directed the development of the water quality chapter for the El Dorado County Water and Power Authority (EDWPA) Supplemental Water Rights Project EIR. The proposed project is to establish permitted water rights allowing diversion of 40,000 AFA water from the American River basin to meet planned future water demands in the EID and GDPUD service areas and other areas located within El Dorado County that are outside of these service areas. The assessment addressed effects of the proposed project on American River watershed, Sacramento River, and Delta water quality.

SACRAMENTO AREA WATER FORUM PROPOSAL EIR

Prepared the fisheries and surface water quality chapters of the EIR and regularly presented technical information on effects of reservoir operations and water management on fish resources and water quality to the Water Forum, a coalition of 46 stakeholders representing agriculture, business, public agencies, and environmental groups collectively developing a

strategic water-planning platform for the greater Sacramento area. Served as liaison between hydrologic/water temperature/salmon mortality modelers, Fischer-Delta (water quality) modelers, and other technical staff and CEQA consultants/City-County management staff responsible for preparing the EIR. Contributed to preparation of a Habitat Management Program (HMP) for the Lower American River, designed to preserve the wildlife, fisheries, recreational, and aesthetic values of the Lower American River, as well as mitigate for any potential impacts of the Water Forum Proposal.

NATOMA PIPELINE REPLACEMENT AND FOLSOM WATER TREATMENT PLANT EXPANSION PROJECT EIR/EA

Managed preparation of fisheries sections of the EIR/EA. The project involved analyzing the construction and operational impacts associated with pipeline replacement and water treatment plant expansion, as well as a 7,000 AFA increment of additional water planned to be diverted from Folsom Reservoir. Worked closely with modelers to develop hydrologic simulations to depict hydrologic effects of the project. Assessed output from the hydrologic, temperature, and salmon mortality models to identify project-specific and cumulative impacts to reservoir, river, and Delta fish resources. The project required compliance with federal and state regulations, including the Endangered Species Act and Clean Water Act.

NARROWS II POWERHOUSE INTAKE EXTENSION MITIGATED NEGATIVE DECLARATION/INITIAL STUDY

Technical lead for assessing the potential effects on the fish resources of Englebright Reservoir and the Lower Yuba River from drawing water into the Narrows II Powerhouse from a lower elevation within Englebright Reservoir as a result of extending the current intake structure. Prepared a technical report on findings, with an emphasis on temperature-related effects on Lower Yuba River anadromous fish resources.

PLACER COUNTY WATER AGENCY AND NORTHRIDGE WATER DISTRICT GROUNDWATER STABILIZATION PROJECT EIR

Managed preparation of fisheries chapter of the EIR. Analyzed the hydrologic effects of the project as they would affect Folsom Reservoir seasonal storage levels, lower American and Sacramento River flows, and Delta inflow/outflow, and water temperatures, and the potential for such changes to impact fish resources in these water bodies. Worked closely with modelers to develop hydrologic simulations to depict hydrologic effects of the project.

LONG-TERM REOPERATION OF FOLSOM DAM AND RESERVOIR EIR

Fisheries lead to determine the feasibility of indefinitely extending Sacramento Area Flood Control Agency's Folsom Dam and Reservoir Reoperation Agreement with the U.S. Bureau of Reclamation. Worked closely with modelers to develop hydrologic simulations to depict hydrologic effects of the project. Output from hydrologic, temperature, and

salmon mortality models was assessed to identify project-specific and cumulative impacts to reservoir, river, and Delta fish resources. Additional activities included meeting with National Marine Fisheries Service, U.S. Fish and Wildlife Service, and California Department of Fish and Game to determine the need for consultation under the federal and state endangered species acts and determination of potential impacts to fishery resources throughout the Central Valley Project resulting from integrated reservoir operations.

CVP WATER SUPPLY CONTRACTS EIS/EIR

Lead author for the fisheries and water quality chapters of the joint programmatic EIS/EIR prepared for the Central Valley Project (CVP) Water Supply Contracts under Section 206 of Public Law 101-514. Evaluated hydrologic, river and reservoir water temperature, and salmon mortality model output to determine potential impacts to CVP reservoir, lower American and Sacramento rivers, and Delta fish resources that could result from diverting a portion of the water from Folsom Reservoir. Worked closely with project engineers to design the hydrologic modeling studies and determine output needed to conduct the necessary environmental assessments. Also participated in development and evaluation of project alternatives capable of fulfilling project purposes, with an emphasis on water supply, affected hydrology, and environmental constraints.

HAMILTON CITY PUMPING PLANT FISH SCREEN IMPROVEMENT PROJECT EIR/EIS

Developed technical approach to assessing the effects of the proposed project and its alternatives on fisheries and aquatic habitats. Lead author for all fisheries sections of the EIR/EIS. Fisheries and aquatic habitat chapter received U.S. EPA's highest review score. Key issues included analyses of alternative means of simultaneously protecting fish (including the endangered winter-run chinook salmon) while re-establishing reliability in Glenn-Colusa Irrigation District's diversions from the Sacramento River. This project involved many state and federal agencies, including California Department of Fish and Game, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Army Corps of Engineers, California Department of Water Resources, and the State Reclamation Board.

NPDES PERMITTING / WASTEWATER DISCHARGER STUDIES

NPDES PERMIT RENEWAL

Provides technical and strategic services to negotiate waste discharge requirements in NPDES permits for wastewater treatment plants (WWTPs) issued by state regional water quality control boards (RWQCB). This includes conducting detailed reviews and preparing detailed comments on tentative NPDES permits to establish a record for administrative appeals, as well as face-to-face negotiations with RWQCB staff and other resources

agencies, including California Department of Fish and Game, National Marine Fisheries Service, and Department of Public Services staff, over permit terms. Also prepares discharger presentations and provides public testimony at NPDES permit adoption hearings. These services have been provided for:

- El Dorado Irrigation District – Deer Creek and El Dorado Hills WWTPs (1996–present)
- Sacramento Regional County Sanitation District (1997–present)
- City of Roseville – Dry Creek and Pleasant Grove Creek WWTPs (1998–present)
- Placer County – Sewer Maintenance District 1, Sewer Maintenance District 3, Sheridan, and Applegate WWTPs (1998–present)
- City of Vacaville – Easterly WWTP (1999–present)
- City of Placerville – Hangtown Creek Water Reclamation Facility (1999–present)
- City of Brentwood WWTP (2003–present)
- Nevada County – Lake Wildwood, Lake of the Pines, and Cascade Shores WWTPs (2003–present)
- Mountain House Community Services District – Mountain House WWTP (2006–present)
- Ironhouse Sanitary District WWTP (2006–present)
- City of Stockton Regional Wastewater Control Facility (2008–present)
- Town of Windsor (2007–2010)
- National Park Service (2008–present)
- City of Ione (2010–present)
- Colusa Industrial Properties (2007–2008)
- City of Santa Rosa (2005–2007)
- Los Angeles County Sanitation Districts – Los Coyotes Water Reclamation Plant and Long Beach Water Reclamation Plant (2002–2005)
- City of Lincoln/Del Webb – Lincoln Wastewater Treatment and Reclamation Facility (2000–2005)

**PROFESSIONAL
AFFILIATIONS/
CERTIFICATIONS**

THERMAL PLAN EXCEPTIONS

Principal-in-charge and technical lead to conduct special studies in support of obtaining Clean Water Act section 316(a) exceptions to California Thermal Plan temperature objectives applied in NPDES permits and facilitate the exceptions' approval by the Central Valley Regional Water Quality Board (RWQCB) and fish resource agencies – California Department of Fish and Game, National Marine Fisheries Services, and U.S. Fish and Wildlife Service. Has developed or is currently developing exceptions as follows:

- *California Department of General Services (DGS)*. Completed study evaluating the temperature-related effects the Central Heating and Cooling Plant discharges to the Sacramento River on migrating fish. Based on this study, its findings, and concurrency on findings by the fish resource agencies, the RWQCB issued a Thermal Plan

Exception to DGS, resulting in a cost-effective solution to DGS's temperature compliance issue.

- *Brentwood Wastewater Treatment Plant.* Completed study evaluating the temperature regime of Marsh Creek under the influence of the discharge and whether the regime could continue to support the indigenous aquatic life, as part of developing information to support a Thermal Plan exception. Developed alternative temperature limitations to protect the Marsh Creek aquatic life and also resolve the temperature compliance issue. Currently facilitating concurrence of alternative temperature limitations by the fish resource agencies.
- *Sacramento Regional County Sanitation District.* Completed study evaluating the effects of the Sacramento Regional Wastewater Treatment Plant discharge on the Sacramento River near-field and far-field temperature regime in support of renewing Thermal Plan exceptions for this discharge. Currently conducting a related temperature and fisheries study requested by the fish resource agencies to further examine the effects of the discharge on Sacramento River aquatic life.

ANTIDegradation ANALYSES

Principal-in-charge for conducting antidegradation analyses for municipal wastewater dischargers consistent with state and federal policies and guidance, in support of new or expanded discharge capacity.

Antidegradation analyses completed include:

Surface Water

- Ironhouse Sanitary District Wastewater Treatment Plant - new discharge
- Sewer Maintenance District 1 Wastewater Treatment Plant – upgrade and expansion
- City of Galt Wastewater Treatment Plant – new summer discharge and expansion
- El Dorado Hills Wastewater Treatment Plant – upgrade and expansion

Groundwater

- Ironhouse Sanitary District Master Reclamation Permit
- City of Roseville Aquifer Storage and Recovery

TOXICITY REDUCTION EVALUATIONS(TRES)

Principal-in-charge for TRES/TIEs performed for municipal wastewater dischargers, including the preparation of TRE work plans and action plans

required by NPDES permits, interpretation of toxicity test results, and negotiations with regional water quality control board staffs to conclude the TRE. Dischargers for which TREs have been or are being performed include:

- City of Stockton Regional Wastewater Control Facility, *Selenastrum capricornutum* and *Ceriodaphnia dubia*
- Town of Windsor Wastewater Treatment, Reclamation and Disposal Facility, *Selenastrum capricornutum*
- City of Davis Water Pollution Control Plant, *Selenastrum capricornutum*
- City of Woodland Wastewater Treatment Plant, *Selenastrum capricornutum*
- City of Brentwood Wastewater Treatment Plant, *Ceriodaphnia dubia*

WATER-EFFECT RATIO STUDIES

Principal-in-charge for conducting water-effect ratio (WER) studies for municipal wastewater dischargers consistent with U.S. EPA and state guidance. Studies include:

- Deer Creek Wastewater Treatment Plant Copper WER
- Town of Windsor Wastewater Treatment, Reclamation, and Disposal Facility Copper WER
- Placer County Sewer Maintenance District 1 Aluminum WER
- City of Colfax Wastewater Treatment Plant Copper WER

RECEIVING WATER TEMPERATURE STUDIES

Principal-in-charge on studies conducted to evaluate seasonal temperature regimes and compliance with receiving water limitations stipulated in NPDES permits. Provided oversight in study plan development, managed field staff, and managed preparation of study reports for studies on the following receiving waters.

- Deer Creek – El Dorado County, CA for El Dorado Irrigation District
- Hangtown Creek – Placerville, CA for City of Placerville
- Old Alamo Creek, New Alamo Creek, and Ulatis Creek – Solano County, CA for City of Vacaville
- Marsh Creek – Contra Costa County, CA for City of Brentwood
- Sacramento River – for Sacramento Regional County Sanitation District and California Department of General Services
- Dry Creek and Pleasant Grove Creek – Placer County, CA for City of Roseville
- Atwater Drain – Atwater, CA for City of Atwater
- Dredger Cut, Highline Canal, and White Slough – San Joaquin

County, CA for City of Lodi

EFFLUENT AND RECEIVING WATER QUALITY ASSESSMENTS

Principal-in-charge on effluent and receiving water quality assessments for the following dischargers:

- Hangtown Creek Water Reclamation Facility
- El Dorado Hills Wastewater Treatment Plant
- Deer Creek Wastewater Treatment Plant
- Sewer Maintenance District 1 Wastewater Treatment Plant – Placer County
- Sewer Maintenance District 3 Wastewater Treatment Plant – Placer County
- Sheridan Wastewater Treatment Plant – Placer County
- Stockton Regional Wastewater Control Facility (ongoing)
- Easterly Wastewater Treatment Plant – City of Vacaville (ongoing)

Assessments documented effluent and receiving water concentrations of over 180 constituents, including all California Toxics Rule/National Toxics Rule constituents, to determine whether contaminant-specific waste discharge requirements are warranted in the dischargers' NPDES permits.

VINEYARD SURFACE WATER TREATMENT PLANT - SACRAMENTO COUNTY WATER AGENCY

As principal-in-charge, assisted RMC Water and Environment for the permitting of a temporary surface water discharge of test water resulting from the startup of a large (80 mgd) water treatment plant in southern Sacramento County. RBI prepared a technical report characterizing projected effluent quality of the testing and startup discharges, and assessment of potential effects to the small ephemeral stream channel (Gerber Creek) which will serve as the receiving water for temporary discharges lasting approximately 6 months with discharge rates varying up to 15 mgd. RBI assisted with preparation of permit application requirements for consistency with the Central Valley RWQCB's "limited threat general NPDES permit," which was an adopted streamlined permit procedure at the time of the project. The permit strategy involved development of a request, with supporting justification, of a temporary exception for the discharge to exceed applicable state water quality objectives for trihalomethane compounds. RBI also prepared the assessments of potential impacts to hydrology, water quality, and fisheries and aquatic resources for an amended CEQA Initial Study and Mitigated Negative Declaration that was prepared for the project.

PORT OF STOCKTON STORMWATER ADMINISTRATIVE ORDER ON CONSENT NEGOTIATION AND TOXICITY MONITORING REVIEW

Developed and negotiated stormwater toxicity monitoring requirements in the U.S. EPA's Administrative Order to achieve reasonable and scientifically defensible requirements. Technically reviewed and interpreted

bioassay laboratory reports from stormwater monitoring events in support of maintaining compliance with the Order. Directed toxicity identification evaluations (TIEs), when needed.

SEASONAL COLIFORM BACTERIA LIMITATIONS

Negotiated alternative winter coliform bacteria limitations to be included in NPDES permits, which involved extensive technical analyses, technical report preparation, and negotiations with Central Valley Regional Water Quality Control Board policy and permitting staff and Department of Health Services (now Department of Public Health) technical staff. Dischargers assisted include: El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant and Placer County's Sewer Maintenance District 1 Wastewater Treatment Plant.

ECOLOGICAL, WATER QUALITY, AND HYDROLOGIC EVALUATION OF DEER CREEK

Project manager and technical lead on a study documenting the ecological, water quality, and hydrologic conditions of Deer Creek upstream and downstream of the Deer Creek Wastewater Treatment Plant discharge. Conducted reconnaissance survey, developed experimental approach, and supervised/participated in field data collection. Documented fish and benthic macroinvertebrate taxa. Prepared final project report, which served, in part, as the basis for NPDES permit renewal.

RECEIVING WATER DISSOLVED OXYGEN STUDIES

As principal-in-charge and project manager, evaluated the effects of municipal wastewater treatment plant effluent discharges on downstream dissolved oxygen profiles using U.S. EPA's STREAMDO IV model. Studies conducted on Deer Creek for El Dorado Irrigation District, and Old Alamo, New Alamo, and Ulatis creeks for the City of Vacaville.

BASIN PLAN AMENDMENTS / USE ATTAINABILITY ANALYSES

SITE-SPECIFIC OBJECTIVES – pH, TURBIDITY, AND TEMPERATURE

Principal-in-charge and lead water quality/aquatic ecology specialist for development of site-specific amendments to the Central Valley Regional Water Quality Control Board (RWQCB) Water Quality Control Plan (Basin Plan) for Deer Creek pH, turbidity, and temperature. Developed supporting technical studies/information, drafted RWQCB Staff Report/Functional Equivalent Document, and prepared responses to peer review and public comments.

REGION-WIDE BASIN PLAN OBJECTIVES – pH AND TURBIDITY

Provided technical and strategic services to the Central Valley Regional Water Quality Control Board, on behalf of Central Valley dischargers, to develop and adopt region-wide amendments to the Central Valley Region Water Quality Control Plan (Basin Plan) for pH and turbidity. Work tiered from the development of site-specific objectives for pH and turbidity for

Deer Creek.

AQUATIC LIFE USE ATTAINABILITY ANALYSIS – OLD ALAMO CREEK

Examined the suitability of Old Alamo Creek to support anadromous salmonids by examining the available instream and riparian habitat, flow regime, thermal regime, water quality, and existing fish and benthic macroinvertebrate communities and participated in preparation of the Use Attainability Analysis (UAA) report. The UAA supported de-designating the cold freshwater habitat and cold migration beneficial uses assigned to Old Alamo Creek.

MUNICIPAL AND DOMESTIC SUPPLY (MUN) USE ATTAINABILITY ANALYSIS – NEW ALAMO CREEK AND ULATIS CREEK

Principal-in-charge for the preparation of a Use Attainability Analysis (UAA) of the MUN use of New Alamo and Ulatis creeks, located in Solano County, consistent with U.S. EPA guidance. The project consisted of assembling hydrologic and water quality characteristics of the watersheds and documenting the extent of MUN use historically occurred or could be attained in the creeks. The UAA supported development of site-specific objectives for trihalomethane compounds for the protection of human health.

SITE-SPECIFIC OBJECTIVES – CHLOROFORM, DIBROMOCHLOROMETHANE, AND DICHLOROBROMOMETHANE

Principal-in-charge and co-author of technical report for the development of site-specific objectives (SSOs) for three trihalomethane (THM) compounds for New Alamo and Ulatis creeks, Solano County. SSOs were developed to be protective of human health-related uses and resolve the THM criteria compliance issues resulting from the City of Vacaville's Easterly Wastewater Treatment Plant discharge. Also participated in the review and drafting of key sections of the Regional Water Quality Control Board's (RWQCB) Staff Report supporting a Basin Plan amendment for the SSOs, and meetings with RWQCB and U.S. Environmental Protection Agency Region 9 staff overseeing the SSO development and approval.

MUNICIPAL AND DOMESTIC SUPPLY (MUN) USE ATTAINABILITY ANALYSIS – ATWATER DRAIN

Principal-in-charge for the preparation of a Use Attainability Analysis report for Atwater Drain, located in Merced County, to evaluate the suitability of its MUN designation. Required the evaluation of watershed land use, hydrology, and water quality information, as well as the documentation of past and current diversions from the drain.

OTHER WATER QUALITY STUDIES

SOUTH FORK AMERICAN RIVER WATERSHED ASSESSMENT

Principal-in-charge responsible for compilation and evaluation of available

water quality data collected in the South Fork American River watershed. Project used a geographic information systems approach to prioritize sub-basins within the watershed for future water quality monitoring and restoration.

SEDIMENT TOTAL MAXIMUM DAILY LOAD (TMDL)

Project manager and technical lead for providing fisheries and water quality expertise to assist the Imperial Irrigation District with participating in the development of a silt TMDL for the Alamo River, the main tributary to the Salton Sea, Imperial Valley, CA. Using available scientific literature, characterized the effects of suspended sediments on freshwater aquatic life. Reviewed and provided comments on the Draft Problem Statement prepared by the Colorado River Basin Regional Water Quality Control Board.

EFFLUENT DISCHARGE IMPACT ASSESSMENT

Project manager and technical lead on evaluation of potential impacts to human health and aquatic life from discharging tertiary-treated municipal wastewater treatment plant effluent into Folsom Reservoir or Lake Natoma as part of dry year water conservation measures under the Sacramento Area Water Forum Proposal. Met with California Department of Health Services (now Department of Public Health) staff to discuss the proposed action and its potential effects on human health associated with downstream municipal purveyor diversions.

FOLSOM DAM TEMPERATURE CONTROL DEVICE (TCD) ASSESSMENT

Project manager and technical lead for assessing the potential impacts of operating a TCD at the urban water supply intakes at Folsom Dam. Identified seasonal impacts to Lower American River water temperatures and fish resources, and the quality of raw and finished urban water supplies diverted from Folsom Dam and the Lower American River.

SEDIMENT CONTAMINANT MONITORING

Project manager and technical lead for a North American-wide sediment contaminant monitoring survey designed to define the range of polydimethylsiloxanes in surface sediments of marine and freshwater systems receiving large municipal wastewater discharges. Supervised preparation of site-specific sampling plans, developed an experimental approach for the overall project, prepared a comprehensive quality assurance project plan, and contributed to preparation of project reports. Study served as the basis for subsequent bioassays and ecological risk assessments.

ECOLOGICAL RISK ASSESSMENT

Directed the aquatic assessment of component of a probabilistic ecological risk assessment that quantified the potential risk posed to wildlife and aquatic populations from opening and operating a gold mine in northern Washington.

Michael D. Bryan

STORMWATER QUALITY MONITORING

Project manager and technical lead for the Laguna West stormwater runoff water quality mitigation-monitoring project, Sacramento County.

Developed the experimental design and field operating procedures, statistically analyzed laboratory bioassay and contaminant data, directed activities for field personnel, and wrote project progress and final reports.