Appendix A

General Protection Measures and Species Protection Measures Applicable to the Proposed Project

The following tables outline Protection Measures, included in the Final SRGO Program EIR (State Water Board 2022b), which are applicable to the Proposed Project as a supplemental document (see Chapter 1, *Introduction*). The measures can be broadly divided into two categories General Protection Measures (GPM) and Species Protection measures (SPM). The purpose of including GPMs is to incorporate best management practices (BMP) and to avoid and/or minimize the potential short-term, long-term, and cumulative adverse effects of a project's construction activities. Similarly, the purpose of including SPMs is to incorporate BMPs and to avoid and/or minimize the potential short-term, long-term, and cumulative adverse effects to species generally and specific gilds of species (i.e. Bird Protection Measures, Amphibian Protection Measures, etc.).

Table App. A-1 contains GPMs from the SRGO Final Program EIR which are applicable to the Proposed Project and the corresponding environmental resource topic to which they would apply.

TABLE APP. A-1
GPMS APPLICABLE TO THE PROPOSED PROJECT

Measure Name	Description of Measure	Applicable Resource Topic
General Protection Measures (GPM)		
GPM-1: Receipt and Copies of All Permits and Authorizations	Work will not begin until all necessary permits and authorizations have been received (e.g., USACE, USFWS, NMFS, State and Regional Boards, CDFW). The project proponent will ensure that a readily available copy of the applicable agency permits and authorizations (e.g., USFWS Biological Opinion, NMFS Biological Opinion, Section 404 permit, etc.) is maintained by the construction foreman/manager on the project site for the duration of project activities.	Biological Resources-Terrestrial, Cumulative
GPM-2: Construction Work Windows	Construction work windows may be required in order to avoid impacts to aquatic resources and associated beneficial uses during the wet season. Project proponents must also follow the applicable Regional Board's construction work windows, unless otherwise approved.	Noise, Biological Resources-Terrestrial, Biological Resources-Aquatic, Cumulative
GPM-3: Construction Hours	Construction activities will generally be limited to daylight hours, to the extent feasible. If nighttime construction is necessary, including in tidally influenced waters where tides may limit daylight access and work schedules, all project lighting (e.g., staging areas, equipment storage sites, roadway, and construction footprint) will be selectively placed and directed onto the roadway or construction site and away from aquatic habitats. Light glare shields will be used to reduce the extent of illumination into aquatic habitats. If the work area is near surface waters, the lighting will be shielded so that it does not shine directly into the water.	Noise, Biological Resources-Terrestrial, Cumulative
GPM-4: Environmental Awareness Training	For projects occurring in aquatics resources (e.g., wetlands, riparian areas, etc.), prior to engaging existing or new personnel in construction activities, new construction personnel will participate in environmental awareness training conducted by an agency-approved biologist or resource specialist. Construction personnel will be informed regarding the identification, potential presence, legal protections, avoidance and minimization measures, and applicable general protection measures for all aquatic resources with the potential to occur within or immediately adjacent to the project site. Construction personnel will be informed of the procedures to follow should aquatic resources be disturbed during construction activities. For projects where the agency-approved biologist or resource specialist is not regularly on the project site, training may be provided via online/web-based meeting with an interactive portion (e.g., web-based or in-person discussion) to be included during remote training sessions. For projects that may continue over an extended duration and require excessive training events, a training video developed under the supervision of the FWS-approved biologist or resource specialist may be used to train new personnel, as long as an FWS-approved biologist or resource specialist is available via phone to answer questions about the training or that may arise during construction.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
GPM-5: Environmental Monitoring	As required in the NOA a resource specialist will ensure that all applicable protective measures are implemented during project construction. The resource specialist will have authority to stop any work if they determine that any permit requirement is not fully implemented. The resource specialist will prepare and maintain a monitoring log of construction site conditions and observations, which will be kept on file.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Cumulative
GPM-6: Work Area and Speed Limits	Construction work and materials staging will be restricted to designated work areas, routes, staging areas, temporary interior roads, or the limits of existing roadways. Prior to initiating construction or grading activities, brightly colored fencing or flagging or other practical means will be erected to demarcate the limits of the project activities, including the boundaries of designated staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones. Flagging or fencing will be maintained in good repair for the duration of project activities. Vehicles will obey posted speed limits on public roadways and will limit speeds to 20 miles per hour (mph) within the project area on unpaved surfaces and unpaved roads (to reduce dust and soil erosion) or in areas where special-status species have the potential to occur. Speeds greater than 20 mph may be permitted in the project area where special-status species are not expected to occur (e.g., within areas from which special-status species have been excluded) and where there is no risk of generating excessive dust (e.g., surfaces are paved, saturated, or have been treated with other measures to prevent dust).	Noise, Transportation, Air Quality and Greenhouse Gas Emissions, Biological Resources-Terrestrial, Hazards and Hazardous Materials, Cumulative
GPM-7: Environmentally Sensitive Areas	Monitoring, flagging, or fencing will be used, where appropriate, to minimize disturbance to environmentally sensitive areas (e.g., waters and wetlands). If fencing is used: • Fencing used must be approved by CDFW and/or USFWS for compatibility with species under their jurisdiction, as applicable, that may occur on site. • The agency-approved biologist or resource specialist will determine the location of fencing prior to the start of construction (e.g., between active work area(s) and sensitive resources). • Fencing will remain in place throughout the duration of the construction activities and will be inspected and maintained regularly by the agency-approved biologist or resource specialist until completion of the project. • Repairs to the fencing will be made within 24 hours of discovering any failure. • Fencing will be removed when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.	Biological Resources-Terrestrial, Hazards and Hazardous Materials, Cumulative
GPM-8: Prevent Spread of Invasive Species	The spread or introduction of invasive exotic plant species by arriving vehicles, equipment, imported gravel, and other materials, will be avoided to the maximum extent possible. When practicable, invasive exotic plants in the project areas will be removed and properly disposed of in a manner that will not promote their spread. Equipment will be cleaned of any sediment or vegetation at designated wash stations before entering or leaving the project area to avoid spreading pathogens or exotic/invasive species. Isolated infestations of noxious weeds identified in the project area will be treated with approved eradication methods at an appropriate time to prevent further formation of seed and destroy viable plant parts and seed. Wash sites must be in confined areas that limit run-off to any surrounding habitat and on a flat grade. Upland areas will use rice straw or invasive species-free local slash/mulch for erosion control, while the remainder of the project area will use certified, weed-free erosion control materials. Mulch must be certified weed-free. The project proponent will follow the guidelines in the CDFW's California Aquatic Invasive Species Management Plan (CDFW 2008) and Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016), where relevant. Construction supervisors and managers will be educated on weed identification and the importance of controlling and preventing the spread of noxious weeds. The project proponent will follow any applicable local guidance to prevent the spread of invasive animal species. Construction	Agriculture, Biological Resources-Terrestrial, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	supervisors and managers will be responsible for implementation of appropriate protocols (e.g., disinfection of equipment and footwear) to prevent the spread of invasive animals.	
GPM-9: Practices to Prevent Pathogen Contamination	The project proponent will review and implement restoration design considerations and best management practices as published by the Working Group for Phytophthoras in Native Habitats (www.calphytos.org), when there is a risk of introduction and spread of plant pathogens in site plantings. (http://www.suddenoakdeath.org/welcome-to-calphytos-org-phytophthoras-in-native-habitats/resources/#restoration.)	Biological Resources-Terrestrial, Cumulative
GPM-10: Equipment Maintenance and Materials Storage	Vehicle traffic will be confined to existing roads and the proposed access route(s). All machinery must be in good working condition, showing no signs of fuel or oil leaks. Oil, grease, or other fluids will be washed off at designated wash stations prior to equipment entering the construction site. Inspection and evaluation for the potential for fluid leakage will be performed daily during construction. Where possible, and where it would not result in greater impact to aquatic resources, no equipment refueling, or fuel storage will take place within 100 feet of a body of water. All fuel and chemical storage, servicing, and refueling will be done in an upland staging area or other suitable location (e.g., barges) with secondary containment to prevent spills from traveling to surface water or drains. Project proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located in upland areas to the extent possible and at least 100 feet from bodies of water unless site-specific circumstances do not provide such a setback or would result in further damage to sensitive resources, in which case the maximum setback possible will be used. Fluids will be stored in appropriate containers with covers and properly recycled or disposed of offsite. Machinery stored on site will have pans or absorbent mats placed underneath potential leak areas as a precautionary measure to further reduce the potential for impact from an unintended or previously undetectable leak.	Transportation, Agriculture, Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
GPM-11: Material Disposal	All refuse, debris, unused materials, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All construction debris will be removed from the project work area immediately upon project completion. The Water Quality and Hazardous Materials measures (below), will be implemented as applicable to ensure proper handling and disposal of hazardous materials.	Aesthetics, Agriculture, Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
GPM-12: Fugitive Dust Reduction	To reduce dust, construction vehicles will be speed restricted as described in GPM-6, Work Area and Speed Limits when traveling on non-paved surfaces. Stockpiled materials susceptible to wind-blown dispersal will be covered with plastic sheeting or other suitable material to prevent movement of the material. During construction, water (e.g., trucks and portable pumps with hoses) or other approved methods will be used to control fugitive dust, as necessary. Dust suppression activities must not result in a discharge to waters of the state unless such discharges are approved by the State or Regional Board.	Agriculture, Air Quality and Greenhouse Gas Emissions, Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
GPM-13: Trash Containment and Removal	During project activities all trash will be properly contained within sealed containers and removed from the work site and disposed of as necessary to maintain a trash-free work area (e.g., trash containers will not be used beyond capacity and fully close/seal).	Biological Resources-Terrestrial, Cumulative
GPM-14: Project Cleanup after Completion	Work pads, temporary falsework, and other construction items will be removed from the 100-year floodplain by the end of the construction window. Removal of materials must not result in discharge to waterbodies.	Aesthetics, Biological Resources-Terrestrial, Hazards and Hazardous Materials, Cumulative
GPM-15: Revegetate Disturbed Areas	All temporarily disturbed areas will be de-compacted and seeded/planted with an assemblage of native riparian, wetland, and/or upland plant species suitable for the area. The project proponent will develop a revegetation plan, including (as applicable) a schedule; plans for grading of disturbed areas to pre-project contours; planting palette with plant species native to the project area; invasive species management; performance standards; success criteria; and maintenance requirements (e.g., watering, weeding, and replanting). Plants for revegetation will come primarily from	Aesthetics, Geology and Soils, Agriculture, Biological Resources-Terrestrial, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	active seeding and planting; natural recruitment may also be proposed if site conditions allow for natural recruitment to reestablish vegetation and avoid potential negative risks associated with erosion and impacts to water quality. Plants imported to the restoration areas will come from local stock, and to the extent possible, local nurseries. Only native plants (genera) will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for restoration planting or seeding. Revegetation activities within and adjacent to waters of the state will commence as soon as is practicable after construction activities at a site are complete.	
Water Quality and Hazardous Materials (WQHM)		
WQHM-1: Staging Areas and Stockpiling of Materials and Equipment	Staging, storage, and stockpile areas must be outside of waters of the state. To the extent feasible, staging will occur on access roads or other previously disturbed upland areas, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation, to avoid aquatic habitats and limit disturbance to surrounding habitats. Similarly, all maintenance equipment and materials (e.g., road rock and project spoil) will be restricted to the existing service roads, paved roads, or other determined designated staging areas. See GPM-10 for more details regarding protection measures for materials storage. Staging areas will be established for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located at least 100 feet from bodies of water unless site-specific circumstances do not provide such a setback, in such cases the maximum setback possible will be used. If an off-road site is chosen and if special-status species are potentially present, the Biological Monitor will survey the selected site to verify that no aquatic resources would be disturbed by staging activities. Stockpiling of materials, portable equipment, vehicles and supplies (e.g., chemicals), will be restricted to the designated construction staging areas. If rain is predicted in the forecast during the dry season, and stockpiled soils will remain exposed and unworked for more than 7 days, then erosion and sediment control measures must be used. If there is a high-wind scenario (to be defined by the approving Water Board as appropriate for an individual project site), then soils will be covered at all times. During the wet season, no stockpiled soils will remain exposed, unless properly installed and maintained erosion and sediment controls are in place on and around the stockpile. Temporary stockpiling of material onsite will be minimized. Stockpiled material will be placed in upland areas far enough away from aquatic habitats that these materials cannot discharge to a water of the state.	Geology and Soils, Transportation, Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
WQHM-2: Storm Water Pollution Prevention Plan	All projects covered by the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) will prepare and implement the required, site-specific, storm water pollution prevention plan (SWPPP).	Geology and Soils, Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
WQHM-3: Erosion and Sediment Control Measures	For projects that do not require coverage under a NPDES permit per GPM WQHM-2, the project proponent will develop and implement erosion and sediment control measures (or plan), which will include appropriate BMPs to reduce the potential release of water quality pollutants to receiving waters. BMPs may include the following measures: • Employ tackifiers, soil binders, or mulch as appropriate for erosion control. • Install sediment control measures, such as straw bales, silt fences, fiber rolls, or equally effective measures, at repair areas adjacent to stream channels, drainage canals, and wetlands, as needed. Sediment control measures will be monitored during and after each storm event for effectiveness. Modifications, repairs, and improvements to sediment control measures will be made as needed to protect water quality.	Geology and Soils, Biological Resources-Terrestrial, Biological Resources-Aquatic, Hydrology and Water Quality, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	• No sediment control products will be used that include synthetic or plastic monofilament or cross-joints in the netting that are bound/ stitched (such as straw wattles, fiber rolls, or erosion control blankets), and which could trap snakes, amphibians, and other wildlife.	
WQHM-4: Hazardous Materials Management and Spill Response Plan	As part of the SWPPP or Erosion Control Plan (WQHM-2 and WQHM-3), project proponent will prepare and implement a hazardous materials management and spill response plan. Project proponent will ensure that any hazardous materials are stored at the staging area(s) with an impermeable membrane between the ground and hazardous material and that the staging area is designed to prevent the discharge of pollutants to groundwater and runoff water. Project proponent will stop work, follow the spill response plan, and arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills. (See WQHM-6. Accidental Discharge of Hazardous Materials for accidental discharges of a reportable quantity of a hazardous material, sewage, or an unknown material.) Project proponent will notify regulatory agencies within 24 hours of any leaks or spills. Project proponent will properly contain and dispose of any unused or leftover hazardous products off-site. Project proponent will use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas located away from stream channels and wetlands, according to local, state, and federal regulations, as applicable. Also see GPM-10: Equipment Maintenance and Materials Storage for more detail on spill prevention.	Geology and Soils, Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
WQHM-5: In-Water Concrete Use.	A dewatering plan must be submitted and approved by State and/or Regional Boards for in-water concrete use. Where possible, poured concrete should be excluded from contact with surface or groundwater during initial curing, ideally for 30 days after it is poured. During that time, runoff from the concrete will not be allowed to enter surface or groundwater. If this is not feasible due to expected flows and site conditions, commercial sealants that are non-toxic to aquatic life may be applied before it comes into contact with flowing water. Only sealants that have been tested and found non-toxic to freshwater aquatic life, including benthic macro-invertebrates, may be used on concrete surfaces that could come into contact with flowing water. Concrete is considered to be cured when water poured over the surface of concrete consistently has a pH of less than 8.5. (Note: Demonstration of nontoxicity to aquatic life may be evaluated by measuring survival of test organisms in a 96-hour bioassay. The bioassay should be performed according to the most up-to-date protocols in 40 C.F.R. part 136, currently Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, 5th Edition (EPA-821-R-02-012), including sample collections, handling, and preservation per U.S. EPA protocols).	Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
WQHM-6. Accidental Discharge of Hazardous Materials	Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, § 13271): As soon as (A) discharger has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then: • first call – 911 (to notify local response agency) • then call – Office of Emergency Services (OES) State Warning Center at: (800) 852-7550 or (916) 845-8911 • Lastly, follow the required OES procedures as set forth in: http://www.caloes.ca.gov/FireRescueSite/Documents/CalOES Spill_Booklet__Feb2014_FINAL_BW_Acc.pdf Following notification to OES, the discharger will notify the State or Regional Board (and other agencies requiring notification in their respective permits), as soon as practicable (ideally within 24 hours). Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
General In-Water Measures (IWW)		
IWW-1: Appropriate In-Water Materials	Selection and use of gravels, cobble, boulders, and instream woody materials in streams, and other materials (e.g., oyster shells, other substrates) for reef/bed restoration will be performed to avoid and/or minimize adverse impacts to aquatic resources, special-status aquatic species, and their habitats. On-site gravels will be screened and sorted; gravels imported from a commercial source will be clean-washed and of appropriate size. As necessary to protect aquatic species, placement will be overseen by an agency-approved Monitor; implementation timing will be determined based on the least amount of overlap, or impact on, all aquatic natural resources that may be affected and the timing of their use of the receiving area. Imported gravel from outside the project watershed will not be from a source known to contain historic hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings. Materials that may foul or degrade spawning gravels, such as sand or soil eroding from sand bag or earthen dams will be managed to avoid release and exposure in salmonid streams. Oyster shells or other substrates for reef/bed restoration will be cured and inspected to be free of pathogens and/or non-native species.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
IWW-2: In-Water Vehicle Selection and Work Access	If work requires that equipment enter wetlands or below the bank of a waters of the state, equipment with low ground-pressure (typically less than 13 to 20 pounds per square inch (psi)) should be selected where feasible to minimize soil compaction. Low ground-pressure heavy equipment mats should be used if needed to lessen soil compaction. Hydraulic fluids in mechanical equipment working in the waters of the state, will not contain organophosphate esters. Vegetable based hydraulic fluids are preferred, where feasible. The amount of time this equipment is stationed, working, or traveling in the waters of the state will be minimized. All equipment will be removed from the aquatic feature during non-work hours where appropriate or returned to the agency-approved staging area in the aquatic feature.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment	Material used for bank stabilization or in-water restoration will minimize discharge sediment or other forms of waste to waters of the state. Where feasible, construction will occur from the top of the stream bank, or on a ground protection mat underlain with filter fabric, or a barge. All materials placed in streams, rivers or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments, or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, or petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms. Except for the following conditions, equipment must not be operated in standing or flowing waters without site-specific approval from State or Regional Board staff: • All construction activities must be effectively isolated from water flows to minimize the potential for runoff. This may be accomplished by working in the dry season or dewatering the work area in the wet season. • When work in standing or flowing water is required, structures for isolating the in-water work area and/or diverting the water flow must not be removed until all disturbed areas are cleaned and stabilized. The diverted water flow must not be contaminated by construction activities. • All open flow temporary diversion channels must be lined with filter fabric or other appropriate liner material to prevent erosion. Structures used to isolate the in-water work area and/or divert the water flow (e.g., coffer dam or geotextile silt curtain) must not be removed until all disturbed areas are stabilized	Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
IWW-4: In-Water Staging Areas and Use of Barges	Where appropriate and practical, barges will be used to stage equipment and construct the project, while reducing noise, traffic disturbances and effects to terrestrial vegetation. When barge use is not practical, construction equipment and project materials may be staged in designated agency-approved staging areas. Existing staging sites, maintenance toe roads, and crown roads will be used to the maximum extent possible for project staging and access to avoid affecting previously undisturbed areas. For projects that involve in-water work for which boats and/or temporary	Hydrology and Water Quality, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	floating work platforms are necessary, buoys will be installed so that moored vessels will not beach on the shoreline and anchor lines will not drag. Moored vessels and buoys will not be within 25 feet of vegetated shallow waters.	
IWW-6: Dewatering/ Diversion	The area to be dewatered will encompass the minimum area necessary to perform construction activities. The project proponent will provide a dewatering plan with a description of the proposed dewatering structures, and appropriate types of BMPs for the installation, operation, maintenance, and removal of those structures. The period of dewatering/ diversion will extend only for the minimum amount of time needed to perform the restoration activity and to allow special-status species time to leave on their own before final clearance surveys and construction can begin. Where feasible and appropriate, dewatering/diversion will occur via gravity-driven systems, and where water is pumped from within the construction area, it should be pumped to upland areas (where feasible) and to a location where it can infiltrate without return flows to the watercourse. Dewatering/diversion will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. If special-status fish species may be present in the area to be dewatered, a fish capture and relocation plan will be developed and implemented for review and approval by appropriate agencies (e.g., CDFW, NMFS, USFWS, as applicable). Stream flows will be allowed to gravity flow around or through the work site using temporary bypass pipes or culverts. Bypass pipes will be sized to accommodate, at a minimum, twice the expected construction-period flow, to not increase stream velocity, and will be placed at stream grade. Conveyance pipe outlet energy dissipaters will be installed to prevent scour and turbidity at the discharge location. When use of gravity-fed dewatering is not feasible and pumping is necessary to dewater a work site, a temporary siltation basin and/or use of silt bags may be required. Silt fences or mechanisms to avoid sediment input to the flowing channel will be installed adjacent to flowing water. Water pumped or removed from dewatered areas will be conducted in a manner that does not contribute turbidity to nearby receiving waters. Where possible, pumps will be refueled in an area well away from the stream channel. Fuel absorbent mats will be placed under the pumps while refueling. Equipment working in the stream channel or within 25 feet of a wetted channel will have a double (i.e., primary and secondary) containment system for diesel and oil fluids. All work will comply with the CDFW Fish Screening Criteria (CDFW 2001) and NMFS Fish Screening Criteria for Anadromous Salmonids (NMFS 1997). Pump intakes will be covered with mesh per the requirements of current fish screening criteria to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion. Pre-project flows must be restored to the affected surface water body upon completion of work at that location. Where diversions are planned, contingency plans will be developed that include oversight for breakdowns, fueling, maintenance, leaks, etc.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
IWW-7: Fish and Aquatic Species Exclusion While Installing Diversion Structures	Fish and other aquatic species will be excluded from occupying the area to be dewatered by blocking the stream channel above and below the area to be dewatered with fine-meshed block nets or screens while coffer dams and other diversion structures are being installed. Block net mesh will be sized to ensure aquatic species upstream or downstream do not enter the areas proposed for dewatering. Mesh will be no greater than 1/8-inch diameter. The bottom of the net must be completely secured to the channel bed. Block nets or screens must be checked at least twice daily at the beginning and end of the workday and cleaned of debris to permit free flow of water. Block nets or screens will be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where aquatic species will be removed. Net placement is temporary and will be removed once dewatering has been accomplished or construction work is complete for the day.	Biological Resources-Aquatic

Measure Name	Description of Measure	Applicable Resource Topic
IWW-8: Removal of Diversion and Barriers to Flow	Upon completion of construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate and consideration of turbidity levels. Alteration of creek beds will be minimized to the maximum extent possible; any imported material that is not part of the project design will be removed from stream beds upon completion of the project.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Cumulative
IWW-9: In-Water Pile Driving Plan for Sound Exposure	Project proponents will develop a plan for pile-driving activities to minimize impacts to special-status species and submit it to relevant agencies for approval prior to the start of in-water pile driving activities. Measures will be implemented to minimize underwater sound pressure to levels below fish thresholds for peak pressure and accumulated sound exposure levels. Thresholds levels for special-status fish under NMFS jurisdiction are established in the Fisheries Acoustic Work Group's Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities (FAWG 2008) and may be used as a guideline for special-status fish. The plan will describe the least impactful method to aquatic organisms, and will identify the number, type, and size of piles, estimated sound levels caused by the driving, how many piles will be driven each day, qualifications of monitors, any other relevant details on the nature of the pile driving activity, and the actions that will be taken to ensure a project stays within the required sound exposure thresholds.	Noise, Biological Resources-Aquatic, Cumulative
IWW-10: In-Water Pile Driving Methods	Pile driving will occur during approved work windows with reduced currents and only during daylight hours. Pile driving will be conducted with vibratory or low/nonimpact methods (i.e., hydraulic) that result in sound pressures below threshold levels to the extent feasible. Applied energy and frequency will be gradually increased until necessary full force and frequency are achieved. If it is determined that impact hammers are required and/or underwater sound monitoring demonstrates that thresholds are being exceeded, the contractor will implement sound dampening or attenuation devices to reduce levels to the extent feasible; these may include the following: • A cushioning block used between the hammer and pile. • Use of a confined or unconfined air bubble curtain. • If feasible, pile driving could be done in the dry area (dewatered) behind the cofferdam. Pile driving will follow the criteria outlined in the most recent version of the California Department of Transportation's Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish (Caltrans 2015).	Biological Resources-Aquatic, Hydrology and Water Quality, Cumulative
IWW-11: Sediment Containment during In-Water Pile Driving	Caissons or a continuous length of silt curtain, fully surrounding the pile driving area and installed in close proximity to piers, must be used as necessary and as practicable to protect aquatic resources and to provide sediment containment while construction activities are occurring if working in a wetted channel. The silt curtain will prevent the release of a turbidity plume and trap sediment that may become suspended as a result of the pile driving. The bottom of the silt curtains must be weighted with ballast weights or rods affixed to the base of the fabric to resist the natural buoyancy of the silt curtain fabric and lessen its tendency to move in response to currents. Where feasible and applicable, the floating silt curtains must be anchored and deployed from the surface of the water to just above the substrate. The silt curtain must be monitored for damage, dislocation or gaps and must be immediately repaired where it is no longer continuous or where it has loosened. The silt curtain must restrict the surface visible turbidity plume to the area of pile construction and must control and contain the migration of re-suspended sediments at the water surface and at depth.	Biological Resources-Aquatic, Hydrology and Water Quality, Cumulative
IWW-12: Pile-driving Monitoring	An agency-approved biologist will be on site during pile-driving activities to minimize effects to special-status species that could be present. If any stranding, injury, or mortality to special-status species is observed, federal and state wildlife agencies will be notified in writing (e.g., via email) within 24 hours and in-water pile driving will cease until the applicable federal and/or state agencies provide guidance on how to proceed.	Biological Resources-Aquatic, Hydrology and Water Quality, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
IWW-13: Dredging Operations and Dredging Materials Reuse Plan	Project proponent will develop and implement a dredging operations and dredging materials management plan to minimize the effects that could occur during dredging operations and material reuse and disposal. If material is being imported from off-site or if there are specific concerns about residual contaminants in the soil from historic land use activities (which can be determined on a site-specific basis in collaboration with the approving Water Board), the plan will describe a sampling program for conducting physical and chemical analyses of sediments before import and/or disturbance. It will also describe BMPs to be implemented during dredging operations (e.g., using less intrusive dredging procedures, properly containing dredging spoils and water, using silt curtains, methods to minimize turbidity, and timing dredging activity to coincide with low flows). The plan also will describe methods to evaluate the suitability of dredged material for reuse and disposal.	Air Quality and Greenhouse Gas Emissions, Agriculture, Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
Vegetation/Habitat Disturbance and Revegetation, and Herbicide Use (VHDR)		
VHDR-1: Avoidance of Vegetation Disturbance	The project proponent will minimize, to the greatest extent feasible, the amount of soil, terrestrial vegetation, emergent native vegetation, and submerged vegetation (e.g., eelgrass and kelp in marine areas, or submerged aquatic vegetation in brackish and freshwater areas) disturbed during project construction and completion and using methods creating the least disturbance to vegetation. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed by the project will be limited to the extent of all temporary and permanent impacts as defined by the final project design. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to waters of the state and other aquatic habitats (e.g., streambank or stream channel, riparian habitat) as much as possible. When possible, existing ingress or egress points will be used and/or work will be performed from the top of the creek banks or from barges on the waterside of the stream or levee bank, or dry gravel beds. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank stabilizing trees and brush with greater than 6-inch diameter branches or trunks. Where possible, vegetation disturbance and soil compaction will be minimized by using low ground-pressure (typically less than 13 to 20 pounds psi) equipment that exerts less pressure per square inch on the ground than other equipment. To minimize impacts to vegetation, select equipment with a greater reach.	Aesthetics, Geology and Soils, Agriculture, Biological Resources-Terrestrial, Cumulative
VHDR-2: Native and Invasive Vegetation Removal Materials and Methods	If riparian vegetation is to be removed with chainsaws or other power equipment, machines that operate with vegetable-based bar oil will be used, as practicable. All invasive plant species (e.g., those rated as invasive by the California Invasive Plant Council or local problem species) will, if feasible, be removed from the project site, using locally and routinely accepted agriculture practices. Invasive plant material will be destroyed using approved protocols and disposed of at an appropriate upland disposal or compost area. Invasive plant materials stockpiled at sites known to experience flash flooding outside the flood season will be removed within 15 days of the initial creation of the stockpile in order to contain the potential spread of invasive plant material. Stockpiling of invasive plant materials is prohibited during the flood season.	Agriculture, Biological Resources-Terrestrial, Hydrology and Water Quality, Cumulative
VHDR-3: Revegetation Materials and Methods	Upon completion of work, site contours will be returned to preconstruction conditions or to contours specified in a Water Board-approved project design that provides enhanced biological and hydrological functions. Where disturbed, topsoil will be conserved (and watered at an appropriate frequency) for reuse during restoration to the extent practicable. Native plant species comprising a diverse community structure (plantings of both woody and herbaceous species, if both are present) that follow an agency-approved plant palette will be used for revegetation of disturbed and compacted areas, as appropriate. See also GPM-15: Revegetate Disturbed Areas, which also allows for revegetation through natural recruitment (e.g., in tidal and managed wetlands and working landscapes where disturbed areas typically revegetate more quickly through natural recruitment than through seeding). Any area barren of vegetation as a	Aesthetics, Geology and Soils, Agriculture, Biological Resources-Terrestrial, Hydrology and Water Quality, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	result of project implementation will be restored to a natural state by mulching, seeding, planting, or other means with native trees, shrubs, willow stakes, erosion control native seed mixes, or herbaceous plant species following completion of project construction. Irrigation may also be required in order to ensure survival of containerized shrubs or trees or other vegetation, depending on rainfall. Soils that have been compacted by heavy equipment will be decompacted, as necessary, to allow for revegetation at project completion as heavy equipment exits the construction area.	
VHDR-4: Revegetation Erosion Control Materials and Methods	If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations as necessary to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used. All plastic exclusion netting placed around plantings will be removed after 2 years or sooner if practicable.	Aesthetics, Geology and Soils, Agriculture, Biological Resources-Terrestrial, Hydrology and Water Quality, Cumulative
VHDR-5: Revegetation Monitoring and Reporting	All revegetated areas will be maintained and monitored for a minimum of 2 years after replanting is complete and until success criteria are met, to ensure the revegetation effort is successful. The standard for success is at least 60% absolute cover compared to pre-project conditions at the project site or at least 60% cover compared to an intact, local reference site (or an available reference site accepted by the approving Water Board). If an appropriate reference site or pre-project conditions cannot be identified, success criteria will be developed for review and approval by the approving Water Board on a project-by-project basis based on the specific habitat impacted and known recovery times for that habitat and geography. The project proponent will prepare a summary report of the monitoring results and recommendations at the conclusion of each monitoring year.	Aesthetics, Agriculture, Biological Resources-Terrestrial, Cumulative
VHDR-6: General Herbicide Use	Chemical control of invasive plants and animals will only be used when consistent with water quality control plans (e.g., basin plans) and when other methods are determined to be ineffective or would create greater environmental impacts than chemical control. Chemical use will be evaluated on a project-by-project basis with consideration of (and preference given towards) integrated pest management (IPM) strategies wherever possible. See University of California Statewide IPM Program for guidance documents (http://ipm.ucanr.edu/index.html). Broadcast spraying, including the use of aerial drones, may be used if it provides greater application accuracy and access. Chemical use is restricted in accordance with approved application methods and best management practices designed to prevent exposure to non-target areas and organisms. Any chemical considered for control of invasive species must be approved for use in California, adhere to all regulations per the California Environmental Protection Agency (CEPA 2011 or most recent version), and be applied by a licensed applicator under all necessary state and local permits. Use herbicides only in a context where all treatments are considered, and various methods are used individually or in concert to maximize the benefits while reducing undesirable effects and applying the lowest legal effective application rate, unless site-specific analysis determines a lower rate is needed to reduce non-target impacts. Treat only the minimum area necessary for effective control. Within 25 feet of any water of the state, only formulations approved by EPA and State Water Board for aquatic use will be utilized. Soil-activated herbicides can be applied as long as directions on the label are followed. Aquatic pesticides will be applied in compliance with NPDES order(s), where applicable (https://www.waterboards.ca.gov/water_issues/programs/npdes/pesticides/) or with authorization from the approving Water Board.	Agriculture, Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative
VHDR-7: Herbicide Application Planning	Written chemical application recommendations should be provided by each project proponent from a certified Pest Control Advisor (PCA) (CEPA 2011). The PCA can ensure that legal, appropriate, and effective chemicals are used with appropriate methodologies. Field scouting must be done before application, and the licensed Applicator (CEPA 2011) must be on-site to lead all applications and will adhere to standard protection measures for application. Prior to field scouting or application, the PCA or licensed applicator, will receive Environmental Awareness	Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	Training (see GPM-4) for the project so that they are aware of special status species and habitats present at the project site.	
VHDR-8 Herbicide Application Reporting	The licensed applicator will keep a record of all plants/areas treated, amounts and types of herbicide used, and dates of application, and pesticide application reports must be completed within 24 hours of application and submitted to applicable agencies for review. Wind and other weather data will be monitored and reported for all application reports.	Biological Resources-Terrestrial, Hazards and Hazardous Materials, Hydrology and Water Quality, Cumulative

Source: ESA 2025; State Water Board 2022b, Appendix E – Restoration Projects Statewide Order: Description and Eligibility (August 16, 2022)

Table App. A-2 contains SPMs from the SRGO Final Program EIR which are applicable to the Proposed Project and the corresponding environmental resource topics to which they would apply.

TABLE APP. A-2
SPMS APPLICABLE TO THE PROPOSED PROJECT

Measure Name	Description of Measure	Applicable Resource Topic
General Species Protection Measures (SPM)		
SPM-1: Preconstruction Surveys	If special-status plants are present and/or special-status terrestrial animal species habitat is present (e.g., stationary habitat such as burrows, bird nests, cavities for bats, etc.), where appropriate, based on project-specific requirements, a qualified, agency-approved biologist with experience on the identification of all applicable life stages of the special-status species will conduct reconnaissance-level preconstruction surveys and implement additional measures, as appropriate, to protect the species from construction-related disturbance before work begins. The intent of the survey is to assess current species habitat and use locations in the project area immediately prior to construction. Special-status plant species surveys shall be conducted in the appropriate blooming period, as applicable, prior to the start of construction for proper plant identification. If construction activities cease for more than five consecutive days, and there is potential for special-status species to re-occupy the site, the agency-approved biologist will re-survey the project area and implement measures, as appropriate. A project proponent can choose to assume animal species presence, forgo preconstruction surveys, and implement additional protection measures, as appropriate, to protect special status species from construction-related disturbance. Additional species guild-specific pre-construction requirements are described below and may supersede this general species protection measure, as applicable.	Biological Resources-Terrestrial, Cumulative
SPM-2: Environmentally Sensitive Areas and/or Wildlife Exclusion	Monitoring, flagging, and/or fencing will be used to minimize disturbance to environmentally sensitive areas (e.g., waters and wetlands). This measure augments GPM-7 (Appendix E), which applies to sensitive aquatic resources. If fencing is used: • The agency-approved biologist or resource specialist will determine the location of the fencing prior to the start of construction (e.g., between active work area(s) and sensitive resources). • Fencing will remain in place throughout the duration of the construction activities, and will be inspected and maintained regularly by the agency-approved biologist or resource specialist until completion of the project. • Repairs to the fencing will be made within 24 hours of discovery. • Fencing will be removed when all construction equipment is removed from the site, and the area cleared of debris and trash, and returned to natural conditions.	Biological Resources-Terrestrial, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
SPM-3: Species Protection Construction Work Windows	Construction work windows may be required, depending on whether or not the project involves in-water construction and/or whether special-status species have potential to occur onsite.	Biological Resources-Terrestrial, Biological Resources-Aquatic, Cumulative
SPM-4: Species Capture, Handling and Translocation	Special-status species capture, handling, and translocation will only be conducted by an agency-approved biologist(s). Required permitting will be needed prior to any capture, handling, and relocation. If translocation of special-status species is needed, the project proponent will prepare a special-status species translocation plan to be reviewed and approved by the agency(ies), as appropriate, prior to project implementation. The plan will include capture and translocation methods, translocation site, and post translocation monitoring, if applicable. If capture, handling, and translocation is necessary due to dewatering activities, refer to the protective measures for Dewatering Activities, under general protection measure IWW 6 and follow the agency-approved translocation plan.	Biological Resources-Terrestrial, Cumulative
SPM-5: Special-Status Species Entrapment Prevention	All excavated, steep-walled holes or trenches will be covered with appropriate covers (e.g., thick metal sheets or plywood) at the end of each workday. Covers will be placed so that trench edges are fully sealed with rock bags, sand, or other appropriate material. Alternatively, one or more escape ramps such as fill dirt or wood planking will be installed at an angle no greater than 30 degrees, to allow wildlife to escape. Before holes or trenches are filled, sealed, or collapsed, the holes or trenches will be thoroughly inspected for trapped animals. Any animals discovered will be allowed to escape voluntarily or will be relocated by an agency-approved biologist.	Biological Resources-Terrestrial, Cumulative
SPM-6: Airborne Noise Reduction	Equipment, including noise abatement systems, will be maintained in good working order. If construction noise has the potential to adversely affect special-status species, the project proponent will include site specific measures for construction activities to minimize impacts. Muffler (or spark arrester) damage must be promptly remedied, to the degree practicable, to meet sound attenuation standards.	Biological Resources-Terrestrial, Cumulative
Amphibians – Guild Protection Measures		
AMP-1: Wildlife Passage Design	For projects that include the installation, repair, or replacement of permanent or temporary fencing (e.g., security, landscape, or privacy fencing) fencing will be designed to allow for permeability; it will incorporate a minimum 6-inch gap with a one-way ramp or door at regular intervals to allow for special-status amphibian species to disperse between upland and breeding habitat. This measure is not applicable to the Environmentally Sensitive and Wildlife Exclusion Area fencing/flagging specified as part of construction activities to protect habitats or exclude wildlife from the work areas (SPM-2, above). Facilities such as curbs, drainages, culverts, and fence “footers” will be designed with gradually sloped sides or intermittent gaps to facilitate wildlife movement.	Cumulative
AMP-2: Rain Event Limitations	To the maximum extent practicable, construction activities will be restricted to periods of low rainfall (less than 1” per 24-hour period) and periods of dry weather (with less than a 50% chance of rain). During these restricted periods, under no circumstances will construction activities occur between 30 minutes prior to sunset and 30 minutes after sunrise (i.e., no night work during rain events). If rain exceeds 0.5 inch during a 24-hour period, work will cease until no further rain is forecast. Construction activities halted due to precipitation may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates less than a 50% chance of 0.5 inch of rain or less during a 24-hour period. Prior to construction activities resuming, an agency-approved biologist will inspect the project area and all equipment/materials for the presence of special-status amphibians.	Cumulative
AMP-3: Pre-Construction Survey	If covered amphibians are known or assumed to be present, no more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, an agency-approved biologist will walk within the project site to investigate all potential areas that could be used by the special-status amphibians for feeding, breeding, sheltering, movement,	Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	and other essential behaviors. If a special-status amphibian species is encountered during the survey the project proponent will refer to and follow procedures described below in AMP-11 and AMP-12[1] for passively allowing the species to move out of the work area or actively relocating the species out of harm's way. Proposed projects that may need to actively relocate amphibians out of harm's way will require the project proponent to submit a project-specific species relocation plan for agency review and approval, as described in AMP-12.	
AMP-4: Disease Prevention and Decontamination	To prevent disease conveyance among work sites during project implementation, the agency-approved biologist will ensure that the decontamination protocols described in CDFW, Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016, or latest version) will be implemented prior to gear and equipment arriving at or moving between work sites and will be followed at all times. A copy of the code of practice must be available at the project site.	Cumulative
AMP-5: Lighting	In addition to GPM-3, Construction Hours (general protection measures in Appendix E), artificial lighting at a project site will be prohibited to the maximum extent practicable during the hours of darkness, except when necessary for driver or pedestrian safety.	Cumulative
AMP-6: Clearing and Grubbing Vegetation	The agency-approved biologist will be present during all vegetation clearing and grubbing activities in areas within the currently occupied range of special-status amphibians where suitable habitat is present. Prior to vegetation removal, the agency-approved biologist will thoroughly survey the area for these species (measure AMP-3). Vegetation in sensitive areas will either be cleared with handheld motorized tools (e.g., weed eaters, chainsaws) or by hand pulling, or an agency-approved biologist will walk in front of vegetation clearing equipment. Where dense brush occurs (e.g., blackberry, periwinkle), the biologist may direct an equipment operator to lift and shake dense vegetation with an excavator or backhoe so that the biologist can look underneath and search for amphibians. Tree stumps and roots will be left in place where possible to avoid any ground disturbance and preserve refugia habitat, with the exception of non-native invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.	Cumulative
AMP-7: Pump Screens	If a water body is to be temporarily dewatered by pumping, intakes will be completely screened consistent with NMFS (1997) and CDFW (2001) screening guidelines, or latest updates to those guidelines. The intake will be placed in a perforated bucket or other method to attenuate suction to prevent special-status amphibians from entering the pump system. Water will be returned to the water body when diversions or coffer dams are removed and flow is restored. If no diversion or coffer dams were used during dewatering, the water body will be allowed to refill naturally from precipitation, runoff, or hydrological processes refilling the water body naturally.	Cumulative
AMP-8: Removal of Non-native Invasive Species	Removal of any individuals of non-native invasive species (e.g., bullfrogs, non-native crayfish, non-native fishes) is encouraged as practicable to facilitate conditions for project success. The project proponent is responsible for ensuring that these activities comply with the California Fish and Game Code. Suspected hybrids will not be removed without specific authorization from appropriate agency(ies).	Cumulative
AMP-9: Placement of Suitable Erosion Control Material	To prevent amphibians from becoming entangled, trapped, or injured, erosion control materials with plastic or synthetic monofilament netting will not be used. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers. Following site restoration, erosion	Cumulative

[1] AMP-12 was removed from the Final SRGO Program EIR. However, reference to this measure was inadvertently left in the text for AMP-3. This measure is not applicable to the proposed project and is not part of the Final SRGO Program EIR.

Measure Name	Description of Measure	Applicable Resource Topic
	control materials, such as straw wattles, will not block the movement of special-status amphibians.	
AMP-10: Encounters with Species	Each encounter with a special-status amphibian will be treated on a case-by-case basis. If any life stage of the special-status amphibian species is found and these individuals may potentially be killed or injured by work activities, the following will apply: • If a special-status amphibian is detected in the project area, work activities within 50 feet of the individual that may potentially be harmed, injured, or killed will cease immediately and the agency-approved biologist will be notified. Based on the professional judgment of the agency-approved biologist, if project activities can be conducted without harming or injuring the species, it may be left at the location of discovery and monitored by the agency-approved biologist. All project personnel will be notified of the finding and at no time will work occur within 50 feet of a species without agency-approved biologist present. • Where practicable, contact with the special-status amphibian will be avoided and it will be allowed to move out of the potentially hazardous situation of its own volition. Allowing a special-status amphibian to move out of the potentially hazardous situation of its own volition may not be appropriate for multi-day projects because they could stay or move back into the project site. If there is an immediate hazard or if there is no suitable, accessible habitat nearby for the amphibian to relocate to, it will be moved following approved handling protocol (AMP-11).	Cumulative
AMP-11: Species Observations and Handling Protocol	If a special-status species does not or cannot leave the work area, the agency-approved biologist will implement the species observation and handling protocols outlined below for the various species' guilds. Separate permits are needed prior to any capture, handling, and relocation of special-status species. Only agency-approved biologists will participate in activities associated with the capture, handling, relocation, and monitoring of a special-status amphibian. In addition to measures described in AMP-5 (which refers to CDFW [2016] decontamination protocols), to prevent the spread of pathogens among sites, special care should be taken to prevent transferring potential pathogens among individual animals.	Cumulative
Reptiles – Guild Protection Measures		
REP-1: Pre-Construction Survey	An agency-approved biologist will conduct pre-construction surveys for the target reptile species within 72 hours prior to any initial ground disturbance within all suitable habitat within or adjacent to the project site and accessible to the project proponent, to identify locations where special-status reptiles may be present, evaluate current activity status in the project area, and protect the species and its habitat from avoidable construction-related disturbance. The intent of this survey is to assess current special-status reptile habitat and use locations in the project area immediately prior to construction. Preconstruction surveys may be phased across a construction site if construction in different areas will occur at different times; only areas where disturbance is imminent need be surveyed. The project area will be re-inspected by the agency-approved biologist whenever a lapse in construction activity of 5 days or greater has occurred.	Biological Resources-Terrestrial, Cumulative
REP-2: Environmentally Sensitive and Wildlife Exclusion Area	Prior to the start of construction, SPM-2, Environmentally Sensitive and Wildlife Exclusion will be implemented. In addition, the following applies: • For the giant garter snake, fencing and/or monitoring will be implemented in coordination with the agency-approved biologist prior to the start of ground-disturbing activities. If fencing is used the fencing will be inspected by the agency-approved biologist before the start of each work day and maintained by the project proponent until completion of the project. The fencing will be removed after all construction equipment is removed from those segments of the project. To prevent reptiles from becoming entangled, trapped, or injured, fencing materials that use plastic or synthetic monofilament netting will not be used. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.	Biological Resources-Terrestrial, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
REP-3: Clearing and Grubbing Vegetation	An agency-approved biologist will be present during all vegetation clearing and grubbing activities in areas where the special status reptiles are confirmed to occur, or where measures are being implemented based on presence of suitable habitat. Prior to vegetation removal, the agency-approved biologist will thoroughly survey the area for these species. Vegetation in sensitive areas will be cleared by handheld motorized tools (e.g., weed eaters, chainsaws) or hand pulling unless alternate methods are proposed by the project proponent and approved by agency(ies). Tree stumps and roots will be left in place where possible to avoid any ground disturbance and preserve refugia habitat, with the exception of non-native invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.	Biological Resources-Terrestrial, Cumulative
REP-4: Prohibited Use of Rodenticides	No rodenticides will be used at the project site during construction in areas that support suitable habitat for special-status reptiles.	Biological Resources-Terrestrial, Cumulative
REP-5: Species Observations and Encounters	Each proposed project with the potential to encounter a special-status reptile species will submit a rescue and relocation plan to agency(ies) for review and approval prior to initiating construction. General guidance to be considered during plan development is as follows: 1) leave the uninjured animal if it is not in danger, or 2) move the animal to a nearby location if it is in danger as described in REP-6, Species Handling and Relocation, below. These options are further described as follows: • When a special-status reptile is encountered in the project area, the priority is to stop all activities in the surrounding area that have the potential to result in the harm, injury, or death of the individual. The agency-approved biologist then needs to assess the situation to select the course of project that will minimize adverse effects to the individual. • Avoid contact with the animal and allow it to move out of the project footprint and hazardous situation on its own to a safe location. This guidance only applies to situations where an animal is encountered while moving through habitat and under conditions that will allow it to escape. This does not apply to animals that are uncovered or otherwise exposed or in areas where there is not enough adjacent habitat to support the life history of the special-status reptiles if they move outside the construction footprint. • Avoidance is the preferred option if the animal is not moving or is within some sort of burrow or other refugia. In this case, the area will be well marked for avoidance by construction and an agency-approved biologist will be assigned to the area when work is taking place nearby. If avoidance is not practicable or safe for the special-status reptile, the project proponent will implement REP-6, below.	Biological Resources-Terrestrial, Cumulative
REP-6: Species Handling and Relocation	A special-status reptile will only be captured and relocated when it is the only option to prevent its death or injury, and after all attempts to avoid interaction of the species have been exhausted as described in REP-6, Species Observation and Encounters. Project-specific rescue and relocation plans will be approved by the agency(ies) prior to starting construction. General guidance for handling and relocation is as follows: • If appropriate habitat is located immediately adjacent to the capture location, then the preferred option is short distance relocation to that habitat. A snake will not be moved outside of the area where it could have traveled on its own. Captured snakes will be released in appropriate cover as close to their capture location as possible for their continued safety. Under no circumstances will an animal be relocated to another property without the owner's written permission. It is the project proponent's responsibility to arrange for that permission. • The release locations must be pre-identified in the project-specific rescue and relocation plan approved by the agency(ies); they will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow, other suitable refugia, or suitable habitat. • Only agency-approved biologists for the project can capture special-status reptiles.	Biological Resources-Terrestrial, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
Birds – Guild Protection Measures		
BIRD-1: Habitat Assessment	A habitat assessment will be conducted by a qualified biologist to determine whether suitable habitat (e.g., including foraging, nesting, and dispersal habitat) for the special-status bird(s) occurs in the project area, as applicable. If suitable habitat for special-status species is identified in the project area and the proposed project may affect suitable habitat, the project proponent will implement measures BIRD-2 through 5 in areas with suitable habitat. Alternatively, the project proponent may propose to conduct surveys and/or monitoring to confirm presence or absence of the species.	Biological Resources-Terrestrial, Cumulative
BIRD-2: Nest Protection Work Window	Project activity in known or potentially occupied migratory bird habitat will be conducted outside of the nesting season to the maximum extent practicable. If project activities must occur during the nesting season see BIRD-5.	Biological Resources-Terrestrial, Cumulative
BIRD-3: Work Area Limits	Work site boundaries in suitable habitat will be clearly marked with flagging or other visible materials, which will be removed at the conclusion of the project.	Biological Resources-Terrestrial, Cumulative
BIRD-4: Site Access Restrictions	If the site conditions allow, access to work sites in occupied habitat will be by foot travel, otherwise heavy equipment will be allowed within suitable nesting habitats only with the presence of an agency-approved biologist. Access routes and work areas will be limited to the minimum amount necessary to achieve the project goals.	Biological Resources-Terrestrial, Cumulative
BIRD-5: Monitoring	If project activities must occur during the nesting season, pre-construction nest surveys will be conducted by an agency-approved biologist, buffers will be established to protect active nests, and disturbance in the vicinity of active nests will be monitored to ensure that it does not disrupt an active nest.	Biological Resources-Terrestrial, Cumulative
Mammals – Guild Protection Measures		
MAM-1: Conduct Habitat Assessment	Prior to construction, an agency-approved biologist will conduct a habitat assessment in potentially suitable habitat within the project footprint to determine presence of special-status mammals or their sign (e.g., scat, guano, tail drags and tracks, skeletal remains in owl pellets, etc.). The habitat assessment surveys will be conducted within 2 years, and at least 14 days prior to the start of construction or ground disturbing activities. If no burrows or sign of special-status mammals are detected, no further measures will be required.	Cumulative
MAM-2: Avoidance Areas	Based on the results of the habitat assessment, in areas where special-status mammals are believed to be present based on observations (e.g., signs of presence, burrows), non-disturbance zones will be established prior to construction or ground disturbing activities.	Cumulative
MAM-3: Use of Handheld Tools	If exclusion fencing will be installed, vegetation in active work areas outside of the exclusion areas will be trimmed and cleared to the ground using handheld tools (which can include handheld motorized equipment, such as weed whackers or mowers) to the maximum extent practicable, under the supervision of an agency-approved biologist, to discourage presence of species in the construction area.	Cumulative
MAM-4: Species Trapping and Relocating	If the minimum avoidance zone cannot be maintained and the agency-approved biologist believes activities will disturb or destroy habitat (e.g., collapse burrows) or may otherwise adversely affect these special-status mammal species, then an agency-approved biologist may be required to implement a trap and release program at the agency's discretion. Project-specific guidance on trapping, temporary holding, release location, and release method will be required by the agency prior to the start of trapping.	Cumulative
MAM-5: Reporting Requirements	Agencies will be notified within 24 hours if any individual special-status species is captured. The date; time of capture; specific location (GPS coordinates); and approximate size, age, and health of the individual will be recorded and provided in both hard copy and digital format to the agency(ies) within 2 weeks of the conclusion of the protective trap-and-release operation.	Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	The agency(ies) will be notified within 24 hours if any special-status mammal species is found injured or dead. A written notification will also be prepared by the project proponent after verbal notification to the agency(ies). The report will include the date, time, and location of the discovered animal/carcass; cause of injury or death; and any other pertinent information. All dead and preserved specimens will be submitted to the appropriate agency(ies) upon request. Salvaged animals will be kept cooled or frozen until delivered.	
Invertebrates – Guild Protection Measures		
INVERT-1: Implement California Freshwater Shrimp Measures	Implement the following measures for projects that include suitable habitat that could be occupied by California freshwater shrimp, as applicable. • Work Window. No work is permitted during wet weather or where saturated ground conditions exist; if a 60 percent chance of a 0.5 inch of rain or more within a 24-hour period is forecast, then operations will cease until 24 hours after rain has ceased. • Site Restrictions. New access routes requiring tree removal and grading will be limited to the extent practicable. Access routes will not be along the top of the stream bank but relatively perpendicular (45 to 90 degrees is acceptable) to the bank. • Pre-Construction Survey. Agency-approved biologist will conduct surveys of suitable habitat in the project area for presence of the California freshwater shrimp in the work area 24 hours prior to any vegetative clearing work, dewatering, or ground-disturbing activities. • Capture and Relocation: If California freshwater shrimp must be temporarily excluded from portions of the project area during in-water work, a project-specific capture and relocation plan must be submitted to the agency(ies) for review and approval. • Habitat Protection: Design project to achieve no net loss of large woody debris in the active (wetted) channels. Trees may be removed for access routes for construction equipment. If trees need to be removed from other portions of the project site, willows over 3 inches in diameter at breast height will be left in place as is practicable and the canopy cover provided by hardwoods or conifers will not be reduced unless necessary for access or other unforeseen circumstance. • Rehabilitate Disturbed Habitat: The stream bank will be planted with species which will enhance the year-round habitat value of the stream edge by providing adequate shelter, stability, complexity and food production potential for California freshwater shrimp. • Dewatering: Minimize the potential for California freshwater shrimp to be entrained during dewatering activities. Pump intakes will be placed away from complex vegetated banks that may contain habitat for California freshwater shrimp. Screens will be used during dewatering in accordance with IWW-6, Dewatering/Diversion, following CDFW (2001) and NMFS (1997) criteria for fry-sized salmonids.	Cumulative
INVERT-2: Implement Vernal Pool Branchiopods Measures	Implement the following measures for projects that are within or adjacent to suitable habitat that could be occupied by vernal pool branchiopods, as applicable. • Ground Disturbance Adjacent to Vernal Pools. Implement the following measures for project sites that include suitable habitat that could be occupied by vernal pool branchiopods, as applicable. o Work Window. Work within 250 feet of suitable special-status vernal pool branchiopod habitat (e.g., vernal pools, seasonal wetlands) will be performed under dry site conditions, to the extent feasible. If project proponents believe projects must be conducted outside of these work windows due to site specific or other constraints, project proponents may propose alternate work periods for review and approval by the agency(ies). o Work Restrictions During Wet Season. Work should be planned for the dry season whenever possible. If the proponent determines that construction activities must occur outside of the dry season,	Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	Environmentally Sensitive Area fencing and erosion control materials will be placed around vernal pools and other seasonal wetlands, as determined by the agency-approved biologist, to avoid sedimentation into vernal pool habitat or altering site hydrology. If project proponents believe projects must be conducted outside of these work windows due to site specific or other constraints, project proponents may propose alternate work periods for review and approval by the agency(ies). o Biological Monitor: Agency-approved biologist will monitor construction activities. o Erosion Control: Any vernal pool, vernal pool grassland, or seasonal wetland will be protected from siltation and potentially contaminated runoff from construction equipment by use of erosion control measures. o Dust Control. Dust control measures will be implemented to prevent the transport of soil from exposed surfaces to vernal pool, swale, and rock pool habitat. • Ground Disturbance within Vernal Pools. If the intent of a proposed project is to improve habitat for special-status vernal pool branchiopods (e.g., enlarge, deepen, repair, or otherwise modify suitable aquatic habitat), and would require ground disturbance within suitable habitat, the project proponent will submit detailed project design information for review and approval by the agency(ies). Any ground disturbing activities within 25 feet of the edge of the pool will be conducted consistent with a plan reviewed and approved by the agency(ies), and will be conducted during the dry season. The following measures may also apply and should be considered during development of the plan that will be submitted to the agency(ies): o If inoculum from an existing site will be used for restoration/enhancement, the plan will identify any proposed donor pools and include documentation that they are free of versatile fairy shrimp (Branchinecta lindahli). No more than 5 percent of the basin area of any donor pool will be used for collection of inoculum. o Restoration plans that include grading or re-grading of vernal pools will include all final specifications and topographic-based grading, planting, and watering plans for the vernal pools, watersheds and surrounding uplands (including adjacent mima mounds) at the restoration sites. The grading plans will also show the watersheds of extant vernal pools, and overflow pathways that hydrologically connect the restored pools in a way that mimics natural vernal pool complex topography/hydrology. o Restoration plans that include grading or re-grading of vernal pools will include a hydraulic analysis that shows each proposed vernal pool and its watershed, and a calculation showing vernal pool to watershed ratio. The vernal pool to watershed ratio will be similar to extant pools closest to the restoration area. o Prior to ground disturbance within suitable habitat, loose substrate, which may include branchiopod cysts, will be collected from the pool area to be disturbed by vacuum and stored in dry conditions until grading is complete. o Topsoil will be removed and stockpiled separately. o Disturbance of the less permeable, hardpan or claypan soil layer that often helps form vernal poos will be minimized. If the less permeable layer must be removed it will be stockpiled separately. o When grading is complete, layers will be replaced in the reverse order, relative to removal, beginning with subsoil, followed by the less permeable layer, then topsoil, and then loose material collected by vacuum. Subsoil and less permeable layers should each be compacted following placement to decrease permeability of restored or modified suitable habitat.	

Measure Name	Description of Measure	Applicable Resource Topic
INVERT-3: Implement Valley Elderberry Longhorn Beetle Protocol	Implement the following measures for projects that include suitable habitat that could be occupied by valley elderberry longhorn beetle (VELB), as applicable. • For the VELB, the project proponent will be required to follow the Protection Measures presented in the May 2017 FWS Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle or the most updated version of this guideline document (USFWS 2017).	Cumulative
INVERT-4: Implement Butterfly Protection Measures	The following general butterfly protection measures apply to all special-status butterfly species and their habitat, as applicable. • Site Restrictions: Access routes, staging areas, and total project footprint within butterfly habitat will be limited to the minimum necessary to achieve the project goal. • Biological Monitor: Biological monitoring will be overseen by an agency-approved biologist. During the adult flight season of special-status butterfly species, an /agency-approved biologist will be present when construction activities occur in or within 150 feet of suitable habitat (dispersal habitat as well as areas containing the larval host plant and adult food plants). • Environmentally Sensitive Areas: Any larval food or host plants found within 300 feet of the project footprint will be clearly marked and will be avoided to the maximum extent practicable. Prior to any ground-disturbing or vegetation removal activities, the edge of the work area near any larval food or host plants will be clearly marked to prevent workers and vehicles from entering this area. • Dust Control: The agency-approved biologist will ensure that dust is controlled by construction personnel by periodically watering down areas within 100 feet of special-status butterfly habitat, as necessary. Watering down the construction area will prevent dirt from becoming air borne and accumulating on larval host plants and adult food source plants for special-status butterflies.	Cumulative
Fish – Guild Protection Measures		
FISH-1: Habitat Disturbance Avoidance and Minimization	Disturbance to aquatic habitat for special-status fish species will be avoided and/or minimized to the maximum extent practicable unless the purpose of the project is to provide overall benefits to the species and the benefits are greater than any temporary impacts to habitat.	Biological Resources-Aquatic, Cumulative
FISH-2: Habitat Assessment and Surveys	For projects that may result in impacts to aquatic habitat within the range of special-status fish species, no less than 30 days prior to construction of the project, the project proponent will evaluate the potential for special-status fish species to be present in the project area. The evaluation may be based on existing information if sufficiently available, or the project proponent may conduct a habitat assessment or focused survey for those species, if appropriate. The habitat assessment and/or survey will be conducted in potentially suitable aquatic habitat within 300 feet of the project area. The agency-approved biologist will conduct the habitat assessment and/or fish survey and will adhere to the standards provided in the CDFW California Salmonid Stream Habitat Restoration Manual 4th Edition Volume I: Section IV (CDFW 2010) or most current regulatory agency guidance document. If special-status fish species are observed during the survey or the habitat is otherwise potentially occupied, based on the results of the habitat assessment or existing information, the project proponent will implement FISH-3, Fish Capture and Relocation, as described below.	Biological Resources-Aquatic, Cumulative
FISH-3: Fish Capture and Relocation	For projects that require dewatering or other work in suitable habitat for the special-status fish species, if fish capture and relocation would be the most protective approach to managing fish during construction, then a fish capture and relocation plan will be developed and submitted to NMFS, USFWS, and/or CDFW, as applicable, for approval. The plan will describe the biologist qualifications, capture methods, capture and relocation work areas, and reporting requirements including details in the list below. If capture and relocation is not feasible or would not be the most protective approach to managing fish in the work area (e.g., if dewatering is not	Biological Resources-Aquatic, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
	needed or appropriate; or if fish are in a large, unconfined water body), other methods to protect covered fish species (e.g., timing restrictions around season and tide, or bubble curtains) should be detailed in a plan and submitted to FWS for approval. • This plan will incorporate the latest agency guidance relating to the capture and relocation of fish, as applicable. • Procedures for decontamination of any equipment used in the capture and relocation of fish will be identified. • Prior to the implementation of capture and relocation activities, relocation (or release) sites will be identified by the agency-approved biologist based on proximity, access, habitat suitability, and potential to be affected by constructionrelated disturbance. Suitable habitat for relocation site(s) will be within the same watershed/sub-watershed fish were originally captured. • Fish relocation will only be conducted (or led) by an agency-approved biologist. If an agency-approved biologist is needed, the project proponent will submit the biologist's qualifications to the appropriate agency office for approval 30 days prior to project construction. The biologist will have knowledge and experience in fish biology and ecology, fish/habitat relationships, and biological monitoring, and handling, collecting, and relocating fish or other relevant experience. • Residual surface water associated with the diverted or dewatered habitat will be monitored or sampled for the presence of fish by an agency-approved biologist as soon as the waters are isolated. If a special-status fish is observed in the isolated habitat, they will be immediately captured and relocated to the suitable habitat outside of the construction area, but within the same watershed/sub-watershed, by the agency-approved biologist in accordance with the approved fish capture and relocation plan. • The agency-approved biologist will relocate any special-status fish species that may become stranded to an appropriate place depending upon the life stage of the fish, consistent with the approved rescue and relocation plan. • The agency-approved biologist will note the number of individuals observed in the affected area, the number of individuals relocated, the approximate size of individuals, the location of capture and release, any instances of injury or mortality, and the date and time of the collection and relocation. The agency-approved biologist will also identify and record the species observed and relocated and the life stage for anadromous species. This information will be reported to the appropriate agency office within 7 days of completion of the fish capture and relocation effort. • One or more of the following methods will be used to capture protected fish species: electrofishing, dip net, seine, throw net, minnow trap, and hand capture.	
FISH-4: Reporting	An agency-approved biologist will provide a written summary of work performed (including biological survey and monitoring results), protection measures implemented (e.g., use of biological monitor, flagging of work areas, erosion and sedimentation controls) and supporting photographs of each stage to the appropriate agency office. Furthermore, the documentation describing surveys and relocation efforts (if appropriate) will be completed in accordance with the requirements of FISH-3: Fish Capture and Relocation.	Biological Resources-Aquatic, Cumulative
Plant Species Protection Measures		
PLANT-1: Habitat Assessment and Surveys	If the project area can potentially support special-status plant species, an agency-approved biologist will conduct a survey for special-status plant species within 1 year prior to commencement of ground disturbing activities. Surveys should follow USFWS's General Rare Plant Survey Guidelines (USFWS 2002); and CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018) or their most recent equivalents.	Biological Resources-Terrestrial, Cumulative

Measure Name	Description of Measure	Applicable Resource Topic
PLANT-2: Seasonal Avoidance of Vernal Pool Plant Species and Other Annual and Perennial Species	For Vernal Pool Plant Species: Work within 250 feet of suitable special-status vernal pool plant habitat (e.g., vernal pools, seasonal wetlands) will be performed under dry site conditions to the maximum extent possible, to minimize potential adverse impacts to aquatic habitats. If any construction activities must occur during the wet period, exclusion fencing and erosion control materials will be placed around vernal pools and other seasonal wetlands as determined by the agency-approved biologist to reduce sedimentation into vernal pool habitat. The fencing will provide a buffer between construction activities and the vernal pools and other seasonal wetlands. The agency-approved biologist will oversee, monitor, inspect and maintain the exclusion fencing. For Other Annual Plant Species: To avoid impacts to other annual species, schedule work to occur after plants have set seed and senesced, avoid soil disturbance, and avoid actions that have potential to reduce habitat quality.	Biological Resources-Terrestrial, Cumulative
PLANT-3: Exclusion Buffer Establishment	An agency-approved biologist will clearly delineate with flagging or other field markers a minimum 50-foot avoidance buffer around all special-status plants or their suitable habitat. A larger exclusion buffer may be established if determined by the agency-approved biologist to be necessary for the protection of the special-status plants. No work activity will occur within the exclusion buffer, except as permitted under Measure PLANT-4, Work Restrictions in the Exclusion Buffer. Additionally, a buffer of at least 300 feet from any vernal pool, vernal pool grassland, or seasonal wetland will be established for the protection of special status plants.	Biological Resources-Terrestrial, Cumulative
PLANT-4: Work Restrictions in the Exclusion Buffer	If agency-approved biologist determines that some work activities can take place within the exclusion buffer described in Measure PLANT-3 without causing any adverse direct or indirect impacts to special-status plants identified for avoidance, those approved work activities may be conducted within the exclusion buffer. Special-status vernal pool plants will be clearly marked by an agency-approved biologist prior to worker entry into the exclusion buffer. Workers may only enter the exclusion buffer when accompanied by an agency-approved biologist, and all work within the exclusion buffer will be monitored by an agency-approved biologist.	Biological Resources-Terrestrial, Cumulative
PLANT-6: Herbicide Application, Clearing, and Ground Disturbance	If mechanical removal is not effective, or could damage sensitive habitats, limited herbicide application may occur as noted below and in accordance with General Protection Measures VHDR-6 through VHDR-8 (Appendix E), wind speed limitations during herbicide application. • To avoid impacts to other special-status species (non-vernal pool species), the following protections will be applied: o Application of herbicide will occur during dry conditions (no precipitation), to the maximum extent practicable. o Backpack and hand-held herbicide application, if applied in dry conditions, is prohibited within 5 feet of any special-status plant. Protect special-status plants from herbicide drift (e.g., cover with plastic when spraying or use a wick applicator). o Broadcast and power spray herbicide application is prohibited; and o Ground disturbing activities are prohibited within 5 feet of senesced annual and perennial plants and within 10 feet of perennial plants. Ground disturbance should occur outside of the dripline of any woody species identified for avoidance.	Biological Resources-Terrestrial, Hazards and Hazardous Materials, Cumulative

Notes:

a. AMP = Amphibians
b. REP = Reptiles
c. MAM = Mammals
d. INVERT = Invertebrates

Source: ESA, 2025, State Water Board 2022b Appendix F – Species Protection Measures (August 16, 2022)

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Appendix B

Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters

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DEPARTMENT OF WATER RESOURCES
SYSTEMWIDE MULTI-BENEFIT INITIATIVES
715 P Street
SACRAMENTO, CA 95814

NOTICE OF PREPARATION

To: Agencies and Interested Parties

From: California Department of Resources

Date: July 22, 2024

Subject: Notice of Preparation and Scoping Meetings for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report

Notice is hereby given that the California Department of Water Resources (DWR), as the Lead Agency under the California Environmental Quality Act (CEQA), is planning to prepare a Supplemental Environmental Impact Report (SEIR) for the Tide's End Multibenefit Restoration Project (proposed Project). DWR has issued this Notice of Preparation (NOP) to provide responsible agencies, trustee agencies, and other interested parties with information describing the proposed Project and its potential environmental effects. Public scoping meetings will be held to receive comments on the scope and content of the SEIR. Three public scoping meetings will be held (details below): 1) In-person on August 6, 2024, from 9:00 a.m. to 10:30 a.m. at California Natural Resources Headquarters in Sacramento with a virtual option via Zoom; 2) Virtual only on August 7, 2024, from 12:00 p.m. to 1:00 p.m. via Zoom; 3) In-person only on August 8, 2024, from 5:00 p.m. to 6:30 p.m. at Yolo Bypass Wildlife Area Headquarters in Davis.

DWR invites each responsible and trustee agency, and each Federal agency, including National Environmental Protection Act (NEPA) cooperating agencies involved in approving or funding the proposed Project, to provide input as to the scope and content of the environmental information that is germane to the agency's statutory responsibilities in connection with the proposed Project. DWR is also accepting comments from members of the public and Native American Tribes on the scope and content of the SEIR, as well as suggested alternatives to the proposed Project that may be considered in the SEIR.

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INTRODUCTION

Pursuant to the California Environmental Quality Act (CEQA), which specifies that a public agency must prepare an Environmental Impact Report on any project that it proposes to carry out or approve that may have a potentially significant or significant direct or indirect effect on the physical environment, the Department of Water Resources (DWR) will serve as lead agency and will prepare a Supplemental Environmental Impact Report (SEIR) for the Tide's End Multibenefit Restoration Project (proposed Project).

BACKGROUND

The Agreements to Support Healthy Rivers and Landscapes Program, often referred to as the "Voluntary Agreements," are a comprehensive, multi-year solution to restore ecosystems and strengthen water supply reliability across California. The Voluntary Agreements were formally proposed to the State Water Resources Control Board (Water Board) in the March 29, 2022 "Memorandum of Understanding Advancing a Term Sheet for the Voluntary Agreements to Update and Implement the Bay-Delta Water Quality Control Plan and Other Related Actions" (2022 MOU). The signatories to the 2022 MOU, including DWR, intend to provide an implementation pathway for the updated Bay-Delta Water Quality Control Plan, providing flexible, adaptive management to real-time conditions. Since the 2022 MOU, the Water Board has been evaluating the Voluntary Agreements, releasing a Draft Scientific Basis Report in January 2023[1] and a Draft Staff Report in September 2023.[2] DWR proposes the Tide's End Multibenefit Restoration Project (proposed Project) as a project supporting the principles and framework outlined in the Voluntary Agreements.

The proposed Project also furthers the goals and objectives of the Central Valley Flood Protection Plan (CVFPP) by managing floodway roughness, maintaining long-term flood capacity, and reducing potential flood encroachments in the Yolo Bypass. The proposed Project also furthers the goals and objectives of the CVFPP's Conservation Strategy by increasing the quantity, quality, and connectivity of aquatic, wetland, and riparian habitat in the flood system through the integration of ecological principles with flood risk reduction projects and activities. In addition, the proposed Project will contribute to the sustainability of agriculture in the region by improving efficiencies of water delivery and drainage associated with the proposed Project area and adjacent landowners.

PROJECT AREA

The proposed Project Area is in Yolo County, approximately six miles southwest of the City of Sacramento, at the northern end of the Sacramento-San Joaquin River Delta (Delta) (Figure 1). It encompasses approximately 2,212 acres at the downstream end of the Yolo Bypass and is adjacent to the Toe Drain that parallels the west side of the Sacramento Deep Water Ship

1 State Water Resources Control Board, California Department of Water Resources, and California Department of Fish and Wildlife. 2023. *Draft Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan*.

2 State Water Resources Control Board. 2023. *Draft Staff Report/Substitute Environmental Document in Support of Potential Updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary for the Sacramento River and its Tributaries, Delta Eastside Tributaries, and Delta*.

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Channel. Land uses in the vicinity are primarily seasonal agriculture and managed seasonal wetlands for waterfowl.

PROJECT DESCRIPTION

The proposed Project would restore tidal marsh and associated floodplain habitat while preserving and enhancing existing land uses. Located at the fluvial-tidal interface at the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex, the proposed Project would connect a ten-mile stretch of uninterrupted floodplain and wetland habitat in one of the most critical areas for smelt and salmonid habitat restoration in the Delta (Figure 1).

The Project Area consists of 2,212 acres of agricultural lands and managed waterfowl habitat across six properties: Capitol Oil (Assessor's Parcel Numbers [APNs]: 033450002000, 033190010000, 033440006000, 033450001000), Laurel G (APNs: 033220054000, 033220052000), Yolo Basin (APN 033220046000), Lucky Five South (APN 033220009000), Kleary (APN 033220068000), and Williams (APN 033220067000). The proposed Project would restore tidal connectivity to the Toe Drain for low-lying areas where the ground elevation is suitable to support tidal marsh habitat by opening an existing berm adjacent to the Toe Drain and excavating tidal channels.

The proposed Project Area's low-lying, low-gradient floodplain areas would be preserved, providing an opportunity for long-term climate change resilience by allowing for inland migration of tidal marsh habitat in the face of sea-level rise. The proposed Project would also improve volitional fish passage between the Project Area and the Toe Drain through the reduction or improvement of existing human-built obstructions. Long-term proposed Project operations would integrate ecologically sensitive seasonal floodplain agriculture (e.g., rice operations) and fish-friendly waterfowl management practices in managed wetland areas, providing seasonal food production to native fish species while integrating ongoing agricultural and recreational uses of the site.

The proposed Project would provide up to approximately 450 acres of tidal marsh and tidal channels; 630 acres of floodplain habitat; and 1,132 acres of managed floodplain and associated infrastructure, including managed seasonal wetlands for waterfowl, agricultural fields, irrigation supply channels, and associated berm and road infrastructure. The restored mix of tidal, floodplain, and managed habitats would improve habitat for listed species, including delta smelt (*Hypomesus transpacificus*) and steelhead (*Oncorhynchus mykiss*), contributing to the aquatic fish habitat targets under the Voluntary Agreements as well as the measurable objectives of CVFPP's Conservation Strategy. The proposed restoration design elements would contribute to conservation, climate, and drought resilience efforts and regional priorities by creating and improving functional fish habitat, improving regional capacity for inland migration, improving floodplain food-web productivity for fish, and preserving and improving conditions for local agricultural and recreational interests where feasible.

The proposed Project is a multibenefit project that contributes to flood management and ecosystem goals outlined in the CVFPP and Conservation Strategy, as well as sustainable

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agriculture for the region. The proposed Project design will incorporate sustainable, wildlife-friendly agriculture (e.g., wild rice production) that is also compatible with floodway operations. Through sustainable agriculture, the area will retain the intended capacity for seasonal flood flow by managing the roughness of the proposed Project site. Other areas in the proposed Project site will be maintained in other land cover types that are also compatible with seasonal flood flows like managed marsh and seasonal wetlands. The proposed Project would also improve drainage and irrigation, thereby facilitating the proposed land uses and providing broader benefits to the region.

By restoring and reconnecting tidal and floodplain habitats, the proposed Project would amplify the benefits of seasonal flows from the Big Notch[3] Project in the proposed Project Area, mimicking the shallow, long-duration flood patterns that existed historically to restore the underlying ecological processes necessary to support productive aquatic ecosystems.

ENVIRONMENTAL REVIEW

As explained in CEQA Guidelines Section 15163, a lead agency may choose to prepare an SEIR when only minor additions or changes would be necessary to make a previous EIR adequately apply to the project in the changed situation (i.e., when changes related to the project, circumstances, or available information that may involve new or substantially more severe significant effects on the environment). The SEIR includes the information necessary to make the previous CEQA document adequate for the project as revised. As such, DWR, as lead agency under CEQA, will prepare an SEIR to evaluate whether new significant effects would result from implementation of the proposed Project, as compared to the environmental impacts disclosed in the Program Environmental Impact Report (PEIR) prepared by the State Water Resources Control Board (State Water Board) for the General Order for Clean Water Act (CWA) Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide (“Statewide Restoration General Order”, or SRGO) adopted August 16, 2022. The SEIR will be tiered off the PEIR pursuant to CEQA guidelines section 15152.

The PEIR evaluates the potential impacts of various types of restoration projects covered by the SRGO. The proposed Project would meet the SRGO PEIR definition of a “Restoration Project,” as it would result in a net increase in aquatic resource functions through implementation of relevant protection measures listed in the SRGO PEIR. In addition, proposed Project improvements and restoration activities (as described above) are covered within the eligible project types described in the SRGO PEIR (e.g., “Floodplain Restoration”, “Removal of Nonnative Invasive Species and Revegetation with Native Plants”, “Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands”).

The SEIR will evaluate potential project-specific and cumulative environmental effects associated with the proposed Project, as well as alternatives to the proposed Project, to the extent necessary to make the SRGO PEIR adequate for the proposed Project. The SEIR will

3 The Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project (or “Big Notch”) is a 30,000-acre floodplain habitat and fish passage project in the Yolo Bypass.

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analyze environmental resource topics that may experience potentially significant impacts from the construction and/or long-term operation of the proposed Project, including the following:

- aesthetics
- agriculture and forestry resources
- air quality
- biological resources
- cultural resources
- energy
- geology and soils
- greenhouse gas emissions
- hazards and hazardous materials
- hydrology and water quality (surface and groundwater resources)
- land use and planning
- mineral resources
- noise
- population and housing
- public services
- recreation
- transportation
- tribal cultural resources
- utilities/service systems
- wildfire
- mandatory findings of significance

SCOPING MEETINGS

Scoping meetings will be held on the following dates:

- In-person with a virtual option in Sacramento on August 6, 2024, at California Natural Resources Headquarters, 715 P Street, 1st Floor Auditorium, Sacramento, CA 95814 from 9:00 a.m. to 10:30 a.m. Zoom link: https://ca-water-gov.zoom.us/meeting/register/tZYpceippjwpGNw4kFzUiD38AXzD4p1GVyxo

- Virtual only on August 7, 2024, from 12:00 p.m. to 1:00 p.m. via Zoom: https://ca-water-gov.zoom.us/meeting/register/tZUpcOCgpj8oGtJG5vFf6n17cJPDlZwFZRYn

- In-person only on August 8, 2024, at Yolo Bypass Wildlife Area Headquarters, 45211 County Rd 32B (Chiles Rd), Davis, CA 95618 from 5:00 p.m. to 6:30 p.m.

Each scoping meeting will include a brief presentation about the proposed Project, followed by time to receive oral and written public comments on the content and scope of the SEIR.

If attendees would like any specific accommodation(s) for these scoping meetings, those requests for accommodation should be submitted no later than July 29, 2024 via e-mail to tidesendmbp@water.ca.gov with the subject heading “RE: Tide’s End Multibenefit Project Scoping Meeting Accommodation.”

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WRITTEN COMMENTS

This NOP is being circulated to obtain suggestions and information from interested parties, including responsible and/or trustee agencies and members of the public, on the content and scope of environmental information that may be addressed in the SEIR. In accordance with CEQA Guidelines section 15082(b)(1)(B), within 30 days of receiving the NOP, responsible and trustee agencies shall provide DWR with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to each responsible agency's area of statutory responsibility that must be explored in the SEIR, as well as an indication of their respective level of responsibility for the proposed Project. Agencies and organizations should provide a contact name and information in their letters.

All comments received will be made available for public review in their entirety, including the names and addresses of the respondents. Individual respondents may request that their name and/or address be withheld from public disclosure. DWR will honor such requests to the extent allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment.

This NOP is also available electronically on DWR's website: https://water.ca.gov/News/Public-Notices

Written comments on the scope of the SEIR are due no later than **5:00 pm on August 23, 2024,** should include the subject heading "RE: Tide's End Multibenefit Project NOP" and should be sent to:

Department of Water Resources,
Division of Multibenefit Initiatives
Attn: Judah Grossman
P.O. Box 942836
Sacramento, CA 94236-0001

Or via e-mail to tidesendmbp@water.ca.gov

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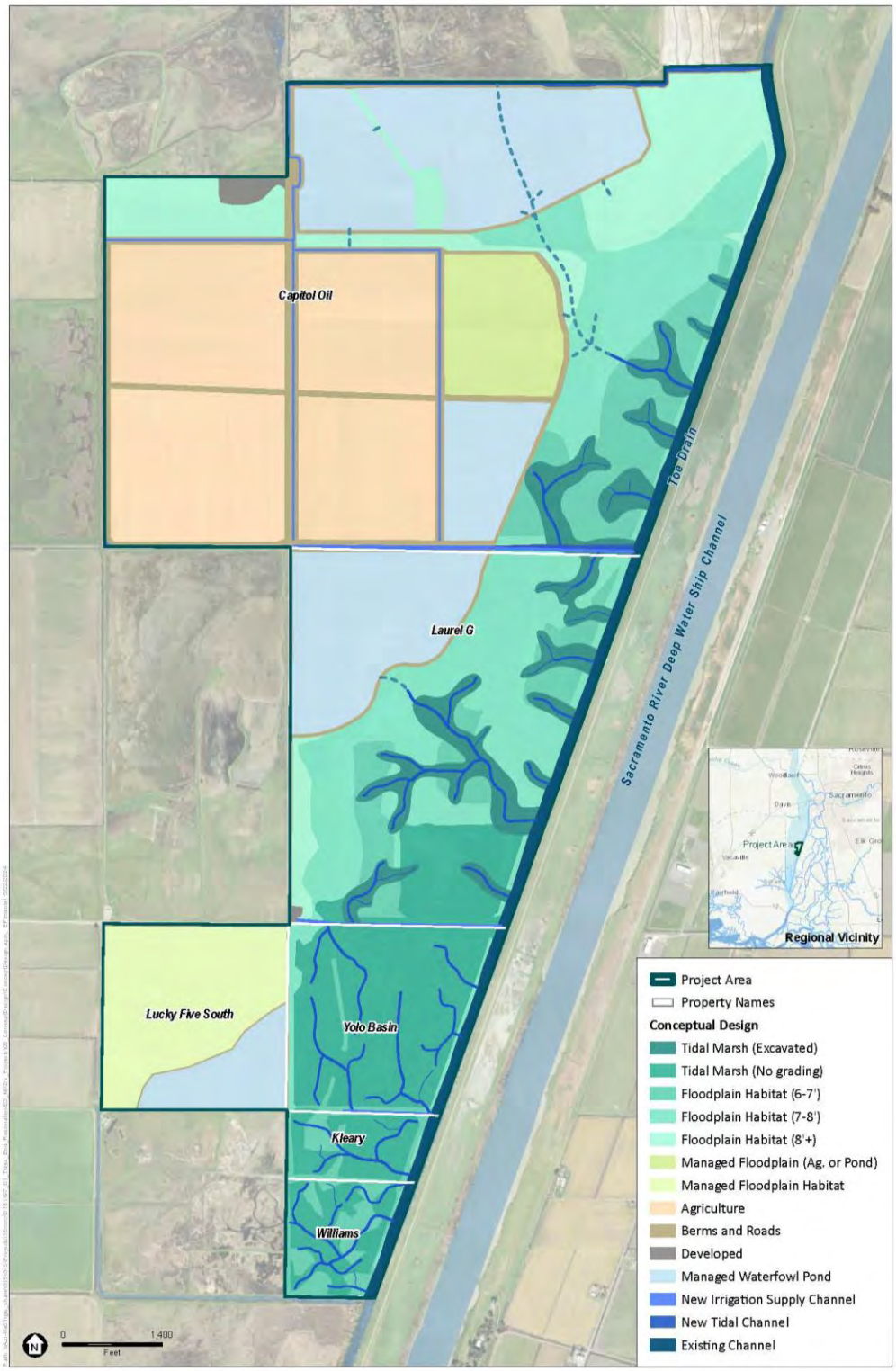

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
(707) 428-2002
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

September 6, 2024

Judah Grossman, Senior Environmental Scientist
California Department of Water Resources, Division of Multibenefit Initiatives
Post Office Box 942836
Sacramento, CA 94236
Judah.Grossman@water.ca.gov

Subject: Tide's End Multibenefit Restoration Project, Notice of Preparation of a Draft Supplemental Environmental Impact Report, SCH No. 2024070944, Yolo County

Dear Judah Grossman:

The California Department of Fish and Wildlife (CDFW) has reviewed the Department of Water Resources' (DWR) Notice of Preparation (NOP) of a draft Supplemental Environmental Impact Report (SEIR) for the Tide's End Multibenefit Restoration Project (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect fish and wildlife resources of the State. Please be advised, by law, CDFW may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW is providing DWR, as the Lead Agency, with specific detail about the scope and content of the environmental information related to CDFW's area of statutory responsibility that must be included in the EIR (Cal. Code Regs., tit. 14, § 15082, subd. (b)).

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802.) For purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

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environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority over the Project pursuant to the Fish and Game Code. For example, the Project may be subject to CDFW's Lake and Streambed Alteration (LSA) regulatory authority, if the Project impacts the bed, channel or bank of any river, stream or lake within the State (Fish & G. Code, § 1600 et seq.). Likewise, to the extent the Project may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

REGULATORY REQUIREMENTS

California Endangered Species Act

A CESA Incidental Take Permit (ITP) must be obtained from CDFW if the Project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the Project. Under CESA, "take" means "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." (Fish & G. Code, § 86.) CDFW's issuance of an ITP is subject to CEQA and to facilitate permit issuance, any project modifications and mitigation measures must be incorporated into the CEQA document analysis, discussion, and mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA permit.

CEQA requires a mandatory finding of significance if a project is likely to substantially impact threatened or endangered species. (Pub. Resources Code, §§ 21001, subd. (c) & 21083; CEQA Guidelines, §§ 15380, 15064 & 15065.) In addition, pursuant to CEQA, the Lead Agency cannot approve a project unless all impacts to the environment are avoided or mitigated to less-than-significant levels, or the Lead Agency makes and supports Findings of Overriding Consideration (FOC) for impacts that remain significant despite the implementation of all feasible mitigation. FOC under CEQA, however, do not eliminate the Project proponent's obligation to comply with the Fish and Game Code.

Lake and Streambed Alteration

CDFW requires an LSA Notification, pursuant to Fish and Game Code section 1600 et seq., for Project activities affecting river, lakes or streams and associated riparian habitat. Notification is required for any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank (including

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associated riparian or wetland resources); or deposit or dispose of material where it may pass into a river, lake, or stream. Work within ephemeral streams, drainage ditches, washes, watercourses with a subsurface flow, and floodplains is generally subject to notification requirements. In addition, infrastructure installed beneath such aquatic features, such as through horizontal directional drilling, is also generally subject to notification requirements**.** Therefore, any impact to the mainstems, tributaries, or floodplains or associated riparian habitat caused by the proposed Project will likely require an LSA Notification. CDFW may not execute a final LSA Agreement until it has considered the final EIR and complied with its responsibilities as a responsible agency under CEQA.

Migratory Birds and Raptors

CDFW has authority over actions that may result in the disturbance or destruction of active bird nest sites or the unauthorized take of birds. Fish and Game Code sections protecting birds, their eggs, and nests include section 3503 (regarding unlawful take, possession, or needless destruction of the nests or eggs of any bird), section 3503.5 (regarding the take, possession, or destruction of any birds-of-prey or their nests or eggs), and section 3513 (regarding unlawful take of any migratory nongame bird). Migratory birds are also protected under the federal Migratory Bird Treaty Act.

PROJECT DESCRIPTION AND LOCATION SUMMARY

Proponent: Department of Water Resources

Objective: The objective of the 2,212-acre Project is to restore tidal marsh and associated floodplain habitat while preserving and enhancing existing land uses (e.g., agriculture and managed wetlands). Located at the fluvial-tidal interface at the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex, the proposed Project would connect a 10-mile stretch of uninterrupted floodplain and wetland habitat. Primary Project activities include restoration of tidal connectivity to the Toe Drain for low-lying areas where the ground elevation is suitable to support tidal marsh habitat by opening an existing berm adjacent to the Toe Drain and excavating tidal channels, creation of managed seasonal wetlands in higher elevation areas, enhanced volitional fish passage by reductions and/or improvements to existing human-built obstructions, enhanced climate change resiliency by allowing for inland migration of tidal marsh habitat with sea-level rise.

Location: Yolo County, County Road 155, and County Road 107, Latitude/Longitude: 38.386889, 121.638306.

Timeframe: Unknown at this time.

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The CEQA Guidelines (§§15124 & 15378) require that the draft SEIR incorporate a full Project description, including reasonably foreseeable future phases of the Project, and that contains sufficient information to evaluate and review the Project's environmental impact. Please include a complete description of the following Project components in the Project description including, but not limited to, the below information.

- Land use changes or incompatible land uses (e.g., presence of oil/gas wells, managed wetland water management for waterfowl vs water management that favors salmonids) resulting from Project implementation.

- Footprints of permanent Project features and temporarily impacted areas, such as staging areas and access routes.

- Area and plans for any proposed buildings/structures, ground-disturbing activities, fencing, paving, stationary machinery, landscaping, and stormwater systems.

- Operational features of the Project, during and after implementation including level of anticipated human presence (describe seasonal or daily peaks in activity, if relevant), artificial lighting/light reflection, noise, traffic generation, ongoing management of water control structures, and other features.

- Construction schedule, activities, equipment, and crew sizes.

ENVIRONMENTAL SETTING

Sufficient information regarding the environmental setting is necessary to understand any potentially significant impacts on the environment of the proposed Project and any alternatives identified in the draft SEIR (CEQA Guidelines, §§15125 & 15360). CDFW recommends the draft SEIR provide baseline habitat assessments for special-status plant, fish and wildlife species located and potentially located within the Project area and surrounding lands, including all rare, threatened, and endangered species (CEQA Guidelines, §15380). The draft SEIR should describe aquatic habitats, such as wetlands or waters of the U.S. or State, and any sensitive natural communities or riparian habitat occurring on or adjacent to the Project site (for sensitive natural communities (see:https://wildlife.ca.gov/Data/VegCAMP/NaturalCommunities#sensitive%20natural%20communities), and any stream or wetland set back distances the City or County may require. Fully protected, threatened, or endangered, candidate, and other special-status species or sensitive natural communities that are known to occur, or have the potential to occur in or near the Project site, include, but are not limited to:

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Plants

- Parry's rough tarplant; California Native Plant Society (CNPS) Rank 4.2
- Woolly rose-mallow; CNPS Rank 1B.2
- Mason's lilaeopsis (*Lilaeopsis masonii*), State-listed as Rare
- Suisun Marsh aster (*Symphyotrichum lentum*), CNPS Rank 1B.2
- Delta tule pea (*Lathyrus jepsonni var jepsonii*), CNPS 1B.2
- Delta mudwort (*Limosella australis*), CNPS 2.B1

Fishes

- Green Sturgeon (*Acipenser medirostris*), Federally-listed as Threatened (FT)
- White Sturgeon (*Acipenser* transmontanus), State candidate for listing as Threatened (ST)
- Central Valley Steelhead (*Oncorhynchus mykiss irideus)*, FT
- Central Valley fall-run Chinook Salmon (*Oncorhynchus tshawytscha*), State Species of Special Concern (SSC)
- Central Valley spring-run Chinook Salmon (*Oncorhynchus tshawytscha*), ST, FT
- Sacramento River winter-run Chinook Salmon (*Oncorhynchus tshawytscha*), State-listed as Endangered (SE), Federally-listed as Endangered (FE)
- Delta Smelt (*Hypomesus transpacificus*), SE, FT
- Longfin Smelt (*Spirinchus thaleichthys*), ST
- Sacramento Splittail (*Pogonichthys macrolepidotus*), SSC

Reptiles

- Pacific pond turtle (*Emys marmorata*), SSC
- Giant garter snake (*Thamnophis gigas*), ST, FT

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Birds

- Swainson's hawk (*Buteo swainsoni*), ST
- Northern harrier (*Circus hudsonius*), SSC
- Western yellow billed cuckoo (*Coccyzus americanus*), FT
- California black rail (*Laterallus jamaicenis coturniculus*), ST
- Loggerhead shrike (*Lanius ludovicianus*), SSC
- Yellow warbler (*Denroica petechia*), SSC
- Song sparrow (*Melospiza melodia*), SSC
- Tricolored blackbird nesting colonies (*Agelaius tricolor*), ST
- And other nesting and migratory birds

Mammals

- Western red bat (*Lasiurus blossevillii*), SSC
- Salt-marsh harvest mouse (*Reithrodontomys raviventris*), Fully Protected Species

Habitat descriptions and species profiles included in the draft EIR should include robust information from multiple sources: aerial imagery; historical and recent survey data; field reconnaissance; scientific literature and reports; U.S. Fish and Wildlife Service's (USFWS) Information, Planning, and Consultation System; California Aquatic Resources Inventory; and findings from "positive occurrence" databases such as California Natural Diversity Database (CNDDB), or any geographically relevant Habitat Conservation Plans (HCP), Natural Community Conservation Planning (NCCP) or other conservation planning documents. Only with sufficient data and information can DWR adequately assess which special-status species are likely to occur in the Project vicinity.

CDFW recommends surveys be conducted for special-status species with potential to occur, following recommended survey protocols if available. Survey and monitoring protocols and guidelines are available at: https://www.wildlife.ca.gov/Conservation/Survey-Protocol.

Botanical surveys for special-status plant species, including those listed by the California Native Plant Society (http://www.cnps.org/cnps/rareplants/inventory/), should

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also be conducted during the blooming period for all sensitive plant species potentially occurring within the Project area and include the identification of reference populations. Please refer to CDFW botanical field surveyor qualifications and protocols for surveying and evaluating impacts to rare plants and required elements to include in a Botanical Survey Report that should be incorporated into the draft SEIR available at: https://www.wildlife.ca.gov/Conservation/Plants.

IMPACT ANALYSIS AND MITIGATION MEASURES

The CEQA Guidelines (§15126.2) necessitate the draft EIR discuss all direct and indirect impacts (temporary and permanent) that may occur with implementation of the Project. This includes evaluating and describing impacts such as:

- Land use changes that would cause a reduction/conversion of riparian or other sensitive habitat, reduce open space, or impact managed wetlands or agricultural land uses;
- Changes in hydrological/hydraulic conditions through levee breaches and changes to flow routing that could negatively impact neighboring properties and/or cause unintended impacts to water quality or cause an increase in non-native species both during construction and ongoing operation of the Project;
- Potential for impacts to special-status species (e.g., riparian obligates);
- Loss or modification of breeding, nesting, dispersal and foraging habitat, including riparian vegetation removal, alteration of soils and hydrology, and removal of habitat structural features (e.g., snags, roosts, overhanging banks);
- Permanent and temporary habitat disturbances associated with ground disturbance, noise, lighting, reflection, air pollution, traffic, or human presence;
- Obstruction of movement corridors, fish passage, or access to water sources and other core habitat features;
- Water quality impacts resulting from construction and operation of the Project;
- Impacts both from construction and operation of the Project;
- Impacts to the bed, channel, and bank, in the reservoirs and creeks downstream of the Project; and
- Impacts to bed, channel, bank, and riparian habitat, and the direct and indirect effects to fish, wildlife, and their habitat;

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The CEQA document also should identify existing and reasonably foreseeable future projects in the Project vicinity, disclose any cumulative impacts associated with these projects, determine the significance of each cumulative impact, and assess the significance of the Project's contribution to each impact (CEQA Guidelines, §15355). Although a project's impacts may be insignificant individually, its contributions to a cumulative impact may be considerable; a contribution to a significant cumulative impact (e.g., reduction of available habitat for a listed species) should be considered cumulatively considerable without mitigation to minimize or avoid the impact.

The CEQA Guidelines direct DWR, as the Lead Agency, to consider and describe in the draft SEIR all feasible mitigation measures to avoid and/or mitigate potentially significant impacts of the Project on the environment based on comprehensive analysis of the potential direct, indirect, and cumulative impacts of the Project. (CEQA Guidelines, §§ 15021, 15063, 15071, 15126.2, 15126.4 & 15370.) This should include a discussion of take avoidance and minimization measures for special-status species, which are recommended to be developed in early consultation with the USFWS, the National Marine Fisheries Service (NMFS) and CDFW. These measures can then be incorporated as enforceable Project conditions to reduce potential impacts to biological resources to less-than-significant levels.

Fully protected species such as salt marsh harvest mouse (*Reithrodontomys raviventris*) may not be taken or possessed at any time except in limited circumstances (Fish & G. Code, §§ 3511, 4700, 5050, & 5515). Therefore, the draft EIR should include measures to completely avoid take of fully protected species.

COMMENTS AND RECOMMENDATIONS

Based on the information provided in the NOP and received during early coordination CDFW offers the comments and recommendations below to assist DWR in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and/or indirect impacts on fish and wildlife (biological) resources. **These comments and recommendations are not an exhaustive list and CDFW may provide additional recommendations as more Project specific information is disclosed. The draft SEIR must include a full Project Description, Environmental Setting, and Impact Analysis and Mitigation Measures as outlined above.** Editorial comments or other suggestions may also be included to improve the document.

BACKGROUND

COMMENT 1: Healthy Rivers and Landscapes (HRL) Program (formerly the Voluntary Agreements (VA) Program)

Issue: On Page 2 The NOP states, "the Project supports the principles and framework outlined in the Voluntary Agreements". More information will be needed that describes

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how the Project will meet the standards of an HRL/VA project as currently defined in the Healthy Rivers and Landscapes Final Draft Science Plan, Draft Science Program Charter, and Draft Strategic Plan (HRL Final Draft Science Plan 2024, HRL Draft Science Program Charter 2024, and HRL Draft Strategic Plan 2024). The Draft Strategic Plan describes the process in which this Project will establish a project work team or technical advisory committee to develop design criteria that are consistent with design standards for a given habitat type (e.g., tidal wetlands and floodplain). This includes participation and review by CDFW, USFWS, NMFS, and State Water Resources Control Board to ensure the project contributes towards the HRL objectives and is based on the best available science and information. The HRL Science Plan also describes a process for HRL non-flow measures where the Delta-specific Governance Entity develops a project-specific or Delta-specific science plan that is consistent with the HRL framework. The Project-specific or Delta-specific science plan needs to include applicable HRL hypothesis at multiple spatial/temporal scales and a monitoring plan. The science and monitoring plan needs to include the following components: accounting for non-flow (habitat) measures to assess progress toward achieving Memorandum of Understanding (MOU) commitments (MOU 2022), habitat suitability assessments to evaluate the ability of improved habitat to support species and habitat utilization and biological effectiveness assessments to evaluate target species usage and benefit from improved habitat.

Without more information about the specific process or a timeline for how these elements of a HRL project will be addressed, particularly the development of a multi-agency/stakeholder project specific science team (i.e., Delta-specific Governance Entity) early in the planning process, this could impact the HRL crediting in terms of meeting obligations under the HRL MOU.

Recommendation 1: Develop a timeline of how and when the HRL framework will be implemented and describe and analyze in the draft SEIR any ongoing effectiveness monitoring or other ongoing activities that will be associated with the Project.

PROJECT DESCRIPTION

COMMENT 2: Riparian Conversion/Setbacks

Issue: The Project has the potential to encroach into riparian vegetation (i.e., “riparian zone”) and/or convert existing riparian habitat into another habitat type from development of the project. Riparian conversion/encroachment into the riparian zone can adversely impact sensitive riparian and aquatic species through reduction of habitat and decreased water quality. Specifically, there are a number of riparian dependent avian (e.g. Swainson’s hawk (*Buteo swainsoni*), western yellow billed cuckoo (*Coccyzus americanus*), Yellow warbler (Denroica petechia), and Song sparrow (Melospiza

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melodia)) and a variety of listed fish species that rely on the ecosystem services of the few remaining patches of mature riparian forest in the project area.

Evidence impact would be significant: Riparian vegetation, and associated floodplains, provide many essential benefits to stream and aquatic species habitat, including thermal protection, cover, and large woody debris (Moyle 2002, CDFW 2007). Development adjacent to or conversion of the riparian zone can result in fragmentation of riparian habitat and decreases in native species abundance and biodiversity (Davies et al. 2001, Hansen et al. 2005, CDFW 2007). Riparian buffers help keep pollutants from entering adjacent waters through a combination of processes including dilution, sequestration by plants and microbes, biodegradation, chemical degradation, volatilization, and entrapment within soil particles. Narrow riparian buffers are considerably less effective in minimizing the effects of adjacent development than wider buffers (Castelle et al. 1992, Brosofske et al. 1997, Dong et al. 1998, Kiffney et al. 2003, Moore et al. 2005).

Recommendation 2: CDFW recommends the Project establish, and the draft SEIR incorporate, riparian buffer zones to limit development and vegetation clearing to outside of and away from riparian areas. CDFW also recommends limiting any proposed riparian conversion to the minimum necessary and to identify opportunities for riparian enhancement. CDFW staff are available to consult with DWR to determine appropriate site-specific riparian buffers, and/or opportunities for riparian enhancement to reduce impacts to sensitive species and riparian habitat to less-than-significant. We also recommend that either the Project find higher elevation areas within the project footprint that can support riparian enhancements to minimize the need for off-site riparian mitigation to compensate for riparian habitat conversions or evaluate a Project design alternative that avoids impacts to riparian forest in the draft SEIR.

COMMENT 3: Presence/Habitat Use of Delta Smelt in the Project Area

Issue: Page 3 of the NOP states: “the proposed project would connect a ten-mile stretch of uninterrupted floodplain and wetland habitat in one of the most critical areas for smelt and salmonid habitat restoration in the Delta.” The North Delta Arc consisting of Suisun Marsh, the lower Sacramento River, the Cache-Lindsey Complex (CLC), and Yolo Bypass has been identified in a number of recovery efforts as critical habitat for native fish species in the northern San Francisco Estuary. Although the project area is within this broad region, it may be unlikely that Delta smelt will be utilizing the project site.

Recommendation 3: If direct benefits to Delta Smelt continue to be a primary project objective, then CDFW recommends that the draft SEIR provide evidence for successful smelt rearing on managed floodplains in the Project area and include Delta Smelt specific HRL hypothesis/targets in the development of the Project science plan. In

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addition, the draft SEIR should also disclose and analyze any activities associated with hypothesis testing and monitoring within the project area.

COMMENT 4: Fish Passage

Issue: Page 3 of the NOP states that, “The proposed Project would also improve volitional fish passage between the Project Area and the Toe Drain through the reduction or improvement of existing human-built obstructions.” As planning progresses more specificity will be needed to determine the details of this statement. Ponding or retaining water through the use of new and enhanced berms in addition to water control structures, can reduce aquatic connectivity and disconnect fish from the Sacramento River.

Evidence impact would be significant: Habitat fragmentation of watercourses as a result of impoundment and water control purposes is considered one of the major threats to worldwide aquatic biodiversity, including freshwater fishes (Liermann et al., 2012, Nicola et al., 1996, Poulet, 2007). The Delta serves as a migration corridor for all anadromous fish species in the Central Valley. Anadromous and resident native fish species require volitional access to all Delta habitats available to them to meet their basic life history requirements (e.g., spawning, rearing, migration). Instream barriers to fish passage and unscreened water diversions impede migratory and rearing movements and adversely affect overall species survival.

Recommendation 4: The draft SEIR should provide information on how volitional passage is provided (fish passage structure design, scientific references, modeling, etc)**.** CDFW recommends project proponents develop a management plan that can ensure that disconnected, ponded water is minimized or eliminated to prevent stranding juvenile fish within the Project area. In addition, the draft SEIR should require that all inlet pumps on water control structures be fitted with fish screens that adhere to CDFW’s fish screening criteria to reduce entrainment or impingement of fish. CDFW’s fish screening criteria can be found in the California Salmonid Stream Restoration Manual’s Appendix S available at: https://wildlife.ca.gov/Grants/FRGP/Guidance.

COMMENT 5: Compatibility of Land Uses (e.g., Sustainable Agriculture, Managed Wetlands, and Fish Habitat)

Issue: The NOP states that, “Long-term proposed Project operations would integrate ecologically sensitive seasonal floodplain agriculture (e.g., rice operations) and fish-friendly waterfowl management practices in managed wetland areas, providing seasonal food production to native fish species while integrating ongoing agricultural and recreational uses of the site.” The term ‘sustainable agriculture’ is also used on Page 4. Recent work (Stumpner et al., 2020) suggest that variable residence times or tidal exchange zones of tidal channels can provide increased fish food production and

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other water quality benefits. Careful water management will be needed to maximize these benefits and may include trade-offs in terms of the different project objectives, particularly during dry water years.

Evidence impact would be significant: Recent work in the Delta (Anzalone et al., 2022, Fuller et al., 2022) found significantly higher concentrations of organochlorines recorded in floodplain rearing fish and bioavailable organochlorine in floodplain sediment compared to the Sacramento River. These findings suggest that within these habitats, juvenile Chinook salmon feeding primarily on zooplankton within the water column may be exposed to a greater range of pesticides than those feeding on benthic macroinvertebrates, and that the benefits of floodplain rearing may come at a cost of increased organochlorine exposure. Other studies have documented higher growth rates associated with floodplain rearing of hatchery origin juvenile salmonids but with variable survival rates (Katz and et al., 2017, Jeffres et al., 2020). Managed wetlands primarily managed for the benefit of waterfowl may or may not be compatible with fish food production depending on the specific management practices employed (Williamshen et al., 2021). Managed wetlands are recognized as novel ecosystems that support a mixture of native and non-native aquatic species (Moyle et al. 2014; Aguilar-Medrano et al., 2019) and the management objectives could be at odds if the Project's sole objective is to benefit native aquatic species.

Recommendation 5: CDFW recommends careful early planning to ensure that long-term operations and management of the site has support from all stakeholders representing the different land uses. Specifically, we recommend developing an adaptive management plan that clearly details the management practices associated with rice agriculture (e.g., limit or eliminate pesticide use, water management schedule relative to fish needs, etc.) and managed wetlands associated with different water year types. Careful planning and stakeholder commitments to mutual compromise will be necessary for project success. CDFW recommends the Project proponent consider including specific HRL hypotheses to show the Project benefits to native fish rearing. The draft SEIR should also disclose any ongoing monitoring or management that will be carried out as part of an adaptive management plan or hypothesis testing.

COMMENT 6: Beaver Abatement

Issue: The NOP does not directly address animal abatement including beaver dam abatement. In 2023, CDFW established a Beaver Restoration Program and adopted a beaver depredation policy that promotes human-beaver coexistence. It is unclear if the Project will implement or adhere to this new program.

Evidence impact would be significant: Beaver colonization and behavior is valuable to the ecosystems they maintain (e.g., felling trees, damming waterways), however, this behavior may lead to direct contact and potential conflict with Project infrastructure.

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Abatement of beavers within the Project area may result in significant impacts to environmental systems within the Project area.

Recommendation 6: CDFW recommends the draft SEIR include an evaluation of potential beaver colonization within the Project area and potential beaver damage to existing or future project infrastructure. The draft SEIR should identify effective and feasible non-lethal deterrent strategies and options that could be implemented in lieu of lethal beaver management. Installation of these devices and equipment may be done proactively to prevent beaver damage or may be pursued to abate damage as an alternative to pursuing depredation. CDFW also recommends as an alternative that the Project be designed to be inclusive of beaver establishment and resilient to beaver activities.

COMMENT 7: CDFW Conservation Easement and Future Managed Wetland Activities

Issue: The draft SEIR should address impacts to existing conservation easements within the project area, including but not limited to those where CDFW is Grantee. The Yolo Basin Farms (YBF) Conservation Easement was granted to CDFW and is located within the project area. Within the conservation easement language, “uses and activities which in any way results in a diminution in the quality of wetland and waterfowl habitat or the use thereof by wildlife” are specifically prohibited. The YBF Conservation Easement also has an associated site-specific management plan that is intended to “optimize waterfowl food production and/or nesting and brood habitat”. Currently, the YBF Conservation Easement falls within the proposed tidal marsh restoration area of the Project which would directly conflict with the YBF Conservation Easement and its associated management plan. In the NOP it states that Project operations would implement “fish-friendly waterfowl management practices” but does not specify what these actions would be and how they would align with the purpose and goals set forth within the management plan of the conservation easement.

Evidence impact would be significant: Tidal marshes, although utilized by waterfowl when other wetland habitats are unavailable, are not selected for when managed wetlands are flooded and present on the landscape (Casazza et al., 2021). This demonstrates that tidal marshes lack the necessary resources (e.g., abundant moist-soil seeds) to support and promote high waterfowl use. This is further demonstrated in Smith, 2022, where waterfowl preferred food plants comprised 66.7-73.1 percent of the seeds found in managed wetlands, but only 10.12 to 13.9 percent of seeds in tidal marshes, thus suggesting that tidal marshes provide little food energy value to support waterfowl populations. More information is needed regarding the definition of “fish-friendly waterfowl management practices” as managed wetlands primarily managed for the benefit of waterfowl may or may not be compatible with fish food production depending on the specific management practices employed (Williamshen et al., 2021).

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Recommendation 7: CDFW recommends meeting with all stakeholders to develop a plan on how the purpose and goals set forth in the YBF Conservation Easement can be addressed. This will require early consultation and planning in advance during the project design phase to avoid potential delays to the Project and to ensure compliance with the conservation easement and associated management plan.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to prepare subsequent CEQA documents or to make supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (d) & (e).) Accordingly, please report any special-status species and natural communities detected during Project surveys to the CNDDB. The CNDDB field survey form can be filled out and submitted online here: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data. The types of information reported to CNDDB can be found here: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

CONCLUSION

CDFW appreciates the opportunity to comment on the NOP in order to assist DWR in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Elijah Portugal, Senior Environmental Scientist, at (707) 428-2088 or Elijah.Portugal@wildlife.ca.gov; or Melissa Farinha, Environmental Program Manager, at (530) 351-4801 or Melissa.Farinha@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Erin Chappell
B77E9A6211EF486...

Erin Chappell
Regional Manager
Bay Delta Region

ec: Office of Planning and Research, State Clearinghouse, Sacramento

REFERENCES

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3 September 2024

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COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, TIDE'S END MULTIBENEFIT RESTORATION PROJECT, SCH#2024070944, YOLO COUNTY

Pursuant to the State Clearinghouse's 24 July 2024 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Tide's End Multibenefit Restoration Project, located in Yolo County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by

the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., “non-federal” waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at:

https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4684 or Peter.Minkel2@waterboards.ca.gov.

Peter G. Minkel
Engineering Geologist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

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STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY **GAVIN NEWSOM,** GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Ste. 170
SACRAMENTO, CA 95821
(916) 574-0609

August 30, 2024

Judah Grossman
Senior Environmental Scientist
California Department of Water Resources
P.O. Box 94236-0001
Sacramento, CA 94236-0001
Judah.grossman@water.ca.gov

Subject: Comments for the Notice of Preparation of a Supplemental Environmental Impact Report, Tide's End Multibenefit Restoration Project, SCH# 2024070944, Yolo County

Dear Judah Grossman,

The Central Valley Flood Protection Board (Board) appreciates the opportunity to comment on the Notice of Preparation (NOP) of a Supplemental Environmental Impact Report (SEIR) for the proposed Tide's End Multibenefit Restoration Project (proposed project).

The proposed project involves restoring tidal marsh habitat and preserving and enhancing existing land uses to create a connected and uninterrupted stretch of floodplain and wetland habitat for listed species and long-term climate change resistance. The proposed project is located in Yolo Bypass and Toe Drain, regulated streams and federally regulated channels that are within the Board's permitting authority, therefore an encroachment permit may be required.

California Code of Regulations, Title 23 provides standards that govern the design and construction of projects that affect the flood control works and floodways. Board staff recommends that you review Title 23 Standards, including Sections 112 (Streams Regulated and Nonpermissible Work Periods), 116 (Borrow and Excavation Activities – Land and Channel), 120 (Levees), 121 (Erosion Control), 122 (Irrigation and Drainage Ditches, Tile Drains, and Septic Systems), 123 (Pipelines, Conduits, and Utility Lines), 124 (Abandoned Pipelines and Conduits), 130 (Patrol Roads and Access Ramps), and 131 (Vegetation). Any deviation or variation from these standards will require approval from the Board.

Responsibility of the Central Valley Flood Protection Board

The Board is the State's regulatory agency responsible for enforcing appropriate standards for the construction, maintenance, and operation of the flood control system that protects life, property, and habitat in California's Central Valley. The Board serves as the State coordinator between local flood management agencies and the federal government, with the goal of providing the highest level of flood protection possible to California's Central Valley.

The Board operates under authorities as described in California Water Code (Water Code), which requires the Board to oversee future modifications or additions to facilities of the State

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August 30, 2024

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Plan of Flood Control (SPFC). In addition, pursuant to assurances provided to the United States Army Corps of Engineers (USACE) by the Board on behalf of the State, the USACE Operation and Maintenance Manuals, Code of Federal Regulations, Title 33, Section 208.10, and United States Code, Title 33, Section 408, the Board is responsible for the operation and maintenance of the SPFC facilities. The USACE requires the Board to serve as the lead non-Federal sponsor for projects to improve or alter facilities of the SPFC pursuant to Code of Federal Regulations, Title 33, Section 408. The State's objectives include fulfilling the USACE's expectations pursuant to the assurances provided to the USACE.

Encroachment Permit

Per California Code of Regulations, Title 23, Waters, Division 1 (Title 23), Section 6, approval by the Board is required for all proposed work or uses, including the alteration of levees within any area for which there is an Adopted Plan of Flood Control within the Board's jurisdiction. In addition, Board approval is required for all proposed encroachments within a floodway, on adjacent levees, and within any Regulated Stream identified in Title 23, Table 8.1. Specifically, Board jurisdiction includes the levee section, the waterward area between project levees, a minimum 10-foot-wide strip adjacent to the landward levee toe, the area within 30 feet from the top of bank(s) of Regulated Streams, and inside Board's Designated Floodways. Activities outside of these limits which could adversely affect Federal-State flood control facilities, as determined by Board staff, are also under the Board's jurisdiction. Permits may also be required for existing unpermitted encroachments or where it is necessary to establish the conditions normally imposed by permitting, including where responsibility for the encroachment has not been clearly established or ownership or uses have been changed.

Federal permits, including USACE Section 404 and Section 10 regulatory permits and Section 408 Permission, in conjunction with a Board permit, may be required for the proposed project. In addition to federal permits, state and local agency permits, certification, or approvals may also be required. State approvals may include, but are not limited to, California Department of Fish and Wildlife's Lake and Streamed Alteration Agreement and Central Valley Regional Water Quality Control Board's Section 401 Water Quality Certification and/or Waste Discharge Requirement. The Applicant must obtain all authorizations that the proposed project may require.

Flood Impacts Analysis

Pursuant to Section 15 of Title 23, the Board may deny an encroachment permit if the proposed project could:

- Jeopardize directly or indirectly the physical integrity of levees or other works
- Obstruct, divert, redirect, or raise the surface level of design floods or flows, or the lesser flows for which protection is provided
- Cause significant adverse changes in water velocity or flow regimen
- Impair the inspection of floodways or project works
- Interfere with the maintenance of floodways or project works
- Interfere with the ability to engage in flood fighting, patrolling, or other flood emergency activities
- Increase the damaging effects of flood flows

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- Be injurious to, or interfere with, the successful execution, functioning, or operation of any adopted plan of flood control
- Adversely affect the State Plan of Flood Control, as defined in the California Water Code

As a responsible agency under the California Environmental Quality Act (CEQA), the Board will need to have adequate information in order to evaluate whether to issue a permit at a future date. Accordingly, the permit applicant may need to provide specific analyses to determine if the proposed project could result in any potential impacts listed above. This includes direct impacts to facilities under construction, as well as indirect impacts from the project to surrounding facilities. This encompasses any proposed work that contemplates modifications to a SPFC Facility, Lower San Joaquin Levee District Facility, or operation of any adopted plan of flood control or the hydrology of the water ways. It is therefore recommended that the environmental document include a specific flood facility impacts analysis section.

Closing

The potential risks to public safety, including increased flood risks, need to be considered when developing proposed projects that seek to modify flood control works or the hydrology of the water ways. Board staff is available to discuss any questions you have regarding the above comments. Please contact Jordan Robbins at (916) 524-3454, or via email at Jordan.Robbins@CVFlood.ca.gov if you have any questions.

Sincerely,

Jamie Silva

Jamie Silva
Environmental Program Manager

cc: Office of Planning and Research
State.Clearinghouse@opr.ca.gov

California
Department of Conservation
Geologic Energy Management Division

Gavin Newsom, Governor
David Shabazian, Director
715 P Street, MS 1803
Sacramento, CA. 95814
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08/14/2024

Other: State - Department of Water Resources
Judah Grossman
P.O. Box 94236-0001, Sacramento, CA 94236, USA
judah.grossman@water.ca.gov

Construction Site Well Review (CSWR) ID: 1013072

Assessor Parcel Number(s): 033450002000, 033190010000, 033440006000, 033450001000, 033220054000, 033220052000, 033220046000, 033220009000, 033220068000, 033220067000

Property Owner(s): Judah Grossman

Project Location Address: County Road 155 and County Road 107 California 95620

Project Title: Tides End Multibenefit Restoration Project

Public Resources Code (PRC) § 3208.1 establishes well reabandonment responsibility when a previously plugged and abandoned well will be impacted by planned property development or construction activities. Local permitting agencies, property owners, and/or developers should be aware of, and fully understand, that significant and potentially dangerous issues may be associated with development near oil, gas, and geothermal wells.

The California Geologic Energy Management Division (CalGEM) has received and reviewed the above referenced project dated 8/9/2024. To assist local permitting agencies, property owners, and developers in making wise land use decisions regarding potential development near oil, gas, or geothermal wells, the Division provides the following well evaluation.

The project is located in Yolo County, within the boundaries of the following fields:

Any Field, Saxon Gas

Our records indicate there are 25 known oil or gas wells located within the project boundary as identified in the application.

- Number of wells Not Abandoned to Current Division Requirements as Prescribed by Law and Projected to Be Built Over or Have Future Access Impeded by this project: 2

- Number of wells Not Abandoned to Current Division Requirements as Prescribed by Law and Not Projected to Be Built Over or Have Future Access Impeded by this project: 1

- Number of wells Abandoned to Current Division Requirements as Prescribed by Law and Projected to Be Built Over or Have Future Access Impeded by this project: 12

- Number of wells Abandoned to Current Division Requirements as Prescribed by Law and Not Projected to Be Built Over or Have Future Access Impeded by this project: 10

The Division categorically advises against building over, or in any way impeding access to, oil, gas, or geothermal wells. Impeding access to a well could result in the need to remove any structure or obstacle that prevents or impedes access including, but not limited to, buildings, housing, fencing, landscaping, trees, pools, patios, sidewalks, roadways, and decking. Maintaining sufficient access is considered the ability for a well servicing unit and associated necessary equipment to reach a well from a public street or access way, solely over the parcel on which the well is located. A well servicing unit, and any necessary equipment, should be able to pass unimpeded along and over the route, and should be able to access the well without disturbing the integrity of surrounding infrastructure.

There are no guarantees a well abandoned in compliance with current Division requirements as prescribed by law will not start leaking in the future. It always remains a possibility that any well may start to leak oil, gas, and/or water after abandonment, no matter how thoroughly the well was plugged and abandoned. The Division acknowledges wells plugged and abandoned to the most current Division requirements as prescribed by law have a lower probability of leaking in the future, however there is no guarantees that such abandonments will not leak.

The Division advises that all wells identified on the development parcel prior to, or during, development activities be tested for liquid and gas leakage. Surveyed locations should be provided to the Division in Latitude and Longitude, NAD 83 decimal format. The Division expects any wells found leaking to be reported to it immediately.

Failure to plug and reabandon the well may result in enforcement action, including an order to perform reabandonment well work, pursuant to PRC § 3208.1, and 3224.

PRC § 3208.1 give the Division the authority to order or permit the re-abandonment of any well where it has reason to question the integrity of the previous abandonment, or if the well is not accessible or visible. Responsibility for re-abandonment costs may be affected by the choices made by the local

permitting agency, property owner, and/or developer in considering the general advice set forth in this letter. The PRC continues to define the person or entity responsible for reabandonment as:

1. The property owner - If the well was plugged and abandoned in conformance with Division requirements at the time of abandonment, and in its current condition does not pose an immediate danger to life, health, and property, but requires additional work solely because the owner of the property on which the well is located proposes construction on the property that would prevent or impede access to the well for purposes of remedying a currently perceived future problem, then the owner of the property on which the well is located shall obtain all rights necessary to reabandon the well and be responsible for the reabandonment.

2. The person or entity causing construction over or near the well - If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment, and the property owner, developer, or local agency permitting the construction failed either to obtain an opinion from the supervisor or district deputy as to whether the previously abandoned well is required to be reabandoned, or to follow the advice of the supervisor or district deputy not to undertake the construction, then the person or entity causing the construction over or near the well shall obtain all rights necessary to reabandon the well and be responsible for the reabandonment.

3. The party or parties responsible for disturbing the integrity of the abandonment - If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment, and after that time someone other than the operator or an affiliate of the operator disturbed the integrity of the abandonment in the course of developing the property, then the party or parties responsible for disturbing the integrity of the abandonment shall be responsible for the reabandonment.

No well work may be performed on any oil, gas, or geothermal well without written approval from the Division. Well work requiring approval includes, but is not limited to, mitigating leaking gas or other fluids from abandoned wells, modifications to well casings, and/or any other re-abandonment work. The Division also regulates the top of a plugged and abandoned well's minimum and maximum depth below final grade. CCR §1723.5 states well casings shall be cut off at least 5 feet but no more than 10 feet below grade. If any well needs to be lowered or raised (i.e. casing cut down or casing riser added) to meet this regulation, a permit from the Division is required before work can start.

The Division makes the following additional recommendations to the local permitting agency, property owner, and developer:

1. To ensure that present and future property owners are aware of (a) the existence of all wells located on the property, and (b) potentially significant issues associated with any improvements

near oil or gas wells, the Division recommends that information regarding the above identified well(s), and any other pertinent information obtained after the issuance of this letter, be communicated to the appropriate county recorder for inclusion in the title information of the subject real property.

2. The Division recommends that any soil containing hydrocarbons be disposed of in accordance with local, state, and federal laws. Please notify the appropriate authorities if soil containing significant amounts of hydrocarbons is discovered during development.

As indicated in PRC § 3106, the Division has statutory authority over the drilling, operation, maintenance, and abandonment of oil, gas, and geothermal wells, and attendant facilities, to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil, gas, and geothermal deposits; and damage to underground and surface waters suitable for irrigation or domestic purposes. In addition to the Division's authority to order work on wells pursuant to PRC §§ 3208.1 and 3224, it has authority to issue civil and criminal penalties under PRC §§ 3236, 3236.5, and 3359 for violations within the Division's jurisdictional authority. The Division does not regulate grading, excavations, or other land use issues.

If during development activities, any wells are encountered that were not part of this review, the property owner is expected to immediately notify the Division's construction site well review engineer in the Northern district office, and file for Division review an amended site plan with well casing diagrams. The District office will send a follow-up well evaluation letter to the property owner and local permitting agency.

Should you have any questions, please contact me at (916) 322-1110 or via email at Erwin.Sison@conservation.ca.gov.

Sincerely,

Erwin Sison
Senior Oil and Gas Engineer - Northern District

cc: Judah Grossman - Plan Checker

Wells Not Abandoned to Current Division Requirements as Prescribed by Law & Projected to be Built Over or Have Future Access Impeded

The wells listed below are not abandoned to current Division requirements as prescribed by law, and based upon information provided, are projected to be built over or have future access impeded. **The Division expects these wells to be reabandoned in compliance with current California law, prior to development activities.**

API	Well Designation	Operator	Well Evaluations
0411300195	F.T. Swan 1	Chevron U.S.A. Inc.	Well does not meet the requirements of § 1723.5. Surface Plugging
0411320047	Swanston 1	UMC Petroleum Corp.	Well does not meet the requirements of § 1723.5. Surface Plugging

Wells Not Abandoned to Current Division Requirements as Prescribed by Law & Not Projected to be Built Over or Have Future Access Impeded

The wells listed below are not abandoned to current Division requirements as prescribed by law, and based upon information provided, are not projected to be built over or have future access impeded.

API	Well Designation	Operator	Well Evaluations
0411320609	Swanston 5	Dalen Resources Oil & Gas Co.	Well does not meet the requirements of § 1723.5. Surface Plugging

Wells Abandoned to Current Division Requirements as Prescribed by Law & Projected to be Built Over or Have Future Access Impeded

The wells listed below are abandoned to current Division requirements as prescribed by law, and based upon information provided, are projected to be built over or have future access impeded.

API	Well Designation	Operator	Well Evaluations
0411320141	Hilliard 1	Atlantic Oil Company	Well is Plugged & Abandoned to Current Requirements. This well review complies with the Guidance for Nonroutine Abandonment Conditions memo dated February 8, 2024.
0411320116	Tri-Valley Superior 1	Hilliard Oil & Gas, Inc.	Well is Plugged & Abandoned to Current Regulations.
0411320355	Venada W-1	Venada National	Well is Plugged & Abandoned to Current Requirements. This well review complies with the Guidance for Nonroutine Abandonment Conditions memo dated February 8, 2024.
0411320933	Channel 1	Zompac Corp.	Well is Plugged & Abandoned to Current Regulations.
0411320594	Laurel G. Ranch 3	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411320564	Venada-Laurel G Ranch 2	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411320537	Laurel G. Ranch 4	Capitol Oil Corporation	Well is Plugged & Abandoned to Current Requirements. This well review complies with the Guidance for Nonroutine

			Abandonment Conditions memo dated February 8, 2024.
0411320797	Swanston 10	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411320782	Swanston 8	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411321081	Capitol Fee 34-1	Capitol Oil Corporation	Well is Plugged & Abandoned to Current Regulations.
0411320654	Swanston 7	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411321051	Capitol Fee 33-1	Capitol Oil Corporation	Well is Plugged & Abandoned to Current Regulations.

Wells Abandoned to Current Division Requirements as Prescribed by Law & Not Projected to be Built Over or Have Future Access Impeded

The wells listed below are abandoned to current Division requirements as prescribed by law, and based upon information provided, are not projected to be built over or have future access impeded.

API	Well Designation	Operator	Well Evaluations
0411320510	Capitol-Swanston 2	Dalen Resources Oil & Gas Co.	Well is Plugged & Abandoned to Current Requirements. This well review complies with the Guidance for Nonroutine Abandonment Conditions memo dated February 8, 2024.
0411320787	Swanston 9	Dalen Resources Oil & Gas Co.	Well is Plugged & Abandoned to Current Requirements. This well review complies with the Guidance for Nonroutine Abandonment Conditions memo dated February 8, 2024.
0411320598	Swanston 4	Dalen Resources Oil & Gas Co.	Well is Plugged & Abandoned to Current Regulations.
0411320559	Swanston 3	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411320723	Swanston 3A	Dalen Resources Oil & Gas Co.	Well is Plugged & Abandoned to Current Regulations.
0411320097	H C-McCulloch Unit 1 2	Phillips Petroleum Company	Well is Plugged & Abandoned to Current Regulations.
0411320083	H&C-McCulloch Unit 1 1	Phillips Petroleum Company	Well is Plugged & Abandoned to Current Requirements. This well review complies with the Guidance for Nonroutine

			Abandonment Conditions memo dated February 8, 2024.
0411320763	Swanston 6	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411320497	Capitol-Swanston 1	Natural Gas Corp. of Calif.	Well is Plugged & Abandoned to Current Regulations.
0411321258	CF 1	Capitol Oil Corporation	Well is Plugged & Abandoned to Current Regulations.

AUGUST 21, 2024

VIA EMAIL: TIDESENDMBP@WATER.CA.GOV
DEPARTMENT OF WATER RESOURCES
DIVISION OF MULTIBENEFIT INITIATIVES
ATTENTION: JUDAH GROSSMAN
P.O. BOX 942836
SACRAMENTO, CA 94236-0001

Dear Ms. Grossman:

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE TIDE'S END MULTIBENEFIT RESTORATION PROJECT SUPPLEMENTAL ENVIRONMENTAL REPORT, SCH# 2024070944

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Notice of Preparation for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report (Project).

The Division monitors and maps farmland conversion on a statewide basis, provides technical assistance regarding the Williamson Act, and administers various agricultural land conservation programs. Public Resources Code, section 614, subdivision (b) authorizes the Department to provide soil conservation advisory services to local governments, including review of CEQA documents.

Protection of the state's agricultural land resources is part of the Department's mission and central to many of its programs. The CEQA process gives the Department an opportunity to acknowledge the value of the resource, identify areas of Department interest, and offer information on how to assess potential impacts or mitigation opportunities.

The Department respects local decision-making by informing the CEQA process, and is not taking a position or providing legal or policy interpretation.

We offer the following comments for consideration with respect to the Project's potential impacts on agricultural land and resources within the Department's purview.

PROJECT ATTRIBUTES

The proposed project would restore tidal marsh and associated floodplain habitat while preserving and enhancing existing land uses. Located at the fluvial-tidal interface at the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex, the proposed project would connect a ten-mile stretch of uninterrupted floodplain and

wetland habitat in one of the most critical areas for smelt and salmonid habitat restoration in the Delta. The project area consists of 2,212 acres of agricultural lands and managed waterfowl habitat across six properties. The proposed project would restore tidal connectivity to the Toe Drain for low-lying areas where the ground elevation is suitable to support tidal marsh habitat by opening an existing berm adjacent to the Toe Drain and excavating tidal channels.

The project site contains Unique Farmland as designated by DOC's Farmland Mapping and Monitoring Program, and a portion of the project site is subject to a Williamson Act contract.

PROJECT CONSIDERATIONS

The conversion of agricultural land represents a permanent reduction and impact to California's agricultural land resources. The Department generally advises discussion of the following in any environmental review for the loss or conversion of agricultural land:

- Type, amount, and location of farmland conversion resulting directly and indirectly from implementation of the proposed project.
- Impacts on any current and future agricultural operations in the vicinity; e.g., land-use conflicts, increases in land values and taxes, loss of agricultural support infrastructure such as processing facilities, etc.
- Incremental impacts leading to cumulative impacts on agricultural land. This would include impacts from the proposed project, as well as impacts from past, current, and likely future projects.
- Implementation of any City or County Agricultural Mitigation Plans, Programs, or Policies.
- Proposed mitigation measures for impacted agricultural lands within the proposed project area.
- The project's compatibility with lands within an agricultural preserve and/or enrolled in a Williamson Act contract.

WILLIAMSON ACT

Where, as here, the project site is located on land subject to a Williamson Act contract, the Department advises that the environmental review discuss the compatibility of the project with the contract and local Williamson Act program requirements.

MITIGATING AGRICULTURAL LAND LOSS OR CONVERSION

Consistent with CEQA Guidelines, the Department advises that the environmental review address mitigation for the loss or conversion of agricultural land. An agricultural conservation easement is one potential method for mitigating loss or conversion of agricultural land. (*See* Cal. Code Regs., tit. 14, § 15370 [mitigation includes "compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of

conservation easements."]; *see also King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814.)

Mitigation through agricultural conservation easements can take at least two forms: the outright purchase of easements or the donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural easements. The conversion of agricultural land may be viewed as an impact of at least regional significance. Hence, the search for replacement lands may not need to be limited strictly to lands within the project's surrounding area. A helpful source for regional and statewide agricultural mitigation banks is the California Council of Land Trusts. They provide helpful insight into farmland mitigation policies and implementation strategies, including a guidebook with model policies and a model local ordinance. The guidebook can be found at:

California Council of Land Trusts

Of course, the use of conservation easements is only one form of mitigation, and the Department urges consideration of any other feasible measures necessary to mitigate project impacts.

Thank you for giving us the opportunity to comment on the Notice of Preparation for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report. Please provide the Department with notices of any future hearing dates as well as any staff reports pertaining to this project. If you have any questions regarding our comments, please contact Farl Grundy, Associate Environmental Planner via email at Farl.Grundy@conservation.ca.gov.

Sincerely,

Monique Wilber

Monique Wilber

Conservation Program Support Supervisor

DELTA PROTECTION COMMISSION

Diane Burgis, Chair (Contra Costa County Board of Supervisors)
2101 Stone Blvd., Suite 200, West Sacramento, CA 95691
(916) 375-4800 | delta.ca.gov

August 13, 2024

Judah Grossman
Division of Multibenefit Initiatives
Department of Water Resources
PO Box 942836
Sacramento, CA 94236-0001

Dear Mr. Grossman:

We are providing combined comments on the notice of preparation (NOP) for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report. This project would convert approximately 2,212 acres of agricultural land in the Delta Primary Zone.

The Delta Protection Commission (Commission) is a state agency charged with ensuring orderly and balanced conservation and development of Delta land resources and improved flood protection in the Primary Zone. The Commission performs planning work to further the State's basic goals for the Delta consistent with the Delta Protection Act (California Public Resources Code Section 29700 et seq.). The Commission is thus commenting as a state agency concerned with the best environmental outcomes for the Delta, consistent with state policy as defined in the Delta Protection Act.

The Notice of Preparation Mischaracterizes the Relationship to the SRGO EIR; a Subsequent Environmental Impact Report Is Required

The notice of preparation (NOP) indicates that the project is tiered from the State Water Resources Control Board (SWRCB) programmatic environmental impact report (PEIR) for the *Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge*

Requirements for Restoration Projects Statewide also referred to as the "Statewide Restoration General Order" (SRGO). The NOP further states that a supplemental environmental impact report (SEIR) is appropriate because "only minor changes or additions would be necessary to make a previous EIR adequately apply to the project. . ." (14 Cal. Code of Regulations Section 15163). Because the SWRCB PEIR does not consider the Delta as a place of special designation, and impacts associated with conversion of agriculture in the Delta specifically, the scope of impacts exceeds minor changes or additions to the SWRCB PEIR. For this reason, a subsequent EIR is more appropriate. A subsequent EIR is used when "Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects" (14 Cal. Code of Regulations Section 15162(a)(1)). The next heading explains the facts supporting this assertion.

The Impacts Associated with Conversion of Agricultural Land Are Substantially More Severe and Different Than Those Analyzed in the SWRCB PEIR

The project area contains unique farmland and other farmland as mapped by the California Department of Conservation (DOC 2022). The project area also occurs in the Primary Zone of the Sacramento-San Joaquin Delta. The State of California has adopted a policy of protecting the agricultural landscape of the Delta through specific policies in the Delta Protection Act (Cal. Public Resources Code Section 29702). To further these goals the Commission has adopted a Land Use and Resource Management Plan (LURMP) that is also incorporated into the California Code of Regulations. These regulations include the policy of supporting the viability of agriculture and discouraging inappropriate development (14 Cal. Code of Regulations Section 20070(b)). In addition, the State of California has adopted a policy of protecting the economic sustainability of the Delta via economic sustainability planning (Cal. Public Resources Code Section 29759). Agricultural land uses and activities are the cornerstone of the Delta economy. A dollar of agricultural crop revenue generates three to five times greater regional income than other leading revenue sources such as recreation or tourism (Delta Protection Commission 2012:274).

Because the project area contains agricultural land that is subject to the protective policies of the Delta Protection Act and the regulations adopted by the Commission, the conversion of this land will create significant and unavoidable impacts different than those identified in the SWRCB PEIR. The SWRCB PEIR does conclude that conversion of agricultural land is significant and unavoidable (SWRCB 2022:3.3-9), but it does not consider the Delta Protection Act or the Commission's regulations. In addition, the SWRCB concludes that indirect conversion of farmland created by restoration work tiered from the

PEIR will not result in significant indirect impacts associated with conversion of agricultural land (see Impact 3.3-3, SWRCB 2022:3.3-16). Because the Delta economy consists of an integrated array of agricultural producers, transporters, and packing and processing facilities, the decline in agricultural land use diminishes the sustainability of associated necessary services such as trucking, packing and shipping. The decline in the viability of these ancillary industries then has a feedback loop on the sustainability of agriculture itself. In summary, the impact on Delta agriculture specifically, and the indirect effects on agricultural sustainability are not contemplated in the SWRCB PEIR.

Recommendations for Analysis and Mitigation

We recommend that the EIR for the project:

- Specifically analyze the impact on Delta agriculture relative to the State policy of protecting these land uses,
- Analyze and mitigate indirect impacts on agricultural sustainability,
- Incorporate and adopt the mitigation in the SWRCB PEIR, which includes conservation of equivalent land at least a 5:1 ratio (5 acres preserved for each acre the project converts),
- Consider in the cumulative impact section the full suite of cumulative projects including but not limited to the Zacharias Ranch Mitigation Bank proposed in Sacramento County, and the Habitat Conservation Plan for which DWR recently issued a NOP for mitigation of the long-term operations of the State Water Project, and,
- Commit to complying with the legal duty to pay relevant special benefit assessments for maintenance of levees and other services that apply within the project boundaries, consistent with California Constitution Article XIII D, Section 4.

If you have any questions, please contact our Senior Environmental Planner, Mike Aviña at Mike.Avina@delta.ca.gov, or at (530) 750-6727.

Sincerely,

Bruce Blodgett, Executive Director
Delta Protection Commission

References Cited

California Department of Conservation (DOC). California Important Farmland Finder. 2022. Sacramento, California.

California Department of Water Resources (DWR). Notice of Preparation: Environmental Impact Report for the State Water Project Delta Field Division Operations and Maintenance Habitat Conservation Plan. 2024a. Sacramento, California.

Delta Protection Commission. *Economic Sustainability Plan for the Sacramento-San Joaquin Delta*. 2012. West Sacramento, California.

Delta Stewardship Council
A CALIFORNIA STATE AGENCY

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August 23, 2024

Judah Grossman
Department of Water Resources
Division of Multibenefit Initiatives
P.O. Box 942836
Sacramento, CA 94236-0001

Delivered via email: tidesendmbp@water.ca.gov

RE: Comments on Notice of Preparation of an Environmental Impact Report for the Tide's End Multibenefit Restoration Project, SCH# 2024070944

Dear Judah Grossman:

Thank you for the opportunity to review and comment on the Tide's End Multibenefit Restoration Project (Tide's End project) Notice of Preparation (NOP) of an Environmental Impact Report (EIR). The Delta Stewardship Council (Council) recognizes the objective of the Tide's End project is to restore tidal marsh and associated floodplain habitat while also preserving and enhancing existing land uses as part of a voluntary agreement to support the Healthy Rivers and Landscapes Program.
The Council is an independent state agency established by the Sacramento-San Joaquin Delta Reform Act of 2009. (Wat. Code, § 85000 et seq., Delta Reform Act)

The Delta Reform Act charges the Council with furthering California's coequal goals of providing a more reliable water supply and protecting, restoring, and enhancing the Sacramento-San Joaquin Delta (Delta) ecosystem. (Water Code, §§ 85054, 85300.) The Delta Reform Act further states that the coequal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. (Wat. Code, § 85054.)

The Council is charged with furthering California's coequal goals for the Delta through the adoption and implementation of the Delta Plan, a comprehensive long-term management plan for the Delta and Suisun Marsh. (Wat. Code, § 85300.) The Delta Plan contains regulatory policies, which are set forth in California Code of Regulations, title 23, section 5001et seq. Through the Delta Reform Act, the Council was granted specific regulatory and appellate authority over certain actions of State or local public agencies that take place in whole or in part in the Delta. (Wat. Code, §§ 85210, 85225.30.) A state or local agency that proposes to undertake a covered action is required to prepare a written Certification of Consistency with detailed findings as to whether the covered action is consistent with the Delta Plan and submit that certification to the Council prior to implementation of the project. (Wat. Code, § 85225.)

COVERED ACTION DETERMINATION AND CERTIFICATION OF CONSISTENCY WITH THE DELTA PLAN

Based on the Tide's End project location and scope, as provided in the NOP, the Tide's End project appears to meet the definition of a covered action. Water Code section 85057.5, subdivision (a), states that a covered action is a plan, program, or project as defined in the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section 21065 and that meets all of the following conditions:

> *(1) Will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh.* The Tide's End project would occur within the boundaries of the Legal Delta, as defined in Water Code section 85058.
>
> *(2) Will be carried out, approved, or funded by a state or a local public agency.* The Tide's End project would be funded and carried out by the Department of Water Resources (DWR), a State agency.

(3) Is covered by one of the provisions of the Delta Plan. Delta Plan regulatory policies that may apply to the Tide's End project are discussed below.
(4) Will have a significant impact on the achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and state interests in the Delta. This multibenefit project would have a significant impact on the achievement of the coequal goal to protect, restore, and enhance the Delta ecosystem and on the implementation of a government-sponsored flood control program.

The state or local agency approving, funding, or carrying out the project is required to determine if a project is a covered action and, if so, file a Certification of Consistency with the Council prior to project implementation. (Wat. Code, § 85225; Cal. Code Regs., tit. 23, § 5001, subd. (k)(3).)

COMMENTS REGARDING DELTA PLAN POLICIES AND POTENTIAL CONSISTENCY CERTIFICATION

The following section describes the Delta Plan regulatory policies that may apply to the Tide's End project based on the available information in the NOP. This information is offered to assist DWR to prepare environmental documents that could be used to support a future Certification of Consistency for the Tide's End project.

General Policy 1: Detailed Findings to Establish Consistency with the Delta Plan

Delta Plan Policy **G P1** (Cal. Code Regs., tit. 23, § 5002.) specifies what is required to be addressed in a Certification of Consistency by a project proponent of a project that is a covered action. The following is a subset of policy requirements that a project is required to fulfill to be considered consistent with the Delta Plan:

Mitigation Measures

Delta Plan Policy **G P1(b)(2)** (Cal. Code Regs., tit. 23, § 5002, subd. (b)(2).) requires that covered actions not exempt from CEQA include all applicable feasible mitigation measures adopted and incorporated into the Delta Plan as amended April 26, 2018, unless the measures are within the exclusive

jurisdiction of an agency other than the agency that files the Certification of Consistency, or substitute mitigation measures that the agency finds are equally or more effective. These mitigation measures are identified in Delta Plan Appendix O (https://deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf).
If the Tide's End project EIR identifies significant impacts that require mitigation, DWR should review Appendix O and include all applicable feasible mitigation measures adopted and incorporated into the Delta Plan or identify substitute mitigation measures that DWR finds are equally or more effective.

Best Available Science

Delta Plan Policy **G P1(b)(3)** (Cal. Code Regs., tit. 23, § 5002, subd. (b)(3).) requires that actions subject to Delta Plan regulations document the use of best available science as relevant to the purpose and nature of the project. The Delta Plan defines best available science as "the best scientific information and data for informing management and policy decisions." (Cal. Code Regs, tit. 23, § 5001, subd. (f).) Best available science is also required to be consistent with the guidelines and criteria in Appendix 1A (Cal. Code Regs, tit. 23, app. 1A) and also found in the Delta Plan (https://deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1a.pdf). The EIR should clearly document and communicate the process for analyzing the Tide's End project alternatives, impacts, and mitigation measures to foster improved understanding and decision-making.

Adaptive Management

Delta Plan Policy **G P1(b)(4)** (Cal. Code Regs., tit. 23, § 5002, sub. (b)(4).) requires that ecosystem restoration and water management covered actions include adequate provisions for the continued implementation of adaptive management, appropriate to the scope of the project. This requirement is satisfied through both a) the development of an adaptive management plan that is consistent with the framework described in Appendix 1B (Cal. Code Regs, tit. 23, app. 1B) and also found in the Delta Plan (https://deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1b.pdf), and b) documentation of adequate resources to implement the proposed adaptive management plan. The ecosystem restoration components of the Tide's End project would require the preparation of an adaptive management plan.

Ecosystem Restoration Policy 1: Delta Flow Objectives

Delta Plan Policy **ER P1** (Cal. Code Regs., tit. 23, § 5005.) requires the State Water Resources Control Board's Bay-Delta Water Quality Control Plan flow objectives to be used to determine consistency with the Delta Plan. The Tide's End project's location within the Yolo Bypass as well as the proposed changes in land use, roughness, and geometry of the site mean that the Tide's End project is likely to affect flow in the Delta. The EIR and a future Certification of Consistency should analyze and document how the Tide's End project may impact or alter Delta flows that are subject to meeting the Bay-Delta Water Quality Control Plan flow objectives in place at the time of the filing a Certification of Consistency.

Ecosystem Restoration Policy 2: Restore Habitats at Appropriate Elevations

Delta Plan Policy **ER P2** (Cal. Code Regs., tit. 23, § 5006.) requires habitat restoration be carried out consistent with Appendix 3 (Cal. Code Regs, tit. 23, app. 3). The elevation map (Cal. Code Regs, tit. 23, app. 4) also is included as Figure 4-6 in the Delta Plan (https://deltacouncil.ca.gov/pdf/delta-plan/figure-4-6-habitat-types-based-on-elevation.pdf) and should be used as a guide for determining appropriate habitat restoration actions based on an area's elevation. Based on the Tide's End project description and figure included in the NOP, much of the Tide's End project site appears to be located in areas appropriate for intertidal habitat. This aligns with the Tide's End project design and objectives. DWR should consider analyzing in the Tide's End project EIR the elevation of the Tide's End project site in relation to current water levels and projected sea level rise, based on best available science, and document how the proposed habitat restoration action is appropriate for these elevations.

Ecosystem Restoration Policy 3: Protect Opportunities to Restore Habitat

Delta Plan Policy **ER P3** (Cal. Code Regs., tit. 23, § 5007.) requires that, within the priority habitat restoration areas (PHRAs) depicted in Appendix 5 (Cal. Code Regs, tit. 23, app. 5), significant adverse impacts to the opportunity to restore habitat at appropriate elevations as described in ER P2 (Cal. Code Regs., tit. 23, § 5006.) are required to be avoided or mitigated. The Tide's End project is proposed to be located within the Yolo Bypass PHRA.

Based on the location and general Tide's End project attributes provided in the NOP, it appears the Tide's End project could improve the opportunity to restore native species at various elevations, including tidal and floodplain habitat. The Biological Resources section of the EIR should acknowledge ER P3 and describe how

the Tide's End project would avoid or mitigate impacts to the opportunity to restore habitat within the Yolo Bypass PHRA.

Ecosystem Restoration Policy 5: Avoid Introductions of and Habitat Improvements for Invasive Nonnative Species

Delta Plan Policy **ER P5** (Cal. Code Regs., tit. 23, § 5009.) requires that covered actions fully consider and avoid or mitigate the potential for new introductions of, or improved habitat conditions for, nonnative invasive species, striped bass, or bass in a way that appropriately protects the ecosystem. Based on information provided in the NOP, the Tide's End project would result in greater hydraulic connectivity to the Toe Drain and would have potential to affect special status fish species, special-status terrestrial species, or their habitats. DWR should acknowledge Policy ER P5 in the Biological Resources section of the Tide's End project EIR. The EIR should analyze how the Tide's End project will address both nonnative wildlife species as well as terrestrial and aquatic weeds. The EIR should analyze how the Tide's End project will avoid or mitigate for conditions that would lead to the establishment of nonnative invasive species. In the event mitigation is warranted, mitigation and minimization measures are required to include Delta Plan Mitigation Measure 4-1 (available at: https://deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf) or substitute equally or more effective measures.

Delta as Place Policy 2: Respect Local Land Use when Siting Water or Flood Facilities or Restoring Habitats

Delta Plan Policy **DP P2** (Cal. Code Regs., tit. 23, § 5011.) reflects one of the Delta Plan's charges to protect the Delta as an evolving place by siting water management facilities, ecosystem restoration, and flood management infrastructure to avoid or reduce conflicts with existing uses, or those uses described or depicted in city and county general plans for their jurisdictions or spheres of influence, when feasible, considering comments from local agencies and the Delta Protection Commission.

The Tide's End project would restore tidal marsh and associated floodplain habitat while preserving and enhancing existing land uses. The Land Use and Planning section of the Tide's End EIR should acknowledge Policy DP P2 in the regulatory setting and describe an analysis of current and planned uses, any potential conflicts, and how those would be avoided or reduced.

Risk Reduction Policy 4: Floodplain Protection

Delta Plan Policy **RR P4** (Cal. Code Regs., tit. 23, § 5015.) prohibits, unless it can be demonstrated by appropriate analysis that the encroachment will not have a significant adverse impact on floodplain values and functions, an encroachment from being constructed in the floodplain in certain areas within the Legal Delta, including the Yolo Bypass. The Tide's End project is restoring and reconnecting tidal and floodplain habitats, which would amplify the benefits of seasonal flows from the Big Noth project in the upper Yolo Bypass in the Tide's End project area. DWR should acknowledge Policy RR P4 in the regulatory setting for the Hazards and/or the Hydrology sections of the EIR. The Tide's End project EIR should analyze the impact of the Tide's End project on floodplain values and functions and document how the Tide's End project would be consistent with Delta Plan Policy RR P4.

CLOSING COMMENTS

As DWR proceeds with design, development, and environmental impact analysis of the Tide's End project, the Council invites DWR to engage Council staff in early consultation, prior to the submittal of a Certification of Consistency, to discuss project features and mitigation measures that would promote consistency with the Delta Plan.

More information on covered actions, early consultation, and the certification process can be found on the Council website, https://coveredactions.deltacouncil.ca.gov. Council staff are available to discuss issues outlined in this letter as DWR proceeds in the next stages of its project and approval processes. Please contact Eva Bush at eva.bush@deltacouncil.ca.gov with any questions.

Sincerely,

Jeff Henderson
Deputy Executive Officer

Lower Sacramento River - Delta North Regional Flood Management Program

Regional Workgroup Team

Comments discussed during the scoping meeting with the RWG team on August 22, 2024 regarding the Notice of Preparation for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report

1. The Notice of Preparation (NOP) does not specify what entity will own the property following project implementation. Assuming the project would be owned by the California Department of Water Resources (DWR), the existing farmland will no longer be on the County tax rolls and project implementation will result in a loss of tax revenue for Yolo County. As a county heavily dependent on the agricultural economy to fund necessary public services, the cumulative loss of agricultural land associated with the implementation of this and multiple other habitat conversion projects will make it difficult to maintain the current level of public services. We recommend that the EIR identify the impacts associated with reduced public services within the county associated with the cumulative conversion of private land to state ownership associated with implementation of the Voluntary Agreements and other state restoration initiatives. Also, the EIR should identify a mechanism to offset the loss of local tax revenues associated with project implementation.
2. DWR is encouraged to review how the Yolo Bypass Wildlife Area is managed to achieve multiple benefits and to consider how this example could be duplicated with project implementation. This includes the payment of in-lieu fees to Yolo County to offset the loss of local property taxed, the leasing of agricultural land to local farmers as a funding mechanism, the inclusion of public hunting managed by the California Department of Fish and Wildlife (CDFW), CDFW's partnership with the Yolo Basin Foundation to provide environmental education to disadvantage school children, and the provision of public wildlife viewing.
3. The NOP states that the proposed project furthers the goals and objectives of the Central Valley Flood Protection Plan (CVFPP) by managing floodway roughness, maintaining long-term flood capacity, and reducing potential flood encroachments in the Yolo Bypass. The roughness of site vegetation is currently controlled on much of the project site by active farming operations and by private entities managing wetlands for waterfowl production. However, by converting active agricultural lands and privately-managed wetlands to tidal marsh, this land management will no longer occur. If the proposed habitat is not appropriately maintained, excessive vegetation growth on the project site could substantially increase roughness and reduce flood conveyance capacity within the Yolo Bypass. We recommend that the EIR describe how the project is intended to achieve the CVFPP goals and objectives identified in the NOP and that it specifically describe the detailed maintenance activities that would be required, the funding mechanism and responsible party for such maintenance activities, the permitting strategy associated with implementing long-term maintenance within sensitive habitats, the access infrastructure

that would be required on the site (e.g., gravel access roads adjacent to drainage channels), and the environmental effects associated with such maintenance.

4. Related to comment 3 above, the Deep Water Ship Channel levee is maintained by the West Sacramento Area Flood Control Agency and U.S. Army Corps of Engineers. The EIR should consider any long-term impacts to the functioning of this levee and routine operations and maintenance of this levee. During project permitting, a long-term permitting strategy should be identified for the required ongoing maintenance of this levee.
5. The project proposes to convert agricultural land to tidal habitat. The California Environmental Quality Act (CEQA) considers the conversion of prime farmland, unique farmland, or farmland of statewide significance as a significant environmental impact. Therefore, the EIR should describe how the loss of agricultural land associated with project implementation will be mitigated. DWR is encouraged to review the County's agricultural mitigation policy when considering the development of mitigation measures.
6. The NOP states that the project would reduce or improve existing human-built obstructions. The EIR should describe in detail the obstructions that are proposed to be reduced or improved, and the associated environmental impacts associated with such changes.
7. The EIR should describe how fish stranding would be minimized with the introduction of regular site inundation from the Toe Drain. The EIR should also describe how the high avian predation that often occurs when fish are concentrated in channels connecting the bypass to the Toe Drain can be minimized and/or offset.
8. Based on the scale of habitat restoration occurring within the Yolo Bypass and Cache Slough Complex and the unique character of the region's hydrology and biotic environment, the EIR should not rely on the cumulative analysis included in the Program EIR prepared for the State Water Board General Order and should instead include a detailed impact analysis focused on the cumulative conversion of agricultural land and the changes in land use within the region.
9. The NOP states that the project would preserve and improve conditions for recreational interests where feasible but provides no details regarding how this will be achieved. The EIR project description should clearly articulate how recreational components will be implemented into the project design and operations, and identify how existing recreational activities on surrounding lands could be preserved and improved. The EIR should also identify whether the project is intended to improve public or private recreational components, should describe any access requirements associated with such activities, and should describe how recreational facilities would be managed over the long term to minimize adverse impacts for adjacent landowners.
10. The NOP states that the project would contribute to drought resilience but does not provide any detail regarding how this will be achieved. The EIR project description should clearly articulate how the project will contribute to drought resiliency in the region including specifically how it will support the ongoing water supply needs associated with the adjacent agricultural operations.
11. The NOP states that the project is intended to provide food production for native fish. By increasing organic matter within the Yolo Bypass and Cache Slough Complex, the project would be expected to increase the intake of organic matter within the Barker Slough intake facility of the North Bay Aqueduct (NBA) which is owned and operated by DWR. The NBA

serves around 500,000 residents in Solano and Napa County. An increase of organic matter could increase water treatment requirements and could increase the presence of listed fish species within the Cache Slough Complex. The EIR should evaluate the impacts associated with introducing additional listed aquatic species within an area with multiple existing water intake facilities.

12. The NOP states that the project will improve drainage and irrigation but provides no details regarding how this will be achieved. The EIR project description should describe the local drainage and irrigation system and should clearly articulate how it will be improved with project implementation.
13. The EIR project description should clearly articulate how the project is intended to function in combination with the Big Notch Project and describe how such operations could affect adjacent agricultural operators and privately managed wetlands.
14. Within the Cache Slough area, farmers have experienced substantial increases in geese populations associated with habitat restoration projects. When these geese fly to nearby agricultural lands, they can consume large volumes of crops prior to harvest, substantially reducing crop yields and threatening the ongoing viability of agricultural operations. The EIR should discuss how project implementation, including the expansion of waterfowl habitat, could affect adjacent agricultural lands.
15. The EIR should include an alternative that is directly focused on achieving the Yolo Bypass Cache Slough Partnership's six pillars. Such an alternative would include components that improve agricultural productivity within the region, enhance public recreational opportunities, improve local water quality, and expand water supplies.
16. The EIR should consider how climate change could affect project operations over the long term including how changes in the tidal prism could potentially expand inundation beyond the project boundaries.
17. The EIR preparers should consult with appropriate tribal representatives to ensure that project implementation does not adversely affect tribal cultural resources.
18. There may be a number of natural gas wells on the former Capitol Oil property. If these wells were not properly abandoned, they could represent a public health risk. The EIR should evaluate the potential public health risks associated with abandoned natural gas wells on or adjacent to the project site.

COUNTY OF YOLO

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August 23, 2024

Department of Water Resources
Division of Multibenefit Initiatives
Attn: Judah Grossman
Via email only to tidesendmbp@water.ca.gov

Re: Tides End Multibenefit Restoration Project
Comments of Yolo County on Notice of Preparation

Dear Mr. Grossman:

The County of Yolo ("County") submits this letter to comment on the Notice of Preparation ("NOP") released by the California Department of Water Resources ("DWR") on July 22, 2024 for the Tides End Multibenefit Restoration Project ("Project"). The County will submit a separate letter to address other issues presented by the Project, including DWR's assertion of lead agency status under the California Environmental Quality Act ("CEQA") and its position that the Project is exempt from local regulation. The County reserves all rights regarding such matters.[1]

Initially, the County recognizes that the Project could be the first of many projects implemented locally by DWR for the proposed Healthy Rivers and Landscapes Program ("HRL") described briefly on p. 2 of the NOP. The County is therefore conservatively treating the Project and DWR's implementation approach—including its intent to rely on the SRGO PEIR—as precedential and reflective of how later HRL projects could be carried out. The County has not taken an official position on the HRL in connection with the Bay-Delta Plan update proceedings of the State Water Resources Control Board ("State Board").

The following sections of this letter provide the County's comments on the NOP. Issues of a general nature are presented first, followed by more specific comments on environmental resource topics and related matters as well as Project alternatives.

1. General Comments.

A. Tiering From the SRGO PEIR.

The NOP explains that DWR intends to prepare a Supplemental Environmental Impact Report ("Supplemental EIR") for the Project, tiering from the Program Environmental Impact Report

[1] The County offers the comments set forth in this letter in its capacity as the public agency with general government powers relating to the Project, including through its building and zoning ordinances, and contends that it is a "responsible agency" under CEQA at the very least.

certified on August 16, 2022 for the Statewide Restoration General Order (the "SRGO PEIR"). The County's concerns with this approach are as follows.

First, the SRGO PEIR attempts to provide a statewide framework for analyzing the environmental effects of several broadly defined categories of "restoration projects." The categories of "restoration projects" described in the PEIR include virtually any project proposed in California that is intended to "result in a net increase in aquatic or riparian resource functions and/or services through implementation of relevant protection measures." (SRGO PEIR at pp. ES-2, ES 5-7.) The resulting analysis, not surprisingly, is very high level and conceptual, providing only general guidance for project-level CEQA documents rather than an analytical framework readily suited to the preparation of a Subsequent or Supplemental EIR.

For this reason, the County contends that it is inappropriate to prepare only a Supplemental EIR for the Project. As the NOP recognizes at p. 4 (citing CEQA Guidelines section 15163), preparation of a Supplemental EIR is appropriate only where "minor additions or changes would be necessary to make a previous EIR apply to the project in the changed situation." At the very least, a Subsequent (rather than Supplemental) EIR is required because "major revisions" to the SRGO PEIR will be necessary to adapt its very general analysis to a site-specific project such as Tides End. (CEQA Guidelines § 15162.) Indeed, DWR should seriously consider preparing a project-level EIR rather than attempt to tier from the SRGO PEIR.[2]

Second, the NOP does not attach or reference an initial study documenting DWR's decision to prepare a Supplemental EIR. Under CEQA, an initial study is an essential step in deciding to tier from a program-level EIR. Section 21094(c) of the Public Resources Code states that "an initial study shall be prepared to assist the lead agency in making the determinations required by this section." Similar language mandating preparation of an initial study appears in CEQA Guidelines section 15168 (c)(1)(4). The SRGO PEIR incorporates these mandates, stating "[i]f an individual restoration project or associated later activity would have impacts that were not fully described or new impacts not examined in this PEIR, the CEQA lead agency would need to prepare an initial study to determine the appropriate environmental document." (SRGO PEIR at p. 1-7.)

If DWR prepared an initial study prior to releasing the NOP, it should have been included for public review. If not, DWR must prepare one now. Either way, the absence of an initial study further calls into question DWR's determination to prepare only a Supplemental EIR rather than a more robust analysis of the Project.

B. Baseline for CEQA Analysis.

The NOP does not provide any information on the environmental baseline that DWR will utilize in a project-level CEQA analysis. The County strongly encourages DWR to use a baseline that

[2] The County notes that in commenting on the Draft SRGO PEIR, the U.S. Environmental Protection Agency ("EPA") urged the State Water Board to exclude "complex multi-benefit tidal wetlands restoration projects" from the proposed General Order. (SRGO PEIR Appendix H, p. H-87.) The EPA expressed concern that "necessary, built in complexities" of such projects "are not well suited to coverage under a General Order." (*Id.*) The EPA's comments apply equally to project-level environmental review and underscore why DWR should not tier from the generalized analysis in the SRGO PEIR.

includes planned operations of the Big Notch Project, consistent with the statement (NOP p. 4) that Tides End "would amplify the benefits of seasonal flows from the Big Notch Project in the proposed Project Area, mimicking the shallow, long-duration flood patterns that existed historically to restore the underlying ecological processes necessary to support productive aquatic ecosystems." In this context, a baseline that includes planned operations of the Big Notch Project would provide a "realistic baseline that will give the public and decision makers the most accurate picture practically possible of the project's likely effects." *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal.4th 439, 449 (2013) (citing *Communities for a Better Environment v. South Coast Air Quality Management District*, 48 Cal. 4th 310, 322, 325, 328 (2010).) Further, a range of different Big Notch Project operational scenarios reflecting the annual variability of Sacramento River conditions should be included to ensure the Project's effects (including its hypothesized benefits for native fish and any adverse effects on other species) are fully described.

C. Project Description.

The County has two general concerns with the NOP's description of the Project.

First, certain aspects of the Project are not described sufficiently in the NOP to enable the County to meaningfully respond regarding the proper scope of an EIR.[3] At least the following Project elements are unclear:

- **Long-term Project site operations and management.** On p. 2, the NOP states that the Project will "further[] the goals and objectives of the Central Valley Flood Protection Plan (CVFPP) by managing floodway roughness, maintaining long-term flood capacity, and reducing potential flood encroachments in the Yolo Bypass." Aside from a reference at p. 4 to compatible land cover types such as "wildlife-friendly agriculture (e.g., wild rice production) that is also compatible with floodway operations," the NOP does not explain how these intended outcomes will be achieved over time.

  The Project site will require active management and stewardship to achieve many of the stated Project objectives. Information on long-term management of the Project site, including plans for sediment control and removal, should be included in the Draft EIR. Other topics such as agricultural leasing, management of waterfowl habitat and recreational access, trespassing, and infrastructure maintenance should also be addressed. The Draft EIR should also discuss any environmental impacts that could result from the specific range of management and stewardship actions that will be carried out over time.

- **Improvements to water delivery and drainage.** Also on p. 2, the NOP states that "the proposed Project will contribute to the sustainability of agriculture in the region by improving efficiencies of water delivery and drainage associated with the proposed Project area and adjacent landowners." Similar language also appears at p. 4 of the NOP.

[3] Section 15082(a)(1) of the CEQA Guidelines states that an NOP must "provide the responsible and trustee agencies . . . with sufficient information describing the project and the potential environmental effects to enable the responsible agencies to make a meaningful response."

More information is necessary for the County to comment meaningfully on DWR's intended means of achieving these laudable objectives. For example, what changes to "water delivery and drainage" will be implemented as part of the Project? Will water diversions be added, eliminated, or relocated? Will the costs of improving water delivery and drainage be charged to adjacent landowners and, if so, have those landowners agreed to pay? Will any new easements be necessary to implement changes in water delivery and drainage? The Draft EIR must include more information on these and other aspects of the proposed water delivery and drainage improvements.

Relatedly, the Draft EIR should describe the disposition of any surface water rights associated with the property, including any changes that could result from the Project (and contemplated change in site ownership).

- **Adaptation to climate change.** The NOP states on p. 3 that the Project will provide "an opportunity for long-term climate change resilience by allowing for inland migration of tidal marsh habitat in the face of sea level rise." Information provided on the Project's design, however, reflects only the intended outcome of Project construction without additional detail on how the Project site will accommodate changes over time. Particularly toward the southern end of the site, new tidal marsh and other habitat types are designed to extend to the property boundary. It is thus unclear how the Project design allows for adaptation to climate change on the Project site, including by "allowing for inland migration of tidal marsh habitat."

- **Drought resiliency.** At p. 3, the NOP indicates the Project's restoration design "would contribute to conservation, climate, and drought resilience efforts" in various respects. The County recognizes that the contract for Project construction (discussed further below) relied on certain Executive Orders with drought-related exemptions from competitive solicitation laws. Despite this, it is unclear how the Project will contribute to drought resiliency. An explanation of this Project objective and any related analysis should be included in the Draft EIR.

Section 2, below, includes additional specific questions and concerns relating to Project features.

Second, the NOP's description of the Project is inconsistent with (and in some instances, ignores) the terms and conditions of the March 21, 2024 contract between DWR and Ecosystem Investment Partners, Inc. ("EIP) for the Project. Some of the County's key concerns in this regard include:

- **Inconsistency in Project objectives.** The contract obligates EIP to establish up to 2,168 "Habitat Acres" at the Project site, with payment to EIP reduced by $29,877 per acre for any shortfall. The NOP, however, offers a less prescriptive approach to restoration that is consistent with the development of Project alternatives that could, by way of example, propose a different balance of tidal, floodplain, and agricultural land use elements. DWR should consider whether EIP should be contractually responsible for preparing all CEQA documentation, as is presently the case, given its clear fiscal incentive to maximize tidal habitat restoration acreage.

- **Unclear commitment to agricultural and waterfowl habitat uses.** The NOP identifies agriculture as an element of the Project, including to ensure the Project site "retain[s] the intended capacity for seasonal flood flow by managing the roughness of the proposed Project site." (NOP at p. 4.) The contract, however, does not require EIP to ensure that agriculture or waterfowl habitat results from Project implementation. The contract indicates only that "Habitat Acres" may—in addition to achieving six specific purposes—also include "seasonal floodplain agriculture and waterfowl management that are necessary for overall site function and are consistent with the Project purposes or existing land use commitments." (*E.g.*, Contract Exh. A, p. 2.) The lack of contract provisions on agricultural and waterfowl uses calls into question these elements of the NOP.

Altogether, while the NOP describes a true "multi-benefit" project, the contract includes terms and conditions that reflect a commitment to aquatic habitat restoration with only secondary consideration, at most, of the agricultural and waterfowl habitat uses described in the NOP. This apparent inconsistency should be addressed and resolved in the Draft EIR (or otherwise).

2. Comments on Environmental Resource Topics and Other Issues.

A. Agricultural Resources.

The NOP observes that the Project site is currently in agricultural and managed waterfowl habitat uses but provides little additional detail. To the extent the Project will convert farmland to other land use types, the County encourages careful analysis in the Draft EIR. This analysis should quantify the net loss of farmland resulting from the Project in addition to describing any resulting water supply and drainage benefits to the sustainability of farmland in the region. The County also encourages consideration of mitigating any net loss in accordance with the County's Agricultural Conservation Easement Program Ordinance (Yolo County Code Section 8-2.2416).

While not mentioned in the NOP, the County's records indicate that about seven of the ten Project site parcels are covered by active Williamson Act contracts. While the Williamson Act does allow specified "open space" uses on contracted lands in certain instances, the contracts covering the Project site do not authorize or even contemplate the conversion of the site to tidal wetlands and other habitats. The County has coordinated with other project proponents in similar situations to prepare amended Williamson Act contracts (e.g., for the Yolo Ranch and Flyway Farms project) and is available to consult with DWR on this issue for the Tides End project.

B. Hydrology and Water Quality.

The NOP asserts the Project will contribute to flood management as outlined in the Central Valley Flood Protection Plan and Conservation Strategy. However, the Project appears likely to result in an increase in Manning's Roughness coefficient within the Project boundary as tidal marsh vegetation replaces rice and grasses. Rice and grasses are typically characterized with a Manning's Roughness coefficient of .026-.035, while tidal marsh has a coefficient of .045-.06. An increase in roughness within the Sacramento River Flood Control System could adversely affect flood conveyance and impair the drainage of adjacent properties, particularly those to the north of the proposed project. The Draft EIR should consider this flood conveyance issue and, in

addition, consider both the short-term effects of breaching berms and the longer-term effects of tidal marsh vegetation growth and sedimentation over time.

C. Local Water Supply Needs.

The NOP describes the Project as supporting fish species including Delta smelt. The County encourages DWR to address local agency (including agencies in Solano County) concerns about impacts on the downstream water supply intakes where the Project intends to attract Delta smelt and allow for tidal marsh encroachment. Specifically, what measures will the Project include to limit take of endangered species such as the Delta smelt at nearby diversions as well as the consolidated diversion(s) proposed in the NOP?

Separately, the NOP does not include sufficient information on the size or location of proposed berm breaches to enable the County to determine potential impacts to nearby diversion infrastructure integrity, potential water quality changes as a result of tidal marsh migration and sedimentation, water rights, and local tax and assessment revenue. As such, the County encourages DWR and EIP to adhere to the "good neighbor checklist" and proactively engage neighboring landowners in discovering and addressing land use concerns.

D. Local Conservation Easements.

Yolo County recommends consulting the Yolo Habitat Conservancy and evaluating whether the Project could benefit from participating in the Yolo HCP/NCCP. For example, the Yolo HCP/NCCP includes a conservation measure to protect over 2,800 acres of rice in the Yolo Bypass as habitat for giant garter snake. Opportunities may exist for collaboration (and cost savings) that serves the Project's mitigation needs and contributes to achievement of HCP/NCCP objectives.

The County understands that due to existing conservation easements on the Project site, EIP is contractually obligated to obtain compatibility determinations from the United States Fish and Wildlife Service and the Natural Resources Conservation Service. Based on "lessons learned" on the Big Notch Project, the County encourages DWR to ensure the compatibility process is undertaken early in project planning to ensure that drainage impacts and other concerns relating to easement compatibility do not arise for the first time late in Project construction, when options for addressing those concerns are more limited. Similarly, the County encourages DWR to ensure that waterfowl habitat resulting from the Project is at least equivalent in quality (including suitability for foraging and breeding) to the habitat that is adversely impacted or lost.

Also, as mentioned above, the Project description states the Project will allow for inland migration of tidal marsh habitat in the face of sea-level rise. Concern exists that tidal marsh habitat is incompatible with the migratory bird/waterfowl conservation easements. Migratory birds and many waterfowl species depend on shallow inundation that allows for diving and foraging. New tidal marsh vegetation could prevent the growth of watergrass and other food supply vegetation by not draining or drying each year as well as outcompete the vegetation.

3. Suggestions for Project Alternatives.

The NOP describes the Project as a "project supporting the principles and framework outlined in the Voluntary Agreements" and explains that it "furthers the goals and objectives of the CVFPP's Conservation Strategy by increasing the quantity, quality, and connectivity of aquatic, wetland, and riparian habitat in the flood system through the integration of ecological principles with flood risk reduction projects and activities." Yolo County questions the need to convert wetland habitat to tidal marsh habitat. Breaching berms and introducing tidal marsh results in an increased roughness within the flood protection system and neither HRL nor the CVFPP's Conservation Strategy require tidal marsh habitat. Therefore, Yolo County recommends including a Project alternative focused on maximizing agricultural land uses within the Project boundary rather than emphasizing tidal marsh habitat restoration. Maintaining and increasing agricultural production in the Project area will provide various benefits, including:

- Equal habitat value in terms of quality as it could support juvenile salmon as well as migratory waterfowl and shorebirds;
- Provide a net benefit to flood conveyance and drainage;
- Increased rice cultivation, such as the wild rice mentioned in the NOP, would be highly compatible with floodway operations and will result in a true net benefit in the flood System by reducing future tule marsh growth; and
- Reduced project implementation costs and the addition of revenue streams for future maintenance and operations.

Such an alternative will support the County's agricultural economy and help offset the loss of agricultural activity on other properties affected by existing and future habitat conversion projects that take agricultural land permanently out of production. This project presents an opportunity to set a positive precedent for future HRL projects contemplated in the County. Finally, the County encourages DWR to investigate an alternative to state ownership that maintains the parcels on the County tax roll as well as long term land management leases with a local entity or business.

The County appreciates the opportunity to comment on the NOP and looks forward to further engagement and coordination with DWR and EIP regarding the Project.

Sincerely,

Philip J. Pogledich
County Counsel

cc: Glen Williams, Ecosystem Investment Partners
Alex Tengolics, Director of Strategic Operations
Sabrina Snyder, Senior Management Analyst

Appendix C

Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report

Tide's End Multibenefit Restoration Project

Preliminary Biological Resources Report

PREPARED FOR
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SEPTEMBER 2024

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Acronyms and Other Abbreviations

Acronym/Abbreviation	Definition
Big Notch Project at the Fremont Weir	Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRAM	California Rapid Assessment Method
Delta	Sacramento–San Joaquin Delta
DPS	distinct population segment
ESU	evolutionarily significant unit
FESA	federal Endangered Species Act
FR	*Federal Register*
GGS	giant garter snake
HCP	habitat conservation plan
NDFS	North Delta Food Subsidies
PCE	primary constituent element
Project area	Tide's End Multibenefit Restoration Project area
proposed Project	Tide's End Multi-Benefit Restoration Project
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WPT	western pond turtle
YBFMP	Yolo Bypass Fish Monitoring Program

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CHAPTER 1
Introduction and Background

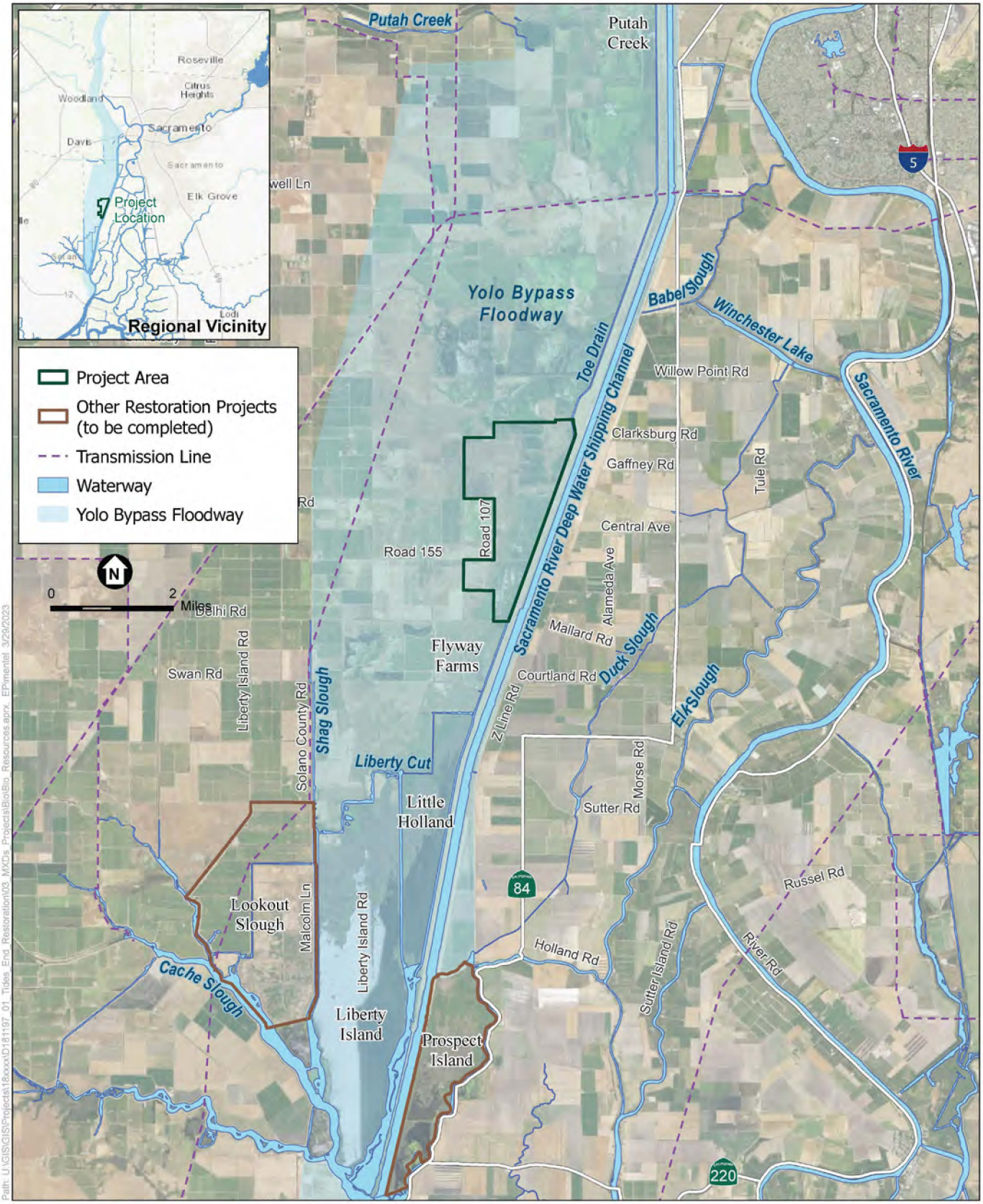
The Tide's End Multibenefit Restoration Project (proposed Project) would restore tidal wetland and associated floodplain habitat at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento–San Joaquin Delta (Delta) (**Figure 1-1**). Implementation of the proposed Project would connect contiguous properties and complete a 10-mile landscape corridor of uninterrupted floodplain and wetland habitat in an area of the Delta critical for smelt and salmonid habitat restoration.

EIP III Credit Co., LLC owns the six properties that make up the proposed Tide's End Multibenefit Restoration Project area (Project area), currently operated as agricultural lands and managed waterfowl habitat. Those properties are (listed from north to south) Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams. The proposed Project would restore and enhance tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) across the entire 2,212-acre Project area. Proposed Project activities would further the goals and objectives of the Central Valley Flood Protection Plan and other systemwide priorities by managing floodway roughness, maintaining long-term flood capacity, and reducing potential flood encroachments in the Yolo Bypass. The proposed Project would also support sea-level-rise resiliency and climate change adaptation while supporting the framework outlined in the Healthy Rivers and Landscapes Program.[1]

This restored mix of tidal and associated floodplain habitats would contribute to conservation, flood risk reduction, climate and drought resiliency efforts, and local and regional priorities by creating functional fish habitat; improving connectivity to waterways for fish passage; enhancing food web productivity; ensuring capacity and limiting roughness in the Yolo Bypass to help accommodate flood flows; increasing regional capacity for sea-level-rise resiliency through inland migration of tidal habitat; increasing groundwater recharge potential; and supporting local agricultural and recreational interests.

The proposed Project was sited in this area to take advantage of existing land elevations and amplify the habitat benefits of seasonal flows. By restoring and enhancing tidal wetland and floodplain habitats within the Yolo Bypass, conditions would mimic the historic shallow, long-duration flood patterns of the region that support underlying ecological processes necessary for

[1] Often referred to as the "Voluntary Agreements," this is a comprehensive, multi-year solution to restore ecosystems and strengthen water supply reliability across California, bringing together dozens of water agencies and the State and federal governments.



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1-1
Regional Setting

Prepared by: ESA

SOURCE: NAIP, 2022; DWR, 2005

Path: U:\GIS\GIS\Projects\18xxxx\D181197_01_Tides_End_Restoration\03_MXDs_Projects\Bio\Bio_Resources aprx, EPimentel 3/29/2023

productive aquatic ecosystems. In addition, long-term operations following implementation of the proposed Project would integrate agricultural and recreational uses with ecologically sensitive floodplain agriculture (e.g., rice operations) and fish-friendly waterfowl management practices that also provide food web benefits for native fish species. To further contribute to the sustainability of agriculture in the region, the proposed Project would improve water delivery and drainage systems between the proposed Project area and adjacent lands.

The purpose of this document is to identify baseline habitat conditions and sensitive biological communities such as wetlands, perennial and seasonal aquatic habitats, and riparian habitat within the Project area and evaluate the potential for special-status species to occur. The baseline conditions presented here are based on a review of background data for the Project area, special-status species reconnaissance surveys conducted by Environmental Science Associates (ESA) in September 2020, a focused survey conducted along the Toe Drain in June 2021, a botanical survey completed in September 2023, and an aquatic resource delineation survey conducted in June 2023.

1.1 Project Location and Physical Setting

The Project area is located within the southern portion of the Yolo Bypass in southern Yolo County (Figure 1-1). The Project area is on the Saxon, Clarksburg, and Liberty Island U.S. Geological Survey (USGS) topographic quadrangles (Townships 6–7 North, Range 3 East) and is in the Lower Sacramento Hydrologic Unit (Hydrologic Unit Code 18020163).

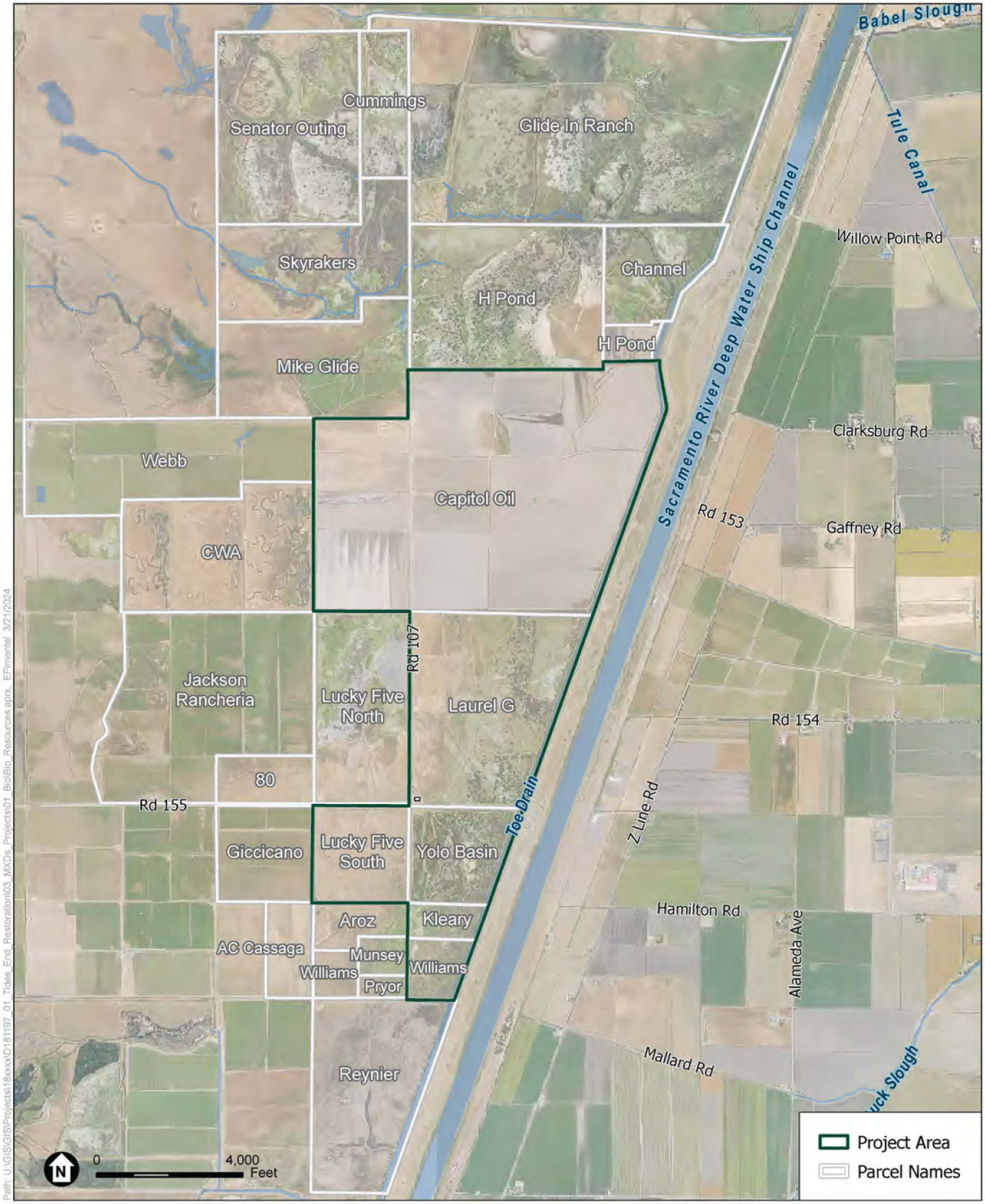
The Toe Drain is the eastern boundary of the Project area (**Figure 1-2**). The Toe Drain flows along the eastern edge of the Yolo Bypass and empties into Prospect Slough, approximately 5.8 miles downstream of the Project area. Lands north and west of the Project area include managed wetlands, both privately owned and owned by the State of California as part of the Yolo Bypass Wildlife Area. The Project area is bordered on the south by the Yolo Flyway Farms Tidal Habitat Restoration Project.

The entire Project area slopes generally from northwest to southeast, toward the Toe Drain. The highest elevation in the northwestern part of the Project area is about 14 feet and the lowest elevations in the southeast are about 6 feet, North American Vertical Datum of 1988.

1.1.1 Directions to the Project Area

The Project area is approximately 27 miles from Sacramento, California. To drive to the Project area, navigate to latitude 38.386863 and longitude -121.638606. Directions are as follows:

- From Sacramento, drive west on Interstate 80.
- Take exit 75 (Mace Boulevard) and turn left onto Mace Boulevard to drive south. Mace Boulevard turns left and becomes Road 36.
- After 0.1 mile, turn right onto Hyde Road/Solano County Road.
- Turn left onto Road 155 and arrive at the Project area after 3 miles.



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1-2
Project Area

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2024

1.1.2 Soils

Appendix A is a soil report of the Project area. Nearly the entire Project area is mapped as Clear Lake soils (flooded), Capay soils (overwash, 0% slopes, frequently flooded), or open water. Both Clear Lake and Capay soils formed in fine-textured alluvium from mixed rock sources in flood basins, and both have been altered in the Project area as a result of past agricultural and management practices.

1.1.3 Hydrology

Biological resources are heavily influenced by regional hydrology. For a description of the hydrology of the Yolo Bypass including floodplain inundation frequency, depth, duration, and other existing flood characteristics in the Project area, see the Hydrologic Conditions Report (Environmental Science Associates 2024a). In brief, the Project area is subject to periodic, seasonal flooding (i.e., inundation of all or part of the area) in the winter months (November–May), followed by little to no inflow and high air temperatures during the late-summer months (August–September).

Two important considerations related to hydrology within the Project area are the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project (Big Notch Project at the Fremont Weir), and the North Delta Food Subsidies (NDFS) program. Once the Big Notch Project at the Fremont Weir is operational, winter and spring managed flows of up to 6,000 cubic feet per second (with potentially higher flows under an adaptive management framework) will be routed down the Yolo Bypass from approximately November through May. The purpose of the NDFS is to enhance water flows and food resource availability downstream by testing different managed flow pulses or “flow actions” to establish positive net flow and improve the quality and quantity of food resources for delta smelt and other fish species in the Cache Slough Complex and North Delta. The source, timing, and amount of flow for the NDFS flow actions is dependent on the water year, Sacramento River flow and water quality conditions, timing of crop planting, and air temperatures. The NDFS managed flow actions occur once a year and can last from two to four weeks during the summer or fall. Both projects are described in greater detail in the Fish Habitat Optimization Report (Environmental Science Associates 2024b). Section 2.3, “Biological Communities,” discusses how hydrologic conditions affect the biological communities in the Project area.

1.1.4 Climate

Climate, especially temperature and precipitation, influences the regional distribution of biological communities and individual species. The Hydrologic Conditions Report (Environmental Science Associates 2024a) provides additional detail about the climate of the Project area.

1.2 Use and Management of Land and Water within the Project Area

The use and management of land and water in the Project area affect the biological resources described in this report. Those subjects are discussed in greater detail in the Land Use Constraints Analysis (Environmental Science Associates 2024c).

Most of the Project area was previously leveled for agricultural use and is currently managed as wetlands for waterfowl. Rice berms are present in many of the fields, which results in somewhat uneven water depths and inundation periods after flooding or irrigation. To support management objectives, fields in the managed wetlands are periodically flooded during the dry season. In addition, some areas are grazed by livestock to manage vegetation. Dirt roads surround most of the fields in the Project area, and in most cases are 1–2 feet higher than the surrounding fields. The only building is the “clubhouse” building at the intersection of County Road 155 and Road 107 on the Laurel G property.

CHAPTER 2
Baseline Biological Resources

This chapter describes the baseline for biological communities and special-status plant and wildlife species in the Project area, as well as the approach to evaluating those resources.

2.1 Review of Background Information

Before performing reconnaissance biological resources surveys, ESA reviewed publicly available data, subscription-based biological resource data, and Project area–specific information. The following data sources assisted in this analysis:

- USGS topographic maps.
- Historic and current aerial imagery.
- U.S. Fish and Wildlife Service (USFWS) list of species that may be affected by projects in the area (**Appendix B**) (U.S. Fish and Wildlife Service 2024).
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) query of the Saxon and surrounding eight USGS topographic quadrangles (Appendix B) (California Department of Fish and Wildlife 2024).
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (Appendix B) (California Native Plant Society 2024).
- National Wetlands Inventory (U.S. Fish and Wildlife Service 2023).
- Soil maps from the U.S. Natural Resources Conservation Service (2023) (Appendix A).
- Interagency Ecological Program, Yolo Bypass Fish Monitoring Program (Interagency Ecological Program 2023).
- Input on current land use practices from a local land manager (Brennan pers. comm. February 22, 2023).

Background information on the soils and hydrology of the Project area was compiled and analyzed. These topics are discussed in Chapter 1.

2.2 Survey Dates, Methodology and Surveying Personnel

Reconnaissance biological resources surveys of the Project area were conducted by ESA biologists Chuck Hughes and Rebecca Acosta on September 3 and 24, 2020. The surveys were conducted to observe and characterize biological communities in the Project area and to assess

habitat quality and the potential for common and special-status plant and wildlife species to occur in the Project area or vicinity.

Chuck Hughes and Philip Brownsey conducted a focused survey for Mason's lilaeopsis and elderberry shrubs along most of the west shore of the Toe Drain and in the riparian forest on June 9, 2021. Chuck Hughes and Joseph Huang finished the elderberry survey on June 29, 2021.

A botanical survey was conducted by Chuck Hughes, Anna Schwyter, and Natalie Lamas on September 1, 7, and 22, 2023, according to federal and State guidelines. The results from this survey are described in **Appendix C**. A delineation of aquatic resources in the Project area was conducted on June 13, 14, and 20, 2023, by ESA biologists Anna Schwyter, Chuck Hughes, Amanda Segura-Moon, and Joseph Huang according to federal and State guidelines (Environmental Science Associates 2023a). The 2022–2023 wet season had approximately normal precipitation.

A habitat assessment and reconnaissance-level survey for giant garter snake (GGS) (*Thamnophis gigas*), western burrowing owl (*Athene cunicularia*), and Swainson's hawk (*Buteo swainsoni*) were conducted by ESA biologist Joseph Huang on June 9, 2021. Joseph surveyed the Project area for potential aquatic and upland habitat for giant garter snake and nesting and roosting habitat for burrowing owl and Swainson's hawk. He used a pair of 10x42 binoculars to survey the trees for old stick nests that raptors may have occupied in previous years. No protocol-level surveys for any of these species were conducted as part of the habitat assessment. Joseph Huang also surveyed for other special-status wildlife species, such as western pond turtle (WPT) (*Actinemys marmorata*) and tricolored blackbird (*Agelaius tricolor*), and common wildlife species during the survey for the other three species. See Chapter 3 (Special-Status Species) for additional species-specific information about the survey methodology, as well as Appendix C (Botanical Survey Results) for the botanical survey methodology.

2.3 Biological Communities

For the purpose of this report, the term "biological communities" means recurring functional units that are determined based on physical, hydrologic, and biologic conditions as well as current management activities. Nearly all vegetation in the Project area is dominated by either annual grasses and forbs, or perennial aquatic emergent plants including tule and bulrushes. Very few trees or shrubs grow in the Project area, except along the eastern boundary near the Toe Drain. **Figure 2-1** shows the results of mapping of biological communities in the Project area. **Table 2-1** summarizes the acreages of the respective biological communities, which are described below.

TABLE 2-1
BIOLOGICAL COMMUNITIES IN THE PROJECT AREA

Biological Community	Acreage
Managed Communities	
Managed floodplain (wetland)	299.6
Managed wetlands	182.1
Managed tule marsh (wetland)	390.2

TABLE 2-1
BIOLOGICAL COMMUNITIES IN THE PROJECT AREA

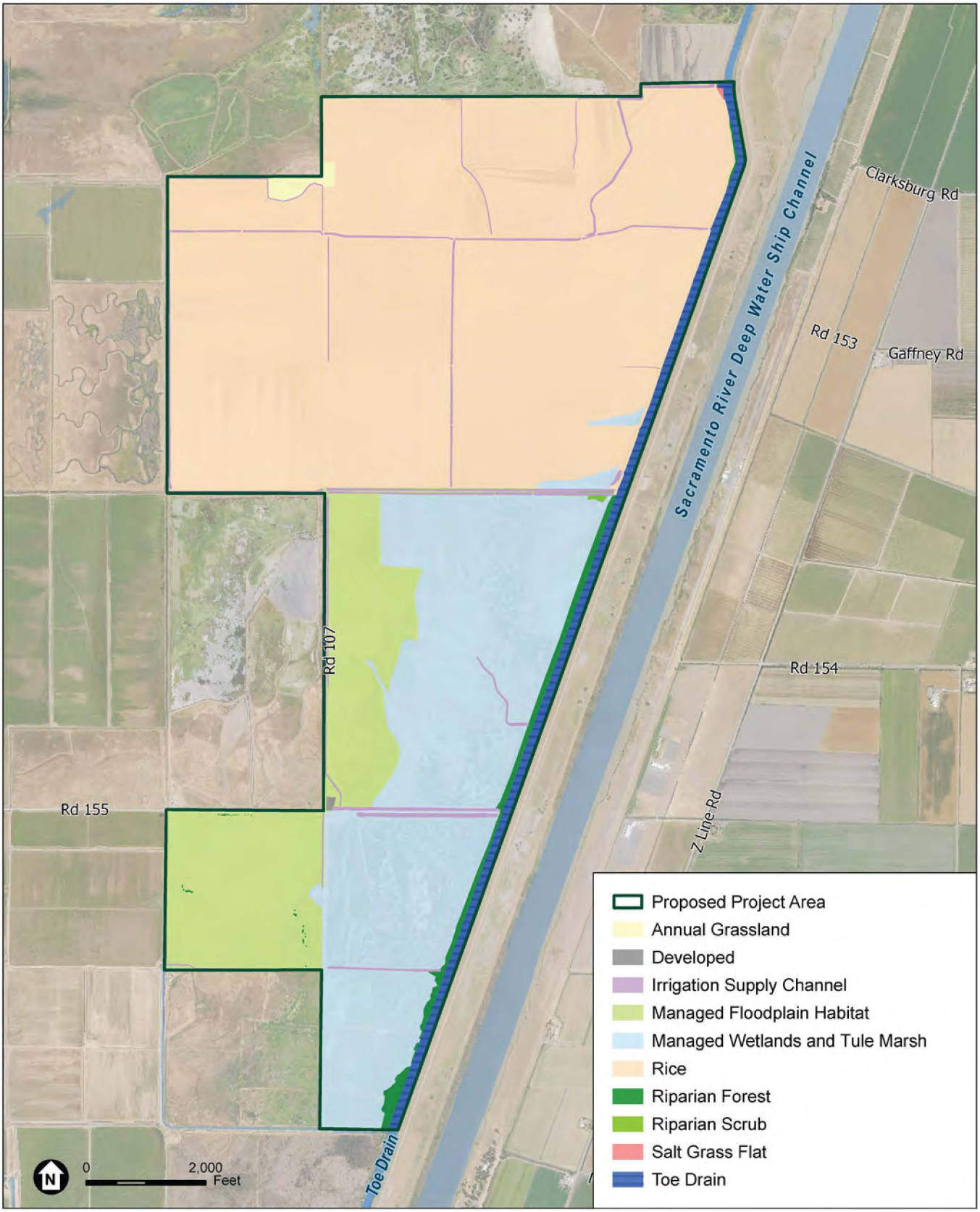
Biological Community	Acreage
Natural Communities	
Riparian forest (wetland)	26.1
Riparian scrub (wetland)	1.1
Salt grass flat (wetland)	0.4
Annual grassland	8.9
Agriculture and Developed Land Uses	
Rice (wetland)	1,205.3
Developed	0.7
Aquatic Features	
Irrigation Supply Channels (waters)	36.4
Toe Drain (waters)	60.6
Total:	**2,211.4**

Note: Total acreage is slightly off (<0.2 acre) due to rounding.
Source: Data compiled by Environmental Science Associates in 2024

"Special-status natural communities" are waters, wetlands, riparian communities, and any natural community ranked S1, S2, or S3 by CDFW (California Department of Fish and Wildlife 2020). Waters and wetlands may be regulated under the federal Clean Water Act, the State Porter-Cologne Water Quality Control Act, or both. Lakes and streams may be regulated by CDFW under the California Fish and Game Code Lake and Streambed Alteration Program.

Historical ecology can provide valuable context for understanding a site's potential to support particular biological communities and a basis for proposed restoration targets. Before the construction of extensive flood risk reduction infrastructure, the Project area was part of the expansive tidal marsh floodplain along the Sacramento River (U.S. Geological Survey 2020).

The descriptions of wildlife habitat relationships for each biological community in the sections below identify a selection of species that have the potential to occur within each biological community type. The species highlighted in these sections are intended to illustrate the predominant wildlife species that could occur; however, for the sake of brevity, the sections do not present a comprehensive list of all taxa that could occur. In addition, species with limited potential to occur in several communities have only been identified in the sections where they are most commonly expected to occur. Also, wildlife species that have been documented in the Project area through any of the field surveys or data sources analyzed in this report are identified with **bold text**. A species that was observed in the Project area and has the potential to occur in multiple biological communities is identified with bold text in all biological community descriptions where it is mentioned, not only the specific community in which it was observed. All plants listed in the biological community descriptions were observed within the Project area.



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 2-1
Biological Communities in the Proposed Project Area

Prepared by: ESA

SOURCE: NAIP 2022, ESA 2025

2.3.1 Managed Floodplain

Description

As shown in **Photo 2-1**, managed floodplain is located in the central portion of the Project area. This biological community is dominated by herbaceous grasses and forbs including beard grass (*Polypogon* spp.), white sweetclover (*Melilotus albus*), prickly lettuce (*Lactuca serriola*), dock (*Rumex* spp.), annual hair grass (*Deschampsia danthonioides*), and spikeweed (*Centromadia* spp.). Fields within the managed floodplain are irrigated periodically during the late summer or autumn and are managed primarily as a duck club, although livestock grazing also occurs in some years.

Managed floodplain in the Project area floods when the Yolo Bypass floods and also receives some irrigation inputs, primarily for agricultural purposes.

Photo 2-1. Typical managed floodplain in the north end of the Project area, September 3, 2020. View is to the south and the Toe Drain is on the far left of the photo.

Wildlife Habitat Relationships with the Managed Floodplain Community

Under non-flooded conditions, managed floodplain provides potential habitat for many terrestrial wildlife species. **Western deer mouse** (*Peromyscus sonoriensis*), **black-tailed deer** (*Odocoileus hemionus*), **California vole** (*Microtus californicus*), and **black-tailed jackrabbit** (*Lepus californicus*) are known to inhabit managed floodplain communities because they have periods where the floodplain is dry during the warm season.

Western meadowlark (*Sturnella neglecta*) and **mourning dove** (*Zenaida macroua*) may nest on the ground in the managed floodplains if the fields are dry during nesting season. Other birds that frequent this biological community include **savannah sparrow** (*Passerculus sandwichnesis*), horned lark (*Eremophila alpestris*), and ring-necked pheasant (*Phasianus colchicus*).

Reptiles are found in the grassy fields of managed floodplain. Among these species are **western fence lizard** (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), California kingsnake (*Lampropeltis californiae*), and pacific gopher snake (*Pituophis catenifer catenifer*). In wetter areas of the managed floodplain, amphibians such as **Sierran treefrogs** (*Pseudacris sierra*) and **bullfrogs** (*Lithobates catesbeianus*) may be observed.

When used to convey flow as part of the Yolo Bypass, managed floodplain serves as juvenile fish rearing habitat. For additional detail, see the Fish Habitat Optimization Report (Environmental Science Associates 2024b).

2.3.2 Managed Marsh

Description

Managed marsh (shown in **Photo 2-2**) is drier than the managed tule marsh but wetter than managed floodplain. This biological community is dominated by herbaceous grasses and forbs including cocklebur (*Xanthium strumarium*), sunflower (*Helianthus* sp.), Bermuda grass (*Cynodon dactylon*), and gumplant (*Grindelia camporum*). White sweetclover and beard grass are common in both managed marsh and managed floodplain. Tule (*Schoenoplectus acutus* var. *occidentalis*) and river bulrush (*Bolboschoenus fluviatilis*) patches occur sporadically, but their cover is much less than in the managed tule marsh. Managed marsh is influenced by seasonal flooding in the Yolo Bypass and by irrigation inputs. The plant community present in managed marsh is adapted to seasonal flooding and irrigation of shorter duration than managed tule marsh.

Wildlife Habitat Relationships with the Managed Marsh Community

Virtually the same mammals known to inhabit managed floodplain communities can also be observed in the managed marsh community when it is not flooded. Some additional mammals that can occur in both managed floodplains and managed marshes include **coyote** (*Canis latrans*), desert cottontail (*Sylvillagus audubonii*), and non-native mammals such as raccoons (*Procyon lotor*) and striped skunks (*Mephitis mephitis*).

Similarly, **western meadowlark** (*Sturnella neglecta*) and **mourning dove** (*Zenaida macroua*) may nest on the ground in the managed marshes if the marshes are dry during nesting season. Other birds that frequent this habitat community include **white-crowned sparrow** (*Zonotrichia leucophrys*), house finch (*Haemorhous mexicanus*), and lesser goldfinch (*Spinus psaltria*). In general, the bird species observed in managed floodplains are similar to those observed in managed marshes. Reptiles and amphibians that inhabit managed floodplains, such as **Sierran treefrogs**, also inhabit managed marshes.

When used to convey flow as part of the Yolo Bypass, managed marsh also serves as juvenile fish rearing habitat. For additional detail, see the Fish Habitat Optimization Report (Environmental Science Associates 2024b).

Photo 2-2. Typical managed marsh in the Project area, September 3, 2020. View is to the south and riparian forest is on the left.

2.3.3 Managed Tule Marsh

Description

Managed tule marsh (shown in **Photo 2-3**) is dominated by the taller perennial herbs, tule, and river bulrush. Areas between thick patches of these two species have vegetation similar to managed marsh, or in some areas, very low vegetation dominated by swamp prickle grass (*Crypsis schoenoides*). In a few areas in the southern end of the Project area, widely scattered trees are present in this community. All of the managed tule marsh is considered a sensitive natural community by CDFW. Managed tule marsh floods when the Yolo Bypass floods and, because of its low landscape elevation, it may become partially inundated in some areas without Yolo Bypass flooding. Irrigation inputs also support the regular inundation of these areas. Tule marsh requires perennial water and is thus restricted to regions of the Yolo Bypass with perennial water from natural and/or managed sources. Tule marsh creates habitat that persists year-round, although in the Yolo Bypass, this habitat may be disturbed by seasonal flooding that occurs during the winter months, as described in the Hydrologic Conditions Report (Environmental Science Associates 2024a).

Photo 2-3. View to the north of typical managed tule marsh in the Project area, September 24, 2020.

Wildlife Habitat Relationships with the Managed Tule Marsh Community

The same mammals known to inhabit managed marsh communities can also be observed in the managed tule marsh community in areas where it is dry.

Typical bird species observed in managed tule marsh communities include **red-winged blackbird** (*Agelaius phoeniceus*), tricolored blackbird (*Agelaius tricolor*), and **marsh wren** (*Cistothorus palustris*). All three of these species can nest in managed tule marsh communities as well.

Reptiles that may occur in managed tule marsh communities include giant garter snake, western pond turtle, and common garter snake (*Thamnophis sirtalis fitchi*). However, because this particular tule marsh community is managed, some sections may remain dry for extended periods. The reptiles observed in managed floodplains and marshes may also be observed in drier areas of managed tule marshes.

When used to convey flow as part of the Yolo Bypass, managed floodplain serves as juvenile fish rearing habitat. For additional detail, see the Fish Habitat Optimization Report (Environmental Science Associates 2024b).

2.3.4 Riparian Forest

Description

Riparian forest (shown in **Photo 2-4**) is a tree-dominated community that occurs along the Toe Drain in the south end of the Project area. The riparian forest is dominated by box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), willows (*Salix* spp.), and Fremont cottonwood (*Populus fremontii* ssp. *fremontii*). Most of the trees are within the range of 15-30 feet tall, although some trees reached around 40 feet, and the forest occurs mostly in a narrow strip between the Toe Drain and marshes in the interior of the Project area. Riparian forest is considered a sensitive natural community by CDFW. Riparian forest floods when the Yolo Bypass floods. As described in previous sections, periodic, seasonal flooding occurs most commonly during the months of December through May.

Photo 2-4. Typical riparian forest in the Project area, September 3, 2020.

Wildlife Habitat Relationships with the Riparian Forest Community

Wild turkey (*Meleagris gallopavo*), **California quail** (*Callipepla californica*), and **black-tailed deer** are known to inhabit riparian forest communities.

Oak titmouse (*Baeolophus inornatus*), dark-eyed junco (*Junco hyemalis*), ash-throated flycatcher (*Myiarchus tuberculifer*), **northern flicker** (*Colaptes auratus*), and **lesser goldfinch** (*Spinus psaltria*) may nest in riparian habitat. Cavity nesters that may utilize this habitat include **great horned owl** (*Bubo virginianus*), western bluebird (*Sialia mexicana*), and ash-throated flycatcher. Special-status birds such as **Swainson's hawk** (*Buteo swainsoni*), Cooper's hawk (*Accipiter cooperii*), and sharp-shinned hawk (*Accipiter striatus*) are known to nest in this biological community. **Red-shouldered hawk** (*Buteo lineatus*) and **red-tailed hawk** (*Buteo jamaicensis*) were also observed in the Project area. Osprey (*Pandion haliaetus*) may also occur within the Project area, as they are known to nest near riparian habitats and utilize riverine ecosystems for fishing. Heron rookeries can also occur in riparian forest trees, although none were observed in the riparian forest in the Project area.

Amphibians and reptiles are found on the forest floor where moisture is retained under fallen wood and in tree crevices. Among these species are **Sierran treefrog**, **western fence lizard**, southern alligator lizard, pacific gopher snake, western rattlesnake (*Crotalus oreganus oreganus*), and California kingsnake.

2.3.5 Riparian Scrub

Description

As shown in **Photo 2-5**, a few small areas in the central portion of the Project area are dominated by dense sandbar willow (*Salix exigua*). Sandbar willow may grow as a shrub to small tree, but these portions of the Project area all have relatively short (mostly estimated to be 10 to 15 feet in height) but very dense sandbar willow. Riparian scrub is considered a sensitive natural community by CDFW. Riparian scrub floods when the Yolo Bypass floods. Riparian scrub occurs along certain drainage ditches in the Project area. Thus, the distribution of this community also partly depends on water management activities.

Wildlife Habitat Relationships with the Riparian Scrub Community

Red-winged blackbird, **northern mockingbird** (*Mimus polyglottos*), **California scrub-jay** (*Aphelocoma californica*), and **spotted towhee** (*Pipilo maculatus*) may inhabit riparian scrub communities.

Sierran treefrogs and **bullfrogs** may inhabit the edges of the riparian scrub community because the riparian scrub is often immediately adjacent to a ditch feature.

Sandbar willows host a variety of butterflies and moths including **western tiger swallowtail** (*Papilio rutulus*), mourning cloak (*Nymphalis antiopa*), and Lourquin's admiral (*Limenitis lorquini*), as well as some gall-forming wasps (*Cynips* spp.).

Photo 2-5. View to the west of riparian scrub on either side of one of the larger ditches in the Project area, September 3, 2020.

2.3.6 Annual Grassland

Description

The annual grassland is in the highest elevation of the Project area and is less frequently inundated. Annual grassland is dominated by soft chess (*Bromus hordeaceus*), Italian rye grass (*Festuca perennis*), and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*). The area is grazed, which primarily affects the vegetation structure by discouraging the establishment of woody vegetation and reducing the overall height of herbaceous cover.

Wildlife Habitat Relationships with the Annual Grassland Community

Common small mammals expected in the Project area include western harvest mouse (*Reithrodontomys megalotis*), **deer mouse**, **black-tailed jackrabbit**, and **Botta's pocket gopher** (*Thomomys bottae*). Grasslands are important foraging grounds for aerial and ground-foraging insect eaters such as *Myotis* bat species and pallid bat (*Antrozous pallidus*). Larger mammal species such **black-tailed deer** and **coyote** may use grasslands in the Project area.

Reptiles such as gopher snakes, **western fence lizards**, southern alligator lizards, and western yellow-bellied racers (*Coluber constrictor*) may inhabit annual grasslands as well.

2.3.7 Salt Grass Flat

Description

This area along the Toe Drain in the northeast corner of the Project area is dominated by salt grass (*Distichlis spicata*) and Italian rye grass (a non-native annual grass). Salt grass flats codominant with non-native annual grasses are not considered a sensitive natural community by CDFW (California Department of Fish and Wildlife 2020). Salt grass flat within the Project area floods when the Yolo Bypass floods and is not primarily controlled by irrigation inputs. The community is associated with areas subject to tidal influence or mesic alkali soil types.

Wildlife Habitat Relationships with the Salt Grass Flat Community

Wildlife expected in the salt grass flat community is likely to closely resemble that of the annual grassland community.

2.3.8 Rice

Description

This community includes areas in rice production. The rice fields have soil berms for irrigation control that create the rice checks and were flooded during a survey conducted in June 2021 (**Photo 2-6**). The rice is present in areas at similar elevations to managed floodplain or managed marsh, and it would likely have similar hydrology to those communities in the absence of cultivation and irrigation for agriculture. Currently, fields are inundated when the Yolo Bypass floods or when irrigation is applied for the cultivation of rice. The rice irrigation season is generally May through September but is dependent on the type of rice being grown.

Wildlife Habitat Relationships with Rice Fields

Fields used from rice production provide habitat and nourishment for several species of ducks and geese as they migrate along the Pacific Flyway each year. This community is also crucial to shorebirds that nest in the fields year-round. Bird species expected to occur within this community type include **great egret** (*Ardea alba*), **great blue heron** (*A. herodias*), **snowy egret** (*Egretta thula*), **Canada goose** (*Branta canadensis*), wood duck (*Aix sponsa*), **mallard** (*Anas platyrhynchos*), and several others. Mammals found in annual grasslands are also expected to utilize the rice biological community.

Amphibians and reptiles that may be present in rice fields include western toad (*Anaxyrus boreas*), bullfrog, WPT, **western fence lizard**, gopher snake, and common garter snake. In addition, GGS often use rice fields because the rice fields are inundated during the summer and provide suitable aquatic habitat for the species to hunt for prey and seek refuge from predators.

Photo 2-6. Typical rice check in the Project area, June 9, 2021. View is to the west.

2.3.9 Ditches

Description

Figure 2-1 shows the largest ditches in the Project area. These ditches have water during much or all of the year and aquatic or emergent vegetation along their margins. Some of the irrigation delivery ditches may contain water less frequently and have exposed, mostly bare soil much of the time. Many of the ditches drain to the Toe Drain through culverts with flap gates under a dirt road. Smaller ditches that do not appear to contain water frequently or have aquatic or emergent vegetation are not shown in the figure.

Wildlife Habitat Relationships with Ditches

Ditches serve as corridors, hydrologically connecting upland areas. Wildlife use of the ditches varies according to each ditch's pattern of water conveyance. Ditches that remain inundated throughout the summer months and are connected to adjacent habitats have the potential to provide important habitat for GGS. This aquatic species commonly travels through irrigation ditches; forages for amphibians and small fish, which may be present; and uses the dry associated banks for basking and thermoregulation. Ditches with suitable hydrology also support the foraging of other aquatic wildlife such as **Sierran tree frogs**, **bullfrogs**, and dabbling ducks such as mallard.

Ditches that remain dry through most of the year and contain abundant vegetation may support foraging upland wildlife such as **song sparrow** (*Melospiza melodia*), **white-crowned sparrow**, and American goldfinch (*Carduelis tristis*) (California Department of Fish and Game 2008).

Ditches that are permanently inundated have the potential to provide aquatic habitat for a diverse assemblage of fish species, dominated by non-native species. Fish sampling in perennial waterways in the Yolo Bypass Wildlife Area, which may be representative of ditches in the Project area, resulted in the collection of 18 different species, all of which were non-native with the exception of one native fish species: Sacramento blackfish (*Orthodon microlepidotus*) (Feyrer et al. 2004). The most abundant species sampled included threadfin shad (*Dorosoma petenens*), common carp (*Cyprinus carpio*), inland silverside (*Menidia beryllina*), and white and black crappie (*Pomoxis annularis, P. nigromaculatus*) (Feyrer et al. 2004).

2.3.10 Toe Drain

Description

The entire Project area drains to the Toe Drain (shown in **Photo 2-7**), a tidal perennial waterway along the eastern edge of the Project area that becomes increasingly tidal as it connects with Cache Slough to the south. Tidal action affects the Toe Drain's water elevation as far north as Interstate 80, and the water surface elevation just north of the Project area, a few hundred feet south of Lisbon Weir, has been documented to fluctuate from 0 to 4 feet (California Department of Fish and Game 2008).

The Toe Drain receives water from the Tule Canal (to the north), western tributaries (the Willow Slough Bypass and Putah Creek; Figure 1-1), groundwater contributions, and agricultural diversions almost year-round.

Wildlife Habitat Relationships with the Toe Drain

Raptors such as osprey (*Pandion haeliatus*) will hunt along the Toe Drain to catch fish. The same wading birds (i.e., great egret, great blue heron) will hunt along the Toe Drain edge as well.

Many of the same reptiles that use rice fields and ditches may inhabit the Toe Drain, including WPT, GGS, **common garter snake**, **bullfrog**, and **Sierran tree frog**.

The tidally influenced Toe Drain provides perennial aquatic habitat for several fish species. The Toe Drain is characterized by a relatively wide (approximately 150 feet), fairly deep (more than 5 feet) channel with no canopy and little bank or overhead vegetation. The channel is homogeneous with little habitat complexity and generally low fish habitat value.

In the north end of the Project area, there is often a very narrow strip of short woody vegetation immediately adjacent to the Toe Drain. Very narrow areas of woody vegetation, and small woody saplings such as these scattered young sandbar willows in the foreground, were not mapped as a separate community.

Fish studies in the Toe Drain show that this aquatic feature likely functions as year-round habitat for resident species, as a migration corridor (e.g., anadromous species movement into Putah Creek and onto the seasonally inundated floodplain), and potentially as spawning habitat for striped bass (*Morone saxatilis*) and American shad (*Alosa sapidissima*) (Interagency Ecological Program 2023; California Department of Fish and Game 2008). Resident species are primarily non-native

and include common carp, channel catfish (*Ictalurus punctatus*), white catfish (*Ameiurus catus*), striped bass, threadfin shad, black crappie, white crappie, Sacramento blackfish, and Sacramento sucker (*Catostomus occidentalis*) (Interagency Ecological Program 2023; California Department of Fish and Game 2008).

Photo 2-7. View to the south of the Toe Drain, September 3, 2020.

2.3.11 Developed

Description

A small, developed area includes the “clubhouse” building on the Laurel G property and the adjacent gravel parking lot. The developed area generally lacks vegetation and has compacted soil. This is not a CDFW sensitive natural community.

Wildlife Habitat Relationships with the Developed Community

Although these areas are developed, they can still support wildlife. Bird species that may use these habitat types include **California scrub jay** (*Aphelocoma californica*), **northern mockingbird** (*Mimus polyglottos*), **house finch** (*Carpodacus mexicanus*), **California quail**, and western bluebird. Common mammals include **black-tailed deer**, raccoon (*Procyon lotor*), and opossum (*Didelphis virginiana*). Gopher snake and **western fence lizard** also occur in this habitat type.

2.4 Wildlife Movement Corridors

Biological communities in the Project area can serve as movement corridors that link areas of suitable wildlife habitat to amplify their benefits for wildlife. Topography and other natural factors in combination with urbanization can fragment or separate large open-space areas. The fragmentation of natural habitat can create isolated "islands" of vegetation and habitat that may not provide sufficient area to accommodate sustainable populations and can adversely affect genetic and species diversity. Retaining wildlife movement corridors ameliorates the effects of such fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished. Such movement may also promote genetic exchange between separated populations.

Many terrestrial wildlife species use the Project area as a corridor for movement, migration, and access to resources. Most notably, the Project area is located within the Pacific Flyway and its lands and waters serve as a stopover point for migrating birds to rest and feed. Specifically, the managed wetlands within the Project area provide important shelter and food resources for migratory waterfowl such as ducks and geese. In addition to the marshes, agricultural fields are used as a corridor by a number of waterfowl and shorebird species. The rice fields in the Project area, and the agricultural ditches and other aquatic features, when inundated, serve as corridors for GGS as they move throughout the region. As described below in Section 3.2.2, although the Project area does not provide optimal nesting habitat for western pond turtle, it could support the movement of individuals as they pursue food and shelter along the Toe Drain and at more inland sites. Mammals such as black-tailed deer and coyotes are likely to use upland areas as corridors to travel through the region and especially to escape floodwaters. Under non-flooded conditions, the Toe Drain is the only important aquatic corridor in the Project area. The Toe Drain allows fish, including several special-status species, to move between the Sacramento River (via Fremont Weir) and the lower Delta, and ultimately San Pablo Bay and the ocean. The Toe Drain is also the movement corridor for a population of fall-run Chinook salmon (*Oncorhynchus tshawytscha*) that spawn in Putah Creek. The Toe Drain may also be important for the maintenance of the Yolo Basin population of GGS. During non-flooded conditions, seasonal waterfowl habitat is created via irrigation within the Project area and the broader Yolo Bypass region.

Under flooded conditions, the Project area is inundated. During periods of receding floodwaters, typically during the months of March through June, the Project area transitions from flooded to non-flooded. Most water in the Project area drains to the Toe Drain; however, some existing drainage pathways within the Project area do not connect, and as a result, those ponded waters dissipate through evapotranspiration and infiltration.

During periods when Fremont Weir is overtopping, the entire Yolo Bypass functions as an active floodplain connecting the Sacramento River (above the city of Sacramento and Fremont Weir), Cache Creek, and Putah Creek, all to the north, with Cache Slough and other North Delta channels to the south. The seasonal nature of the active floodplain can result in stranding of fish if they are unable to move off the floodplain and into the Toe Drain or Tule Canal (to the north) following receding floodwaters. Fish stranding can be a natural phenomenon on both natural and managed floodplains, such as the Yolo Bypass. The Project area has had no known occurrences

of stranding and does not appear to have a higher potential for stranding than other areas of the Yolo Bypass. Several projects, including the Wallace Weir Fish Rescue Facility, the Fremont Weir Adult Fish Passage Project, and the Big Notch Project at the Fremont Weir, have been or are currently being implemented to provide passage for upstream-migrating fish at the north end of the Yolo Bypass.

2.5 Aquatic Resources

Nearly the entire Project area is dominated by hydrophytic vegetation, although in the areas highest in elevation such as the annual grassland, the vegetation is a mix of upland and facultative wetland species. The annual grassland and some of the higher areas of managed floodplain in the western Project area did not meet wetland criteria.

Soil pits were dug at 28 data points throughout the Project area to determine whether hydric soil was present. All wetland data points contained strong redoximorphic concentrations, an indicator of hydric soil. Hydric soil indicators observed included redox dark surface, depleted matrix, and redox depression. Wetland hydrology criteria observed included surface water, saturation, a high water table, sediment deposits, non-riverine drift deposits, surface soil cracks, and biotic crusts.

Table 2-2 provides a summary of aquatic resources in the Project area. Further discussion of existing aquatic resources functions is included below and in in the Aquatic Resources Delineation Report (Environmental Science Associates 2023a).

TABLE 2-2
AQUATIC RESOURCES IN THE PROJECT AREA

Feature Type—Cowardin Classification	Acres	Acreage of Presumed Waters of the State	Acreage of Presumed Waters of the United States	Linear Feet
Wetlands				
Farmed wetlands—Palustrine, farmed (Pf)	1,149.10	0	0	N/A
Managed tule marsh—Palustrine, emergent (PEM1A)	372.53	372.53	0	N/A
Managed floodplain—Palustrine, emergent (PEM1A)	175.39	175.39	0	N/A
Managed marsh—Palustrine, emergent (PEM1A)	182.81	182.81	0	N/A
Seasonal wetland—Palustrine, emergent (PEM1C)	1.95	1.95	0	N/A
Riparian forest—Palustrine, forested (PFO1)	21.11	21.11	0	N/A
Swale—Palustrine, emergent (PEM1Cx)	1.28	1.28	0	6,439.83
Subtotal	1,904.17	755.07	0	6,439.83
Other Waters				
Toe Drain Canal—Riverine tidal (R1UBVx)	60.61	60.61	60.61	18,603.52
Agricultural ditches—Riverine intermittent (R5UBFx)	23.72	23.72	23.72	73,708.87
Subtotal	84.33	84.33	84.33	92,312.39
Aquatic Resources Total:	1,988.5	**839.4**	**84.33**	**98,752.22**

NOTE: N/A = not applicable

SOURCES: Cowardin et al. 1979; data compiled by Environmental Science Associates in 2023.

Based on the results of the aquatic resources delineation and the jurisdictional analysis performed by ESA in 2023 according to the U.S. Army Corps of Engineers' (USACE's) 2023 Revised Definition of Waters of the United States,[2] it is presumed that no wetland waters of the United States and 755.07 acres of wetland waters of the State occur within the Project area. In addition, 84.33 acres of potential other (non-wetland) waters of the United States and potential other (non-wetland) waters of the State occur within the Project area. Finally, activities that may alter the bed, bank, or channel of all streams occurring within the Project area are potentially subject to Section 1600 et seq. of the Fish and Game Code (Environmental Science Associates 2023a).

Waters of the United States and State are subject to regulation by USACE under Section 404 of the Clean Water Act and by the Central Valley Regional Water Quality Control Board under the Porter-Cologne Water Quality Control Act and Section 401 of the Clean Water Act.

2.6 Current Functions and Services of Aquatic Resources

Functions of aquatic resources generally fall into three broad categories—physical, chemical, and biological—according to the Hydrogeomorphic Method Approach (Smith et al. 1995). Physical functions capture hydrologic and geomorphic processes along with topography and landscape position. Chemical functions encompass sediment, nutrient, and biogeochemical processes. Biological functions include food web, structural habitat diversity, plant community composition, and wildlife utilization. The California Rapid Assessment Method (CRAM) (California Wetlands Monitoring Workgroup 2009), which is used to measure wetland condition in California, is another useful reference for assessing wetland functions.

The baseline conditions of aquatic resources in the Project area were assessed using tools from the Hydrogeomorphic Method Approach and CRAM. The results identified physical, chemical, and biological functions of aquatic resources, some of which are currently limited. **Table 2-3** summarizes the existing functions. The proposed Project aims to improve aquatic resource functions in the Project area through targeted restoration activities. These actions will be described in the proposed Project's Restoration Plan and Basis of Design.

[2] The 2023 U.S. Supreme Court ruling in *Sackett v. Environmental Protection Agency* sharply limited the scope of the federal Clean Water Act's protection for the nation's waters. As a result of this decision, on August 29, 2023, the U.S. Environmental Protection Agency and USACE issued a final rule that amends the "Revised Definition of 'Waters of the United States'" to conform key aspects of the regulatory text to the U.S. Supreme Court's decision.

TABLE 2-3
BASELINE AQUATIC RESOURCE FUNCTIONS

Category	Function	Existing Baseline
Physical and Hydrologic	Hydroperiod	• The hydroperiod within managed community types is affected by the operation of water control structures and irrigation to meet specific management objectives. For managed marsh, managed tule marsh, and managed floodplain, the hydroperiod is controlled seasonally to meet waterfowl habitat objectives and hunting-season flooding. These habitats also function as seasonal floodplains. • Flooding occurs periodically when the Yolo Bypass is activated. • No daily tidal inundation occurs.
	Hydrologic connectivity	• There is no tidal connectivity. Hydrologic connection with the adjacent Toe Drain occurs only during the flood-up and draining periods of managed marsh and managed tule marsh. • Agricultural ditches are interconnected for irrigation and drainage.
	Topographic complexity	• There is very little topographic complexity. Most agricultural fields are level.
	Sediment deposition	• Some minimal deposition occurs on agricultural fields and within managed marsh and managed tule marsh during flood events.
Chemical	Tidal nutrient and organic carbon exchange	• Tidal nutrient exchange is limited periods (marsh draining) when nutrients are input into the Toe Drain, and no nutrient exchange when the site is dry. • Organic carbon input into the tidal system is also extremely limited and only occurs during marsh draining (early spring).
	Biogeochemical: Methyl mercury	• Methyl mercury production and export is greater in intermittently wet habitats with muted tidal/seasonal inundation, such as managed marsh and managed tule marsh, than in perennially inundated wetlands such as tidal marsh.
Biological	Structural patch richness	• There are two patch types based on CRAM (California Wetlands Monitoring Workgroup 2013) (pannes or pools on floodplain, soil cracks), which represents low structural patch richness.
	Maintenance of characteristic plant community	• Intensive management (mowing, discing) occurs to maintain waterfowl-forage plants; many non-native species. • The managed hydroperiod supports only seasonal inundation, which eliminates typical low marsh plant community (tules) in many areas.
	Utilization by fish	• Fish, including juvenile Chinook salmon and delta smelt, have no access to managed marsh and managed tule marsh during non-flooding conditions.
	Special-status plants	• Managed marsh and agricultural fields support poor habitat for special-status plants because of managed hydrology and annual mowing/discing.
	Maintenance of invertebrate prey pool	• Invertebrate production in managed marsh is not available for fish in the Toe Drain and the larger Delta system.
	Utilization by wildlife	• Agricultural areas generally support poor habitat for wildlife, with the exception of Swainson's hawk foraging habitat and use of these areas and GGS foraging in rice fields. • Waterfowl and wading birds utilize managed marsh and managed tule marsh, which are managed specifically to benefit migratory and breeding waterfowl. • Suitable habitat for GGS and WPT is available in agricultural ditches with summer inundation.

NOTES: CRAM = California Rapid Assessment Method; Delta = Sacramento–San Joaquin Delta; GGS = giant garter snake; WPT = western pond turtle

The descriptions above refer to the aggregate condition of all community types within the Project area. Individual community types are called out where such distinctions are warranted.

SOURCE: Data compiled by Environmental Science Associates in 2024

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CHAPTER 3
Special-Status Species

Several species known to occur in or near the Project area are protected by federal and/or State endangered species laws or have been designated as CDFW species of special concern. The special-status species evaluated in this report fall into the following categories:

- Species listed (or candidate or proposed) under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA), or under the California Native Plant Protection Act.
- CDFW species of special concern or species fully protected by CDFW (Fish and Game Code Sections 3511, 4700, 5050, and 5515).
- Species that are Rank 1 or 2 in the CNPS Inventory of Rare and Endangered Plants of California[3] (California Native Plant Society 2023).

Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides a definition of rare, endangered, or threatened species that are not included in any listing.[4] The species that fall into the categories listed above typically are considered to meet the criteria described in CEQA Guidelines Section 15380(b) and are evaluated during the CEQA reviews for projects.

Each species with potential to occur in the Project area or vicinity was assessed individually based on its habitat requirements and distribution relative to biological communities and habitat features that occur in and around the Project area. Special-status species and biological communities identified during queries of the USFWS, CNDDB, and CNPS databases were used to compile a table of evaluated resources, presented in **Appendix D**. The table identifies each special-status species or community, summarizes its general habitat requirements, and assesses its potential to occur in the Project area. The "Potential for Occurrence" categories are defined as follows:

- **None:** The Project area does not support suitable habitat for a particular species, does not provide soils required for the species to inhabit, or is outside of the species' known elevation or geographic range.
- **Low:** The Project area only provides very low-quality habitat for a particular species.

[3] The CNPS Rank 4 Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) was incidentally observed to occur widely in the Project area. For additional detail, see the Botanical Survey Memorandum (Appendix C).

[4] For example, vascular plants listed as rare or endangered or as Rank 1 or 2 by CNPS are considered to meet Section 15380(b) requirements.

- **Moderate:** The species has not been documented in the Project area or vicinity, but the Project area is within the known current range of the species and it provides suitable habitat for a particular species.
- **High:** The species has not been documented in the Project area, but the Project area provides ideal habitat conditions for a particular species and/or known populations occur in the immediate area of the Project area.
- **Present:** The species was observed during the biological resources surveys or by a reliable source within the Project area.

Species that have a moderate or high potential to occur or are present in the Project area are discussed further in Section 3.1 (Special-Status Plants) and Section 3.2 (Special-Status Wildlife).

The following discussions summarize the special-status species with potential to occur in the Project area and vicinity. For a comprehensive list of species considered in the analysis, see Appendix D.

3.1 Special-Status Plants

The Project area has no or low potential to support most of the special-status plants that were analyzed based on the database queries. Many of these plant species require vernal pools or high levels of soil alkalinity that are absent from the Project area. Nine species were determined to have moderate potential to occur because they have less specific habitat requirements and either tolerate some soil disturbance and altered hydrology or may spread relatively easily into managed lands. **Table 3-1** is included below as a summary of the plants identified in Appendix D that were determined to have moderate or high potential to occur, or that are present in the Project area.

A protocol botanical survey was conducted according to USFWS and CDFW guidelines (U.S. Fish and Wildlife Service 2000; California Department of Fish and Wildlife 2018), as applicable. Full results of the survey are documented separately (Environmental Science Associates 2023b) (**Appendix C**). The botanical survey was conducted on the following dates:

- *September 3 and 24, 2020—Chuck Hughes and Rebecca Acosta.* A general biological reconnaissance survey was conducted on these dates. The survey involved recording plants observed and conducting an initial evaluation of the Project area for special-status plants. There was an initial detection of Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*).
- *June 9, 2021—Chuck Hughes and Philip Brownsey.* This survey focused on the margin of the Toe Drain at low tide for Mason's lilaeopsis (*Lilaeopsis masonii*) and Delta mudwort (*Limosella australis*) (see the discussion below).
- *September 1, 2023—Chuck Hughes.* This survey focused primarily on mapping the extent of Parry's rough tarplant and searching agricultural ditches for Sanford's arrowhead.
- *September 7, 2023—Chuck Hughes and Anna Schwyter.* This was a general botanical survey and also included part of the margin of the Toe Drain at low tide that was not included in the 2021 survey.
- *September 22, 2023—Chuck Hughes and Natalie Lamas.* This was a general botanical survey.

TABLE 3-1
SPECIAL-STATUS PLANTS

Scientific Name **Common Name**	**Listing Status USFWS/ CDFW/CRPR**	**Habitat**	**Potential to Occur[1]**
Centromadia parryi ssp. *parryi* Pappose tarplant	—/—/1B.2	Annual herb generally found in vernally mesic alkaline grassland and coastal prairie, alkaline springs and seeps, and coastal salt marshes and swamps. Blooms May–November.	**Moderate:** There is little alkaline influence, but this subspecies has been reported regionally and is somewhat tolerant of land disturbance.
Eryngium jepsonii Jepson's coyote thistle	—/—/1B.2	Perennial herb found on moist clay soil in valley and foothill grasslands and vernal pools. Known from the southern inner north Coast Ranges, deltaic Great Valley, and San Francisco Bay. Blooms April–August.	**Moderate:** There are suitable soils and recent nearby records, but the history of land use, altered hydrology, and lack of vernal pools in the Project area limits the likelihood.
Extriplex joaquinana San Joaquin spearscale	—/—/1B.2	Annual herb found in alkaline chenopod scrub, meadows and seeps, playas, and valley and foothill grassland. Blooms April–October.	**Moderate:** There is little alkaline influence, but there are recent nearby records. The history of land use in the Project area limits the likelihood.
Hibiscus lasiocarpus var. *occidentalis* Woolly rose-mallow	—/—/1B.2	Perennial herb found in freshwater wetlands, marshes, and wet banks. May grow in riprap on levee slopes. Blooms June–September.	**Moderate:** The margins of larger ditches in the Project area with summertime water provide potential habitat.
Lilaeopsis masonii Mason's lilaeopsis	—/CR/1B.1	Perennial rhizomatous herb occurring in freshwater marsh, marsh and swamp, riparian scrub, and wetland. Blooms April–November.	**Moderate:** The margins of the Toe Drain provide potential habitat and there are records on the Toe Drain adjacent to the Project area (part of CNDDB Occurrence #223). Most of the Toe Drain is outside the Project area, but a small portion lies within it.
Limosella australis Delta mudwort	—/—/2B.1	Perennial stoloniferous herb occurring in brackish marsh, freshwater marsh, marsh and swamp, riparian scrub, and wetland. Blooms May–August.	**Moderate:** The margins of the Toe Drain provide potential habitat. Most of the Toe Drain is outside the Project area, but a small portion lies within it.
Sagittaria sanfordii Sanford's arrowhead	—/—/1B.2	Found in assorted freshwater habitats including marshes, swamps, and seasonal drainages. Blooms May–October.	**Moderate:** Ditches in the Project area with summertime water provide potential habitat.
Scutellaria lateriflora Side-flowering skullcap	—/—/2B.2	Perennial rhizomatous herb occurring in marsh and swamp, meadow and seep, and wetlands. Blooms July–September.	**Moderate:** Managed tule marsh and managed marsh in the Project area may provide potential habitat, although artificial hydrology and historic land use reduce the likelihood of presence.
Symphyotrichum lentum Suisun marsh aster	—/—/1B.2	Perennial rhizomatous herb occurring in brackish marsh, and freshwater. Blooms April–November.	**Moderate:** The margins of the Toe Drain provide potential habitat and there are records on the Toe Drain south of the Project area. Most of the Toe Drain is outside the Project area, but a small portion lies within it.

NOTES: CDFW = California Department of Fish and Wildlife; CNDDB = California Natural Diversity Database; CRPR = California Rare Plant Rank; CR = California Rare listing; Project area = Tide's End Multibenefit Restoration Project area; USFWS = U.S. Fish and Wildlife Service

For status codes, see Appendix D.

1. None of the species listed in the table were observed during botanical surveys of the Project area.

Botanical surveys were conducted during the evident and identifiable period for special-status plants with at least a moderate potential to occur in the Project area. Botanical surveys consisted of searching systematically through fields that were not in agricultural production, including areas of grassland, managed floodplain, managed marsh, managed tule marsh, riparian forest, and riparian scrub. Nearly all of the northern portion of the Project area (approximately 1,200 acres) was in rice production in 2023. A few of the fields in the north were fallow in 2023 and were searched during the botanical survey. The survey focused on the margins of these fields, where richness of plant species was greater. In the central and southern portions of the Project area, more survey time was spent in areas of managed tule marsh and riparian forest, which have the best suitable habitat for most of the special-status plants with potential to occur.

One of the plants with moderate potential to occur, Mason's lilaeopsis, is listed as Rare under the California Native Plant Protection Act. Take of California Native Plant Protection Act plants may be authorized under an incidental take permit issued under the same regulations as plants listed under the CESA. There is a CNDDB record of Mason's lilaeopsis in the Toe Drain adjacent to the Project area, but no further text notes on the specific area. Mason's lilaeopsis grows on exposed or sparsely vegetated mud, generally below the high-tide level on the immediate edge of open water. Mason's lilaeopsis is short, up to a few inches in height. Occurrences may be very small, less than a square foot in area.

A focused survey was conducted on June 9, 2021, along the west shore of the Toe Drain, except along the Yolo Basin property, for Mason's lilaeopsis during its evident and identifiable period, and during low tide, by staff familiar with the species. The Toe Drain along the Yolo Basin property was surveyed on September 7, 2023. Mason's lilaeopsis was not found during the surveys. The west shore of the Toe Drain provides limited suitable habitat for Mason's lilaeopsis because much of the shoreline has a near-vertical, or sometimes undercut, shore within the suitable tidal elevation range (see **Photo 3-1**). In addition, some areas of the shore are covered with trees, mostly willows, or Himalayan blackberries, which create dense shade at the soil surface. It appeared during the survey that the east shore of the Toe Drain provided better habitat for Mason's lilaeopsis because the shoreline was more gently sloped with more sparsely vegetated mud or tules within the suitable tidal elevation range, and there was much less cover of tall vegetation creating shade.

None of the nine plants with moderate potential to occur were found. However, the CNPS Rank 4 Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) was found to occur widely in the Project area and throughout the Yolo Bypass (see Appendix C). CNPS Rank 4 plant species may or may not be considered during CEQA review at the discretion of the CEQA lead agency.

Much of the west shore of the Toe Drain is poor habitat for Mason's lilaeopsis because the shore is nearly vertical and undercut, which does not create suitable conditions within the narrow suitable tidal elevation range. Here the mud patch exposed at low tide is too low in elevation to support Mason's lilaeopsis, and as a result is completely unvegetated. Above that, the undercut slope is nearly vertical and thickly vegetated with herbaceous vegetation, creating poor conditions for Mason's lilaeopsis.

Photo 3-1. West Shore of the Toe Drain.

3.2 Special-Status Wildlife Species

Ten special-status terrestrial wildlife species are present or have at least a moderate potential to occur in the Project area. The following sections briefly describe each of these species.

3.2.1 Western Pond Turtle

The WPT is a CDFW species of special concern that is also proposed for federal listing as threatened. This species has widespread distribution in California and likely occurs in the Toe Drain, and possibly in larger ditches in the Project area during the dry season when the ditches are used for irrigation. The Project area may provide poor nesting habitat, given the flooding in the Yolo Bypass. The WPT lays eggs in the ground generally from late April to late July; incubation ranges from 80 days to more than 100 days. In Northern California, hatchlings overwinter in the nest chamber after hatching until the next spring (Yolo Habitat Conservancy 2018).

The Yolo Habitat Conservation Plan (HCP) (Yolo Habitat Conservancy 2018) uses a spatial model that identifies WPT nesting and overwintering habitat either in or adjacent to the Project area. The resulting map of the model for the HCP is very coarse and at the scale of the entire county. Although it is useful for the purposes of the HCP, the resulting map does not reflect conditions in the Project area. The levee for the Sacramento River Deep Water Ship Channel, on the other side of the Toe Drain east of the Project area, may provide better nesting opportunities

for WPT because it is both close to permanent water and includes upland areas above the elevation of flooding in the Yolo Bypass.

3.2.2 Giant Garter Snake

The Project area is in the Yolo Basin population of GGS, which is federally listed and State-listed as threatened. There are four CNDDB records either in or adjacent to the Project area (#250, #308, #309, and #310), representing six observations of GGS individuals between 2008 and 2012. A GGS habitat assessment was conducted in the Project area by Joseph Huang who holds a U.S. Fish and Wildlife Service 10(a)(1)(A) Recovery Permit for the species. He identified all potential aquatic habitat for GGS in the Project area, which includes drainage ditches, the Toe Drain, and rice fields. The upland areas adjacent to the aquatic features were surveyed for upland refugia the species can occupy, including soil cracks and fissures, riprap, and small mammal burrows.

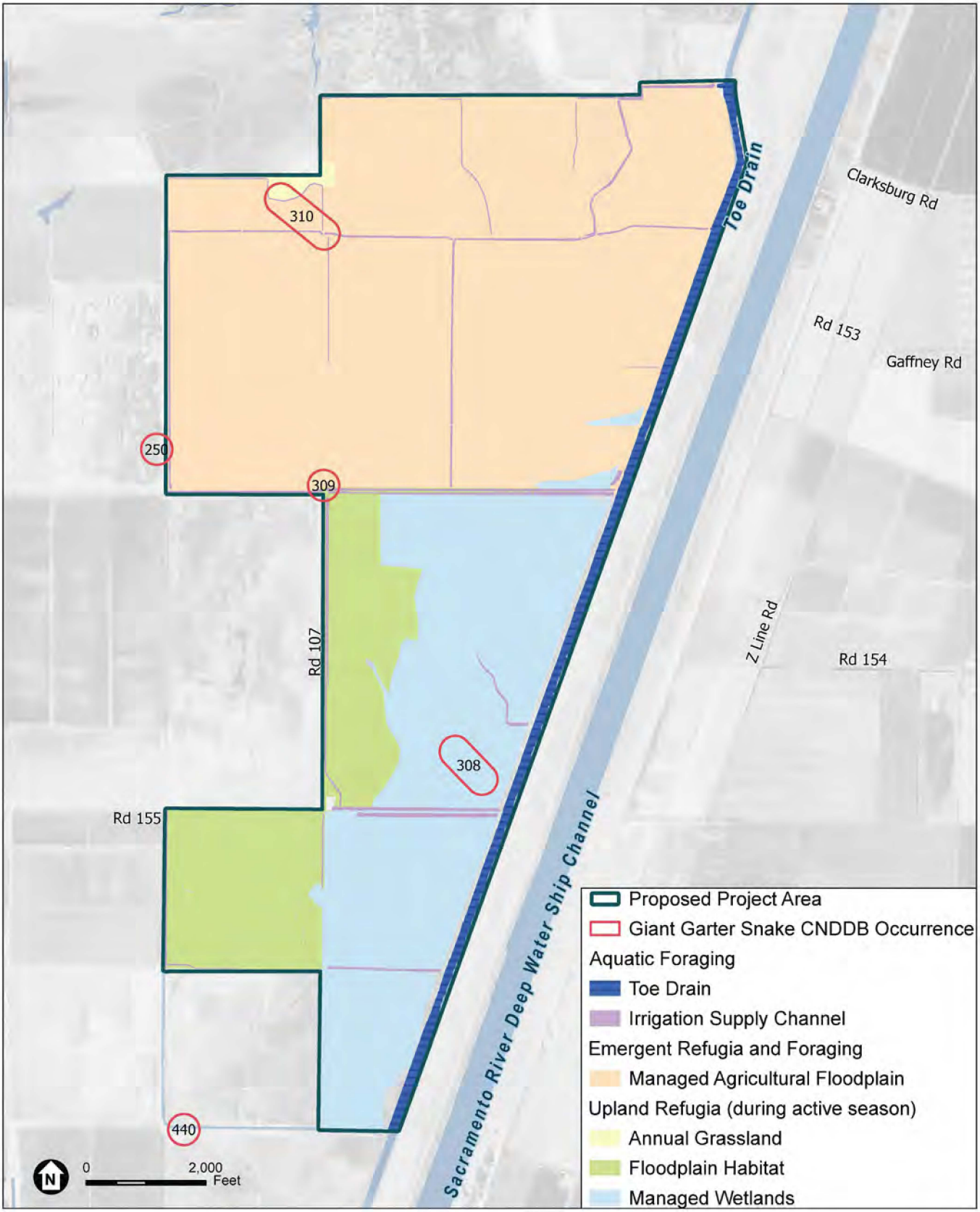
That habitat assessment determined that this species likely uses the Toe Drain and larger ditches with more open water in the Project area during the summer because those were determined to provide suitable aquatic habitat. Any waterways with dense vegetation were considered either unsuitable or marginally suitable aquatic habitat. Aquatic features that do not contain water during the GGS active season were considered unsuitable aquatic habitat for the species.

Surface-level soil cracks observed in the Project area may provide temporary upland refugia for GGS. However, overwintering snakes may make little or no use of the Project area, given the general lack of burrows and the likelihood of flooding. The nearby levee for the Sacramento River Deep Water Ship Channel may provide overwintering habitat for GGS. **Figure 3-1** shows the predicted extent of existing GGS habitat within the Project area. An area was considered potential habitat if it was inundated during reconnaissance surveys or known to convey water during the summer months when GGS are active. Areas currently managed for waterfowl hunting were observed to be dry during surveys in June. These areas rely on supplemental water inputs for summer inundation and based on present operations and water management, they are not expected to provide summer aquatic habitat for GGS.

3.2.3 Western Burrowing Owl

The western burrowing owl (*Athene cunicularia*), a CDFW species of special concern, has widespread distribution in California and is dependent on fossorial mammal activity for its burrow habitat. The Project area was surveyed for burrowing owl individuals and their roosting and nesting habitat, including California ground squirrel (*Otospermophilus beecheyi*) burrows, culverts, and debris piles.

Given the annual (or occasionally biannual) flooding in the bypass, this flooding decreases opportunities for fossorial mammals to create extensive burrow complexes the species would use. No burrowing owls, California ground squirrels, and ground squirrel burrows were observed during the surveys. Although there are culverts in the Project area, most of them have water running through them. However, when the culverts are dry, burrowing owls may opportunistically occupy them. Burrowing owls also have potential to occur in the Project Area while foraging in some of the grassland and marsh habitats when it is not flooded. The CNDDB has 29 occurrence



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TIDE'S END

Prepared by: ESA

Note: GGS winter brumation habitat is absent from the proposed Project area. While superficial soil cracks are present and suitable for temporary refugia, more extensive soil cracks and burrows suitable for winter brumation are absent. Also, the proposed Project area is prone to flooding, further decreasing GGS brumation potential.

Tide's End Multibenefit Restoration Project

Figure 3-1
Giant Garter Snake Habitat

SOURCE: NAIP 2022, CDFW 2024, ESA 2025

records dating from 1982 to 2020 of the species within a 5-mile radius. However, with the lack of any burrows and minimal alternative burrow habitat, such as dry culverts, for the species to occupy, it is unlikely that the species would occur in the Project Area on a long-term basis.

3.2.4 Tricolored Blackbird

The managed tule marsh and sandbar willow scrub provide potential nesting habitat for the tricolored blackbird, which is State-listed as threatened. Nearly the entire Project area provides potential foraging habitat. There is one CNDDB occurrence within 5 miles of the Project area located approximately 3.9 miles to the north in the Yolo Bypass Wildlife Area recorded in 2005. No other CNDDB occurrence records for the species are within a 5-mile radius.

3.2.5 Swainson's Hawk

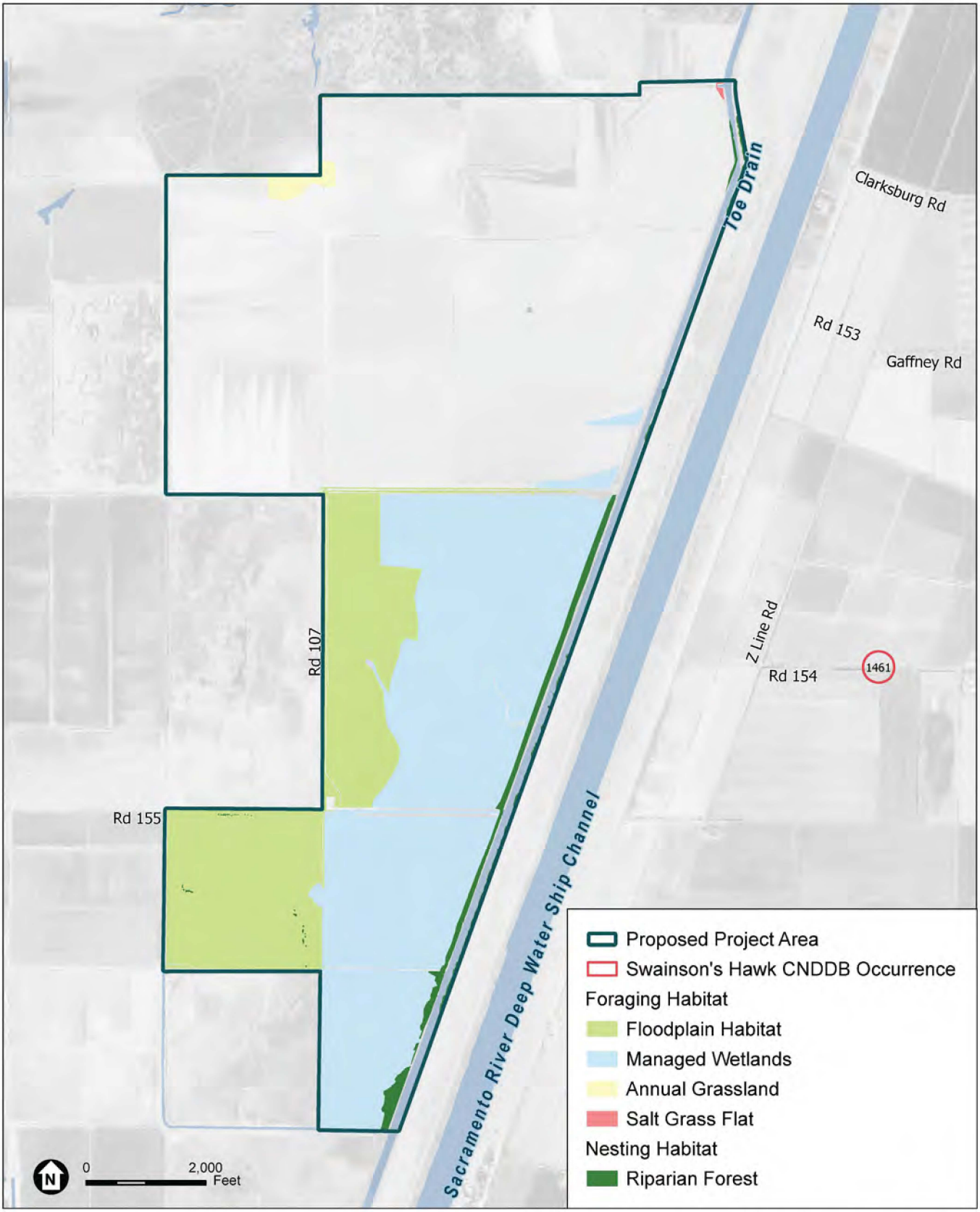
Larger trees were identified during the survey of the Project area, which may provide suitable nesting habitat for raptors, including Swainson's hawk. Trees on the Williams property at the south end of the Project area are potential nesting habitat for the Swainson's hawk, which is State-listed as threatened, although many of the trees are smaller than the size typically identified as Swainson's hawk's nesting habitat. The grassland and dry open fields in the Project area are considered suitable foraging habitat for the species.

There are several CNDDB records of nesting Swainson's hawks within approximately 1 mile of the Project area, and Swainson's hawks were observed over the Project area during the field survey. **Figure 3-2** shows the predicted extent of Swainson's hawk foraging and potential nesting habitats in the Project area. The California Wildlife Habitat Relationships (CWHR) Biogeographic Information and Observation System (BIOS) web application (CDFW 2025) has a Swainson's hawk predicted habitat layer that shows there is mostly moderate quality habitat for the species in the north and some areas of both moderate and high quality habitat to the south. The high and moderate quality habitat in the CWHR BIOS predicted habitat model mostly coincides with the foraging and nesting habitat map in Figure 3-2. Since the north portion of the Project area mostly consists of rice fields that are inundated during the spring and summer season, Figure 3-2 does not have it mapped as foraging habitat, which differs from the CWHR BIOS predicated habitat identifying the area as moderate quality habitat.

The riparian forest is the potential nesting habitat in the Project area because that community contains nearly all of the trees present (Swainson's Hawk Technical Advisory Committee 2000). No other suitable nest trees for Swainson's hawk were observed during the surveys conducted in the Project area. There are suitable nest trees across the Toe Drain that the species can use as well.

3.2.6 Least Bell's Vireo

The least Bell's vireo (*Vireo bellii pusillus*) is State-listed and federally listed as endangered. This species nests primarily in willow-dominated riparian forests, but occasionally forages and nests in oak trees as well. The riparian forest and riparian scrub habitats provide potential foraging and nesting habitat for the species. However, this species is not commonly observed in the Sacramento



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 3-2
Swainson's Hawk Habitat

Prepared by: ESA

SOURCE: NAIP 2022, CDFW 2024, ESA 2025

Valley, and the CNDDB occurrence record for the species was in a location 6.5 miles to the north in the Yolo Bypass Wildlife Area in 2011. No vireos were observed during the surveys of the Project area. Because it is known to occur in the wildlife area of the Yolo Bypass to the north, there is potential for this species to occur.

The grass- and herb-dominated biological communities (managed floodplain, managed marsh, annual grassland, and salt grass flat) provide foraging habitat for Swainson's hawk.

3.2.7 Other Special-Status Birds

The federal Migratory Bird Treaty Act and the California Fish and Game Code regulate take of most species of birds that have the potential to occur or nest in the Project area, including mountain plover (*Charadrius montanus*) (wintering habitat), northern harrier (*Circus hudsonius*), and song sparrow ("Modesto" population; *Melospiza melodia*), all CDFW species of special concern, as well as white-tailed kite (*Elanus leucurus*), a CDFW fully protected species. ESA biologists have observed northern harrier, song sparrow, and white-tailed kite in the Project area.

3.3 Special-Status Fish

The Project area supports several special-status fish species and the Yolo Bypass Fish Monitoring Program (YBFMP), which collects long-term data on fish, invertebrates, chlorophyll, and water quality in the Yolo Bypass, has documented their occurrence. The goal of the YBFMP is to better understand the life history of native fishes using the habitat provided and ecological role played by the Yolo Bypass in the larger San Francisco Bay-Delta ecosystem.

In addition to describing regulatory status and generalized life history, catch data from the YBFMP were summarized to identify the seasonal presence of special-status fish species. The following observations were made using fish catch data acquired from the YBFMP for the years 2011–2023, with 2023 being the most recent year with available data from the program.

3.3.1 Central Valley Steelhead

The Central Valley steelhead (*Oncorhynchus mykiss*) distinct population segment (DPS) is federally listed as threatened. This DPS includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin rivers and their tributaries (McEwan and Jackson 1996). Steelhead have a complex life history, including the capability to be anadromous or resident (referred to as "rainbow trout") (Moyle 2002). Anadromous species spend most or a portion of their adult lives in the ocean, then migrate back into fresh water to reproduce. Spawning and rearing habitat for steelhead typically occurs in perennial streams with clear, cool to cold, fast-flowing water with high dissolved oxygen content and abundant gravels and riffles upstream of the Yolo Bypass (and Project area) (McEwan and Jackson 1996). Migration into fresh water begins in August and peaks in September–October, after which the steelhead hold until flows are sufficiently high to enable migration (Moyle 2002). Spawning begins in late December and peaks in February–March (Busby et al. 1996). After steelhead fry emerge from spawning gravels, they continue to grow and mature in freshwater for one to three years before emigrating to the ocean

(Moyle 2002). Unlike salmon, steelhead do not necessarily die after spawning and can spawn more than one time.

Adult and juvenile steelhead may move through the portions of the Yolo Bypass on their way to and from the ocean (i.e., adult migration and juvenile rearing and emigration) and have been documented in the Yolo Bypass and Toe Drain (Sommer et al. 2001; Interagency Ecological Program 2023). Steelhead are seasonally present in the Yolo Bypass, including the Toe Drain in the Project area, and have been observed at sample stations immediately adjacent to the Project area. Steelhead presence was noted during the months of February through May, and in November and December (Interagency Ecological Program 2023).

Steelhead have not been observed during the summer months, likely because of unsuitable water temperature conditions. During the spring months, steelhead rear in the Yolo Bypass while it is an inundated floodplain and in the Toe Drain during their out-migration. Finally, during the early winter months, steelhead are present in the Yolo Bypass in the Toe Drain in the vicinity of the Project area. The month with the highest mean annual catch is March, when steelhead are rearing (Interagency Ecological Program 2023).

3.3.2 Chinook Salmon

Special-status Chinook salmon with potential to occur in the Yolo Bypass consist of four evolutionarily significant units (ESUs): Central Valley fall-run, Central Valley late fall-run, Sacramento River winter-run, and Central Valley spring-run. Adult and juvenile Chinook salmon may move through portions of the Yolo Bypass on their way to and from the ocean (i.e., adult migration and juvenile rearing and emigration). Chinook salmon have been documented occupying in the Yolo Bypass and Toe Drain (Interagency Ecological Program 2023).

The Sacramento River winter-run Chinook salmon ESU is listed as endangered under both the CESA and the FESA (*Federal Register* [FR] Title 59, page 440 [59 FR 440], January 4, 1994). Winter-run Chinook salmon return to the upper Sacramento River between December and July but delay spawning until the spring and summer (April–August) (Moyle 2002). Juveniles typically spend five to nine months in the river and Delta before entering the ocean (Moyle 2002).

The Central Valley spring-run Chinook salmon ESU is listed as threatened under both the CESA and the FESA (50 FR 50394, September 16, 1999). Spring-run Chinook salmon enter the Sacramento River system between March and September and move upstream into the headwaters, where they hold in pools until they spawn between August and October (Moyle 2002). Juveniles typically emigrate from the tributaries from mid-November through June; however, some juveniles spend a year in the streams and emigrate as yearlings during the following October (Moyle 2002).

The Central Valley fall- and late fall–run Chinook salmon ESUs are federal species of concern. Fall-run Chinook salmon is the most widely distributed and most numerous run occurring in the Sacramento and San Joaquin rivers and their tributaries (McEwan and Jackson 1996). Fall-run juveniles typically rear in fresh water for up to five months before migrating to sea. Fall-run Chinook salmon have historically spawned in Putah Creek and, after decades of sparse

occurrences, returned to spawn in lower Putah Creek following changes in flow management and other restoration efforts (California Department of Fish and Game 2008).

Chinook salmon occur seasonally in the Project area. Over the 13-year period between 2011 and 2023, Chinook salmon presence was documented at all of the sample stations in the Toe Drain closest to the Project area. Chinook salmon were observed between January and June, and between September and December, with no observations at any sample stations during July and August for the entire sample size (Interagency Ecological Program 2023).

Based on the mean annual catch data provided by the YBFMP and on Chinook salmon life history timing, Chinook salmon are typically present during January to May, especially in wet years (presumably during years when Fremont Weir overtops). After May, there may be a few juvenile Chinook salmon in the Yolo Bypass; in July and August, they are not present. This is most likely because of unsuitable water temperatures (Interagency Ecological Program 2023). Adult Chinook salmon start to return to the Yolo Bypass in October and into early winter on their spawning migrations. When the Yolo Bypass is flooded during overtopping and inundation events, the Project area and the rest of the Yolo Bypass represent some of the most important seasonal floodplain habitat available for Chinook salmon in the region (Sommer et al. 2001; Feyrer et al. 2006). Juvenile Chinook salmon reared in the Yolo Bypass floodplain have demonstrated better growth and survival than those reared in the mainstem Sacramento River (Johnston et al. 2018). Additionally, increasing scientific evidence points toward fish body size upon ocean entry as a leading factor in an individual's chance at returning from the ocean to spawn (Katz et al. 2017).

3.3.3 Green Sturgeon

The southern DPS of North American green sturgeon (*Acipenser medirostris*) is listed as threatened by the National Marine Fisheries Service under the FESA (71 FR 17757, April 7, 2006). Green sturgeon occur in the lower reaches of large rivers, including the Sacramento–San Joaquin river basins, and in the Eel, Mad, Klamath, and Smith rivers (Moyle et al. 1992). Green sturgeon adults and juveniles occur throughout the upper Sacramento River, based on observations incidental to winter-run Chinook salmon monitoring at the Red Bluff Diversion Dam in Tehama County (National Marine Fisheries Service 2005).

Green sturgeon spawn predominantly in the upper Sacramento River, upstream of the Project area. Juveniles inhabit the Delta until they are approximately four to six years old, when they migrate to the ocean (Kohlhorst et al. 1991).

The Yolo Bypass serves as a migration corridor for adult and juvenile anadromous fish during Fremont Weir overtopping events. The perennially inundated areas of the Yolo Bypass such as the Tule Canal and Toe Drain (including portions in the Project area) are known to be used by green sturgeon during low-flow periods (National Marine Fisheries Service 2019). During Fremont Weir overtopping events, flows within the Yolo Bypass can be much greater than flows in the Sacramento River, attracting anadromous fish migrating up the Sacramento River into the Yolo Bypass at the Cache Slough Complex (U.S. Bureau of Reclamation and California Department of Water Resources 2019). Moreover, in years when Fremont Weir does not spill,

westside tributary and drainage canal flows can attract anadromous fish, including green sturgeon, into the Yolo Bypass, particularly during periods of high tides and low Sacramento River flows. Fish attracted by westside stream and drainage canal flows have been observed migrating upstream through the Toe Drain (California Department of Fish and Wildlife 2019). Green sturgeon have been regularly recovered during fish rescues immediately below Fremont Weir after the drainage of the Yolo Bypass. Recent efforts to improve adult passage at Fremont Weir are intended to address this issue.

3.3.4 Delta Smelt

Delta smelt (*Hypomesus transpacificus*), federally listed as threatened and State-listed as endangered, occur in the Delta where, for most of the year, they are typically associated with the freshwater edge of the salt-water/freshwater mixing zone, in the portion of the water column that has relatively low water velocities. The species moves inland to freshwater portions of the Delta for spawning. Spawning season varies from year to year and may occur from February to July but occurs mainly from April through May (Moyle 2002). The lower Yolo Bypass, including the Project area, is a known spawning area for this species (U.S. Fish and Wildlife Service 2004). Delta smelt tolerate a wide range of salinity levels and typically rear in shallow fresh or slightly brackish waters of the Delta (Moyle 2002).

Delta smelt have been captured in the Toe Drain of the Yolo Bypass in the vicinity of the Project area (Sommer et al. 2001; Interagency Ecological Program 2023). California Department of Water Resources monitoring in the Toe Drain (rotary screw trap located within one-half mile south of the Project area) observed a higher number of delta smelt in the Yolo Bypass in more recent years than in the late 1990s and early 2000s, in contrast to declining trends observed in other surveys in the Delta (Mahardja et al. 2019). The rotary screw trap in the Toe Drain (operated January–June) generally caught adult delta smelt between February and April and juvenile delta smelt May through June (Mahardja et al. 2019). These documented occurrences are indicative of delta smelt spawning and rearing in the Toe Drain in the vicinity of the Project area.

3.3.5 Longfin Smelt

Longfin smelt (*Spirinchus thaleichthys*) is a small, planktivorous fish species that is State-listed as threatened and proposed for federal listing as endangered (Bay-Delta DPS). This species is found in several Pacific coast estuaries from San Francisco Bay to Prince William Sound, Alaska. Longfin smelt can tolerate a broad range of salinity concentrations, ranging from fresh water to sea water. Spawning is believed to occur in the Sacramento and San Joaquin rivers and adjacent sloughs. Spawning may take place as early as November and may extend into June, with the peak spawning period occurring from December to April (Baxter 1999; Moyle 2002).

Adult longfin smelt are found mainly in Suisun, San Pablo, and San Francisco bays, although their distribution shifts upstream into the western Delta in years of low outflow (Baxter 1999; Moyle 2002). Dispersal of longfin smelt larvae downstream is likely dependent on the level of freshwater flow, with transport likely being reduced in drought years (Grimaldo et al. 2016). Longfin smelt have been captured in the Toe Drain (Interagency Ecological Program 2023).

3.3.6 Sacramento Splittail

Sacramento splittail (*Pogonichthys macrolepidotus*) was delisted from its federal status of threatened, but it remains a CDFW species of special concern. This large cyprinid (minnow family) is endemic to California and occurs in sloughs, lakes, and rivers of the Central Valley (Moyle 2002). Sacramento splittail spawn and rear on terrestrial vegetation and debris on floodplains inundated by high spring flows (i.e., late February through April) (Moyle 2002). In wet years, Sacramento splittail are commonly found in the Putah Creek Sinks, in the region where Putah Creek crosses the Yolo Bypass; and as discussed above, the Yolo Bypass provides valuable spawning and rearing habitat for splittail (Sommer et al. 1997, 2001). Sacramento splittail have been captured in the Toe Drain (Interagency Ecological Program 2023).

3.4 Critical Habitat for Listed Fish and Wildlife Species

USFWS and the National Marine Fisheries Service define the term "critical habitat" in the FESA as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Part of the purpose of critical habitat is to identify areas for the recovery of a federally listed species even if they are currently unoccupied by the species. All or portions of the Project area are within designated critical habitat for the following federally listed species. The information is derived from the identification of primary constituent elements (PCEs) as part of critical habitat designations and/or recovery planning efforts for species listed under the FESA.

- The portions of the Toe Drain and managed floodplain areas in the Project area are within the primary zone of the legal Delta and are critical habitat for delta smelt.
  - The Project area includes the following PCEs for delta smelt critical habitat in the Toe Drain and seasonally flooded upland areas: spawning habitat, larval and juvenile transport, rearing habitat, and upper corridors of adult migration habitat.
- The portions of the Toe Drain and managed floodplain areas in the Project area are within the Yolo Bypass and are critical habitat for the southern DPS of North American green sturgeon.
  - The Project area includes the following freshwater and estuarine PCEs for North American green sturgeon critical habitat in the Toe Drain and seasonally flooded upland areas: food resources, substrate type or size, water flow, water quality, migratory corridor, depth, and sediment quality.
- The portions of the Toe Drain and managed floodplain areas in the Project area are within the Yolo Bypass and are critical habitat for Central Valley steelhead DPS, Sacramento River winter-run Chinook salmon ESU, and Central Valley spring-run Chinook salmon ESU.
  - The Project area includes the following freshwater and estuarine PCEs for Central Valley steelhead DPS, Sacramento River winter-run Chinook salmon ESU, and Central Valley spring-run Chinook salmon ESU critical habitat in the Toe Drain and seasonally flooded upland areas: freshwater rearing, freshwater migration, and estuarine areas.

CHAPTER 4
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Appendix A
Soil Report

United States Department of Agriculture

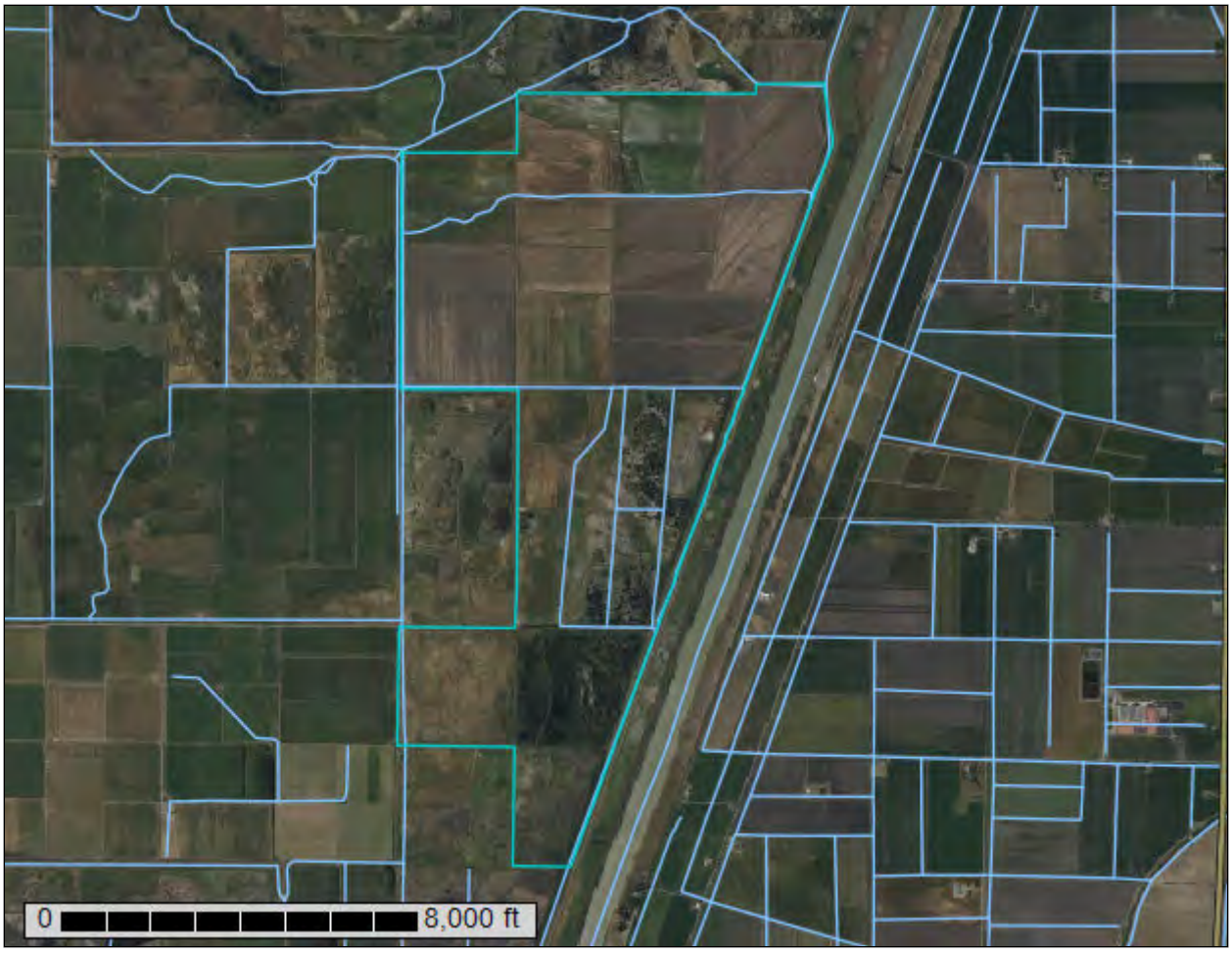
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Yolo County, California

Appendix A - Soils Report March2023



March 29, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:31,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 450 900 1800 2700

Feet
0 1500 3000 6000 9000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yolo County, California
Survey Area Data: Version 19, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cc	Capay soils, overwash, 0 percent slopes, frequently flooded, MLRA 17	851.3	38.5%
Cn	Clear Lake soils, flooded	1,298.1	58.7%
Pc	Pescadero soils, flooded	0.1	0.0%
Rn	Riz loam, flooded	9.5	0.4%
W	Water	52.5	2.4%
Totals for Area of Interest		**2,211.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Yolo County, California

Cc—Capay soils, overwash, 0 percent slopes, frequently flooded, MLRA 17

Map Unit Setting

National map unit symbol: 2y0f6
Elevation: 0 to 20 feet
Mean annual precipitation: 20 to 20 inches
Mean annual air temperature: 61 to 61 degrees F
Frost-free period: 323 to 326 days
Farmland classification: Not prime farmland

Map Unit Composition

Capay, silty clay, and similar soils: 45 percent
Capay, overwash, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Capay, Silty Clay

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and clayey alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 11 inches: silty clay
A - 11 to 18 inches: silty clay
Bss1 - 18 to 36 inches: silty clay
Bkss - 36 to 49 inches: silty clay
B'ss2 - 49 to 64 inches: silty clay

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.2 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Description of Capay, Overwash

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Overwash alluvium derived from igneous, metamorphic and sedimentary rock over basin silty and clayey alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 12 inches: loam
2Ab1 - 12 to 23 inches: silty clay
2Ab2 - 23 to 30 inches: silty clay
2Bssb1 - 30 to 48 inches: silty clay
2Bkssb - 48 to 61 inches: silty clay
2B'ssb2 - 61 to 76 inches: silty clay

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.2 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Minor Components

Clear lake

Percent of map unit: 4 percent
Landform: Basin floors
Hydric soil rating: Yes

Sacramento

Percent of map unit: 4 percent
Landform: Basin floors
Hydric soil rating: Yes

Unnamed

Percent of map unit: 4 percent
Landform: Basin floors
Hydric soil rating: Yes

Willows

Percent of map unit: 3 percent
Landform: Basin floors
Hydric soil rating: Yes

Cn—Clear Lake soils, flooded

Map Unit Setting

National map unit symbol: hdvj
Elevation: 10 to 400 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 225 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Clear lake, long flooding duration, and similar soils: 60 percent
Clear lake, brief flooding duration, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clear Lake, Long Flooding Duration

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 25 inches: clay loam
H2 - 25 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: OccasionalNone

Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Description of Clear Lake, Brief Flooding Duration

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Minor Components

Willows

Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Capay

Percent of map unit: 5 percent

Landform: Basin floors
Hydric soil rating: Yes

Sacramento
Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Pc—Pescadero soils, flooded

Map Unit Setting
National map unit symbol: hdwp
Elevation: 10 to 100 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Pescadero and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pescadero

Setting
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile
H1 - 0 to 15 inches: loam
H2 - 15 to 50 inches: silty clay
H3 - 50 to 60 inches: silty clay loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 90.0
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups
Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Minor Components

Capay
Percent of map unit: 5 percent
Landform: Rims
Hydric soil rating: Yes

Unnamed
Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Willows
Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Rn—Riz loam, flooded

Map Unit Setting
National map unit symbol: hdwz
Elevation: 10 to 30 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 280 days
Farmland classification: Not prime farmland

Map Unit Composition
Riz and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riz

Setting
Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous silty alluvium

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 44 inches: clay loam
H3 - 44 to 69 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

Minor Components

Willows

Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Clear lake

Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Pescadero

Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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Appendix B
Database Queries

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Yolo County, California

Local office

San Francisco Bay-Delta Fish And Wildlife

(916) 930-5603
(916) 930-5654

650 Capitol Mall
Suite 8-300
Sacramento, CA 95814

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Longfin Smelt *Spirinchus thaleichthys* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9011	Proposed Endangered

Insects

NAME	STATUS

NOT FOR CONSULTATION

Monarch Butterfly Danaus plexippus — Candidate

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus — Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME	STATUS

Conservancy Fairy Shrimp Branchinecta conservatio — Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/8246

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS

Colusa Grass Neostapfia colusana — Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5690

NOT FOR CONSULTATION

Solano Grass Tuctoria mucronata Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8302	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Delta Smelt Hypomesus transpacificus For information on why this critical habitat appears for your project, even though Delta Smelt is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/321#crithab	Final

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Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-

golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted

Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

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The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

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Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird *Selasphorus sasin* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31

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Belding's Savannah Sparrow Passerculus sandwichensis beldingi — Breeds Apr 1 to Aug 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Gull Larus californicus — Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

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Marbled Godwit Limosa fedoa — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Willet Tringa semipalmata — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence ( )

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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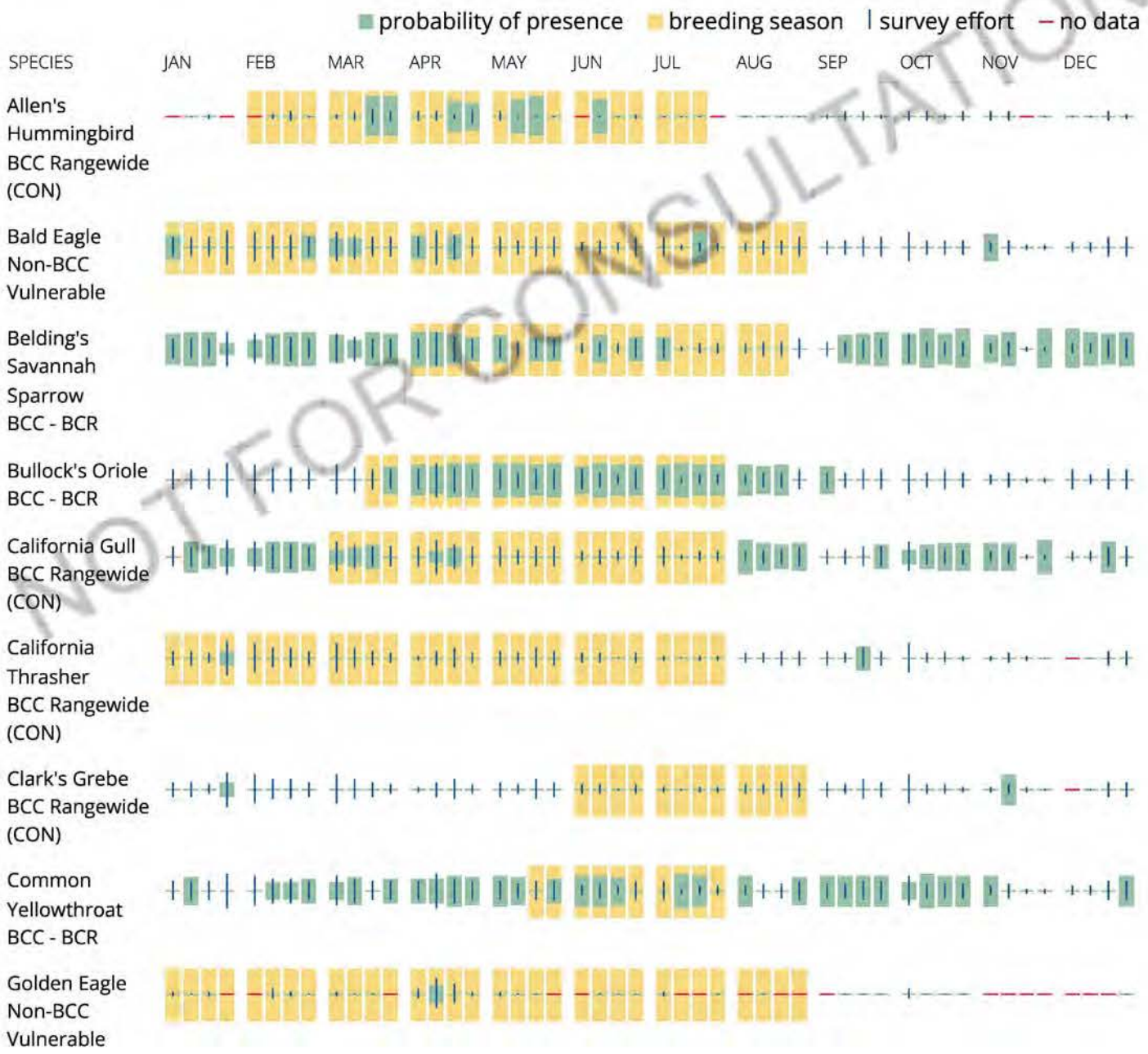
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure.

To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in

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offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
STEVE THOMPSON NORTH CENTRAL VALLEY WILDLIFE MANAGEMENT AREA	15,437.4 acres

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1C
- PEM1Fh

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PEM1Ch
PEM1Fx

FRESHWATER FORESTED/SHRUB WETLAND
PSSR
PSSF

FRESHWATER POND
PUBHx
PUBFx

OTHER
Pf

RIVERINE
R1UBVx
R5UBFx
R4SBCx
R2UBHx
R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or

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submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Dixon (3812147) OR Davis (3812156) OR Merritt (3812157) OR Sacramento West (3812155) OR Dozier (3812137) OR Saxon (3812146) OR Clarksburg (3812145) OR Courtland (3812135) OR Liberty Island (3812136))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	SSC
Actinemys marmorata northwestern pond turtle	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S1	
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G1	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Atriplex persistens vernal pool smallscale	PDCHE042P0	None	None	G2	S2	1B.2
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Brasenia schreberi watershield	PDCAB01010	None	None	G5	S3	2B.3
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2	SSC
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S3	SSC
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T3	S3	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elaphrus viridis Delta green ground beetle	IICOL36010	Threatened	None	G1	S1	
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Fritillaria pluriflora adobe-lily	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S2	
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G4	S3S4	
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Lasthenia chrysantha alkali-sink goldfields	PDAST5L030	None	None	G2	S2	1B.1
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S3	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Melospiza melodia pop. 1 song sparrow ("Modesto" population)	ABPBXA3013	None	None	G5T3?Q	S3?	SSC
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Neostapfia colusana Colusa grass	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	SSC
Oncorhynchus tshawytscha pop. 11 chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	G5T2Q	S2	
Oncorhynchus tshawytscha pop. 7 chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5T1Q	S2	
Plagiobothrys hystriculus bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	G3	S3	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G2	S2	1B.2
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Scutellaria lateriflora side-flowering skullcap	PDLAM1U0Q0	None	None	G5	S1S2	2B.2
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Spea hammondii western spadefoot	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
Spirinchus thaleichthys pop. 2 longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	G5TNRQ	S1	
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Tuctoria mucronata	PMPOA6N020	Endangered	Endangered	G1	S1	1B.1
Crampton's tuctoria or Solano grass						
Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Valley Needlegrass Grassland						
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S3	
least Bell's vireo						
Xanthocephalus xanthocephalus	ABPBXB3010	None	None	G5	S3	SSC
yellow-headed blackbird						

Record Count: 86

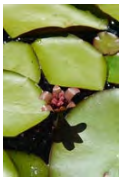
CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

39 matches found. Click on scientific name for details

Search Criteria:Quad is one of [3812157:3812156:3812155:3812147:3812146:3812145:3812137:3812136:3812135]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Astragalus tener var. *ferrisiae*	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	None	None	G2T1	S1	1B.1	Yes	1994-01-01	No Photo Available
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	Yes	1994-01-01	No Photo Available
Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	© 1994 Robert E. Preston, Ph.D.
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01	© 2009 Zoya Akulova
Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	Jun-Oct	None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	None	None	G5	S3	2B.3		2010-10-27	 ©2014 Kirsten Bovee
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	None	None	G5	S2	2B.1		1994-01-01	Dean Wm. Taylor 1997

Centromadia parryi ssp. *parryi*	pappose tarplant	Asteraceae	annual herb	May-Nov	None	None	G3T2	S2	1B.2	Yes	2004-01-01	© 2016 John Doyen
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	None	None	G3T3	S3	4.2	Yes	2007-05-22	© 2019 John Doyen
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	Apiaceae	perennial herb	Jul-Sep	None	None	G5T4T5	S2?	2B.1		1974-01-01	© 2007 Doreen L Smith
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2		1980-01-01	© 2013 Aaron Arthur
Eryngium jepsonii	Jepson's coyote-thistle	Apiaceae	perennial herb	Apr-Aug	None	None	G2	S2	1B.2	Yes	2016-09-13	No Photo Available
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	© 2016 Aaron Schusteff
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2	Yes	1974-01-01	© 2004 Carol W. Witham
Fritillaria pluriflora	adobe-lily	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2G3	S2S3	1B.2	Yes	1974-01-01	© 2015 Steve Matson
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974-01-01	©2004 Carol W. Witham

Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	© 2017 John Doyen
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	Yes	1974-01-01	© 2020 Steven Perry
Isocoma arguta	Carquinez goldenbush	Asteraceae	perennial shrub	Aug-Dec	None	None	G1	S1	1B.1	Yes	1994-01-01	No Photo Available
Lasthenia chrysantha	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	Yes	2019-09-30	© 2009 California State University, Stanislaus
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	G4T2	S2	1B.1		1994-01-01	© 2013 Keir Morse
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	None	None	G5T2	S2	1B.2	Yes	1974-01-01	© 2003 Mark Fogiel
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	©2000 John Game
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	None	None	G4T1	S1	1B.2	Yes	1994-01-01	2018 Jennifer Buck
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	None	CR	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	May-Aug	None	None	G4G5	S2	2B.1		1994-01-01	© 2020 Richard Sage

Myosurus minimus ssp. *apus*	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		1980-01-01	No Photo Available
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G4T2	S2	1B.1	Yes	1994-01-01	© 2018 Barry Rice
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Plagiobothrys hystriculus	bearded popcornflower	Boraginaceae	annual herb	Apr-May	None	None	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
Psilocarphus brevissimus var. *multiflorus*	Delta woolly-marbles	Asteraceae	annual herb	May-Jun	None	None	G4T3	S3	4.2	Yes	1994-01-01	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	© 2017 Chris Winchell
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	©2013 Debra L. Cook
Scutellaria lateriflora	side-flowering skullcap	Lamiaceae	perennial rhizomatous herb	Jul-Sep	None	None	G5	S2	2B.2		1994-01-01	No Photo Available
Sidalcea keckii	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE	None	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	2001-01-01	© 2005 Dean Wm Taylor
Tuctoria mucronata	Crampton's tuctoria or Solano grass	Poaceae	annual herb	Apr-Aug	FE	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available

Showing 1 to 39 of 39 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 8 February 2024].

Appendix C
Botanical Survey Results

Tide's End Multibenefit Restoration Project

Botanical Survey Results

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October 2023

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memorandum

date	October 3, 2023
to	Stephanie Freed, EIP III Credit Co., LLC (EIP)
cc	Glen Williams, EIP
from	Chuck Hughes, M.S.
subject	Tide's End Project—Botanical Survey Results

This technical memorandum documents the results of botanical surveys conducted in the Tide's End Multibenefit Restoration Project (Project) area. A preliminary biological resources report (Biological Report) (Environmental Science Associates 2023) was previously prepared to document baseline habitat conditions and evaluate the potential for special-status plants to occur in the Project area. The Biological Report includes a discussion of the general environmental setting including descriptions of vegetation communities, a table of all plant species evaluated, and regulatory context.

Botanical surveys were conducted according to guidelines of the U.S. Fish and Wildlife Service (2000) and California Department of Fish and Wildlife (2018), as applicable. Each special-status plant species determined by the Biological Report to have potential habitat in the Project area is discussed in greater detail relative to habitat conditions on site. One California Rare Plant Rank (CRPR) 4 species, Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*), was found.

Environmental Setting

The approximately 2,200-acre Project area is located in Yolo County, in the lower Yolo Bypass of the Sacramento–San Joaquin Delta. Most of the northern end of the Project area is used for agricultural production, primarily rice, although some of the fields are fallowed in some years. Most of the Project area's southern end consists of managed marsh and floodplain, with substantial tules (*Schoenoplectus acutus* var. *occidentalis*) present in some areas. Dirt roads surround the fields in the Project area, and in most cases are 1–2 feet higher than the surrounding fields. The east side of the Project area is the Toe Drain, a tidal water that drains much of the Yolo Bypass. Numerous irrigation canals and drainage ditches are present on site. A relatively thin band of riparian forest runs along the west side of the Toe Drain. The entire site may be inundated when the Yolo Bypass floods during the winter or spring, approximately once every two years. Vegetation in the Project area does not indicate the presence of substantially alkaline (saline) water or soil. Soils are predominantly loams or clay loams with alluvium from mixed rock sources as the parent material. The site is surrounded by similarly managed lands and habitats. Vegetation communities in the Project area are described in more detail in the Biological Report.

Methods

The Biological Report compiled a list of special-status plants that occur regionally from the U.S. Fish and Wildlife Service Sacramento Field Office (U.S. Fish and Wildlife Service 2023), the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife 2023), and the California Native Plant Society online inventory (California Native Plant Society 2023). The Biological Report identified 10 special-status plants with a moderate or higher potential to occur in the Project area (discussed below in "Results"). The databases were re-checked for this memorandum to determine whether records of any additional special-status plants have since been added. None have been added.

Botanical surveys were conducted during the evident and identifiable period for special-status plants with at least a moderate potential to occur in the Project area. Botanical surveys consisted of searching systematically through fields that were not in agricultural production, including areas of grassland, managed floodplain, managed marsh, managed tule marsh, riparian forest, and riparian scrub. Nearly all of the northern portion of the Project area (approximately 1,200 acres) was in rice production in 2023. A few of the fields in the north were fallow in 2023 and were searched during one of the botanical surveys. The survey focused on the margins of these fields, where richness of plant species was greater. In the central and southern portions of the Project area, more survey time was spent in areas of managed tule marsh and riparian forest, which have the best suitable habitat for most of the special-status plants with potential to occur.

The surveys were floristic in nature. Every vascular plant found in the study area was identified to the taxonomic level necessary to determine regulatory status. A list of all plants observed is enclosed. Botanical taxonomy and nomenclature conform to *The Jepson Manual: Vascular Plants of California*, second edition (Baldwin et al. 2012) as revised by the Jepson eFlora (Jepson Flora Project 2023).

Hydrologic conditions in the Project area are driven primarily by flooding in the Yolo Bypass. In the 2022–2023 wet season, water entered the Yolo Bypass over the Fremont Weir crest from approximately January 7 through January 22, and again from March 12 through April 2 (California Data Exchange Center 2023). Inundation in much of the Yolo Bypass persists after hydrologic inputs end. Inundation in much of the central and southern portions of the Project area is visible on an April 21, 2023, aerial photograph (Google Earth 2023). Much of the Project area was likely inundated for several months in late winter and early spring 2023.

Field Surveys

The 2023 botanical surveys were conducted on the following dates:

- *September 1, 2023—Chuck Hughes.* This survey focused primarily on mapping the extent of Parry's rough tarplant and searching agricultural ditches for Sanford's arrowhead (*Sagittaria sanfordii*).
- *September 7, 2023—Chuck Hughes and Anna Schwyter.* This survey included part of the margin of the Toe Drain at low tide that was not included in the 2021 survey (see below).
- *September 22, 2023—Chuck Hughes and Natalie Lamas.*

In addition, a survey was conducted along most of the Toe Drain at low tide in 2021, and general biological reconnaissance surveys took place in 2020.

- *September 3 and 24, 2020—Chuck Hughes and Rebecca Acosta*. A general biological reconnaissance survey was conducted on these dates.
- *June 9, 2021—Chuck Hughes and Philip Brownsey.* This survey focused on the margin of the Toe Drain at low tide for Mason's lilaeopsis (*Lilaeopsis masonii*) and Delta mudwort (*Limosella australis*).

Species-Specific Methods

Specific methods were used for some special-status plants based on their biology. Two of the special-status plants with potential to occur, Mason's lilaeopsis and Delta mudwort, occur in fresh water or in brackish intertidal areas. The only habitat for these species in the Project area is the margin of the Toe Drain. Flap gates on culverts that connect some Project area ditches to the Toe Drain prevent tidal action elsewhere. A survey was conducted specifically in the intertidal area along the entire Toe Drain margin in 2021, except for the Yolo Basin property (see Figure 1-2 of the Biological Report), where access was not available at the time. A similar survey was conducted in 2023 for the Yolo Basin property. Both surveys were timed to coincide with low tide, when these species would be exposed, and evident and identifiable.

The biological reconnaissance surveys conducted in 2020 determined that Parry's rough tarplant occurs in the Project area. Parry's rough tarplant is a CRPR 4 species. The 2023 surveys determined that Parry's rough tarplant is abundant in the Project area, but that it occurs largely along dirt road margins, and in one field of managed floodplain. The September 1, 2023, field visit consisted partly of driving dirt roads in the Project area to determine which were occupied by Parry's rough tarplant.

Sanford's arrowhead is an aquatic emergent plant that requires inundation into the warm season. Deeper areas of managed tule marsh may provide habitat in the Project area. However, Sanford's arrowhead is also commonly reported from ditches that contain summertime water (California Department of Fish and Wildlife 2023). During the September 1, 2023, field visit, ditches in the Project area were either driven or walked. Most of the ditches are between farm roads and rice fields in the northern portion of the Project area.

Results

One CRPR 4 species was found in the Project area: Parry's rough tarplant. The reported results below update the brief discussions of potential habitat in the Project area for each species in the Biological Report based on the observed conditions during the botanical survey.

Parry's Rough Tarplant

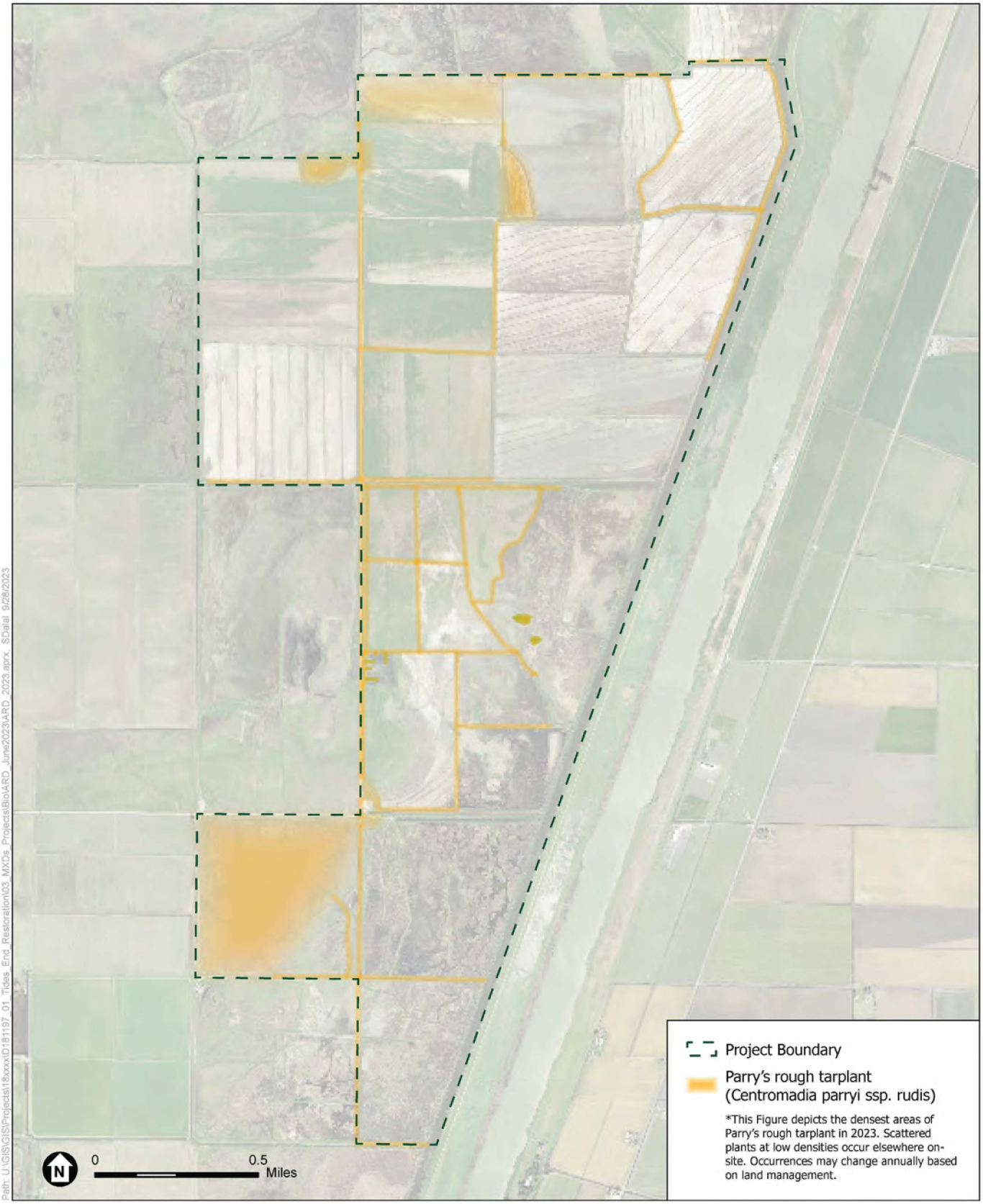
Photo 1. Parry's rough tarplant growing in the margin of a gravel road on site. More are visible in the background (September 1, 2023).

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*; CRPR 4.2) is an annual herb found along the margins of vernal pools and seeps, and in vernally mesic grassland. It may occur in alkaline substrates or in disturbed areas and roadsides (**Photo 1**). It typically blooms June through October. The range of Parry's rough tarplant includes the north and central areas of the Central Valley, the southern portion of the inner north Coast Ranges, and a small area of the Modoc Plateau (California Native Plant Society 2023; Jepson Flora Project 2023). Parry's rough tarplant is distinguished from the other Northern California subspecies based mostly on leaf puberulence, few or no glands, and smaller involucres and ray petals.

Parry's rough tarplant is abundant in the Project area (**Figure 1**). It most commonly occurs on and along dirt roads on site. It is along the margin of most roads, except some that are particularly low in elevation and experience more extended flooding. Along some segments of seldom used roads, Parry's rough tarplant is the dominant species. Many of the dirt roads in the Project area are slightly higher than the surrounding fields. Parry's rough tarplant is almost entirely absent from areas of managed marsh and tule marsh. In **Photo 2**, Parry's rough tarplant is the dominant plant along the road but is almost entirely absent from the managed marsh on either side.

Photo 2. Parry's rough tarplant growing on and along the margins of a dirt road through managed marsh (September 1, 2023).

The boundaries of Parry's rough tarplant in Figure 1 are shown as faded to indicate that although the figure shows the densest areas of occurrence, scattered plants, at much lower densities, can and do occur outside of those areas.



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1
Tide's End
Botanical Survey

Prepared by: ESA

SOURCE: NAIP 2022; ESA 2023;

Photo 3. Parry's rough tarplant (shorter, yellowish plant) growing in a fallow rice field. It is much more sparse in most of the field (September 1, 2023).

Many of the higher elevation areas, above the managed marsh, also support Parry's rough tarplant. These areas are mostly identified as managed floodplain or annual grassland in the Biological Report. The rice fields, when fallow, also support Parry's rough tarplant, although it is relatively sparse there (**Photo 3**). Parry's rough tarplant was first identified on site in a fallow rice field during the 2020 reconnaissance survey. However, Parry's rough tarplant is generally more abundant along the roads on site than in any of the fields. The background biology of the subspecies notes the pattern of occurrence in disturbed areas, including roadsides (California Native Plant Society 2023; Jepson Flora Project 2023).

CRPR 4 species may or may not be considered special-status during review under the California Environmental Quality Act (CEQA) at the discretion of the lead agency. Yolo County is expected to be the CEQA lead agency for any proposed Project. The environmental impact report for the Yolo County General Plan does not define special-status species to include CRPR 3 or 4 plants (LSA Associates 2009). CRPR 4 is defined by CNPS as plants "of limited distribution or infrequent throughout a broader area in California."

California Code of Regulations (CCR) Title 14, Section 15380 (14 CCR Section 15380) defines "endangered, rare, or threatened species" for the purposes of CEQA review. For species not listed under the federal or California Endangered Species Act, or under the California Native Plant Protection Act, 14 CCR Section 15380(b) identifies qualitative criteria for determining whether a species shall be considered to be endangered, rare, or threatened.

Per Section 15380(b)(1), a species of plant is considered endangered "*when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors*." Per Section 15380(b)(2), a species of plant is considered rare when "*Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens*" or the "*species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act*."

The range of Parry's rough tarplant is documented through 137 collections searchable via the Consortium of California Herbaria (2023). All but four of the collections are in or along the margin of the Central Valley, from approximately Willows south to Los Banos. Almost all of the collections are on the west side of the Central Valley, west of State Route 99. Collections extend back to 1863, but many of the collections (41) have been made relatively recently, since 1990. Parry's rough tarplant was collected in the Project area in 2020 (Hughes 481) and

deposited at the University of California, Davis, herbarium, but the collection record is not yet available online in the Consortium of California Herbaria.

Parry's rough tarplant is abundant in the Project area, even though none of the land is managed specifically for the benefit of the species. Parry's rough tarplant is common even in the portions of the Project area devoted to rice farming. Adjacent off-site areas of Parry's rough tarplant are visible from the Project area boundary. The species has been noted by CNPS and Jepson (California Native Plant Society 2023; Jepson Flora Project 2023) to be tolerant of disturbance, consistent with the observations in the Project area.

Parry's rough tarplant was observed on site in both 2020 and 2023, in fallow fields that are in rice production in some years. Parry's rough tarplant does not tolerate the hydrologic conditions needed to grow rice. Its presence in fallow fields indicates that Parry's rough tarplant may spread relatively easily into them when conditions allow.

The occurrence of Parry's rough tarplant in and around the Project area is not near the edge of the subspecies' range and does not represent a disjunct satellite population. Rather, the Project area is very near the center of the range based on the collection records (Consortium of California Herbaria 2023).

Parry's rough tarplant does not meet the criteria of "endangered" in 14 CCR Section 15380(b)(1) because its survival and reproduction in the wild are not in immediate jeopardy. It is abundant in the Project area and spreads into new areas relatively easily when circumstances allow. Many of the other collections are in areas similar to the Project area, particularly the Colusa Basin, which also has substantial rice farming and marshes managed for duck clubs. CNPS (California Native Plant Society 2023) notes that the subspecies is "*protected on several refuges including Sacramento NWR* [National Wildlife Refuge], *Colusa NWR, the Llano Seco Unit of the North Valley Wildlife Management Area, the Llano Seco Ranch, and the Vic Fazio Yolo Wetlands Preserve*." There are other collections from in and near the San Luis NWR, Merced NWR, and Los Banos Waterfowl Management Area.

Parry's rough tarplant does not meet the criteria for "rare" identified in 14 CCR Section 15380(b)(2) because it is not likely to become endangered within the foreseeable future due to small numbers throughout all or a significant portion of its range. The refuges noted above that support the subspecies are distributed from the north end of the range to the south. The 41 relatively recent collections are distributed throughout the subspecies' range (including the Modoc Plateau, where the Jepson Flora Project (2023) notes that the subspecies may have been introduced). The collection records and other available evidence suggest that Parry's rough tarplant is persisting throughout its range. The subspecies has the ability to both colonize and persist in disturbed areas.

EIP intends to plan and construct a restoration project in the Project area for the benefit of multiple special-status species. The ultimate Project design is expected to continue to have land at a suitable elevation for Parry's rough tarplant because (1) areas of emergent marsh would have higher elevation areas to account for future sea level rise and (2) some areas would remain in rice production. No Project design is likely to result in complete removal of Parry's rough tarplant from the Project area. However, even if all Parry's rough tarplant were removed, it would likely recolonize the Project area from adjacent off-site lands.

Pappose Tarplant

Pappose tarplant (*Centromadia parryi* ssp. *parryi*; CRPR 1B.2) is an annual herb generally found in vernally mesic grassland and coastal prairie, springs and seeps, and coastal salt marshes and swamps. It often occurs in

alkaline substrates. It typically blooms May through November (California Native Plant Society 2023; Jepson Flora Project 2023).

This subspecies has been reported regionally and, similar to the other subspecies of *Centromadia parryi*, is somewhat tolerant of land disturbance. The vegetation communities in the Project area do not suggest a strong alkaline influence, although mild alkalinity may occur throughout much of the Project area. Salt grass (*Distichlis spicata*) is present occasionally but generally is not one of the dominant plants. Because another subspecies, Parry's rough tarplant, is abundant in the Project area, spot-checks of individual plants were made throughout the Project area; however, no pappose tarplant was observed. Pappose tarplant was not found during the floristic survey and does not occur in the Project area.

Jepson's Coyote Thistle

Jepson's coyote thistle (*Eryngium jepsonii*; CRPR 1B.2) is a perennial herb found on clay soil in mesic grasslands and vernal pools. It typically blooms April through August (California Native Plant Society 2023; Jepson Flora Project 2023). Both CNDDB records in the area are in a vernal pool complex northwest of the Project area (California Department of Fish and Wildlife 2023). The Project area has locations with suitable clay soils, but there are no vernal pools or complexes. Most of the Project area has unsuitable hydrology for vernal pool species because it is either farmed to rice (at least in some years) or managed as an emergent marsh for duck hunting. The westernmost areas in the central and southern portions of the Project area have the most suitable hydrology but have experienced substantial soil disturbance in the past, including from rice farming. *Eryngium* is evident and identifiable, at least to genus, after blooming because of its distinctive growth form and inflorescences. No *Eryngium* species were found during the floristic survey and Jepson's coyote thistle does not occur in the Project area.

San Joaquin Spearscale

San Joaquin spearscale (*Extriplex joaquinana*; CRPR 1B.2) is an annual herb found in alkaline chenopod scrub, meadows and seeps, playas, and grassland. It typically blooms April through October (California Native Plant Society 2023; Jepson Flora Project 2023). The three nearby relatively recent records are from vernal pool complexes and associated grasslands northwest of the Project area (California Department of Fish and Wildlife 2023). There are no records from areas of the Yolo Bypass that frequently flood. Most of the Project area is either farmed to rice or consists of emergent marsh habitat that is unsuitable for San Joaquin spearscale. The westernmost areas in the central and southern portions of the Project area are the most suitable, but the alkaline influence is weak and there has been substantial soil disturbance in the past, including from rice farming. San Joaquin spearscale was not found during the floristic survey and does not occur in the Project area.

Woolly Rose-Mallow

Woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*; CRPR 1B.2) is a perennial herb/subshrub found in freshwater wetlands, marshes, and wet banks. It may grow through riprap on levee slopes. It typically blooms June through September (California Native Plant Society 2023; Jepson Flora Project 2023). A reference population of woolly rose-mallow was observed in bloom approximately 7 miles east of the Project area on September 13, 2023.

Nearby CNDDB records are in habitats that occur in the Project area (California Department of Fish and Wildlife 2023), including the margin of the Sacramento River Deep Water Ship Channel and areas in the upper Yolo Bypass that flood with a frequency similar to the Project area. The farmed fields in the north end of the Project area are too frequently disturbed to provide habitat. The margins of some ditches may provide habitat, but ditch maintenance (excavation of sediment and thick vegetation) may greatly limit the suitability. Managed marsh, riparian forest, and the margins of the Toe Drain in the Project area provide suitable habitat, but woolly rose-mallow was not found during the floristic survey and does not occur in the Project area.

Coulter's Goldfields

Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*; CRPR 1B.1) is an annual herb found in alkaline playas and vernal pools and coastal salt marshes. It typically blooms February through June (California Native Plant Society 2023; Jepson Flora Project 2023). The closest record is an extensive occurrence (#124), covering at least several hundred acres, that was reported in the CNDDB about 13 miles southwest of the Project area (California Department of Fish and Wildlife 2023). That occurrence is in a large, high-quality vernal pool and playa complex near Travis Air Force Base preserved and managed in part by the Solano Land Trust, with other special-status plants that occur in alkaline habitats.

The Project area does not have any vernal pools or playas, or any grassland that has not experienced substantial past disturbance from current or ongoing rice farming. The alkaline influence is weak. Marshes and ditches in the Project area do not provide habitat. The Project area does not provide habitat for Coulter's goldfields. Coulter's goldfields was not found during the floristic survey and does not occur in the Project area.

Mason's Lilaeopsis

Mason's lilaeopsis (*Lilaeopsis masonii*; California Rare, CRPR 1B.1) is a perennial rhizomatous herb found in brackish or freshwater intertidal marshes and streambanks. It typically blooms April through November (California Native Plant Society 2023; Jepson Flora Project 2023). An extensive CNDDB occurrence (#223) extending along 16 miles of shoreline has been reported near the Project area (California Department of Fish and Wildlife 2023). However, most of Occurrence #223 is in the Sacramento River Deep Water Ship Channel, which is separated from the Toe Drain and the rest of the Project area by a levee. Some of Occurrence #223 is in the Toe Drain, but mostly farther south, near Liberty Island. Only a single point of Occurrence #223 is mapped in the Toe Drain adjacent to the Project area. One additional point is mapped in the Toe Drain about 0.6 mile south of the Project area. Both of these points appear to be mapped on the east bank of the Toe Drain. The Project area only includes the west bank of the Toe Drain. A reference population of Mason's lilaeopsis was observed in bloom approximately 7.7 miles southwest of the Project area on September 2, 2023.

Two survey events were conducted in the Project area along the west bank of the Toe Drain during low tide, specifically for Mason's lilaeopsis and Delta mudwort. The west shore of the Toe Drain provides limited suitable habitat for Mason's lilaeopsis because much of the shoreline has a near-vertical, or sometimes undercut, shore within the suitable tidal elevation range (see the Biological Report). In addition, some areas of the shore are covered with trees, mostly willows, or Himalayan blackberries, which create dense shade at the soil surface. It appeared during the survey that the east shore of the Toe Drain provided better habitat for Mason's lilaeopsis because the shoreline was more gently sloped with more sparsely vegetated mud or tules within the suitable tidal elevation range, and there was much less cover of tall vegetation creating shade. Mason's lilaeopsis was not found during the floristic survey and does not occur in the Project area.

Delta Mudwort

Delta mudwort (*Limosella australis*; CRPR 2B.1) is a perennial stoloniferous herb found in muddy or sandy substrates of brackish or freshwater intertidal marshes, streambanks, and riparian scrub. It typically blooms May through August, and sometimes into October (California Native Plant Society 2023; Flora of North America Editorial Committee 1993; Jepson Flora Project 2023). There is uncertainty as to Delta mudwort's native status in California. Jepson (2023) and the Flora of North America Editorial Committee (1993) treat it as a naturalized species. Delta mudwort occurs in habitat similar to that of Mason's lilaeopsis and may look similar, but it is evident and identifiable in flower and fruit, and the species may be differentiated based on the inflorescence structure and leaf characteristics.

The surveys specific to the Toe Drain conducted at low tide (see "Methods" above) included Delta mudwort. The potential habitat in the Project area is poor for the same reasons described for Mason's lilaeopsis above. Delta mudwort was not found during the floristic survey and does not occur in the Project area.

Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*; CRPR 1B.2) is a perennial rhizomatous aquatic emergent herb found in shallow freshwater marshes, ponds, and ditches. It typically blooms from May through October, and sometimes into November (California Native Plant Society 2023; Jepson Flora Project 2023). The nearest CNDDB record is approximately 5.4 miles to the south in Miner Slough, and there are no records in the Yolo Bypass (Consortium of California Herbaria 2023; California Department of Fish and Wildlife 2023).

Sanford's arrowhead occurs in wetlands, or the margins of open water, where inundation persists into the warm season. Deeper portions of the marsh in the Project area provide potential habitat. The margins of some ditches may provide habitat, but ditch maintenance (excavation of sediment and vegetation) may greatly limit the suitability. Two other species of *Sagittaria* (*S. longiloba* and *S. montevidensis* ssp. *calycina*) were found in the Project area, but only in actively farmed rice fields. Two species of *Alisma* (*A. lanceolatum* and *A. triviale*) that are in the same family as Sanford's arrowhead and grow in the same habitat were found in deeper areas of marshes that either still contained water in September 2023 or had recently dried out. Sanford's arrowhead was not found during the floristic survey and does not occur in the Project area.

Side-Flowering Skullcap

Side-flowering skullcap (*Scutellaria lateriflora*; CRPR 2B.2) is a perennial rhizomatous herb found in wet meadows, seeps, and marshes. It typically blooms from July through September (California Native Plant Society 2023; Jepson Flora Project 2023). The nearest CNDDB record is approximately 9.7 miles to the southeast in Snodgrass Slough (California Department of Fish and Wildlife 2023). Managed marsh, riparian forest, and the margins of the Toe Drain in the Project area provide suitable habitat, but side-flowering skullcap was not found during the floristic survey and does not occur in the Project area.

Suisun Marsh Aster

Suisun marsh aster (*Symphyotrichum lentum*; CRPR 1B.2) is a perennial rhizomatous herb occurring in brackish or freshwater marshes. It typically blooms from May through November, and sometimes as early as April (California Native Plant Society 2023; Jepson Flora Project 2023). Suisun marsh aster typically occurs along the edge of intertidal areas on the waterside of levees or in tidally influenced marshes (California Department of Fish

and Wildlife 2023). A reference population of Suisun marsh aster was observed in bloom approximately 7.7 miles southwest of the Project area on September 2, 2023.

Only the Toe Drain margin provides potential habitat for Suisun marsh aster in the Project area because it is the only area subject to the tide. Suisun marsh aster typically grows near the high-tide line, just above the elevation at which more aquatic plants such as Mason's lilaeopsis and Delta mudwort occur. Two other species of *Symphyotrichum* were observed during the survey. *S. subulatum* var. *parviflorum* is abundant in the north end of the Project area along the margins of rice fields. It also occurs around the margins of managed marshes elsewhere but is much less abundant. *S. chilense* occurs occasionally in the riparian forest. Suisun marsh aster was not found during the floristic survey and does not occur in the Project area.

Conclusion

Botanical surveys were conducted consistent with guidance from agencies (California Department of Fish and Wildlife 2018; U.S. Fish and Wildlife Service 2000). No problems or limitations were encountered. No further botanical surveys are needed for CEQA review. No special-status plants requiring consideration under CEQA were found. One CRPR 4 species, Parry's rough tarplant, was found and is abundant in several portions of the Project area. For the reasons discussed above, Parry's rough tarplant is not required to be considered, at the discretion of the CEQA lead agency. Any restoration project proposed in the Project area is not likely to remove the occurrence or to have significant impacts on the species.

Enclosure: Plant Species Observed

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PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
FERNS & ALLIES				
Azollaceae	*Azolla filiculoides*	Mosquito fern	N	
Equisetaceae	*Equisetum* sp.	Horsetail	N	
Marsileaceae	*Marsilea vestita* ssp. *vestita*	Water-clover	N	
EUDICOTS				
Amaranthaceae	*Amaranthus albus*	Tumbleweed	I	
Anacardiaceae	*Toxicodendron diversilobum*	Western poison oak	N	
Apiaceae	*Ammi majus*	Ammi	I	
	Foeniculum vulgare	Fennel	I	High
Apocynaceae	*Apocynum cannabinum*	Indian hemp	N	
	Asclepias fascicularis	Narrow-leaf milkweed	N	
Araliaceae	*Hydrocotyle verticillata*	Marsh pennywort	N	
Asteraceae	*Ambrosia* sp.	Ragweed	--	
	Anthemis cotula	Mayweed	I	
	Bidens frondosa	Sticktight	N	
	Centaurea solstitialis	Yellow star-thistle	I	High
	Centromadia parryi ssp. *rudis*	Parry's rough tarplant	N	
	Cichorium intybus	Chicory	I	
	Euthamia occidentalis	Western goldenrod	N	
	Grindelia camporum	Gumplant	N	
	Helenium sp.	Sneezeweed	--	
	Helianthus annuus	Sunflower	N	
	Helminthotheca echioides	Bristly ox-tongue	I	Limited
	Lactuca saligna	Lettuce	I	
	Lactuca serriola	Prickly lettuce	I	
	Pluchea odorata var. *odorata*	Saltmarsh-fleabane	N	
	Silybum marianum	Milk thistle	I	Limited
	Sonchus asper ssp. *asper*	Prickly sow thistle	I	
	Symphyotrichum chilense	American-aster	N	
	Symphyotrichum subulatum var. *parviflorum*	American-aster	N	
	Xanthium strumarium	Cocklebur	N	
Betulaceae	*Alnus rhombifolia*	White alder	N	
Boraginaceae	*Amsinckia* sp.	Fiddleneck	N	
	Plagiobothrys stipitatus	Great Valley popcornflower	N	
Brassicaceae	*Brassica nigra*	Black mustard	I	Moderate
	Lepidium latifolium	Perennial pepperweed	I	High
	Hirschfeldia incana	Summer mustard	I	Moderate

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
	Rorippa sp.	Yellow cress	--	
Campanulaceae	*Downingia* sp.	Downingia	N	
Chenopodiaceae	*Atriplex prostrata*	Fat-hen	I	
	Chenopodium album	Lamb's quarters	I	
	Dysphania anthelmintica	Wormseed	I	
Convolvulaceae	*Convolvulus arvensis*	Bindweed	I	
	Cressa truxillensis	Alkali weed	N	
	Cuscuta campestris	Field dodder	N	
Fabaceae	*Glycyrrhiza lepidota*	Wild licorice	N	
	Lathyrus jepsonii var. *californicus* [1]	Wild pea	N	
	Lotus corniculatus	Bird's-foot trefoil	I	
	Medicago polymorpha	California burclover	I	Limited
	Melilotus albus	White sweetclover	I	
	Robinia pseudoacacia	Black locust	I	Limited
	Vicia sativa	Vetch	I	
	Vicia villosa	Hairy vetch	I	
Fagaceae	*Quercus lobata*	Valley oak	N	
Gentianaceae	*Centaurium* sp.	Centaury	N	
Lamiaceae	*Mentha canadensis*	American cornmint	N	
	Mentha pulegium	Pennyroyal	I	Moderate
	Stachys sp.	Hedge-nettle	N	
Lythraceae	*Ammannia robusta*	Ammannia	N	
	Lythrum californicum	California loosestrife	N	
	Lythrum hyssopifolia	Loosestrife	I	Limited
Malvaceae	*Abutilon theophrasti*	Velvet-leaf	I	
	Malvella leprosa	Alkali-mallow	N	
Myrtaceae	*Eucalyptus* sp.	Eucalyptus, gum tree	I	Limited
Oleaceae	*Fraxinus latifolia*	Oregon ash	N	
Onagraceae	*Epilobium brachycarpum*	willowherb	N	
	Epilobium densiflorum	willowherb	N	
	Ludwigia hexapetala	Uruguayan primrose-willow	I	High
	Oenothera sp.	Evening-primrose	--	
Plantaginaceae	*Bacopa rotundifolia*	Water-hyssop	I	
	Plantago lanceolata	English plantain	I	Limited
	Plantago major	Common plantain	I	
	Veronica anagallis-aquatica	Water speedwell	I	
Polemoniaceae	*Navarretia intertexta*	Navarretia	N	
Polygonaceae	*Persicaria amphibia*	Water smartweed	N	
	Persicaria punctata	Smartweed	N	

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
	Polygonum aviculare	Knotweed	I	
	Rumex crispus	Curly dock	I	Limited
	Rumex dentatus	Dock	I	
	Rumex sp.	Dock	--	
Portulacaceae	*Portulaca oleracea*	*Purslane*	*I*	
Rosaceae	*Rosa californica*	California rose	N	
	Rubus armeniacus	Himalayan blackberry	I	High
	Rubus ursinus	California blackberry	N	
Rubiaceae	*Cephalanthus occidentalis*	California button willow	N	
Salicaceae	*Populus fremontii* ssp. *fremontii*	Fremont cottonwood	N	
	Salix exigua	Willow	N	
	Salix gooddingii	Goodding's black willow	N	
	Salix lasiolepis	Arroyo willow	N	
Sapindaceae	*Acer negundo*	Box elder	N	
Scrophulariaceae	*Verbascum blattaria*	Moth mullein	I	
Solanaceae	*Solanum americanum*	Nightshade	N	
Tamaricaceae	*Tamarix* sp.	Tamarisk, saltcedar	I	High
Verbenaceae	*Phyla nodiflora*	Phyla	N	
Viscaceae	*Phoradendron leucarpum* ssp. *macrophyllum*	American mistletoe	N	
MONOCOTS				
Alismataceae	*Alisma lanceolatum*	Water-plantain	I	
	Alisma triviale	Water-plantain	N	
	Sagittaria longiloba	Arrowhead	N	
	Sagittaria montevidensis ssp. *calycina*	Arrowhead	N	
Asparagaceae	*Asparagus officinalis* ssp. *officinalis*	Asparagus	I	
Cyperaceae	*Bolboschoenus fluviatilis*	River bulrush	N	
	Carex barbarae	Whiteroot sedge	N	
	Cyperus difformis	Nutsedge	I	
	Cyperus eragrostis	Nutsedge	N	
	Cyperus odoratus	Nutsedge	N	
	Eleocharis macrostachya	Spikerush	N	
	Eleocharis sp.[2]	Spikerush	--	
	Schoenoplectus acutus var. *occidentalis*	Common tule	N	
Iridaceae	*Iris pseudacorus*	Iris	I	Limited
Juncaceae	*Juncus balticus* ssp. *ater*	Baltic rush	N	
	Juncus effusus ssp. *pacificus*	Pacific rush	N	
Poaceae	*Avena* sp.	Wild oat	I	Moderate
	Bromus caroli-henrici	Brome, chess	I	

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
	Bromus diandrus	Ripgut grass	I	Moderate
	Bromus hordeaceus	Soft chess	I	Moderate
	Cynodon dactylon	Bermuda grass	I	Moderate
	Crypsis schoenoides	Swamp prickle grass	I	
	Deschampsia danthonioides	Annual hair grass	N	
	Distichlis spicata	Salt grass	N	
	Echinochloa crus-galli	Barnyard grass	I	
	Echinochloa oryzoides	Barnyard grass	I	
	Elymus ponticus	Tall wheat grass	I	
	Elymus triticoides	Beardless wild rye	N	
	Festuca perennis	Rye grass	I	Moderate
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	I	Moderate
	Leersia oryzoides	Rice cutgrass	N	
	Leptochloa fusca ssp. *fascicularis*	Bearded sprangletop	N	
	Paspalum dilatatum	Dallis grass	I	
	Paspalum distichum	Knot grass	N	
	Phalaris minor	Little-seeded canary grass	I	
	Phalaris paradoxa	Hood canary grass	I	
	Polypogon monspeliensis	Annual beard grass	I	Limited
	Sorghum halepense	Johnson grass	I	
Pontederiaceae	*Eichhornia crassipes*	Water hyacinth	I	High
Typhaceae	*Typha angustifolia*	Narrow-leaved cattail	N/I	
	Typha domingensis	Southern cattail	N	

NOTES:

1. Specimen was puberulent on stems and leaves, including young and mature leaves. Growing above the high tide line and area of frequent inundation, with *Rubus* spp. and *Rosa californica.*
2. No mature fruits present. Specimen less than 10 cm tall, appears annual, growing in open marsh where taller vegetation absent.

Appendix D

Special-Status Species Evaluated Table

APPENDIX D

Special-Status Species Evaluated Table

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Invertebrates			
Bombus crotchii Crotch bumble bee	—/CE/—	May inhabit open grassland and scrub. Current range is primarily adjacent foothills around the Central Valley. Largely extirpated from agricultural and urban areas of the Central Valley.	**Low:** Largely extirpated from agricultural areas of the Central Valley. Only a small portion of the project area has grassland habitat.
Bombus occidentalis western bumble bee	—/CE/—	Currently restricted to higher elevation and coastal meadows and grasslands with abundant floral resources that provide adequate nectar and pollen throughout the spring and summer. Typically nests in old mammal burrows and possibly logs. The historic range mostly excluded the Central Valley and drier, warmer areas.	**Low:** The study area is outside the current range.
Branchinecta conservatio Conservancy fairy shrimp	FE/—/—	Life cycle restricted to large, deep, cool-water vernal pools with moderately turbid water.	**None:** There are no vernal pools or wetlands with similar hydrology.
Branchinecta lynchi vernal pool fairy shrimp	FE/—/—	Life cycle restricted to vernal pools and sandstone rock outcrop pools.	**None:** There are no vernal pools or wetlands with similar hydrology.
Desmocerus californicus dimorphus valley elderberry longhorn beetle	FT/—/—	Breeds and forages exclusively on elderberry (*Sambucus*) shrubs typically associated with riparian forests, riparian woodlands, elderberry savannas, and other Central Valley habitats. Occurs only in the Central Valley of California.	**None:** The host plant for valley elderberry longhorn beetle (*Sambucus nigra* ssp. *caerulea*) is absent.
Elaphrus viridis delta green ground beetle	FT/—/—	Found primarily on sandy-clay soils on shorelines of vernal pools and bare ground or areas of sparse and short vegetation in the adjacent valley grasslands. Known only from the greater Jepson Prairie area in southern Solano County.	**None:** There are no vernal pools or wetlands with similar hydrology and the study area is outside the range.
Lepidurus packardi vernal pool tadpole shrimp	FE/—/—	Life cycle restricted to vernal pools.	**None:** There are no vernal pools or wetlands with similar hydrology.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Danaus Plexippus monarch butterfly	FC/—/—	Winter roosting (resting) sites occur along the California coast from northern Mendocino to Baja California, Mexico. Monarchs roost by the hundreds or thousands in wind-protected tree groves (e.g., eucalyptus, Monterey pine, cypress, and other trees), with nearby nectar and water sources. From California, populations migrate toward the Rockies, breeding on milkweed host plants in the spring and summer.	**Low (overwintering population):** The project site is not near any known or potential coastal roosting sites and is not expected to support spring breeding. Narrowleaf milkweed has been observed on the site; and monarch breeding status is not known on the site.
Amphibians			
Ambystoma californiense California tiger salamander	FE, FT/CSC/—	Annual grassland and grassy understory of valley-foothill hardwood habitats in Central and Northern California. Needs underground refuges and vernal pools or other seasonal water sources with a 3- to 6-month hydroperiod for breeding.	**Low:** The study area as well as surrounding properties lack vernal pools or breeding habitat with similar hydrology. The entire study area periodically floods for weeks to months.
Rana aurora draytonii California red-legged frog	FT/CSC/—	Breeds in slow-moving streams, ponds, and marshes with emergent vegetation; forages in nearby uplands within about 200 feet.	**None:** This species is extirpated from the Central Valley floor.
Spea hammondii western spadefoot	PT/CSC/—	May occur in the Central Valley and adjacent foothills. Occurs primarily in grasslands, but may occur in valley-foothill woodlands. Breeding and egg laying occur almost exclusively in vernal pools or similar seasonal wetlands.	**None:** There are no vernal pools or wetlands with similar hydrology.
Reptiles			
Actinemys marmorata western pond turtle	PT/CSC/—	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Moderate:** Potential aquatic habitat is present within the Toe Drain and seasonally within drainage features within the proposed Project area during the dry season when the Yolo Bypass is largely drained.
Thamnophis gigas giant garter snake	FT/ST/—	Prefers freshwater marsh and low-gradient streams. Has adapted to drainage canals and irrigation ditches.	**Present:** Suitable aquatic habitat is present within the Toe Drain and seasonally within drainage features within the proposed Project area during the dry season when the Yolo Bypass is largely drained. Because the bypass regularly floods during the snake's inactive season, it would not represent suitable overwintering upland habitat for the species. There are CNDDB occurrences within the proposed Project area (see Figure 3-1).
Fish			
Archoplites interruptus Sacramento perch	—/CSC/—	Euryhaline species historically found in sloughs, slow-moving rivers, lakes, and floodplains in the Central Valley.	**None**: Sacramento perch is extirpated from its native range in the Delta.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Hypomesus transpacificus delta smelt	FT/CE/—	Endemic to the San Francisco Bay/Delta in California. Delta smelt is a pelagic fish that is known to disperse up the Sacramento River to spawn. Spawning is February through July, with the peak in March through May. May be affected by downstream sedimentation.	**High**: Delta smelt seasonally use the Toe Drain as adults and potentially for spawning. The study area is in critical habitat for delta smelt.
Oncorhynchus mykiss steelhead–Central Valley DPS	FT/—/—	Requires cold, freshwater streams with suitable gravel for spawning; rears in seasonally inundated floodplains, rivers, tributaries, and the Delta. Spawning occurs from December to March in upper watershed streams with cool, well-oxygenated water. Juveniles likely use the edges of rivers and sloughs for foraging and rearing as they emigrate, during late winter and early spring (March through June).	**High**: Central Valley steelhead use the Toe Drain as migrating adults and migrating and rearing juveniles. The Toe Drain is designated critical habitat for Central Valley steelhead.
Oncorhynchus tshawytscha Chinook salmon–Central Valley spring-run	FT/CT/—	Anadromous species using riverine, estuarine, and saltwater habitat. Requires cold, freshwater streams with suitable gravel for spawning; rears in seasonally inundated floodplains, rivers, tributaries, and the Delta. Juveniles may use the edges of rivers and sloughs for foraging and rearing as they emigrate, during late fall and winter.	**High**: Central Valley spring-run Chinook salmon use the Toe Drain as migrating adults and migrating and rearing juveniles. The Toe Drain is designated critical habitat for Central Valley spring-run Chinook salmon.
Oncorhynchus tshawytscha Chinook salmon–Sacramento River winter-run ESU	FE/CE/—	Anadromous species using riverine, estuarine, and saltwater habitat. Requires cold, freshwater streams with suitable gravel for spawning; rears in seasonally inundated floodplains, rivers, tributaries, and the Delta. Juveniles may use the edges of rivers and sloughs for foraging and rearing as they emigrate, during winter and early spring.	**High**: Sacramento River winter-run Chinook salmon use the Toe Drain as migrating adults and migrating and rearing juveniles. The Toe Drain is designated critical habitat for Sacramento River winter-run Chinook salmon.
Pogonichthys macrolepidotus Sacramento splittail	—/CSC/—	Estuarine species, with adults and juveniles common throughout the rivers, sloughs, and floodplains of the Delta. Adults move upstream to spawn from late February to early July, with peak spawning in March through April.	**High:** Waterways in the area are used by adults and juveniles for foraging and rearing. Seasonally activated floodplain habitat within the Yolo Bypass is also used by adults for spawning.
Acipenser medirostris Southern DPS of North American green sturgeon	FT/—/—	The Southern DPS spawns in the Sacramento River basin. Juveniles and subadults rear in the Delta.	**High**: Green sturgeon are known to occupy the Delta. Green sturgeon are regularly captured in the upper Yolo Bypass, and it is possible for migrating, rearing, and/or foraging green sturgeon to be present in the study area. The study area is also designated critical habitat for green sturgeon.
Spirinchus thaleichthys Longfin smelt	PE/CT/—	Euryhaline, nektonic, and anadromous fish found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15–30 ppt, but can be found in completely freshwater to almost pure seawater.	**Moderate**: The waters adjacent to the study area have the potential to be occupied by longfin smelt. Fish monitoring upstream of the study area has detected longfin smelt in the Toe Drain, including in recent years.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Birds			
Agelaius tricolor tricolored blackbird	—/CT/—	Species is mostly colonial and most numerous in Central Valley and vicinity. Species is largely endemic to California. It requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**Moderate:** The managed tule wetland and sandbar willow scrub provide potential nesting habitat for the species; much of the proposed Project area provides potential foraging habitat.
Ammodramus savannarum Grasshopper sparrow	—/CSC/—	Dense, dry, and well-drained grassland with a mix of grasses and forbs. Scattered shrubs for singing perches. Nests in a slight depression on the ground built out of grasses and forbs at the base of a clump of grass.	**Low:** Flooding and irrigation in the study area limit nesting opportunities. There are few or no shrubs except near the Toe Drain.
Athene cunicularia Western burrowing owl	—/CSC/—	Species is found in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. It is a subterranean nester, dependent on burrowing mammals, most notably, the California ground squirrel.	**Moderate:** The proposed Project area lacks suitable natural breeding habitat for the species. No ground squirrel burrows were observed during prior biological surveys; regular flooding within the Yolo Bypass likely precludes the ability for fossorial mammals to establish. **The** species may occupy certain artificial structures (e.g., dry culverts) that are presented in the proposed Project area as alternative nesting sites when natural burrows are scarce. Burrowing owls may occupy the area to forage.
Buteo swainsoni Swainson's hawk	—/CT/—	Species breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees.	**Present:** Swainson's hawk was observed flying over the proposed Project area during biological surveys. Larger trees were identified during the survey of the proposed Project area, which may provide suitable nesting habitat for raptors, including Swainson's hawk. The riparian forest is the potential nesting habitat in the proposed Project area. The proposed Project area also provide foraging habitat for the species.
Charadrius alexandrines nivosus western snowy plover	FT/CSC/—	Occurs on sandy or gravelly beaches along the Pacific coast, at sand pits, dune-backed beaches, salt pans at lagoons and estuaries, and alkali lakes. Common on sandy marine and estuarine shores in fall and winter. Inland nesting areas occur at the Salton Sea, Mono Lake, and at isolated sites on the shores of alkali lakes in northeastern California, the Central Valley, and southeastern California deserts. Requires a sandy, gravelly, or friable soil substrate for nesting.	**None:** The study area does not provide suitable substrates or habitats for western snowy plover.
Charadrius montanus mountain plover	—/CSC/—	Species is found in short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Prefers grazed areas and areas with burrowing rodents.	**Moderate:** The grassland habitat provides potential wintering habitat for this species.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Circus hudsonius northern harrier	—/CSC/—	Species is found in coastal salt and freshwater marsh. Species nests and forages in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Present:** The managed wetlands provide potential nesting habitat for this species, but no nests within the proposed Project area were observed during surveys.
Coccyzus americanus occidentalis western yellow-billed cuckoo	FT/SE/—	Nests in densely foliaged deciduous trees and shrubs, especially willow, in broad riparian forest.	**Low:** The riparian woodland along the east side of the study area is narrow and relatively short. It is unlikely to support western yellow-billed cuckoo.
Elanus leucurus white-tailed kite	—/CFP/—	Forages in open plains, grasslands, and prairies; typically nests in trees.	**Present:** This species was incidentally observed in the Project area during a survey in June 2023.The study area has a few moderate-sized trees along the eastern edge that could potentially support a nest.
Falco peregrinus anatum American peregrine falcon	—/CF/—	Nests near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, and mounds. Breeds and feeds near water. Nest is a scrape on a depression or ledge in an open site. Will use human-made structures or tree snags, or old raptor nests.	**None:** Suitable nesting habitat is not present in the study area.
Geothlypis trichas sinuosa saltmarsh common yellowthroat	—/CSC/—	Nests in dense undergrowth in marshes and swamps, both fresh and brackish. Range includes four main areas: coastal riparian and wetland areas of western Marin County, the tidal marshes of San Pablo Bay and southern San Francisco Bay, and coastal riparian and wetland areas in San Mateo County. Additional disjunct populations occur at Stafford Lake, Marin County; Lake Merced, San Francisco County; and wet areas on San Bruno Mountain.	**Low.** The study area is outside the current known range.
Laterallus jamaicensis coturniculus California black rail	—/CP/—	Resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay Area, the Delta, the South Coast at Morro Bay and a few other locations, the Salton Sea, and the lower Colorado River. Occurs most commonly in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes and pickleweed. Found in the immediate vicinity of tidal sloughs. In freshwater habitat, usually found in bulrushes, cattails, and saltgrass. Nests are concealed in dense vegetation near the upper limits of tidal flooding. Occasionally found away from wetlands in late summer and autumn. May overwinter in locations where it does not breed.	**Low.** There is little brackish influence in the study area, natural hydrology and tides are mostly absent, and irrigation may result in artificial summertime water.
Melospiza melodia song sparrow (“Modesto” population)	—/CSC/—	Central lower basin of Great Valley, from Colusa County south to Stanislaus County and east of Suisun Marshes. Breeds chiefly below 200 feet elevation. Cover consists of willow and nettle thickets, growths of tules and cattails, and riparian oak forests with sufficient understory of blackberry.	**Present:** The managed wetlands and riparian forest provide potential habitat for this species, but no nests within the proposed Project area were observed during surveys.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Melospiza melodia maxillaris Suisun song sparrow	—/CSC/—	Prefers marsh and swamp, and wetlands.	**Low:** Occurs mostly around Suisun Bay and Marsh.
Progne subis purple martin	—/CSC/—	Widely distributed throughout nearly the entire eastern United States. In the western U.S., occurs in the Rocky Mountains, the Sonoran Desert, and Pacific Coast states; also occurs in central Mexico. Generally inhabits open areas near a water source. Purple martins nest colonially or singly in cavities, both natural and human-made. All current known nesting sites in Sacramento are in vertical weep holes beneath bridges built of steel and concrete box girders over urban areas and railroad tracks.	**None:** There is no suitable nesting habitat in the study area.
Riparia riparia Bank swallow	—/CT/—	Found primarily west of California's deserts in riparian and other lowland habitats. In summer, restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured sandy soils for nesting holes.	**None:** There is no suitable nesting habitat in the study area.
Vireo bellii pusillus least Bell's vireo	FE/CE/—	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, cottonwood, brooms, blackberry, and mesquite.	**Moderate:** While there are documented observations of this species within the Yolo Bypass, they were from locations from within the Yolo Bypass Wildlife Area approximately 6.5 miles to the north. Potential nesting habitat is present within the proposed Project area within riparian forested areas; however, no vireos were observed during past biological surveys of the proposed Project area. The species may potentially transit through riparian habitat patches.
Xanthocephalus xanthocephalus yellow-headed blackbird	—/CSC/—	Breeds commonly, but locally, east of the Cascade Range and Sierra Nevada, in the Central Valley, and selectively in the Imperial and Colorado River Valleys in Southern California. Nests, roosts, and does much foraging in fresh emergent wetland. Also feeds along shorelines and in open fields. Nests in deep and densely vegetated fresh emergent wetland, often along borders of lakes or ponds.	**Low:** There are very few records regionally.
Mammals			
Antrozous pallidus pallid bat	—/CSC/—	Locally common at low elevations in a wide variety of habitats, including grasslands, shrub lands, woodlands, and forests. May occur from sea level up through mixed conifer forests. Most common in open, dry habitats with rocky areas for roosting. Roosts in crevices in rock outcrops, mines, caves, tree hollows, buildings, and bridges.	**Low:** There are few roosting opportunities in the study area because of the lack of cliffs or other rocky areas. Trees at the site are generally too small for roosting.
Taxidea taxus American badger	—/CSC/—	Occurs in a wide variety of open forest, shrub, and grassland habitats that have friable soils for digging.	**Low:** No suitable burrows were observed. Periodic flooding and irrigation of the study area likely limits the occurrence of burrow-dwelling animals.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Plants			
Astragalus tener var. ferrisiae Ferris' milk-vetch	—/—/1B.1	Annual herb found in vernally mesic meadows and subalkaline flats from 5 to 250 feet. Known from the Sacramento Valley. Blooms April–May.	**Low:** Regional records nearby are associated with remnant vernal pool areas. The altered and partly artificial hydrology of the study area, along with the history of agricultural use, likely precludes use of the study area as habitat.
Astragalus tener var. *tener* alkali milk-vetch	—/—/1B.2	Generally found in playas, valley and foothill grasslands with adobe clay soils, and vernal pools. Generally found in alkaline soils. Blooms March–June.	**Low:** Regional records nearby are associated with remnant vernal pool areas. The altered and partly artificial hydrology of the study area, along with the history of agricultural use, likely precludes use of the study area as habitat.
Atriplex cordulata var. cordulata heartscale	—/—/1B.2	Chenopod scrub, alkali seasonal wetlands, and grassland. Often found in the sandy soils of alkaline flats and scalds in the Central Valley. Blooms April–October.	**Low:** Soils in the study area are clays or loams, and there is little alkaline influence. Artificial hydrology and historic land use also make presence unlikely.
Atriplex depressa brittlescale	—/—/1B.2	Generally found in chenopod scrub, alkali seasonal wetlands and grassland, meadows, and playas. Blooms May–October.	**Low:** There is little alkaline influence. Artificial hydrology and historic land use also make presence unlikely.
Atriplex persistens vernal pool smallscale	—/—/1B.2	Annual herb generally found in alkaline vernal pools. Blooms June–October.	**None:** There is little alkaline influence and no vernal pools. Artificial hydrology and historic land use also make presence unlikely.
Brasenia schreberi watershield	—/—/2B.3	Aquatic perennial rhizomatous herb found in freshwater marshes and swamps, ponds, and slow streams. Known from the Klamath Range, north Coast Ranges, high Cascade Range and Sierra Nevada, Sacramento Valley, and Modoc Plateau. Blooms June–September.	**Low:** Ditches with summertime water in the study area may provide potential habitat, but there are few reports from the Delta, and none more recent than 1976.
Carex comosa bristly sedge	—/—/2B.1	Perennial rhizomatous herb generally found in coastal prairie, marshes and swamps, and valley and foothill grassland. Blooms May–September.	**Low:** Managed tule marsh and managed marsh may provide potential habitat, but there are few reports from the Delta and none nearby.
Centromadia parryi ssp. *parryi* pappose tarplant	—/—/1B.2	Annual herb generally found in vernally mesic alkaline grassland and coastal prairie, alkaline springs and seeps, and coastal salt marshes and swamps. Blooms May–November.	**Moderate:** There is little alkaline influence, but this subspecies has been reported regionally and is somewhat tolerant of land disturbance.
Cicuta maculata var. *bolanderi* Bolander's water-hemlock	—/—/2B.1	Perennial herb found in coastal, fresh or brackish water marshes and swamps from 0 to 656 feet. Blooms July–September.	**Low:** There are few reports in the Delta outside the Suisun Bay and Marsh area.
Downingia pusilla dwarf downingia	—/—/2B.2	Annual herb found in vernal pools, ditches, and mesic grassland. Blooms March–May.	**Low:** There are no vernal pools or wetlands with similar hydrology.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Eryngium jepsonii Jepson's coyote thistle	—/—/1B.2	Perennial herb found on moist clay soil in valley and foothill grasslands and vernal pools. Known from the southern inner north Coast Ranges, deltaic Great Valley, and San Francisco Bay. Blooms April–August.	**Moderate:** There are suitable soils and recent nearby records, but the history of land use, altered hydrology, and lack of vernal pools in the study area limits the likelihood.
Extriplex joaquinana San Joaquin spearscale	—/—/1B.2	Annual herb found in alkaline chenopod scrub, meadows and seeps, playas, and valley and foothill grassland. Blooms Apr–Oct.	**Moderate:** There is little alkaline influence, but there are recent nearby records. The history of land use in the study area limits the likelihood.
Fritillaria liliacea Fragrant fritillary	—/—/1B.2	Perennial bulbiferous herb found in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland from. Often found on serpentine soils, or in heavy soil, open hills, and fields near the coast. Blooms Feb–Apr.	**None:** There is no serpentine, and the history of land use and artificial hydrology preclude the presence.
Gratiola heterosepala Boggs Lake hedge-hyssop	—/CE/—	Annual herb occurring in shallow water of lake or vernal pool margins. Blooms Apr–Aug.	**None:** There are no vernal pools or wetlands with similar hydrology, and the history of land use and artificial hydrology preclude the presence.
Hibiscus lasiocarpus var. *occidentalis* Wooly rose-mallow	—/—/1B.2	Perennial herb found in freshwater wetlands, marshes and wet banks. May grow in rip-rap on levee slopes. Blooms Jun–Sep.	**Moderate:** The margins of larger ditches in the study area with summertime water provide potential habitat.
Isocoma arguta Carquinez goldenbush	—/—/1B.2	Perennial shrub found in alkaline valley and foothill grassland. Blooms Aug–Dec.	**Low:** There is little alkaline influence, and the history of land use and artificial hydrology make presence unlikely. There are no records as far east as the study area.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	—/—/1B.1	Annual herb occurring in alkali playa, marsh and swamp, salt marsh, and vernal pools and playas. Blooms Feb–Jun.	**Low:** There are several recent records within about 13 miles, but they are in areas of vernal pool complexes higher than the study area. The study area has no vernal pools or complexes, or high alkaline influence.
Lathyrus jepsonii var. jepsonii Delta tule pea	—/—/1B.2	Perennial herb found in freshwater and brackish marshes and swamps. Blooms May–Jul and sometimes into September.	**Low:** The artificial hydrology of the tule marsh limits the likelihood of presence. Known records in the Delta are all further south than the Study Area.
Legenere limosa Legenere	—/—/1B.1	Annual herb occurring in vernal pools and wetlands. Blooms Apr–Jun.	**Low:** There are no vernal pools or wetlands with similar hydrology.
Lepidium latipes var. *heckardii* Heckard's pepper-grass	—/—/1B.2	Generally found in valley and foothill grasslands. Prefers wet places including vernal pools. Blooms Mar–May.	**Low:** There are no vernal pools or wetlands with similar hydrology.
Lilaeopsis masonii Mason's lilaeopsis	—/CR/1B.1	Perennial rhizomatous herb occurring in freshwater marsh, marsh and swamp, riparian scrub, and wetland. Blooms Apr–Nov.	**Moderate:** The margins of the Toe Drain provide potential habitat and there are records on the Toe Drain adjacent to the Study Area (part of CNDDB Occurrence #223). Most of the Toe Drain is outside the Study Area, but a small portion is in, and one of the ditches in the Study Area may also be tidal and provide potential habitat.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**
Limosella australis Delta mudwort	—/—/2B.1	Perennial stoloniferous herb occurring in brackish marsh, freshwater marsh, marsh and swamp, riparian scrub, wetland. Blooms May–Aug.	**Moderate:** The margins of the Toe Drain provide potential habitat. Most of the Toe Drain is outside the Study Area, but a small portion is in, and one of the ditches in the Study Area may also be tidal and provide potential habitat.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	—/—/1B.1	Annual herb occurring in vernal pools in cismontane woodland, lower montane coniferous forest, meadows and seeps, and valley and foothill grassland. Blooms May–Jul.	**None:** There are no vernal pools or wetlands with similar hydrology, and the history of land use and artificial hydrology preclude the presence.
Neostapfia colusana Colusa grass	FT/CE/1B.1	Annual herb found in large adobe vernal pools. Blooms May–Aug. In habitats of large vernal pools or playas with inundation lasting until May or June, in areas of the pools where other plants are almost entirely absent.	**None:** There are no vernal pools or wetlands with similar hydrology, and the history of land use and artificial hydrology preclude the presence.
Plagiobothrys hystriculus Bearded popcornflower	—/—/1B.1	Annual herb occurring in vernal swales and vernal pool margins in valley and foothill grassland. Blooms Apr–May.	**None:** There are no vernal pools or wetlands with similar hydrology, and the history of land use and artificial hydrology preclude the presence.
Puccinellia simplex California alkali grass	—/—/1B.2	Annual herb occurring in alkaline and vernally mesic sinks, flats, lake margins, and vernal pools. Blooms Mar–May.	**Low:** There is little alkaline influence and no vernal pools. Artificial hydrology and historic land use also make presence unlikely.
Sagittaria sanfordii Sanford's arrowhead	—/—/1B.2	Found in assorted freshwater habitats including marshes, swamps, and seasonal drainages. Blooms May–Oct.	**Moderate:** Ditches in the Study Area with summertime water provide potential habitat.
Scutellaria lateriflora Side-flowering skullcap	—/—/2B.2	Perennial rhizomatous herb occurring in marsh and swamp, meadow and seep, and wetlands. Blooms July–Sep.	**Moderate:** Managed tule marsh and managed marsh in the Study Area may provide potential habitat, although artificial hydrology and historic land use reduce the likelihood of presence.
Symphyotrichum lentum Suisun Mash aster	—/—/1B.2	Perennial rhizomatous herb occurring in brackish marsh, and freshwater. Blooms Apr–Nov.	**Moderate:** The margins of the Toe Drain provide potential habitat and there are records on the Toe Drain south of the Study Area. Most of the Toe Drain is outside the Study Area, but a small portion is in, and one of the ditches in the Study Area may also be tidal and provide potential habitat.
Trifolium hydrophilum Saline clover	—/—/1B.1	Annual herb occurring in salt marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools. Blooms Apr–Jun.	**Low:** There is little alkaline influence and no vernal pools. Artificial hydrology and historic land use also make presence unlikely.
Tuctoria mucronata Crampton's tuctoria or Solano grass	FE/SE/1B.1	Annual herb occurring in mesic valley and foothill grassland and vernal pools. Blooms Apr–Aug.	**None:** There are no vernal pools. Artificial hydrology and historic land use preclude the presence.

Scientific Name **Common Name**	**Federal Status/State Status/CRPR Status**	**Habitat**	**Potential to Occur**

NOTES:

Status

Federal:
FE = Endangered
FT = Threatened
FC = Federal Candidate
PE = Proposed Endangered
PT = Proposed Threatened
— = No federal status

State:
CE = State listed as Endangered.
CT = State listed as Threatened.
CSC = California species of special concern.
CP = Fully protected by the State of California under Section 3511 and 4700 of the CDFG Code.
CR = Listed as rare under California Native Plant Protection Act.
– = No state status

California Rare Plant Rank:
1B.1 = Rare, threatened, or endangered in California and elsewhere; seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
1B.2 = Rare, threatened, or endangered in California and elsewhere; moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
2B.1 = Rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
2B.2 = Rare, threatened, or endangered in California, but more common elsewhere; moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Other:

CNDDB = California Natural Diversity Database; Delta = Sacramento–San Joaquin Delta; DPS = distinct population segment; ESU = evolutionarily significant unit; ppt = parts per thousand

SOURCES: CNDDB, 2020; IPAC, 2020; CNPS, 2020.

Appendix D

Tide's End Multibenefit Restoration Project Land Use Constraints Analysis

Tide's End Multibenefit Restoration Project

Land Use Constraints Report

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Appendix

A Easement Agreements

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TIDE'S END MULTIBENEFIT RESTORATION PROJECT

Land Use Constraints Report

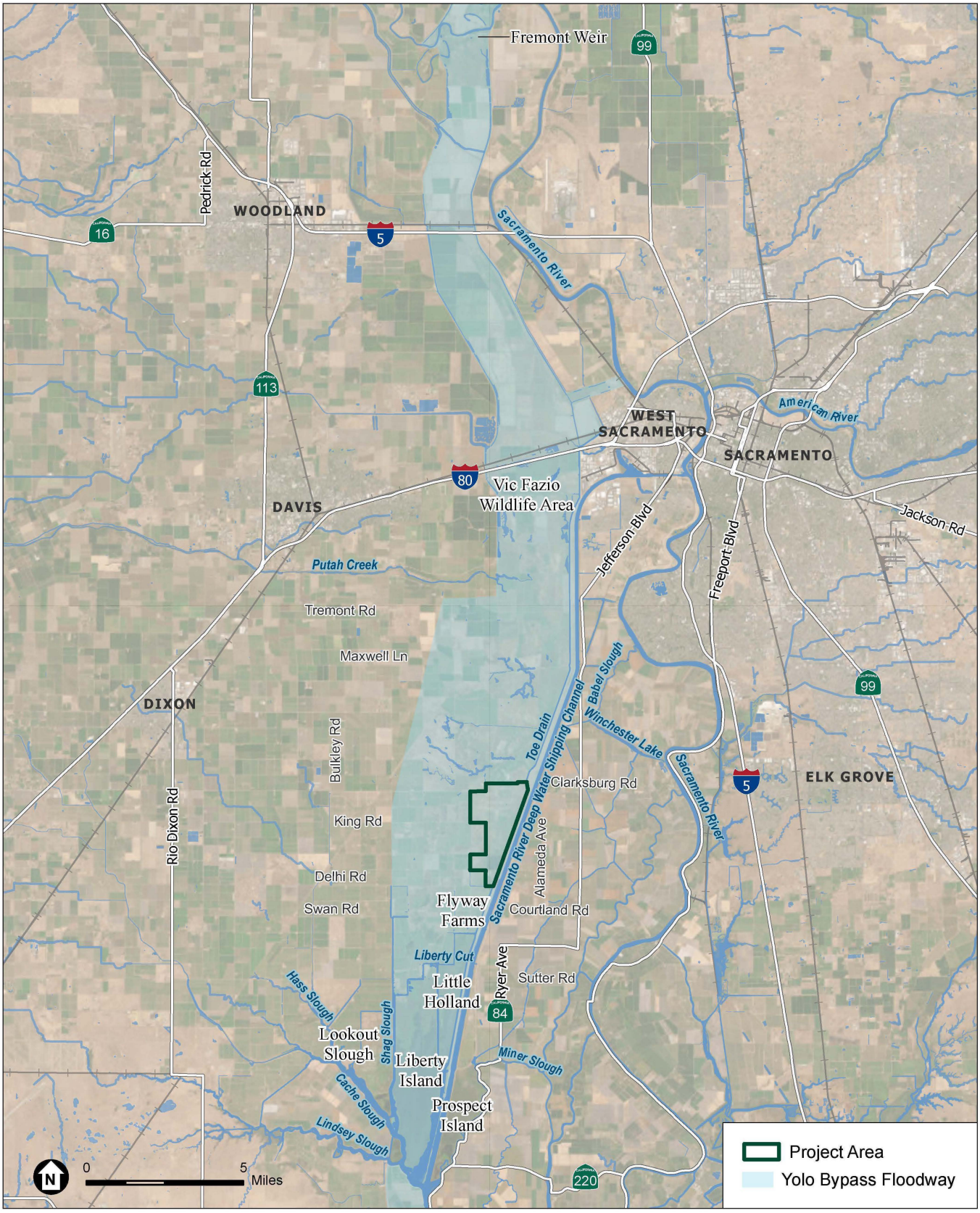
1 Introduction

The Tide's End Multibenefit Restoration Project (proposed Project) would restore tidal wetland and associated floodplain habitat at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento-San Joaquin River Delta (Delta) (**Figure 1**). Implementation of the proposed Project would connect contiguous properties and complete a ten-mile landscape corridor of uninterrupted floodplain and wetland habitat in an area of the Delta critical for smelt and salmonid habitat restoration.

EIP California, LLC owns the six properties that make up the proposed Project area, currently operated as agricultural lands and managed waterfowl habitat. Those properties are (listed from north to south): Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams. The proposed Project would restore and enhance tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) across the entire 2,212-acre proposed Project area. Proposed Project activities would further the goals and objectives of the Central Valley Flood Protection Plan and other systemwide priorities by managing floodway roughness, maintaining long-term flood capacity, and reducing potential flood encroachments in the Yolo Bypass. The proposed Project would also support sea level rise resiliency and climate change adaptation while supporting the framework outlined in the Healthy Rivers and Landscapes Program.

This restored mix of tidal and associated floodplain habitats would contribute to conservation, flood risk reduction, climate and drought resiliency efforts, and local and regional priorities by: creating functional fish habitat; improving connectivity to waterways for fish passage; enhancing food web productivity; ensuring capacity and managing roughness in the Yolo Bypass to help accommodate flood flows; increasing regional capacity for sea-level-rise resiliency through inland migration of tidal habitat; increasing groundwater recharge potential; and supporting local agricultural and recreational interests.

The proposed Project was sited in this area to take advantage of existing land elevations and amplify the habitat benefits of seasonal flows. By restoring and enhancing tidal wetland and floodplain habitats within the Yolo Bypass, conditions would mimic the historic shallow, long-duration flood patterns of the region that support underlying ecological processes necessary for productive aquatic ecosystems. In addition, long-term operations following implementation of the proposed Project would integrate agricultural and recreational uses with ecologically sensitive



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1
Regional Vicinity

Prepared by: ESA

SOURCE: NAIP, 2022; EIP, 2024; ESA, 2024

floodplain agriculture (e.g., rice operations) and fish-friendly waterfowl management practices that also provide food web benefits for native fish species. To further contribute to the sustainability of agriculture in the region, the proposed Project would improve water delivery and drainage systems between the proposed Project area and adjacent lands.

This report summarizes the proposed Project area's existing land management practices and infrastructure, encumbrances, agricultural classifications, and water management practices and infrastructure as they relate to Project design considerations.

2 Land Uses and Management Practices

The proposed Project area is located at the southern end of the Yolo Bypass, which is a flood control facility in the State Plan of Flood Control with a maximum capacity of approximately 500,000 cubic feet per second (cfs) (Smalling et al. 2005) during high-flow events on the Sacramento River or creeks on the west side (e.g., Cache Creek). The proposed Project area is adjacent to the southeastern drainage channel for the flood control structure (Toe Drain). Inundation of the Yolo Bypass occurs in approximately 70% of years on record (Reclamation and DWR 2019). The duration of seasonal inundation can be as short as five days and as long as four months (Opperman et al. 2017; Yolo Bypass Working Group et al. 2001).

Managed wetland habitat for waterfowl is the dominant land use in the local region, including large portions of the proposed Project area where constructed wetlands are operated for a duck club via an irrigation system comprised of pumps and drainage ditches. The Laurel G, Yolo Basin, Kleary, and Williams properties are operated as seasonal wetland habitat for duck hunting, and a duck hunting clubhouse is located in the southwest corner of the Laurel G property. The Lucky Five South property, on the other hand, is not able to pond water: the northwestern side is too high to hold water for managed seasonal wetland and is managed instead as upland bird habitat (for pheasant hunting), while the soil types and topography of the southeast side are too well-draining. The Capitol Oil property was historically farmed for rice, corn, and other general field crops and has continued to be managed for rice production since EIP's purchase of the property in 2019.

Current land management practices within the proposed Project area include flood-up and drainage associated with typical seasonal rice cultivation practices and managed wetland for waterfowl. Starting in November, rice fields are flooded to facilitate the decomposition of rice straw after harvest. Active field flooding is maintained through early February, when water is drawn off the fields ("drawdown") via gravity and management of flashboards (also described further in the subsection on "Water Conveyance System and Management" below) so that drying can take place, allowing field tillage and seed bed preparation to occur in March through April. Once fields have been prepared, they are flooded again in April and May as presoaked rice seeds are spread. The fields are then drained for the active growing season, June through October. This practice of flood-up and drawdown for rice cultivation can benefit wetlands managed for waterfowl, as gradual flooding increases seed production by aquatic plants (Nelms and Ballinger 2007), and the timing and duration of drawdown affects the types of vegetation that grow on the properties, thereby affecting waterfowl usage.

Similarly, managed seasonal wetlands are typically flooded in September until drawdown occurs during the spring (March, April). Once drained, vegetation management and other maintenance activities are performed. Water management for agriculture and seasonal wetlands is conveyed through the site's existing network of pumps, ditches, and water control structures (as described in the subsection on "Water Conveyance System and Management" below). The Toe Drain is the primary source of irrigation water for the site and serves as the primary drainage conveyance facility during periods of drawdown.

Additional land management practices include grazing by cows and sometimes goats during most summers on a portion of the proposed Project area. Grazing is used to manage vegetation growth, creating conditions more favorable for attracting waterfowl (the lands are not seeded or irrigated for pasture and the grazing is strictly for management purposes). These management practices reflect the recurring and periodic inundation of the broader region in which the proposed Project area is located. There is a variety of physical infrastructure present in the proposed Project area as well (e.g., roads, utilities infrastructure) that similarly reflects prior and current uses of the properties. In addition, existing conservation easements and agricultural designations have influenced land uses on the proposed Project area's properties and how they have been managed.

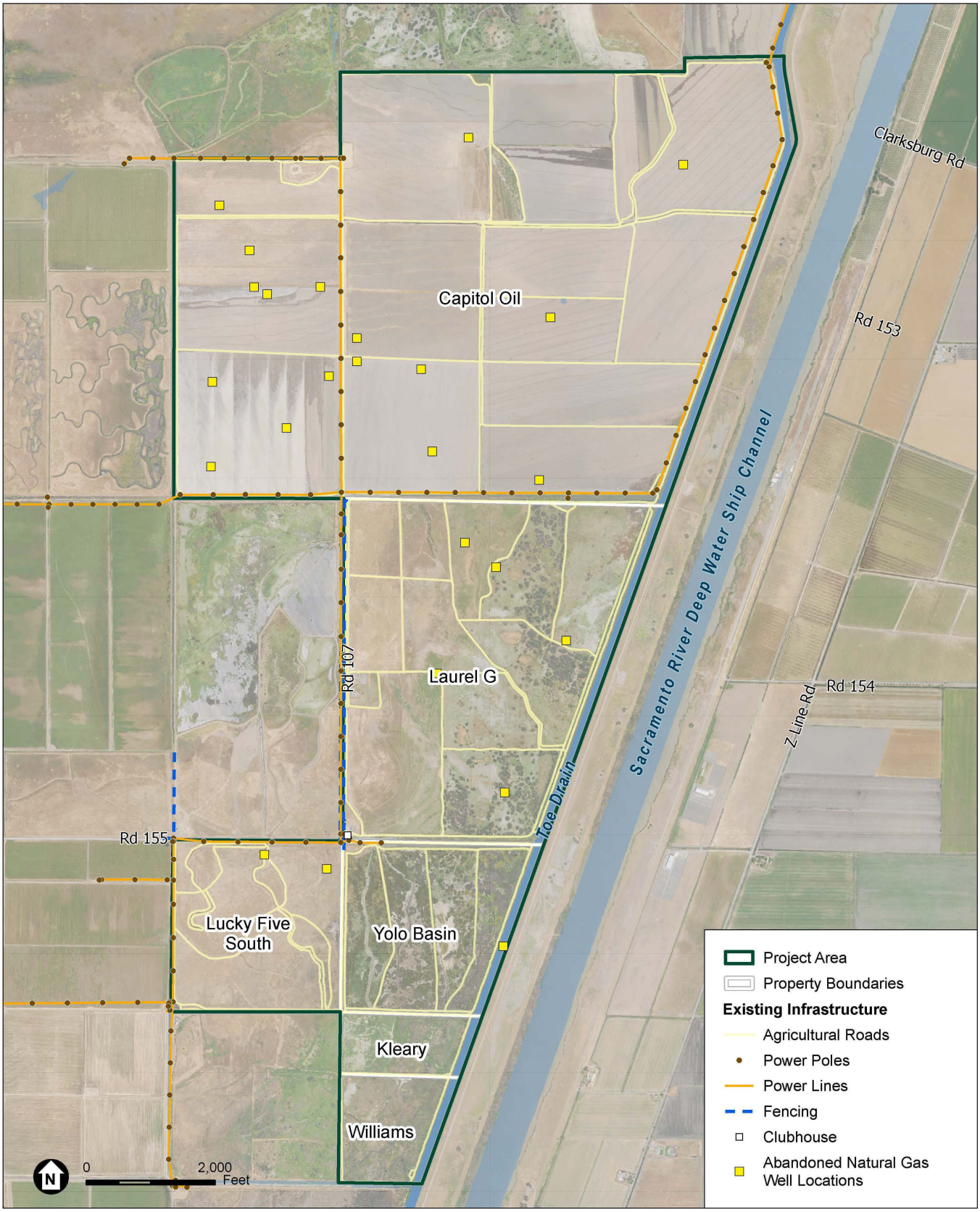
2.1 Existing Infrastructure

The proposed Project area is comprised of six mainly undeveloped properties; however, there is a variety of existing physical infrastructure located on site related to past and present land uses (**Figure 2**). There is a small (approximately seven acres) duck clubhouse and gravel parking lot at the southwest corner of the Laurel G property. Two county roads and associated rights-of-way are located on the western side of the proposed Project area: Road 155 runs east-west on the north side of the Lucky Five South property, and Road 107 runs north-south along the west side of the Laurel G property. These roads connect to an existing system of dirt agricultural roads that run atop berms across the proposed Project area. Fencing has been previously installed along the western side of the Laurel G property and north of the northwestern corner of the Lucky Five South property.

There are also approximately 87 power poles on the proposed Project area, carrying approximately 35,500 feet of overhead utility line owned and operated by Pacific Gas & Electric (PG&E), providing power to properties both within and adjacent to the proposed Project area (Davids Engineering 2024a). In addition to electric infrastructure, there are 25 abandoned natural gas wells (all plugged before the end of 2012) throughout the Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, and Kleary properties (ESA 2024).

2.2 Conservation Easements

There are currently six conservation easements on the proposed Project area, covering the Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams properties (**Figure 3**). These easements are held by state and federal agencies, including the California Department of Fish and Wildlife (CDFW), the United States Fish and Wildlife Service (USFWS), and the United States Natural Resources Conservation Service (NRCS). The following subsections provide additional information related to the prohibitions and allowed uses of each easement document.



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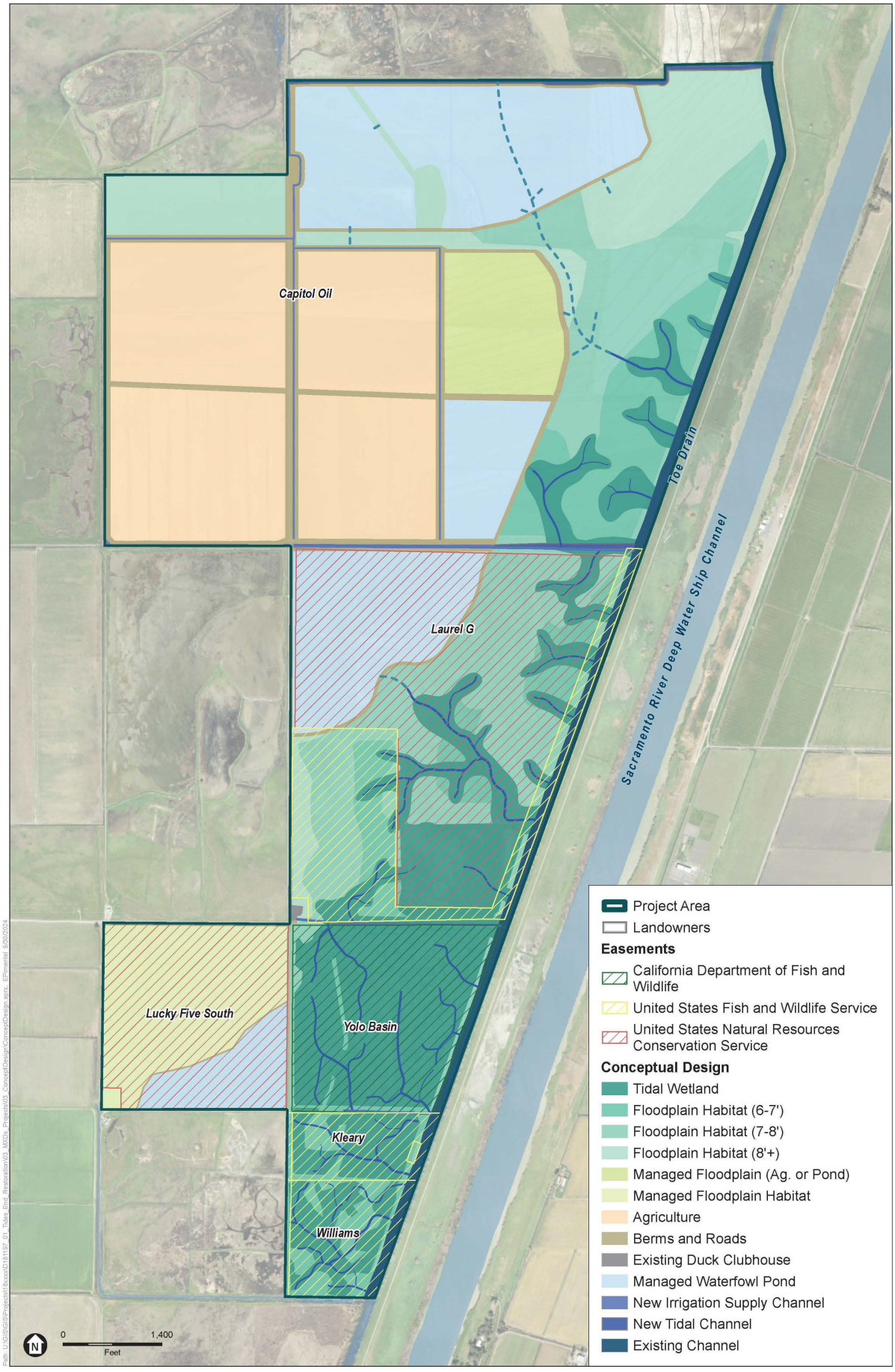
Tide's End Multibenefit Restoration Project

Figure 2
Existing Conditions and Infrastructure

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2024



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Prepared by: ESA

Tide's End MultiBenefit Restoration Project

Figure 3
Tide's End Conceptual Design and Conservation Easements

SOURCE: esri 2022, CCED 2022, ESA 2024

As stated above, these eased lands are currently managed as seasonal wetland habitat for waterfowl (Laurel G, Yolo Basin, Kleary, and Williams) and upland bird habitat (Lucky Five South). Refer to **Appendix A** to view the full text of the six easement agreements.

CDFW Conservation Easement

The Yolo Basin property is protected by a conservation easement acquired by the Wildlife Conservation Board (WCB) and held by CDFW. The easement, which consists of approximately 151 acres, was recorded in 1993 to ensure the property was preserved and enhanced to support waterfowl and other wetland associated species.

The easement describes its purpose to conserve and enhance the natural and managed wetland and upland habitat values of the property, preserve its natural character, and prevent the development of the property for any purpose that conflicts with the habitat values it provides to waterfowl and other wetland associated species. The terms and conditions of the easement reserve for the Grantor (i.e., EIP as the landowner) the right to use the property for purposes "deemed by the State as not inconsistent with the purposes, intent and specifications of this Conservation Easement" (Condition 2). Specific activities laid out as inconsistent with the easement include those that would diminish the quality of wetland and waterfowl habitat or the use thereof by wildlife (e.g., commercial agricultural cultivation, installation of structures other than hunting blinds and water control infrastructure, alteration of topography or vegetation that would adversely affect waterfowl habitat value or use, livestock grazing, tree removal, application of herbicides or pesticides, dumping or burning waste). The easement also outlines a process by which the State may approve an inconsistent use, so long as impacts to waterfowl use and wetland habitat values have been assessed and, if necessary, mitigated (Condition 3).

Condition 4 points to a Waterfowl Habitat Management Plan (Management Plan) provided as Exhibit B to the easement document. The Management Plan outlines specific management practices intended to optimize waterfowl food production and/or nesting and brood habitat on the property, favoring seasonal wetlands and "moist-soil" plants that provide food for wintering waterfowl, including smartweed, swamp timothy, and watergrass. Condition 4 also provides that the Management Plan may be amended by the mutual consent of the Grantor and the State.

Condition 7 provides the notification and approval process for any proposed changes or modifications to the conservation easement area for any activity, use, or enterprise that requires CDFW's approval or that may not be entirely consistent with either the Management Plan or Article 2 of the conservation easement deed.

USFWS Conservation Easements

Currently, the USFWS holds conservation easements over portions of three properties within the proposed Project area: an easement on approximately 122 acres of the Laurel G property was acquired in 1996; an easement on approximately 44 acres of the Kleary property was acquired in 1998; and an easement on approximately 100 acres of the Williams property was acquired in 2006. These conservation easements were acquired by the USFWS to provide waterfowl habitat suitable for migratory birds, as authorized and funded under a provision of the Migratory Bird Conservation Act (16 U.S.C. 715 et seq).

The Laurel G easement (Condition 4), Kleary easement (Condition 3), and Williams easement (Condition 3) each lay out prohibited activities affecting only the specific acreage covered by the easements, which include: altering the existing topography or cultivating agricultural crops on the easement areas; otherwise altering or permitting the use by third parties of the easement areas for any purpose, including the exploration or development of reserved minerals; or placing any structures on the easement areas other than hunting blinds without written authorization from USFWS. Condition 3 of the Laurel G easement clarifies that the Grantor is not obligated to take any action or incur any expense related to the construction of water distribution facilities or maintenance of the easement areas as waterfowl habitat. The Grantor is, however, expected to flood the easement areas to the historical hunting season (fall and winter) levels, or the Grantee may flood the easement areas from September 1 through March 1 of the following year. Condition 5 of the Kleary and Williams easements contains the same terms (although these easements provide the Grantee sole discretion for flooding of the lands beginning October 15, as opposed to September 1).

Each easement contains a list of plants (as Exhibit A or Exhibit 1, depending on the document) approved for conservation easements in the Sacramento Valley (or North Central Valley Wildlife Management Area) that are considered desirable for waterfowl and other wildlife. The lists include various plant species of the following types: aquatic-floating and submergent plants; aquatic-emergent plants; moist-soil plants; upland plants; and trees, shrubs, and vines. Plants not on the list may not be introduced on the easement lands without written permission from the USFWS.

NRCS Easements

An easement over a portion of the Laurel G property (approximately 360 acres) was acquired in 1993 by and through the United States Department of Agriculture (USDA) Agricultural Stabilization and Conservation Service (ASCS), which has since been consolidated under the Farm Service Agency (FSA). An easement over a portion of the Lucky Five South property (approximately 157 acres) was acquired in 2006 by and through the USDA's Commodity Credit Corporation and NRCS. The authority for both acquisitions was granted under the Food Security Act of 1985 as amended (16 U.S.C. 3801 et seq). The conservation easements were implemented under a Wetlands Reserve Program (WRP) contract; the WRP has since been replaced by the Agricultural Conservation Easement Program (ACEP) managed by the NRCS under the Agricultural Act of 2014 (Public Law Number 113-79). Pursuant to the ACEP Interim Rule, easement lands previously enrolled under the WRP, including the subject conservation easements, are considered enrolled in ACEP and are subject to the same long-term stewardship and management policies and implementation funding sources as current ACEP easement acquisitions (7 CFR 1468). Wetland Reserve Easements (WREs) are one component of the ACEP (the other component being Agricultural Land Easements).

Under the WREs, the NRCS has restored the lands on both properties and actively works with the private landowners to manage and maintain the properties as wetlands and wildlife habitat. The purpose of the WREs on the Laurel G and Lucky Five South properties is to restore, protect, manage, maintain, and enhance the functional values of wetlands and other lands for fish and wildlife habitat (particularly migratory waterfowl and shorebirds), water quality improvement, flood water retention, groundwater recharge, open space, aesthetic values, and environmental education.

Laurel G Property

Part III, Section F of the Laurel G WRE (Prohibitions) specifically prohibits the landowner from building structures; planting or harvesting agricultural commodities; or altering the hydrology, wildlife habitat, or other natural land features of the easement lands. Management requirements are laid out in the Wetland Reserve Plan of Operations (WRPO) for the property, a summary of which is attached to the easement document. The WRPO states that existing dikes and water control structures on the property will be maintained to provide the means to seasonally flood the area for wetland habitat, by way of overland flooding from the Yolo Bypass, and provides that the property may be permanently flooded to provide nesting and brood habitat for resident waterfowl and shorebirds.

The WRPO also sets forth that vegetative cover will include a mix of wetland plant types including emergent and seasonal wetland plants, as well as open water. While "any mixture of these habitat types is acceptable" according to the document, it is laid out that persistent emergent vegetation (e.g., cattails, hardstem bulrush) must be managed to ensure cover is no more than 75% and no less than 25% of the easement area. Management of vegetation, including the desired mix of wetland plant species as well as control of noxious weeds, may occur via burning, grazing, or chemical or mechanical treatment.

The WRPO also specifies compatible uses of the easement lands to include: hunting, fishing, and trapping; hiking, picnicking, and bird watching; oil and gas leasing, exploration, and extraction (with conditions); as well as seasonal grazing and/or mowing (from July 15 through August 30) for vegetation management. Compatible use authorizations are not discussed in the WRE deed or the WRPO, but according to ACEP regulations laid out in Title 7 of the Code of Federal Regulations, "NRCS may, in its sole discretion, authorize the landowner to conduct compatible uses as defined in this part on the easement or contract area. Compatible use authorizations are time-limited and may be modified or rescinded at any time by NRCS" (7 CFR 1468.38(d)). NRCS has the authority to review, revise, and supplement the WRPO with additional conservation practices or eligible activities needed to "enhance, maintain, manage, repair, replace or otherwise to protect the functions and values of the easement" (7 CFR 1468.38(c)).

Lucky Five South Property

Part III, Section A of the Lucky Five South WRE (Prohibitions) specifically prohibits the landowner from: haying, mowing, or seed harvesting; altering wildlife habitat by any means that destroys vegetative cover; dumping; harvesting wood products; draining, dredging, channeling, filling, leveling, pumping, diking, impounding, altering, or tampering with water control structures; diverting water into or out of the easement area by any means; building or placing structures; planting or harvesting any crop; grazing or allowing livestock; and otherwise disturbing or interfering with the nesting or brood-rearing activities of migratory birds.

No specific management regime is prescribed to the landowner by the easement document or attachments; management activities are to be governed by the NRCS as deemed appropriate to meet the purpose of the WRE, which is to restore, protect, manage, maintain, enhance, and monitor the wetland and other natural values of the easement area.

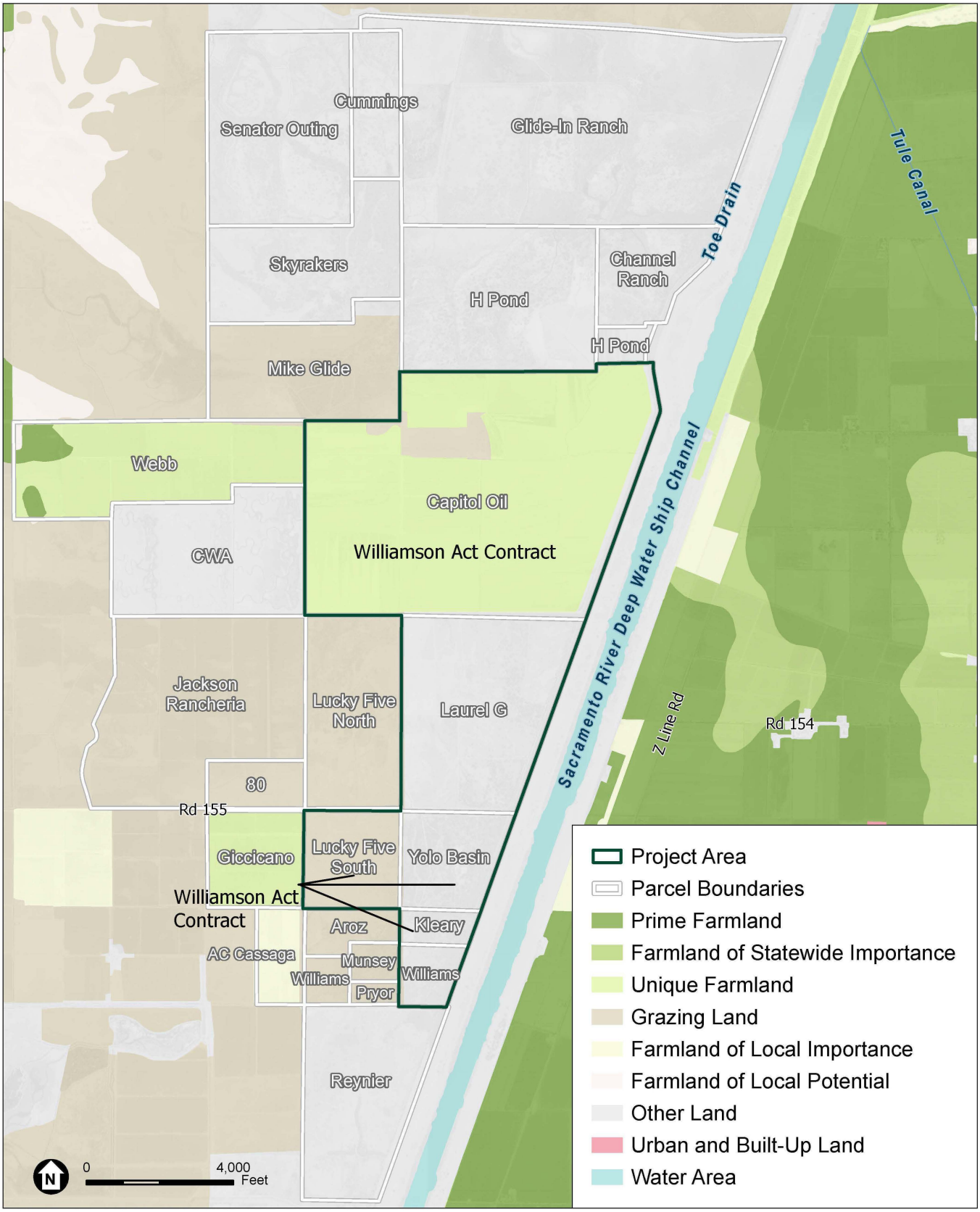
Compatible uses are permitted on the easement lands as outlined in Part IV of the WRE. This section states that compatible use authorizations may be granted by the NRCS if activities are deemed consistent with the long-term protection and enhancement of the wetland and other natural values of the easement lands. The NRCS will likely need to determine that the proposed use furthers the functions and values of the WRE, and then issue a compatible use authorization to the landowner under the terms of the deeds and applicable regulations (as outlined in 7 CFR 1468.38).

2.3 Agricultural Classifications

Figure 4 presents farmland classifications for the proposed Project area, based on the California Department of Conservation, Division of Land Resource Protection's Farmland Mapping and Monitoring Program (FMMP). The FMMP currently conducts farmland mapping efforts within the state of California to produce Important Farmland Maps that represent a combination of soil quality information (physical and chemical features) and land use information (type and degree of vegetative cover and/or type and intensity of land disturbance or development). The maps are updated every two years using aerial infrared photographs and field reconnaissance to map existing land uses (e.g., urban, rural residential, natural vegetation, water, agriculture) in combination with NRCS digital soil survey data. As such, Important Farmland Maps account for factors such as existing vegetation, chemical and physical features of underlying soil, and development intensity, but they do not consider land use regulations or restrictions, such as local land use plans, rights-of-way, or uses prohibited by easements or other ownership restrictions.

The California Public Resources Code (Sections 21060.1 and 21095) defines "agricultural land" under CEQA as those lands designated by the FMMP as either Prime Farmland, Farmland of Statewide Importance, and/or Unique Farmland. Appendix G of the CEQA Guidelines refers to these same three categories as "Farmland." Definitions of these FMMP categories are as follows:

- **Prime Farmland** – Land that has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to mapping.
- **Farmland of Statewide Importance** – Land similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to mapping.
- **Unique Farmland** – Land of lesser quality soils used for the production of the state's leading agricultural cash crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California.



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 4
Agricultural Land Designations

Prepared by: ESA

SOURCE: NAIP, 2022; FMMP, 2020

The only CEQA-defined Farmland present within the proposed Project area is within the Capitol Oil Property, with approximately 1,153 acres of this property mapped as Unique Farmland (**Table 1**). As shown in Table 1 and Figure 4, other FMMP lands occur in the proposed Project area that are not defined as Farmland by the California Public Resources Code (including "Grazing Land" and "Other Land").

TABLE 1
FMMP CLASSIFICATIONS WITHIN THE PROPOSED PROJECT AREA

Property	Unique Farmland (acres)	Grazing Land (acres)	Other Land (acres)	Total (acres)
Capitol Oil	1,153	62	66	1,281
Laurel G	–	11	487	498
Kleary	–	2	43	45
Lucky Five South	–	162	–	162
Williams	–	5	57	62
Yolo Basin	–	5	159	164
Subtotal	**1,153**	**247**	**812**	**2,212**

Source: ESA, 2024

NOTES:

1. While the proposed Project area contains Grazing Land as defined by the FMMP, livestock grazing has been expressly prohibited by recorded easements with CDFW and NRCS (sometimes excepting seasonal grazing for vegetation management) on Yolo Basin and a portion of Laurel G since 1993 and on Lucky Five South since 2006. See Section 2.2 for further details.
2. The "Other Land" category applies to land not included in any other mapping category and does not necessarily indicate agricultural use or potential. This category includes a variety of land cover types including low density rural development, wetland and riparian areas, confined livestock, borrow pits and vacant lands, water bodies smaller than forty acres, and more.

Figure 4 also notes Williamson Act contract status for the proposed Project area properties, based on the California Department of Conservation's Yolo County Williamson Act map data for 2018. The California Land Conservation Act of 1965, commonly known as the Williamson Act (California Government Code, Sections 51200 through 51297.4), allows local governments to create agricultural preserves and enter into contracts with private property owners to protect land for agricultural and open-space purposes. The Capitol Oil, Yolo Basin, Kleary, and Lucky Five South properties all have active Williamson Act contracts. Williamson Act contracts and implications for the proposed Project are addressed under Section 4 of this report.

3 Water Conveyance System and Management

Water supply distribution and drainage at the proposed Project area are conducted by a series of water conveyance features and infrastructure, defined as follows (Davids Engineering 2024b):

- Canal: An open-channel water conveyance feature that supplies water to lateral canals and fields. Water flows from higher elevation to lower elevations via gravity. Canals in the proposed Project area are supplied by lift pumps (defined below) that lift water from a lower elevation supply source and discharge it into the canal, enabling gravity flow within the canal.
- Drain ditch (or drain): An open channel linear water conveyance feature that conveys excess flow from fields, canals, or from overland runoff. In the proposed Project area, water flows from fields, through spills (defined below), and into a drain ditch where it returns to the Toe Drain.

- Control structure: Structures placed along a canal network to regulate distribution, flows, and/or the level of water. The structures may include gates, weirs, and/or valves operated manually or automatically to control the movement of water.
- Culvert: A pipe or similar structure to allow the passage of water underneath roads, pathways, or other obstacles that intersect a canal.
- Heading Structure: A structure placed at the upstream end of a new canal or canal lateral to control the flow of water.
- Lift Pump: A pump designed to move water from a lower elevation to a higher elevation.
- Spill: Structure that allows the flow of water out of a field or from a canal into a drain ditch, either for operational or for emergency purposes. Depending on their purpose, they may be operated manually (operational) or automatically (emergency).
- Turnout: Structure (consisting of gates, valves, or a similar device) used to divert and regulate the flow of water from a canal or canal lateral into individual fields.

Lift pumps in the proposed Project area draw directly from the Toe Drain or from canals connected to the Toe Drain. Some of the canals are also equipped with open culverts or flap-gated culverts[1] to manage and supply water from the Toe Drain. Water delivered to the properties generally drains to the east, flowing back to the Toe Drain through spills, culverts, and drain ditches. Some of the neighboring properties receive water from the proposed Project area or drain through the proposed Project area as well. **Figure 5** shows the proposed Project area's water supply infrastructure and **Figure 6** presents the proposed Project area's drainage system. The following subsections summarize the water control and conveyance systems for the proposed Project area and adjacent properties, as further detailed in the *Inventory of Existing Water Conveyance and Distribution Infrastructure* for the proposed Project area, a technical memorandum prepared by Davids Engineering, Inc. based on a comprehensive field inventory (Davids Engineering 2024b).

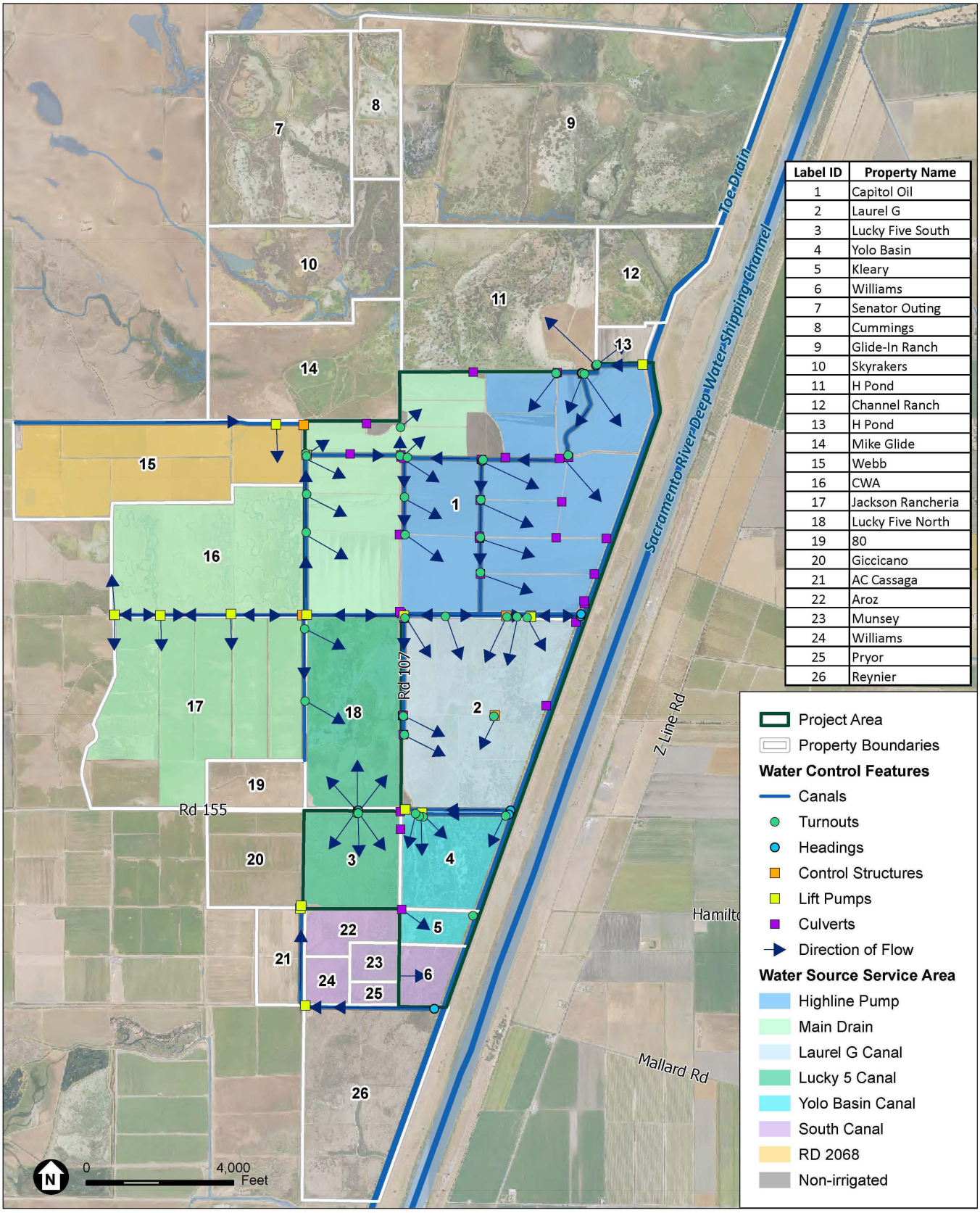
3.1 Proposed Project Area Properties

Capitol Oil

The primary water delivery pump for this property is called the Highline Pump, located in the northeast corner of the Capitol Oil property. The Highline Pump lifts water directly from the Toe Drain and discharges it into the property's main canal/canal lateral network that runs west and then south through the property, supplying water to approximately 722 acres via 14 turnouts.

A second lift pump in the southwest corner of the property pumps water northward from the Main Drain, a bidirectional flap-gated channel that runs along the Capitol Oil/Laurel G boundary. This pump supplies water to approximately 286 acres on the Capitol Oil property via five turnouts. The Main Drain is also part of the property's drainage network, carrying discharges from RD 2068 lands and the Mike Glide property, to the north and west, as well as flows from the Capitol Oil property, via six spills and four culverts.

[1] A flap gate (or tidal gate) allows a water channel to fill as the tide rises and retains water as the tide recedes.



Label ID	Property Name
1	Capitol Oil
2	Laurel G
3	Lucky Five South
4	Yolo Basin
5	Kleary
6	Williams
7	Senator Outing
8	Cummings
9	Glide-In Ranch
10	Skyrakers
11	H Pond
12	Channel Ranch
13	H Pond
14	Mike Glide
15	Webb
16	CWA
17	Jackson Rancheria
18	Lucky Five North
19	80
20	Giccicano
21	AC Cassaga
22	Aroz
23	Munsey
24	Williams
25	Pryor
26	Reynier

Ecosystem Investment Partners

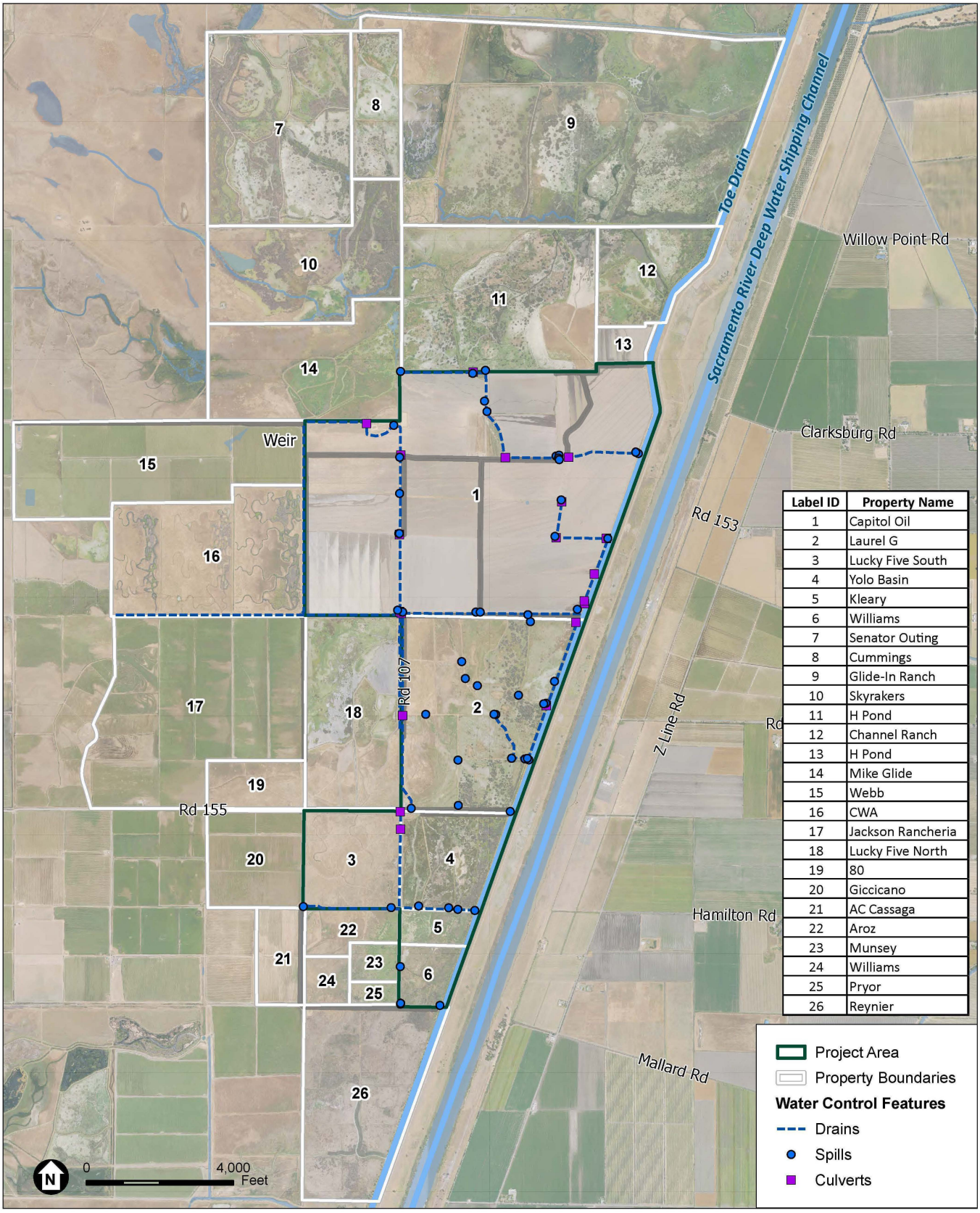
TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 5
Existing Water Supply System

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2024



Label ID	Property Name
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15	Webb
16	CWA
17	Jackson Rancheria
18	Lucky Five North
19	80
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21	AC Cassaga
22	Aroz
23	Munsey
24	Williams
25	Pryor
26	Reynier

Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 6
Existing Drainage System

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2024

Two open culverts also exist on the eastern edge of the property between the drain ditches and the Toe Drain. These culverts have flashboards[2] that allow for management of water levels. This network of drains collects water generally flowing from west to east, for lands within the Capitol Oil property and to the north of the proposed Project area, and includes nine culverts and 11 inflowing spill structures from fields or adjacent lands.

Laurel G

A canal on the northern boundary of the Laurel G property (Laurel G Canal) parallels the Main Drain. This canal is connected to the Toe Drain by a flap-gated culvert and is comprised of two distinct segments. Two lift pumps located approximately one quarter mile west of the culvert lift water into the second canal segment, which continues to carry water west to another pump located at the northwest corner of the property. This pump directs water south into a canal lateral along the property's west side. Together, this system supplies water to approximately 444 acres via seven turnouts. The canal has a spill structure near the lift pumps that provides passive (or manual) spill of excess supply into the adjacent Main Drain.

Flow travels downslope across the Laurel G property from west to east, with fields draining through a number of spill structures into a system of drains on the east side of the property that discharge into the Toe Drain. A north-south running drain is also located on the property's west side, which provides roadside drainage along County Road 107. This drain discharges into a canal on the property's southern boundary that is connected to the Toe Drain (and services the Lucky Five South property, discussed below).

Yolo Basin

A canal on the northern boundary of the Yolo Basin property (Yolo Basin Canal) is connected to the Toe Drain via a buried culvert (it is unknown whether this heading contains a one-way or adjustable flap gate). Water in the canal flows westward to a lift pump near the northwest corner of the Yolo Basin property, which lifts water into an approximately 180-foot-long buried pipeline system that discharges water through three turnouts to the 140-acre Yolo Basin property and the 38-acre Kleary property.

Excess flows across the Yolo Basin property, as well as upgradient lands to the west, are directed into a ditch along the property's southern boundary via spill structures and then discharged to the Toe Drain.

Lucky Five South

Water for the Lucky Five South property is supplied from a flap-gated canal (Lucky 5 Canal) that runs along the southern boundary of the Laurel G property (parallel to the Yolo Basin Canal). Tidally influenced flows move westward through this canal to the pump located at the southwest corner of the Laurel G property, which supplies a buried 18-inch diameter pipeline that conveys flows approximately 1,300 feet west to an earthen discharge basin, positioned just north of

[2] A board, or series of boards, used to increase the depth of impounded water.

County Road 155 on the Lucky 5 North property. The discharge basin has a series of turnouts that deliver water to both the Lucky Five North and Lucky Five South properties.

This property slopes from northwest to southeast, where flows are discharged into a drain located along the property's southern boundary. This drain flows east to west and discharges into a canal that begins at the property's southwest corner. This canal (discussed further for the Williams property) is connected to the Toe Drain.

Kleary

The turnout supplying the Kleary property, from the lift pump located at the northwest corner of the Yolo Basin property, supplies flow to a small canal that runs north-south on the west side of the Yolo Basin property, which then flows through a culvert at the northwest corner of the Kleary property.

Water for this property is delivered from northwest to southeast, with excess flow draining downslope via gravity to the Toe Drain on the east side.

Williams

A canal is located along the south side of the Williams property and along the southern boundaries of neighboring properties to the west for approximately 0.7 miles, before turning northward for approximately 0.5 miles (South Canal). The canal is hydraulically connected to the Toe Drain via a pair of flashboard weir structures, and water flows westward to three pumps on properties west of the proposed Project area. The 50-acre Williams property receives water indirectly from these westward pumps via pass-through drainage from spills on adjacent properties.

Water for this property is delivered from northwest to southeast, with excess flow draining downslope via gravity to the Toe Drain on the east side.

3.2 Adjacent Properties

H Pond

The H Pond property receives water from the Capitol Oil property via the Highline Pump. Water from H Pond drains through a natural swale and back through the Capitol Oil property's drainage system.

Lucky Five North

As described for Luck Five South, water for Lucky Five North is supplied from a flap-gated canal that runs along the southern boundary of the Laurel G property. A pump located at the southwest corner of the Laurel G property supplies a buried 18-inch diameter pipeline that conveys flows to an earthen discharge basin located just north of County Road 155 on the Lucky 5 North property. The discharge basin has a series of turnouts that deliver water to both the Lucky Five North and Lucky Five South properties. An additional canal and two turnouts are located on the western side of Lucky Five North property, with water sourced from the Main Drain. It is unknown whether

this canal is used for water supply on the Lucky Five North property, or whether all water for the property is sourced from the canal and pump described above.

The Lucky Five North property generally slopes from southwest to northeast. Excess flows travel to a drain on the property's east side that flows from south to north and discharges into the Main Drain near its intersection with County Road 107.

Other Properties West of the Proposed Project area

Properties west of the proposed Project area generally drain from west to east, following the overall slope of the land. All of these properties drain through the proposed Project area to the Toe Drain.

4 Project Considerations and Opportunities

The following sections discuss environmental and engineering constraints that could arise from existing land use and management.

4.1 Consideration of Existing Infrastructure

As discussed in Section 2.1, a variety of existing physical infrastructure is located within the proposed Project area related to past and present land uses, including a duck clubhouse, roads, fencing, and utilities infrastructure (see Figure 2 for type and location of physical structures). Project design will incorporate consideration of the clubhouse, roads, and fencing; proposed Project activities will maintain in place or restore necessary infrastructure and dispose of demolished infrastructure through appropriate means.

Throughout the design phase, coordination with PG&E will occur to ensure that construction of the proposed Project will maintain electric power to all properties within and adjacent to the proposed Project area. Consideration will also be given to the methods used and disposal of any demolished PG&E poles or electric service line.

Regarding the abandoned natural gas wells, records indicate that 20 of the 25 plugged gas wells within the proposed Project area were removed to a depth of five feet; the abandonment records for four gas wells are unclear as to cut-off depths; and one other well is recorded as cut off to four feet below grade. A site reconnaissance visit noted that no visible surface evidence of any gas well was observed and it is assumed that the four wells with unclear records were also abandoned to a depth of five feet (ESA 2024). As there is potential presence of plugged wells within four feet of the of the ground surface, well locations must be carefully considered and avoided in Project design, particularly in regard to excavation depths and locations for tidal channel features. Such design considerations will ensure Project features will not disturb or impede access to the gas wells should they require future testing, maintenance, or re-abandonment.

4.2 Project Compatibility with Existing Easements

As stated previously, lands held under CDFW, USFWS, and NRCS easements within the proposed Project area are currently managed as seasonal wetland habitat (Laurel G, Yolo Basin,

Kleary, and Williams properties) or upland bird habitat (Lucky Five South). The stated purposes of these easements are unique to the agencies and authorizing regulations upon which each easement was conveyed, but are generally focused on conserving, restoring, and enhancing the natural features, functional wetland values, and habitat values of the eased lands for waterfowl, migratory birds, shorebirds, and other wetland associated species. The NRCS easements broaden this habitat-focused purpose with a goal of water quality improvement, flood water retention, groundwater recharge, open space and aesthetic values, and environmental education.

The proposed Project would open the existing berm along the Toe Drain and create tidal wetlands within the proposed Project area to reconnect the land to tidal influence (Figure 3). Areas outside the channels would either be graded to appropriate tidal wetlands elevations or left alone (i.e., no grading would occur) where current elevations are already ideal for the proliferation of tidal wetlands and floodplain habitat. The proposed Project design intends to balance cut versus fill volumes onsite, conveying excavated hydric soils to the southeast portion of the Lucky Five South property, which is currently comprised of well-drained soils that do not hold water, thus greatly enhancing the wetland characteristics of the property. The anticipated restoration design condition aligns with the intent and purpose of the various easement documents by restoring functional wetland benefits and providing year-round habitat benefits to foraging and breeding waterfowl. During the breeding season, the proposed Project's tidal wetlands would provide a valuable water source for waterfowl in the Central Valley and nesting habitat in the higher elevations of the high marsh zone. The tidal wetlands system would also provide highly productive winter foraging habitat in the low, middle, and high tidal wetlands zones.

The proposed Project would transition the conservation easement areas from a managed water delivery and drainage system, relying on pumps and constructed berms, to a naturalized system that emulates historic tidal wetlands and associated floodplain conditions, supporting ecological processes that benefit waterfowl and many other species in the aquatic ecosystem. As such, it is anticipated that CDFW, USFWS, and NRCS may issue a compatibility determination or otherwise authorize the proposed Project. However, outreach and engagement with each agency is underway and will be required to continue to ensure this authorization.

4.3 CEQA Requirements for Agricultural Land Conversion

The California Environmental Quality Act (CEQA) requires that a lead agency consider a project's impacts to the environment, including impacts to agricultural resources (PRC Section 21095(a)). Under Appendix G of the CEQA Guidelines, if a project will convert Farmland to a non-agricultural use and the impacts of the project to agricultural resources are significant, then the agency must implement all feasible, effective mitigation to reduce the impacts to a less than significant level.

Neither the CEQA statute nor the Guidelines specifically address mitigation for the impact of converting Farmland to other uses; however, CEQA Guidelines Section 15370 generally defines mitigation to include avoiding, minimizing, rectifying/restoring, and/or compensating for an impact by providing substitute resources, including through permanent protection in the form of conservation easements. CEQA case law has previously supported a 1:1 mitigation ratio for

restoration of or compensation for impacted Farmland acreage.[3] Yolo County, however, requires a mitigation ratio of 2:1 for conversion of non-prime farmland to non-agricultural use, prior to or concurrent with, approval of a zone change from agricultural to urban zoning, permit, or other discretionary or ministerial approval by the County, unless mitigation lands are located within the County's priority conservation areas, in which case a 1:1 ratio may be acceptable. As such, it is unknown at this time whether a 1:1 or 2:1 mitigation ratio, or some combination of the two, would apply to the proposed Project in the case that compensatory mitigation is required for conversion of agricultural lands.

Under CEQA, a public agency should not approve a project if there are feasible alternatives or mitigation measures available that would substantially lessen the significant environmental effects of a project (PRC, Section 21002); however, if mitigation is infeasible due to economic, legal, social, technological or other considerations, the agency may find that the benefits of the project outweigh the specific effects and make a finding that the impact is significant and unavoidable in a statement of overriding considerations (PRC, Section 21081).

Unique Farmland Mitigation Options

The proposed Project proposes to utilize a combination of landscape modifications, new infrastructure, and operational actions to create tidal wetlands and associated floodplain habitat and managed seasonal wetlands for waterfowl, as well as improve areas of existing floodplain agriculture. As discussed previously, the proposed Project area contains 1,153 acres of Unique Farmland on the Capitol Oil Property (see Figure 4 and Table 1). Under the anticipated restoration design condition, approximately 784 acres of land currently designated as Unique Farmland would either be retained as farmland and associated infrastructure (Figure 3, Agriculture, Berms and Roads, Developed, New Irrigation Supply Channel) or operated as managed seasonal wetlands, with water levels optimized for waterfowl (Figure 3, Managed Waterfowl Pond). This type of land management would not preclude future agricultural use; rather, the timing of flood-up and drawdown operations for waterfowl and rice cultivation can be complimentary (see Section 2.1 for further details).

The proposed Project would potentially convert Unique Farmland on the Capitol Oil property from irrigated farmland to tidal wetlands and associated floodplain habitat, a non-agricultural use. The proposed Project is still in the design phase, however, and minimization of impacts to Farmland through avoidance, replacement, and/or other mitigation strategies (such as irrigation improvements to benefit water supply to adjacent properties) will continue to be an important design consideration.

Williamson Act and Agricultural Preserve Considerations

The Capitol Oil, Yolo Basin, Kleary, and Lucky Five South properties are under Williamson Act contracts, as described in Section 2 of this report, which would remain in place under implementation of the proposed Project. California Government Code Sections 51290–51295 establish requirements when a public agency (e.g., DWR) acquires lands subject to Williamson

[3] See, for example, *Citizens for Open Government v. City of Lodi* (2012) 205 Cal.App.4th 296, 322; *Building Industry Assn. of Central California v. County of Stanislaus* (2010) 190 Cal.App.4th 582, 592.

Act contract. California Government Code Section 51292 requires public agencies not to locate proposed public improvements, which includes easements and rights-of-way, within an agricultural preserve (based primarily on consideration of the cost of acquiring land); however, Section 51293(e)(2) provides an exemption to this requirement when the acquisition of land is for purposes of flood control works or public works for fish and wildlife enhancement and preservation.

The Williamson Act limits non-compatible uses of the land (i.e. nonagricultural/open space) under contract, but restoration of these areas to tidal wetlands and seasonal floodplain habitat (i.e., open space uses) may fall within the range of allowable uses defined by statute. In many cases, agricultural preserves are established in a manner that allows for general recreation and open space uses because, as established under California Government Code Section 51205, the term "agricultural use" under the Williamson Act includes recreational and open space use. Land devoted to wildlife habitat, managed wetland, or submerged areas may also be specifically included in a contract as allowable uses within agricultural preserves. Therefore, restoration of the proposed Project area to tidal wetlands and seasonal floodplain habitat may be compatible with the Williamson Act contracts on the subject properties; however, individual contracts may contain varying degrees of flexibility regarding open space uses, so further coordination with the County is recommended to support design compatibility with these contracts.

4.4 Water Supply and Drainage for Adjacent Properties

The overall intent of the proposed Project design as it relates to water supply and drainage infrastructure is to improve the efficiency of the existing irrigation system, reducing the number of redundant control structures and their impacts to wildlife, while accommodating and enhancing (when feasible) access to water for Project neighbors.

Two adjacent properties, H Pond and Lucky Five North, rely on water from the proposed Project area. As discussed above, H Pond receives water from the Capitol Oil property's Highline Pump, which drains back through the Capitol Oil property farther west. The Lucky Five North property currently uses water from the canal and pump between the Capitol Oil and Laurel G properties. The design process will include an evaluation of water conveyance alternatives to ensure water supply to these properties is maintained.

In addition, all of the properties directly west of the proposed Project area drain through the proposed Project area to the Toe Drain, so accommodation of these drainage paths will be a critical design consideration.

5 References

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Appendix A
Easement Agreements

A1 CDFW Easement – Yolo Basin

State of California
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

Recording Requested by
Wildlife Conservation Board
801 K Street, Suite 806
Sacramento, CA 95814

WHEN RECORDED MAIL TO:
DEPARTMENT OF FISH AND GAME
Wildlife Conservation Board
801 K Street, Suite 806
Sacramento, California 95814

ORDER No. 22856

TONY BERNHARD
COUNTY RECORDER

024283

93 JUL 30 PM 3:29

OFFICIAL RECORDS
YOLO CO. CALIF.
RECORD REQUESTED BY: First American Title Co.

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Wetlands Conservation
PROJECT: Easement Program

COUNTY: Yolo Apn 33-270-46

DEED OF CONSERVATION EASEMENT

THIS DEED OF EASEMENT, made this 15th day of March, 1993, by YOLO BASIN FARMS, INCORPORATED, a California corporation, who acquired title as YOLO BASIN FARMS, INC., a California corporation, as to Parcel 1; and YOLO BASIN FARMS, INCORPORATED, as to Parcel 2

hereinafter called the Grantor to THE STATE OF CALIFORNIA, hereinafter called the State.

WITNESSETH

WHEREAS, Grantor is the owner in fee simple of certain real property hereinafter described, situated in the County of Yolo, State of California;

WHEREAS, said property supports or will support habitat of particular importance to waterfowl and other wetland associated species.

WHEREAS, the Grantor is willing to grant a Conservation Easement to the State over said property, thereby restricting and limiting the use of land and contiguous water areas of said property, on the terms and conditions and for the purposes hereinafter set forth;

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WHEREAS, the Grantor and the State recognize the waterfowl and other wildlife values provided by the property in its present and/or planned state as managed wetland habitat, and have, by the conveyance of a Conservation Easement to the State, the common purpose of conserving and enhancing the natural and managed wetland habitat and certain upland habitat values of said property, preserving the natural character of said property, and preventing the use or development of said property for any purpose or in any manner which would conflict with the maintenance in perpetuity of those habitat values referred to above.

NOW THEREFORE, for valuable, adequate and sufficient consideration and in further consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor hereby grants and conveys unto the State forever and in perpetuity an interest and Conservation Easement in the lands and water described herein set forth, as provided for in Civil Code 815 et seq. in respect to the lands of the Grantor situated in the County of Yolo, State of California, more particularly described as set forth in "Exhibit A", which is attached hereto and made a part hereof. The lands described in Exhibit A shall henceforth be referred to as the Easement Lands.

The terms, conditions, and restrictions of the Conservation Easement are as hereinafter set forth:

1. The terms "Grantor" and "State", wherever used herein, and any pronouns used in place thereof, shall be held to mean and include the above-named Grantor, its officers, employees, successors and assigns, and the above-named Grantee, its heirs, personal representatives, successors and

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assigns. The covenants, terms, conditions, and restrictions of this Conservation Easement shall be binding upon, and inure to the benefit of Grantor and the State.

2. The Grantor reserves all rights of surface entry and the right to continue the use of the property for those purposes deemed by the State as not inconsistent with the purposes, intent and specifications of this Conservation Easement. In general, uses of and activities upon the Easement Lands which shall be deemed by the State as inconsistent with this Conservation Easement, unless specifically provided for in the Waterfowl Habitat Management Plan (Exhibit B), are those uses and activities which in any way result in a diminution in the quality of wetland and waterfowl habitat or the use thereof by wildlife. Such inconsistent uses and activities shall include, but shall not be limited to, the following: (i) the cultivation of agricultural crops for commercial gain on the Easement Lands, (ii) the alteration of the existing topography of, or other alterations or uses, or permitted alterations or uses by third parties of the Easement Lands for any purpose, including the exploration or development of any reserved minerals, in a manner that would change the topographic or vegetative character of the Easement Lands or adversely affect the waterfowl habitat value or waterfowl use of the Easement Lands, (iii) the placement of any new structures on the Easement Lands other than hunting blinds and those water control structures required to achieve the waterfowl habitat conditions described in Exhibit B, (iv) the killing, removal, alteration or replacement of any existing wetland vegetation, (v) the grazing of livestock, (vi) the removal of living or dead standing trees six inches or greater in diameter, (vii) the application of herbicides, pesticides

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or other toxic chemicals, (viii) the dumping, burning and/or burying of rubbish, garbage, non-biodegradable materials or any other waste or fill materials.

3. The State may permit the Grantor to engage in uses and activities on the Easement Lands which are generally considered to be inconsistent with this Conservation Easement as described in Article 2 provided that (i) the Grantor has submitted to the State, in writing, the detailed plans for and explanations of the proposed use or activity, (ii) the State has thoroughly assessed the probable impact of the proposed use, (iii) if deemed necessary by the State, the Grantor has prepared or caused to be prepared a detailed mitigation plan to minimize impacts upon both the waterfowl use and wetland habitat values of the Easement Lands and a detailed compensation plan which will fully offset any and all unavoidable adverse impacts thereto, and has made legal and binding assurances that such mitigation and compensation measures shall be implemented in a timely manner, and (iv) all necessary state, local and federal permits have been obtained for the proposed action.

4. The Grantor and the State have cooperatively developed a long-term Waterfowl Habitat Management Plan, hereinafter referred to as the Management Plan, designed specifically for the Easement Lands. The Management Plan constitutes Exhibit B which is attached and hereby made part of this agreement. The Management Plan contains recommended habitat management activities whose implementation is expected to result in the optimization of waterfowl habitat occurring on the Easement Lands. The Grantor agrees to judiciously implement each element of habitat maintenance and enhancement as defined in the Management Plan for

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so long as this Conservation Easement remains in effect. The Management Plan may be amended by the mutual consent of the Grantor and the State.

5. The State reserves the right to enter the Easement Lands at all reasonable times, across the Grantor's fee if necessary, for the purpose of inspecting said property to determine if the Grantor is in compliance with the terms, conditions, restrictions, and purposes of this Conservation Easement.

6. The provisions of Article 2 hereof shall not prohibit hunting or the operation of a hunting club on the Easement Lands and such use shall be deemed to be consistent with maintenance of the Easement Lands as waterfowl habitat so long as such use is in accordance with all applicable state and federal laws and regulations regulating hunting on privately owned lands. In this connection, Grantor may take such actions as he may deem appropriate to improve the Easement Lands as waterfowl habitat and to facilitate the operation of any waterfowl hunting club on the Easement Lands provided that such actions are consistent with the management practices contained in the Management Plan and the provisions of Article 2 above. Such actions may include building or relocating blinds, providing access to blinds, installing and maintaining those water control structures required to achieve the waterfowl habitat conditions described in the Management Plan, irrigating vegetation, fertilizing, planting native trees and wetland vegetation, and moving non-woody vegetation to the extent it encroaches upon the open water areas and interferes with hunting and/or the use of the Easement Lands as waterfowl habitat. In no case shall any action result in the diminution of either wetland acreage or wetland habitat values.

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7. Sixty (60) days prior to the commencement of any activity, use, or enterprise requiring the State's approval or which is not entirely consistent with the Management Plan and Article 2 above, Grantor shall provide written notice by registered mail of its intention to commence or undertake such activity, use or enterprise. Said notice shall inform the State of all aspects of such proposed activity, use or enterprise.

8. The State shall respond within sixty (60) days from the receipt of such notice as required in Article 7 above, to inform the Grantor of any concerns or objections the State may have relative to the proposed activity, use or enterprise. Such objection or concerns, if any, shall be based upon the State's opinion that the proposed activity is inconsistent with the purposes, intent or specifications of this Conservation Easement. If, in the State's judgment, conformity with the purposes of this Conservation Easement may be achieved by alternative means, said notice shall inform Grantor of the manner in which the proposed activity can be modified to be consistent with this Conservation Easement. Only upon the State's express written approval may the proposed activity, use, or enterprise be commenced and/or conducted, and only in the manner explicitly represented by Grantor and approved by the State.

9. The Grantor does hereby grant to the State the first priority use of all existing water rights (hereinafter referred to as Easement Waters) as described below. The Easement Waters consist of (i) any riparian water rights appurtenant to the Easement Lands; (ii) any appropriative water rights acquired incident to, or for the purpose of serving the Easement Lands; (iii) any waters, the rights to which are secured currently or in

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the future under contract between Grantor and any private or public entity or individual, for use on the Easement Lands; and (iv) any water from wells currently in existence or which may be constructed in the future that are expressly intended to, or in part, serve and maintain the Easement Lands in a manner consistent with this Conservation Easement. The Easement Waters are limited to the amount of water available to the Grantor which is reasonably required to restore, create and maintain wetlands and other significant habitat on the Easement Lands in accordance with this Conservation Easement and the Management Plan.

10. Failure to properly flood the easement property or otherwise duly discharge the habitat management practices described in the Management Plan shall be considered a breach of this Conservation Easement and subject to the remedial measures described in Article 11. However, it shall not be considered a breach of the terms and conditions of this covenant if the Grantor is unable to flood the Easement Lands in accordance with the Management Plan due to a curtailment of water deliveries imposed by the serving water district(s) due to drought or the failure of the district's water conveyance system, or due to other conditions that the State determines to be clearly beyond the control of the Grantor.

11. The State reserves the right to enter the Easement Lands at all reasonable times, across the Grantor's fee if necessary, and take all necessary steps to perform the Grantor's obligation to flood the Easement Lands in the manner prescribed in the Management Plan. In this connection, the State shall have, at its sole discretion, the right and option, but not the obligation, to use any and all of the Easement Waters

BOOK 2522 PAGE 603

that the State deems necessary for waterfowl habitat purposes and to place on the Easement Lands and convey through Grantor's water distribution facilities any other waters the State may acquire or have available to it. The State shall have the right to make full use of Grantor's water distribution facilities, including both existing facilities and any facilities constructed by the Grantor in the future and including all water wells and pumps, to the extent those facilities are capable of serving the Easement Lands. Grantor shall be immediately obligated to reimburse the State for all costs incurred and said obligation shall bear interest at the maximum rate allowed by law until paid in full by Grantor. However, should the State elect to obtain water from a source(s) other than the Easement Waters to flood the Easement Lands and the water thus obtained is more costly than the Easement Waters would have been, then the Grantor's obligation to repay the State the cost of said water shall not exceed that amount which would have been required had the State used the Easement Waters.

In the event the State exercises its right to utilize any of the Grantor's water distribution facilities and it is proven that those facilities suffered damage due to negligence on the part of the State, then the State shall be liable to effect the reasonable repair of said damage. The aforementioned damage shall not include the normal wear-and-tear which could be expected to occur to the water distribution facilities as a result of normal use.

12. In the event that the Grantor fails to properly flood the Easement Lands pursuant to the Management Plan (except under the conditions described in Article 10) and, in the interest of waterfowl and habitat protection, the

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State elects to flood the Easement Lands as provided for in Article 11, the Grantor, his agents, invitees and assigns shall not be permitted to hunt for any species of waterfowl on the Easement Lands during the waterfowl season commencing in the year(s) the breach of this covenant occurred. The State may grant exception to this restriction only if, 1) a waterfowl disease outbreak occurs on the Easements Lands and hunting on the area is determined to be necessary to prevent the concentration of waterfowl on the area while it is being drained of water, or 2) the Grantor has, prior to the waterfowl season in question, reimbursed the State all of the costs incurred by the State for actions taken pursuant to Article 11.

13. In the event that the state or federal government prohibits the hunting of waterfowl in California for a period of three consecutive years, the Grantor may apply to the State for termination of the Conservation Easement. Such notification shall be made in writing to the State on or after February 15 following the third waterfowl season during which the Grantor was legally prohibited from hunting waterfowl on the subject property.

14. In the event that the circumstances in Article 13 occur and the Grantor wishes to be released from the terms and conditions of this covenant, it may pursue, in the same sequence as they appear, the courses of action described below:

A. The Grantor must first offer the State an option to purchase the underlying fee in the Easement Lands. If the State elects to pursue the purchase of said lands, the State must notify Grantor of its desire to purchase the underlying fee within ninety (90) days of its

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receipt of this offer. If the State elects to purchase, escrow must close not longer than one-hundred and eighty (180) days following receipt of the offer. The purchase price for the underlying fee of the Easement Lands shall not exceed the then current fair market value of the Easement Lands with this Conservation Easement in effect.

B. In the event the State declines to exercise its option to purchase the fee title to the Easement Lands, then the Grantor must offer said fee to the U.S. Fish and Wildlife Service and other appropriate public entities or non-profit conservation organizations acceptable to the State. Such agencies and organizations shall have ninety (90) days to respond to the Grantor from the date of receipt of the offer. In the event of an election to purchase, escrow must close within two-hundred and ten (210) days following receipt of the offer. The Grantor shall provide the State with photocopies of its offers to each of the entities specified above and of any responses received from those entities.

C. If the Grantor has been unsuccessful at implementing any of the actions provided for in A and B above, it may then repurchase the State's interests in the Easement Lands and so terminate the Conservation Easement. The price for obtaining the State's interests shall include any and all costs incurred by the State as a result of the repurchase transaction and, at a minimum, the greater of the two following calculated amounts: (1) an amount equal to the difference between the then current fair market value of the Easement Lands at the time of the repurchase transaction with this Conservation Easement in effect and the then current fair market

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value of the Easement Lands at the time of the repurchase transaction without this Conservation Easement in effect; or (2) an amount equal to the original cost of the Conservation Easement paid to the Grantor by the State and the interest which would have accrued during the term of the Conservation Easement on an amount equal to the original cost of the Conservation Easement paid by the State had that amount been deposited in the State of California Surplus Money Account.

15. The Grantor may at any time attempt to divest itself of its remaining interest in the Easement Lands through a donation of said interest. Grantor must first offer said donation to the State. The State shall consider the offer, but shall not be obligated to accept said donation. In the event that the State declines said donation, upon approval of the State, the Grantor may offer to donate its remaining interest in the Easement Lands to an appropriate public entity or non-profit conservation organization acceptable to the State.

16. Should the Grantor wish to sell the Easement Lands with the terms and conditions of this Conservation Easement in full effect, the Grantor must first offer the State an option to purchase the underlying fee in the Easement Lands. The purchase price for said underlying fee shall not exceed the then current fair market value of the Easement Lands with this Conservation Easement in effect. However, the Grantor is not required to offer individual ownerships to the State when the Easement Lands are owned by several individuals (commonly referred to as proprietary [illegible] and individual ownerships are to be sold,

BOOK 2522 PAGE 907

transferred or traded or the number of proprietary owners or stockholders increased or decreased, provided the Easement Lands remain undivided.

17. Grantor shall not sell, grant or otherwise transfer any additional easements, rights-of-way, or other property interests in the underlying estate. In addition Grantor shall not sell, grant, nor transfer those Easement Waters reasonably necessary to maintain the Easement Lands.

18. The Grantor agrees that this Conservation Easement shall run with the land and further agrees to provide actual notice of the existence of this Conservation Easement in any subsequent agreement or conveyance by which he divests himself of either the fee title to or of his possessory interest in the project property.

19. The State shall record this easement in the real property records of the county(s) in which the Easement Lands are located.

20. In the event a violation of any restriction contained in Article 2 hereof, whether by Grantor or a third party, comes to the attention of the State, the State shall notify Grantor in writing of such violation. Grantor shall have thirty (30) days after receipt of such notice to, at its sole expense, undertake actions including restoration of that portion of the Easement Lands affected by such activity to a condition which, to the satisfaction of the State, is similar or equivalent to the condition that existed prior to the undertaking of such unauthorized activity. If Grantor fails to take such corrective actions to the satisfaction of the State, the State may at its discretion, undertake such actions as are reasonably necessary to effect such corrections. The State may take legal action to recover the reasonable cost of such corrections and shall

BOOK 2522 PAGE 608

be entitled to recovery of the State's reasonable expenses, court costs and legal fees from Grantor, provided either Grantor, Grantor's officers, assigns, employees, agents, contractors or other persons permitted by Grantor are determined to be responsible for the violation.

21. Enforcement of the terms and conditions of this Conservation Easement shall be at the reasonable discretion of the State, and any forbearance on behalf of the State to exercise its rights hereunder in the event of any breach hereof by Grantor shall not be deemed or construed to be a waiver of the State's rights hereunder in the event of any subsequent breach.

22. The State reserves the right to prohibit the flooding of the Easement Lands and also to effect immediate drainage of the Easement Lands if either action is deemed by the State to be necessary to prevent or control the loss of waterfowl and/or other wildlife species due to disease or environmental contaminants.

23. The covenants agreed to and the terms, conditions, restrictions, and purposes imposed as aforesaid shall not only be binding upon the Grantor but also its agents, personal representatives, heirs and assigns, and all other successors to him in interest and shall continue as a servitude running in perpetuity with the above described land.

24. There are excepted and reserved from this Conservation Easement all minerals, including gas, oil and other hydrocarbon substances, underlying the Easement Lands, and this Conservation Easement is subject to all existing easements and rights-of-way of record held by third parties, and to all outstanding mineral rights, including all oil and gas leases of

BOOK 2522 PAGE 609

record, held by third parties. No exercise of underlying mineral rights, existing easements or rights-of-way shall interfere with the conservation purposes of this easement.

25. If any provision of this Conservation Easement or the application thereof to any persons or circumstances is found to be invalid, the remainder of the provisions of this Conservation Easement and the application of such provisions to persons or circumstances other than those which were found to be invalid, shall not be affected thereby.

26. The interpretation and performance of this Conservation Easement shall be governed by the laws of the State of California and the United States of America.

27 The terms and conditions herein set forth may be amended at any time by mutual agreement of the undersigned parties.

The parties to this Agreement do hereby agree to the terms and conditions of this Agreement as set forth above.

BOOK 2522 PAGE 610

Executed on March 29th, 1993

Department:
Department of Fish and Game
Wildlife Conservation Board

W. John Schmidt
Executive Director

Grantor: YOLO BASIN FARMS, INCORPORATED,
a California corporation

By: Robert R. Leonard

Its: Secretary-Treasurer
and a Director

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California
County of Sacramento

On June 28-93 before me Roberta L Uribe Notary Public
DATE NAME, TITLE OF OFFICER E.G. "JANE DOE, NOTARY PUBLIC"

personally appeared Robert R. Leonard
NAME(S) OF SIGNER(S)

☐ personally known to me - OR - ☑ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(ies), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

OFFICIAL SEAL
Roberta L Uribe
NOTARY PUBLIC CALIFORNIA
SACRAMENTO COUNTY
My Comm. Expires Nov 17 1995

Roberta L Uribe
SIGNATURE OF NOTARY

OPTIONAL SECTION
CAPACITY CLAIMED BY SIGNER
Though statute does not require the Notary to fill in the data below, doing so may prove invaluable to persons relying on the document

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☐ CORPORATE OFFICER(S)
TITLE(S)
☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER:

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

BK: 2522 PG: 611

OPTIONAL SECTION
THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED AT RIGHT

Though the data requested here is not required by law, it could prevent fraudulent reattachment of this form.

TITLE OR TYPE OF DOCUMENT Wildlife Conservation Board
NUMBER OF PAGES 1 DATE OF DOCUMENT March-29-93
SIGNER(S) OTHER THAN NAMED ABOVE John Schmidt

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15 A

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5193

State of California
County of Sacramento

on 6-1-93 (DATE) before me, Sandy Daniel (NAME, TITLE OF OFFICER E.G., "JANE DOE, NOTARY PUBLIC")

personally appeared W. John Schmidt (NAME(S) OF SIGNER(S))

☒ personally known to me - OR - ☐ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

OFFICIAL SEAL
SANDY DANIEL
NOTARY PUBLIC - CALIFORNIA
SACRAMENTO COUNTY
My Comm. Expires Sept. 23, 1994

Sandy Daniel
SIGNATURE OF NOTARY

OPTIONAL SECTION
CAPACITY CLAIMED BY SIGNER
Though statute does not require the Notary to fill in the data below, doing so may prove invaluable to persons relying on the document

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☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER _____

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)
Department of Fish & Game
Wildlife Conservation Board

Bk. 2322 Pg. 012

OPTIONAL SECTION

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TITLE OR TYPE OF DOCUMENT Yolo Basin Farms Conservation Easement
NUMBER OF PAGES _____ DATE OF DOCUMENT 3-15-93
SIGNER(S) OTHER THAN NAMED ABOVE Robert Leonard, William Campbell, Ernest Pellegrini

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Executed on March 30th, 1993

Department:
Department of Fish and Game
Wildlife Conservation Board

W. John Schmidt
Executive Director

Grantor: YOLO BASIN FARMS, INCORPORATED,
a California corporation

By: William Campbell

Its: Director

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

No. 5193

State of California
County of Sacramento

On March 30 '93 before me, Martha R Nelson, Notary Public
DATE NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC"

personally appeared J. William Campbell
NAME(S) OF SIGNER(S)

☐ personally known to me - OR - ☑ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Martha R Nelson
SIGNATURE OF NOTARY

OPTIONAL SECTION

CAPACITY CLAIMED BY SIGNER

Though statute does not require the Notary to fill in the data below, doing so may prove invaluable to persons relying on the document.

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☐ CORPORATE OFFICER(S)
TITLE(S)
☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

Bk. 2522 Pg. 613

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15 B

Executed on March 30th, 1993

Department:
Department of Fish and Game
Wildlife Conservation Board

By: _____
W. John Schmidt
Executive Director

Grantor: YOLO BASIN FARMS, INCORPORATED,
a California corporation

By: Ernest S. Hollingshead
Its: President and
a Director

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

No. 5193

State of California
County of Sacramento

On March 30 1993 before me, Martha A. Nelson, Notary Public
DATE NAME, TITLE OF OFFICER - E.G., JANE DOE, NOTARY PUBLIC

personally appeared Ernest S. Hollingshead
NAME(S) OF SIGNER(S)

☐ personally known to me - OR - ☒ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Martha A. Nelson
SIGNATURE OF NOTARY

OPTIONAL SECTION
CAPACITY CLAIMED BY SIGNER
Though statute does not require the Notary to fill in the data below, doing so may prove invaluable to persons relying on the document.

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☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER:

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

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15 C

Wetlands Conservation
Easement Program,
Yolo County

EXHIBIT "A" -

PARCEL 1:
All that portion of the Northwest 1/4 and the Northeast 1/4 of Section 10, Township 6 North, Range 3 East, M.D.B.&M., lying Northwesterly of the Northwesterly line of the property deeded by Fridolf Anderson to the Sacramento-Yolo Port District, by deed dated December 26, 1956 and recorded December 26, 1956, in Book 502 of Official Records, at page 185.

EXCEPTING THEREFROM all oil, gas and other hydrocarbons, as reserved in Deed from Fridolf Anderson, recorded April 9, 1959, in Book 569 of Yolo County Official Records, at page 246.

EXCEPTING THEREFROM a 100 foot by 100 foot square parcel located in the northwest corner of the northwest 1/4 of Section 10, Township 6 North, Range 3 East, M.D.B.&M.

PARCEL 2:
All that certain piece, parcel or tract of land, lying and being in the County of Yolo, State of California, and being a portion of Section 10, Township 6 North, Range 3 East, M.D.B. & M.; also being portions of Swamp Land Surveys Nos. 286, 811, 834 and 1008 Yolo County Surveys and being more particularly described as follows (basis of bearings and coordinates is California State System for Zone II):

Beginning at a point on the South line of said Section 10, which bears South 88 deg. 48' 52" East 1246.44 feet from the Southwest corner of said Section 10, coordinates of said point of beginning being North 257,077.07 East 2,105,136.64; thence from said point of beginning along the South line of said Section 10, North 88 deg. 48' 52" West 226.86 feet; thence leaving the South line of said Section 10, North 19 deg. 47' 18" East 5601.92 feet to a point on the North line of said Section 10, which point bears South 88 deg. 52' 14" East 256.06 feet from the quarter corner on the North line of said Section 10; thence along the North line of said Section 10, South 88 deg. 52' 14" East 226.93 feet; thence leaving the North line of said Section 10 South 19 deg. 47' 18" West 5602.15 feet to the point of beginning.

EXCEPTING THEREFROM, that portion lying within the South half of said Section 10.

ALSO EXCEPTING THEREFROM all oil, gas, and mineral rights in and to the above described property, but without any right to drill, or to erect structures or other improvements, or to install pipes, or to excavate upon any of the said property, except at such locations as shall be approved by Sacramento-Yolo Port District, a California river port and by the U.S. Corps of Engineers, so that any such operations will not interfere with the maintenance and operation of the toe drain and/or the deep water channel to be constructed on the said property, as reserved in Deed from Fridolf Anderson, recorded December 26, 1956, in Book 502 of Yolo County Official Records, at page 185.

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Exhibit B

SITE SPECIFIC MANAGEMENT PLAN

YOLO BASIN FARMS

The following is a site-specific habitat management plan for Yolo Basin Farms intended to optimize waterfowl food production and/or nesting and brood habitat. Habitat management practices are prescribed for each individual wetland unit. It is expected that proper implementation of these practices will enhance the wetland habitat value of the property. Amendments to this management plan may be made through consultation with and the agreement of the State.

Yolo Basin Farms is one of the oldest duck clubs in the Yolo Bypass, consisting of four individual wetland units. It has good waterfowl habitat management potential due its soils and plentiful water supply. However, the current flow-through water system limits its management potential because wetland units cannot be independently drained. Rehabilitation of the water delivery and drainage system will be necessary in order for management objectives to be met. The proposed structural improvements (illustrated on the accompanying map) shall be completed within 3 years of the enrollment date.

The necessary capital improvements are as follows:

1. **Drainage Ditch:** A ditch shall be constructed along the south boundary to facilitate the independent drainage of Cell A, Cell B, and Cell C. The ditch shall be of sufficient size to drain Cell A, Cell B, and Cell C simultaneously.

2. **Delivery Ditch:** The ditch that delivers water from the holding reservoir to the wetland units shall be rehabilitated in a manner that allows Cell A, Cell B, and Cell C independent flooding capabilities.

3. **Water Control Structures:** Structures #2, 3, 4, and 5 shall serve as inlets for Cell A, Cell B, Cell C, and Cell D, respectively. These inlet structures shall be 24" slide gates. Structure #1 shall be upgraded to a 36" slide gate in order to effectively deliver water from the holding reservoir into the delivery ditch.

Structures #6, 7, and 8 shall be installed at the lowest points in Cell A, Cell B, and Cell C, respectively, to facilitate complete drainage of these units. Drainage structures #6-8 shall be flashboard risers with 18" pipes. A 36" pipe with a flashboard riser on the inside and a flapgate on the outside (Structure #9) shall be installed at the point where the new drainage ditch empties into the Toe Drain. The State may require Structure #10 (an existing flapgate) to be rehabilitated if Structure #11 is not capable of effectively draining Cell D.

The Grantor is encouraged to seek the engineering assistance of the U.S.D.A. Soil Conservation Service or the U.S. Fish and Wildlife Service in refining the of water control

BOOK 2322 PAGE 016

structure design and installation specifications. The size, design, elevation, and material of all required water control structures must be approved by the State prior to installation.

The existing wetland vegetation on the property is as follows: 25% river bulrush, 25% spikerush, 20% dock, 10% hardstem bulrush, 10% swamp timothy, 10% sweet clover. The current vegetation provides minimal food resources for wintering waterfowl. Thus, the entire wetland acreage shall be disced during 1993 and 1994 in order to reverse wetland succession an encourage seed-producing waterfowl food plants.

Management practices described in the PRINCIPLES OF CENTRAL VALLEY MARSH MANAGEMENT section of Exhibit B shall generally be followed for the entire property. Specific management practices described in WETLAND HABITAT MANAGEMENT GUIDE #1 shall be followed for Cell A and Cell B. Management practices described in WETLAND HABITAT MANAGEMENT GUIDE #3 and #5 shall be followed for Cell C and Cell D, respectively. These leaflets contain "how-to" information about drawdowns, discing, and irrigations.

Cell A and Cell B shall receive at least one summer irrigation for the duration of the contract. Cell C shall receive two summer irrigations. Cell D shall be maintained in a flooded condition until July 15 each summer to provide brood habitat for local ducks.

Habitat management must be dynamic in order to maintain productive wetland habitat. Managers need to adapt to changing wetland conditions by varying water management and soil disturbance schedules. The Wetland Conservation Easement Program provides landowners with the flexibility necessary to maintain optimum habitat. It is likely that the Department will periodically require the landowner to rotate habitat management practices among wetland units and/or disrupt wetland plant succession through discing to maintain the vigor of waterfowl food plants.

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Yolo Basin Farms Proposed Design

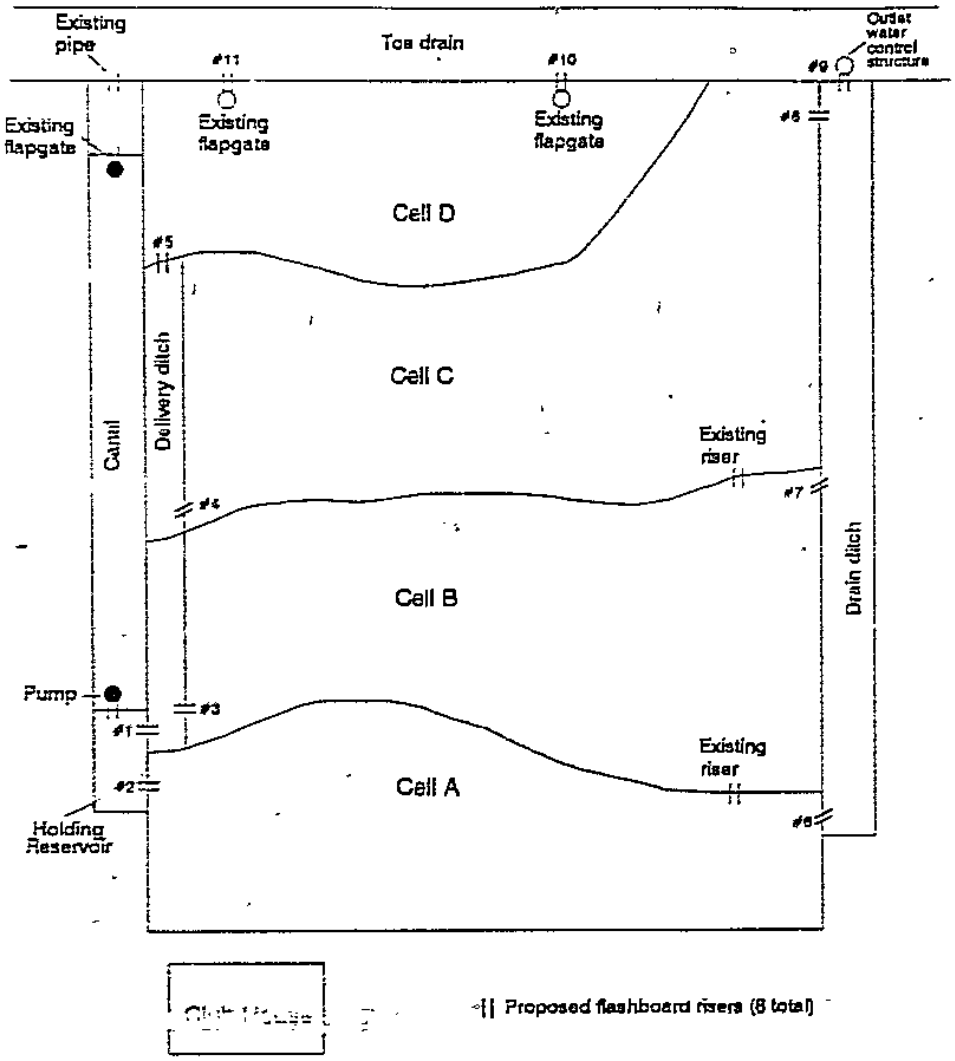

EXHIBIT 2522 PAGE 618

Exhibit B

PRINCIPLES OF CENTRAL VALLEY MARSH MANAGEMENT

Exhibit B

Marsh management can best be described as the active manipulation of wetland habitat. Wetlands evolved as dynamic ecosystems, constantly changing due the physical and chemical processes associated with floods, drought, and fire. Today, the mighty rivers have been contained and natural seasonal flooding seldom occurs on the majority of California's wetlands. Marshes are now enclosed by levees and flooded with water from deep wells, rivers and sloughs, and/or irrigation district conveyance systems. It is the task of the modern marsh manager to interrupt the natural evolution of marsh habitat and to stabilize the marsh vegetation at a point which is the most productive of those elements required by waterfowl. To accomplish this, he must employ such tools as water management, discing, burning, mowing, seeding, earthwork, and perhaps most importantly, his powers of observation. Although marsh managers are knowledgeable about water manipulation, they are not always aware of the specific practices that maximize habitat conditions for waterfowl. The attached habitat management guides were designed to inform landowners of those management practices required to produce any of the five specific wetland habitat types. Coincidentally, many of these practices benefit entire wetland ecosystems and the wide variety of wildlife species dependent upon them.

Wetland habitat types are often defined by the duration of flooding. Seasonal wetlands are flooded in the fall, with standing water maintained continuously throughout the winter until drawdown occurs in the spring. Permanent marshes remain flooded all year although they should be drained every 5-7 years to restore marsh productivity. Semi-permanent marshes are flooded in the fall and remain inundated until they are either: 1) drained in mid-summer or 2) partially drained in spring with water maintained in low-lying areas throughout the year. These three wetland habitats each provide important resources to waterfowl at different times during the year. For example, permanent and semi-permanent marshes are essential to ducks during the breeding season due to the lack of summer water in the Central Valley, but typically provide very little food for wintering waterfowl. The primary seed-producing marsh plants that supply waterfowl with the majority of their natural winter food are found in seasonal wetlands.

A variety of annual plants germinate on the exposed mudflats of seasonal wetlands when surface water is drained during spring and summer. These plants are collectively known as "moist-soil plants". Some of these plants produce seeds, browse, and/or tubers that are important foods for waterfowl. A combination of moist-soil plants and robust emergent vegetation (typically cattails and/or tules) usually results from marsh management practices. The goal of "moist-soil management" (seasonal wetland management) is to assure that the resultant vegetation is dominated by preferred waterfowl

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food plants. Although agricultural grains (e.g. rice, corn) supplement the diets of waterfowl in winter, these foods lack many of the vitamins, minerals, and proteins essential for survival and subsequent reproductive success. Marsh plants provide waterfowl with the essential nutritional balance lacking in grains.

Smartweed, swamp timothy, and watergrass are the most important natural waterfowl food plants in the Central Valley. These plants are easily propagated on most wetland sites through effective water management and soil disturbance. The timing of spring drawdown influences which moist-soil plants will dominate a seasonal wetland. The seeds of each plant species germinate best at a specific soil temperature. Therefore, as plants compete for dominance, marsh managers can favor specific plants by timing drawdowns to coincide with optimum germination conditions (primarily soil temperature). Although climatic conditions vary by year and location, the drawdown dates listed in the habitat management guides will generally induce germination of the target waterfowl food plant. The management strategies described in these leaflets have been successfully implemented by marsh managers throughout the Central Valley, but are by no means the only way to achieve these desired habitat types. Soil type and water quality also influence plant growth, so modification of these general recommendations may be necessary based on local knowledge and weather patterns for specific sites.

The rate of pond drawdown affects moist-soil plant composition, seed production, soil-salt levels, and the duration of food availability to waterfowl. Slow drawdowns (2-3 weeks) cause invertebrates to become concentrated in the shallow water and allow waterfowl optimum foraging conditions for a prolonged period. These invertebrates are a protein-rich food source important to pre-breeding and breeding ducks, ducklings, molting ducks, and shorebirds. Slow drawdowns also typically result in high vegetation diversity, and if executed during mid to late spring, may enhance seed production. However, they may concentrate salts near the soil surface in systems with brackish or saline water. Rapid drawdowns (3-5 days) are desirable if a soil-salt problem exists, as was quite often the case in the San Joaquin Valley in the past. The Grasslands Water District now provides water that appears to be of sufficient quality for managers to execute slow drawdowns without adversely affecting vegetation. However, further research is needed to determine the long-term relationship between slow drawdowns and alkaline soils. Rapid drawdowns generally produce extensive stands of waterfowl food plants if timed correctly, but "rob" wildlife of the extended shallow water habitat associated with slow drawdowns. Rapid drawdowns late in the growing season should be followed by a summer irrigation to insure a good seed crop. Although slow drawdowns are generally better for wildlife, there is no "right" or "wrong" way to drain a seasonal wetland. The rate of drawdown should be based on site-specific knowledge.

Summer irrigations are very important in Central Valley moist-soil management. Most waterfowl food plants will not attain maximum seed production without at least one

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irrigation. The San Joaquin Valley receives less rainfall than the Sacramento Valley, and therefore the soils dry out faster and irrigations are more often a necessity. Swamp timothy is the only waterfowl food plant that may be grown successfully without an irrigation in the San Joaquin Valley. However, irrigations generally enhance seed production. Irrigation schedules for smartweed and watergrass vary with annual weather patterns. These plants can be observed for signs of wilting to determine proper irrigation dates.

The timing of fall flooding is typically based on water delivery dates. Most wetland units should be flooded prior to October 15. Irrigation districts typically cease water deliveries by mid-December, therefore marsh managers must devise feasible ways to maintain water in their ponds until spring drawdown. This ongoing problem is easily solved on those properties which can simply pump groundwater from deep wells to overcome the effects of evapo-transpiration and seepage (percolation). Wetland properties which do not enjoy access to wells can close all of their drainage structures and rely on rainfall to maintain pond levels and/or prior to the termination of water deliveries, raise the level of their ponds well above normal shooting depths and rely on the extra storage to carry them through to spring drawdown. If the latter technique is employed, water depth should not exceed 18 inches; any deeper would seriously impair the ability of waterfowl to feed effectively. In extreme cases, it may be possible to maintain pond levels by purchasing water from nearby properties that have wells and are willing to deal.

- Water depth is also very important. Dabbling ducks (e.g. mallards, pintails, green-winged teal) cannot effectively feed on the seeds and invertebrates found on pond-bottoms if the water is deeper than 18 inches. Water depths of 6-12" are preferred for feeding. Therefore, in order to provide feeding habitat for dabbling ducks, shallow water must be maintained! Shallow water habitat management is valuable to many other wildlife species, as well. In Missouri, only 5 of 54 bird species that use seasonal marshes can effectively forage in water deeper than 10".

It is unlikely that marsh managers will be able to produce a monoculture of any one plant in an established marsh, particularly if pond bottoms are of uneven topography. Furthermore, a marsh with diverse habitats is valuable to a wider variety of waterfowl and other wildlife species and will better resist the devastating effects of plant diseases, insect pests, and bird depredation. Diversified habitats also provide a variety of waterfowl foods throughout the fall and winter. Even though some moist-soil plants are poor seed producers, when flooded they may support excellent assemblages of invertebrates. Waterfowl also utilize other plants (e.g. cattails and "tules") for cover. An ideal Central Valley seasonal wetland is dominated by waterfowl food plants, contains other moist-soil plants, and provides waterfowl with substantial cover.

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Some plants reduce the value of a wetland to waterfowl if they become overly abundant. Tules and/or cattails can eventually "fill in" a pond and eliminate open water. While 40-60% tule/cattail coverage of the pond bottom may provide acceptable habitat for some species, efforts must be made to reduce these plants when they increase beyond this range. The primary tools for tule/cattail control are discing, mowing, and burning. Mowing and burning are only effective when followed by discing and 2-3 months of exposure to the sun, which is necessary in order to dry out and kill the tubers and rhizomes. Discing is beneficial for tule/cattail control because it also provides suitable conditions for invasion by waterfowl food plants. Habitat managers should be familiar with soil characteristics, however. Deep (24-36") "subsoil" discing can adversely affect the water-holding capacity of a wetland if shallow clay layers exist near the soil surface. Shallow discing is preferred in this circumstance.

Marsh management is an art, not a science. Marsh management practices are continually being improved as a result of research and experimental management. The results of these learning efforts are disseminated to interested parties by the agencies and organizations involved in waterfowl management. However, it is to the advantage of all marsh managers to keep accurate records of habitat manipulations (e.g. dates of flooding, irrigation, drawdown, discing). Managers should eventually be able to predict how the vegetation on their property will respond to specific management practices, this in turn will allow them to consistently provide high-quality waterfowl habitat.

Doc. 2522 Filed 6/22

Exhibit B

WETLAND HABITAT MANAGEMENT GUIDE #1

SEASONAL WETLAND

Target Waterfowl Food Plant: Smartweed

Timing of Spring Drawdown:

March 1 - 20. Sacramento Valley
February 20 - March 10. San Joaquin Valley

Moist-soil Plant Community: In addition to smartweed, other desirable wetland plants that may occur under the following water management and soil disturbance schedule include but are not limited to tule, cattail, spikerush, chufa, fat-hen, alkali bulrush, and watergrass.

Potential Problem Plants: Some wetland plants are undesirable if they become overly abundant or create dense stands. These include but are not limited to tule, cattail, asters, cocklebur, salt grass, bermuda grass, and baltic rush.

Value to Waterfowl: A moist-soil plant community dominated by smartweed, but including various other wetland plants, is an important component of a diversified marsh management program. Also referred to as "redweed", smartweed provides ducks with a quality food source throughout the fall and winter. Smartweed produces seeds that contain balanced proportions of essential vitamins, protein, minerals, and carbohydrates. In addition, it has a complex leaf structure, which supports excellent assemblages of aquatic invertebrates when flooded. Recent research in the Midwest shows high invertebrate abundance and diversity in association with smartweed. Tules, cattails, and other emergent plants add structural diversity to the marsh and provide ducks with cover. Wetland units having dominant stands of smartweed in association with these cover plants become an integral part of the wetland complex and receive heavy usage by dabbling ducks, particularly mallards. Smartweed may also occur in combination with watergrass, which has even greater seed value.

Management Strategy: Two important factors that influence smartweed growth are (1) the timing of spring drawdown and (2) the stage of succession (number of years since the area was last disturbed through discing or plowing). Smartweed requires cool soil temperatures and relatively high soil moisture for germination, and therefore, is usually found in wetlands that undergo early spring drawdowns. Smartweed can be maintained in seasonal wetlands for several years if water management coincides with its growth

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requirements. Periodic soil disturbance is usually essential to the maintenance of smartweed stands. Smartweed is considered a "pioneer" or "invader" plant species because it colonizes recently disturbed wetland sites. Eventually, competition from other wetland plants, particularly cattails and tules, will eliminate smartweed from the community. Discing should occur when smartweed abundance decreases substantially.

Establishment: Smartweed seeds are present in the soils of most wetlands, ricefields, and set-aside lands, which eliminates the need for any type of planting. If undesirable vegetation is dominant, the area must be disced, preferably during summer. Discing reduces plant competition and prepares the seedbed for improved smartweed production the following spring. Discing dense stands of cattails and tules in early summer is the most effective way to reduce competition and create conditions suitable for smartweed colonization. This method exposes cattail/tule rhizomes and tubers to the sun and kills them, thus preventing their re-growth during fall flooding. Water should be maintained on these areas throughout the winter. Smartweed will usually "invade" the disced areas if an early spring drawdown occurs.

Spring Drawdown: Managers must do everything possible within the constraints imposed by water districts to maintain water until the early-spring drawdown that will typically encourage smartweed development. Coincidentally, the retention of pond water through February assures the availability of protein-rich invertebrates to pre-breeding ducks. Appropriate drawdown dates are listed above. Smartweed seeds should begin to germinate within 2 weeks of drawdown. Rapid drawdowns (3-5 days) typically produce extensive stands of moist-soil vegetation, consisting of relatively few plant species. Slow drawdowns (2-3 weeks) maximize the foraging opportunity for waterfowl and other wetland birds and result in greater diversity of vegetation. Invertebrates, in particular, become concentrated and readily available to ducks.

Irrigation: An irrigation will be needed if smartweed plants show signs of stunting (i.e. halted growth and "yellowing"). This usually occurs 4-6 weeks after germination when plants are generally 3-12" high. Irrigation should occur as soon as possible, but may be delayed until mid-summer if water availability is a problem. A second irrigation is necessary if plants appear stunted before seed development occurs. Summer irrigations encourage the expansion of cattail and tule stands, as well as sprangletop and watergrass development. Smartweed may achieve full development without an irrigation, particularly if a high water table is present, late rains occur, or water seeps in from surrounding wetlands or ricefields.

Fall Flooding: Flooding should coincide with the arrival of migratory waterfowl. Pintails begin arriving in the Central Valley in mid-August, and peak numbers of wintering waterfowl are usually present during December and January. The flooding of individual units should be staggered to match the habitat requirements of arriving waterfowl, if possible. For example, fall flooding should begin on sites suitable for pintails, such as

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areas dominated by swamp timothy. Smartweed units are typically used by mallards, many of which are raised locally, therefore flooding can occur anytime between August and October. The timing of water delivery plays a major role in the determination of flooding schedules, however. Many marsh managers simply execute their fall flooding when irrigation districts make water available. Marsh units should be gradually flooded to allow ducks maximum accessibility to seeds and invertebrates.

Discing: Periodic soil disturbance is vital to most marsh management programs, particularly those involving smartweed production. It reduces potential problem plants and creates conditions suitable for smartweed establishment. Discing should be employed when it is obvious that smartweed is no longer dominant and is being replaced by undesirable species. This normally occurs 3-6 years after establishment. However, discing the entire field at one time would eliminate all food and cover from the area for one season and should be discouraged. This practice would also return the marsh to a monoculture of smartweed the following year. Marsh plant diversity is desirable, and discing 30-40% of the pond bottom in a random pattern will create a "mosaic" of smartweed and dense emergent vegetation. Following discing, smartweed will colonize areas previously occupied by cattails, tules and other non-target species.

Note: Occasionally, stands of smartweed develop a fungal infection called "smut", which reduces seed production. Little is known about smut, although it appears most prevalent when too much water is applied during the growing season. Managers should not be overly concerned with the disease because it usually only affects a portion of the smartweed seed source, and not the invertebrate habitat the plant provides. However, the threat of the disease further emphasizes the need for habitat diversity. If, in a given year, a smartweed seed crop fails in a diverse wetland complex, other waterfowl food plants will help supply necessary seeds for wintering waterfowl.

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Exhibit B

WETLAND HABITAT MANAGEMENT GUIDE #3

SEASONAL WETLAND

Target Waterfowl Food Plant: Watergrass

Timing of Spring Drawdown:

May 1 -31. Sacramento Valley.
April 15 - May 15. San Joaquin Valley

Moist-soil Plant Community: In addition to watergrass, other desirable wetland plants that may occur under the following water management and soil disturbance schedule include, but are not limited to tules, cattails, sprangletop, ammannia, fat-hen, beggarticks, and smartweed.

Potential Problem Plants: Some wetland plants are undesirable if they become overly abundant or create dense stands. These include but are not limited to tule, cattail, cocklebur, salt grass, bermuda grass, dock, jointgrass, and baltic rush.

Value to Waterfowl: A moist-soil plant community dominated by watergrass is an important component of a diversified marsh management program. Watergrass, also referred to as millet, is an important and very abundant waterfowl food plant in the Central Valley. It is highly attractive to pintails, mallards, and other dabbling ducks, presumably due to its combination of seed production, invertebrate habitat, and thermal cover. Watergrass is a weed that grows in dense stands and may produce in excess of 2,000 lb. of seed/acre. It has substantial stem mass, which provides ducks with thermal cover and protection from predators. Through flooding and waterfowl activity, the stems eventually become matted and serve as excellent substrate for invertebrate production.

Watergrass seeds provide greater balance in nutritive quality than the high-energy, low-protein cereal grains, (e.g. corn, rice). They are especially high in essential minerals. Marsh units dominated by watergrass typically receive heavy duck usage throughout the season. Sprangletop seeds provide waterfowl with a lesser, but still valuable, food source. Ammannia is a plant species that benefits waterfowl, but does not occur in great abundance.

Management Strategy: Watergrass requires more water than other waterfowl food plants but is an easily propagated wetland plant species. Although an initial seeding may

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be required, a stand can be sustained for several years with proper water management, which involves late-spring drawdowns and summer irrigations. Unlike other waterfowl food plants, watergrass is commonly propagated in a monoculture. These watergrass units resemble unharvested rice fields in appearance. This management practice maximizes food production at the expense of habitat diversity. However, units can be strategically located so that diverse wetland habitats are nearby. Watergrass is also produced in conjunction with other moist-soil plants in diverse wetland units.

Watergrass and rice have very similar growth requirements. Maximum growth occurs during hot days and warm nights. The establishment (i.e. aerial seeding) of rice can even be used as a local estimate for determining the proper drawdown date for watergrass. Watergrass seed maturation takes approximately 45-80 days, but less time may be required under ideal soil and temperature conditions. Although crops can be established as late as August, seed production is limited due to the cold nights at the end of the growing season. Sprangletop germination generally occurs with late June or July drawdowns. Watergrass grows best in heavy clay or loam soils and will tolerate mildly saline conditions.

Establishment: The introduction of watergrass to a seasonal wetland through seeding usually promotes rapid establishment. Optimal establishment occurs either by: 1) discing, broadcasting the seed, treating the soil with a cultipacker (ring-roller), then flooding for 3-5 days, or 2) through aerial application on saturated soils. The subsequent drawdown should be executed within the time frame in which watergrass locally germinates best (listed under "Timing of Spring Drawdown"). Seeds should begin to germinate within 2 weeks. If germination has not occurred 3 weeks after drawdown, an irrigation will be needed. Irrigation schedules are listed below. Discing prior to seeding reduces plant competition and need not occur if the ground is sparsely vegetated. It may be necessary to repeat the discing process several times to remove dense or robust vegetation. It is important to remember that watergrass is a weed and that drilling or covering the seed is unnecessary. The seed will not germinate if it is buried too deeply in the soil. "Rice cleanings" can be obtained from rice mills and should be applied at 50-100 lb./acre. Though only 10-40% watergrass seed, these have proven quite satisfactory. "Pure" watergrass can be purchased from seed distributors and only requires 15-40 lb./acre.

Spring Drawdown: Managers must do everything possible within the constraints imposed by water districts to maintain water until the late-spring drawdown that will typically encourage watergrass development. Coincidentally, the retention of pond water through April assures the availability of protein-rich invertebrates to breeding ducks. Appropriate drawdown dates are listed above. Watergrass seeds should begin to germinate within 2 weeks of drawdown. Rapid drawdowns (3-5 days) typically produce extensive stands of moist-soil vegetation, consisting of relatively few plant species. Slow drawdowns (2-3 weeks) maximize the foraging opportunity for waterfowl and other wetland birds and result in greater diversity of vegetation. Invertebrates, in particular, become concentrated and readily available to ducks.

Irrigation: Watergrass and other millets are water-dependent plants that require one or two summer irrigations for seed development to occur. Watergrass plants typically show signs of "redness" when soil moisture becomes limiting and the plants are "stressed". Plants will usually be 3-6" high when this condition occurs. At this point the marsh manager may

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elect to employ either of two strategies. They are as follows:

a) Irrigate Immediately: This method is the most reliable way to produce a highly productive stand of watergrass. The first irrigation should occur when the majority of the plants are turning red, which is generally 4-6 weeks after drawdown. A subsequent irrigation is crucial if plants show redness again. This procedure generally produces a robust stand of watergrass with good seed development. Although ducks may initially have problems utilizing excessively tall watergrass, weather and feeding activity eventually create openings and facilitate access. Stems serve as an excellent substrate for invertebrates when they become "matted" in the water, therefore, tall watergrass provides good invertebrate habitat.

b) Delay Irrigation Until August: If irrigation water is unavailable until August or if a more open and shorter watergrass stand is desired, then irrigation can be delayed until August. However, under this scenario, high soil moisture must be maintained throughout the remainder of the growing season. This can be accomplished through repeated irrigations or continuous flooding. Early fall flooding (August) can serve as this irrigation. This form of watergrass management is not normally recommended because vegetation response is variable and, therefore, seed production is unreliable.

Fall Flooding: Flooding should coincide with the arrival of migratory waterfowl. Pintails begin arriving in the Central Valley in mid-August, and peak numbers of wintering waterfowl are usually present during December and January. Watergrass units should be flooded between August and October, but the delayed flooding (late November - early December) of an individual unit can make a "new" food source available to wintering waterfowl. The timing of water delivery plays a major role in the determination of flooding schedules, however. Many marsh managers simply execute their fall flooding when irrigation districts make water available. Marsh units should be gradually flooded to allow ducks maximum accessibility to seeds and invertebrates.

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Exhibit B

WETLAND HABITAT MANAGEMENT GUIDE #5

BROOD POND

Flooding Schedule

Fall Flooding: October 1 preferred
Summer Drawdown: July 15 - August 1

A semi-permanent marsh is a wetland impoundment that incorporates a semi-permanent flooding regime with dense emergent vegetation, aquatic vegetation, moist-soil plants, open water, and possibly small islands. In the Central Valley, they are typically flooded from fall until mid-summer to meet the brood-rearing habitat requirements of local waterfowl. For this reason, semi-permanent marshes are often referred to as "brood ponds". They provide critical habitat for wetland wildlife, particularly during the summer when seasonal wetlands are dry. Hardstem bulrush (tules) and cattails are characteristic of brood ponds. Brood pond management limits the growth of "moist-soil" waterfowl food plants (e.g. smartweed, swamp timothy), but creates valuable escape cover for duck broods. Brood ponds also provide ducks with a diverse food source of invertebrates and aquatic plants.

Value to Waterfowl: Ducks utilize brood ponds throughout much of their annual cycle, but are most dependent upon them during the late spring and summer when aquatic invertebrates are their primary food source and relatively few wetland areas are flooded. Invertebrates, which are high in protein, are readily available to ducks in both seasonal and semi-permanent marshes during drawdowns. Seasonal wetlands in the Central Valley are typically dry and of little value to ducks during the summer. Although permanent marshes are flooded during the summer, invertebrates are not highly available to ducks in these deep-water marshes. Research has shown that while gadwall hens and their broods utilize permanent marshes extensively, hen mallards with broods prefer shallow seasonal or semi-permanent wetlands over permanent marshes when both habitat types are available. Thus, brood ponds (especially during drawdown) and other semi-permanent wetlands appear to be the preferred feeding habitat for Central Valley mallards during the summer.

Brood ponds typically support vigorous stands of cattails and/or tules. The maintenance of a productive brood pond generally requires periodic vegetation manipulation, however. Studies have shown that wetlands exhibiting the "hemi-marsh" 50:50 cover to open water ratio are ideal habitats for breeding ducks. Frequent discing will accomplish nutrient cycling and insure that the marsh remains in a productive state. Brood ponds also provide excellent feeding habitat for wintering waterfowl, particularly mallards and wood ducks.

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Management Strategy: Brood ponds should be flooded continuously from the fall until at least July 15, but preferably August 1. The presence of summer water encourages cattail and/or tule growth in shallow areas, which provides ideal escape cover for duck broods. Discing, mowing, and burning are methods that can be used to maintain brood ponds in the 50:50 "hemi-marsh" state. Moderate production of moist-soil vegetation may occur (e.g. watergrass), although seed development is hindered by the short period between drawdown and fall flooding, as well as competition from dense emergent vegetation.

In the Central Valley, many wetlands that remain flooded during the spring and summer months are enrolled in the USDA Water Bank Program. Landowners receive annual payments for this provision of brood habitat and may only begin draining these units on established dates between June 15 and July 15. The flightless molting period and part of the brood-rearing period may occur after some Water Bank units have been drained, thus the maintenance of water beyond the contractual calendar date may provide increased benefits to brood-rearing and molting ducks. The timing of fall flooding is not crucial because seasonal wetlands provide the majority of the habitat for early migrant waterfowl. Flooding of brood ponds should occur after maintenance work (i.e. discing, mowing) has been completed.

Note: The presence of summer water benefits ducks and other wetland wildlife, but also may produce mosquitos. Landowners should check with their local mosquito abatement district for guidelines.

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Wetland Conservation Easement Program
(DFG), Yolo Basin Farms, Inc.,
Yolo County

CERTIFICATE OF ACCEPTANCE

THIS IS TO CERTIFY that the interest in real property conveyed by the deed or grant, dated March 15, 1993, from Yolo Basin Farms, Inc., to the STATE OF CALIFORNIA, is hereby accepted by the undersigned officer on behalf of the State of California, pursuant to authority conferred by authorization of the Wildlife Conservation Board, Department of Fish and Game, Resources Agency, State of California, adopted on May 6, 1993, and the grantee consents to the recordation thereof by its duly authorized officer.

STATE OF CALIFORNIA
Resources Agency
Department of Fish and Game

By: _____
W. John Schmidt
Executive Director
Wildlife Conservation Board

Date: 4/1/93

APPROVED:
DEPARTMENT OF GENERAL SERVICES

By _____
For F. WARREN CALDWELL, Senior Real Estate Officer
Office of Real Estate and Design Services
TR93-075-0

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24283

A2 USFWS Easements – Laurel G, Kleary, Williams

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

GRANT OF EASEMENT

GRANT OF EASEMENT, made between KENNETH E. MARTIN AND CYNTHIA MARTIN, Husband and wife, hereinafter referred to as Grantor, and the UNITED STATES OF AMERICA and its assigns, hereinafter referred to as Grantee,

WHEREAS the Migratory Bird Conservation Act of February 18, 1929, (16 U.S.C. 715 et seq), as amended, and since August 1, 1958, authorizes the Secretary of the Interior to acquire certain lands or interests therein for waterfowl habitat;

AND ALSO WHEREAS, the easement interest rights in the following described lands are being acquired for administration by the Secretary of the Interior (Secretary) through the United States Fish and Wildlife Service, and the use, occupation and operation of the reservations retained herein shall be subordinate to and subject to such rules and regulations as may be prescribed by the Secretary governing the use, occupation, protection and administration of units of the National Wildlife Refuge System under and in compliance with provisions of Section 6 of the Migratory Bird Conservation Act of February 18, 1929 (45 Stat. 1222), as amended by Section 301 of the Refuge Revenue Sharing Act of June 15, 1935, (49 Stat. 381).

NOW THEREFORE, For and in consideration of SIXTY-TWO THOUSAND AND 00/100 DOLLARS ($62,000.00), the Grantor hereby grants to the UNITED STATES OF AMERICA, Grantee, a perpetual conservation easement for the maintenance and use of the land and waters described below (hereinafter referred to as "Easement Lands" and "Easement Waters") for the management of migratory birds on the terms and conditions stated herein. There is included in this Grant of Easement a right of access by designated representatives of the U.S. Fish and Wildlife Service over any and all Easement Lands and those lands described as excluded from the Easement Lands described below, as reasonably necessary for the limited purposes of entering the Easement Lands to verify compliance by the Grantor with the terms and conditions of this easement and exercising Grantee's rights under this Grant of Easement. Said lands contain 43.99 acres, more or less, all being located in Yolo County, State of California, and more particularly described as follows:

Tract (29C):
Township Six (6) North, Range Three (3) East, M.D.B.& M.: In Section Ten (10), Parcel 2 of Parcel Map No.3146, filed May 3, 1982 in Book 6 of Parcel Maps, page 59, Yolo County Records.

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(10)

EXCEPTING THEREFROM a portion of said land all oil, gas and mineral rights in and to that property, but without any right in the grantor, his successors or assigns, to drill, or to erect structures or other improvements, or to install pipes, or to excavate upon any of the said property, except as such locations shall be approved by grantee and by the U.S. Corps of Engineers so that any such operations will not interfere with the maintenance and operation of the toe drain and/or the deep water channel to be constructed on the property, as reserved in a Grant Deed from Fridolf Anderson to Sacramento-Yolo Port District, dated December 19, 1956 and recorded December 26, 1956 in Book 502 of Official Records at page 185, Yolo County Records.

ALSO EXCEPTING THEREFROM a portion of said land and all oil, gas and other hydrocarbons in and under the above described property, as reserved in Deed from Fridolf Anderson to Daniel J. Mezzetta and Ersile D. Mezzetta, his wife, dated March 20, 1959, and recorded April 9, 1959 in Book 569 of Offical Records at page 240, Yolo County Records. Assessors Parcel No. 033-220-68.

ALSO EXCEPTING THEREFROM a 0.745 acre, more or less, exclusion surveyed by the U.S. Fish and Wildlife Service as delineated on a map tracing designated RISING WINGS TRACT (29Cz-1) bearing the date of July 17, 1998, of record in the files of the Department of the Interior. A print from that map is attached hereto.

The following described tract of land is located in Yolo County, California, situate approximately 15 miles South of the city of West Sacramento, California, and being a part of the land described in the Grant Deed from Richard J. Goodell, et ux, to Kenneth E. Martin, et al, recorded in the Official Records of Yolo County, California, May 19, 1989 in Book 2026, Pages 272-273, said tract being more particularly described as follows;

All bearings and distances are based on the Lambert State Plane Coordinate System, NAD 83/91, California Zone 2; divide distances by 0.99998 for ground distances.

<u>Township 6 North, Range 3 East, Section 10, Mount Diablo Meridian;</u>
<u>BEGINNING</u> at a U.S. Fish and Wildlife Service monument marked "150, TR29CZ-1,1998", said monument marking the Southwest corner of this tract, and which monument bears,

South 26° 34' 52" East, 3756.00 feet,

from the calculated Section Corner of Sections 3, 4, 9, & 10 as determined from ties per DR. 1, BK. 1, P. 45, Yolo County Records; thence,

North 19° 40' 13" East, 302.33 feet,

to a U.S. Fish and Wildlife Service monument marked "153, TR29CZ-1, 1998"; Thence, South 69° 22' 56" West, 96.04 feet,
to a U.S. Fish and Wildlife Service monument marked "152, TR29CZ-1,

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1998"; Thence, continuing on the same bearing, 10.96 feet, for a total of 107.00 feet, to a point at the waters of the Sacramento River Deep Water Ship Channel Project - Toe Drain; Thence, along the waters of the Sacramento River Deep Water Ship Channel Project - Toe Drain, to a point which bears, South 19° 40' 13" West, 302.33; Thence, leaving said TOE DRAIN, North 69° 22' 56" West, 11.38 feet, to a U.S. Fish and Wildlife Service monument marked "151, TR29CZ-1, 1998"; Thence, continuing on the same bearing, 95.62 feet, for a total of 107.00 feet, to the point of BEGINNING, containing 0.745 acres, more or less.

Grantor reserves the right of access, for ingress and egress, along the toe drain on the land described above, containing 0.745 acres, more or less.

1. There are excepted and reserved from this Grant of Easement all minerals, including gas, oil, and other hydrocarbon substances, underlying the Easement Lands, and this Grant of Easement is subject to all existing easements and rights-of-way of record held by third parties, and to all outstanding mineral rights, including all oil and gas leases of record, held by third parties.

2. The Easement Waters consist of (i) any riparian water rights appurtenant to the Easement Lands, (ii) any appropriative water rights to the extent those rights are appurtenant to the Easement Lands, (iii) any waters, the rights to which are secured under contract between the Grantor and any irrigation or water district, to the extent such waters are customarily applied to the Easement Lands, and (iv) any water from wells that are in existence or may be constructed in the future on the Easement Lands or on those lands described as excepted from the Easement Lands in the legal description and that are capable of being used by the Grantor to maintain the Easement Lands in a flooded condition. The Easement Waters are limited to the amount of Grantor's water reasonably required to maintain the Easement Lands in a flooded condition to the elevation not to exceed the historical fall and winter seasonal level. Any survey undertaken in connection with the determination of flood elevation levels and measurement locations shall be at the option and expense of the United States.

3. (a) Grantors shall not (i) alter the existing topography of or cultivate agricultural crops on the Easement Lands, (ii) otherwise alter or use or permit the use by third parties of the Easement Lands for any purpose, including the exploration or development of any reserved minerals, or (iii) place any structures on the Easement Lands other than hunting blinds without the prior written authorization of Grantee given through the Fish and Wildlife Service. Such authorization will only be given if the Secretary or his designated representative determines that the proposed activity will not change the character of the Easement Lands or adversely affect the use of the Easement Lands as waterfowl habitat suitable for migratory birds.

(b) Grantors and Grantee agree that the exploration, development, and production of reserved oil and gas deposits by Grantors or authorized third

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parties shall be considered compatible with maintenance and use of the Easement Lands and Waters for the management of migratory birds and shall be authorized by the Fish and Wildlife Service provided (i) all exploration and development operations and, in particular, all drilling and work over activities, are conducted after June 1st and prior to September 1st of each year and (ii) Grantee, through the Fish and Wildlife Service shall have the right to approve the locations and methods of all proposed exploration, development and production operations to insure such operations are carried out in a manner that is compatible with protection of Grantee's easement interest.

4. The provisions of Paragraph 3 hereof shall not prohibit hunting or operation of a hunting club on the Easement Lands and such use shall be deemed to be consistent with maintenance of the Easement Lands as waterfowl habitat so long as such use is in accordance with all applicable state and federal laws and regulations regulating hunting on privately owned lands. In this connection, Grantors may take such actions as they may deem appropriate to improve the Easement Lands as waterfowl habitat and to facilitate the operation of any hunting club on the Easement Lands, including building or relocating blinds, excavating channels to blinds, irrigating vegetation, fertilizing, planting native trees and wetland vegetation, provided that such trees and vegetation are included on the Fish and Wildlife Service List of Approved Wetland Vegetation described in **Exhibit 1** attached to and incorporated herein by reference, removing trees and vegetation to the extent they encroach on the open marsh and interfere with the use of the Easement Lands as waterfowl habitat, and removing brush to the extent it encroaches on dikes and impedes access thereto for hunting and maintenance purposes.

5. Grantors are not obligated to take any action or to incur any expense related to the maintenance or restoration of the Easement Lands as waterfowl habitat. Nor are Grantors obligated to apply water to the Easement Lands or to maintain, repair, or construct any water distribution facilities to serve the Easement Lands. However, in any year that Grantors do not flood the Easement Lands in the customary manner to their historical hunting season level, Grantee shall have, at its sole discretion, the nonexclusive right and option, but not the obligation, to flood the Easement Lands from October 15th through March first of the following year. In this connection, Grantee shall have, at its sole discretion, the right and option, but not the obligation, to use any and all of the Easement Waters that Grantee deems suitable for waterfowl habitat purposes and to place on the Easement Lands and convey through Grantors' water distribution facilities any other waters Grantee may acquire or have available to it. In connection with any flooding done by Grantee pursuant to this paragraph, (i) Grantee shall have the right to make full use of Grantors' water distribution facilities, including both existing facilities and any facilities constructed in the future and including all water wells and pumps, to the extent those facilities are capable of serving the Easement Lands, on the condition that Grantee shall pay the expenses of operating Grantors' pumps, exclusive of maintenance costs, during any period of such use by Grantee, and (ii) Grantors shall pay any taxes, assessments, or other charges, excluding actual water costs, due to any water or irrigation district on account of the use by Grantee of Easement Water supplied by such district.

6. Grantor shall not grant any additional easements, rights-of-way, or other interests in the Easement Lands, other than a fee or leasehold interest,

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or grant or otherwise transfer to any other person or entity or to other lands or otherwise abandon or relinquish any Easement Waters without the prior written authorization of Grantee given through the U.S. Fish and Wildlife Service. Such authorization will be given unless the Secretary or his designated representative determines that the proposed interest or transfer will interfere with the use of the Easement Lands as waterfowl habitat suitable for migratory birds or interfere with the availability of Easement Waters for the Easement Lands. This paragraph shall not prohibit the transfer of a fee title or leasehold interest in the Easement Lands that is subject to the terms of this Grant of Easement.

7. Upon acceptance of this Grant, the easement interest acquired by the United States shall become a component part of the National Wildlife Refuge System and shall be subject to those laws and regulations pertaining to the National Wildlife Refuge System that are applicable to the easement interests being acquired. Violation of those applicable laws and regulations may subject the violator to civil and/or criminal penalties. Laws and regulations that regulate conduct that does not affect the property interests conveyed to the United States through this Grant of Easement are not applicable. For example, regulations controlling hunting and fishing or any public use are not applicable since these rights have not been conveyed.

8. The Grantee acknowledges that adoption of laws or regulations that prohibit hunting of all migratory waterfowl on the property for a continuous period of thirty-six (36) months shall deprive the Grantor of the primary economic beneficial use of the fee estate in the property. Therefore, the Grantee, and its assigns, reserves the first right of refusal to acquire the remaining fee interest in the Grantor's property in the event that waterfowl hunting seasons in the State of California are stopped for a period of three consecutive years without the likelihood of reinstatement. The acquisition of these remaining rights is contingent upon Congressional, State, and County approvals where applicable, and the appropriation of sufficient funds. This right of first refusal is contingent upon the receipt of a written offer to sell this remaining interest from the individual landowner, and the value for this remaining interest will be based upon an approved fair market value appraisal.

9. This Grant of Easement shall be binding upon, and shall inure to the benefit of, the Grantor, its successors and assigns and Grantee and its assigns.

10. THIS GRANT IS MADE SUBJECT TO existing rights of way, of record or in use, for roads, pipelines, ditches, canals, conduits, telephone and electrical transmission lines, on, over and across said premises; ALSO SUBJECT TO all covenants, terms and conditions, restrictions, drainage rights, agreements and permits of record or in use, and all outstanding mineral rights, including oil and gas leases of record, exceptions and reservations of record as of the date of recording herein.

11. This Grant of Easement imposes no other obligations or restrictions on the Grantor and neither they nor their successors, nor any other person or entity claiming under them, shall be in any way restricted from using all of the subject lands in the customary manner except as provided herein.

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Kenneth E. Martin L.S.

Kenneth E. Martin

Cynthia Martin L.S.

Cynthia Martin

- - - - - - - - - - - - - - -

CERTIFICATE OF ACCEPTANCE
State of California Government Code Section 27281

This is to certify that the Secretary of the Interior, acting by and through his authorized representative, the Senior Realty Officer, U.S. Fish and Wildlife Service, hereby accepts on behalf of the UNITED STATES OF AMERICA, the real property described in the within Grant of Easement and consents of recordation thereof.

8/25/98

Date

Senior Realty Officer
U.S. FISH AND WILDLIFE SERVICE

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ACKNOWLEDGMENT

STATE OF California †
† ss
COUNTY OF Sacramento †

On 8-25-, 1998, before me, Sharon A. Wichmann personally appeared Kenneth E. Martin and Cynthia Martin, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Signature Sharon A. Wichmann
Notary Public

(SEAL)

SHARON A. WICHMANN
COMM. #1100219
Notary Public-California
SACRAMENTO COUNTY
My Comm. Exp. Jun. 9, 2000

BMP1

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EXHIBIT 1

The following list contains most of the plants considered desirable for waterfowl and other wildlife in the North Central Valley Wildlife Management Area. This list is not intended to be all-inclusive, and other species may be desirable under some circumstances. Plants not on this list may not be introduced on the Easement Land without written permission from the Grantee.

Scientific Name	Common Name
Aquatic-floating and submerged:	
Lemna minor	Duckweed
Potamogeton pectinatus	Sego pondweed
Potamogeton species	Other pondweeds
Zannichellia palustris	Horned pondweed
Najas guadalupensis	Southern naiad
Chara species	Muskgrass
Aquatic-emergent:	
Scirpus acutus (tule)	Hardstem bulrush
Scirpus robustus	Alkali bulrush
Scirpus fluviatilis	River bulrush
Carex species	Sedges
Heleocharis palustis	Spike rush
Cyperus species	Flat sedges (nutgrass)
Echinodorus berteroi	Burhead
Sagittaria latifolia	Wapato, duck potato
Sagittaria species	Arrowhead
Typha species	Cattails
Moist soil:	
Echinochloa crusgalli	Watergrass
Leptochloa fascicularis	Sprangletop
Heleochloa schoenoides	Swamp timothy
Crypsis niliaca	Prickle grass
Polygonum species	Smartweeds
Ammannia coccinea	Redstem
Paspalum distichum	Joint grass
Cynodon dactylon	Bermuda grass
Uplands:	
Phalaris tuberosa var. stenoptera	Harding grass
Phalaris tuberosa var. hirtiglumis	Perla grass
Phalaris arundinacea	Reed canary grass
Sorghum halepense	Johnson grass
Setaria species	Bristle grass
Distichlis spicata	Saltgrass

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Apropyron elongatum	Tall wheatgrass
Melilotus species	Sweetclovers

Scientific Name	Common Name
Uplands continued:	
Astragalus cicer	Cicer milkvetch
Lotus corniculatus	Birdsfoot trefoil
Trees, shrubs, and vines:	
Salix gooddingii	Black willow
Salix hindsiana	Sandbar willow
Populus fremontii	Fremont cottonwood
Alnus rhombifolia	White alder
Elaeagnus angustifolia	Russian olive

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UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

NORTH CENTRAL VALLEY WILDLIFE MANAGEMENT AREA

RISING WINGS TRACT

(29Cz-1)

0.745 ACRES

YOLO COUNTY, CALIFORNIA

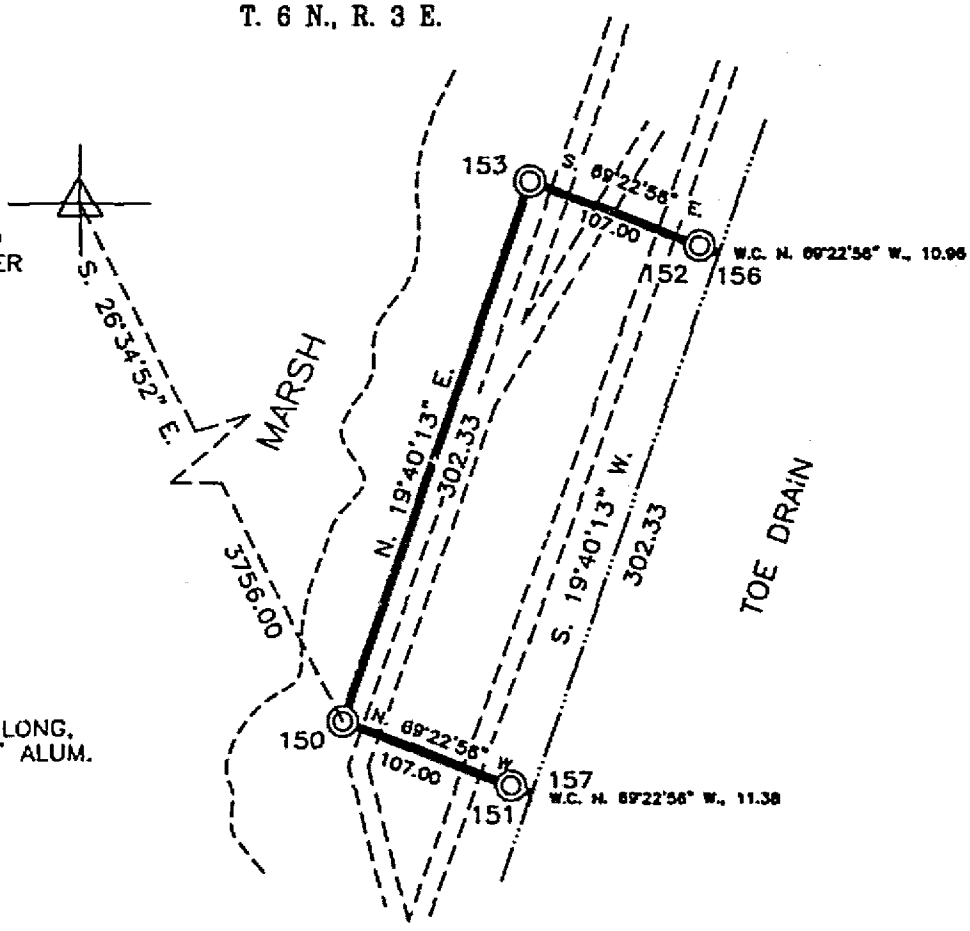
0 50 100 200 300 400 FEET

MOUNT DIABLO MERIDIAN

T. 6 N., R. 3 E.

CALIFORNIA S.P.C.S. ZONE 2
NAD 83
GRID = 0.99998

COR. SECS. 3, 4, 9 & 10
DETERMINED FROM TIES PER
DR.1, BK 1, P.45 YOLO
COUNTY RECORDS



LEGEND:

◎ SET 5/8" REBAR, 30" LONG, WITH U.S.F.W.S. 3 1/4" ALUM. CAP.

— TRACT BOUNDARY

THIS MAP WAS COMPILED FROM OFFICIAL PLATS OF THE BUREAU OF LAND MANAGEMENT, PRIVATE SURVEYS RECORDED AND UNRECORDED, AND FIELD SURVEYS MADE BY THE FISH AND WILDLIFE SERVICE JUNE 1998, AND RECORDS IN THE FILES THEREOF.

JULY 17, 1998
DATE

William C. Drummond

WILLIAM C. DRUMMOND
REGIONAL LAND SURVEYOR

END OF DOCUMENT

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YOLO Co Recorder's Office
Tony Bernhard, County Recorder

DOC - 96-0021259-00
Acct 104-Placer Title
Friday, AUG 30, 1996 15:55:00
Ttl Pd $31.00 Nbr-0000028843
VRB/R6/9

RECORDING REQUESTED; WHEN RECORDED
MAIL TO: Attn: Stephen M. Dyer
U.S. Fish and Wildlife Service
Sacramento Realty Field Office
2233 Watt Avenue, Suite 375
Sacramento, California 95825-0509

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

GRANT OF EASEMENT

THIS GRANT OF EASEMENT, Made this 29th day of August, 1996 between Laurel G Ranch Corporation, a California corporation, its successors and assigns, hereinafter referred to as Grantor, and the UNITED STATES OF AMERICA and its assigns, hereinafter referred to as Grantee,

WHEREAS the Migratory Bird Conservation Act of February 18, 1929, (16 U.S.C. 715 et seq), as amended, and since August 1, 1958, authorizes the Secretary of the Interior to acquire certain lands or interests therein for waterfowl habitat;

AND ALSO WHEREAS, the easement interest rights in the following described lands are being acquired for administration by the Secretary of the Interior (Secretary) through the United States Fish and Wildlife Service, and the use, occupation and operation of the reservations retained herein shall be subordinate to and subject to such rules and regulations as may be prescribed by the Secretary governing the use, occupation, protection and administration of units of the National Wildlife Refuge System under and in compliance with provisions of Section 6 of the Migratory Bird Conservation Act of February 18, 1929 (45 Stat. 1222), as amended by Section 301 of the Refuge Revenue Sharing Act of June 15, 1935, (49 Stat. 381).

NOW THEREFORE, For and in consideration of ONE HUNDRED TWENTY-TWO THOUSAND FOUR HUNDRED THIRTY AND 00/100 DOLLARS ($122,430.00), the Grantor hereby grants to the UNITED STATES OF AMERICA, Grantee, a perpetual conservation easement for the maintenance and use of the land and waters described below (hereinafter referred to as "Easement Lands" and "Easement Waters") for the management of migratory birds on the terms and conditions stated herein. There is included in this Grant of Easement a right of access by designated representatives of the U.S. Fish and Wildlife Service over any and all Easement Lands and those lands described as excluded from the Easement Lands described below, as reasonably necessary for the limited purposes of entering the Easement Lands to verify compliance by the Grantor with the terms and conditions of this easement and exercising Grantee's rights under this Grant of Easement. Said lands contain 122.43 acres, more or less, all being located in Yolo County, State of California described as follows:

TRACT 16C:

Parcel One: All that portion of Section 3, T. 6N., R. 3E, M.D.B. & M., that lies West of the following described line:

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BEGINNING at a point on the North line of said Section 3, which point bears North 88° 40' 26" West 518.32 feet from the Northeast corner of said Section 3; thence from said point of beginning South 19° 47' 18" West 5610.39 feet to a point on the South line of said Section 3.

EXCEPTING THEREFROM an undivided 1/4 interest in and to all oil, gas, hydrocarbon substances, minerals and other gaseous materials, in and under the above described property as reserved by James Iriart and Jean Iriart, his wife, in Deed to Woodland Title Guaranty Company dated January 13, 1962, Recorded February 1, 1962 in Book 663 of Official Records at page 404 and in Deed to Y.C. Soda and Helen C. Soda, his wife, dated January 13, 1962, Recorded February 1, 1962 in Book 663 of Official Records at page 406.

Parcel Two: A portion of Section 3, T. 6N., R. 3E, M.D.B. & M., and being also a portion of Swamp Land Survey 793, Yolo County Surveys, and being more particularly described as follows: (basis and bearings and coordinates is California State Coordinate System for Zone II):

BEGINNING at a point on the North line of said Section 3, which point bears North 88° 40' 26" West 291.65 feet from the Northeast corner of said Section 3, coordinates of said point of beginning being North 267,626.73 East 2,108,932.33; thence from said point of beginning South 19° 47' 18" West 5609.54 feet to a point on the South line of said Section 3; thence along said South line North 88° 52' 14" West 226.93 feet; thence leaving said South line North 19° 47" 18" East 5610.39 feet to a point on the North line South 88° 40" 26" East 226.67 feet to the point of beginning.

EXCEPTING THEREFROM an undivided 1/2 interest in all oil, gas and mineral rights in and to said property as reserved by James Iriart and Jean Iriart, his wife, in Deed to Sacramento-Yolo Port District, a California river port district, dated January 13, 1958, Recorded March 24, 1958 in Book 537 of Official Records at page 548.

Assessors Parcels No. 033-220-52 and 033-220-54

EXCEPTING THEREFROM the above described parcels all that portion of Section 3, T. 6N., R. 3E, M.D.B. & M.; beginning at a point in said Section 3, from which point of beginning the Northeast corner of said Section 3 bears the following two courses: (1) North 70° 21' 24" East 33.14 feet and (2) South 88° 40' 26" East 518.32 feet; thence from said point of beginning South 19° 53' 36" West 5447.85 feet; thence North 89° 56' 04" West 1373.79 feet; thence North 00° 06" 35" East 2521.95 feet; thence North 89° 51' 01" West 1460.62 feet; thence North 00° 05' 49" East 2676.16 feet; thence South 89° 00' 42" East 4679.48 feet to the point of beginning; containing 361.4 acres more or less, and leaving a residual acreage of 124.43 acres, more or less, for this conveyance.

Excluding except for the purpose of access to and over the Easement Lands the following lands:

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TRACT (16Cz-1):

The following described tract of land is located in Yolo County, California, situate approximately 8 miles South of the City of Davis, California, and being a part of the land described in the Grant Deed from Laurel G Ranch, a partnership, to Laurel G Ranch Corporation, recorded in the Official Records of Yolo County, California, December 6, 1990 in Book 2184, Page 372, said tract being more particularly described as follows;

All bearings and distances are based on the Lambert State Plane Coordinate System, NAD 83/91, California Zone 2; divide distance by 0.99998 for ground distance.

Township 6 North, Range 3 East, Mount Diablo Meridian:

A portion of the Southwest 1/4 of the Southwest 1/4 of section 3, above said Township and Range, more particularly described as follows:

BEGINNING at a 3 1/4" U.S. Fish and Wildlife Service aluminum monument marked "100, 1996", said point marking the Southwest corner of this tract, and which point bears North 78° 13' 59" East, 31.23 feet from the section corner common to sections 3, 4, 9, 10 of T. 6 N., R. 3 E., said section corner's position determined from ties per that certain Record of Survey recorded on May 3, 1963, in Drawer 1, Book 1 at Page 45, in the Official Records of Yolo County; thence, North 0° 01' 10" West, 350.00 feet to a 3 1/4" U.S. Fish and Wildlife Service aluminum monument marked "101, 1996"; thence, North 89° 58' 50" East, 248.91 feet to a 3 1/4" U.S. Fish and Wildlife Service aluminum monument marked "102, 1996"; thence, South 0° 01' 10" East, 350.00 feet to a 3 1/4" U.S. Fish and Wildlife Service aluminum monument marked "103, 1996"; thence, South 89° 58' 50" West, 248.91 feet to the point of BEGINNING, containing 2.00 acres, more or less, leaving a balance of 122.43 acres, more or less, for the purpose of this conveyance.

The above-described tract of land, containing 2.00 acres, more or less, is delineated on a map tracing designated LAUREL G. RANCH TRACT (16Cz-1) bearing the date of April 5, 1996, of record in the files of the Department of the Interior.

1. There are excepted and reserved from this Grant of Easement all minerals, including gas, oil, and other hydrocarbon substances, underlying the Easement Lands, and this Grant of Easement is subject to all existing easements and rights-of-way of record held by third parties, and to all outstanding mineral rights, including all oil and gas leases of record, held by third parties.

2. The Easement Waters consist of (i) any riparian water rights appurtenant to the Easement Lands, (ii) any appropriative water rights to the extent those rights are appurtenant to the Easement Lands, (iii) any waters, the rights to which are secured under contract between the Grantor and any irrigation or water district, to the extent such waters are customarily applied to the Easement Lands, and (iv) any water from wells that are in existence or may be constructed in the future on the Easement Lands or on

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those lands described as excepted from the Easement Lands in the legal description and that are capable of being used by the Grantor to maintain the Easement Lands in a flooded condition. The Easement Waters are limited to the amount of Grantor's water reasonably required to maintain the Easement Lands in a flooded condition to the elevation not to exceed the historical fall and winter seasonal level.

3. Grantor is not obligated to take any action or to incur any expense related to the maintenance of the Easement Lands as waterfowl habitat. Nor is Grantor obligated to apply water to the Easement Lands or to maintain, repair, or construct any water distribution facilities to serve the Easement Lands. However, in any year that the Grantor does not flood the Easement Lands to the determined elevation or the historical fall and winter seasonal levels, Grantee shall have, at its sole discretion, the nonexclusive right and option, but not the obligation, to flood the Easement Lands from September 1st through March 1st of the following year. In this connection, Grantee shall have, at its sole discretion, the right and option, but not the obligation, to use any and all of the Easement Waters that Grantee deems suitable for waterfowl habitat purposes and to place on the Easement Lands and convey through Grantor's water distribution facilities any other waters Grantee may acquire or have available to it.

In connection with any flooding done by Grantee pursuant to this paragraph, (i) Grantee shall have the right to make full use of Grantor's water distribution facilities, including both existing facilities and any facilities constructed in the future and including all water wells and pumps, to the extent those facilities are capable of serving the Easement Lands, on the condition that Grantee shall pay the expenses of operating Grantor's pumps, exclusive of maintenance costs, during any period of such uses by Grantee, and (ii) Grantor shall pay any taxes, assessments, or other charges, excluding actual water costs, due to any water or irrigation district on account of the use by Grantee of Easement Water supplied by such district.

4. (a) Grantor shall not, except as provided in 5(c) below, (i) alter the existing topography of or cultivate agricultural crops on the Easement Lands, (ii) otherwise alter or use or permit the use by third parties of the Easement Lands for any purpose, including the exploration or development of any reserved minerals, or (iii) place any structures on the Easement Lands other than hunting blinds without the prior written authorization of Grantee given through the Fish and Wildlife Service. Such authorization will only be given if the Secretary or his designated representative determines that the proposed activity will not change the character of the Easement Lands or adversely affect the use of the Easement Lands as habitat suitable for migratory birds.

(b) Grantor and Grantee agree that the exploration, development, and production of reserved oil and gas deposits by the Grantor or authorized third parties shall be considered compatible with maintenance and use of the Easement Lands and Waters for the management of migratory birds and shall be authorized by the Fish and Wildlife Service provided (i) all exploration and development operations and, in particular, all drilling and workover activities, are conducted after June 1st and prior to September 1st of each

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year and (ii) Grantee, through the Fish and Wildlife Service shall have the right to approve the locations and methods of all proposed exploration, development and production operations to insure such operations are carried out in a manner that is compatible with protection of Grantee's easement interest.

5. The provisions of Paragraph 3 hereof shall not prohibit hunting or operation of a hunting club on the Easement Lands and such use shall be deemed to be consistent with maintenance of the Easement Lands as waterfowl habitat so long as such use is in accordance with all applicable state and federal laws and regulations regulating hunting on privately owned lands. In this connection, Grantor may take such actions as they may deem appropriate to improve the Easement Lands as waterfowl habitat and to facilitate the operation of any hunting club on the Easement Lands, including building or relocating blinds, excavating channels to blinds, irrigating vegetation, fertilizing, planting native trees and wetland vegetation, provided that such trees and vegetation are included in Exhibit 1 attached to and incorporated herein by reference, removing trees and vegetation to the extent they encroach on the open marsh and interfere with the use of the Easement Lands as waterfowl habitat, and removing brush to the extent it encroaches on dikes and impedes access thereto for hunting and maintenance purposes.

6. Grantor shall not grant any additional easements, rights-of-way, or other interests in the Easement Lands, other than a fee or leasehold interest, or grant or otherwise transfer to any other person or entity or to other lands or otherwise abandon or relinquish any Easement Waters without the prior written authorization of Grantee given through the U.S. Fish and Wildlife Service. Such authorization will be given unless the Secretary or his designated representative determines that the proposed interest or transfer will interfere with the use of the Easement Lands as waterfowl habitat suitable for migratory birds or interfere with the availability of Easement Waters for the Easement Lands. This paragraph shall not prohibit the transfer of a fee title or leasehold interest in the Easement Lands that is subject to the terms of this Grant of Easement.

7. Upon acceptance of this Grant, the easement interest acquired by the United States shall become a component part of the National Wildlife Refuge System and shall be subject to those laws and regulations pertaining to the National Wildlife Refuge System that are applicable to the easement interests being acquired. Violation of those applicable laws and regulations may subject the violator to civil and/or criminal penalties. Laws and regulations that regulate conduct that does not affect the property interests conveyed to the United States through this Grant of Easement are not applicable. For example, regulations controlling hunting and fishing or any public use are not applicable since these rights have not been conveyed.

8. The Grantee acknowledges that adoption of laws or regulations that prohibit hunting of all migratory waterfowl on the property for a continuous period of thirty-six (36) months shall deprive the Grantor of the primary economic beneficial use of the fee estate in the property. Therefore, the Grantee, and its assigns, reserves the first right of refusal to acquire the remaining fee interest in the Grantor's property in the event that waterfowl

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hunting seasons in the State of California are stopped for a period of three consecutive years without the likelihood of reinstatement. The acquisition of these remaining rights is contingent upon Congressional, State, and County approvals where applicable, and the appropriation of sufficient funds. This right of first refusal is contingent upon the receipt of a written offer to sell this remaining interest from the individual landowner, and the value for this remaining interest will be based upon an approved fair market value appraisal at the time of purchase.

9. This Grant of Easement shall be binding upon, and shall inure to the benefit of, the Grantor, its successors and assigns and Grantee and its assigns.

10. This Grant of Easement imposes no other obligations or restrictions on the Grantor and neither them nor their successors, nor any other person or entity claiming under them, shall be in any way restricted from using all of the subject lands in the customary manner except as provided herein.

11. This Grant is made in compliance with Yolo County Resolution No. 95-185, passed November 21, 1995, and shall not otherwise limit the control and management over resident wildlife species vested under law in the California Fish and Game Commission and the Department of Fish and Game.

IN WITNESS WHEREOF, the Grantors have hereunto set their hands as of the day and year above written.

LAUREL G RANCH CORPORATION, a California corporation

Steve Gidaro, Secretary

John D. Reynen, President

ACKNOWLEDGMENT

STATE OF California)
) ss
COUNTY OF Sacramento)

On 8-29-96, before me, the undersigned, personally appeared John D. Reynen, President and Steve Gidaro, Secretary for the Laurel G Ranch, a California corporation, personally known to me or proved to me on the basis of satisfactory evidence to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same in their capacities, and that by their signatures on the instrument, the persons, or the entity upon behalf of which the persons acted, executed the instrument.

WITNESS my hand and official seal.

Signature

(Notarial Seal)

BMP1 JENNIFER L. REIFSNIDER BMP1
COMM. 0993718
Notary Public-California
SACRAMENTO COUNTY
My Comm. Exp. July 14, 1997

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CERTIFICATE OF ACCEPTANCE
State of California Code Section 27281

This is to certify that the Secretary of the Interior, acting by and through his authorized representative, the Senior Realty Officer, U.S. Fish and Wildlife Service, hereby accepts on behalf of the United States of America, the real property described within the Grant of Easement and consents to recordation thereof.

August 28, 1996
Date

Senior Realty Officer
U.S. Fish and Wildlife Service

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EXHIBIT A

The following list contains most of the plants considered desirable for waterfowl and other wildlife in the North Central Valley Wildlife Management Area. This list is not intended to be all-inclusive, and other species may be desirable under some circumstances. Plants not on this list may not be introduced on the Easement Land without written permission from the Grantee.

Scientific Name	Common Name
Trees, shrubs, and vines:	
Salix gooddingii	Black willow
Salix hindsiana	Sandbar willow
Populus fremontii	Fremont cottonwood
Alnus rhombifolia	White alder
Elaeagnus angustifolia	Russian olive
Aquatic-floating and submerged:	
Lemna minor	Duckweed
Potamogeton pectinatus	Sego pondweed
Potamogeton species	Other pondweeds
Zannichellia palustris	Horned pondweed
Najas guadalupensis	Southern naiad
Chara species	Muskgrass
Aquatic-emergent:	
Scirpus acutus	Hardstem bulrush (tule)
Scirpus robustus	Alkali bulrush
Scirpus fluviatilis	River bulrush
Carex species	Sedges
Heleocharis palustis	Spike rush
Cyperus species	Flat sedges (nutgrass)
Echinodorus berteroi	Burhead
Sagittaria latifolia	Wapato, duck potato
Sagittaria species	Arrowhead
Typha species	Cattails

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8

Moist soil:

Echinochloa crusgalli	Watergrass
Leptochloa fascicularis	Sprangletop
Heleochloa schoenoides	Swamp timothy
Crypsis niliaca	Prickle grass
Polygonum species	Smartweeds
Ammannia coccinea	Redstem
Paspalum distichum	Joint grass
Cynodon dactylon	Bermuda grass

Uplands:

Phalaris tuberosa var. stenoptera	Harding grass
Phalaris tuberosa var. hirtiglumis	Perla grass
Phalaris arundinacea	Reed canary grass
Sorghum halepense	Johnson grass
Setaria species	Bristle grass
Distichlis spicata	Saltgrass
Agropyron elongatum	Tall wheatgrass
Melilotus species	Sweetclovers
Astragalus cicer	Cicer milkvetch
Lotus corniculatus	Birdsfoot trefoil

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END OF DOCUMENT

9

NCS-158619-SF

YOLO Recorder's Office
Freddie Oakley, County Recorder
DOC- 2006-0001322-00
Acct 183-First American Title
Tuesday, JAN 10, 2006 14:15:00
Ttl Pd $25.00 Nbr-0000618003
VRB/R6/1-7

RECORDING REQUESTED BY AND WHEN RECORDED
MAIL TO: U.S. Fish and Wildlife Service
California/Nevada Realty Office (kb)
2800 Cottage Way, W-1832
Sacramento, California 95825-0509

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

GRANT OF EASEMENT

GRANT OF EASEMENT, made between Rodney W. Williams, a married man, as his sole and separate property, hereinafter referred to as Grantor, and the UNITED STATES OF AMERICA and its assigns, hereinafter referred to as Grantee,

WHEREAS the Migratory Bird Conservation Act of February 18, 1929, (16 U.S.C. 715 et seq), as amended, and since August 1, 1958, authorizes the Secretary of the Interior to acquire certain lands or interests therein for waterfowl habitat;

AND ALSO WHEREAS, the easement interest rights in the following described lands are being acquired for administration by the Secretary of the Interior (Secretary) through the United States Fish and Wildlife Service, and the use, occupation and operation of the reservations retained herein shall be subordinate to and subject to such rules and regulations as may be prescribed by the Secretary governing the use, occupation, protection and administration of units of the National Wildlife Refuge System under and in compliance with provisions of Section 6 of the Migratory Bird Conservation Act of February 18, 1929 (45 Stat. 1222), as amended by Section 301 of the Refuge Revenue Sharing Act of June 15, 1935, (49 Stat. 381).

NOW THEREFORE, For and in consideration of One Hundred Ten Thousand and 00/100 DOLLARS ($110,000.00), the Grantor hereby grants to the UNITED STATES OF AMERICA, Grantee, a perpetual conservation easement for the maintenance and use of the land and waters described below (hereinafter referred to as "Easement Lands" and "Easement Waters") for the management of migratory birds on the terms and conditions stated herein. There is included in this Grant of Easement a right of access by designated representatives of the U.S. Fish and Wildlife Service over any and all Easement Lands and those lands described as excluded from the Easement Lands described below, as reasonably necessary for the limited purposes of entering the Easement Lands to verify compliance by the Grantor with the terms and conditions of this easement and exercising Grantee's rights under this Grant of Easement. Said lands contains 100.1 acres, more or less, all being located in Yolo County, State of California, and more particularly described as follows:

TRACT (447 C) :
Township Six (6) North, Range Three (3) East, MT. DIABLO BASE AND MERIDIAN: APN: 33-220-67-1 and 33-220-60-1
PARCEL ONE: Parcel 1, Parcel Map 3146, Filed May 3, 1982 in Book 6 of Parcel Maps, Page 59, Yolo County Records.

Excepting Therefrom all oil, gas and mineral rights in and to said property, but without any right in Grantor, his successors or assigns, to drill, or to erect structures or other improvements, or to

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(1)

install pipes, or to excavate upon any of the said property, except as such locations as shall be approved by Grantee and by the U.S. Corps of Engineers, so that any such operations will not interfere with the maintenance operation of the toe drain and/or the deep water channel to be constructed on said property, by deed recorded December 26, 1956, in Book 502 of Official Records, page 185.

AFFECTS A PORTION OF PREMISES

Also Excepting Therefrom all oil, gas and other hydrocarbons as reserved in the deed recorded April 9, 1958, in Book 569 of Official Records, page 240.

AFFECTS REMAINDER OF PREMISES

PARCEL TWO: A right of way for ingress or egress over the West 30 feet of the Northwest Quarter of Section 10 Township 6 North, Range 3 East, M.D.B.&M. as granted in the deed recorded April 9, 1958, in Book 569 of Official Records, page 240.

PARCEL THREE: A right of way for road, water ditch, utilities, ingress and egress over the West 50 feet of the North 965 of the Southwest Quarter of Section 10, Township 6 North, Range 3 East, M.D.B.&M., as reserved in the deed recorded April 23, 1963, Book 711 of Official Records, page 140.
Parcels Two and Three are for the benefit of and appurtenant to parcel One above.

PARCEL FOUR: The Southwest Quarter of the Southeast Quarter of Section 9, Township 6 North, Range 3 East, M.D.B.&M. Excepting and reserving all oil, gas, and other hydrocarbons in and under the above described property as excepted and reserved in the deeds from Fridolf Anderson to Yolo Basin Farms, Inc., a California Corporation, dated April 7, 1959, recorded April 20, 1959, in Book 571 of Official Records at page 170.

PARCEL FIVE: A non-exclusive easement for road purposes over the North 10 feet of the Northeast Quarter of Section 16, Township 6 North, Range 3 East, M.D.B.&M.

PARCEL SIX: A perpetual and non-exclusive easement for road purposes only along and across the surface of the easterly 10 feet of the Southwest Quarter of Section 9, Township 6 North, Range 3 East, M.D.B.&M.

1. There are excepted and reserved from this Grant of Easement all minerals, including gas, oil, and other hydrocarbon substances, underlying the Easement Lands, and this Grant of Easement is subject to all existing easements and rights-of-way of record held by third parties.

2. The Easement Waters consist of (i) any riparian water rights appurtenant to the Easement Lands, (ii) any appropriative water rights to the extent those rights are appurtenant to the Easement Lands, (iii) any waters, the rights to which are secured under contract between the Grantor and any irrigation or water district, to the extent such waters are customarily applied to the Easement Lands, and (iv) any water from wells that are in existence or may be constructed in the future on the Easement Lands or on those lands described as excepted from the Easement Lands in the legal description and that are capable of being used by the Grantor to maintain the Easement Lands in a flooded condition. The Easement Waters are limited to the amount of Grantor's water reasonably required to maintain the Easement Lands in a flooded condition to the elevation not to exceed the historical fall and winter seasonal level.

3. (a) Grantor shall not (i) alter the existing topography of or cultivate agricultural crops on the Easement Lands, (ii) otherwise alter or use or permit the use by third parties of the Easement Lands for any purpose, including the exploration or development of any reserved minerals, or

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(iii) place any structures on the Easement Lands other than hunting blinds without the prior written authorization of Grantee given through the Fish and Wildlife Service. Such authorization will only be given if the Secretary or her designated representative determines that the proposed activity will not change the character of the Easement Lands or adversely affect the use of the Easement Lands as waterfowl habitat suitable for migratory birds.

(b) Grantor and Grantee agree that the exploration, development, and production of reserved oil and gas deposits by Grantor or authorized third parties shall be considered compatible with maintenance and use of the Easement Lands and Waters for the management of migratory birds and shall be authorized by the Fish and Wildlife Service provided (i) all exploration and development operations and, in particular, all drilling and workover activities, are conducted after June 1st and prior to September 1st of each year and (ii) Grantee, through the Fish and Wildlife Service shall have the right to approve the locations and methods of all proposed exploration, development and production operations to insure such operations are carried out in a manner that is compatible with protection of Grantee's easement interest.

4. The provisions of Paragraph 3 hereof shall not prohibit hunting or operation of a hunting club on the Easement Lands and such use shall be deemed to be consistent with maintenance of the Easement Lands as waterfowl habitat so long as such use is in accordance with all applicable state and federal laws and regulations regulating hunting on privately owned lands. In this connection, Grantor may take such actions as they may deem appropriate to improve the Easement Lands as waterfowl habitat and to facilitate the operation of any hunting club on the Easement Lands, including building or relocating blinds, excavating channels to blinds, irrigating vegetation, fertilizing, planting native trees and wetland vegetation, provided that such trees and vegetation are included on the Fish and Wildlife Service List of Approved Wetland Vegetation described in Exhibit 1 attached to and incorporated herein by reference, removing trees and vegetation to the extent they encroach on the open marsh and interfere with the use of the Easement Lands as waterfowl habitat, and removing brush to the extent it encroaches on dikes and impedes access thereto for hunting and maintenance purposes.

5. Grantor is not obligated to take any action or to incur any expense related to the maintenance or restoration of the Easement Lands as waterfowl habitat. Nor is Grantor obligated to apply water to the Easement Lands or to maintain, repair, or construct any water distribution facilities to serve the Easement Lands. However, in any year that Grantor does not flood the Easement Lands in the customary manner to their historical hunting season level, Grantee shall have, at its sole discretion, the nonexclusive right and option, but not the obligation, to flood the Easement Lands from October 15th through March first of the following year. In this connection, Grantee shall have, at its sole discretion, the right and option, but not the obligation, to use any and all of the Easement Waters that Grantee deems suitable for waterfowl habitat purposes and to place on the Easement Lands and convey through Grantor's water distribution facilities any other waters Grantee may acquire or have available to it. In connection with any flooding done by Grantee pursuant to this paragraph, (i) Grantee shall have the right to make full use of Grantors' water distribution facilities, including both existing facilities and any facilities constructed in the future and including all water wells and pumps, to the extent those facilities are capable of serving the Easement Lands, on the condition that Grantee shall pay the expenses of operating Grantor's pumps, exclusive of maintenance costs, during any period of such use by Grantee, and (ii) Grantor shall pay any taxes, assessments, or other charges, excluding actual water costs, due to any water or irrigation district on account of the use by Grantee of Easement Water supplied by such district.

6. Grantor shall not grant any additional easements, rights-of-way, or other interests in the Easement Lands, other than a fee or leasehold interest, or grant or otherwise transfer to any other person or entity or to other lands or otherwise abandon or relinquish any Easement Waters without the prior written authorization of Grantee given through the U.S. Fish and Wildlife

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Service. Such authorization will be given unless the Secretary or her designated representative determines that the proposed interest or transfer will interfere with the use of the Easement Lands as waterfowl habitat suitable for migratory birds or interfere with the availability of Easement Waters for the Easement Lands. This paragraph shall not prohibit the transfer of a fee title or leasehold interest in the Easement Lands that is subject to the terms of this Grant of Easement.

7. Upon acceptance of this Grant, the easement interest acquired by the United States shall become a component part of the National Wildlife Refuge System and shall be subject to those laws and regulations pertaining to the National Wildlife Refuge System that are applicable to the easement interests being acquired. Violation of those applicable laws and regulations may subject the violator to civil and/or criminal penalties. Laws and regulations that regulate conduct that does not affect the property interests conveyed to the United States through this Grant of Easement are not applicable. For example, regulations controlling hunting and fishing or any public use are not applicable since these rights have not been conveyed.

8. This Grant of Easement shall be binding upon, and shall inure to the benefit of, the Grantor, his successors and assigns and Grantee and its assigns.

9. THIS GRANT IS MADE SUBJECT TO existing rights of way, of record or in use, for roads, pipelines, ditches, canals, conduits, telephone and electrical transmission lines, on, over and across said premises;

ALSO SUBJECT TO all covenants, terms and conditions, restrictions, drainage rights, agreements and permits of record or in use, and all outstanding mineral rights, including oil and gas leases of record, exceptions and reservations of record as of the date of recording herein.

10. This Grant of Easement imposes no other obligations or restrictions on the Grantor and neither he nor his successors, nor any other person or entity claiming under them, shall be in any way restricted from using all of the subject lands in the customary manner except as provided herein.

11. THIS GRANT is made in compliance with Yolo County Resolution No. 95-512, passed November 21, 1995, and shall not otherwise limit the control and management over resident wildlife species vested under law in the California Fish and Game Commission and the Department of Fish and Game.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand as of this 4th day of January, ~~2005~~ 2006 as above written.

_____ L.S.
Rodney W. Williams

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ACKNOWLEDGMENT

STATE OF CALIFORNIA
} ss
COUNTY OF EL DORADO

On 1-4-06, 2005 before me, Robert K. Lobner notary public, PERSONALLY appeared RODNEY W. WILLIAMS, ~~personally known to me or~~ proved to me on the basis of satisfactory evidence to be the persons whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

(SEAL)

Signature _____
Notary Public

ROBERT K. LOBNER
Commission # 1449606
Notary Public - California
El Dorado County
My Comm. Expires Nov 4, 2007

CERTIFICATE OF ACCEPTANCE
State of California Government Code Section 27281

This is to certify that the Secretary of the Interior, acting by and through her authorized representative, the Realty Officer, U.S. Fish and Wildlife Service, hereby accepts on behalf of the UNITED STATES OF AMERICA, the real property described in the within Grant of Easement and consents of recordation thereof.

December 20, 2005
Date

Realty Officer
U.S. Fish and Wildlife Service

EXHIBIT 1
Plants Approved for Introduction onto U. S. Fish and Wildlife Service Conservation Easement Lands in the Sacramento Valley

The following list contains most of the plants considered desirable for waterfowl and other wildlife on U.S. Fish and Wildlife Service Conservation Easements in the Sacramento Valley. This list is not intended to be all inclusive, and other species may be desirable under some circumstances. Plants not on this list may not be introduced on the Easement Land without written permission from the U. S. Fish and Wildlife Service.

Common Name	Scientific Name
Aquatic-floating and submergent plants:	
Dwarf Spikerush	*Eleocharis parvula*
Duckweed	*Lemna minor*
Sago Pondweed	*Potamogeton pectinatus*
Horned Pondweed	*Zannichellia palustris*
Aquatic-emergent plants:	
Santa Barbara Sedge	*Carex barbarae*
Clustered Field Sedge	*Carex praegracilis*
Tall Cyperus (umbrella sedge, nut sedge)	*Cyperus eragrostis*
Burhead	*Echinodorous berteroi*
Pale Spikerush	*Eleocharis palustris*
Engelmann's Spikerush	*Eleocharis obtusa*
Hardstem Bulrush (tule)	*Scirpus acutus*
Alkali Bulrush	*Scirpus robustus*
Tuberous Bulrush	*Scirpus tuberosus*
River Bulrush	*Scirpus fluviatilis*
Wapato, Duck Potato	*Sagittaria latifolia*
Long-lobed Arrowhead	*Sagittaria longiloba*
Montevideo Arrowhead	*Sagittaria montevidensis*
Broadleaf Cattail	*Typha latifolia*
Narrowleaf Cattail	*Typha angustifolia*
Moist-soil Plants:	
Valley Redstem (red berry)	*Ammania coccinia*
Fathen	*Atriplex patula*
Prickle Grass	*Crypsis niliaca*
Bermuda Grass	*Cynodon dactylon*
Watergrass	*Echinochloa crusgalli*
Swamp Timothy	*Heleochloa schoenoides*
Sprangletop	*Leptochloa fascicularis*
Joint Grass	*Paspalum distichum*

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Common Name	Scientific Name
Moist Soil Plants Continued:	
Nodding Smartweed	*Polygonum lapathifolium*
Lady's-thumb Smartweed	*Polygonum persicaria*
Upland Plants:	
Tall Wheatgrass	*Agropyron elongatum*
Soft Chess Brome	*Bromus hordeaceus*
Red Brome	*Bromus madritensis*
Berber Orchardgrass	*Dactylis glomerata*
Salt Grass	*Distichlis picata*
Blue Wildrye	*Elymus glaucus*
Slender Wheatgrass	*Elymus trachycaulus*
Tall Fescue	*Fescue arundinacea*
Meadow Barley	*Hordeum brachyantherum*
Creeping Wildrye	*Leymus triticoides*
Annual Ryegrass	*Lolium multiflorum*
Birdsfoot Trefoil	*Lotus corniculatus*
Purple Needlegrass	*Nassella pulchra*
Annual Bluegrass	*Poa annua*
Harding Grass	*Phalaris tuberosa var.stenoptera*
Perla Grass	*Phalaris tuberosa var. hertiglumus*
Salina Strawberry Clover	*Trifolium fragiferum*
White Clover	*Trifolium incarnatum*
Lana Vetch	*Vicia villosa*
Trees, Shrubs and Vines:	
Box Elder	*Acer negundo*
Coyote Brush	*Baccharis pilularis*
Mule's Fat	*Baccharis salicifolia*
Buttonbush (buttonwillow)	*Cephalanthus occidentalis*
Oregon Ash	*Fraxinus latifolia*
Fremont Cottonwood	*Populus fremontii*
Western Sycamore	*Platanus racemosa*
Valley Oak	*Quercus lobata*
California Wild Rose	*Rosa californica*
California Blackberry	*Rubus vitifolius*
Black Willow	*Salix gooddingii*
Sandbar Willow	*Salix hindsiana*
Arroyo Willow	*Salix lasiolepsis*
Blue Elderberry	*Sambucus caerula*
California Wild Grape	*Vitus californica*

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END OF DOCUMENT

1

A3 NRCS Easements – Laurel G, Lucky 5 South

RECORDING REQUESTED BY
AND WHEN RECORDED MAIL TO

Name
Street
Address
City &
State

035054

OFFICIAL RECORDS
YOLO CO., CALIF.
RECORD REQUESTED BY:

TONY BERNHARD
COUNTY RECORDER

93 OCT 28 AM 9:37

First American Title Co. 59

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ASCS-897
(6-6-93)

U.S. Department of Agriculture
Agricultural Stabilization and Conservation Service

After Recording Return to:
USDA-Agricultural Stabilization
Conservation Service
1303 J Street, suite 300
Sacramento, CA 95814

WETLANDS RESERVE PROGRAM
EASEMENT

ORDER No. 86339

THIS EASEMENT is made this 22nd day of October, 1993, by and between LAUREL G. RANCH CORPORATION, A CALIFORNIA CORPORATION whose address is 525 Morse Avenue, Suite 101, Sacramento, CA 95864 (Landowner), and the United States of America by and through the Agricultural Stabilization and Conservation Service (ASCS), an agency of the United States Department of Agriculture. The Landowner and ASCS are jointly referred to as the "Parties".

This conveyance is in conjunction with Wetlands Reserve Program (WRP) contract number 14, in the County (Borough or Parish) of Yolo, State of California.

FOR AND IN CONSIDERATION of the above referenced WRP easement, and/or other good and valuable consideration, receipt of which is hereby acknowledged, the Landowner does hereby grant and convey to ASCS all right, title and interest in the property described in Part II, Paragraph A, including appurtenant rights of access described in Part II, Paragraph E. Those rights specified in Part III, Paragraph D are reserved to the landowner for the duration of the easement specified in Part II, Paragraph D, of this document. By this easement, the Landowner covenants compliance with the terms and conditions enumerated for the use of lands described in this document, and will refrain from any activity not specifically allowed or inconsistent with the purposes of this easement or with the exercise of the rights granted to ASCS or its representatives.

PART I - PURPOSE AND AUTHORITY

A. Purpose. The purpose of this easement is to restore, protect and maintain the functional values of wetlands and other eligible lands for wildlife habitat, water quality improvement, flood water retention, groundwater recharge, open space, aesthetic values, and environmental education. The details of how this is to be accomplished are provided in the Wetlands Reserve Plan of Operation (WRPO) developed for the easement area. Summary of the WRPO is attached and such summary is incorporated by reference as a part of this easement.

B. Authority. Food Security Act of 1985, as amended (16 U.S.C. 3801 et. seq.).

PART II - PROPERTY DESCRIPTION

A. Easement Area. The property encumbered by this Wetlands Reserve Program easement is described as follows: [Provide a legal description of the land comprising the easement area. Append a plat (photocopy) as Exhibit A.]

All that portion of Section 3, township 6 North, Range 3 East, M.D.B.&M., described as follows:

Beginning at a point in said Section 3, from which point of beginning the Northeast corner of said Section 3 bears the following two courses: (1) North 70° 21' 24" East 33.14 feet and (2) South 88° 40' 26" East 518.32 feet; thence from said point of beginning South 29° 53' 36" West 5447.85 feet; thence North 89° 56' 04" West 1373.79 feet; thence North 00° 06' 35" East 2521.95 feet; thence North 89° 51' 01" West 1460.62 feet; thence North 00° 05' 49" East 2676.16 feet; thence South 89° 00' 42" East 4679.48 feet to the point of beginning; containing 361.4 acres more or less.

BK 2561 PG 645

B. In addition, the Landowner agrees to refrain from engaging in the following activities on land owned by the Landowner: [Insert "NONE" unless otherwise specified by ASCS]

See Summary of Wetland Reserve Plan of Operations for Laurel G. Ranch (348 acres) attached hereto as Exhibit "B"

C. Definitions. For purposes of this easement:

1. "Easement Area" means the land on which the approved practices are required. The legal description of the easement area is described in Part II, Paragraph A, of this document and is depicted in Exhibit A. To the extent of any conflict with Exhibit A, the land descriptions in this document shall control.

2. "Easement Practice" means the wetland and easement area development restoration measures agreed to in the attached WRPO summary to accomplish the desired program objectives.

3. "Landowner" means the person who has title to the easement area. "Landowner" shall also include such person's heirs, successors and assigns.

4. Wetlands Reserve Plan of Operation (WRPO) means that plan which prescribes implementation measures for the Wetlands Reserve Program contract referenced above. The WRPO is available for inspection at the County ASCS Office in the county identified above.

D. Duration of Easement.

1. This easement shall continue in perpetuity unless D 2 has been completed by ASCS.

2. This easement will terminate at 12:00 noon on _____. Upon termination of the easement, all right, title, and interest in the property conveyed by this easement shall vest with the current owner of the easement area.

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E. Access. The Landowner grants to the ASCS and its representative, a right of access to the easement area. Such access shall be for any purposes ASCS or its representative determines necessary to ensure compliance with the WRPO and the easement. Establishment and maintenance of such access shall be the responsibility of the Landowner and all costs resulting from access establishment and maintenance shall be borne by the Landowner. ASCS will pay the fair market value of a planted crop destroyed because of ASCS exercising its right of access to the easement area. The landowner is free to locate and relocate the place of access as the landowner deems desirable, provided that such location is sufficient to provide reasonable access to the easement area.

PART III - COVENANTS BY THE LANDOWNER

A. Title. The Landowner covenants that the Landowner is vested with good title to the easement area and will warrant and defend unto ASCS the same against all claims and demands including, but not limited to, claims and demands against ASCS' quiet and peaceable use and enjoyment of the easement area and the right of access granted herein.

B. Easement Practices.

1. Compliance. The Landowner shall comply with all easement practices specified in the WRPO. In the event of a conflict or ambiguity between the WRPO or this easement, the provisions of this easement shall prevail.

2. Costs Incurred in Implementing the WRPO. All costs involved in the implementation of the WRPO and the right of access granted to ASCS and its representatives, or otherwise incurred with respect to the maintenance of the easement area shall, together with all other charges associated with the easement area, including taxes, be the responsibility of the Landowner.

3. ASCS Rights to Inspect Property and Perform Work on the Property. By this easement, ASCS and its authorized representatives have a right of access to the easement area, including but not limited to, the right to inspect the easement area, and, if necessary, the right to perform measures necessary to maintain the easement practices specified in the attached WRPO summary.

C. ASCS Rights Run with the Land and Bind the Landowner's Successors. The rights granted to ASCS in this easement run with the land and shall be superior to the rights of all others in the easement area. All obligations of the Landowner under this easement shall also bind the Landowner's heirs, successors, and assigns.

D. Use of the Easement Area. The Landowner shall have the right to quiet enjoyment of the easement area and to control access by the general public consistent with the terms of this easement and the WRP regulations. When specified in the attached WRPO summary, such rights may also include regulated hunting and fishing, periodic timber harvesting, and haying or grazing.

E. Violations. If there is any failure to comply with the provisions of this easement and the WRPO; to provide access to the easement area; to establish and maintain the easement practice as specified in the WRPO; or to comply with such WRPO, ASCS, or its authorized representative, may enter onto the property to perform the necessary work, seek specific performance, or seek any other legal remedy provided by law. All expenses incurred by the United States of America (including any legal fees or attorney fees) thereby incurred shall be assessed against the Landowner.

F Prohibitions. No action shall be taken on the easement area by the Landowner, the landowner's representative, heirs, successors or assigns, unless such action is in accordance with the WRPO, this easement, and the WRP regulations. Generally, unless specified in the attached WRPO Summary, such prohibitions include, but are not limited to the following:

1. No structures may be built.

2. No agricultural commodities may be planted for harvest.

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3. No alteration of the hydrology on the easement area may be done.

4. No alteration of the wildlife habitat or other natural land features of the easement area may be done.

IN WITNESS WHEREOF, the Landowner hereunto sets hand(s) and seal(s) on the day of year first written above.

Grantor(s)

Laurel G. Ranch Corporation,
a California corporation

Treasurer

President

(Acknowledgment in accordance with State or Local Practice)

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5193

State of CALIFORNIA
County of YOLO

On [illegible] DATE before me, EILEEN F CRUZ, NOTARY PUBLIC NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC"

personally appeared ANDREW STRATIS NAME(S) OF SIGNER(S)

☑ personally known to me - ~~OR -~~ ☐ ~~proved to me on the basis of satisfactory evidence~~ to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that ~~he/she/they~~ executed the same in his/~~her/their~~ authorized capacity(ies), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

OFFICIAL SEAL
EILEEN F. CRUZ
NOTARY PUBLIC CALIFORNIA
YOLO COUNTY
My Comm. Expires Sept 12 1995

Eileen F. Cruz
SIGNATURE OF NOTARY

OPTIONAL SECTION
CAPACITY CLAIMED BY SIGNER
Though statute does not require the Notary to fill in the data below, doing so may prove invaluable to persons relying on the document.

☐ INDIVIDUAL
☑ CORPORATE OFFICER(S)
CFO TREASURER
TITLE(S)
☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

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SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

OPTIONAL SECTION

THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED AT RIGHT:

Though the data requested here is not required by law, it could prevent fraudulent reattachment of this form.

TITLE OR TYPE OF DOCUMENT WETLANDS RESERVE PROGRAM EASEMENT
NUMBER OF PAGES 2 DATE OF DOCUMENT _____
SIGNER(S) OTHER THAN NAMED ABOVE _____

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5193

State of CALIFORNIA
County of YOLO

On 11/22/95 (DATE) before me, EILEEN F CRUZ NOTARY PUBLIC (NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC")

personally appeared JOSEPH L SIARD (NAME(S) OF SIGNER(S))

☒ personally known to me - OR - ☐ ~~proved to me on the basis of satisfactory evidence~~ to be the person(s) whose name(s) (is) ~~are~~ subscribed to the within instrument and acknowledged to me that (he) ~~she/they~~ executed the same in (his) ~~her/their~~ authorized capacity(~~ies~~), and that by (his) ~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

WITNESS my hand and official seal.

OFFICIAL SEAL
EILEEN F. CRUZ
NOTARY PUBLIC CALIFORNIA
YOLO COUNTY
My Comm Expires Sept 12, 1995

Eileen F. Cruz
SIGNATURE OF NOTARY

OPTIONAL SECTION

CAPACITY CLAIMED BY SIGNER

Though statute does not require the Notary to fill in the data below, doing so may prove invaluable to persons relying on the document.

☐ INDIVIDUAL
☒ CORPORATE OFFICER(S)
VP PRESIDENT (TITLE(S))
☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

OPTIONAL SECTION

THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED AT RIGHT:

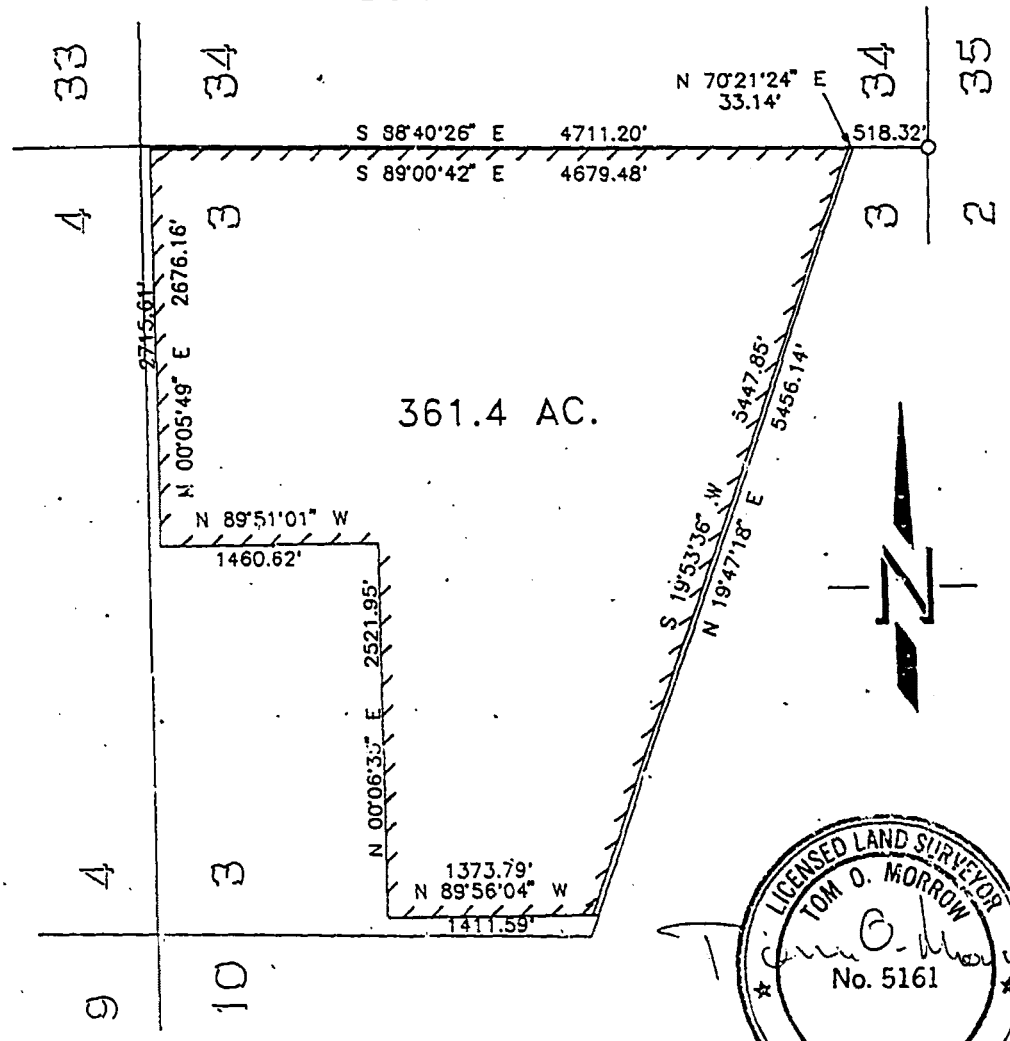
Though the data requested here is not required by law, it could prevent fraudulent reattachment of this form.

TITLE OR TYPE OF DOCUMENT WETLANDS RESERVE PROGRAM EASEMENT
NUMBER OF PAGES 2 DATE OF DOCUMENT _____
SIGNER(S) OTHER THAN NAMED ABOVE _____

©1993 NATIONAL NOTARY ASSOCIATION • 8236 Remmet Ave., P.O. Box 7184 • Canoga Park, CA 91309-7184

EXHIBIT "A"

EXHIBIT OF EASEMENT AREA
LAUREL G. RANCH
A PORTION OF SECTION 3
T6N, R3E, MDB&M
YOLO COUNTY, CALIFORNIA
TOM O. MORROW, INC.
SCALE 1"=1000'



0 500 1000 2000 3000

SCALE IN FEET

LICENSED LAND SURVEYOR
TOM O. MORROW
No. 5161
STATE OF CALIFORNIA

LICENSE EXPIRES JUNE 30, 1995

BOOK 2561 PAGE 150

See reverse for Privacy Act and Burden statements.

FEB 26 1993

EXHIBIT "B"

Form Approved - OMB No. 0560-0139

ASCS-891 (04-08-92)

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Stabilization and Conservation Service

Wetlands Reserve Program
CONTRACT

1. ASCS COUNTY OFFICE AND TELEPHONE NUMBER
YOLO COUNTY ASCS COMMITTEE
221 W. Court St. Suite 3B
Woodland, CA 95695

INSTRUCTIONS: Participant MUST complete items 13, 16, and 17. Return this completed form to the County ASCS Office.

The owner(s) signature in item 17 constitutes agreement by the owner(s) to:

1. implement on such designated acreage, the approved WRPO developed for such acreage;
2. sign a completed copy of form ASCS-897, Wetlands Reserve Program Easement, conveying to the U.S. Government an easement on the designated acres and the right of access to such acres for the period specified in block 15;
3. assure that the easement rights are superior, except as determined by the Agricultural Stabilization and Conservation Service (ASCS), to that of any other person or entity by having any person or entity with rights to the land execute a copy of form ASCS-895, Subordination Agreement and Limited Lien Waiver Easement;
4. a permanent retirement of specified crop acreage bases and allotments, shown in block 16, to the extent that such crop acreage bases and allotments exceed the cropland acres on the farm less the cropland acres enrolled in WRP.
5. acknowledge that the net present value for lump sum payments will be used to evaluate bid offers for selection.
6. acknowledge receipt of the bid specification sheet and WRPO.

The landowner(s) and ASCS, upon signature in block 18 by an authorized representative of the ASCS, agree to comply with the terms and conditions contained in this contract including the ASCS-897, Wetland Reserve Program Easement, and the regulations at 7 CFR Part 703 which are incorporated by reference into this contract. The Government agrees to make payment under this WRP contract in the manner as specified by the owner in block 17 conditional upon the owner complying with the terms and conditions contained in the WRPO and recorded easement.

2. ST. & CO. CODE	5. CROPLAND ACRES FOR WRP	8. POOL NO.	11. EASEMENT MANAGEMENT CODE	14. RATE OF COST SHARES
06 113	366.0	1		%
3. WRP CONTRACT NO.	**6. NONCROPLAND ACRES FOR WRP**	**9. TRACT NO. OF SITE**	**12. DATE WRPO SIGNED BY PARTICIPANT**	**15. EASEMENT PERIOD**
14		6787	8-20-92	A. Permanent [X] B. Nonpermanent [ ]
4. FARM NO.	**7. SIGNUP NO.**	**10. ST. & CO. CODE OF SITE**	**13. TOTAL EASEMENT BID AMOUNT**	If "nonpermanent", enter number of years:
3225	1	06 113	$ 274,500	

16. CAB AND ALLOTMENT RETIREMENTS

A. Do you have crop bases, allotments or quotas established for the farm entered in block 4?

YES [X] Complete block 16B.
NO [ ] Skip block 16B. Go to block 17.

B. If the sum of the bases and allotments plus the acres enrolled in WRP exceed the cropland acres for the farm, then the bases and/or allotments or quotas *must be permanently retired* by the amount that they exceed the cropland acres remaining after WRP. If this contract is approved, and cropland acres are exceeded, which crop base and/or allotment or quotas do you agree to permanently retire? *(Designate two crops below by order of priority.)*

FIRST PRIORITY (Enter name of crop)	SECOND PRIORITY (Enter name of crop)

17. EASEMENT PAYMENT INFORMATION AND PARTICIPANT'S CERTIFICATION

EXPLANATION OF PAYMENT TERMS - READ CAREFULLY

Lump Sum Payments: Limited to 10% (of block 13) annually until all WRPO practices are completed.

Annual Payments: 10 equal annual payments.

First Payment will be equal to 10% of the owner's share of the total easement payment and will be issued within 30 days of the County Committee's approval of the contract.
Remaining Payments will be paid within 30 days of the ANNIVERSARY date of the first payment, EXCEPT the final lump sum may be paid within 30 days of completion of required WRPO practices.
NOTE: For NONPERMANENT easements, ONLY annual payments will be made.

A. OWNER'S NAME AND ADDRESS	A. OWNER'S NAME AND ADDRESS
Laurel G. Resch Corp 535 Morse Ave. #101 Sacramento Ca 95864	
SOCIAL SECURITY NUMBER 68-0240747	SOCIAL SECURITY NUMBER
B. PAYMENT TERMS *(A Nonpermanent Easement will be paid under annual payment terms only)* ANNUAL PAYMENT [ ] LUMP SUM PAYMENT [X]	B. PAYMENT TERMS *(A Nonpermanent Easement will be paid under annual payment terms only)* ANNUAL PAYMENT [ ] LUMP SUM PAYMENT [ ]
C. OWNER'S PERCENT SHARE: 100 % X	D. TOTAL EASEMENT BID AMOUNT IN ITEM 13: $	E. OWNER'S SHARE OF TOTAL PAYMENT: $ =
C. OWNER'S PERCENT SHARE: % X	D. TOTAL EASEMENT BID AMOUNT IN ITEM 13: $	E. OWNER'S SHARE OF TOTAL PAYMENT: $ =
F. FIRST PAYMENT AMOUNT *(10% of Owner's Share of Total Payment, Item 17E)*	$	F. FIRST PAYMENT AMOUNT *(10% of Owner's Share of Total Payment, Item 17E)*	$
G. OWNER'S SIGNATURE: L.G. Resch	DATE: 9/23/92	G. OWNER'S SIGNATURE	DATE

18. APPROVAL

CONTRACT IS: *(Mark only one)*	ASCS REPRESENTATIVE'S SIGNATURE	DATE
APPROVED [ ] DISAPPROVED [ ]		

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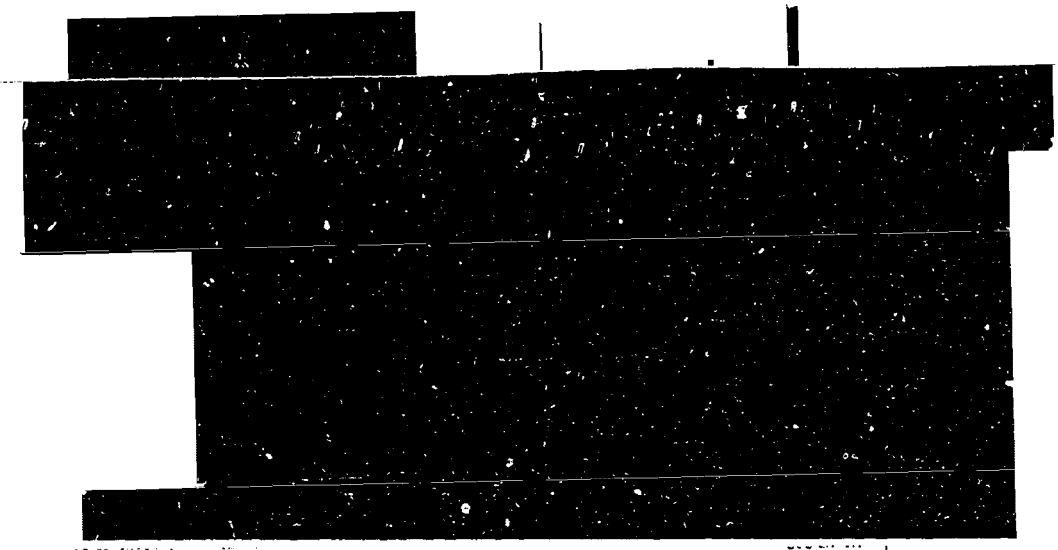
This program or activity will be conducted on a nondiscriminatory basis without regard to race, color, religion, national origin, age, sex, marital status, or disability.

ASCS COPY



CONSERVATION PLAN
SCHEDULE OF OPERATIONS

1 of 12

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G. Ranch	Yolo	CA	1	348

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SUMMARY OF
WETLAND RESERVE PLAN OF OPERATIONS
FOR
LAUREL G RANCH (348 acres)

Purpose and Function: The primary purposes of this easement are the restoration and protection of wetlands for wildlife (particularly migratory waterfowl and shorebirds), flood water retention, open space and aesthetic values. The easement area will enhance the wetland values within the Yolo Bypass, Yolo County, California.

Summary of Restoration: Under this Wetland Reserve Plan of Operations, about 347.9 acres of farmed wetland (FW) will be restored to seasonal and possibly permanent wetland. Dikes and water control structures have recently been installed on this property to facilitate seasonal flooding for wetland habitat, but still allow farming on the fields.

The existing dikes and water control structures will be maintained to provide the means to seasonally flood these fields for wetland habitat. Water enters the property from the north via overland flooding within the Yolo Bypass. Overland flooding is expected to occur more years than not. The property will probably receive flood waters from January 1 through February 28 every other year. Fields may be flooded for longer duration including permanent flooding. Permanently flooded areas will provide nesting and brood habitat for resident waterfowl and shorebirds. Refer to the map for locations of dikes and water control structures.

The water control structures will enable the landowners to manage water including drainage when vegetation management and/or structure repair is appropriate. The natural flooding sequence will encourage wetland plants to grow in suitable areas. Supplemental water may be added to the wetlands but is not required. Vegetative cover in the areas saturated or ponded will include a mixture of emergent wetland plants such as cattails and hardstem bulrush and seasonal wetland plants such as smartweed, swamp timothy and watergrass. A portion of the flooded area may also be open water. Any mixture of these habitat types is acceptable. Vegetation will be managed such that persistent vegetation such as cattails and bulrush dominate no more than 75 percent and no less than 25 percent of the easement area.

Compatible Uses: The following uses have been determined to be compatible with the purposes for which this WRP easement has been established.

1. Hunting, fishing and trapping that is consistent with all State and Federal regulations, including the leasing of such

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Page 1 of 2

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	6. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

rights to others. Construction of hunting/photography blinds and associated walkways. Commercial harvest of catfish and crawfish is prohibited.

2. Passive recreational activities, such as hiking, picnicking and bird watching, to the extent that such activities do not interfere with waterfowl and other bird nesting activities.

3. Oil and gas leasing, exploration and extraction. Earthwork (pad and access road) associated with this activity must not affect more than 1 acre per well. No more than three wells may be active at one time within the easement area. Pads, access roads and associated ground disturbance must be restored to wetlands within 1 year after the need for such pads, roads, etc. has ended.

NO OIL OR GAS EXPLORATION

4. Grazing (July 15 - August 30) and/or mowing (July 15 - August 30) for vegetation management.

Operation and Maintenance: The following items will be performed to provide for long term wetland values.

1. The constructed dikes and water control structures will be maintained to serve their intended purpose for the life of this easement.

2. Natural wetland vegetation will become established on the restored wetlands. However, if emergent vegetation, such as cattails and tules extends to over 75 percent of the easement area, the persistent emergent vegetation will be reduced to cover no less than 25 percent of the easement area, by burning, grazing, chemical or mechanical treatment.

3. Noxious weeds will be controlled on the easement area as required by state law by burning or grazing, biological, chemical or mechanical treatment.

4. Any chemical use on the easement area will be in accordance with regulations and all label requirements and restrictions.

Access: An access route will be provided to US Department of Agriculture personnel, or representative, to conduct compliance checks on the Wetland Reserve Program easement. The landowner controls all other public access.

Note: The final design plan will include detailed engineering, operations and maintenance specifications. The design plan is an official part of the Wetland Reserve Plan of Operations and the design plan must be approved by the Agricultural Stabilization and Conservation Service, Soil Conservation Service, US Fish and Wildlife Service and the landowner.

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U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

SCS-LTP-011
2-90
FORM APPROVED
OMB NUMBER 0578 0013
APPROVAL EXPIRES
JUNE 30, 1993

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CONSERVATION PLAN
SCHEDULE OF OPERATIONS

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

ITEM NO.	FIELD	PLANNED CONSERVATION TREATMENT (Record of Decisions)	ESTIMATED AMOUNT (UNITS)	COST BASIS $	COST SHARE RATE %	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR (For Noncost-Share Items Show Units)					REF. NO.
						19 93	19 94	19 95	19 96	19 etc	
						$	$	$	$	$	
1	All	WR-1 Wetland Restoration- ~~Dikes and water control~~ structures will be used to ~~manage water to restore wetland~~ conditions on these fields. ~~Operation and Maintenance~~ The water control structures ~~and dikes will be maintained in~~ proper working order and ~~replaced or repaired when~~ necessary. The dikes and water ~~control structures will be~~ capable of impounding water at ~~an average 1 foot depth.~~ Unlevel bottom contours in the ~~fields will not be levelled.~~	348ac	NC	NC	348ac	348ac	348ac	348ac	348ac	

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

CONSERVATION PLAN
SCHEDULE OF OPERATIONS

SCS-LTP-011
2-90
FORM APPROVED
OMB NUMBER 0578-0013
APPROVAL EXPIRES
JUNE 30, 1993

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel Ranch	Yolo	CA	1	348

ITEM NO.	FIELD	PLANNED CONSERVATION TREATMENT (Record of Decisions)	ESTIMATED AMOUNT (UNITS)	COST BASIS $	COST SHARE RATE %	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR (For Noncost-Share Items Show Units) 19 93 $	19 94 $	19 95 $	19 96 $	19 etc $	REF. NO.
6	7	8	9	10	11	12	13	14	15	16	17
UN	All	WR-2 Vegetative cover ~~Establishment~~ Wildlife Wetland Habitat ~~Management (644)~~. Fields will receive water via ~~natural overland flooding more~~ years than not from January 1 ~~through February 28~~. Fields may be flooded earlier, ~~if desired by the landowner~~. Water may also be held longer, ~~if desired by landowner~~. Any combination of fields may be ~~flooded as semi-permanent or~~ permanent wetland.	348ac	NC	NC	348ac	348ac	348ac	348ac	348ac	
2	All	WR-2 Vegetative cover ~~establishment~~. Water in seasonal wetlands will be managed to encourage food plants including swamp timothy, smartweed and alkali bulrush. Vegetative establishment within the waterline of the fields will be controlled (by water management, mowing, or chemical spraying) to maintain at least 25 percent (and no more than 75 percent) open water when	348ac	NC	NC	348ac	348ac	348ac	348ac	348ac	

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U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

CONSERVATION PLAN
SCHEDULE OF OPERATIONS

SCS-LTP-011
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FORM APPROVED
OMB NUMBER 0578-0013
APPROVAL EXPIRES
JUNE 30, 1993

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

ITEM NO.	FIELD	PLANNED CONSERVATION TREATMENT (Record of Decisions)	ESTIMATED AMOUNT (UNITS)	COST BASIS $	COST SHARE RATE %	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR (For Noncost-Share Items Show Units) 19 93 $	19 94 $	19 95 $	19 96 $	19 etc $	REF. NO.
		flooded. Such management will ~~occur between July 15 and~~ September 1.									
3	All	All state identified noxious ~~weed will be controlled as~~ required by the County Ag. ~~Commissioner. Control will be~~ by conventional methods such as ~~biological, mechanical or~~ chemical. Weed control will be ~~done in a manner that will not~~ adversely affect wildlife, ~~water quality or established~~ desirable plant communities, ~~and in accordance with state~~ and federal laws.	348ac	NC	NC	as needed					

U.S DEPARTMENT OF AGRICULTURE
Soil Conservation Service

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JUNE 30, 1993

CONSERVATION PLAN
SCHEDULE OF OPERATIONS

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

ITEM NO.	FIELD	PLANNED CONSERVATION TREATMENT (Record of Decisions)	ESTIMATED AMOUNT (UNITS)	COST BASIS $	COST SHARE RATE %	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR (For Noncost-Share Items Show Units)					REF. NO.
						1993	19 94	19 95	19 96	19 etc	
						$	$	$	$	$	
4	All	WR-1; (Pasture and hayland management - 510) The fields can be grazed after vegetation is established. Grazing can occur between July 15 and August 30. Stocking rates and duration of grazing must be planned to ensure that the harvest efficiency does not exceed 25 percent. As an alternative to grazing, mowing may occur once between July 15 and August 30 to control unwanted vegetation.	348ac	NC	NC	as needed					
5	All	Hunting, fishing, trapping, and the peaceful enjoyment of the easement area is allowed as long as it conforms to state and Federal laws. Passive recreation such as hiking, picnicking and bird watching is allowed, to the extent that such uses do not interfere with waterfowl and other bird nesting activities.	348ac	NC	NC	348ac	348ac	348ac	348ac	348ac	

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

CONSERVATION PLAN
SCHEDULE OF OPERATIONS

SCS-LTP-011
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FORM APPROVED
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1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

ITEM NO.	FIELD	PLANNED CONSERVATION TREATMENT (Record of Decisions)	ESTIMATED AMOUNT (UNITS)	COST BASIS $	COST SHARE RATE %	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR (For Noncost-Share Items Show Units)					REF. NO.
						19 93 $	19 94 $	19 95 $	19 96 $	19 etc $	
6	All	Hunting/photography blinds and ~~associated gravel walkways may~~ be constructed such that the ~~density does not exceed 1 blind~~ per 20 acres.	348ac	NC	NC	348ac	348ac	348ac	348ac	348ac	
7	All	Access Road - for ASCS and SCS ~~compliance checks.~~ Access to the Wetland Reserve ~~Program easement area will be~~ attained via exisicng farm or ~~levee roads or by foot.~~	348ac	NC	NC	348ac	348ac	348ac	348ac	348ac	

SCS-LTP-011 2-90

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

CONSERVATION PLAN
SCHEDULE OF OPERATIONS

SCS-LTP-011
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FORM APPROVED
OMB NUMBER 0578-0013
APPROVAL EXPIRES
JUNE 30, 1993

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

ITEM NO. (6)	FIELD (7)	PLANNED CONSERVATION TREATMENT (Record of Decisions) (8)	ESTIMATED AMOUNT (UNITS) (9)	COST BASIS $ (10)	COST SHARE RATE % (11)	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR (For Noncost-Share Items Show Units) 19 93 (12) $	19 94 (13) $	19 95 (14) $	19 96 (15) $	19 etc (16) $	REF. NO. (17)
8	All	Compatible Use: (Oil and gas leasing, exploration, and production.) Earthwork (pads and access roads) associated with oil and gas extraction must not affect more than 1 acre in any field and no more than 3 one-acre sites may be active simultaneously. Inactive pads must be restored to wetlands within 1 year. The oil and gas activities and construction must not adversely affect the flooding capability of the remainder of the field. Every effort must be made to keep debris and contaminants out of the wetland. Any and all water quality standards will be adhered to by the landowner.	3ac	NC	NC	as needed					
UN	6,7	Approximately (2600 ft + 1300 ft + 2000 ft) 5900 ft of Class III dike with water control structures may be built across these fields to improve water management capabilities.	5900 ft	NC	NC	as needed					

659 2561 Mar 800

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

SCS-LTP-011
2-90
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JUNE 30, 1993

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CONSERVATION PLAN
SCHEDULE OF OPERATIONS

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

ITEM NO.	FIELD	PLANNED CONSERVATION TREATMENT *Record of Decisions)*	ESTIMATED AMOUNT (UNITS)	COST BASIS $	COST SHARE RATE %	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR *(For Noncost-Share Items Show Units)*					REF. NO.
						19 93	19 94	19 95	19 96	19 etc	
						$	$	$	$	$	
UN	All	Failure to carry out the unnumbered items (UN) does not constitute noncompliance with this Wetlands Reserve Plan of Operations.	348ac								

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

CONSERVATION PLAN
SCHEDULE OF OPERATIONS

SCS-LTP-011
2-80
FORM APPROVED
OMB NUMBER 0578-0013
APPROVAL EXPIRES
JUNE 30, 1983

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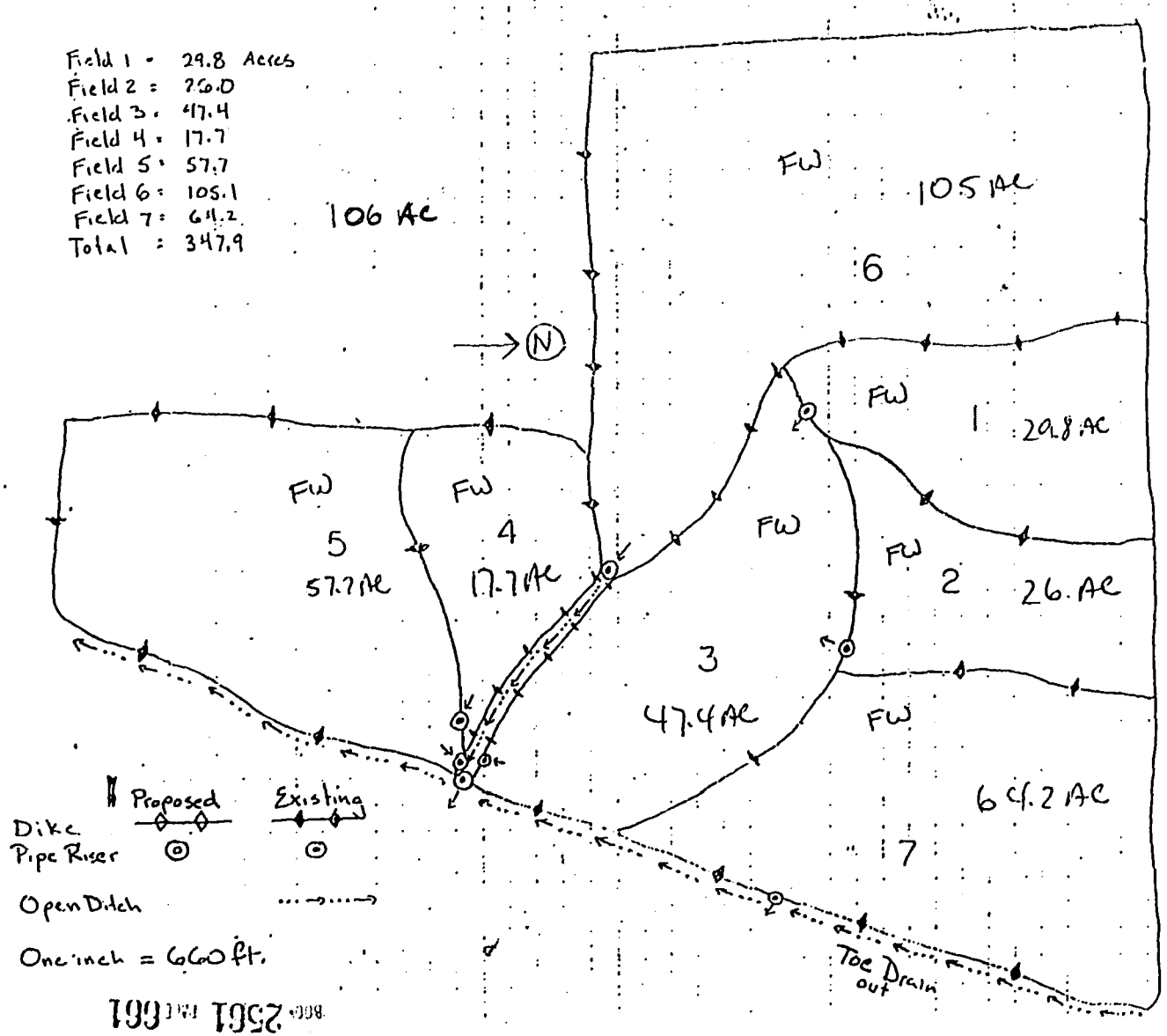
1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1 - Before	348

Field 1 = 29.8 Acres
Field 2 = 26.0
Field 3 = 47.4
Field 4 = 17.7
Field 5 = 57.7
Field 6 = 105.1
Field 7 = 64.2
Total = 347.9

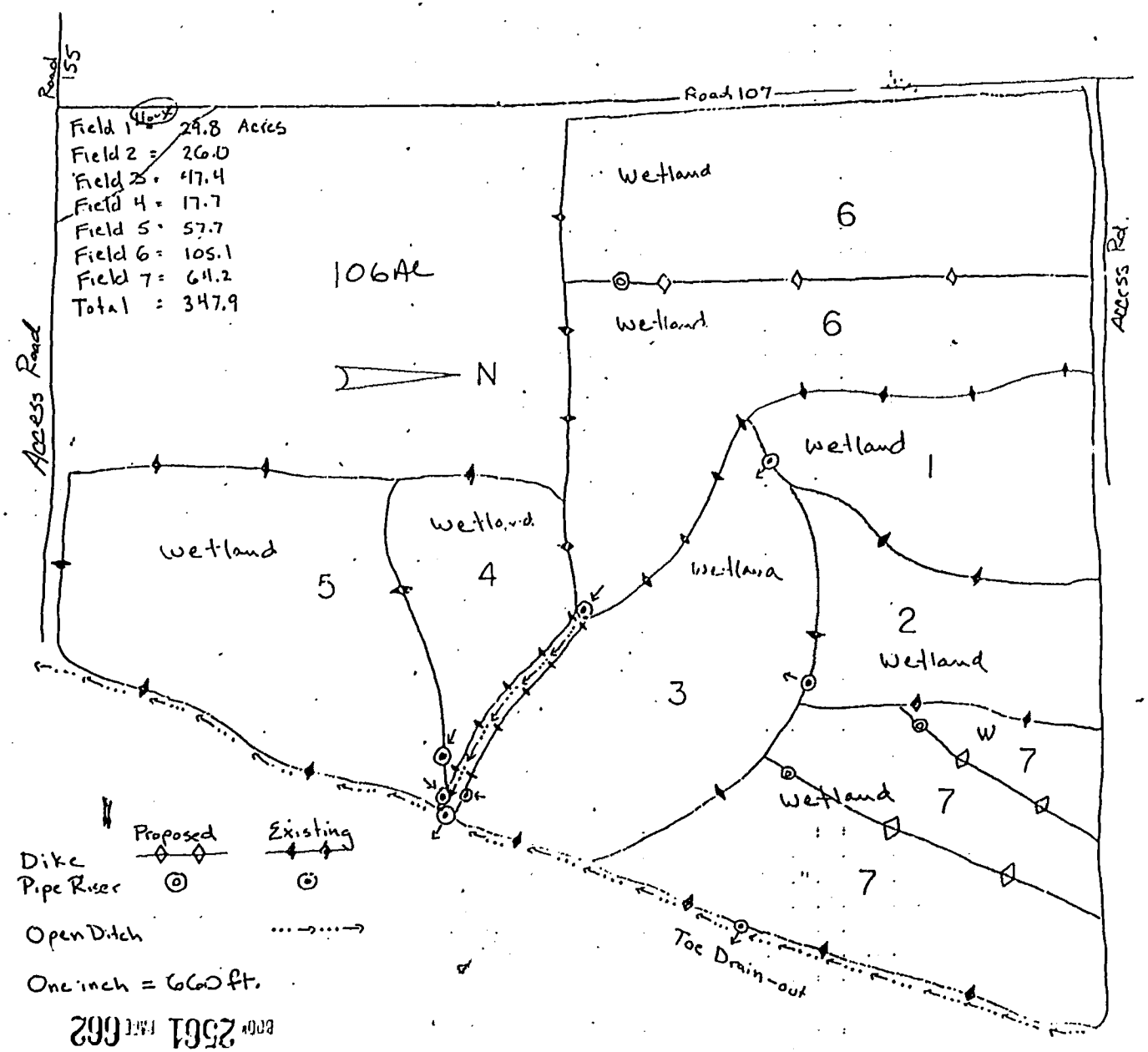
106 AC



Proposed Existing
Dike
Pipe Riser
Open Ditch

One inch = 600 ft.

199 1952 661



U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

CONSERVATION PLAN
SCHEDULE OF OPERATIONS

SCS-UTP-011
(10-80)
FORM APPROVED
OMB NUMBER 0578-0013
EXPIRATION DATE: JUNE 30, 1983

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1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1-After	348

299 DEC 1992 0062

Form Approved - OMB No. 0578-0013

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

SCS-LTP-11B
(2-89)

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CONSERVATION PLAN
SCHEDULE OF OPERATIONS

NOTE: *The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 522a). The authorities for requesting the information to be supplied on this form are: 16 U.S.C. 590a-f (Soil and Water Conservation); 16 U.S.C. 590h(b) (Agriculture Conservation); 16 U.S.C. 590p(b) (Great Plains); 30 U.S.C. 1236 et seq. (Rural Abandoned Mine Reclamation); 33 U.S.C. 1288 et seq. (Rural Clean Water); The Food Security Act of 1985, Public Law 99-198; and the regulations promulgated thereunder. The information requested is necessary for the development and implementation of a conservation, reclamation or water quality as the basis for satisfying program eligibility and compliance requirements, and for providing technical assistance and/or cost-sharing under the previously mentioned authorities. Furnishing this information is voluntary; however, failure to furnish correct, complete information will result in the withholding or withdrawal of such technical or financial assistance. The information may be furnished to other USDA agencies, the Internal Revenue Service, the Department of Justice, or other State or Federal law enforcement agencies, or in response to orders of a court, magistrate, or administrative tribunal.*

1. NAME	2. COUNTY	3. STATE	4. CONTRACT OR AGREEMENT NO.	5. TOTAL ACRES UNDER CONTRACT
Laurel G Ranch	Yolo	CA	1	348

ITEM NO.	FIELD	PLANNED CONSERVATION TREATMENT (Record of Decisions)	ESTIMATED AMOUNT (UNITS)	COST BASIS	COST-SHARE RATE %	COMPLETION SCHEDULE AND ESTIMATED COST-SHARE BY YEAR (For Noncost-Share Items Show Units)					REF. NO.
						19 93	19 94	19 95	19 96	19 etc	
6	7	8	9	10	11	12	13	14	15	16	17
		Total Cost-Share by Year:				$ 0	$	$	$	$	
		Total Contract Cost-Share: $ 0									

NOTES:
A. All items numbered in column 6 must be carried out as a part of this contract to prevent violation.
B. When established, the conservation practices listed in column 8 must be maintained by the participant at no cost to the government.
C. Enter total cost per unit in column 10 unless the method of cost-share is flat rate. When flat rate, enter the amount per unit to be paid to the participant.
D. All cost share rates in column 11 are based on average cost with the following exceptions:
AA = Actual costs not to exceed average cost.
FR = Flat rate.
NC = Non cost-shared.
AM = Actual cost not to exceed a specified maximum.
E. Modifications will be referenced by number in column 17.
F. By signing, the participant acknowledges receipt of this conservation plan including the SCS-CPA-11 and SCS-CPA-11B and agrees to comply with the terms and conditions hereof.

35054 BOOK 2561 PAGE 663

U.S. Fish and Wildlife Service Martha B. Nalley 8-15-92
For Wayne S. White, Field Supervisor, Fish and Wildlife Enhancement, Sacramento, CA

18. CERTIFICATION OF PARTICIPANTS

SIGNATURE	DATE	SIGNATURE	DATE	SIGNATURE	DATE
[signature]	8/20/92				

19. REVIEWING OFFICIALS SIGNATURES

DISTRICT CONSERVATIONIST-TECHNICAL ADEQUACY CERTIFICATION	DATE	APPROVED BY (Signature of Conservation District Representative)	DATE
[signature]	8/14/92		

RECORDING REQUESTED BY:
Fidelity National Title Company of California

AND WHEN RECORDED MAIL TO
HY Young
C/O USDA
430 G Street #4164
Davis, Ca. 95616-4164

Escrow No.: 05-**1000784**-MEM
Locate No.: CAFNT0957-0957-0001-0001000784
Title No.: 05-**1000784**-KR

YOLO Recorder's Office
Freddie Oakley, County Recorder
DOC- 2006-0020581-00
Acct 102-Fidelity National Title
Thursday, MAY 25, 2006 08:41:00
Ttl Pd $88.00 Nbr-0000643645
VRB/R6/1-28

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Warranty Easement Deed

THIS PAGE ADDED TO PROVIDE ADEQUATE SPACE FOR RECORDING INFORMATION
(Additional recording fee applies)

(recoverch)(10-04)

28

U.S. DEPARTMENT OF AGRICULTURE
COMMODITY CREDIT CORPORATION

CCC-1255
6-25-00

OMB No. 0578-0013

WARRANTY EASEMENT DEED

WETLANDS RESERVE PROGRAM
AGREEMENT NO. 66-9104-5-307

THIS WARRANTY EASEMENT DEED is made by and between, Lucky Five Farm, by deed dated January 7, 1963; and Lucky Five Farm, a Co-Partnership, by deed dated February 26, 1963; and Lucky Five Farm, A General Partnership (hereafter referred to as the "Landowner"), Grantor(s), and the UNITED STATES OF AMERICA, by and through the Commodity Credit Corporation(CCC) (hereafter referred to as the "United States"), Grantee. The Landowner and the United States are jointly referred to as the "Parties". The acquiring agency of the United States is the Natural Resources Conservation Service(NRCS), United States Department of Agriculture

Witnesseth

Purposes and Intent. The purpose of this easement is to restore, protect, manage, maintain, and enhance the functional values of wetlands and other lands, and for the conservation of natural values including fish and wildlife *and their* habitat, water quality improvement, flood water retention, groundwater recharge, open space, aesthetic values, and environmental education. It is the intent of CCC to give the Landowner the opportunity to participate in the restoration and management activities on the easement area.

Authority. This easement deed acquisition is authorized by Title XII of the Food Security Act of 1985, as amended (16 U.S.C. § 3837), for the Wetlands Reserve Program.

NOW THEREFORE, for and in consideration of the sum of Nine hundred forty-three thousand Dollars ($943,000.00), the Grantor(s), hereby grants and conveys with general warranty of title to the UNITED STATES OF AMERICA and its assigns, the Grantee, forever, all rights, title and interest in the lands comprising the easement area described in Part I and appurtenant rights of access to the easement area, but reserving to the Landowner only those rights, title and interest expressly enumerated in Part II. It is the intention of the Landowner to convey and relinquish any and all other property rights not so reserved. This easement shall constitute a servitude upon the land so encumbered, shall run with the land in perpetuity and shall bind the Landowner, (the Grantor(s)), their heirs, successors, assigns, lessees, and any other person claiming under them.

SUBJECT, however, to all valid rights of record, if any.

PART I. Description of the Easement Area. The lands encumbered by this easement deed, referred to hereafter as the easement area, are described on EXHIBIT A which is appended to and made a part of this easement deed.

TOGETHER with a right of access for ingress and egress to the easement area across adjacent or other properties of the Landowner. ~~Such a right-of-way for access purposes is described in EXHIBIT B which is appended to and made a part of this easement deed~~. *There is NO exhibit B.*

PART II. Reservations in the Landowner on the Easement Area. Subject to the rights, title, and interest conveyed by this easement deed to the United States, the Landowner reserves:

A. Title. Record title, along with the Landowner's right to convey, transfer, and otherwise alienate title to these reserved rights.

B. Quiet Enjoyment. The right of quiet enjoyment of the rights reserved on the easement area.

C. Control of Access. The right to prevent trespass and control access by the general public subject to the operation of State and Federal law.

D. Recreational Uses. The right to undeveloped recreational uses, including hunting and fishing, and including leasing of such rights for economic gain, pursuant to applicable State and Federal regulations that may be in effect at the time.

E. Subsurface Resources. The right to oil, gas, minerals, and geothermal resources underlying the easement area, provided that any drilling or mining activities are to be located outside the boundaries of the easement area unless activities within the boundaries are specified in accordance with the terms and conditions of EXHIBIT C..

PART III. Obligations of the Landowner. The Landowner shall comply with all terms and conditions of this easement, including the following:

A. Prohibitions. *Without otherwise limiting the rights of the United States acquired hereunder,* it is expressly understood that the rights to the following activities and uses have been acquired by the United States and unless authorized by the United States under Part IV, are prohibited of the Landowner on the easement area:

1. haying, mowing or seed harvesting for any reason;
2. altering of grassland, woodland, wildlife habitat or other natural features by burning, digging, plowing, disking, cutting or otherwise destroying the vegetative cover;
3. dumping refuse, wastes, sewage or other debris;
4. harvesting wood products;
5. draining, dredging, channeling, filling, leveling, pumping, diking, impounding or related activities, as well as altering or tampering with water control structures or devices;
6. diverting or causing or permitting the diversion of surface or underground water into, within or out of the easement area by any means;
7. building or placing buildings or structures on the easement area;
8. planting or harvesting any crop; and
9. grazing or allowing livestock on the easement area.
10. disturbing or interfering with the nesting or brood-rearing activities of migratory birds.

B. Noxious plants and pests. The Landowner is responsible for noxious weed control and emergency control of pests as required by all Federal, State and local laws. A plan to control noxious weeds and pests must be approved in writing by CCC prior to implementation by the Landowner.

C. Fences. Except for establishment cost incurred by the United States and replacement cost not due to the Landowner's negligence or malfeasance, all other costs involved in maintenance of fences and similar facilities to exclude livestock shall be the responsibility of the Landowner.

D. Taxes. The Landowner shall pay any and all real property and other taxes and assessments, if any, which may be levied against the land.

E. Reporting. The Landowner shall report to CCC any conditions or events which may adversely affect the wetland, wildlife, and other natural values of the easement area.

PART IV. Allowance of Compatible Uses by the Landowner.

A. General. The United States may authorize, in writing and subject to such terms and conditions CCC may prescribe at its discretion, the use of the easement area for compatible economic uses, including, but not limited to, managed timber harvest, periodic haying, or grazing.

B. Limitations. Compatible use authorizations will only be made if, upon a determination by CCC in the exercise of its discretion and rights, that the proposed use is consistent with the long-term protection and enhancement of the wetland and other natural values of the easement area. CCC shall prescribe the amount, method, timing, intensity, and duration of the compatible use.

PART V. Rights of the United States. The rights of the United States include:

A. Management activities. The United States shall have the right to enter unto the easement area to undertake, at its own expense or on a cost share basis with the Landowner or other entity, any activities to restore, protect, manage, maintain, enhance, and monitor the wetland and other natural values of the easement area. The United States, at its own cost, may apply to or impound additional waters on the easement area in order to maintain or improve wetland and other natural values.

B. Access. The United States has a right of reasonable ingress and egress to the easement area over the Landowner's property, whether or not the property is adjacent or appurtenant to the easement area, for the exercise of any of the rights of the United States under this easement deed. The authorized representatives of the United States may utilize vehicles and other reasonable modes of transportation for access purposes. To the extent practicable, the United States shall utilize the access identified in exhibit B.. *There is NO exhibit B.*

C. Easement Management. The Secretary of Agriculture, by and through CCC may delegate all or part of the management, monitoring or enforcement responsibilities under this easement to any entity authorized by law that CCC determines to have the appropriate authority, expertise and resources necessary to carry out such delegated responsibilities. State or federal agencies may utilize their general statutory authorities in the administration of any delegated management, monitoring or enforcement responsibilities for this easement. The authority to modify or terminate this easement (16 U.S.C. § 3837e(b)) is reserved to CCC in accordance with applicable law.

D. Violations and Remedies - Enforcement. The Parties agree that this easement deed may be introduced in any enforcement proceeding as the stipulation of the Parties hereto. If there is any failure of the Landowner to comply with any of the provisions of this easement deed, the United States or other delegated authority shall have any legal or equitable remedy provided by law and the right:

1. To enter upon the easement area to perform necessary work for prevention of or remediation of damage to wetland or other natural values; and,

2. To assess all expenses incurred by the United States (including any legal fees or attorney fees) against the Landowner, to be owed immediately to the United States.

PART VI. General Provisions.

A. Successors in Interest. The rights granted to the United States shall accrue to any of its agents, successors, or assigns. All obligations of the Landowner under this easement deed shall also bind the Landowner's heirs, successors, agents, assigns, lessees, and any other person claiming under them. All the Landowners who are parties to this easement deed shall be jointly and severally liable for compliance with its terms.

B. Rules of Construction and Special Provisions. All rights in the easement area not reserved by the Landowner shall be deemed acquired by the United States. Any ambiguities in this easement deed shall be construed in favor of the United States to effect the wetland and conservation purposes for which this easement deed is being acquired. The property rights of the United States acquired under this easement shall be unaffected by any subsequent amendments or repeal of the Wetlands Reserve Program. If the Landowner receives the consideration for this easement in installments, the Parties agree that the conveyance of this easement shall be totally effective upon the payment of the first installment.

TO HAVE AND TO HOLD, this Warranty Easement Deed is granted to the United States of America and its assigns forever. The Landowner covenants that he, she or they are vested with good title to the easement area and will warrant and defend the same on behalf of the United States against all claims and demands. The

A

Landowner covenants to comply with the terms and conditions enumerated in this document for the use of the easement area and adjacent lands for access, and to refrain from any activity not specifically allowed or that is inconsistent with the purposes of this easement deed.

Dated this _____ day of _____, 2006.

Landowner(s): See Signature Page Attached (Seal)

_____(Seal)

Acknowledgment

STATE of CALIFORNIA

COUNTY of: _____, on this _____ day of _____, 2006. before me, the undersigned, a Notary Public in and for said state, personally appeared _____ _____ known or proved to me to be the person(s) described in and who executed the foregoing instrument, and acknowledged that _____ executed the same as _____ free act and deed,

IN TESTIMONY WHEREOF, I have hereunto set my hand and Official Seal the day and year first above written.

(NOTARIAL SEAL)

_____
Notary Public for the State of California
Residing at _____
My Commission Expires: _____

This instrument was drafted by the Office of the General Counsel, U.S. Department of Agriculture, Washington, D.C. 20250-1400.

OMB DISCLOSURE STATEMENT

Public reporting burden for this collection of information is approximately (60) minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture Clearance Office OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB No. 0578-0013), Washington, D.C. 20503.

SIGNATURE PAGE

Lucky Five Farm
A General Partnership

BY: Arlene Jones
Arlene Jones-Partner

BY:
James Lamont-Partner

BY: Thomas A Nannizzi
Thomas A. Nannizzi-Partner

BY:
Rodney Williams-Partner

Hall-Mark Services Inc.

BY:
Gary S. Moody CEO

STATE OF California

COUNTY OF Yolo

On 4-11-06 before me Denise Ann Raycraft, Notary Pub.
(Name of Notary Public)

personally appeared Arline Jones

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity(~~ies~~), and that by ~~his~~/her/~~their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Denise Ann Raycraft
(Signature of Notary Public)

DENISE ANN RAYCRAFT
Commission # 1422668
Notary Public - California
Solano County
My Comm Expires Jun 6, 2007

(This area for notarial seal)

(notary)(07-02)

STATE OF California

COUNTY OF Yolo

On 4-11-06 before me, Denise Ann Raycraft, N.P.
(Name of Notary Public)

personally appeared Thomas A. Nannizzi

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Denise Ann Raycraft
(Signature of Notary Public)

DENISE ANN RAYCRAFT
Commission # 1422668
Notary Public - California
Solano County
My Comm. Expires Jun 6, 2007

(This area for notarial seal)

(notary)(07-02)

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5907

State of California

County of Yolo

On 4-11-06 (DATE) before me, Denise Ann Raycraft, Notary Public (NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC")

personally appeared James Lamont (NAME(S) OF SIGNER(S))

☒ personally known to me - **OR** - ☐ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(s) acted, executed the instrument.

DEBBIE ANN RAYCRAFT
Commission # 1422568
Notary Public - California
Solano County
My Comm. Expires Jun 6, 2007

WITNESS my hand and official seal.

Denise Ann Raycraft
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

☐ INDIVIDUAL
☐ CORPORATE OFFICER

_____
TITLE(S)

☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
TITLE OR TYPE OF DOCUMENT

_____
NUMBER OF PAGES

_____
DATE OF DOCUMENT

_____
SIGNER(S) OTHER THAN NAMED ABOVE

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5907

State of California

County of Yolo

On 4-11-06 (DATE) before me, Denise Ann Raycraft, Notary (NAME, TITLE OF OFFICER - E.G. "JANE DOE, NOTARY PUBLIC")

personally appeared Rodney Williams (NAME(S) OF SIGNER(S))

☒ personally known to me - **OR** - ☐ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(s) acted, executed the instrument.

DENISE ANN RAYCRAFT
Commission # 1422668
Notary Public - California
Solano County
My Comm. Expires Jun 6, 2007

WITNESS my hand and official seal.

Denise Ann Raycraft
SIGNATURE OF NOTARY

OPTIONAL

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SIGNER(S) OTHER THAN NAMED ABOVE

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5907

State of California

County of Yolo

On 4-11-06 (DATE) before me, Denise Ann Raycraft, notary public (NAME, TITLE OF OFFICER - E.G. "JANE DOE, NOTARY PUBLIC")

personally appeared Gary S. Moody (NAME(S) OF SIGNER(S))

☒ personally known to me - **OR** - ☐ proved to me on the basis of satisfactory evidence to be the person(~~s~~) whose name(~~s~~) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

DENISE ANN RAYCRAFT
Commission # 1422568
Notary Public - California
Solano County
My Comm. Expires Jun 4, 2007

WITNESS my hand and official seal.

Denise Ann Raycraft
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

☐ INDIVIDUAL
☐ CORPORATE OFFICER

_____
TITLE(S)

☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

SIGNER IS REPRESENTING:
(NAME OF PERSON(S) OR ENTITY(IES))

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
TITLE OR TYPE OF DOCUMENT

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NUMBER OF PAGES

_____
DATE OF DOCUMENT

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SIGNER(S) OTHER THAN NAMED ABOVE

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LAUGENOUR AND MEIKLE
CIVIL ENGINEERS

Exhibit "A"

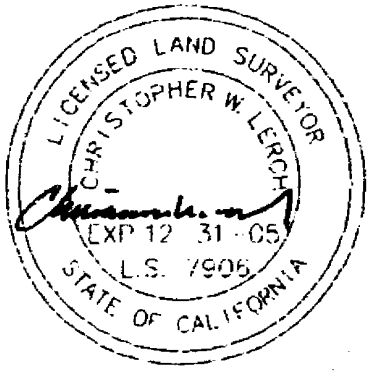
2395-15
August 8, 2005
N.U.B.

LAND DESCRIPTION
for
CALIFORNIA WATERFOWL ASSOCIATION

A PORTION OF LUCKY FIVE FARMS - NORTH AREA

ALL that real property situate in the unincorporated area of the County of Yolo, State of California, and being a portion of the East Half of Section 4, Township 6 North, Range 3 East, Mount Diablo Base and Meridian, also being a portion of that parcel of land described in Book 704 of Official Records, at Page 488, said County Records, being more particularly described as follows:

BEGINNING at a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" at the intersection of the Northerly right-of-way line of County Road 155 with the Westerly right-of-way line of County Road 107; said point being distant from National Geodetic Survey Designation "DIXON RESET" (PID JS4323), the following two (2) courses and distances: (1) North 63°37'50" East 17,444.78 feet to National Geodetic Survey Designation "ANDREW" (PID AE9864); and (2) South 58°49'46" West 59.17 feet; thence, from said POINT OF BEGINNING, and along said Northerly right-of-way line, North 89°36'27" West 2,314.51 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, along a line parallel with the West line of said East half, North 00°09'11" East 295.16 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, along a line parallel with said Northerly right-of-way line, North 89°36'27" West 295.16 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" on the West line of said East half, said point bears, North 00°09'11" East 325.16 feet from a spike at the Southwest corner of said East half; thence, along said West line, North 00°09'11" East 4,991.77 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" at the Northwest corner of said East half; thence, along the North line of said East half, South 89°56'23" East 2,612.66 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S.



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7906" on the Westerly right-of-way line of County Road 107, said point bears, North 89°56'23" West 30.00 feet from a 1½" iron rod at the Northwest corner of said East half; thence, along said Westerly right-of-way line, South 00°11'08" West 683.03 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, leaving said Westerly right-of-way and along a line parallel with the North line of said East half, North 89°56'23" West 86.60 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" at the toe of an existing berm; thence, along said toe of berm, the following two (2) courses and distances: (1) South 02°27'41" West 14.58 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; and (2) South 87°05'52" West 118.02 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, along a line parallel with said Westerly right-of-way line, South 00°11'08" West 258.79 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, along a line parallel with the North line of said East half, South 89°56'23" East 159.68 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, along a line parallel with the said Westerly right-of-way line, North 00°11'08" East 257.05 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, along a line parallel with the North line of said East half, South 89°56'23" East 45.34 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" on said Westerly right-of-way line; thence, along said Westerly right-of-way line, South 00°11'08" East 4,596.63 feet to the POINT OF BEGINNING.

Containing 314.373 acres of land, more or less.

The basis of bearings for this description is the grid bearing between said N.G.S. Designations "DIXON RESET" and "ANDREW"; said Designation "DIXON RESET" having coordinates of North (Y) 1,895,113.16 feet and East (X) 6,649,647.87 feet, said Designation "ANDREW" having coordinates of North (Y) 1,902,861.37 feet and East (X) 6,665,277.41 feet; said grid bearing being North 63°37'50" East as determined from National Geodetic Survey Data Sheets.

All bearings shown are grid, based upon the California Coordinate System of 1983, Zone 2. All distances shown are ground. To obtain grid distances, multiply ground distances described herein by the combination factor of 0.999994855.

End of description.

LAUGENOUR AND MEIKLE
CIVIL ENGINEERS

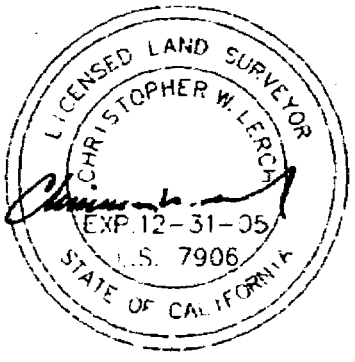
2395-15
August 8, 2005
N.U.B.

LAND DESCRIPTION
for
CALIFORNIA WATERFOWL ASSOCIATION

A PORTION OF LUCKY FIVE FARMS - SOUTH AREA

ALL that real property situate in the unincorporated area of the County of Yolo, State of California, and being a portion of the Northeast Quarter of Section 9, Township 6 North, Range 3 East, Mount Diablo Base and Meridian, also being a portion of that parcel of land described in Book 704 of Official Records, at Page 488, said County Records, being more particularly described as follows:

BEGINNING at a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" at the intersection of the Southerly right-of-way line of County Road 155 with the East line of said Northeast Quarter; said point being distant from National Geodetic Survey Designation "DIXON RESET" (PID JS4323), the following two (2) courses and distances: (1) North 63°37'50" East 17,444.78 feet to National Geodetic Survey Designation "ANDREW" (PID AE9864); and (2) South 13°04'47" West 93.25 feet; thence, from said POINT OF BEGINNING, and along said East line, South 00°43'19" West 2,628.24 feet to a 2¼" buttonhead monument with tag stamped "L.S. 2355" at the Southeast corner of said Northeast Quarter as shown on that certain map filed in Book 1 of Parcel Maps, at Page 46, said County Records; thence, along the South line of said Northeast Quarter, North 89°30'07" West 2,343.91 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; said point bears, South 89°30'07" East 295.16 feet from a 2" Iron Pipe at the Southwest corner of said Northeast Quarter; thence, along a line parallel with the West line of said Northeast Quarter; North 00°42'36" East 295.16 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906"; thence, along a line parallel with the South line of



14

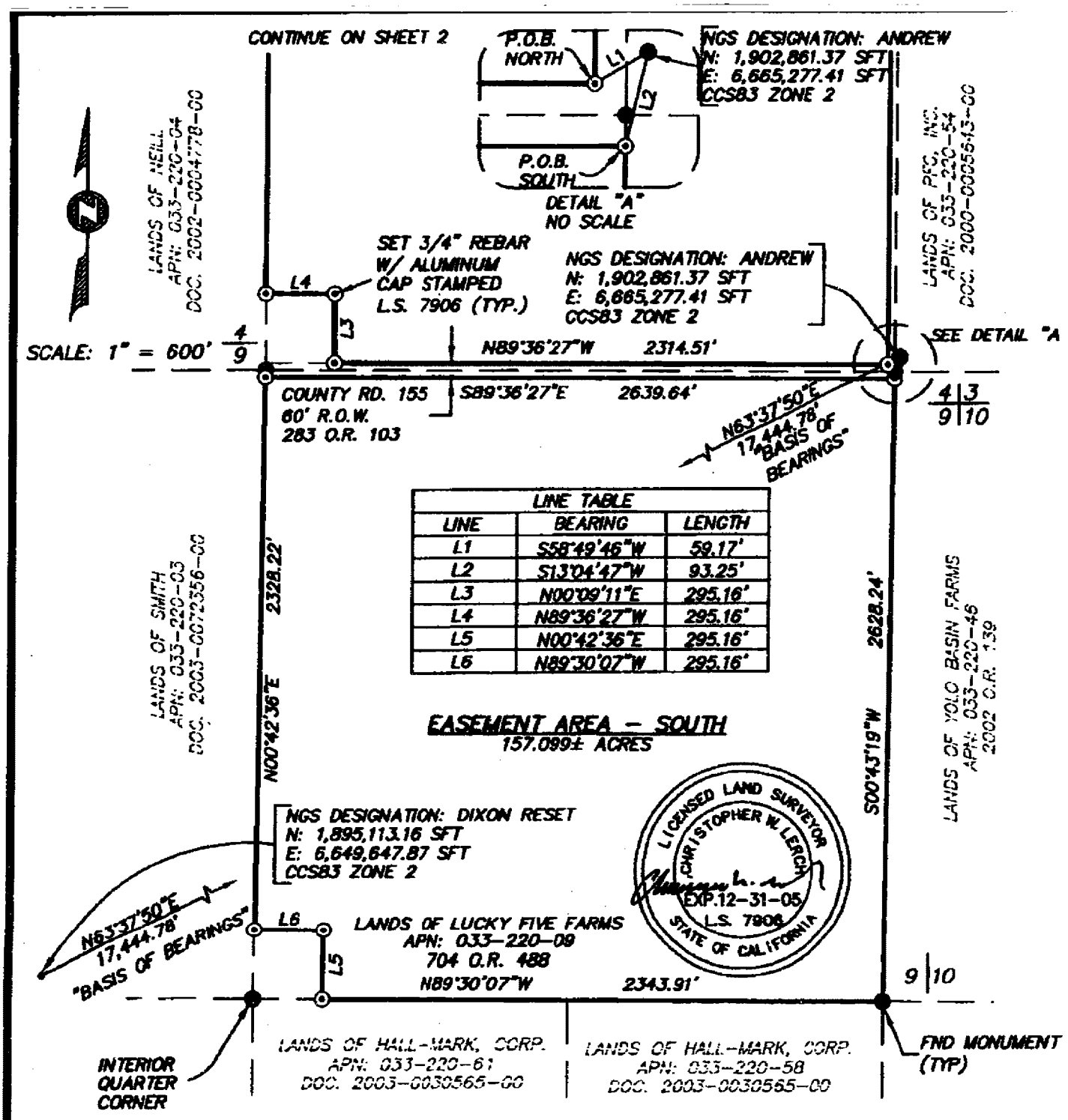
said Northeast Quarter, North 89°30'07" West 295.16 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" on the West line of said Northeast Quarter; said point bears North 00°42'36" East 295.16 feet from a 2" Iron Pipe at the Southwest corner of said Northeast Quarter; thence, along said West line, North 00°42'36" 2,328.22 feet to a 3/4" x 24" rebar with aluminum cap stamped "ESMT COR L.S. 7906" on the Southerly right-of-way line of County Road 155; said point bears South 00°42'36" West 30.00 feet from a spike at the Northwest corner of said Northeast Quarter; thence, along said Southerly right-of-way line, South 89°36'27" East 2,639.64 feet to the POINT OF BEGINNING.

Containing 157.099 acres of land, more or less.

The basis of bearings for this description is the grid bearing between said N.G.S. Designations "DIXON RESET" and "ANDREW"; said Designation "DIXON RESET" having coordinates of North (Y) 1,895,113.16 feet and East (X) 6,649,647.87 feet, said Designation "ANDREW" having coordinates of North (Y) 1,902,861.37 feet and East (X) 6,665,277.41 feet; said grid bearing being North 63°37'50" East as determined from National Geodetic Survey Data Sheets.

All bearings shown are grid, based upon the California Coordinate System of 1983, Zone 2. All distances shown are ground. To obtain grid distances, multiply ground distances described herein by the combination factor of 0.999994855.

End of description.



CHRISTOPHER W. LERCH
L.S. 7906 - EXPIRES 12-31-05

AUGUST 8, 2005
DATE

SEE SHEET NO. 3 FOR NOTES

LM CIVIL ENGINEERING LAND SURVEYING PLANNING
LAUGENOUR AND MEIKLE
WOODLAND, CALIFORNIA

WETLAND RESERVE EASEMENT EXHIBIT

FOR

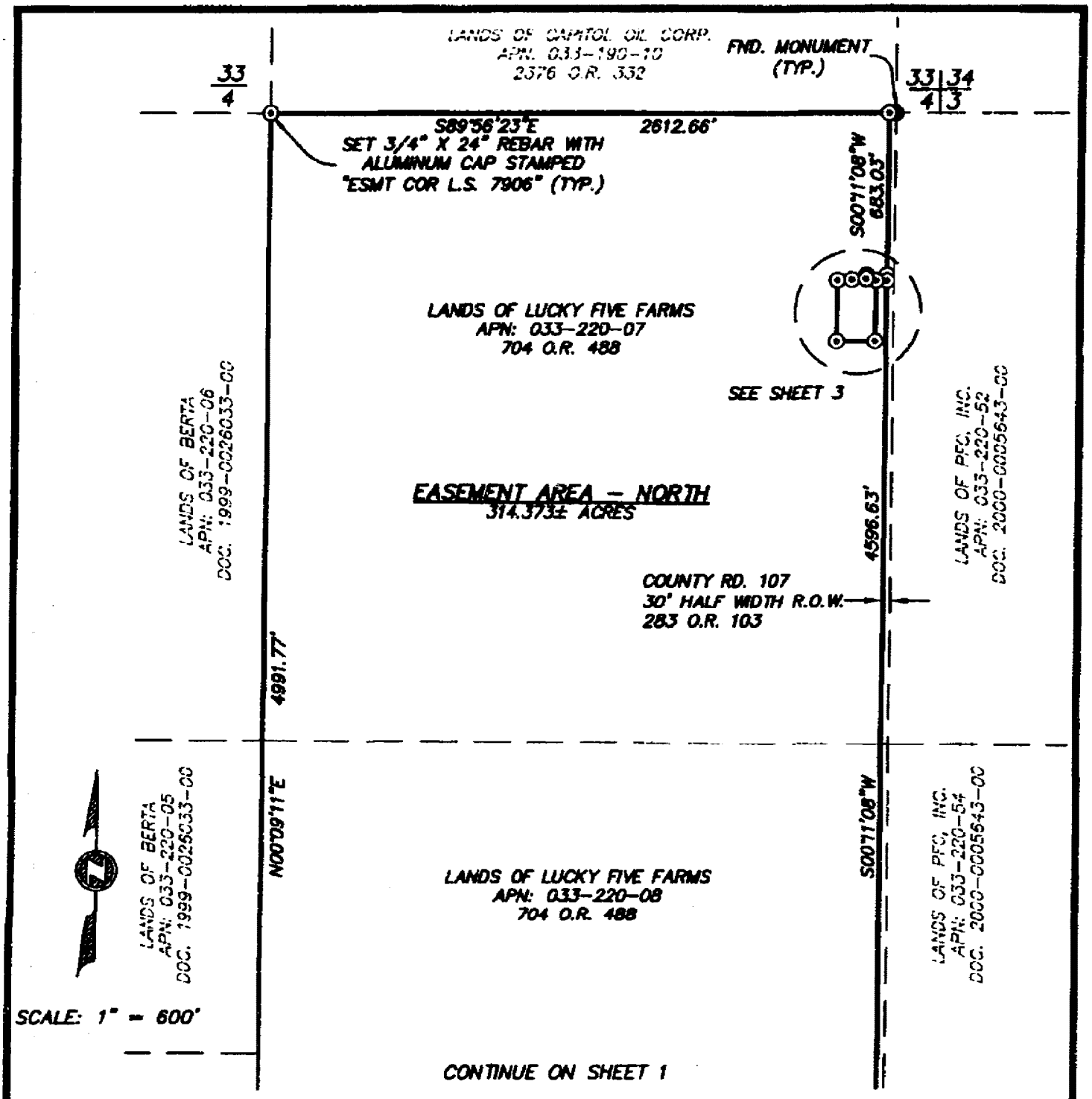
CALIFORNIA WATERFOWL ASSOCIATION

"A PORTION OF LUCKY FIVE FARMS"

BEING PORTIONS OF THE EAST HALF OF SECTION 4 AND THE NORTHEAST QUARTER OF SECTION 9, TOWNSHIP 6 NORTH, RANGE 3 EAST, MOUNT DIABLO BASE AND MERIDIAN. YOLO COUNTY, CALIFORNIA

SHEET 1 OF 3

AUGUST 8, 2005



SEE SHEET NO. 3 FOR NOTES

WETLAND RESERVE EASEMENT EXHIBIT

FOR

CALIFORNIA WATERFOWL ASSOCIATION

"A PORTION OF LUCKY FIVE FARMS"

BEING PORTIONS OF THE EAST HALF OF SECTION 4, AND THE NORTHEAST QUARTER OF SECTION 9, TOWNSHIP 6 NORTH, RANGE 3 EAST, MOUNT DIABLO BASE AND MERIDIAN. YOLO COUNTY, CALIFORNIA

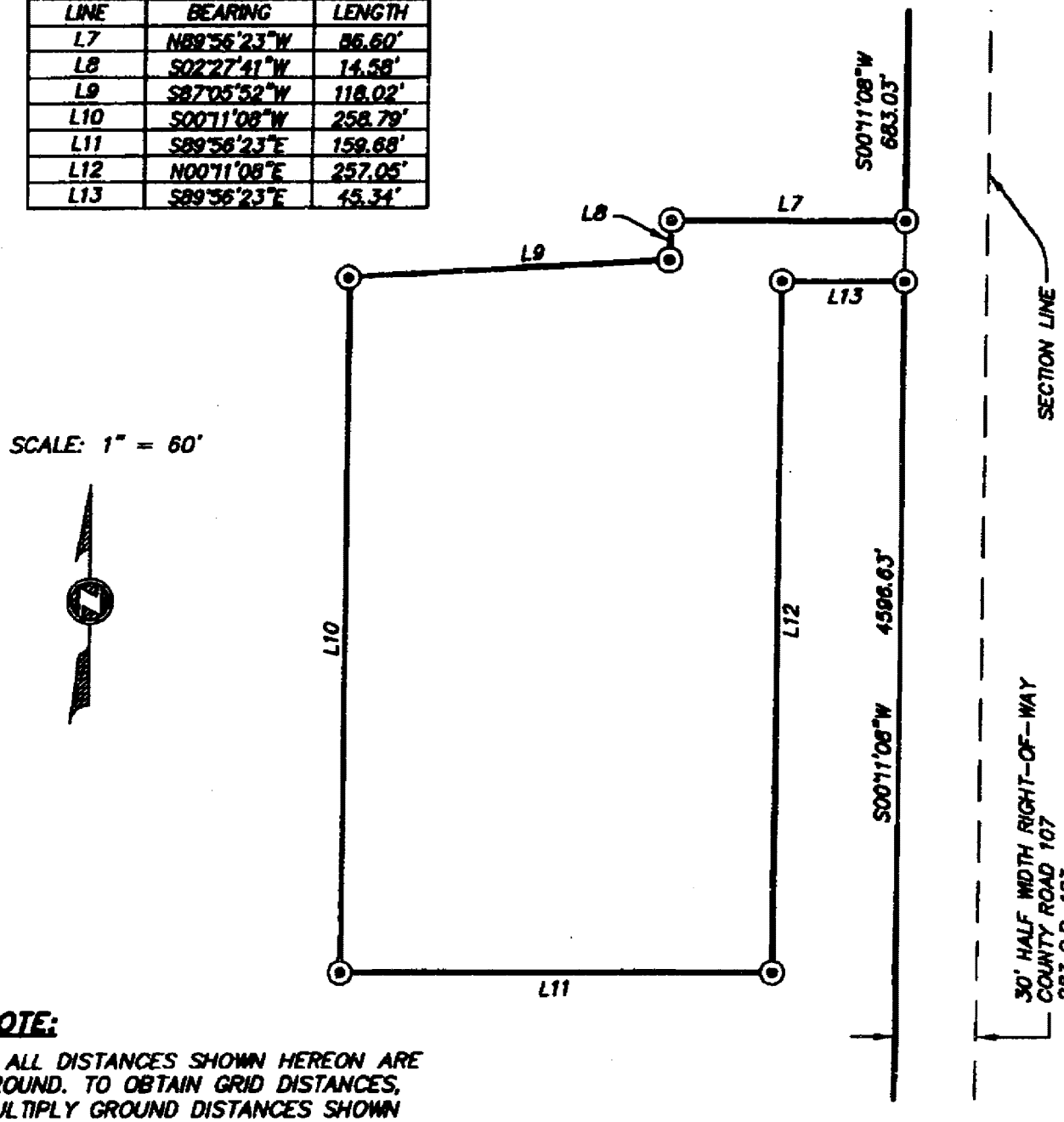
LM
CIVIL ENGINEERING
LAND SURVEYING
PLANNING
LAUGENOUR AND MEIKLE
WOODLAND, CALIFORNIA

SHEET 2 OF 3

AUGUST 8, 2005

#2395-15

LINE TABLE		
LINE	BEARING	LENGTH
L7	N89°56'23"W	86.60'
L8	S02°27'41"W	14.58'
L9	S87°05'52"W	118.02'
L10	S00°11'08"W	258.79'
L11	S89°56'23"E	159.68'
L12	N00°11'08"E	257.05'
L13	S89°56'23"E	45.34'



NOTE:

1) ALL DISTANCES SHOWN HEREON ARE GROUND. TO OBTAIN GRID DISTANCES, MULTIPLY GROUND DISTANCES SHOWN HEREON BY THE COMBINATION FACTOR OF 0.999994855.

2) ALL BEARINGS SHOWN HEREON ARE GRID.

3.) ALL LANDS SHOWN HEREON ARE IN AN EASEMENT FOR FLOOD INUNDATION WITH THE SACRAMENTO AND SAN JOAQUIN DRAINAGE DISTRICT PER BOOK 168 OF OFFICIAL RECORDS, AT PAGE 14, YOLO COUNTY RECORDS.

LM
CIVIL ENGINEERING
LAND SURVEYING
PLANNING
LAUGENOUR AND MEIKLE
WOODLAND, CALIFORNIA

WETLAND RESERVE EASEMENT EXHIBIT

FOR

CALIFORNIA WATERFOWL ASSOCIATION

"A PORTION OF LUCKY FIVE FARMS"

BEING PORTIONS OF THE EAST HALF OF SECTION 4 AND THE NORTHEAST QUARTER OF SECTION 9, TOWNSHIP 6 NORTH, RANGE 3 EAST, MOUNT DIABLO BASE AND MERIDIAN. YOLO COUNTY, CALIFORNIA

SHEET 3 OF 3

AUGUST 2, 2005

#2395-15

Exhibit C to Warranty Easement Deed
Revised July 7, 1998

INDEMNIFICATION AND HOLD HARMLESS AGREEMENT

This Indemnification and Hold Harmless Agreement ("Agreement") is made this 11th day of April 2006 by and between NATURAL RESOURCES CONSERVATION SERVICE, United States Department of Agriculture ("NRCS"), and Lucky Five Farm, by deed dated January 7, 1963; and Lucky Five Farm, a Co-Partnership, by deed dated February 26, 1963; and Lucky Five Farm, A General Partnership (the"Landowners").

1. NRCS has entered into an agreement with Landowners whereby certain real property owned by Landowners and more particularly described in Exhibit A, which is attached hereto and made a part hereof ("Property") will become subject to a Wetlands Reserve Program Easement and associated documents, all of which are herein called WRP documents.

2. Based upon a Preliminary Report from Fidelity National Title Company, dated May 2, 2005, Order Number 05-1000784-kr ("Preliminary Report") the title held by Landowners to the Property appears to be subject to an exception of certain outstanding interests in waters, minerals, oil, gas and other hydrocarbon substances, and other gaseous materials located on, in or under the Property, (collectively "Outstanding Mineral Interests"), which are shown in either the Preliminary Report exceptions and/or the legal description of the property.

3. Because of the objectives of the Wetlands Reserve Program as set forth in the WRP documents, is necessary to limit the seasons during which drilling is conducted on the Property subject to the WRP documents and to provide for the selection of sites for drilling and related activities that will not unreasonably interfere with the WRP documents.

NOW THEREFORE, NRCS and Landowners mutually covenant and agree as follows:

4. A. **No** drilling or other related operations, including but not limited to exploration, will be conducted by Landowner on the Property during the month of **February, March, April , May and June**. If parties other than Landowner conduct such activities, Landowners are subject to the indemnification and hold harmless provisions of this document.

B. At present, there are no drilling or other related operations, including but not limited to exploration, on the subject easement area.

C. NRCS **will agree** to the selection of drilling sites which may be used during the months of **October, November, December and January**. **No NRCS approval** will be required in the months of **July, August, and September**. NRCS will also agree to the location of access routes for exploration, drilling and related activities on the Property. NRCS will be reasonable in the selection of these sites and routes taking into account the standard that such agreement will

not unreasonably interfere with the purposes of the WRP program. Any work-sites will be **restored prior to January 31** of each year.

D. Landowners, and each of them, hereby agree that they will not exercise any of their respective mineral interest in the Property, or cooperate with the owner or any Outstanding Mineral Interests, in any manner which would unreasonably interfere with the purpose of the WRP documents.

E. If the exercise of any Outstanding Mineral Interests noted in the Preliminary Report unreasonably interferes with the purposes of the WRP documents, Landowners agree to indemnify and hold harmless NRCS for any damage to the Wetland Program Easement which are proximately caused by the exercise of any Outstanding Mineral Interests. Landowners also agree to take any action which has a reasonable chance of success, that might stop the exercise of any above mentioned Outstanding Mineral Interests.

5. If any party hereto fails to perform its obligations because of strikes, fires or other casualties, acts of God, legal acts of public authorities, or other causes not within the control of the party to perform, and which cannot be reasonably forecast or provided against, than that party's failure to perform shall be excused for a period equal to such cause.

6. This Agreement may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute one instrument.

7. This Agreement supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the matters set forth herein and contains all of the covenants and agreements between the parties regarding said matters. Each party to this Agreement acknowledges that no representations, inducements, promises or agreements, orally or in writing, have been made by any party or anyone acting on behalf of any party which are not embodied in this Agreement and no other alleged agreement, statement, or promise shall be valid or binding.

8. If an action at law or in equity is necessary to enforce or interpret the terms of this Agreement, if the United States is the prevailing party it shall be entitled to recover reasonable attorneys' fees and costs. If the Landowners are the prevailing party, they are entitled to recover reasonable attorney's fees and costs only pursuant to the Equal Access to Justice Act (28 U.S.C. 2412 and 5 U.S.C. 504.

9. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

10. The covenants and agreements contained in this Agreement shall be binding upon and shall inure to the benefit of the heirs, successors and assigns of the parties hereto.

11. No change, amendment or modification of this Agreement shall be valid unless the same be in writing and signed by the parties hereto.

12. This Agreement shall be construed and governed pursuant to the applicable laws of the State of California and the laws of the United States.

NATURAL RESOURCES CONSERVATION SERVICE
United States Department of Agriculture

LANDOWNERS:

See Signature Page Attached

_____

_____

_____

By _____

NOTARIZATIONS

SIGNATURE PAGE

Lucky Five Farm
A General Partnership

BY: _____
Arlene Jones-Partner

BY: _____
James Lamont-Partner

BY: _____
Thomas A. Nannizzi-Partner

BY: _____
Rodney Williams-Partner

Hall-Mark Services Inc.

BY: _____
Gary S. Moody CEO

STATE OF California

COUNTY OF Yolo

On 4-11-06 before me, DeniseAnn Raycraft, Notary Public
(Name of Notary Public)

personally appeared Arline Jones

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity(~~ies~~), and that by ~~his~~/her/~~their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

DeniseAnn Raycraft
(Signature of Notary Public)

DENISE ANN RAYCRAFT
Commission # 1422688
Notary Public - California
Solano County
My Comm. Expires Jun 6, 2007

(This area for notarial seal)

(notary)(07-02)

STATE OF California

COUNTY OF Yolo

On 4-11-06 before me, Denise Ann Raycraft, Notary
(Name of Notary Public)

personally appeared Thomas A. Nannizzi

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Denise Ann Raycraft
(Signature of Notary Public)

DENISE ANN RAYCRAFT
Commission # 1422668
Notary Public - California
Solano County
My Comm. Expires Jun 6, 2007

(This area for notarial seal)

(notary)(07-02)

21

STATE OF California

COUNTY OF Yolo

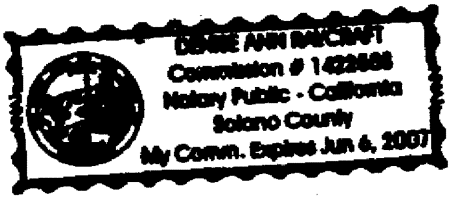
On 4-11-06 before me, Denise Ann Raycraft, Notary Public
(Name of Notary Public)

personally appeared Gary S. Moody

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/she/~~they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Denise Ann Raycraft
(Signature of Notary Public)



(This area for notarial seal)

(notary)(07-02)

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5907

State of California

County of Yolo

On 4-11-06 (DATE) before me, Denise Ann Raycraft, Notary (NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC") pub,

personally appeared James Lamont (NAME(S) OF SIGNER(S)),

☒ personally known to me - **OR** - ☐ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(s) acted, executed the instrument.

DENISE ANN RAYCRAFT
Commission # 1422868
Notary Public - California
Solano County
My Comm. Expires Jun 6, 2007

WITNESS my hand and official seal.

Denise Ann Raycraft
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

☐ INDIVIDUAL
☐ CORPORATE OFFICER

_____
TITLE(S)

☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
TITLE OR TYPE OF DOCUMENT

_____
NUMBER OF PAGES

_____
DATE OF DOCUMENT

_____
SIGNER(S) OTHER THAN NAMED ABOVE

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT No. 5907

State of California

County of Yolo

On 4-11-06 (DATE) before me, Denise Ann Raycraft, Notary (NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC")

personally appeared Rodney Williams (NAME(S) OF SIGNER(S))

☒ personally known to me - **OR** - ☐ proved to me on the basis of satisfactory evidence to be the person(s) whose name(~~s~~) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(s) acted, executed the instrument.

DENISE ANN RAYCRAFT
Commission # 1422888
Notary Public - California
Solano County
My Comm. Expires Jun 6, 2007

WITNESS my hand and official seal.

Denise Ann Raycraft
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

☐ INDIVIDUAL
☐ CORPORATE OFFICER

_____
TITLE(S)

☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

DESCRIPTION OF ATTACHED DOCUMENT

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NUMBER OF PAGES

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DATE OF DOCUMENT

_____
SIGNER(S) OTHER THAN NAMED ABOVE

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USDA United States Department of Agriculture

Natural Resources Conservation Service

430 G Street, #4164
Davis, CA 95616-4164
(530) 792-5684
FAX (530) 792-5731

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed by the Warranty Easement Deed dated, Lucky Five Farm, by deed dated January 7, 1963; and Lucky Five Farm, a Co-Partnership, by deed dated February 26, 1963; and Lucky Five Farm, A General Partnership, to the United States of America, by and through the Commodity Credit Corporation and the Natural Resources Conservation Service, agencies of the U.S. Department of Agriculture is hereby accepted by the undersigned officer pursuant to the authority of Title XII of the Food Security Act of 1985, as amended (16 U.S.C.§ 3837) for the Wetlands Reserve Program. The grantee consents to the recordation thereof.

Date: 5/22/06

Raymond C Miller

RAYMOND C. MILLER, Contract Specialist

END OF DOCUMENT

Appendix E

Tide's End Multibenefit Restoration Project Air Quality Modeling

Scenario 1 (Construction over 2 years)

Proposed Restoration/Project Element	Year 1 (Anticipated 2027)							Year 2, If Needed (Anticipated 2028)						
	Apr	May	Jun	Jul	Aug	Sep	Oct-Nov	Apr	May	Jun	Jul	Aug	Sep	Oct-Nov
Site Access & Preparation														
Capitol Oil, Laurel G														
Yolo Basin, Kleary, Williams														
Lucky Five South														
Tidal Wetland														
Capitol Oil, Laurel G														
Yolo Basin, Kleary, Williams														
Lucky Five South	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Floodplain Habitat														
Capitol Oil, Laurel G														
Yolo Basin, Kleary, Williams	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lucky Five South														
Managed Floodplain														
Capitol Oil, Laurel G														
Yolo Basin, Kleary, Williams	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lucky Five South														
Facilities Improvements														
Capitol Oil, Laurel G														
Yolo Basin, Kleary, Williams	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lucky Five South														
Habitat Finalization/Stabilization														
Capitol Oil, Laurel G														
Yolo Basin, Kleary, Williams														
Lucky Five South														

Hours per workday 10

	Start	End	Workdays									
	4/1/2027	7/31/2027	87									
Site Prep	Tier	HP	LF	Hours	Days	Quantity	Total haul truck one way trips					
Excavators	4 Final	36	0.38	1	10	1						
Graders	4 Final	148	0.41	17	150	1						
Highway trucks	**4 Final**	**93**	**0.4**	**5**	**40**	**5**	**400**					
Other Material Handling Equipment	4 Final	93	0.4	1	6	1						
Forklifts	4 Final	82	0.2	5	45	1						
Tractors/loaders/backhoes	4 Final	84	0.37	5	45	1						
Skid steer loaders	4 Final	71	0.37	5	45	1						

								Start	End	Workdays	
								5/1/2028	9/30/2028	110	*46%*
Tidal Wetland	5/1/2027	11/1/2027	131		*54%*			Hours	Days	Quantity	Total haul truck one way trips
Excavators	4 Final	36	0.38	2	30	1		2	25	1	
Scrapers	4 Final	423	0.48	5	60	5		5	50	5	
Graders	4 Final	148	0.41	7	90	2		7	75	2	
Off-highway trucks	4 Final	376	0.38	1	8	5		1	7	5	
Highway trucks	**4 Final**	**93**	**0.4**	**3**	**43**	**10**	**870**	**3**	**37**	**10**	**730**
Other Material Handling Equipment	4 Final	93	0.4	2	33	2		2	27	2	
Plate compactors	4 Final	8	0.43	2	33	2		2	27	2	
Forklifts	4 Final	82	0.2	4	46	2		4	39	2	
Tractors/loaders/backhoes	4 Final	84	0.37	4	46	2		4	39	2	
Skid steer loaders	4 Final	71	0.37	4	46	2		4	39	2	

								5/1/2028	7/31/2028	66	*38%*
Floodplain Habitat	5/1/2027	9/30/2027	109		*62%*						
Excavators	4 Final	36	0.38	3	28	1		3	17	1	
Scrapers	4 Final	423	0.48	0	5	1		0	3	1	
Graders	4 Final	148	0.41	8	84	1		8	51	1	
Off-highway trucks	4 Final	376	0.38	3	28	5		3	17	5	
Highway trucks	**4 Final**	**93**	**0.4**	**2**	**25**	**5**	**249**	**2**	**15**	**5**	**151**
Other Material Handling Equipment	4 Final	93	0.4	0	5	1		0	3	1	
Plate compactors	4 Final	8	0.43	0	4	1		0	2	1	
Forklifts	4 Final	82	0.2	3	28	1		3	17	1	
Tractors/loaders/backhoes	4 Final	84	0.37	3	28	1		3	17	1	
Skid steer loaders	4 Final	71	0.37	3	28	1		3	17	1	

								6/1/2028	7/31/2028	43	*33%*
Managed Floodplain	6/1/2027	9/30/2027	88		*67%*						
Scrapers	4 Final	423	0.48	8	71	1		5	34	1	
Graders	4 Final	148	0.41	6	50	1		4	25	1	
Highway trucks	**4 Final**	**93**	**0.4**	**3**	**27**	**5**	**269**	**2**	**13**	**5**	**131**
Other Material Handling Equipment	4 Final	93	0.4	8	71	1		5	34	1	
Plate compactors	4 Final	8	0.43	6	50	1		4	25	1	
Forklifts	4 Final	82	0.2	3	30	1		2	15	1	
Tractors/loaders/backhoes	4 Final	84	0.37	3	30	1		2	15	1	
Skid steer loaders	4 Final	71	0.37	3	30	1		2	15	1	

Facilities Improvements	7/1/2028	8/31/2028	44				
Excavators	4 Final	36	0.38	38	165	1	
Scrapers	4 Final	423	0.48	3	15	1	
Graders	4 Final	148	0.41	3	15	1	
Highway trucks	**4 Final**	**93**	**0.4**	**9**	**40**	**5**	**400**
Other Material Handling Equipment	4 Final	93	0.4	3	15	1	
Plate compactors	4 Final	8	0.43	3	15	1	
Forklifts	4 Final	82	0.2	10	45	1	
Tractors/loaders/backhoes	4 Final	84	0.37	10	45	1	
Skid steer loaders	4 Final	71	0.37	10	45	1	

Habitat Finalization/Stabilization	9/1/2028	11/1/2028	44				
Graders	4 Final	148	0.41	34	150	1	
Highway trucks	**4 Final**	**93**	**0.4**	**9**	**40**	**5**	**400**
Plate compactors	4 Final	8	0.43	1	3	1	
Forklifts	4 Final	82	0.2	10	45	1	
Tractors/loaders/backhoes	4 Final	84	0.37	10	45	1	
Skid steer loaders	4 Final	71	0.37	10	45	1	

Scenario 2 (Construction in one year)

Proposed Restoration/Project Element	Year 1 (2027)						
	Apr	May	Jun	Jul	Aug	Sep	Oct-Nov
Site Access & Preparation							
Capitol Oil, Laurel G							
Yolo Basin, Kleary, Williams							
Lucky Five South							
Tidal Wetland							
Capitol Oil, Laurel G							
Yolo Basin, Kleary, Williams							
Lucky Five South	-	-	-	-	-	-	-
Floodplain Habitat							
Capitol Oil, Laurel G							
Yolo Basin, Kleary, Williams	-	-	-	-	-	-	-
Lucky Five South							
Managed Floodplain							
Capitol Oil, Laurel G							
Yolo Basin, Kleary, Williams	-	-	-	-	-	-	-
Lucky Five South							
Facilities Improvements							
Capitol Oil, Laurel G							
Yolo Basin, Kleary, Williams	-	-	-	-	-	-	-
Lucky Five South							
Habitat Finalization/Stabilization							
Capitol Oil, Laurel G							
Yolo Basin, Kleary, Williams							
Lucky Five South							

						Hours per workday	
	Start	End	Workdays			10	
	4/1/2027	7/31/2027	87				
Site Prep	Tier	HP	LF	Hours	Days	Quantity	
Excavators	4 Final	36	0.38	1	10	1	
Graders	**4 Final**	**148**	**0.41**	**17**	**150**	**1**	
Highway trucks	**4 Final**	**93**	**0.4**	**5**	**40**	**5**	**400**
Other Material Handling Equipment	4 Final	93	0.4	1	6	1	
Forklifts	4 Final	82	0.2	5	45	1	
Tractors/loaders/backhoes	4 Final	84	0.37	5	45	1	
Skid steer loaders	4 Final	71	0.37	5	45	1	
Tidal Wetland	5/1/2027	11/1/2027	131				
Excavators	4 Final	36	0.38	4	55	2	
Scrapers	4 Final	423	0.48	8	110	10	
Graders	4 Final	148	0.41	13	165	4	
Off-highway trucks	4 Final	376	0.38	1	15	10	
Highway trucks	**4 Final**	**93**	**0.4**	**6**	**80**	**20**	**3200**
Other Material Handling Equipment	4 Final	93	0.4	5	60	4	
Plate compactors	4 Final	8	0.43	5	60	4	
Forklifts	4 Final	82	0.2	6	85	4	
Tractors/loaders/backhoes	4 Final	84	0.37	6	85	4	
Skid steer loaders	4 Final	71	0.37	6	85	4	
Floodplain Habitat	5/1/2027	9/30/2027	109				
Excavators	4 Final	36	0.38	4	45	2	
Scrapers	4 Final	423	0.48	1	8	2	
Graders	4 Final	148	0.41	12	135	2	
Off-highway trucks	4 Final	376	0.38	4	45	10	
Highway trucks	**4 Final**	**93**	**0.4**	**4**	**40**	**10**	**800**
Other Material Handling Equipment	4 Final	93	0.4	1	8	2	
Plate compactors	4 Final	8	0.43	1	6	2	
Forklifts	4 Final	82	0.2	4	45	2	
Tractors/loaders/backhoes	4 Final	84	0.37	4	45	2	
Skid steer loaders	4 Final	71	0.37	4	45	2	
Managed Floodplain	6/1/2027	9/30/2027	88				
Scrapers	4 Final	423	0.48	12	105	2	
Graders	4 Final	148	0.41	9	75	2	
Highway trucks	**4 Final**	**93**	**0.4**	**5**	**40**	**10**	**800**
Other Material Handling Equipment	4 Final	93	0.4	12	105	2	
Plate compactors	4 Final	8	0.43	9	75	2	
Forklifts	4 Final	82	0.2	5	45	2	
Tractors/loaders/backhoes	4 Final	84	0.37	5	45	2	
Skid steer loaders	4 Final	71	0.37	5	45	2	
Facilities Improvements	7/1/2027	8/31/2027	44				
Excavators	4 Final	36	0.38	38	165	1	
Scrapers	4 Final	423	0.48	3	15	1	
Graders	4 Final	148	0.41	3	15	1	
Highway trucks	**4 Final**	**93**	**0.4**	**9**	**40**	**5**	**400**
Other Material Handling Equipment	4 Final	93	0.4	3	15	1	
Plate compactors	4 Final	8	0.43	3	15	1	
Forklifts	4 Final	82	0.2	10	45	1	
Tractors/loaders/backhoes	4 Final	84	0.37	10	45	1	
Skid steer loaders	4 Final	71	0.37	10	45	1	
Habitat Finalization/Stabilization	9/1/2027	11/1/2027	44				
Graders	4 Final	148	0.41	34	150	1	
Highway trucks	**4 Final**	**93**	**0.4**	**9**	**40**	**5**	**400**
Plate compactors	4 Final	8	0.43	1	3	1	
Forklifts	4 Final	82	0.2	10	45	1	
Tractors/loaders/backhoes	4 Final	84	0.37	10	45	1	
Skid steer loaders	4 Final	71	0.37	10	45	1	

	Site Prep	Tier	HP	LF	Hours	Days	Quantity	hp-hr	EF year	Emission Factors (grams per horsepower-hour) ROG	NOx	PM10	PM2.5	Emissions (tpy) ROG	NOx	PM10	PM2.5
	Excavators	Tier 4 Final		49	0.38	10	10	4900	2027	0.09	2.75	0.01	0.01	0	0.01	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	150	261000	2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	40	238000	2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	6	7140	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	53550	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	53550	2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	33300	2027	0.09	2.74	0.01	0.01	0.00	0.04	0.00	0.00
	Tidal Wetland																
	Excavators	Tier 4 Final		49	0.38	10	30	14649	2027	0.09	2.75	0.01	0.01	0.00	0.02	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	60	1790786	2027	0.05	0.26	0.01	0.01	0.05	0.25	0.01	0.01
	Graders	Tier 4 Final		174	0.41	10	90	312117	2027	0.05	0.26	0.01	0.01	0.01	0.04	0.00	0.00
	Off-highway trucks	Tier 4 Final		599	0.38	10	8	244198	2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	43	517477	2027	0.05	0.26	0.01	0.01	0.01	0.06	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	33	77622	2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	33	31962	2027	0.09	2.75	0.01	0.01	0.00	0.04	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	46	109964	2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	46	109964	2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	46	68381	2027	0.09	2.74	0.01	0.01	0.00	0.08	0.00	0.00
2027																	
	Tidal Wetland																
	Excavators	Tier 4 Final		49	0.38	10	28	13734	2027	0.09	2.75	0.01	0.01	0.00	0.02	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	5	29847	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	84	146309	2027	0.05	0.26	0.01	0.01	0.00	0.02	0.00	0.00
	Off-highway trucks	Tier 4 Final		599	0.38	10	28	839456	2027	0.05	0.26	0.01	0.01	0.02	0.09	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	25	148240	2027	0.05	0.26	0.01	0.01	0.00	0.02	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	5	5930	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	4	1831	2027	0.09	2.75	0.01	0.01	0.00	0.00	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	28	33354	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	28	33354	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	28	20741	2027	0.09	2.74	0.01	0.01	0.00	0.02	0.00	0.00
	Managed Floodplain																
	Scrapers	Tier 4 Final		599	0.48	10	71	422501	2027	0.05	0.26	0.01	0.01	0.01	0.06	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	50	87664	2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	27	159878	2027	0.05	0.26	0.01	0.01	0.00	0.02	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	71	83936	2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	50	24687	2027	0.09	2.75	0.01	0.01	0.00	0.03	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	30	35973	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	30	35973	2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	30	22309	2027	0.09	2.74	0.01	0.01	0.00	0.02	0.00	0.00
	Tidal Wetland																
	Excavators	Tier 4 Final		49	0.38	10	25	12301	2028	0.09	2.75	0.01	0.01	0.00	0.01	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	50	1503714	2028	0.05	0.26	0.01	0.01	0.04	0.21	0.01	0.01
	Graders	Tier 4 Final		174	0.41	10	75	262083	2028	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Off-highway trucks	Tier 4 Final		599	0.38	10	7	205052	2028	0.05	0.26	0.01	0.01	0.00	0.02	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	37	434523	2028	0.05	0.26	0.01	0.01	0.01	0.05	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	27	69178	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	27	26838	2028	0.09	2.75	0.01	0.01	0.00	0.03	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	39	92336	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	39	92336	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	39	57419	2028	0.09	2.74	0.01	0.01	0.00	0.06	0.00	0.00
	Floodplain Habitat																
	Excavators	Tier 4 Final		49	0.38	10	17	8316	2028	0.09	2.75	0.01	0.01	0.00	0.01	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	3	18073	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	51	88591	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Off-highway trucks	Tier 4 Final		599	0.38	10	17	508294	2028	0.05	0.26	0.01	0.01	0.01	0.06	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	15	89760	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	3	3590	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	2	1109	2028	0.09	2.75	0.01	0.01	0.00	0.00	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	17	20196	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	17	20196	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	17	12559	2028	0.09	2.74	0.01	0.01	0.00	0.01	0.00	0.00
	Managed Floodplain																
	Scrapers	Tier 4 Final		599	0.48	10	34	206449	2028	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
2028	Graders	Tier 4 Final		174	0.41	10	25	42836	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	13	78122	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	34	41014	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	25	12063	2028	0.09	2.75	0.01	0.01	0.00	0.02	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	15	17577	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	15	17577	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	15	10931	2028	0.09	2.74	0.01	0.01	0.00	0.01	0.00	0.00
	Facilities Improvements																
	Excavators	Tier 4 Final		49	0.38	10	165	80850	2028	0.09	2.75	0.01	0.01	0.00	0.09	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	15	89850	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	15	26100	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	40	238000	2028	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	15	17850	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	15	7350	2028	0.09	2.75	0.01	0.01	0.00	0.01	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	53550	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	53550	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	33300	2028	0.09	2.74	0.01	0.01	0.00	0.04	0.00	0.00
	Habitat Finalization/Stabilization																
	Graders	Tier 4 Final		174	0.41	10	150	261000	2028	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	40	238000	2028	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	3	1470	2028	0.09	2.75	0.01	0.01	0.00	0.00	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	53550	2028	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	53550	2028	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	33300	2028	0.09	2.74	0.01	0.01	0.00	0.04	0.00	0.00

Year of Construction

CAP Emissions Summary (tons per year)

	ROG	NOx	PM10	PM2.5
2027	0.18	1.12	0.05	0.04
2028	0.15	1.06	0.04	0.03

CAP Emissions Summary (pounds per day)

	ROG	NOx	PM10	PM2.5
2027	1.4	8.7	0.38	0.29
2028	1.2	8.1	0.32	0.24

1 ton =	907.185 g
1 pound =	454 g
1 MT =	1,000,000 g

										Emission Factors (grams per horsepower-hour)				Emissions (tpy)			
	Site Prep	Tier	HP	LF	Hours	Days	Quantity	hp-hr	EF year	ROG	NOx	PM10	PM2.5	ROG	NOx	PM10	PM2.5
	Excavators	Tier 4 Final		49	0.38	10	10	1	4900 2027	0.09	2.75	0.01	0.01	0	0.01	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	150	1	261000 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	40	5	238000 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	6	1	7140 2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	1	53550 2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	1	53550 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	1	33300 2027	0.09	2.74	0.01	0.01	0.00	0.04	0.00	0.00
	Tidal Wetland																
	Excavators	Tier 4 Final		49	0.38	10	55	2	53900 2027	0.09	2.75	0.01	0.01	0.00	0.06	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	110	10	6589000 2027	0.05	0.26	0.01	0.01	0.17	0.91	0.03	0.03
	Graders	Tier 4 Final		174	0.41	10	165	4	1148400 2027	0.05	0.26	0.01	0.01	0.03	0.13	0.01	0.01
	Off-highway trucks	Tier 4 Final		599	0.38	10	15	10	898500 2027	0.05	0.26	0.01	0.01	0.02	0.10	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	80	20	1904000 2027	0.05	0.26	0.01	0.01	0.04	0.22	0.01	0.01
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	60	4	285600 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	60	4	117600 2027	0.09	2.75	0.01	0.01	0.01	0.15	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	85	4	404600 2027	0.05	0.26	0.01	0.01	0.00	0.02	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	85	4	404600 2027	0.05	0.26	0.01	0.01	0.01	0.04	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	85	4	251600 2027	0.09	2.74	0.01	0.01	0.01	0.28	0.00	0.00
	Floodplain Habitat																
	Excavators	Tier 4 Final		49	0.38	10	45	2	44100 2027	0.09	2.75	0.01	0.01	0.00	0.05	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	8	2	95840 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	135	2	469800 2027	0.05	0.26	0.01	0.01	0.01	0.06	0.00	0.00
	Off-highway trucks	Tier 4 Final		599	0.38	10	45	10	2695500 2027	0.05	0.26	0.01	0.01	0.06	0.29	0.01	0.01
	Highway trucks	Tier 4 Final		119	0.4	10	40	10	476000 2027	0.05	0.26	0.01	0.01	0.01	0.05	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	8	2	19040 2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	6	2	5880 2027	0.09	2.75	0.01	0.01	0.00	0.01	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	2	107100 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
2027	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	2	107100 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	2	66600 2027	0.09	2.74	0.01	0.01	0.00	0.07	0.00	0.00
	Managed Floodplain																
	Scrapers	Tier 4 Final		599	0.48	10	105	2	1257900 2027	0.05	0.26	0.01	0.01	0.03	0.17	0.01	0.01
	Graders	Tier 4 Final		174	0.41	10	75	2	261000 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	40	10	476000 2027	0.05	0.26	0.01	0.01	0.01	0.05	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	105	2	249900 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	75	2	73500 2027	0.09	2.75	0.01	0.01	0.00	0.10	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	2	107100 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	2	107100 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	2	66600 2027	0.09	2.74	0.01	0.01	0.00	0.07	0.00	0.00
	Facilities Improvements																
	Excavators	Tier 4 Final		49	0.38	10	165	1	80850 2027	0.09	2.75	0.01	0.01	0.00	0.09	0.00	0.00
	Scrapers	Tier 4 Final		599	0.48	10	15	1	89850 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Graders	Tier 4 Final		174	0.41	10	15	1	26100 2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	40	5	238000 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Other Material Handling Equipment	Tier 4 Final		119	0.4	10	15	1	17850 2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	15	1	7350 2027	0.09	2.75	0.01	0.01	0.00	0.01	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	1	53550 2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	1	53550 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	1	33300 2027	0.09	2.74	0.01	0.01	0.00	0.04	0.00	0.00
	Habitat Finalization/Stabilization																
	Graders	Tier 4 Final		174	0.41	10	150	1	261000 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Highway trucks	Tier 4 Final		119	0.4	10	40	5	238000 2027	0.05	0.26	0.01	0.01	0.01	0.03	0.00	0.00
	Plate compactors	Tier 4 Final		49	0.43	10	3	1	1470 2027	0.09	2.75	0.01	0.01	0.00	0.00	0.00	0.00
	Forklifts	Tier 4 Final		119	0.2	10	45	1	53550 2027	0.05	0.26	0.01	0.01	0.00	0.00	0.00	0.00
	Tractors/loaders/backhoes	Tier 4 Final		119	0.37	10	45	1	53550 2027	0.05	0.26	0.01	0.01	0.00	0.01	0.00	0.00
	Skid steer loaders	Tier 4 Final		74	0.37	10	45	1	33300 2027	0.09	2.74	0.01	0.01	0.00	0.04	0.00	0.00

Year of Construction

CAP Emissions Summary (tons per year)

ROG	NOx	PM10	PM2.5
2027 0.58	3.82	0.15	0.12

CAP Emissions Summary (pounds per day)

ROG	NOx	PM10	PM2.5
2027 4.5	29.39	1.16	0.91

1 ton =	907,185	g
1 pound =	454	g
1 MT =	1,000,000	g

Appendix F

Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation)

F.1 Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment

Tide's End Multibenefit Restoration Project

Phase I Environmental Site Assessment - Update

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November 2024

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SECTION 1.0
Executive Summary

Environmental Science Associates (ESA) compiled this executive summary using excerpts from the Phase I environmental site assessment report that follows. This executive summary may not provide all the information necessary to fully characterize the site and gain an understanding of the issues, nor does it detail the Phase I assessment and its findings. ESA does not recommend relying solely on this executive summary.

This Phase I environmental site assessment was conducted on behalf of EIP California, LLC (EIP) for the proposed Tide's End Multibenefit Restoration Project (proposed Project), located about 12 miles south-southwest of Sacramento along the west side of the Sacramento River Deep Water Ship Channel and within the Yolo Bypass floodway in Yolo County, California (see **Figure 1-1, *Regional Setting*,** and **Figure 1-2, *Subject Property Conditions***). This assessment was conducted in accordance with guidance from the American Society of Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-21), 40 Code of Federal Regulations (CFR) Section 312.1, "Purpose, Applicability, Scope and Disclosure Obligations," and in accordance with the contract signed November 20, 2018, along with subsequent modifications. This Phase I environmental site assessment was conducted to identify Recognized Environmental Conditions (RECs), Historical Recognized Environmental Conditions (HRECs), or Controlled Recognized Environmental Conditions (CRECs) at the Subject Property (see Section 2.1 for definitions).

The proposed Project area (or subject property) consists of six parcels (Capitol Oil, Laurel G, Yolo Basin, Kleary, Lucky Five South, and Williams) with a total area of about 2,212 acres, as shown on Figure 1-2. The subject property borders the Sacramento River Deep Water Ship Channel and its Toe Drain to the east and are within the Yolo Bypass floodway (Figure 1-1). Various levees and sloughs lie along the borders of each property, and some levees and sloughs cross through some of the properties.

The initial Phase I environmental site assessment conducted in 2021 (ESA 2021a) included five parcels (Capitol Oil, Laurel G, Yolo Basin, Kleary, and Williams), referred to in this updated report as "the five original parcels." An additional sixth parcel, referred to as Lucky Five South, was added to the subject property subsequent to the 2021 Phase I environmental site assessment. A separate Phase I environmental site assessment was conducted for the Lucky Five South parcel and is included as Appendix C to this report, "Tide's End Multibenefit Restoration Project Lucky Five South Parcel Phase I Environmental Site Assessment". The conclusions of the Lucky Five South Phase I assessment are included in this updated report, but the reader is referred to Appendix C to this report for the details for the Lucky Five South parcel.

The five original parcels were inspected by ESA staff on February 23 and June 9, 2021. The Lucky Five South parcel was inspected on June 10, 2024, by others. The five original parcels have a number of levees, sloughs, irrigation pumps, and bulkhead gates to control water flow. Capitol Oil and Laurel G consist of flat fields that have been fallow since 2016 and historically have been farmed for rice, alfalfa, and possibly hay; some areas were flooded during the inspection. A clubhouse for a duck hunting club is present on the southwest corner of the Laurel G parcel; the remaining areas on Capitol Oil and Laurel G are undeveloped grassland and wetlands. The Yolo Basin property has the dilapidated remains of a former small restaurant consisting of the foundation, some brick pillars, and scattered debris consisting of pieces of the roof, walls, and restaurant contents (e.g., a stove, a bathtub, a toilet, and other debris); the rest of the parcel is undeveloped grassland and wetlands. The Kleary and Williams parcels are undeveloped flat grassland and wetlands. Abandoned farm equipment lies in scattered locations on these five parcels. The Lucky Five South property is undeveloped fallow land with no structures or farm equipment.

As noted in the regulatory records search summarized below, 25 natural gas wells were previously present on five of the six parcels on the subject property (none were reported on the southernmost parcel, the Williams parcel). No visible evidence of any natural gas well was observed at any of the reported well locations. There were no observations of chemical spills, underground or aboveground storage tanks, waste pits or ponds, stained soil, unusual odors, or stressed vegetation. **No RECs, HRECs, or CRECs were observed relative to hazardous materials, hazardous waste, or chemical use, storage, or disposal.**

A commercial regulatory database service searched relevant federal, State, and local regulatory agency lists for listings of the six parcels assessed in this report, and for nearby properties within the appropriate ASTM 1527 standard search distances. In addition, regulatory agency websites were checked to provide additional information. The six parcels did not appear on any regulatory agency lists. **The search of regulatory records did not reveal any RECs, HRECs, or CRECs**. The search of regulatory records did indicate the former presence of 25 former natural gas wells, as described below.

Twenty-five plugged natural gas wells are reported on five of the six parcels, as shown in **Figure 1-3, *Abandoned Natural Gas Well Locations***. Ten of the wells produced natural gas between December 1978 and December 2010; all of the gas wells had been plugged before the end of 2012. Oil and natural gas wells are abandoned by plugging the well with a cement grout from the bottom of the well to the ground surface. The top portion of the grout plug and well casing is typically removed and the ground area is covered with soil, leaving no surface indication of the former gas well. Well abandonment records indicate that 20 of the gas wells had at least the top 5 feet of well casing and grout plug cut off. The abandonment records for four gas wells are unclear as to cut-off depths; one other well is recorded as cut off to 4 feet below grade. However, as noted during the site reconnaissance, no visible surface evidence of any gas well was observed, and it is assumed that the four wells with unclear records were also abandoned by cutting off the top 5 feet of the well casing and grout plug. **Although not a REC, CREC, or HREC, the potential presence of a grout plug and well casing to within 5 feet of the ground surface is considered a business environmental risk (see Section 2.1 for definition) because excavation**

for tidal channels may encounter the shallowest portion of the grout plugs and well casings, depending on the location and depth of the tidal channel excavations.

The clubhouse has a septic tank and leach field located just west of the clubhouse. A restaurant was previously present in the northwest corner of the Yolo Basin parcel, and the foundation and dilapidated remains are still present; it is unknown whether sanitary waste from the former restaurant was routed to the clubhouse septic tank or whether it had its own septic tank and leach field. A former set of structures are present along the northwestern border of the Capitol Oil parcel and may have been a former residence; it is assumed that this location also had a septic tank and leach field, but the location and status are unknown. **Although not a REC, CREC, or HREC, the presence of septic tanks and leach fields is considered a business environmental risk because excavation for tidal channels and marsh plain may encounter the sanitary waste systems**.

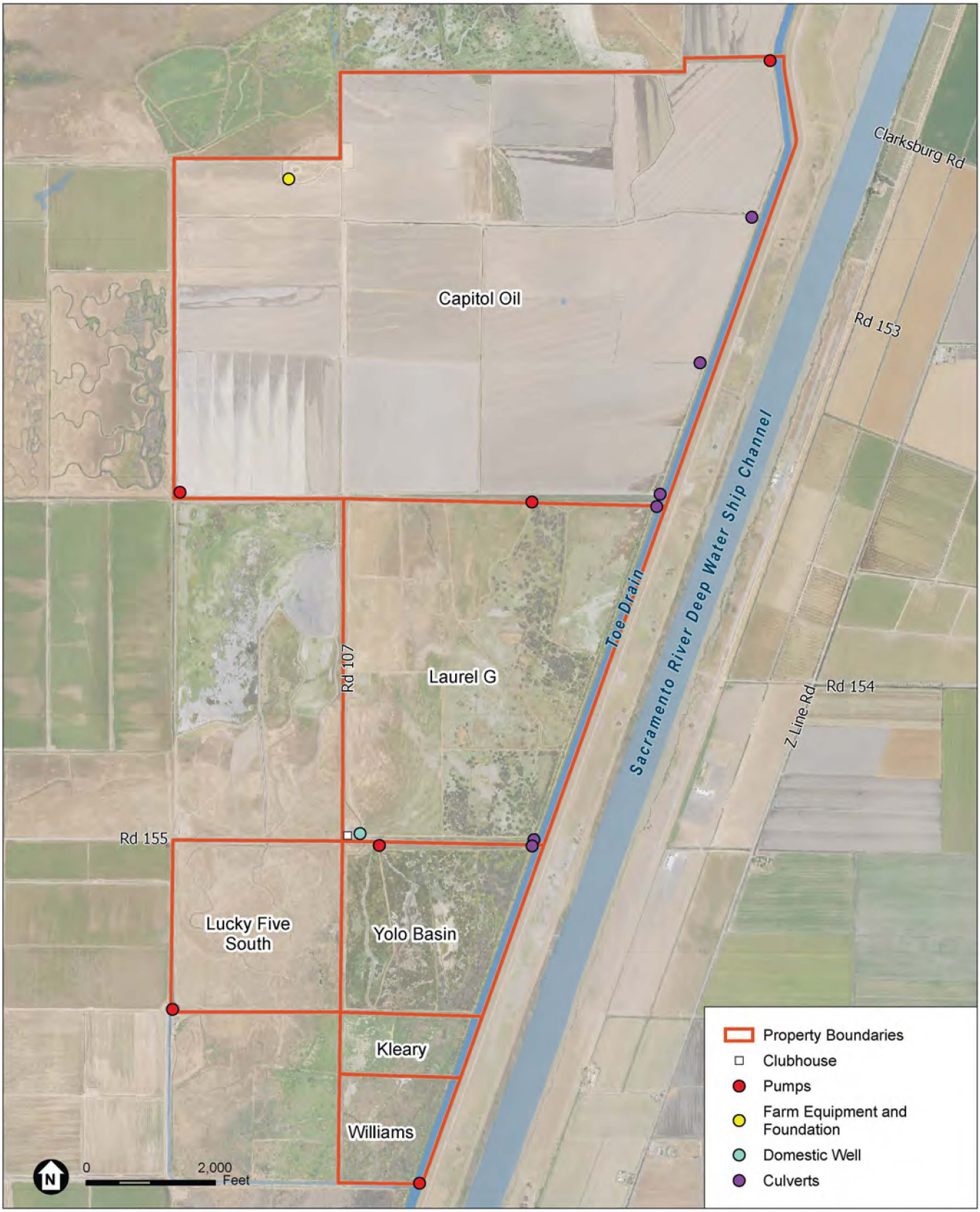
The EIP real estate manager indicated that farming activity on the five original parcels historically consisted of rice and alfalfa farming, and possibly some hay farming. The last farming occurred in 2016, and only on the Capitol Oil parcel. Historically, pesticides, herbicides, and/or fertilizers may have been used, but the real estate manager did not know of any records. The Yolo County Agricultural Commissioner (2021) maintains pesticide use records back to 2014; the five parcels have no recorded use of pesticides or herbicides. The use of dichlorodiphenyltrichloroethane (DDT) was banned in 1972 and chlordane use on food crops was banned in 1978. Modern (post-1970s) pesticides and herbicides have a short life span of 1 year or less, and do not leave residual toxic compounds. Subsequent to the initial 2021 Phase I environmental site assessment, ESA conducted a Phase II soil sampling investigation to test whether legacy pesticides (e.g., DDT or chlordane) were present in soil at the five original parcels. The testing results indicated chemical concentrations of metals are within background levels; and that pesticides, herbicides, total organic carbon, and acid soluble sulfide are either not detected above reporting limits or are present at concentrations below screening criteria (ESA 2021b). **Therefore, the residual chemicals in soil from historical and present use of the five original parcels for agriculture is not expected to adversely affect the proposed wetland habitat, and the residual levels of agricultural chemicals are not considered a REC, HREC, or CREC.**

Tide's End Multibenefit Restoration Project

Figure 1-1
Regional Setting

Prepared by: ESA

SOURCE: NAIP, 2022; DWR, 2005



Ecosystem Investment Partners

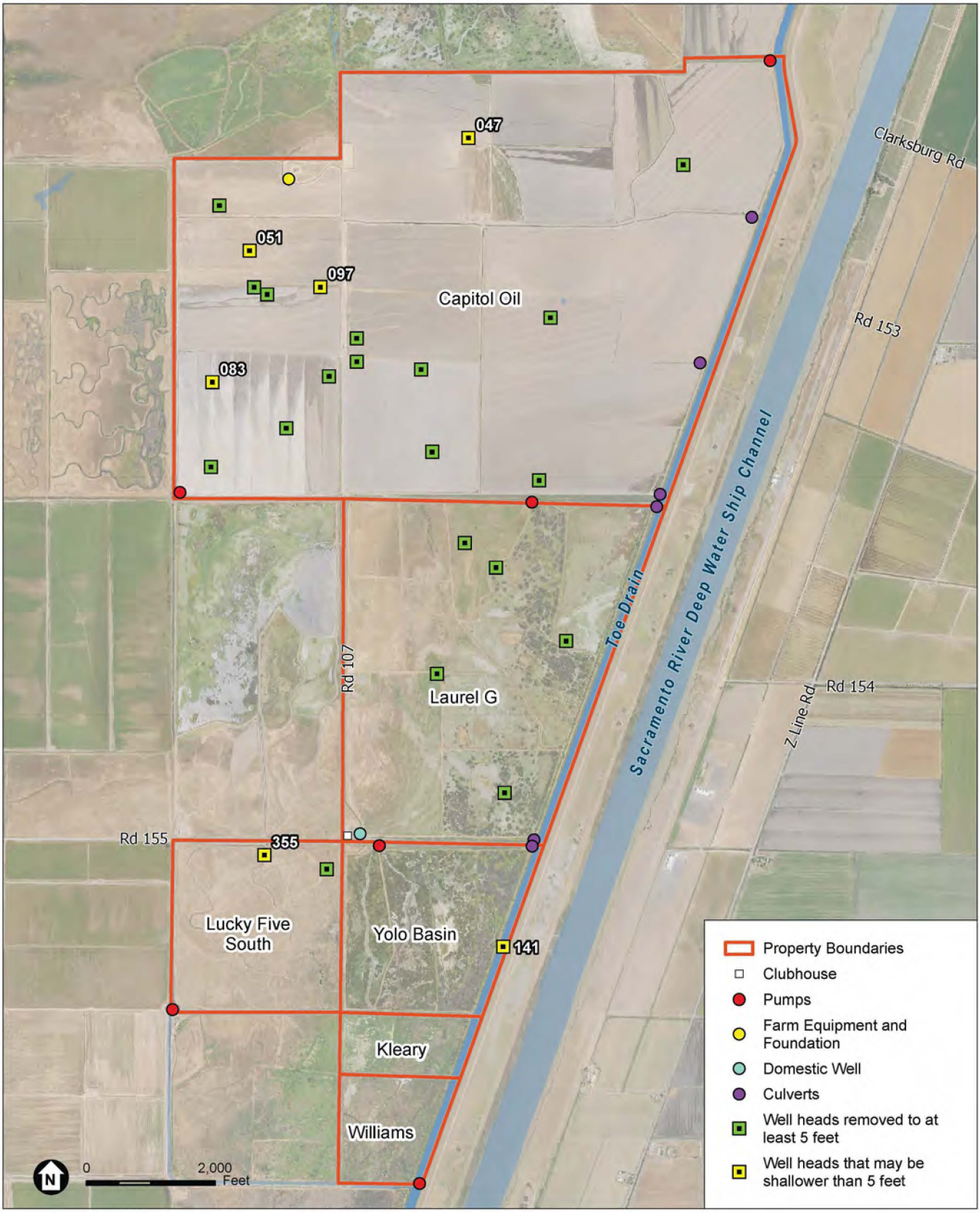
TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1-2
Subject Property Conditions

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2024



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1-3
Abandoned Natural Gas Wells

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2024

SECTION 2.0
Introduction

2.1 Purpose, Standards, and Definitions

EIP California, LLC (EIP) retained Environmental Science Associates (ESA) to conduct a Phase I environmental site assessment for the Tide's End Multibenefit Restoration Project (proposed Project), located about 14 miles south-southwest of Sacramento, California (see Figures 1-1 and 1-2).

The initial Phase I environmental site assessment conducted in 2021 (ESA 2021a) included five parcels (Capitol Oil, Laurel G, Yolo Basin, Kleary, and Williams), referred to in this updated report as "the five original parcels." An additional sixth parcel, referred to as Lucky Five South, was added to the proposed Project area (or subject property) subsequent to the 2021 Phase I environmental site assessment. A separate Phase I environmental site assessment was conducted for the Lucky Five South parcel (EnviroApplications 2024). The conclusions of the Lucky Five South Phase I assessment are included in this updated report, but the reader is referred to the Lucky Five South Phase I assessment for details for that parcel.

This Phase I assessment was conducted in general accordance with the American Society of Testing Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-21) (ASTM 2021) and the U.S. Environmental Protection Agency (EPA) Final Rule regarding Standards and Practices for All Appropriate Inquiries (70 *Federal Register* [FR] 66070, November 1, 2005; 40 Code of Federal Regulations [CFR] Part 312) (AAI Rule). EPA has stated that the newly revised ASTM E1527-21 is consistent with the AAI Rule (87 FR 76578, approved December 15, 2022). Specifically, this final rule amends the AAI Rule at 40 CFR Part 312 to reference ASTM E1527-21 and make clear that persons conducting all appropriate inquiries may use the procedures included in this standard to comply with the AAI Rule.

The purpose of this Phase I assessment is to enable the parties relying on it to satisfy one or more of the requirements for the innocent landholder defense to liability under the Comprehensive Environmental Response, Compensation, and Liability Act and to evaluate the potential for Recognized Environmental Conditions (RECs) at the Project site. Three types of RECs are defined by ASTM E1527-21, as listed below. The term *Recognized Environmental Conditions (RECs)* means:

> the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum

> products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.

In addition, the updated ASTM E1527-21 defines the two categories cited below.

The term *Historical Recognized Environmental Conditions (HRECs)* means:

> the previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations). A historical recognized environmental condition is not a recognized environmental condition.

If the REC has use restrictions or engineering controls (e.g., cap, subslab depressurization system), the REC may be designated as a *Controlled Recognized Environmental Condition* (CREC), as defined below. Unlike HRECs, a CREC will be listed in the conclusions section of the Phase I assessment, along with other RECs. The purpose of this category is to bring continuing obligations, such as use restrictions, maintenance requirements, and reporting requirements, to the forefront. The term *CREC* means:

> recognized environmental condition affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations).

RECs, HRECs, and CRECs are not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. In addition, business environmental conditions (e.g., subsurface crude oil pipelines) are noted but not considered RECs, HRECs, or CRECs.

The ASTM Standard practice also defines a “business environmental risk” (BER) as a risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of commercial real estate, not necessarily related to those environmental issues required to be investigated in this practice. Consideration of BER issues may involve addressing one or more non-scope considerations.

2.2 Scope of Services

The following sections describe ESA’s work scope:

- Section 2.0, *Introduction*, discusses the purpose for performing the Phase I assessment; the standards and definitions used for the Phase I assessment; and significant assumptions and limitations.
- Section 3.0, *Site Description*, compiles information concerning the location, legal description, and current and proposed uses of the Project area, along with a description of any structures and improvements at the time of ESA’s assessment.

- Section 4.0, *Records Review*, includes ESA's review of various databases available from federal, State, and local regulatory agencies regarding hazardous materials use, storage, or disposal within or near the parcels considered in this assessment. Copies of relevant documents are included in the appendices of this report. Physical setting sources such as topography, soil, and groundwater conditions are described.
- Section 5.0, *Site Reconnaissance*, describes ESA's observations during reconnaissance of the subject property. The methodology used and limiting conditions are described.
- Section 6.0, *User-Provided Information*, documents interviews conducted with the property managers.
- Section 7.0, *Findings and Opinions*, presents ESA's findings and professional opinions regarding the information contained in this report. It provides ESA's conclusions regarding the presence of RECs connected with the proposed Project and data gaps, if any, that could affect the recognition of RECs.
- Section 8.0, *Report Authors and Qualifications*, provides the signatures and qualifications of the report authors.
- Section 9.0, *References*, is a summary of the resources used to compile this report that supplement the information provided in the appendices.
- The *appendices* contain certain pertinent documentation regarding the proposed Project. Appendices A and B contain the report of regulatory agency database search results, as well as historical aerial photographs and historical topographic maps. Fire insurance maps, city directories, and an environmental lien search were not ordered because such records would not be produced for a property that was never in industrial, commercial, or residential use.

2.3 Limitations and Exceptions

No environmental site assessment can wholly eliminate uncertainty regarding the potential for RECs, HRECs, and CRECs in connection with a property. Conformance of this Phase I assessment with ASTM E1527-21 reduces, but does not eliminate, uncertainty regarding the potential for RECs, HRECs, and CRECs in connection with the subject property. While ESA has made every effort to discover and interpret available historical and current information on the properties assessed within the time available, some potential always remains for undiscovered contamination to be present. ESA's report is a best-efforts collection and interpretation of available information, and cannot be considered wholly conclusive. This report and the associated work were provided in accordance with the principles and practices generally employed by the local environmental consulting profession. This is in lieu of all warranties, expressed or implied. No other warranty is expressed or implied. The ASTM E1527-21 standard is included in this report by reference.

This Phase I assessment is based primarily on historical research, a database review, and a site reconnaissance of accessible areas. This Phase I assessment does not include "non-scope issues" as specified by ASTM E1527-21, such as surveys for the presence of the following items on or in the vicinity of the subject property: asbestos-containing materials, polychlorinated biphenyls

(PCBs), radon, effects on indoor air quality, lead-based paint, lead in drinking water, industrial hygiene, health and safety, regulatory compliance, and high-voltage lines.

The conclusions presented are professional opinions based solely upon indicated data described in this report, visual site and vicinity observations, and the interpretation of the available historical information and documents reviewed, as described in this report. Unless ESA has actual knowledge to the contrary, information obtained from interviews or provided to ESA is assumed to be correct and complete. ESA does not assume any liability for information that was misrepresented to ESA by others or for items not visible, accessible, or present on the parcels during the time of the site reconnaissance. The conclusions are intended exclusively for the purpose outlined herein and the site location and project indicated. Any use or reuse of this document or the findings, conclusions, or recommendations presented herein is at the sole risk of the user.

Opinions and recommendations presented herein apply to the site conditions existing at the time of this Phase I assessment and cannot necessarily apply to site changes of which ESA is not aware and has not had the opportunity to evaluate. Changes in the conditions of the parcels may occur with time due to natural processes or the works of man on the property or adjacent properties. Changes in applicable standards may also occur as a result of legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond ESA's control. Opinions and judgments expressed herein are based on ESA's understanding and interpretation of current regulatory standards, and should not be construed as legal opinions.

SECTION 3.0
Site Description

3.1 General Setting and Location

The subject property is located about 12 miles south-southwest of Sacramento in Yolo County, California. The subject property consists of six parcels (Capitol Oil, Laurel G, Yolo Basin, Kleary, Lucky Five South, and Williams) with a total acreage of about 2,212 acres. Figures 1-1 through 1-3 show the locations of the six parcels, along with items of interest. The subject property borders the west side of the Sacramento River Deep Water Ship Channel and the Toe Drain (also known as Prospect Slough or Tule Canal) and is within the Yolo Bypass floodway. Various levees lie along the borders of each parcel, and some levees cross through some of the parcels. **Table 3-1** summarizes the parcel numbers, acreages, Yolo County land use zoning, Yolo County General Plan designations, Williamson Act designations, and structures for the properties considered in this Phase I assessment.

TABLE 3-1
LOCATION AND ZONING

Property Name	Acres	APNs	Zoning	General Plan	Williamson Act	Structures
EIP–Capitol Oil	1,281	033-190-010 033-440-006 033-450-001 033-450-002	A-N	AG-DPO	Yes Yes Partial Partial	Two irrigation pumps; three culverts
EIP–Laurel G	498	033-220-052 033-220-054	A-N	AG-DPO	No No	Duck hunting clubhouse; two irrigation pumps; two culverts
Yolo Basin	164	033-220-046	A-N	AG-DPO	Yes	One irrigation pump; one culvert; remains of residential structure
Kleary	45	033-220-068	A-N	AG-DPO	Yes	One irrigation pump
Williams	62	033-220-067	A-N	AG-DPO	No	None
Lucky Five South	162	033-220-009	A-N	AG-DPO	Yes	None
Total Acres	**2,212**					

NOTES: APN = Assessor's Parcel Number

Yolo County A-N zoning is Agriculture–Intensive.

AG-DPO Yolo County General Plan designation is Agriculture with a Delta Protection Overlay.

Flood Zone designation is AE, which means the area has a 1 percent chance of being equaled or exceeded in any given year. The 1 percent annual chance flood is also referred to as the base flood or 100-year flood.

SOURCES: Yolo County Assessor's Office 2021; Yolo County 2009

3.2 Current and Proposed Land Uses

Managed wetland habitat for waterfowl is the dominant land use in the local region, including large portions of the subject property where constructed wetlands are operated for a duck club via an irrigation system comprised of pumps and drainage ditches. The Laurel G, Yolo Basin, Kleary, and Williams parcels are operated as seasonal wetland habitat for duck hunting, and a duck hunting clubhouse is located in the southwest corner of the Laurel G parcel. The Lucky Five South parcel, on the other hand, is not able to pond water: the northwestern side is too high to hold water for managed seasonal wetland and is managed instead as upland bird habitat (for pheasant hunting), while the soil types and topography of the southeast side are too well-draining. The Capitol Oil parcel was historically farmed for rice, corn, and other general field crops and has continued to be managed for rice production since EIP's purchase of the property in 2019.

SECTION 4.0
Records Review

The purpose of the records review is to obtain and examine records that could help to evaluate potential RECs, HRECs, and CRECs in connection with the proposed Project. This section documents the database records search and the evaluation of other records, summarizes information provided by the property owners, and describes the physical setting of the subject property. As previously noted, the initial Phase I environmental site assessment conducted in 2021 (ESA 2021a) included five parcels (Capitol Oil, Laurel G, Yolo Basin, Kleary, and Williams), referred to in this updated report as "the five original parcels." the Lucky Five South parcel was assessed under a separate Phase I assessment (EnviroApplications 2024). The reader is directed to that Phase I assessment for records search details, which did not identify and RECs, HRECs, or CRECs. However, the Oil and Gas Well Records section below provides additional details regarding abandoned gas wells that were on the Lucky Five South parcel and not included in that Phase I assessment.

4.1 Standard Environmental Record Sources

Federal, State, and local regulatory agencies publish databases of businesses and properties that handle hazardous materials or hazardous waste, including those properties with a known release of hazardous substances to soil and/or groundwater. These databases are available for review and/or purchase at the regulatory agencies, or the information may be obtained through a commercial database service. ESA contracted with a commercial database service to perform the government database search for listings within the appropriate ASTM standard minimum search distance (GeoSearch 2021). A detailed description of the types of information in each database reviewed and the agency responsible for compiling the data is included in the Radius Report provided as Appendix A, which includes a list of acronyms for the individual databases in the executive summary of the Radius Report.

ESA evaluated the listings with regard to the nature of potential chemicals of concern and the extent of known releases. In general, reported or potential releases likely to affect a property would include those located on or within a 1/8-mile radius of the subject property. ESA also considered additional factors such as chemical properties, regional knowledge of the site vicinity, groundwater flow direction, and available past regulatory documentation as part of the REC evaluation.

4.2 Results of Database Search

The regulatory records search did not identify any listings of hazardous materials use or historical releases for the five parcels assessed, or for the sites within the ASTM-specified search radius in

the surrounding area. Sites not plotted due to poor or inadequate address information are referred to as "orphan sites." The records search did not identify any orphan sites. To augment the regulatory records search, the State Water Resources Control Board's GeoTracker and California Department of Toxic Substances Control's EnviroStor websites were accessed to review documents that describe the locations and status of environmental issues. The State websites did not identify any sites on or adjacent to the five parcels.

4.3 Other Records Reviewed

The regulatory agency records search also provides historical aerial photographs and historical topographic maps. Fire insurance maps, city directories, and an environmental lien search were not ordered because such records would not be produced for a rural undeveloped area that has never had any industrial, commercial, or residential land use. The search results are discussed below.

Historical Aerial Photographs

Historical aerial photographs are available for the years 1937, 1953, 1957, 1968, 1970, 1982, 1987, 1993, 2003, 2004, 2005, 2006, 2009, 2010, 2012, 2014, 2016, and 2018, and are included in Appendix B.

In the **1937** aerial photograph, the Capitol Oil parcel shows linear patterns indicating active farming across much but not all of the property. The Williams parcel appears to be entirely actively farmed. The other three parcels appear to be undeveloped grasslands and wetlands. Several levees and sloughs cross through the five parcels. The present-day Road 155 had not yet been established. Access was on several vaguely defined unimproved roads. A straight channel is visible approximately on the alignment of the present-day Sacramento River Deep Water Ship Channel, but was a narrower version. The present-day Toe Drain had not yet been constructed. Other than some levees and sloughs, no structures are visible. The surrounding area appears to be farmland and wetlands. As stated by Mr. Brennan, EIP's local real estate manager, historically farmed crops included rice and alfalfa, and possibly hay (see Section 6.0, *User-Provided Information*).

The **1953** aerial photograph shows the five parcels all under active farming. The visible levees and sloughs appear to be largely in their present-day configuration. The unpaved Roads 155 and 107 are present. Three to four square structures are visible in the northwest portion of the Capitol Oil parcel and are likely farm support structures and/or possibly a residence. Several long trailers are visible at various locations on the five parcels. The present-day location of the clubhouse appears to be at least partly developed; the quality of the aerial photograph is marginal and it is unclear whether the clubhouse construction is complete.

The **1957** aerial photograph is largely unchanged from the 1953 aerial photograph. The clubhouse and its domestic well are present, although the use in 1957 was more likely in support of farming operations because there was no extensive wetland habitat to support birds (and bird hunting) at that time. The curved patterns on the Capitol Oil and Laurel G parcels are consistent with rice farming.

The **1968** aerial photograph shows portions of the five parcels under less intensive farming activity. Portions if not all of the southern three parcels appear to be returning to grasslands and wetlands. The areas still being farmed have curved features consistent with rice farming. Three structures and several vehicles are visible at the location of the foundation identified on the Capitol Oil parcel shown in Figure 1-2. A structure is visible in the northwest corner of the Yolo Basin parcel, just south of the present-day clubhouse. The site reconnaissance, discussed in Section 5.0, observed the foundation and brick supporting pillars of the former structure, along with broken and rusted debris, a stove, a bathtub, and a toilet. EIP's real estate manager stated that this structure was a restaurant. He does not know where the septic tank and leach field for the restaurant were located or whether it was routed to the clubhouse's septic system. The present-day Toe Drain and Sacramento River Deep Water Ship Channel are present along the eastern border of the five parcels.

The **1970** aerial photograph is largely unchanged from the 1968 photograph. The natural gas well labeled as "083" in Figure 1-3 is visible in the western portion of the Capitol Oil parcel.

The **1982** aerial photograph is of poor quality, showing no useful details.

The **1987** aerial photograph shows the Capitol Oil parcel being farmed. The land patterns are straight, suggesting that the crop may have changed from rice to alfalfa or hay. The other four parcels show no obvious farming activity. As of 1987, 19 natural gas wells had been installed, with many of them visible at intersections of unpaved roads within the parcels. In this photograph, the residence and farming structures in the northwestern part of the Capitol Oil parcel have been removed, leaving only the foundation of the former residence observed during the site reconnaissance discussed in Section 5.0.

The **1993** aerial photograph shows conditions similar to the 1987 aerial photograph, except that most of the natural gas wells are no longer visible and the former locations are in the process of being covered over by vegetation. It is unclear whether any farming is occurring on any of the five parcels. The Kleary parcel shows what appear to be some unimproved roads, but with no visible structures; the purpose of the roads is unclear.

The **2003 through 2009** aerial photographs show the five parcels and the surrounding area largely in their current condition. The curved patterns on the Capitol Oil parcel suggest rice farming through much of this time period. Farming does not appear to be occurring on the other four parcels. The structure at the northwest corner of the Yolo Basin parcel is in its current dilapidated condition.

The **2009 through 2012** aerial photographs show the five parcels and the surrounding area largely in their current condition. Farming is occurring on the Capitol Oil parcel and the eastern portion of the Laurel G parcel. Farming does not appear to be occurring on the other three parcels. A new structure is visible along the northwest border of the Capitol Oil parcel; Mr. Brennan stated that this was a workshop that was later removed. Natural gas well 051, identified in Figure 1-3, is visible in the northwest portion of the Capitol Oil parcel.

The **2014** aerial photograph shows the five parcels and the surrounding area largely in their current condition. Farming is occurring on the Capitol Oil parcel and possibly the eastern portion of the Laurel G parcel. Farming does not appear to be occurring on the other three parcels. The structure previously along the northwest border of the Capitol Oil parcel has been removed. The surface portions of natural gas well 051, identified in Figure 1-3, have been removed and its surface disturbance almost gone due to farming activity.

The **2016 and 2018** aerial photographs show the five parcels and the surrounding area largely in their current condition. Farming is occurring during 2016 on the Capitol Oil parcel and possibly the eastern portion of the Laurel G parcel. Farming does not appear to be occurring on the other three parcels. A structure consistent with the storage trailer observed during the site reconnaissance is visible along the northwest border of the Capitol Oil parcel. The trailer is not present in the 2018 aerial photograph.

Historical Topographic Maps

Historical topographic maps are available for various portions of the subject property for the years 1906, 1908, 1952, 1968, 1973, 1993, and 2012, and are included in Appendix B.

The **1906 and 1908** topographic maps show the five parcels as undeveloped, with no structures. Marshland is shown along the east side of the five parcels.

The **1952** topographic map shows a number of irrigation ditches crossing the five parcels. The building that is the current clubhouse is present. The present-day Roads 155 and 107 are present. One irrigation pump is shown in the northwest corner of the Laurel G parcel. The West Cut channel is shown just east of the future alignment of the present-day Sacramento River Deep Water Ship Channel.

The **1968, 1973, and 1993** topographic maps show the present-day Sacramento River Deep Water Ship Channel and the Toe Drain along the east side of the five parcels. Three structures are shown along the northwest border of the Capitol Oil parcel.

The **2012** topographic map is a simplified topographic map that does not show structures.

Oil and Gas Well Records

The oil and natural gas well database operated by the California Geologic Energy Management Division was searched for records regarding oil and natural gas wells drilled on the six parcels within the subject property; the results are summarized in **Table 4-1** and the well locations shown in Figure 1-3 (CalGEM 2021). Twenty-five natural gas wells were drilled on five of the six parcels between 1955 and 2006; no wells were reported on the southernmost property, the Williams parcel. The well depths were typically more than 8,000 feet deep. Fifteen of the wells did not produce economically viable volumes of natural gas and were plugged shortly after drilling. Ten of the wells produced economically viable volumes of natural gas between December 1978 and December 2010. All of the natural gas wells had ceased production and had been plugged by the end of 2012.

TABLE 4-1
NATURAL GAS WELLS

API Well Number	Drill Start Date	First Production	Last Production	Plug Date	Depth to Cutoff in Feet
0411300195	06/17/1955	None	None	07/19/1955	16
0411320047	12/07/1968	None	None	12/28/1968	Unclear
0411320083	11/29/1969	None	None	07/01/1974	4
0411320097	06/25/1970	None	None	07/22/1970	Unclear
0411320116	08/20/1971	None	None	09/10/1971	5
0411320141	05/18/1972	None	None	05/25/1972	Unclear
0411320355	07/28/1975	None	None	08/27/1975	Unclear
0411320497	07/01/1978	None	None	07/18/1978	5
0411320510	09/01/1978	Dec-78	Sep-90	02/23/1991	5
0411320537	05/27/1979	None	None	07/21/1988	5
0411320559	09/27/1979	Apr-80	Sep-84	10/12/1984	5
0411320564	09/08/1979	Apr-80	Aug-86	11/05/1986	5
0411320594	08/20/1980	None	None	09/14/1980	5
0411320598	08/03/1980	Apr-81	Aug-88	10/29/1988	5
0411320609	09/16/1980	Apr-81	Apr-90	04/19/1990	5
0411320654	10/14/1981	Jul-82	Feb-87	06/23/1987	5
0411320723	10/19/1982	Nov-83	Mar-90	04/24/1990	5
0411320763	10/08/1983	Jul-84	Jan-87	06/24/1987	5
0411320782	04/26/1984	None	None	05/07/1984	5
0411320787	05/08/1984	Sep-84	May-91	05/23/1991	5
0411320797	07/18/1984	None	None	08/02/1984	5
0411320933	09/28/1989	None	None	10/03/1989	5
0411321051	10/01/1993	Nov-93	Dec-10	08/09/2012	6
0411321081	08/03/1995	None	None	08/16/1995	5
0411321258	09/09/2006	None	None	09/19/2006	5

Notes:

API = American Petroleum Institute
Yellow highlighting indicates wells that produced natural gas; the other wells never produced natural gas.

SOURCE: CalGEM 2021, 2024

Natural gas wells are abandoned by filling the well with cement grout from the bottom of the well to the ground surface. The top portion of the grout plug and well casing is then removed to some subsurface depth and the remaining casing has a metal plate welded on to the top of the remaining well casing. As summarized in Table 4-1, the tops of almost all of the wells were cut to 5 feet below grade, with a few variations. The wells shown in yellow in Figure 1-3 are wells for which records are unclear about the depths to the top of the abandoned wells. As noted in Section 5.0, *Site Reconnaissance*, no visible evidence of any of the natural gas wells was observed at the surface, including those wells for which the abandonment records are unclear.

Yolo County Agricultural Commissioner Pesticide Use Records

The Yolo County Agricultural Commissioner's Pesticide Use Records were checked for the use of pesticides and herbicides on the five original parcels (Yolo County Agricultural Commissioner 2021). The county office maintains records from 2014 to 2020; the available records did not identify any pesticide or herbicide use on the five properties. Note that the use of legacy pesticides such as dichlorodiphenyltrichloroethane (DDT) was banned in 1972 and chlordane was banned for use on food crops in 1978. Modern (post-1970s) pesticides and herbicides have a short life span of 1 year or less, and do not leave residual toxic compounds. Subsequent to the 2021 Phase I environmental site assessment, ESA conducted a Phase II soil sampling investigation to test whether legacy pesticides and/or herbicides are present in soil at the five original parcels (ESA 2021b). The results indicated chemical concentrations of metals are within background levels; and pesticides, herbicides, total organic carbon, and acid soluble sulfide are either not detected above reporting limits or are present at concentrations below screening criteria (ESA 2021b). **Therefore, the residual chemicals in soil from historical and present use of the five original parcels for agriculture is not expected to adversely affect the proposed wetland habitat, and the residual levels of agricultural chemicals are not considered a REC, HREC, or CREC**.

The Phase I Assessment conducted for the Lucky Five South parcel did not check for pesticide use records. However, given that the timeline for agricultural use on this parcel is similar and overlaps with agricultural practices on the five original parcels, it is likely that concentrations of legacy pesticides and/or herbicides would be similar to those of the five original parcels described above.

4.4 Physical Setting

The following sections provide information about the physical setting of the proposed Project area. Geotechnical information is not a required element of ASTM E1527-21 Phase I assessments and is not included in this Phase I assessment.

Topography. The Project area is within the Clarksburg and Saxon, California, 7.5-minute quadrangles. The five properties assessed in this report are located on reclaimed wetlands and floodplain west of the Sacramento River in Yolo County. Elevations range from about 5 to 15 feet above mean sea level. The topographic relief is flat.

Geology, Soils, and Hydrology. The surface geology consists of Quaternary[1] to recent basin deposits of alluvium composed of clays, silts, and organic matter. The soil units include the Clear Lake Soils and the Capay Soils, which consist of clay loam, clay, and silty clay (NRCS 2020). The levees are composed of undocumented and unengineered fill of unknown origin and composition.

[1] Quaternary time is from the present to 1.6 million years ago.

SECTION 5.0
Site Reconnaissance

5.1 Methodology and Limiting Conditions

Michael Burns, PG, CEG, CHG, from ESA conducted the site reconnaissance on February 23 and June 9, 2021, to assess present conditions. Weather at the time of the site reconnaissance was sunny. The site conditions discussed below are limited to readily apparent environmental conditions observed for the five original parcels. The Phase I environmental site assessment for the Lucky Five South parcel was conducted by others (EnviroApplications 2024).

5.2 General Site Setting

The five properties border the Sacramento River Deep Water Ship Channel and its Toe Drain (also known as Prospect Slough) to the east, and are within the Yolo Bypass floodway (Figure 1-1). Farmland and wetland areas surround the five properties on the north, west, and south. Various levees and sloughs are along the borders of each of the parcels and some levees and sloughs cross through some of the parcels (Figures 1-2 and 1-3). Access to the parcels from the west is from Interstate 80, east on Midway Road, south on Levee Road, east on Road 155 to Road 107 and the five parcels. The parcels are described below from north to south.

5.3 Site Observations

Figures 1-2 and 1-3 show the five properties and identify items of interest observed during the site reconnaissance. Photographs of typical conditions and items of interest accompany the descriptions of observed conditions.

Capitol Oil Parcel

The Capitol Oil parcel was observed to be largely covered with low grass and weeds. A number of low levees crisscross the property (Figure 1-2). A few sloughs with water and bulkhead gates to control water flow border or cross through the parcel. Some of the low areas in the eastern portions of the parcel were flooded. Three irrigation pumps are present along the parcel border (Figure 1-2). As discussed previously, historical aerial photographs and interview information indicate that this parcel was historically used for agriculture until 2016. No evidence of recent farming was observed. The Capitol Oil parcel previously had 17 natural gas wells at the locations shown in Figure 1-3. The locations of the wells were visually checked for evidence of the well heads. As discussed previously, well records for the wells shown in yellow are unclear as to whether the well heads were cut off at 5 feet below the ground surface, as per the typical practice. However, no evidence of any wellheads was observed at any of the former well locations. The photographs on the next page show typical views of the Capitol Oil parcel.

Abandoned farming equipment and the foundation of a former building were observed along the northwest border of the parcel at the location shown in Figure 1-2. One open storage trailer was observed, along with abandoned farming equipment and supplies. No chemicals, stained floors or soil, pooled liquids, unusual odors, or stressed vegetation were observed.

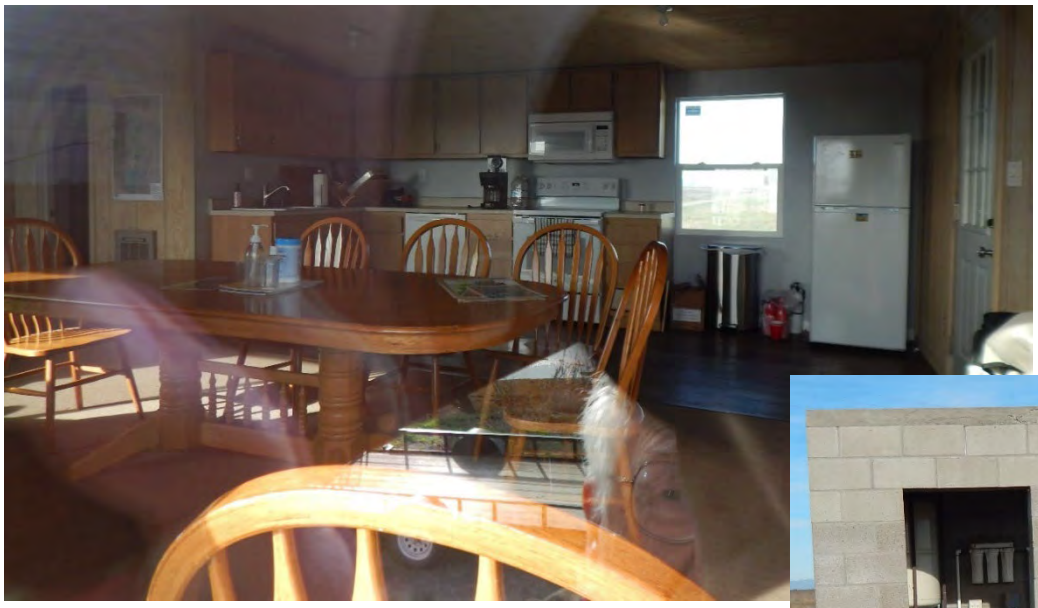
The photographs below show the irrigation pump at the western end of the Capitol Oil parcel, which is typical of the several irrigation pumps on the five properties. Some of the pumps have a 5-gallon bucket of irrigation pump oil next to the pump. None of the irrigation pumps had stains on the equipment or surrounding soil. Also note the transformer on the power pole near the irrigation pump. The transformer has a blue “no PCBs” sticker, indicating that the transformers in the area do not contain transformer oil with PCBs.

Laurel G Parcel

The Laurel G parcel is largely similar to the Capitol Oil parcel, with the exception of the southwest corner as described below. Most of this parcel was observed to be covered with low grass and weeds, a number of low levees and sloughs with bulkhead gates crisscross the property, and one large irrigation pump is located along the southern parcel border (Figure 1-2).

As discussed previously, the Laurel G parcel has historically been used for agriculture, but there was no obvious evidence of recent farming activity. Several pieces of abandoned farming equipment were observed in scattered locations. The Laurel G parcel previously had five natural gas wells at the locations shown in Figure 1-3. The locations of the wells were visually checked for evidence of the well heads. No evidence of any well heads was observed at any of the former well locations. The photographs below show typical views of the Laurel G parcel.

The southwest corner of the Laurel G parcel has a two-story duck hunting clubhouse, a concrete parking area, an irrigation pump in the slough just east of the clubhouse, and an active domestic water well just north of the clubhouse. Several pieces of abandoned farming equipment were observed scattered around the area. The septic tank and leach field for the clubhouse are located just west of the clubhouse. The photographs below show the clubhouse. No stained pavement or soil, stressed vegetation, or chemical containers were observed. As discussed previously, aerial photographs indicate that the clubhouse dates to at least 1957. This predates the national ban on the use of asbestos and lead-based paint in building materials. Although the clubhouse may contain these materials, the clubhouse is not proposed for removal.



Clubhouse ↑

Domestic well →

The photographs below show the irrigation pump at the southwestern portion of the Laurel G parcel. The clubhouse is just beyond the irrigation well; the domestic well is inside the well house visible to the right. The transformer on the power pole has a “no PCBs” sticker. The irrigation pump did not have stains on the equipment or surrounding soil.

Yolo Basin Parcel

With the exception of the northwest corner as described below, the Yolo Basin parcel is currently undeveloped grasslands and wetlands, as shown in the following photographs. A number of low levees and sloughs with bulkhead gates crisscross the parcel. As discussed previously, aerial photographs indicate that this parcel was farmed in 1953, 1957, and 1968. Several pieces of abandoned farming equipment and pieces of water pipe were observed scattered around the parcel. The Yolo Basin parcel previously had one natural gas well at the location shown in Figure 1-3, which appears to have been either within or along the side of the present-day Toe Drain. The location of the natural gas well was checked for evidence of the well head; no evidence of the well head was observed.

The northwest corner of the Yolo Basin parcel, adjacent to the Laurel G parcel, has the dilapidated remains of a former restaurant, including one rusted stove, a bathtub, an outdoor toilet, and other debris, as shown in the photographs below. The foundation is present and brick support columns remain standing; the rest of the structure and its contents are scattered around the area. No chemical containers, stained foundation or soil, unusual odors, or stressed vegetation was observed. The presence of the outhouse indicates that a septic tank and leach field may be present, unless the sanitary waste was routed to the septic system on the Laurel G parcel to the north.

Kleary Parcel

The Kleary parcel is currently undeveloped grassland and wetlands, as shown in the photographs below. Much of the parcel was underwater on February 23, 2021. A number of low levees and sloughs with bulkhead gates crisscross the property. As discussed previously, this property was farmed in 1953, 1957, and 1968. Several pieces of abandoned farming equipment were observed scattered around the parcel. No natural gas wells are known to have been present within this parcel.

One locked storage trailer with several nearby pieces of abandoned farm equipment are located along the east side of the Kleary parcel along the Toe Drain, as shown in the photographs below. No chemical containers, stained soil, stressed vegetation, or unusual odors were noted; the storage locker was locked; and the inside of the container was not observed.

The photograph below shows a typical bulkhead or tidal gate that controls the flow of water. Flow is controlled by adding or removing wooden boards.

Williams Parcel

The Williams parcel is currently undeveloped grasslands and wetlands, as shown in the photographs below. A number of low levees and sloughs with bulkhead gates crisscross the parcel. As discussed previously, this property was farmed in 1953, 1957, and 1968. Several pieces of abandoned farming equipment were observed scattered around the area. No natural gas wells are known to have been present within this parcel.

A fishing spot and a tidal gate are present along the east side of the Williams parcel along the Toe Drain, as shown in the photographs below.

5.4 Results of Site Inspection

There were no observations of chemical spills, underground or aboveground storage tanks, waste pits or ponds, stained soil or pavement, unusual odors, or stressed vegetation. A few 5-gallon buckets of irrigation pump oil were observed next to some of the irrigation pumps; no oil spills were observed on the pumps or the soil around the pump areas. No evidence of the former natural gas wells was observed at the surface at any of the reported former well locations. **No RECs, HRECs, or CRECs were observed relative to hazardous materials, hazardous waste, or chemical use, storage, or disposal**.

Several business environmental risks were observed relative to the proposed excavation of channels. Abandoned farm equipment was observed at scattered locations within the five original parcels and may need to be moved to excavate the channels. One to three septic tank and leach field sanitary waste systems are associated with the clubhouse on the Laurel G parcel, the possible former farm residence on the Capitol Oil parcel, and the former restaurant on the Yolo Basin parcel. The proposed Project's design will need to locate the channels away from the septic tanks and leach fields unless the sanitary waste systems are to be removed.

Similar to this Phase I assessment, the Phase I assessment conducted for the Lucky Five South parcel also did not identify any RECs (EnviroApplications 2024).

SECTION 6.0
User-Provided Information

The site conditions and history were discussed by telephone with Mr. John Brennan, the local EIP real estate manager. The results of the discussion have been incorporated into the previous sections.

Mr. Brennan stated that sanitary waste from the clubhouse is routed to a septic tank and leach field located just west of the clubhouse. Note that the clubhouse and its septic tank and leach field would not be disturbed by the proposed Project.

Mr. Brennan stated that the dilapidated structure just south of the clubhouse was previously a restaurant. As noted previously, historical aerial photographs indicate that the restaurant was operational through 1993, but not as of 2003. Mr. Brennan does not know where the septic tank and leach field for the former restaurant are located or whether its sanitary waste was routed to the system used by the clubhouse.

Mr. Brennan noted that the structures present along the northwest border of the Capitol Oil parcel visible in the 2009 to 2012 historical aerial photographs were a work shop that was later removed. He has no knowledge of the use of the three to four former structures visible in the 1963 to 1982 historical aerial photographs.

Mr. Brennan stated that historical farming has consisted of rice and alfalfa farming, and possibly hay farming. The last farming activity occurred in 2016 on the Capitol Oil and Laurel G parcels. In general, rice farming was more common on the eastern portions of the five parcels next to the Toe Drain, while alfalfa and hay farming was more common on the western portions of the five parcels. He does not have knowledge of the historical use of fertilizers, pesticides, and/or herbicides, if any.

Mr. Brennan stated that the five parcels have never had any underground storage tanks and no hazardous materials spills or violations have been reported.

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SECTION 7.0
Findings and Opinions

7.1 Findings and Opinions

A commercial database service searched relevant federal, State, and local regulatory agency lists for listings of the properties assessed in this report, and nearby properties within the appropriate ASTM 1527 standard search distances. In addition, regulatory agency websites were checked to provide additional information about the proposed Project area. There were no listings of any kind for the six properties or adjacent properties.

The five original parcels were inspected on February 23 and June 9, 2021. The parcels have a number of levees, sloughs, irrigation pumps, and bulkhead gates to control water flow. The Capitol Oil and Laurel G parcels consist of flat fields that have been fallow since 2016 and historically have been farmed for rice, alfalfa, and possibly hay; some areas were flooded during the inspection. A clubhouse for a duck hunting club is present on the southwest corner of the Laurel G parcel; the remaining area of the Capitol Oil and Laurel G parcels is undeveloped grassland and wetlands. The Yolo Basin parcel has the dilapidated remains of a former small restaurant consisting of the foundation, some brick pillars, and scattered debris consisting of pieces of the roof, walls, and restaurant contents (e.g., a stove, a bathtub, a toilet, and other debris); the rest of the parcel is undeveloped grassland and wetlands. The Kleary and Williams parcels are undeveloped flat grassland and wetlands. Abandoned farm equipment is in scattered locations on all five parcels. The separate Phase I assessment conducted for the Lucky Five South parcel observed fallow undeveloped land with no structures.

As noted in the regulatory records search summarized below, 25 natural gas wells were previously present on five of the six parcels (none were reported on the southernmost property, the Williams parcel). No visible evidence of any natural gas well was observed at any of the reported well locations. There were no observations of chemical spills, underground or aboveground storage tanks, waste pits or ponds, stained soil, unusual odors, or stressed vegetation. **No RECs, HRECs, or CRECs were observed relative to hazardous materials, hazardous waste, or chemical use, storage, or disposal.**

A commercial database service searched relevant federal, State, and local regulatory agency lists for listings of the parcels assessed in this report, and for nearby properties within the appropriate ASTM 1527 standard search distances. In addition, regulatory agency websites were checked to provide additional information. The subject property did not appear on any regulatory agency lists. **The search of regulatory records did not reveal any RECs, HRECs, or CRECs**. The search of regulatory records did indicate the former presence of 25 natural gas wells, as described below.

Twenty-five plugged natural gas wells are reported on five of the six parcels (Figure 1-3). Ten of the wells produced natural gas between December 1978 and December 2010; all of the gas wells had been plugged before the end of 2012. Oil and natural gas wells are abandoned by plugging the well with a cement grout from the bottom of the well to the ground surface. The upper portion of the grout plug and well casing is typically removed and the ground area covered with soil, leaving no surface indication of the former gas well. Well abandonment records indicate that 20 of the natural gas wells had at least the top 5 feet of the well casing and grout plug cut off. The abandonment records for four gas wells are unclear as to cut-off depths; one other well is recorded as cut off to 4 feet below grade. However, as noted during the site reconnaissance, no visible surface evidence of any gas well was observed, and it is assumed that the four wells with unclear records were also abandoned by cutting off the top 5 feet of the well. **Though not a REC, CREC, or HREC, the potential presence of a grout plug and well casing to within 5 feet of the ground surface is considered a business environmental risk because excavation for tidal channels my encounter the shallowest portion of the grout plugs and well casings, depending on the location and the depth of the tidal channel excavations**.

The clubhouse has a septic tank and leach field located just west of the clubhouse. A restaurant was previously present on the northwest corner of the Yolo Basin parcel, and the foundation and dilapidated remains are still present; it is unknown whether sanitary waste from the former restaurant was routed to the clubhouse septic tank or whether it had its own septic tank and leach field. Evidence of a former set of structures is present along the northwestern border of the Capitol Oil parcel and may have been a former residence; it is assumed that this location also had a septic tank and leach field, but the location and status is unknown. **Though not a REC, CREC, or HREC, the presence of septic tanks and leach fields is considered a business environmental risk because excavation for tidal channels may encounter the sanitary waste systems**.

The EIP real estate manager indicated that farming activity on the five parcels historically consisted of rice and alfalfa farming, and possibly some hay farming. The last farming occurred in 2016, and only on the Capitol Oil parcel. The real estate manager did not have knowledge of which pesticides, herbicides, and/or fertilizers may have been used, if any. The Yolo County Agricultural Commissioner's Pesticide Use Records were checked for the use of pesticides and herbicides on the five properties (Yolo County Agricultural Commissioner, 2021). The county office maintains records from 2014 to 2020; the available records did not identify any pesticide or herbicide use on the five properties. The use of DDT was banned in 1972 and chlordane was banned for use on food crops in 1978. Modern (post-1970s) pesticides and herbicides have a short life span of 1 year or less, and do not leave residual toxic compounds. Subsequent to the initial 2021 Phase I environmental site assessment, ESA conducted a Phase II soil sampling investigation to test whether legacy pesticides and/or herbicides are present in soil at the five original parcels. The results indicated chemical concentrations of metals are within background levels; and pesticides, herbicides, total organic carbon, and acid soluble sulfide are either not detected above reporting limits or are present at concentrations below screening criteria (ESA 2021b). **Therefore, the residual chemicals in soil from historical and present use of the five original parcels for agriculture is not expected to adversely affect the proposed wetland habitat, and the residual levels of agricultural chemicals are not a REC, HREC, or CREC**.

The Phase I Assessment conducted for the Lucky Five South parcel did not check for pesticide use records. The timeline for agricultural use on this parcel is similar and overlaps with agricultural practices on the five original parcels, and it is therefore likely that concentrations of legacy pesticides and/or herbicides would be similar to those of the five original parcels described above. **However, given the potential REC caused by legacy pesticides such as DDT and chlordane, it is recommended that Phase II soil sampling be conducted on the Lucky Five South parcel prior to any construction**.

7.2 Data Gaps

ESA attempted to obtain reasonably ascertainable information regarding the five parcels assessed and the surrounding environs. There were no data gaps identified that could affect the identification of RECs, HRECs, or CRECs.

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SECTION 8.0
Report Authors and Qualifications

8.1 Report Authors and Signatures

This section includes qualification statements of the environmental professionals responsible for conducting the Phase I assessment and preparing this report.

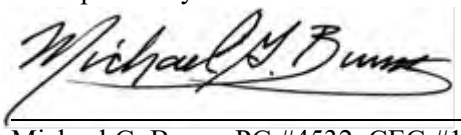
Mr. Michael Burns, PG, CEG, CHG, of ESA conducted the data review for the subject property, conducted the site reconnaissance, and prepared the Phase I environmental site assessment report. Mr. Burns has over 30 years of experience in environmental site investigations, characterizations, and assessments, including Phase I environmental site assessments.

The work conducted and report written by Mr. Burns were reviewed by Mr. Luke Evans. Mr. Evans has over 20 years of experience in environmental site investigations, characterizations, and assessments, including Phase I environmental site assessments.

Mr. Burns declares that, to the best of his professional knowledge and belief, he meets the definition of "Environmental Professional" as defined in 40 CFR 312.10. Mr. Evans declares that, to the best of his professional knowledge and belief, he meets the definition of "Environmental Professional" as defined in 40 CFR 312.10.

Mr. Burns has the specific qualifications based on education, training, and experience to assess parcels of the nature, history, and setting of these parcels. With the assistance of Mr. Evans, he has developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

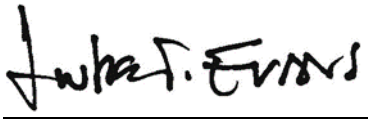
Principal Analyst/Reviewer:



November 2024

Michael G. Burns, PG #4532, CEG #1846, CHG #280

Senior Reviewer:



November 2024

Luke Evans, Program Manager

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SECTION 9.0
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APPENDIX A

Regulatory Records Database Report

APPENDIX A

Regulatory Records Database Report

GeoSearch
On time. On target. In touch.™

Radius Report

GeoLens by GeoSearch

Target Property:

Tides End
Road 107
Clarksburg, Yolo County, California 95620

Prepared For:

Environmental Science Assoc-San Francisco

Order #: 161369
Job #: 397577
Project #: D201801197.01
PO #: 201801197.01-1.3
Date: 02/16/2021

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Unlocatable Report . . . . . See Attachment

Zip Report . . . . . See Attachment

Disclaimer

This report was designed by GeoSearch to meet or exceed the records search requirements of the All Appropriate Inquiries Rule (40 CFR ï¿½312.26) and the current version of the ASTM International E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process or, if applicable, the custom requirements requested by the entity that ordered this report. The records and databases of records used to compile this report were collected from various federal,state and local governmental entities. It is the goal of GeoSearch to meet or exceed the 40 CFR ï¿½312.26 and E1527 requirements for updating records by using the best available technology. GeoSearch contacts the appropriate governmental entities on a recurring basis. Depending on the frequency with which a record source or database of records is updated by the governmental entity, the data used to prepare this report may be updated monthly, quarterly, semi-annually, or annually.

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Target Property Summary

Target Property Information

Tides End
Road 107
Clarksburg, California 95620

Coordinates
Area centroid (-121.63183, 38.4027843)
3 feet above sea level

USGS Quadrangle
Liberty Island, CA
Clarksburg, CA
Saxon, CA

Geographic Coverage Information

County/Parish: Yolo (CA)
ZipCode(s):
Clarksburg CA: 95612
Dixon CA: 95620

Database Summary

FEDERAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSCA	0	0	TP/AP
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	TP/AP
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	TP/AP
RCRA SITES WITH CONTROLS	RCRASC	0	0	TP/AP
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR	RCRAGR09	0	0	0.1250
RESOURCE CONSERVATION & RECOVERY ACT - NON-GENERATOR	RCRANGR09	0	0	0.1250
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - NON-CORRACTS TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM	SEMS	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM ARCHIVED SITE INVENTORY	SEMSARCH	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - SUBJECT TO CORRECTIVE ACTION FACILITIES	RCRASUBC	0	0	1.0000

SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	TP/AP
BIENNIAL REPORTING SYSTEM	BRS	0	0	TP/AP
CERCLIS LIENS	SFLIENS	0	0	TP/AP
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
EPA DOCKET DATA	DOCKETS	0	0	TP/AP
ENFORCEMENT AND COMPLIANCE HISTORY INFORMATION	ECHOR09	0	0	TP/AP
FACILITY REGISTRY SYSTEM	FRSCA	0	0	TP/AP

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR09	0	0	TP/AP
HAZARDOUS WASTE COMPLIANCE DOCKET FACILITIES	HWCD	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	0	0	TP/AP
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDESR09	0	0	TP/AP
PCB ACTIVITY DATABASE SYSTEM	PADS	0	0	TP/AP
PERMIT COMPLIANCE SYSTEM	PCSR09	0	0	TP/AP
SEMS LIEN ON PROPERTY	SEMSLIENS	0	0	TP/AP
SSEHRI PFAS CONTAMINATION SITES	SSEHRIPFAS	0	0	TP/AP
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	TP/AP
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	TP/AP
TOXICS RELEASE INVENTORY	TRI	0	0	TP/AP
ALTERNATIVE FUELING STATIONS	ALTFUELS	0	0	0.2500
FEMA OWNED STORAGE TANKS	FEMAUST	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
INTEGRATED COMPLIANCE INFORMATION SYSTEM DRYCLEANERS	ICISCLEANERS	0	0	0.2500
MINE SAFETY AND HEALTH ADMINISTRATION MASTER INDEX FILE	MSHA	0	0	0.2500
MINERAL RESOURCE DATA SYSTEM	MRDS	0	0	0.2500
OPEN DUMP INVENTORY	ODI	0	0	0.5000
SURFACE MINING CONTROL AND RECLAMATION ACT SITES	SMCRA	0	0	0.5000
URANIUM MILL TAILINGS RADIATION CONTROL ACT SITES	USUMTRCA	0	0	0.5000
DEPARTMENT OF DEFENSE SITES	DOD	0	0	1.0000
FORMER MILITARY NIKE MISSILE SITES	NMS	0	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM	FUSRAP	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000
SUB-TOTAL		0	0	

STATE (CA) LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
DTSC DEED RESTRICTIONS	DTSCDR	0	0	TP/AP
ABOVE GROUND STORAGE TANKS	ABST	0	0	0.2500
ABOVEGROUND STORAGE TANKS PRIOR TO JANUARY 2008	AST2007	0	0	0.2500
HISTORICAL UNDERGROUND STORAGE TANKS	HISTUST	0	0	0.2500
STATEWIDE ENVIRONMENTAL EVALUATION AND PLANNING SYSTEM	SWEEPS	0	0	0.2500
UNDERGROUND STORAGE TANKS	USTCUPA	0	0	0.2500
BROWNFIELD SITES	BF	0	0	0.5000
CALSITES DATABASE	CALSITES	0	0	0.5000
GEOTRACKER CLEANUP SITES	CLEANUPSITES	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS	LUST	0	0	0.5000
SOLID WASTE INFORMATION SYSTEM SITES	SWIS	0	0	0.5000
VOLUNTARY CLEANUP PROGRAM	VCP	0	0	0.5000
ENVIROSTOR CLEANUP SITES	ENVIROSTOR	0	0	1.0000
ENVIROSTOR PERMITTED AND CORRECTIVE ACTION SITES	ENVIROSTORPCA	0	0	1.0000

SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
CALIFORNIA HAZARDOUS MATERIAL INCIDENT REPORT SYSTEM	CHMIRS	0	0	TP/AP
CLANDESTINE DRUG LABS	CDL	0	0	TP/AP
EMISSIONS INVENTORY DATA	EMI	0	0	TP/AP
HAZARDOUS WASTE TANNER SUMMARY	HWTS	0	0	TP/AP
LAND DISPOSAL SITES	LDS	0	0	TP/AP
MILITARY CLEANUP SITES	MCS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM FACILITIES	NPDES	0	0	TP/AP
PFAS SAMPLING LOCATION SITES	PFAS	0	0	TP/AP
RECORDED ENVIRONMENTAL CLEANUP LIENS	LIENS	0	0	TP/AP
CALIFORNIA MEDICAL WASTE MANAGEMENT PROGRAM FACILITY LIST	MWMP	0	0	0.2500
DTSC REGISTERED HAZARDOUS WASTE TRANSPORTERS	DTSCHWT	0	0	0.2500
DRY CLEANER FACILITIES	CLEANER	0	0	0.2500

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
MINES LISTING	MINES	0	0	0.2500
SPILLS, LEAKS, INVESTIGATION & CLEANUP RECOVERY LISTING	SLIC	0	0	0.2500
CORTESE LIST	CORTESE	0	0	0.5000
EXPEDITED REMOVAL ACTION PROGRAM SITES	ERAP	0	0	0.5000
HISTORICAL CORTESE LIST	HISTCORTESE	0	0	0.5000
LISTING OF CERTIFIED DROPOFF, COLLECTION, AND COMMUNITY SERVICE PROGRAMS	DROP	0	0	0.5000
LISTING OF CERTIFIED PROCESSORS	PROC	0	0	0.5000
NO FURTHER ACTION DETERMINATION	NFA	0	0	0.5000
RECYCLING CENTERS	SWRCY	0	0	0.5000
REFERRED TO ANOTHER LOCAL OR STATE AGENCY	REF	0	0	0.5000
SITES NEEDING FURTHER EVALUATION	NFE	0	0	0.5000
WASTE MANAGEMENT UNIT DATABASE	WMUDS	0	0	0.5000
TOXIC PITS CLEANUP ACT SITES	TOXPITS	0	0	1.0000

SUB-TOTAL		0	0	

Database Summary

LOCAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
YOLO COUNTY LEAKING STORAGE TANKS	YCLST	0	0	0.5000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
YOLO COUNTY UNDERGROUND STORAGE TANKS	YCUST	0	0	0.2500
SUB-TOTAL		0	0	

TRIBAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR09	0	0	0.2500
ILLEGAL DUMP SITES ON THE TORRES MARTINEZ RESERVATION	TORRESDUMPSITES	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR09	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	

TOTAL		0	0	

Database Radius Summary

FEDERAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AIRSAFS	0.0200	0	NS	NS	NS	NS	NS	0
BRS	0.0200	0	NS	NS	NS	NS	NS	0
CDL	0.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	0.0200	0	NS	NS	NS	NS	NS	0
EC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
ECHOR09	0.0200	0	NS	NS	NS	NS	NS	0
ERNSCA	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
FRSCA	0.0200	0	NS	NS	NS	NS	NS	0
HMIRSR09	0.0200	0	NS	NS	NS	NS	NS	0
HWCD	0.0200	0	NS	NS	NS	NS	NS	0
ICIS	0.0200	0	NS	NS	NS	NS	NS	0
ICISNPDES	0.0200	0	NS	NS	NS	NS	NS	0
LUCIS	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
MLTS	0.0200	0	NS	NS	NS	NS	NS	0
NPDESR09	0.0200	0	NS	NS	NS	NS	NS	0
PADS	0.0200	0	NS	NS	NS	NS	NS	0
PCSR09	0.0200	0	NS	NS	NS	NS	NS	0
RCRASC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
SEMSLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SFLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SSEHRIPFAS	0.0200	0	NS	NS	NS	NS	NS	0
SSTS	0.0200	0	NS	NS	NS	NS	NS	0
TRI	0.0200	0	NS	NS	NS	NS	NS	0
TSCA	0.0200	0	NS	NS	NS	NS	NS	0
RCRAGR09	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
RCRANGR09	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
ALTFUELS	0.2500	0	0	0	NS	NS	NS	0
FEMAUST	0.2500	0	0	0	NS	NS	NS	0
HISTPST	0.2500	0	0	0	NS	NS	NS	0
ICISCLEANERS	0.2500	0	0	0	NS	NS	NS	0
MRDS	0.2500	0	0	0	NS	NS	NS	0
MSHA	0.2500	0	0	0	NS	NS	NS	0
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
DNPL	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NLRRCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
ODI	0.5000	0	0	0	0	NS	NS	0
RCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SEMS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SEMSARCH	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SMCRA	0.5000	0	0	0	0	NS	NS	0
USUMTRCA	0.5000	0	0	0	0	NS	NS	0
DOD	1.0000	0	0	0	0	0	NS	0
FUDS	1.0000	0	0	0	0	0	NS	0
FUSRAP	1.0000	0	0	0	0	0	NS	0
NLRRCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
NMS	1.0000	0	0	0	0	0	NS	0
NPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
PNPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRASUBC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RODS	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0

Database Radius Summary

STATE (CA) LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
CDL	0.0200	0	NS	NS	NS	NS	NS	0
CHMIRS	0.0200	0	NS	NS	NS	NS	NS	0
DTSCDR	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
EMI	0.0200	0	NS	NS	NS	NS	NS	0
HWTS	0.0200	0	NS	NS	NS	NS	NS	0
LDS	0.0200	0	NS	NS	NS	NS	NS	0
LIENS	0.0200	0	NS	NS	NS	NS	NS	0
MCS	0.0200	0	NS	NS	NS	NS	NS	0
NPDES	0.0200	0	NS	NS	NS	NS	NS	0
PFAS	0.0200	0	NS	NS	NS	NS	NS	0
ABST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
AST2007	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
CLEANER	0.2500	0	0	0	NS	NS	NS	0
DTSCHWT	0.2500	0	0	0	NS	NS	NS	0
HISTUST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
MINES	0.2500	0	0	0	NS	NS	NS	0
MWMP	0.2500	0	0	0	NS	NS	NS	0
SLIC	0.2500	0	0	0	NS	NS	NS	0
SWEEPS	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
USTCUPA	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CALSITES	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CLEANUPSITES	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CORTESE	0.5000	0	0	0	0	NS	NS	0
DROP	0.5000	0	0	0	0	NS	NS	0
ERAP	0.5000	0	0	0	0	NS	NS	0
HISTCORTESE	0.5000	0	0	0	0	NS	NS	0
LUST	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NFA	0.5000	0	0	0	0	NS	NS	0
NFE	0.5000	0	0	0	0	NS	NS	0
PROC	0.5000	0	0	0	0	NS	NS	0
REF	0.5000	0	0	0	0	NS	NS	0
SWIS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SWRCY	0.5000	0	0	0	0	NS	NS	0
VCP	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
WMUDS	0.5000	0	0	0	0	NS	NS	0
ENVIROSTOR	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
ENVIROSTORPCA	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
TOXPITS	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0

Database Radius Summary

LOCAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
YCUST	0.2500	0	0	0	NS	NS	NS	0
YCLST	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SUB-TOTAL		0	0	0	0	0	0	0

Database Radius Summary

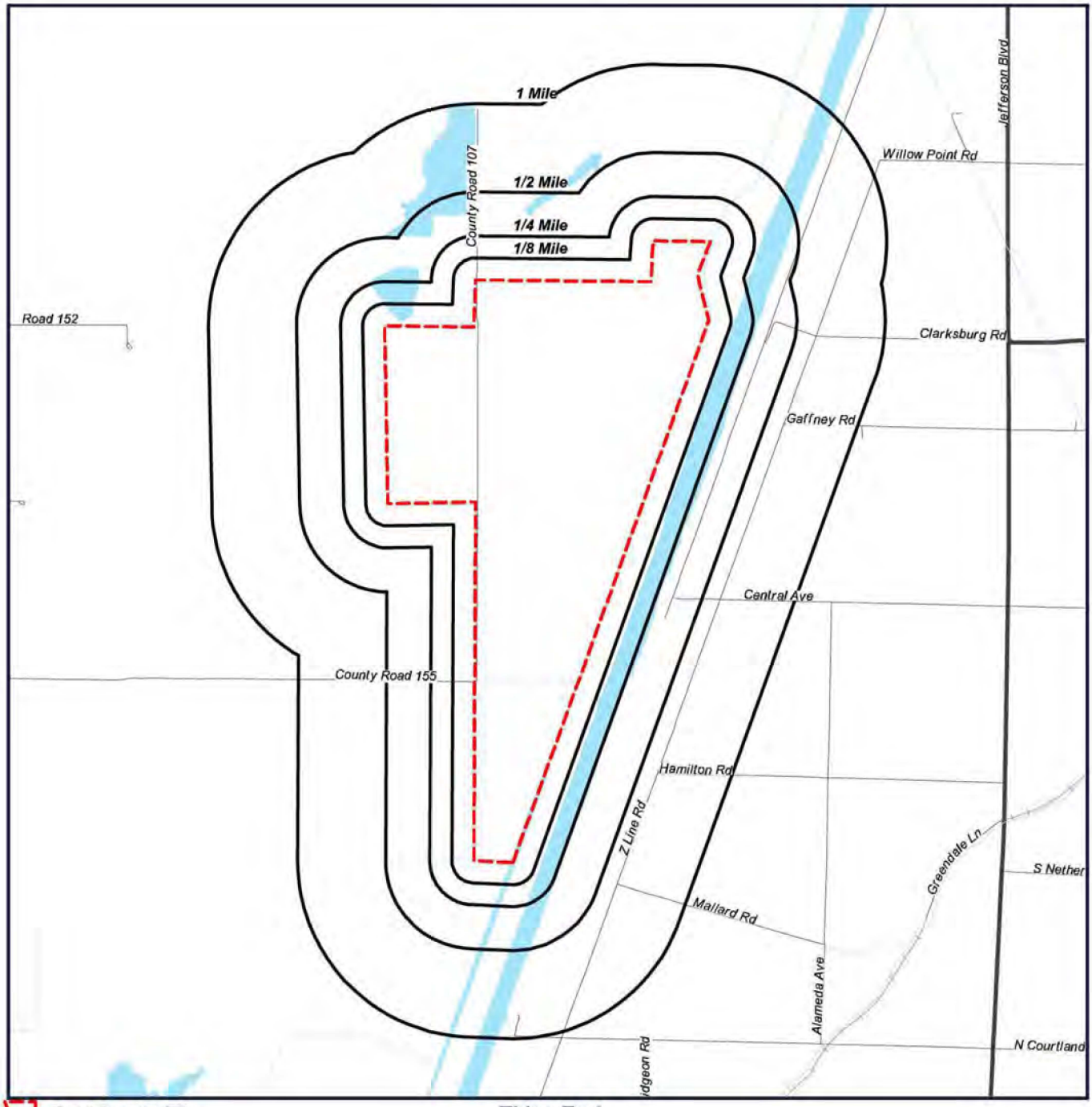
TRIBAL LISTING

Standard environmental records are displayed in ***bold****.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR09	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
LUSTR09	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODINDIAN	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
TORRESDUMPSITES	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
INDIANRES	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0
TOTAL		0	0	0	0	0	0	0

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1

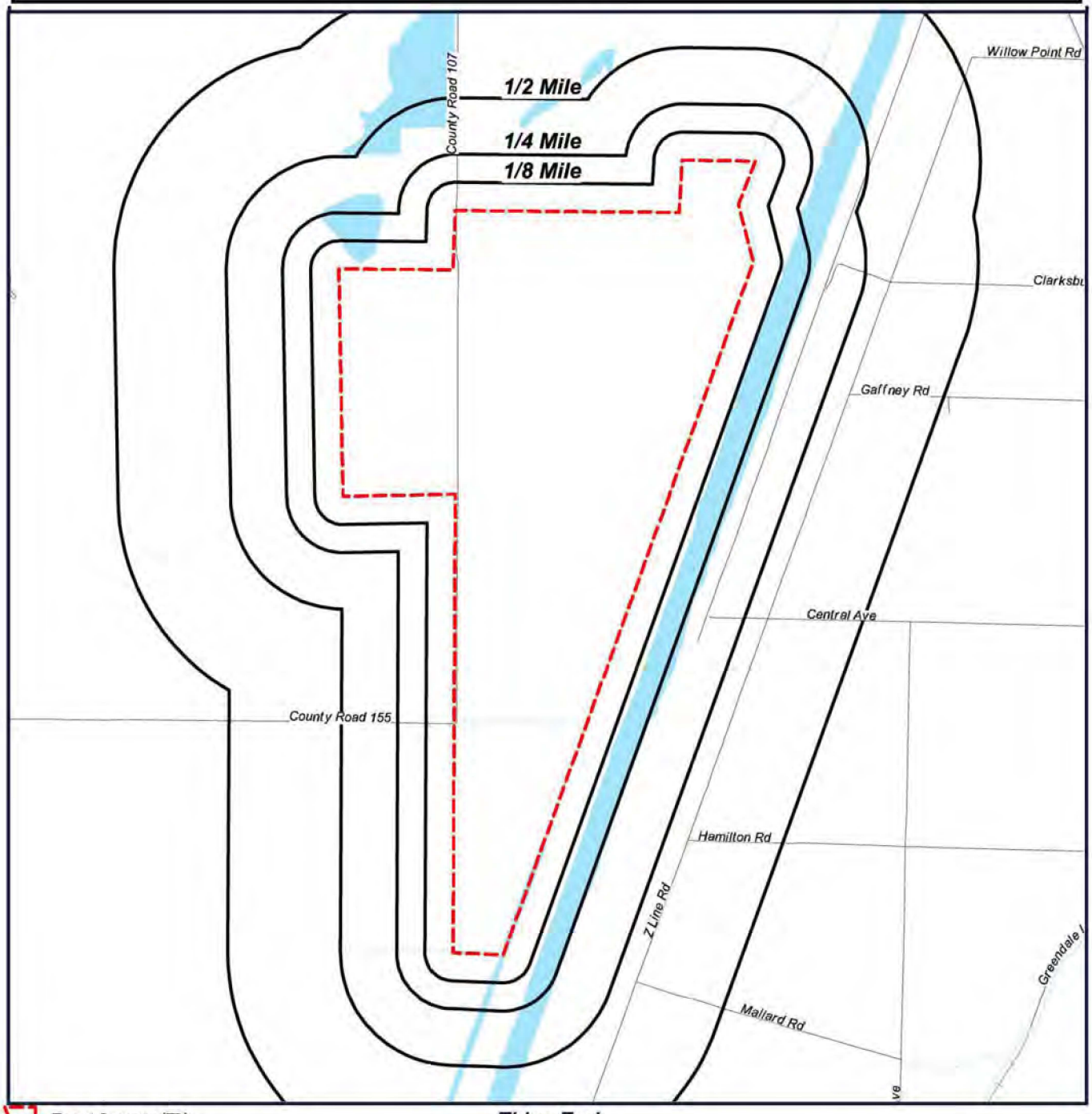


Tides End
Road 107
Clarksburg, California
95620

N
W E
S

0' 2300' 4600' 6900'
SCALE: 1" = 4600'

Radius Map 2

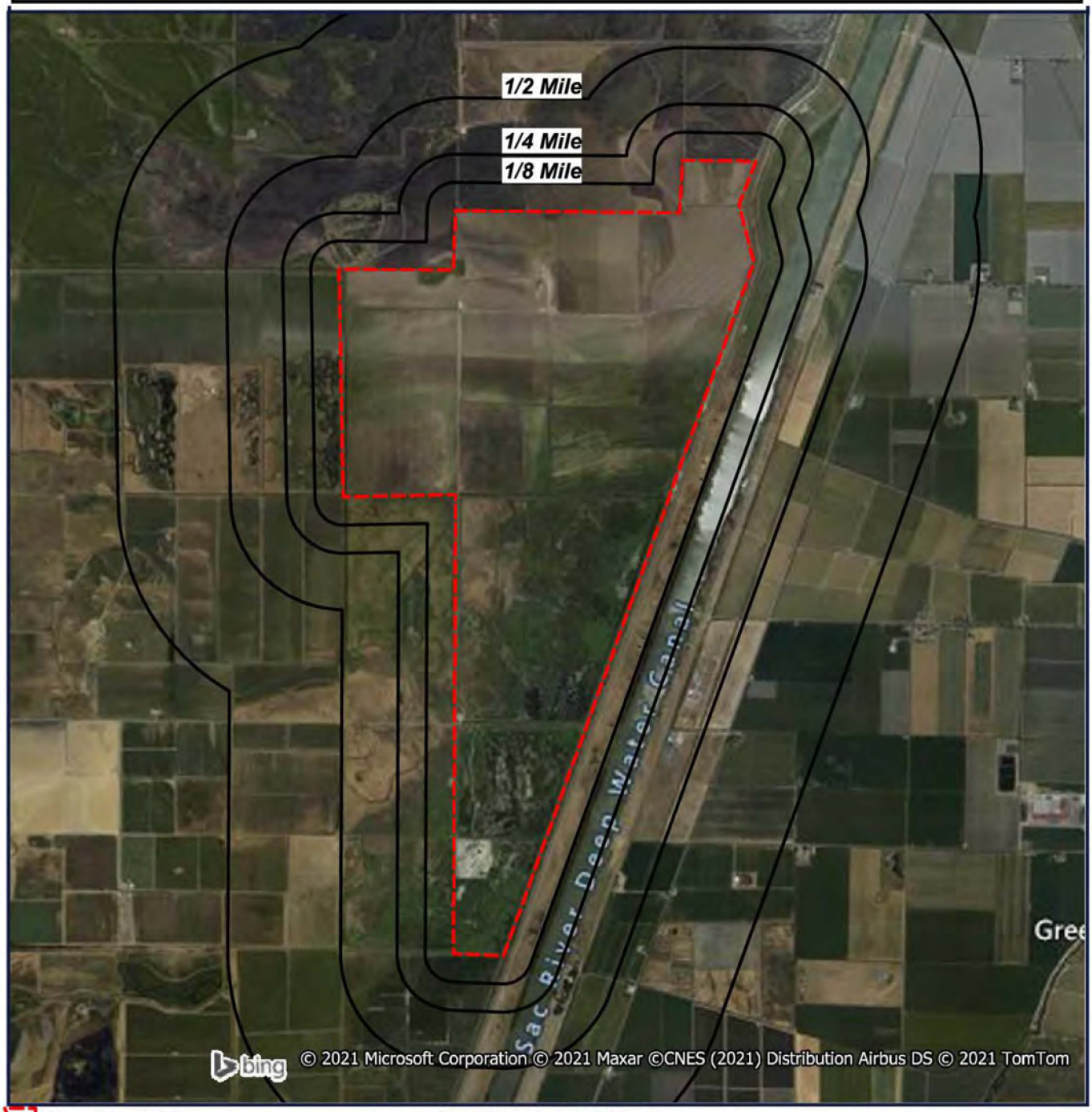


Tides End
Road 107
Clarksburg, California
95620

N
W E
S

0' 1800' 3600' 5400'
SCALE: 1" = 3600'

Ortho Map



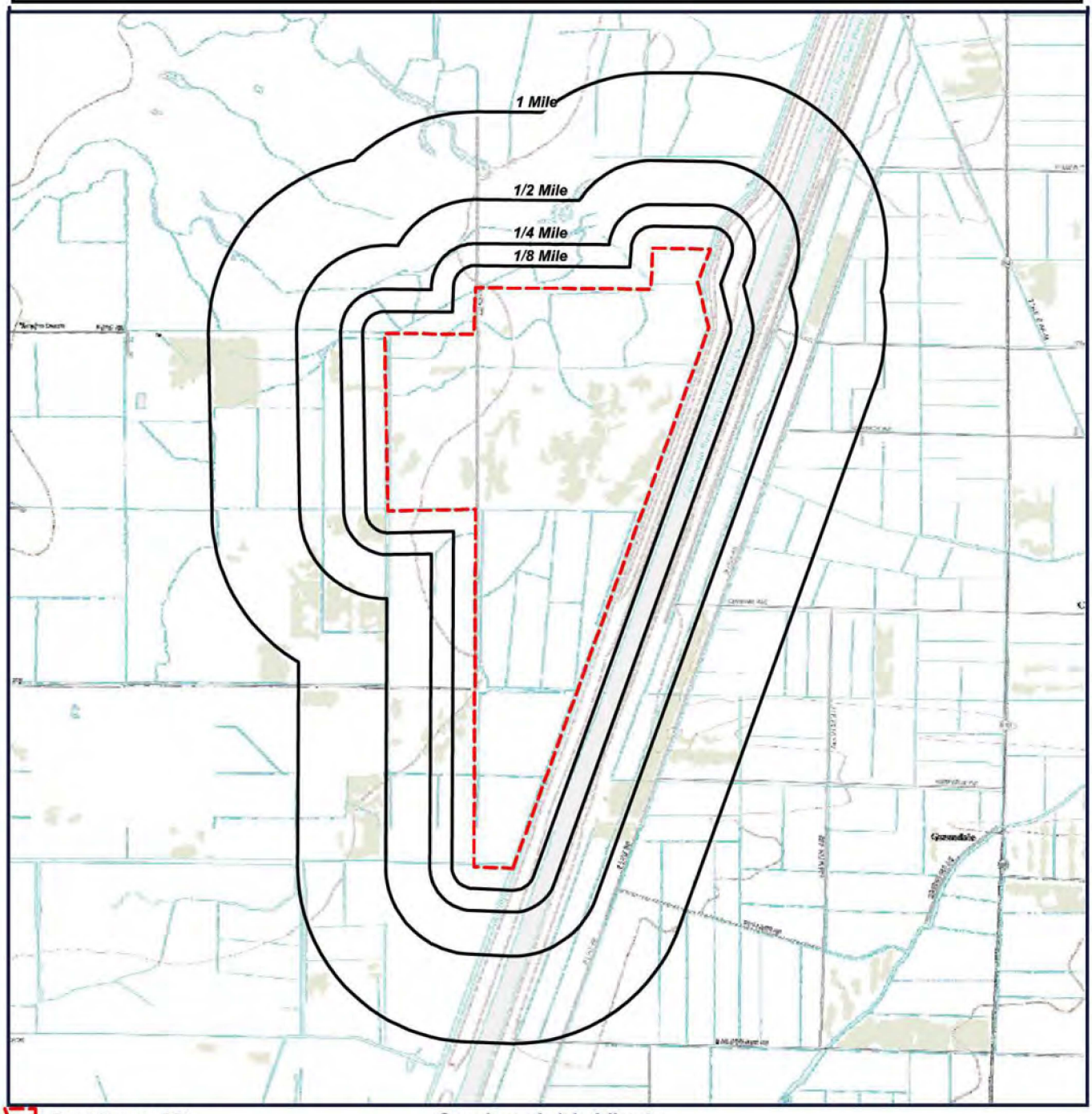
Target Property (TP)

Quadrangle(s): Liberty Island, Clarksburg, Saxon
Tides End
Road 107
Clarksburg, California
95620

N
W E
S

0' 1800' 3600' 5400'
SCALE: 1" = 3600'

Topographic Map



Target Property (TP)

Quadrangle(s): Liberty Island, Clarksburg, Saxon
Source: USGS, 03/08/2012
Tides End
Road 107
Clarksburg, California
95620

N
W E
S

0' 2300' 4600' 6900'
SCALE: 1" = 4600'

Located Sites Summary

No Records Found.

Site Summary By Database

No Records Found.

Elevation Summary

Elevations are collected from the USGS 3D Elevation Program 1/3 arc-second (approximately 10 meters) layer hosted at the NGTOC. .

Target Property Elevation: 3 ft.

*NOTE: Standard environmental records are displayed in **bold**.*

No Records Found.

Unlocated Sites Summary

This list contains sites that could not be mapped due to limited or incomplete address information.

No Records Found

AIRSAFS Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 10/20/14

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance. Enforcement and Compliance History Online (ECHO) Clean Air Act data from AFS are frozen and reflect data as of October 17, 2014, the EPA retired this system for Clean Air Act stationary sources.

ALTFUELS Alternative Fueling Stations

VERSION DATE: 10/28/20

Nationwide list of alternative fueling stations made available by the U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Bio-diesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE).

BF Brownfields Management System

VERSION DATE: 01/11/21

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment. This database included tribal brownfield sites.

BRS Biennial Reporting System

VERSION DATE: 12/31/17

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 06/17/20

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

DNPL Delisted National Priorities List

VERSION DATE: 11/20/20

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

DOCKETS EPA Docket Data

VERSION DATE: 12/22/05

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

DOD Department of Defense Sites

VERSION DATE: 12/01/14

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 11/23/20

This database includes site locations where Engineering and/or Institutional Controls have been identified as part of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. The data displays remedy component information for Superfund decision documents issued in fiscal years 1982-2017, and it includes final and deleted NPL sites as well as sites with a Superfund Alternative Approach (SAA) agreement in place. The only sites included that are not on the NPL, proposed for NPL, or removed from proposed NPL, are those with an SAA Agreement in place. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the

potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ECHOR09 Enforcement and Compliance History Information

VERSION DATE: 11/28/20

The U.S. Environmental Protection Agency's Enforcement and Compliance History Online (ECHO) database, provides compliance and enforcement information for facilities nationwide. This database includes facilities regulated as Clean Air Act stationary sources, Clean Water Act direct dischargers, Resource Conservation and Recovery Act hazardous waste handlers, Safe Drinking Water Act public water systems along with other data, such as Toxics Release Inventory releases.

ERNSCA Emergency Response Notification System

VERSION DATE: 12/27/20

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FEMAUST FEMA Owned Storage Tanks

VERSION DATE: 12/01/16

This is a listing of FEMA owned underground and aboveground storage tank sites. For security reasons, address information is not released to the public according to the U.S. Department of Homeland Security.

FRSCA Facility Registry System

VERSION DATE: 10/02/20

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

FUDS Formerly Used Defense Sites

VERSION DATE: 12/31/18

The Formerly Used Defense Sites (FUDS) inventory includes properties previously owned by or leased to the United States and under Secretary of Defense Jurisdiction, as well as Munitions Response Areas (MRAs). The remediation of these properties is the responsibility of the Department of Defense. This data is provided by the U.S. Army Corps of Engineers (USACE), the boundaries/polygon data are based on preliminary findings and not

all properties currently have polygon data available. DISCLAIMER: This data represents the results of data collection/processing for a specific USACE activity and is in no way to be considered comprehensive or to be used in any legal or official capacity as presented on this site. While the USACE has made a reasonable effort to insure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation or guaranty, either expressed or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. For additional information on Formerly Used Defense Sites please contact the USACE Public Affairs Office at (202) 528-4285.

FUSRAP Formerly Utilized Sites Remedial Action Program

VERSION DATE: 03/04/17

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

HISTPST Historical Gas Stations

VERSION DATE: NR

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

HMIRSR09 Hazardous Materials Incident Reporting System

VERSION DATE: 10/27/20

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

HWCD Hazardous Waste Compliance Docket Facilities

VERSION DATE: 10/29/20

This list of the Federal Agency Hazardous Waste Compliance Docket Facilities is maintained by the United States Environmental Protection Agency (EPA). According to the EPA, Section 120(c) of CERCLA requires EPA to establish a listing, known as the Federal Facility Hazardous Waste Compliance Docket (Docket), of Federal facilities which are managing or have managed hazardous waste; or have had a release of hazardous waste. Thus, the Docket identifies all Federal facilities that must be evaluated to determine whether they pose a risk to human health and the environment and it makes this information available to the public. In order for the Docket to remain current and accurate it requires periodic updating.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 09/19/20

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISCLEANERS Integrated Compliance Information System Drycleaners

VERSION DATE: 09/19/20

This is a listing of drycleaner facilities from the Integrated Compliance Information System (ICIS). The U.S. Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments. The following Primary SIC Codes are included in this data: 7211, 7212, 7213, 7215, 7216, 7217, 7218, and/or 7219; the following Primary NAICS Codes are included in this data: 812320, 812331, and/or 812332.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System

VERSION DATE: 04/26/20

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. This database is provided by the U.S. Environmental Protection Agency.

LUCIS Land Use Control Information System

VERSION DATE: 09/01/06

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System

VERSION DATE: 06/29/17

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States Nuclear Regulatory Commission (NRC) licensing requirements. Disclaimer: Due to agency regulations and policies, this database contains applicant/licensee location information which may or may not be related to the physical location per MLTS site.

MRDS Mineral Resource Data System

VERSION DATE: 03/15/16

MRDS (Mineral Resource Data System) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS. The USGS has ceased systematic updates of the MRDS database with their focus more recently on deposits of critical minerals while providing a well-documented baseline of historical mine locations from USGS topographic maps. A few updates last occurred 2015 and early 2016 for select mine site area/s.

MSHA Mine Safety and Health Administration Master Index File

VERSION DATE: 08/07/20

The Mine dataset lists all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970. It includes such information as the current status of each mine (Active, Abandoned, NonProducing, etc.), the current owner and operating company, commodity codes and physical attributes of the mine. Mine ID is the unique key for this data. This information is provided by the United States Department of Labor - Mine Safety and Health Administration (MSHA).

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 12/14/20

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 12/14/20

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

NMS Former Military Nike Missile Sites

VERSION DATE: 12/01/84

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline,

heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

NPDESR09 National Pollutant Discharge Elimination System

VERSION DATE: 04/01/07

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES database was collected from the U.S. Environmental Protection Agency (EPA) from December 2002 through April 2007. Refer to the ICIS and/or ICIS-NPDES database as source of current data. This database includes permitted facilities located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

NPL National Priorities List

VERSION DATE: 11/20/20

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

ODI Open Dump Inventory

VERSION DATE: 06/01/85

The open dump inventory was published by the United States Environmental Protection Agency. An “open dump” is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

PADS PCB Activity Database System

VERSION DATE: 11/19/20

PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of Polychlorinated Biphenyls (PCB) who are required to notify the U.S. Environmental Protection Agency of such activities.

PCSR09 Permit Compliance System

VERSION DATE: 08/01/12

The historic Permit Compliance System tracked enforcement status and permit compliance of facilities controlled

by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act. This database includes permitted facilities located in EPA Region 9 states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa. This system has since been modernized by United States Environmental Protection Agency and is now integrated into the Integrated Compliance Information System (ICIS). Please refer to the ICIS database as the current source for this data.

PNPL Proposed National Priorities List

VERSION DATE: 11/20/20

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 12/14/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with corrective action activity.

RCRAGR09 Resource Conservation & Recovery Act - Generator

VERSION DATE: 12/14/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities currently generating hazardous waste. EPA Region 9 includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

RCRANGR09 Resource Conservation & Recovery Act - Non-Generator

VERSION DATE: 12/14/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities classified as non-generators. Non-Generators do not presently generate hazardous waste. EPA

Region 9 includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

RCRASC RCRA Sites with Controls

VERSION DATE: 11/17/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with institutional controls in place.

RCRASUBC Resource Conservation & Recovery Act - Subject to Corrective Action Facilities

VERSION DATE: 12/14/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities subject to corrective actions.

RCRAT Resource Conservation & Recovery Act - Non-CORRACTS Treatment, Storage & Disposal Facilities

VERSION DATE: 12/14/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities recognized as hazardous waste treatment, storage, and disposal sites (TSD).

RODS Record of Decision System

VERSION DATE: 09/21/20

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

SEMS Superfund Enterprise Management System

VERSION DATE: 11/20/20

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs.

SEMSARCH Superfund Enterprise Management System Archived Site Inventory

VERSION DATE: 11/20/20

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System Archived Site Inventory (List 8R Archived) replaced the CERCLIS NFRAP reporting system in 2015. This listing reflects sites at which the EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program.

SEMSLIENS SEMS Lien on Property

VERSION DATE: 06/22/20

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs. This is a listing of SEMS sites with a lien on the property.

SFLIENS CERCLIS Liens

VERSION DATE: 06/08/12

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete. Please refer to the SEMSLIENS database as source of current data.

SMCRA Surface Mining Control and Reclamation Act Sites

VERSION DATE: 12/18/20

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by the Office of

Surface Mining Reclamation and Enforcement (OSMRE) to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

SSEHRIPFAS SSEHRI PFAS Contamination Sites

VERSION DATE: 12/12/19

This PFAS Contamination Site Tracker database is compiled by the Social Science Environmental Health Research Institute (SSEHRI) at Northeastern University. According to the SSEHRI, the database records qualitative and quantitative data from each known site of PFAS contamination, including timeline of discovery, sources, levels, health impacts, community response, and government response. The goal of this database is to compile information and support public understanding of the rapidly unfolding issue of PFAS contamination. All data presented was extracted from government websites, news articles, or publicly available documents, and this is cited in the tracker. Disclaimer: The source conveys this database undergoes regular updates as new information becomes available, some sites may be missing and/or contain information that is incorrect or outdated, as well as their information represents all contamination sites SSEHRI is aware of, not all possible contamination sites. This data is not intended to be used for legal purposes. Limited location details are available with this data. Please access the following source link for the most current information: https://pfasproject.com/pfas-contamination-site-tracker/

SSTS Section Seven Tracking System

VERSION DATE: 08/04/20

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. "Production" includes formulation, packaging, repackaging, and relabeling. For this database, the Product Information is only available for establishments up through 2014 or prior years, product details are no longer released by the EPA within the current SSTS non-Confidential Business Information data.

TRI Toxics Release Inventory

VERSION DATE: 12/31/18

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal and tribal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/31/16

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency (EPA) authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site. The EPA has collected Chemical Data Reporting (CDR) data since in 1986 (as Inventory Update Reporting). Collections occur approximately every four years and reporting requirements changed from collection to collection.

USUMTRCA Uranium Mill Tailings Radiation Control Act Sites

VERSION DATE: 03/04/17

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

ABST Above Ground Storage Tanks

VERSION DATE: 11/29/20

This database, provided by the California Environmental Protection Agency's (CalEPA) Regulated Site Portal, contains aboveground petroleum storage tank facilities originating from the California Environmental Reporting System (CERS). These facilities store petroleum in aboveground storage tanks with oversight by local agencies. As of January 1, 2008, Assembly Bill No. 1130 of the Aboveground Petroleum Storage Act (APSA) authorized the Certified Unified Program Agencies to implement and administer the requirements of the APSA. CalEPA Data Disclaimer: Information displayed in the portal is collected from separate agency databases and displayed unaltered. Information that is considered confidential, trade secret, or is otherwise protected by the agency that manages the database is not loaded into the portal. For more detail about information displayed in the portal, please visit the data source sites. Please refer to AST2007 database for aboveground storage tank information obtained from the California State Water Resources Control Board prior to 2008 APSA requirements.

AST2007 Aboveground Storage Tanks Prior to January 2008

VERSION DATE: 11/01/06

This database contains aboveground storage tank facilities registered with the California State Water Resources Control Board (SWRCB) between 2007 and 2003. Since 2006, tanks were required to contain a minimum (even as cumulative) of 1320 gallons to be in the program. As of January 1, 2008, the SWRCB no longer maintains a list of registered aboveground storage tanks, due to effective Assembly Bill No. 1130 (Laird) of the Aboveground Petroleum Storage Act (APSA). This Bill authorized the Certified Unified Program Agencies to implement and administer the requirements of the APSA. Please refer to ABST database as a current source for aboveground petroleum storage tank data.

BF Brownfield Sites

VERSION DATE: 02/14/21

This database of Brownfield Memorandum of Agreement (MOA) sites is maintained by the California Environmental Protection Agency. The California Department of Toxic Substances Control (CTSC), the State Water Resources Control Board, and the Regional Water Quality Control Boards (RWQCBs) agreed to a Brownfield Memorandum of Agreement (MOA). The MOA limits the oversight of a brownfields site to one agency, establishes procedures and guidelines for identifying the lead agency, calls for a single uniform site assessment procedure, requires all cleanups to address the requirements of the agencies, defines roles and responsibilities, provides for ample opportunity for public involvement, commits agencies to review time frames, and commits agencies to coordinate and communicate on brownfields issues. The Brownfield MOA site list is obtained from the State Water Resources Control Board GeoTracker online database. This list contains both open and completed sites.

CALSITES CALSITES Database

VERSION DATE: 05/01/04

This historical database was maintained by the Department of Toxic Substance Control for more than a decade.

CALSITES contains information on Brownfield properties with confirmed or potential hazardous contamination. In 2006, DTSC introduced EnviroStor as the latest Brownfields site database.

CDL Clandestine Drug Labs

VERSION DATE: 06/30/19

The California Department of Toxic Substance Control (DTSC) maintains this listing of illegal drug laboratories. DTSC maintains a limited cost-tracking database to manage and pay appropriate contractor invoices for removal costs. The data source is an expenditure report with the contractors' invoice information and the reported removal action locations. The reported location information may or may not include the actual location of the illegal drug lab for several reasons. First, DTSC receives the location information verbally from law enforcement or local environmental health officials in the initial request for emergency support. Second, DTSC does not verify the information received and does not perform "data cleaning" or other measures to ensure data quality. Third, the location information may not be the actual location of an illegal drug lab or any hazardous substance release to the environment. The initial report may have provided the location of the nearest identifiable address to an illegal drug lab or mobile lab or abandonment of illegal drug lab wastes, or a nearby meeting location for the contractor. Please note the DTSC does not guarantee the accuracy of the address or location information or the condition of the location listed. The listing of an address or location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the address or location either requires or does not require additional cleanup work or mitigation action.

CHMIRS California Hazardous Material Incident Report System

VERSION DATE: 11/04/20

The California Hazardous Material Incident Report System list is maintained by the California Governor's Office of Emergency Services (OES). This list contains all spills called in to the California OES Warning Center for a specific year since 1993.

CLEANER Dry Cleaner Facilities

VERSION DATE: 05/29/20

This list of dry cleaners is maintained by the California Department of Toxic Substances Control (DTSC). Data is extracted from the DTSC Hazardous Waste Tracking System. This list includes dry cleaner facilities that have registered EPA identification numbers. These facilities are categorized by SIC codes (7211, 7212, 7213, 7215, 7216, 7217, 7218, 7219). This database may also include facilities other than dry cleaners who also register with these same NAICS Codes. Not all companies report their NAICS/SIC Codes to the DTSC, therefore this database may exclude registered dry cleaner facilities with incomplete classification information.

CLEANUPSITES GeoTracker Cleanup Sites

VERSION DATE: 01/06/21

This list of GeoTracker Cleanup Sites is maintained by the California State Water Resources Control Board. The database contains contaminated sites that impact groundwater or have the potential to impact ground water,

including sites that require cleanup, such as Leaking Underground Storage Tank Sites, Department of Defense Sites, and Cleanup Program Sites. GeoTracker also contains records for various unregulated projects as well as permitted facilities including: Irrigated Lands, Oil and Gas production, operating Permitted USTs, and Land Disposal Sites. GeoTracker portals retrieve records and view integrated data sets from multiple State Water Board programs and other agencies.

CORTESE Cortese List

VERSION DATE: 01/06/21

This list of hazardous waste and substances sites (Cortese List) is maintained by the California Department of Toxic Substances Control (DTSC). DTSC's Brownfields and Environmental Restoration Program (Cleanup Program) EnviroStor database provides DTSC's component of Cortese List data by identifying Annual Workplan (now referred to State Response and/or Federal Superfund), and Backlog sites listed under Health and Safety Code section 25356. In addition, DTSC's Cortese List includes Certified with Operation and Maintenance sites. The list, or a site's presence on the list, has bearing on the local permitting process as well as on compliance with the California Environmental Quality Act (CEQA). Because this statute was enacted over twenty years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented and, in some cases, the information to be included in the Cortese List does not exist.

DROP Listing of Certified Dropoff, Collection, and Community Service Programs

VERSION DATE: 12/16/20

This list of Certified Dropoff, Collection, and Community Service Programs (non-buyback) operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

DTSCDR DTSC Deed Restrictions

VERSION DATE: 12/13/20

The California Department of Toxic Substances Control (DTSC) maintains this listi of sites with deed restrictions. According to the DTSC, restricted land use indicates whether the site or area within the site has an environmental restriction recorded and/or other institutional control preventing certain types of land use or activities. The land use restrictions listed under the site management requirements are only an abbreviated summary of the land use restrictions, and may not encompass all restrictions and notification requirements placed on a property. For complete land use restriction information please contact the DTSC to review associated Land Use Restriction documents.

DTSCHWT DTSC Registered Hazardous Waste Transporters

VERSION DATE: 10/19/20

The California Department of Toxic Substances Control maintains this list of Registered Hazardous Waste Transporters.

EMI Emissions Inventory Data

VERSION DATE: 12/31/18

This list of Emissions Inventory Data is maintained by the California Environmental Protection Agency California Environmental Agency Air Resources Board. This list includes criteria pollutant data and toxic data. Please note gas stations, print shops, autobody shops, and dry cleaners are not included in this list.

ENVIROSTOR EnviroStor Cleanup Sites

VERSION DATE: 01/11/21

This list of Envirostor Cleanup Sites is maintained by the California Department of Toxic Substances Control (DTSC). DTSC has developed the EnviroStor database system to evaluate and track sites with confirmed or potential contamination and sites where further investigation may be necessary. This EnviroStor database of cleanup sites contains the following: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites.

ENVIROSTORPCA EnviroStor Permitted and Corrective Action Sites

VERSION DATE: 01/15/21

The California Department of Toxic Substance Control maintains this list of Hazardous Waste sites in their Envirostor online database. This list contains: 1) data pertaining to the Hazardous Waste Sites tracked in Envirostor; 2) the completed activities for Hazardous Waste Units; 3) the completed activities for Hazardous Waste Units undergoing closure; 4) completed maintenance activities; 5) the various "aliases" for a project (Some examples are: alt project name, alt address, EPA ID, etc.).

ERAP Expedited Removal Action Program Sites

VERSION DATE: 01/11/21

This list of Expedited Removal Action Program Sites is a subset of the EnviroStor database, maintained by the California Department of the Toxic Substance Control. Sites are queried from Envirostor by site type = State Response ERAP.

HISTCORTESE Historical Cortese List

VERSION DATE: 11/02/02

This historical listing includes hazardous waste and substances sites designated by the State Water Resources Control Board, the Integrated Waste Board, and the Department of Toxic Substance Control. The Cortese List was utilized by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. See CACORTESE for an updated version of this database.

HISTUST Historical Underground Storage Tanks

VERSION DATE: 12/31/87

The Hazardous Substance Storage Container Database is a historical list of Underground Storage Tank sites, compiled from tank survey and registration information collected at one time between 1984 and 1987 by the State Water Resources Control Board. The hazardous substances stored within these tanks includes, but not restricted to, petroleum products, industrial solvents, and other materials.

HWTS Hazardous Waste Tanner Summary

VERSION DATE: 12/31/19

The Hazardous Waste Tanner Summary is maintained by the California Department of Toxic Substances Control (DTSC). This list includes data extracted from the copies of hazardous waste manifests received each year by the DTSC.

LDS Land Disposal Sites

VERSION DATE: 01/06/21

This list of Land Disposal sites (Landfills) is a subset of the GeoTracker Cleanup Sites database, maintained by the California State Water Resources Control Board. Sites are queried from GeoTracker by case type = Land Disposal Site.

LIENS Recorded Environmental Cleanup Liens

VERSION DATE: 11/16/20

The California Department of Toxic Substance Control (DTSC) maintains this list of liens placed upon real properties. A lien is utilized by the DTSC to obtain reimbursement from responsible parties for costs associated with the remediation of contaminated properties.

LUST Leaking Underground Storage Tanks

VERSION DATE: 01/06/21

This list of leaking underground storage tanks is a subset of the GeoTracker Cleanup Sites database maintained by the California State Water Resources Control Board. Sites are queried from GeoTracker by case type = LUST Cleanup Site.

MCS Military Cleanup Sites

VERSION DATE: 01/06/21

This list of Military sites is a subset of the GeoTracker Cleanup Sites database maintained by the California State Water Resources Control Board. Sites are queried from GeoTracker by case type = Military Cleanup Sites. This

list includes : Military UST sites; Military Privatized sites; and Military Cleanup sites (formerly known as DoD non UST).

MINES Mines Listing

VERSION DATE: 01/12/21

This list includes mine site locations extracted from the Mines Online database, maintained by the California Department of Conservation. Mines Online (MOL) is an interactive web map designed with GIS features that provide information such as the mine name, mine status, commodity sold, location, and other mine specific data. Please note: Mine location information is provided to assist experts in determining the location of mine operators in accordance with California Civil Code section 1103.4 and reflects information reported by mine operators in annual reports provided under Public Resources Code section 2207. While the Division of Mine Reclamation (DMR) attempts to populate MOL with accurate location information, the DMR cannot guarantee the accuracy of operator reported location information.

MWMP California Medical Waste Management Program Facility List

VERSION DATE: 12/31/20

This list of Medical Waste Management Program Facilities is maintained by the California Department of Public Health. The Medical Waste Management Program (MWMP) regulates the generation, handling, storage, treatment, and disposal of medical waste by providing oversight for the implementation of the Medical Waste Management Act (MWMA). The MWMP permits and inspects all medical waste off-site treatment facilities, medical waste transporters, and medical waste transfer stations. This list contains transporters, treatment, and transfer facilities.

NFA No Further Action Determination

VERSION DATE: 09/09/19

This list of No Further Action (NFA) sites is maintained by the California Department of Toxic Substances Control. NFA identifies sites where a Phase I Environmental Assessment was completed and resulted in a no action required determination. Please refer to ENVIROSTOR for current No Further Action sites.

NFE Sites Needing Further Evaluation

VERSION DATE: 11/29/20

This list of Inactive - Needs Evaluation sites is maintained by the California Department of Toxic Substances Control. These are unconfirmed contaminated properties that need further assessment. This data is queried from the Department of Toxic Substances Control Evirostor online database.

NPDES National Pollutant Discharge Elimination System Facilities

VERSION DATE: 11/18/20

This list of active, historical, and terminated National Pollutant Discharge Elimination System Facilities permits is maintained by the California Environmental Protection Agency State Water Resources Control Board. This data includes storm water general permit enrollees that are active or have been active within the past three years. Please note there can be multiple listings for a single permit due to multiple dischargers, multiple facilities, and/or multiple address listings. Please use the Regulatory Measure ID to identify duplicates, as this is a unique identifier for each permit.

PFAS PFAS Sampling Location Sites

VERSION DATE: 12/14/20

This list of PFAS Sampling Locations is maintained by the California State Water Resources Control Board (SWRCB). This list contains site locations with Per- and Polyfluoroalkyl Substances (PFAS) analytical data. The data can represent individual sampling points (i.e. soil boring, groundwater monitoring well, drinking water well, etc.) or a site location with multiple sampling points. Sites currently under investigation are not included in this database until analytical results are finalized and submitted electronically by the Responsible Parties via GeoTracker's Electronic Submittal of Information Portal, and after acceptance by a Regional Water Quality Control Board. According to the SWRCB, the addresses in this data may or may not be accurate.

PROC Listing of Certified Processors

VERSION DATE: 10/27/20

This list of Certified Processors that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

REF Referred to Another Local or State Agency

VERSION DATE: 12/02/20

This Referred to Another Local or State Agency list, maintained by the California Department of Toxic Substances Control (DTSC), contains properties where contamination has not been confirmed and which were determined as not requiring direct Department of Toxic Substance Control Site Mitigation Program action or oversight. Accordingly, these sites have been referred to another state or local regulatory agency. This data is extracted from the DTSC Envirostor online database and is queried by Status = "Refer state and local agencies".

SLIC Spills, Leaks, Investigation & Cleanup Recovery Listing

VERSION DATE: 11/08/20

This list of Spills, Leaks, Investigation & Cleanup Recovery sites is maintained by the California Regional Water Quality Control Board (RWQCB). This list all "non-federally owned" sites that are regulated under the State Water Resources Control Board's Site Cleanup Program and/or similar programs conducted by each of the nine Regional Water Quality Control Boards. Cleanup Program Sites are also commonly referred to as "Site Cleanup Program sites". Cleanup Program Sites are varied and include but are not limited to pesticide and fertilizer facilities, rail yards, ports, equipment supply facilities, metals facilities, industrial manufacturing and maintenance sites, dry cleaners, bulk transfer facilities, refineries, mine sites, landfills, RCRA/CERCLA cleanups, and some

brownfields. Unauthorized releases detected at Cleanup Program Sites are highly variable and include but are not limited to hydrocarbon solvents, pesticides, perchlorate, nitrate, heavy metals, and petroleum constituents, to name a few.

SWEEPS Statewide Environmental Evaluation and Planning System

VERSION DATE: 10/01/94

The Statewide Environmental Evaluation and Planning System (SWEEPS) contains a historical listing of active and inactive underground storage tank locations from the State Water Resources Control Board. The hazardous substances stored within these tanks includes, but not restricted to, petroleum products, industrial solvents, and other materials. Refer to CUPA listing for source of current data.

SWIS Solid Waste Information System Sites

VERSION DATE: 01/25/21

This list of Solid Waste Information System Sites is extracted from the Solid Waste Information System (SWIS) database, maintained by the California Department of Resources Recycling and Recovery. The SWIS database includes information on solid waste facilities, operations, and disposal sites located in California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

SWRCY Recycling Centers

VERSION DATE: 11/02/20

This list of Certified Recycling Centers that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

TOXPITS Toxic Pits Cleanup Act Sites

VERSION DATE: 07/01/95

Toxic Pits are sites with possible contamination of hazardous substances where cleanup is necessary. This listing is no longer updated by the State Water Resources Control Board.

USTCUPA Underground Storage Tanks

VERSION DATE: 01/12/21

The California State Water Resources Control Board maintains this list of permitted underground storage tanks. Permitted Underground Storage Tank (UST) Facilities includes facilities at which the owner or operator has been issued a permit to operate one or more USTs by the local permitting agency. Permitted UST Facilities are imported weekly from the California Environmental Reporting System (CERS).

VCP Voluntary Cleanup Program

VERSION DATE: 01/11/21

This list of Voluntary Cleanup Sites is a subset of the Envirostor database maintained by the California Department of Toxic Substance Control. Sites are queried from Envirostor by site type = Voluntary Cleanup.

WMUDS Waste Management Unit Database

VERSION DATE: 01/01/00

The Waste Management Unit Database System tracks and inventories waste management units. CCR Title 27 contains criteria stating that Waste Management Units are classified according to their ability to contain wastes. Containment shall be determined by geology, hydrology, topography, climatology, and other factors relating to the ability of the Unit to protect water quality. Water Code Section 13273.1 requires that operators submit a water quality solid waste assessment test (SWAT) report to address leak status. The WMUDS was last updated by the State Water Resources control board in 2000.

Environmental Records Definitions - LOCAL

YCLST Yolo County Leaking Storage Tanks

VERSION DATE: 04/16/08

This list of Leaking Underground Storage Tanks in Yolo County is maintained by the Yolo County Environmental Health Division and the Central Valley Regional Water Quality Control Board. Data from April 2008 was maintained by Yolo County Environmental Health Department and is still available for review, but leaky storage tanks have since been transferred to the State Water Resources Control Board's GeoTracker database system. Please refer to the State CLEANUPSITES and State LUST databases as source of current data for Yolo County Leaking USTs.

YCUST Yolo County Underground Storage Tanks

VERSION DATE: 11/24/20

This list of active and inactive underground storage tanks in Yolo County is maintained by the Yolo County Environmental Health Department. The Yolo County Environmental Health Department regulates the construction, operation, repair and removal of underground storage tank systems throughout Yolo County.

Environmental Records Definitions - TRIBAL

INDIANRES Indian Reservations

VERSION DATE: 09/27/17

This database is extracted from select geographic and cartographic information from the U.S. Census Bureau. The Bureau of Indian Affairs (BIA) within the U.S. Department of the Interior (DOI) provides the list of federally recognized tribes. The American Indian/Alaska Native/Native Hawaiian (AIANNH) Areas includes the following legal entities: federally recognized American Indian reservations and off-reservation trust land areas, state-recognized American Indian reservations, and Hawaiian home lands (HHLs). The boundaries for federally recognized American Indian reservations and off-reservation trust lands are as of January 2017. The boundaries for state-recognized American Indian reservations and for state designated tribal statistical areas were delineated by state governor-appointed liaisons for the 2010 Census through the State American Indian Reservation Program and Tribal Statistical Areas Program respectively.

LUSTR09 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/01/20

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

TORRESDUMPSITES Illegal Dump Sites on the Torres Martinez Reservation

VERSION DATE: 12/31/18

This listing of illegal dump site locations on the Torres Martinez Reservation is maintained by the United States Environmental Protection Agency, Region IX. These dump sites contain unlawfully discarded household waste such as landscaping and wood wastes with no known soil or groundwater contamination. A majority of the sites have already been cleaned up through the collaborative efforts of the EPA, The California Integrated Waste Management Board and the Torres Martinez Tribe. This data contains the 2007 List of Illegal Dump Site Locations from the Torres Martinez Reservation and the 2017-2018 List of Illegal Dump Site Locations from the Torres Martinez Reservation.

USTR09 Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/01/20

This database, provided by the United States Environmental Protection Agency (EPA), contains underground

storage tanks on Tribal lands located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.2s
June 03, 2024

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

46503 COUNTY ROAD 155
DIXON, CA 95620

COORDINATES

Latitude (North):	38.3829580 - 38° 22' 58.64''
Longitude (West):	121.6431760 - 121° 38' 35.43''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	618508.9
UTM Y (Meters):	4248971.0
Elevation:	11 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	50007648 SAXON, CA
Version Date:	2022
Northeast Map:	50006781 CLARKSBURG, CA
Version Date:	2022
Southeast Map:	50006878 COURTLAND, CA
Version Date:	2022
Southwest Map:	50007639 LIBERTY ISLAND, CA
Version Date:	2022

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20200528, 20200617
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
46503 COUNTY ROAD 155
DIXON, CA 95620

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ---- National Priority List
Proposed NPL ---- Proposed National Priority List Sites
NPL LIENS ---- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---- Federal Facility Site Information listing
SEMS ---- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---- RCRA - Large Quantity Generators
RCRA-SQG ---- RCRA - Small Quantity Generators
RCRA-VSQG ---- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---- Land Use Control Information System

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROLS..... Institutional Controls Sites List

Federal ERNS list

ERNS..... Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE..... State Response Sites

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR..... EnviroStor Database

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF..... Solid Waste Information System

Lists of state and tribal leaking storage tanks

LUST..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC..... Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Properties
INDIAN VCP..... Voluntary Cleanup Priority Listing

Lists of state and tribal brownfield sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
ODI..... Open Dump Inventory

DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
CERS HAZ WASTE ..... California Environmental Reporting System Hazardous Waste
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing
HIST UST ..... Hazardous Substance Storage Container Database
CERS TANKS ..... California Environmental Reporting System (CERS) Tanks
CA FID UST ..... Facility Inventory Database

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System

EXECUTIVE SUMMARY

COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
MINES MRDS	Mineral Resources Data System
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
FUELS PROGRAM	EPA Fuels Program Registered Listing
PFAS NPL	Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES	Federal Sites PFAS Information
PFAS TSCA	PFAS Manufacture and Imports Information
PFAS TRIS	List of PFAS Added to the TRI
PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR	PFAS Contamination Site Location Listing
PFAS WQP	Ambient Environmental Sampling for PFAS
PFAS NPDES	Clean Water Act Discharge Monitoring Information
PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING	Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing
BIOSOLIDS	ICIS-NPDES Biosolids Facility Data
PFAS	PFAS Investigation Site Location Listing
AQUEOUS FOAM	Former Fire Training Facility Assessments Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
CHROME PLATING	Chrome Plating Facilities Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	Inspection, Compliance and Enforcement
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
HWTS	Hazardous Waste Tracking System
HAZNET	Facility and Manifest Data
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records

HAZMAT Hazardous Material Facilities
UIC UIC Listing
UIC GEO UIC GEO (GEOTRACKER)
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
WIP Well Investigation Program Case List
MILITARY PRIV SITES MILITARY PRIV SITES (GEOTRACKER)
PROJECT PROJECT (GEOTRACKER)
WDR Waste Discharge Requirements Listing
CIWQS California Integrated Water Quality System
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ Well Stimulation Project (GEOTRACKER)
UST FINDER UST Finder Database
UST FINDER RELEASE UST Finder Releases Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants
EDR Hist Auto EDR Exclusive Historical Auto Stations
EDR Hist Cleaner EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF Recovered Government Archive Solid Waste Facilities List
RGA LUST Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

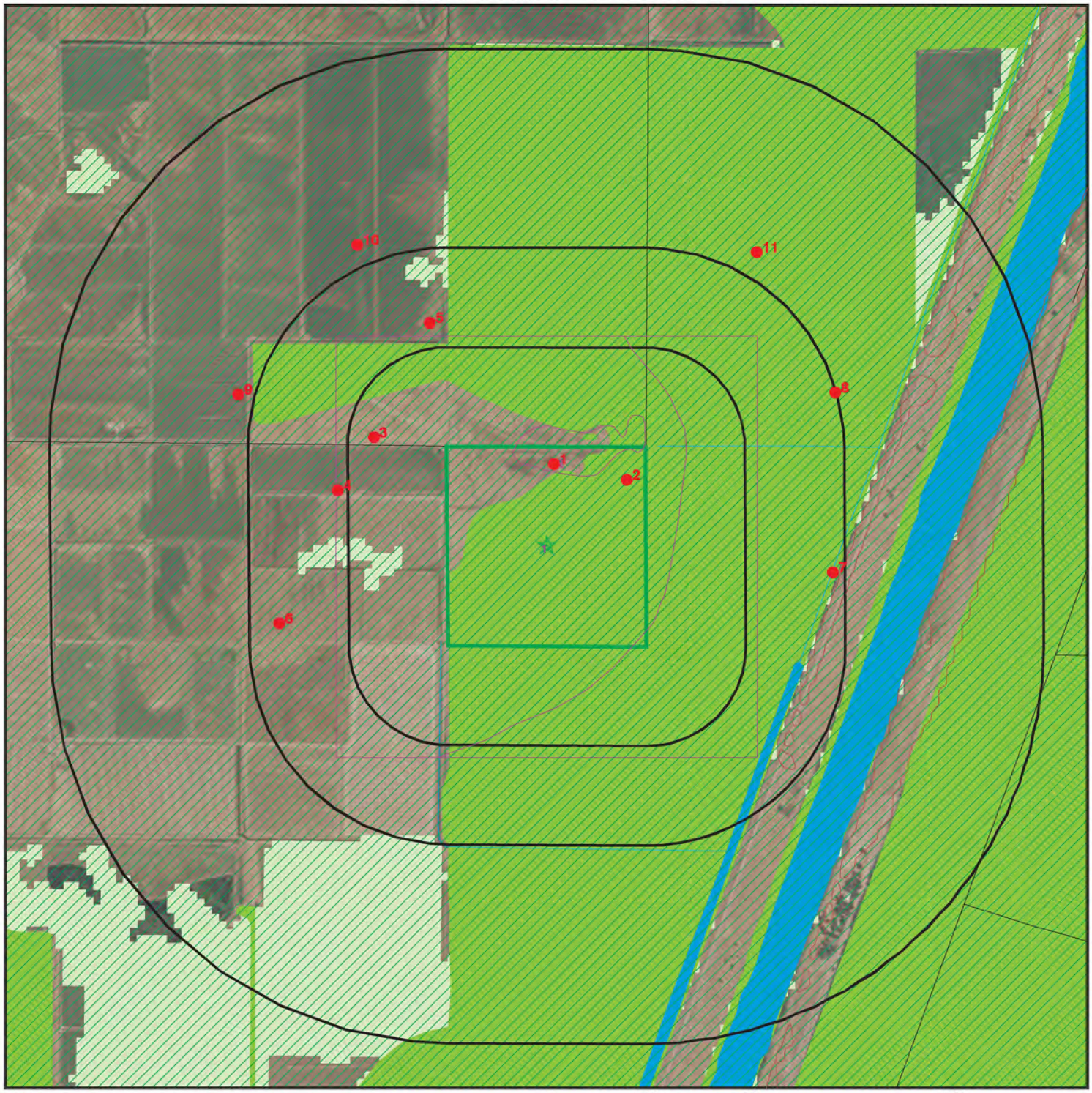
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 7669950.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: ECOSYS Lucky 5 South ADDRESS: 46503 County Road 155 Dixon CA 95620 LAT/LONG: 38.382958 / 121.643176	CLIENT: Enviroapplications Inc. CONTACT: Bernard Sentianin INQUIRY #: 7669950.2s DATE: June 03, 2024 1:16 pm

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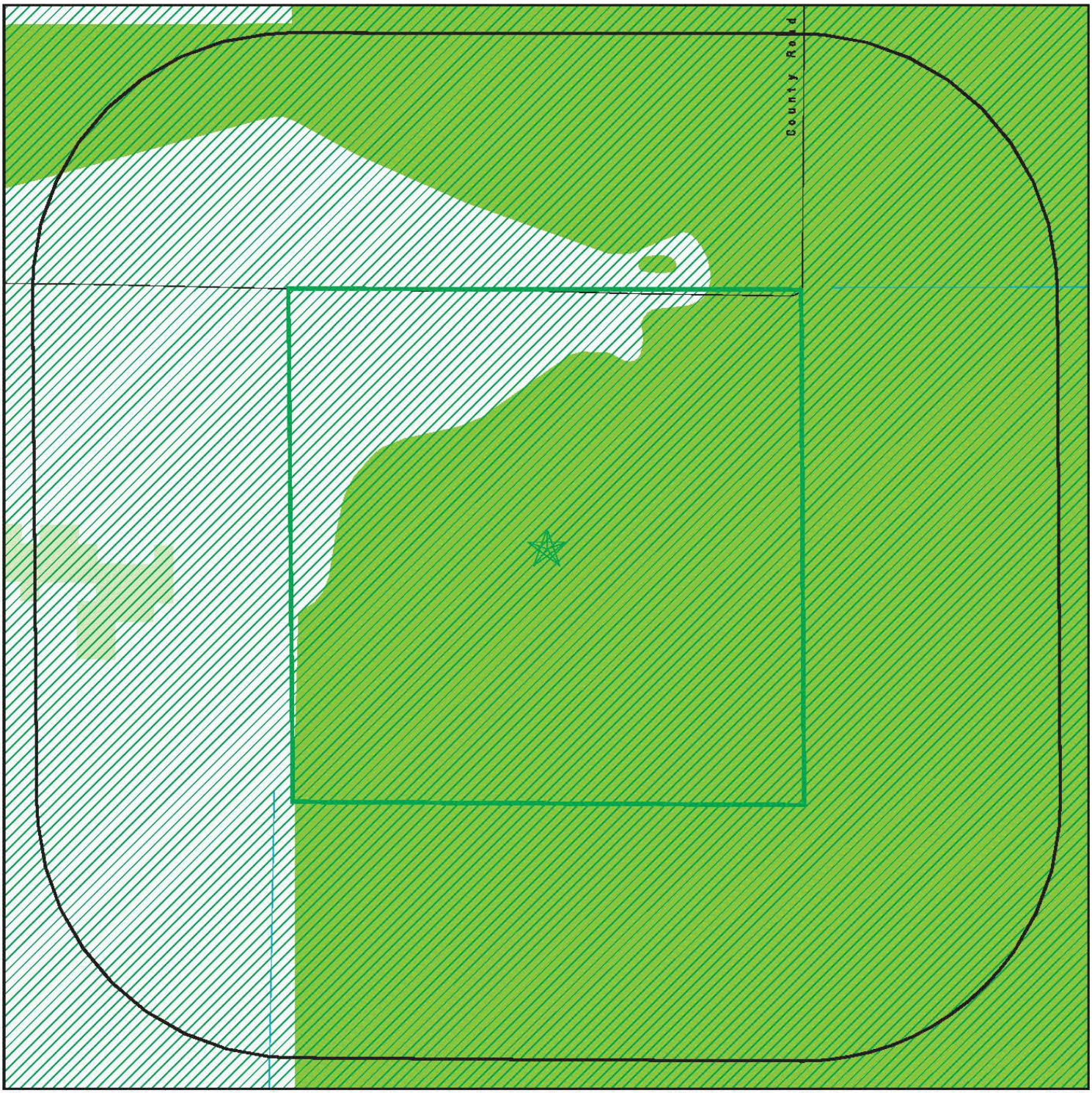
DETAIL MAP - 7669950.2S



0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	ECOSYS Lucky 5 South	CLIENT:	Enviroapplications Inc.
ADDRESS:	46503 County Road 155 Dixon CA 95620	CONTACT:	Bernard Sentianin
LAT/LONG:	38.382958 / 121.643176	INQUIRY #:	7669950.2s
		DATE:	June 03, 2024 1:18 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	0	0	NR	0
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
MINES MRDS	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS TRIS	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
BIOSOLIDS	0.001		0	NR	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
CHROME PLATING	0.500		0	0	0	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWTS	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
HAZMAT	0.250		0	0	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
UST FINDER	0.250		0	0	NR	NR	NR	0
UST FINDER RELEASE	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
YOLO COUNTY	S107538895		I-5, NO OF DUNNIGAN AT COUNTY		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/20/2023
Date Data Arrived at EDR: 12/20/2023
Date Made Active in Reports: 01/24/2024
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/26/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/22/2024
Date Data Arrived at EDR: 05/01/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 23

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/22/2024
Date Data Arrived at EDR: 05/01/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 23

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/14/2024
Date Data Arrived at EDR: 02/16/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 48

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/06/2024
Date Made Active in Reports: 04/26/2024
Number of Days to Update: 80

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/04/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 11/16/2023
Date Data Arrived at EDR: 11/16/2023
Date Made Active in Reports: 02/13/2024
Number of Days to Update: 89
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 85
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 11/28/2023
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 89

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/17/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/18/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

Lists of state and tribal brownfield sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/13/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/11/2024
Date Data Arrived at EDR: 03/12/2024
Date Made Active in Reports: 05/10/2024
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/12/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 04/04/2024
Date Data Arrived at EDR: 04/05/2024
Date Made Active in Reports: 04/15/2024
Number of Days to Update: 10

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/04/2024
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 09/28/2023
Date Made Active in Reports: 12/18/2023
Number of Days to Update: 81

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

CERS HAZ WASTE: California Environmental Reporting System Hazardous Waste

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 83

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 78
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing
Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/14/2024
Number of Days to Update: 77
Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/20/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 77

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/30/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239
Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574
Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/11/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA Watch List

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 04/29/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 283

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/14/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 11/13/2023
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 86

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 70

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2023
Date Data Arrived at EDR: 04/04/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 66

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 57
Source: Nuclear Regulatory Commission
Telephone: 301-415-0717
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 11/27/2023
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 87
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 05/28/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 05/28/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/11/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 5

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 03/03/2023
Date Data Arrived at EDR: 03/03/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 98

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 04/26/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 1
Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Quarterly

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 01/07/2022
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 82
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing
Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/23/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines
An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 11/28/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 12

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Quarterly

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 08/23/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/28/2023
Number of Days to Update: 98

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

FINDS: Facility Index System/Facility Registry System
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/09/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 87

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 12/17/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 09/06/2023
Date Data Arrived at EDR: 09/13/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 89

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/12/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TRIS: List of PFAS Added to the TRI

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits. Caveats and Limitations: Less than half of states have required PFAS monitoring for at least one of their permittees and fewer states have established PFAS effluent limits for permittees. New rulemakings have been initiated that may increase the number of facilities monitoring for PFAS in the future.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-267-2675
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/10/2017
Number of Days to Update: 63

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

BIOSOLIDS: ICIS-NPDES Biosolids Facility Data

The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-4700
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS sites included in the Envirostor and GeoTracker databases. Locations of potential sources of per - and polyfluoroalkyl substances (PFAS). This does not mean that PFAS has been produced, used, or discharged at these sites.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/06/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/06/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CHROME PLATING: Chrome Plating Facilities Listing

This listing represents chrome plating facilities the California State Water Resources Control Board staff identified as possibly being a source of Per- and polyfluoroalkyl substance (PFAS) contamination. Sites and locations were identified by staff with the Division of Water Quality in the California State Water Board. Data was collected from the CA Air Resources Board 2013 and 2018 - Cr VI emission survey, CA Emission Inventory, CA HAZ Waste discharge database and by reviewing storm water permits. Former chrome plating sites are also included that are open site investigation or remediation cases with the Regional Water Quality Control Boards and the Department of Toxic Substances Control.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/13/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 02/14/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 77

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

DRYCLEAN VENTURA CO DIST: Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Ventura County Air Pollution Control District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 02/08/2024
Number of Days to Update: 23

Source: Ventura County Air Pollution Control District
Telephone: 805-645-1421
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN AMADOR: Amador Air District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Amador Air Quality Management District

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77

Source: Amador Air Quality Management District
Telephone: 209-257-0112
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/20/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 76

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

DRYCLEAN MOJAVE DESERT DIST: Mojave Desert Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Mojave Desert Air Quality Management District.

Date of Government Version: 04/15/2024
Date Data Arrived at EDR: 04/17/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 7

Source: Mojave Desert Air Quality Management District
Telephone: 760-245-1661
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BUTTE CO DIST: Butte County Air Quality Management DistrictDrycleaner Facility Listing
Butte County Air Quality Management DistrictDrycleaner Facility Listing.

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 10/18/2023
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 90

Source: Butte County Air Quality Management District
Telephone: 530-332-9400
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN FEATHER RIVER DIST: Feather River Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Feather River Air Quality Management District.

Date of Government Version: 03/08/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 06/05/2023
Number of Days to Update: 88

Source: Feather River Air Quality Management District
Telephone: 530-634-7659
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN DIEGO CO DIST: San Diego County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Diego County Air Pollution Control District.

Date of Government Version: 03/19/2024
Date Data Arrived at EDR: 03/21/2024
Date Made Active in Reports: 04/12/2024
Number of Days to Update: 22

Source: San Diego County Air Pollution Control District
Telephone: 858-586-2616
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 04/02/2024
Date Data Arrived at EDR: 04/05/2024
Date Made Active in Reports: 04/15/2024
Number of Days to Update: 10

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Annually

DRYCLEAN GRANT: Grant Recipients List
Assembly Bill 998 (AB 998) established the Non-Toxic Dry Cleaning Incentive Program to provide financial assistance to the dry cleaning industry to switch from systems using perchloroethylene (Perc), an identified toxic air contaminant and potential human carcinogen, to non-toxic and non-smog forming alternatives.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 01/26/2024
Date Made Active in Reports: 04/16/2024
Number of Days to Update: 81

Source: California Air Resources Board
Telephone: 916-323-0006
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

DRYCLEAN LAKE CO DIST: Lake County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Lake County Air Quality Management District,

Date of Government Version: 02/15/2024
Date Data Arrived at EDR: 02/16/2024
Date Made Active in Reports: 05/02/2024
Number of Days to Update: 76

Source: Lake County Air Quality Management District
Telephone: 707-263-7000
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 78

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

DRYCLEAN MENDO CO DIST: Mendocino County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Mendocino County Air Quality Management District.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/28/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 77

Source: Mendocino County Air Quality Management District
Telephone: 707-463-4354
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN EAST KERN DIST: Eastern Kern Air Pollution Control District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Eastern Kern Air Pollution Control District.

Date of Government Version: 01/12/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Eastern Kern Air Pollution Control District
Telephone: 661-862-9684
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN IMPERIAL CO DIST: Imperial County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Imperial County Air Pollution Control District

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Imperial County Air Pollution Control District
Telephone: 442-265-1800
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN YOLO-SOLANO DIST: Yolo-Solano Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Yolo-Solano Air Quality Management District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/05/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 75

Source: Yolo-Solano Air Quality Management District
Telephone: 530-757-3650
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SHASTA CO DIST: Shasta County Air Quality Management District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Shasta County Air Quality Management District.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 78

Source: Shasta County Air Quality Management District
Telephone: 530-225-5674
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MONTEREY BAY DIST: Monterey Bay Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Monterey Bay Air Quality Management District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/05/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 75

Source: Monterey Bay Air Quality Management District
Telephone: 831-647-9411
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN LUIS OB CO DIST: San Luis Obispo County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Luis Obispo County Air Pollution Control District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 76

Source: San Luis Obispo County Air Pollution Control District
Telephone: 805-781-5756
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN PLACER CO DIST: Placer County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Placer County Air Quality Management District.

Date of Government Version: 05/15/2023
Date Data Arrived at EDR: 05/17/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 89

Source: Placer County Air Quality Management District
Telephone: 530-745-2335
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN JOAQ VAL DIST: San Joaquin Valley Air Pollution Control District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Joaquin Valley Air Pollution Control District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 77
Source: San Joaquin Valley Air Pollution Control District
Telephone: 559-230-6001
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BAY AREA DIST: Bay Area Air Quality Management District Drycleaner Facility Listing
Bay Area Air Quality Management District Drycleaner Facility Listing.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1432
Source: Bay Area Air Quality Management District
Telephone: 415-516-1916
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN CALAVERAS CO DIST: Calaveras County Environmental Management Agency Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Calaveras County Environmental Management Agency.

Date of Government Version: 06/17/2019
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1412
Source: Calaveras County Environmental Management Agency
Telephone: 209-754-6399
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

DRYCLEAN NO COAST UNIFIED DIST: North Coast Unified Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the North Coast Unified Air Quality Management District.

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1473
Source: North Coast Unified Air Quality Management District
Telephone: 707-443-3093
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SIERRA DIST: Northern Sierra Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Northern Sierra Air Quality Management District,

Date of Government Version: 05/07/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455
Source: Northern Sierra Air Quality Management District
Telephone: 530-274-9350
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SANTA BARB CO DIST: Santa Barbara County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Santa Barbara County Air Pollution Control District.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Santa Barbara County Air Pollution Control District
Telephone: 805-961-8867
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN TEHAMA CO DIST: Tehama County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Tehama County Air Pollution Control District.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/24/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1468
Source: Tehama County Air Pollution Control District
Telephone: 530-527-3717
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN GLENN CO DIST: Glenn County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Glenn County Air Pollution Control District.

Date of Government Version: 01/08/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Glenn County Air Pollution Control District
Telephone: 530-934-6500
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SONOMA CO DIST: Norther Sonoma County County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Northern Sonoma County Air Pollution Control District.,

Date of Government Version: 01/05/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Santa Barbara County Air Pollution Control District
Telephone: 707-433-5911
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SACRAMENTO METO DIST: Sacramento Metropolitan Air Quality Management DistrictDrycleaner Facility Listing
A listing of drycleaner facility locations, for the Sacramento Metropolitan Air Quality Management District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Sacramento Metropolitan Air Quality Management District
Telephone: 916-874-3958
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 06/09/2023
Date Made Active in Reports: 08/30/2023
Number of Days to Update: 82

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/14/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

FIN ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 01/11/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

FIN ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 02/28/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 77

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

ICE: Inspection, Compliance and Enforcement
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 0

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 0

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 01/26/2024
Date Data Arrived at EDR: 01/30/2024
Date Made Active in Reports: 04/17/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data
Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 01/23/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/16/2024
Number of Days to Update: 79

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/06/2024
Date Made Active in Reports: 04/25/2024
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/17/2024
Number of Days to Update: 80

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/08/2024
Date Data Arrived at EDR: 03/08/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Annually

SANTA CRUZ CO SITE MITI: Site Mitigation Listing

Sites may become contaminated with toxic chemicals through illegal dumping or disposal, from leaking underground storage tanks, or through industrial or commercial activities.The goal of the site mitigation program is to protect the public health and the environment while facilitating completion of contaminated site clean-up projects in a timely manner.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 06/23/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 20

Source: Santa Cruz Environmental Health Services
Telephone: 831-454-2761
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)

Underground control injection sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region’s active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/14/2024
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data
The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)
Non-Case Information sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)
Other Oil & Gas Projects sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UST FINDER: UST Finder Database
EPA developed UST Finder, a web map application containing a comprehensive, state-sourced national map of underground storage tank (UST) and leaking UST (LUST) data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states and from Tribal lands and US territories . UST Finder contains information about proximity of UST facilities and LUST sites to: surface and groundwater public drinking water protection areas; estimated number of private domestic wells and number of people living nearby; and flooding and wildfires.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/04/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-564-0394
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

UST FINDER RELEASE: UST Finder Releases Database

US EPA's UST Finder data is a national composite of leaking underground storage tanks. This data contains information about, and locations of, leaking underground storage tanks. Data was collected from state sources and standardized into a national profile by EPA's Office of Underground Storage Tanks, Office of Research and Development, and the Association of State and Territorial Solid Waste Management Officials.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/31/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 79

Source: Environmental Protecton Agency
Telephone: 202-564-0394
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Semi-Annually

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 12/26/2023
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 84

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 04/27/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/18/2023
Date Data Arrived at EDR: 12/18/2023
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 86

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 01/19/2024
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 76

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/26/2024
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 76

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 10/30/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 04/25/2024
Date Data Arrived at EDR: 05/01/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 7

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/26/2024
Number of Days to Update: 78

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 03/26/2024
Number of Days to Update: 68

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/09/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/09/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 01/12/2023
Date Made Active in Reports: 03/29/2023
Number of Days to Update: 76

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/13/2023
Date Data Arrived at EDR: 07/13/2023
Date Made Active in Reports: 09/27/2023
Number of Days to Update: 76

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 12/01/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 12/14/2023
Number of Days to Update: 1

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 12/01/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/11/2023
Date Data Arrived at EDR: 10/17/2023
Date Made Active in Reports: 01/09/2024
Number of Days to Update: 84

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/18/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/12/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 06/13/2023
Number of Days to Update: 42

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/15/2023
Date Data Arrived at EDR: 11/20/2023
Date Made Active in Reports: 02/15/2024
Number of Days to Update: 87

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/31/2023
Date Data Arrived at EDR: 11/03/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 81

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 02/28/2024
Date Data Arrived at EDR: 02/28/2024
Date Made Active in Reports: 05/16/2024
Number of Days to Update: 78

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/29/2024
Number of Days to Update: 85

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/05/2023
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 77

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2022
Date Data Arrived at EDR: 12/21/2022
Date Made Active in Reports: 03/16/2023
Number of Days to Update: 85

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2022
Date Data Arrived at EDR: 12/09/2022
Date Made Active in Reports: 03/01/2023
Number of Days to Update: 82

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 01/26/2024
Number of Days to Update: 8

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/14/2024
Date Made Active in Reports: 05/02/2024
Number of Days to Update: 78

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/2024
Date Data Arrived at EDR: 05/22/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 2

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2023
Date Data Arrived at EDR: 01/31/2024
Date Made Active in Reports: 04/17/2024
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 83

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 83

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/15/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/05/2024
Number of Days to Update: 78

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/14/2024
Date Data Arrived at EDR: 02/14/2024
Date Made Active in Reports: 05/02/2024
Number of Days to Update: 78

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/07/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/21/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 76
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/03/2023
Date Data Arrived at EDR: 08/24/2023
Date Made Active in Reports: 09/12/2023
Number of Days to Update: 19

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 12/05/2023
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 27

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 10/07/2022
Date Data Arrived at EDR: 10/07/2022
Date Made Active in Reports: 12/21/2022
Number of Days to Update: 75

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 75

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 77

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 85

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/18/2023
Date Data Arrived at EDR: 12/26/2023
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 84

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/06/2024
Date Made Active in Reports: 04/25/2024
Number of Days to Update: 79

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 12/01/2023
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/13/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/01/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

ECOSYS LUCKY 5 SOUTH
46503 COUNTY ROAD 155
DIXON, CA 95620

TARGET PROPERTY COORDINATES

Latitude (North):	38.382958 - 38° 22’ 58.65’’
Longitude (West):	121.643176 - 121° 38’ 35.43’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	618508.9
UTM Y (Meters):	4248971.0
Elevation:	11 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	50007648 SAXON, CA
Version Date:	2022
Northeast Map:	50006781 CLARKSBURG, CA
Version Date:	2022
Southeast Map:	50006878 COURTLAND, CA
Version Date:	2022
Southwest Map:	50007639 LIBERTY ISLAND, CA
Version Date:	2022

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

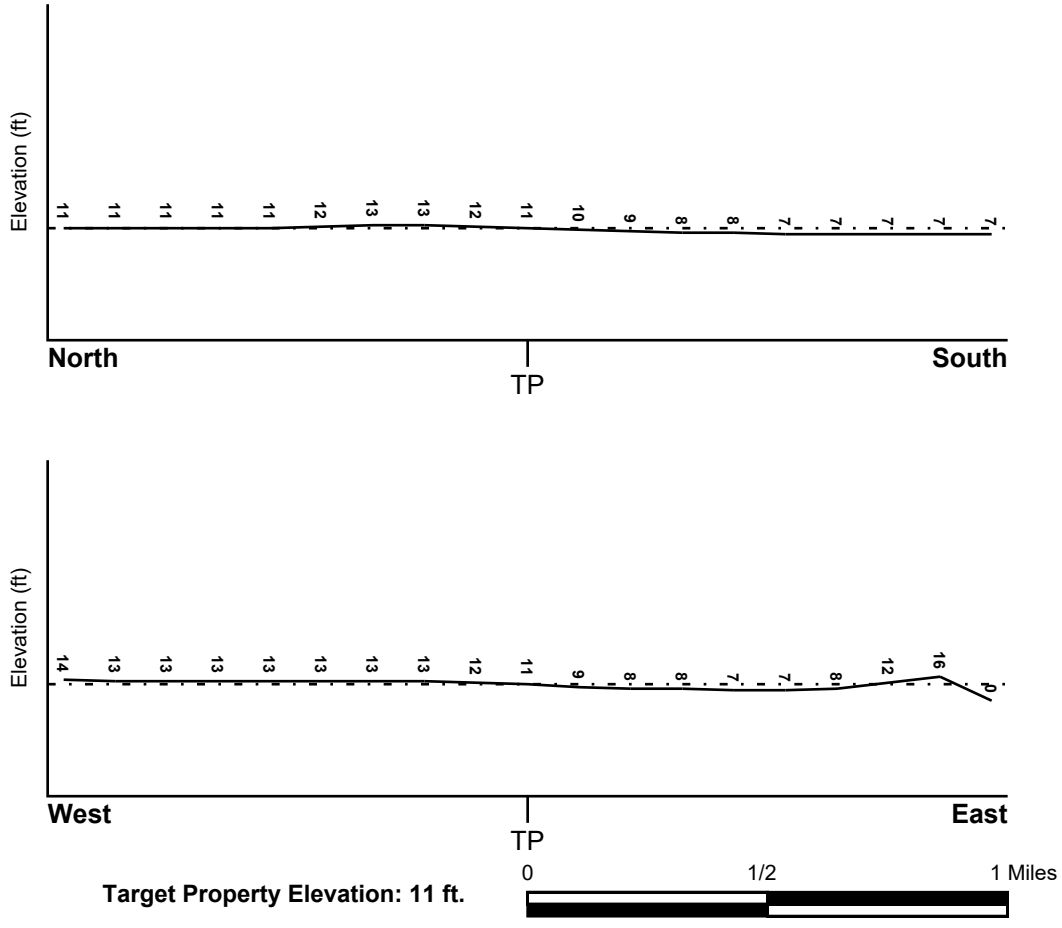
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 11 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06095C0225E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06113C0740G	FEMA FIRM Flood data
06113C0720G	FEMA FIRM Flood data
06095C0335E	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
SAXON	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

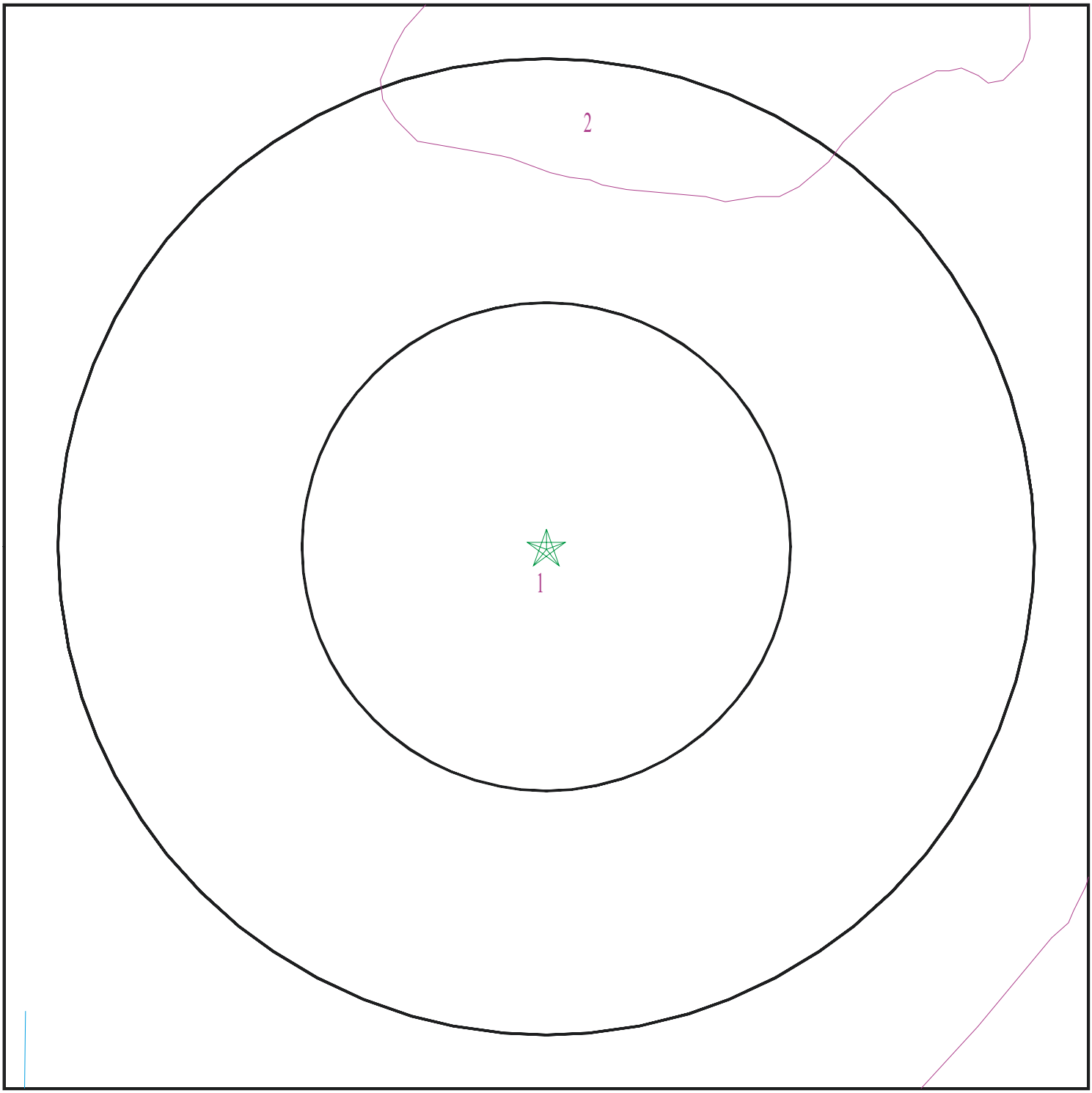
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 7669950.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	ECOSYS Lucky 5 South	CLIENT:	Enviroapplications Inc.
ADDRESS:	46503 County Road 155 Dixon CA 95620	CONTACT:	Bernard Sentianin
LAT/LONG:	38.382958 / 121.643176	INQUIRY #:	7669950.2s
		DATE:	June 03, 2024 1:18 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Capay

Soil Surface Texture: silty clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	35 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
2	35 inches	59 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name: Riz

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 61 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9
2	9 inches	44 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9
3	44 inches	68 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

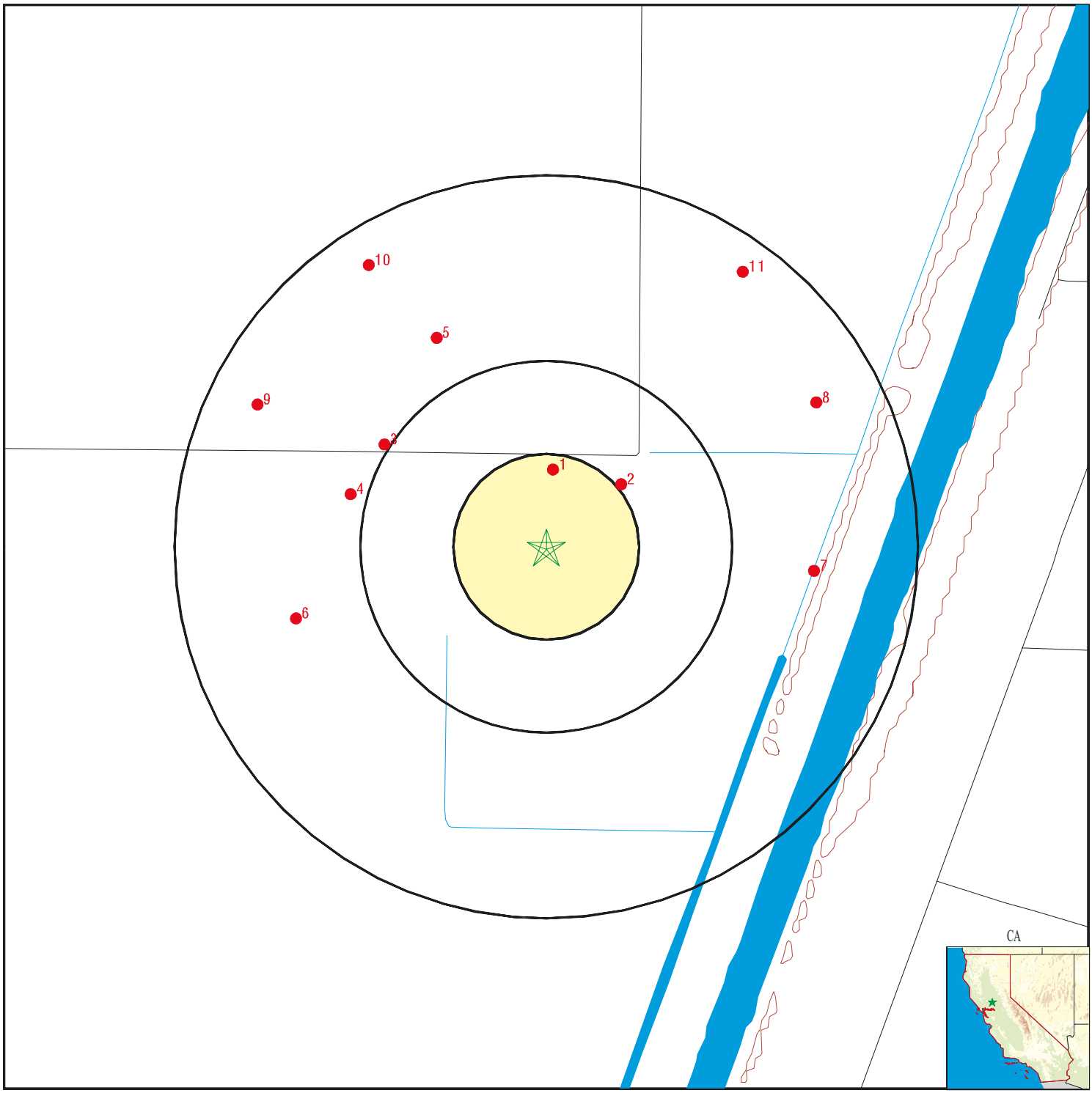
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG17000015248	1/8 - 1/4 Mile North
2	CAOG17000007864	1/4 - 1/2 Mile NE
3	CAOG17000003067	1/2 - 1 Mile WNW
4	CAOG17000011190	1/2 - 1 Mile WNW
5	CAOG17000003070	1/2 - 1 Mile NNW
6	CAOG17000007842	1/2 - 1 Mile WSW
7	CAOG17000002963	1/2 - 1 Mile East
8	CAOG17000002964	1/2 - 1 Mile ENE
9	CAOG17000192270	1/2 - 1 Mile WNW
10	CAOG17000007848	1/2 - 1 Mile NNW
11	CAOG17000002958	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 7669950.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	ECOSYS Lucky 5 South	CLIENT:	Enviroapplications Inc.
ADDRESS:	46503 County Road 155 Dixon CA 95620	CONTACT:	Bernard Sentianin
LAT/LONG:	38.382958 / 121.643176	INQUIRY #:	7669950.2s
		DATE:	June 03, 2024 1:18 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
North **OIL_GAS** **CAOG17000015248**
1/8 - 1/4 Mile

OIL_GAS:

API #:	0411320355	Well #:	W-1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Venada	Well Design:	Venada W-1
Operator ID:	V1000	Operator Name:	Venada National
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/28/1975		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320355		

2
NE **OIL_GAS** **CAOG17000007864**
1/4 - 1/2 Mile

OIL_GAS:

API #:	0411320116	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Tri-Valley Superior	Well Design:	Tri-Valley Superior 1
Operator ID:	H4400	Operator Name:	Hilliard Oil & Gas, Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	08/20/1971		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320116		

3
WNW **OIL_GAS** **CAOG17000003067**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320532	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Morrill Farms, Inc. et al	Well Design:	Morrill Farms, Inc. et al 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	05/11/1979		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320532		

4
WNW **OIL_GAS** **CAOG17000011190**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320768	Well #:	2
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Whiting	Well Design:	Whiting 2
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	04/13/1984		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320768		

5
NNW **OIL_GAS** **CAOG17000003070**
1/2 - 1 Mile

OIL_GAS:

API #:	0411300196	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Union-Amerada-Vaughn	Well Design:	Union-Amerada-Vaughn 1
Operator ID:	08253	Operator Name:	Ted Sterling, Operator
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	04/21/1960		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11300196		

6
WSW **OIL_GAS** **CAOG17000007842**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320346	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Superior-Whiting et al	Well Design:	Superior-Whiting et al 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/18/1975		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320346		

7
East **OIL_GAS** **CAOG17000002963**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320141	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Hilliard	Well Design:	Hilliard 1
Operator ID:	A4400	Operator Name:	Atlantic Oil Company
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	05/18/1972		

Well Record Request URL: https://filerequest.conservation.ca.gov/WellRecord?api=11320141

8
ENE **OIL_GAS** **CAOG17000002964**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320933	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Channel	Well Design:	Channel 1
Operator ID:	09416	Operator Name:	Zompac Corp.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	09/28/1989		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320933		

9
WNW **OIL_GAS** **CAOG17000192270**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320761	Well #:	1
Well Type:	Dry Gas	Well Status:	Plugged
Lease Name:	Pope	Well Design:	Pope 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Millar Gas	Area Name:	Main
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	10/12/1983		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320761		

10
NNW **OIL_GAS** **CAOG17000007848**
1/2 - 1 Mile

OIL_GAS:

API #:	0411300310	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	F & C	Well Design:	F & C 1
Operator ID:	A1700	Operator Name:	Amerada Hess Corp.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/06/1941		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11300310		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

11
NE
1/2 - 1 Mile

OIL_GAS **CAOG17000002958**

OIL_GAS:

API #:	0411300195	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	F.T. Swan	Well Design:	F.T. Swan 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	06/17/1955		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11300195		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95620	5	0

Federal EPA Radon Zone for YOLO County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for YOLO COUNTY, CA

Number of sites tested: 13

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.508 pCi/L	92%	8%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.200 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

Geothermal Wells Listing
Department of Conservation
Telephone: 916-445-9686
Geothermal well means a well constructed to extract or return water to the ground after it has been used for heating or cooling purposes. Geothermal wells in California (except for wells on federal leases which are administered by the Bureau of Land Management) are permitted, drilled, operated, and permanently sealed and closed (plugged and abandoned) under requirements and procedures administered by the Geothermal Section of the Department of Conservations Geologic Energy Management Division (CalGEM, formerly DOGGR).

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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ATTACHMENT 4

DATABASE ASSESSMENT CRITIERA

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

DATABASE ASSESSMENT CRITERIA

EnviroApplications, Inc. (*EAI*) used a commercial government database search service in the preparation of this report. Specifically, research into environmental regulatory agency database listings was performed by a third-party database search firm. The purpose of the review was to identify reported environmental issues for the subject property (SP) and other properties in the vicinity. The database search firm utilized the more stringent of the approximate minimum search distances specified in the Scope of Work described in Section 1.4 for each of the referenced Local, State and Federal environmental agency and other databases. The definition of the databases searched and the associated search radius distances from the SP are identified in the regulatory agency database search report.

The regulatory agency database search report commonly lists a number of sites identified as "unmappable and/or orphan." The database search firm was unable to confirm the physical locations of these sites relative to the SP or to assess whether they were located within the designated search radii. *EAI* independently reviewed the locations of these "unmappable" sites, to the extent possible, using various maps and our knowledge of the SP area. Any of the "unmappable" sites determined to be within the designated search radii were included in our evaluation of the various listed release sites that might result in a potential ASTM *recognized environmental condition* (REC) of the SP.

An ASTM REC refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at the SP: due to release into the environment; under conditions indicative of a release into the environment; or under conditions that pose a material threat of a future release into the environment.

An ASTM *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory agency authorities, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

An ASTM *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the SP and has been addressed to the satisfaction of the applicable regulatory agency authorities, or meeting unrestricted use criteria established by a regulatory authority, without subjecting the SP or its improvements to any required engineering or other types of controls.

EAI reviewed the results of the database search report to note reported environmental release sites in the vicinity of the SP that were considered to have a potential to have adversely impacted the SP (i.e., are known to have or are expected to result in an ASTM REC). Reported release sites identified in the regulatory agency database search report were evaluated with respect to the nature and extent of a given release, the distance of the reported release site from the SP, the stratigraphy of soils, the expected soil permeability, and the topographic position of a reported release site with respect to known or expected local and/or regional groundwater movement direction. Those release sites that were considered likely to have impacted the SP are identified in the report as ASTM RECs, as defined in the latest version of ASTM Standard 1527. Sites that were listed in the database search report, but not identified as a release site (for example, a site listed as a hazardous waste generator but not as having had a release), and release sites that were listed as being "closed" by the regulatory agencies were not considered likely to have impacted the SP.

ATTACHMENT 5

AGENCY RECORD REQUESTS AND INFORMATION RESPONSES

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

[Records Center] Public Records Request :: R013492-060324

CALFIRE PRA Records Center <calfire@govqa.us>
Mon 6/10/2024 7:05 AM
To: Bernard Sentianin <bsentianin@enviroapplications.com>

--- Please respond above this line ---

CAL FIRE

RE: PUBLIC RECORDS REQUEST of June 03, 2024, Reference # R013492-060324

Dear Bernard Sentianin,

CAL FIRE received a California Public Records Act (CPRA) request from you on June 03, 2024. Your request mentioned:

"Requesting records pertaining to incident/Hazmat responses at the following locaiton:

Lucky Five, 46503 County Road 155, Dixon, CA"

CAL FIRE has reviewed its files and has determined there are no responsive documents to your request.

For additional publicly available materials please visit the California Environmental Protection Agency Regulated Site Portal: https://siteportal.calepa.ca.gov/nsite/map/help

For information on facilities or locations/areas that have been reported to the State Warning Center for hazardous materials spills or releases may be found on the Governor' s Office of Emergency Services (Cal OES) HazMat Spill Release Reporting Database: (https://w3.calema.ca.gov/operational/malhaz.nsf/$defaultview).

To search for nearby pipelines please visit The National Pipeline Mapping system: https://www.npms.phmsa.dot.gov/

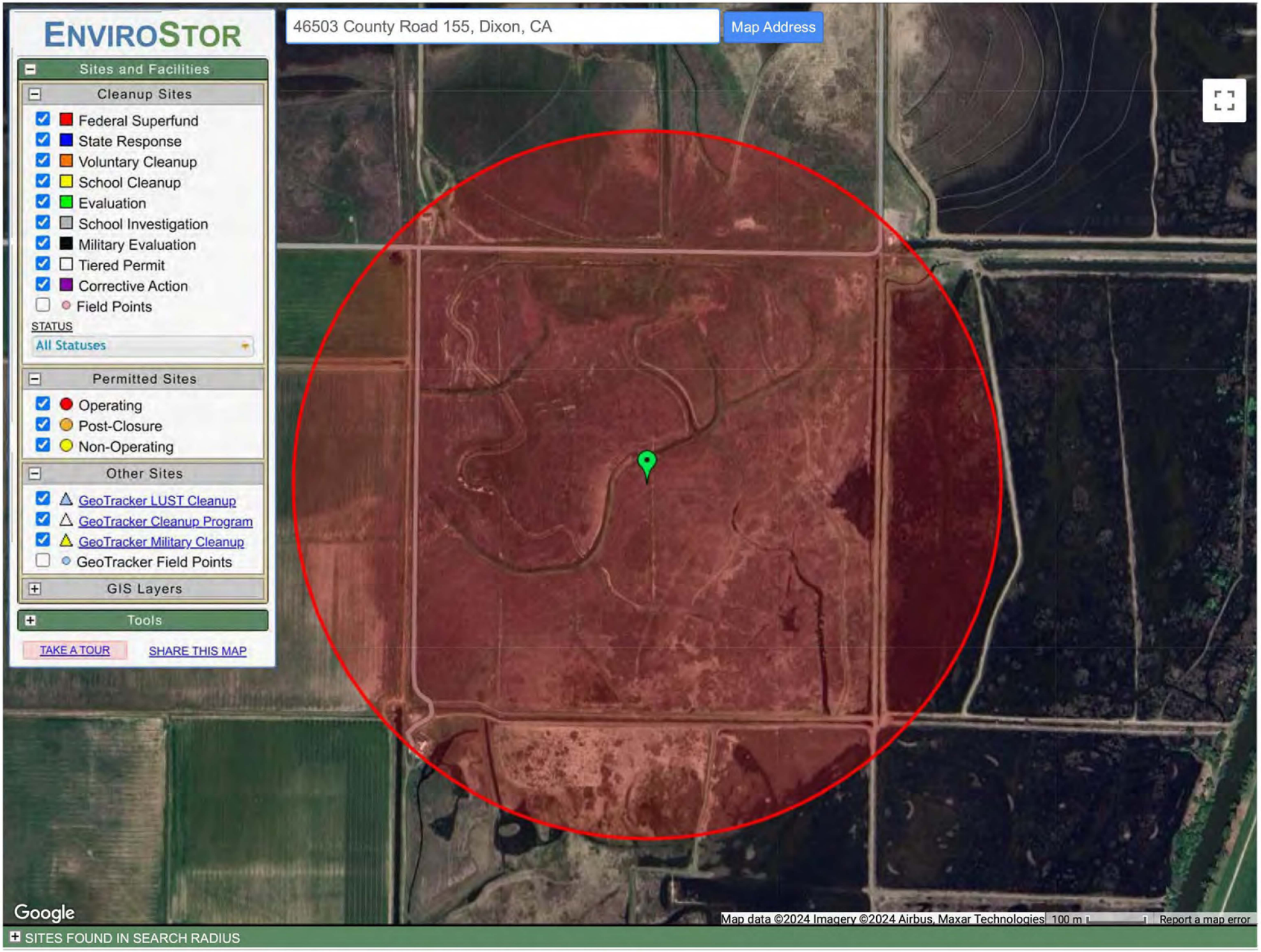
If you have any questions or need additional information, you can manage your request through the CAL FIRE PRA Records Center.

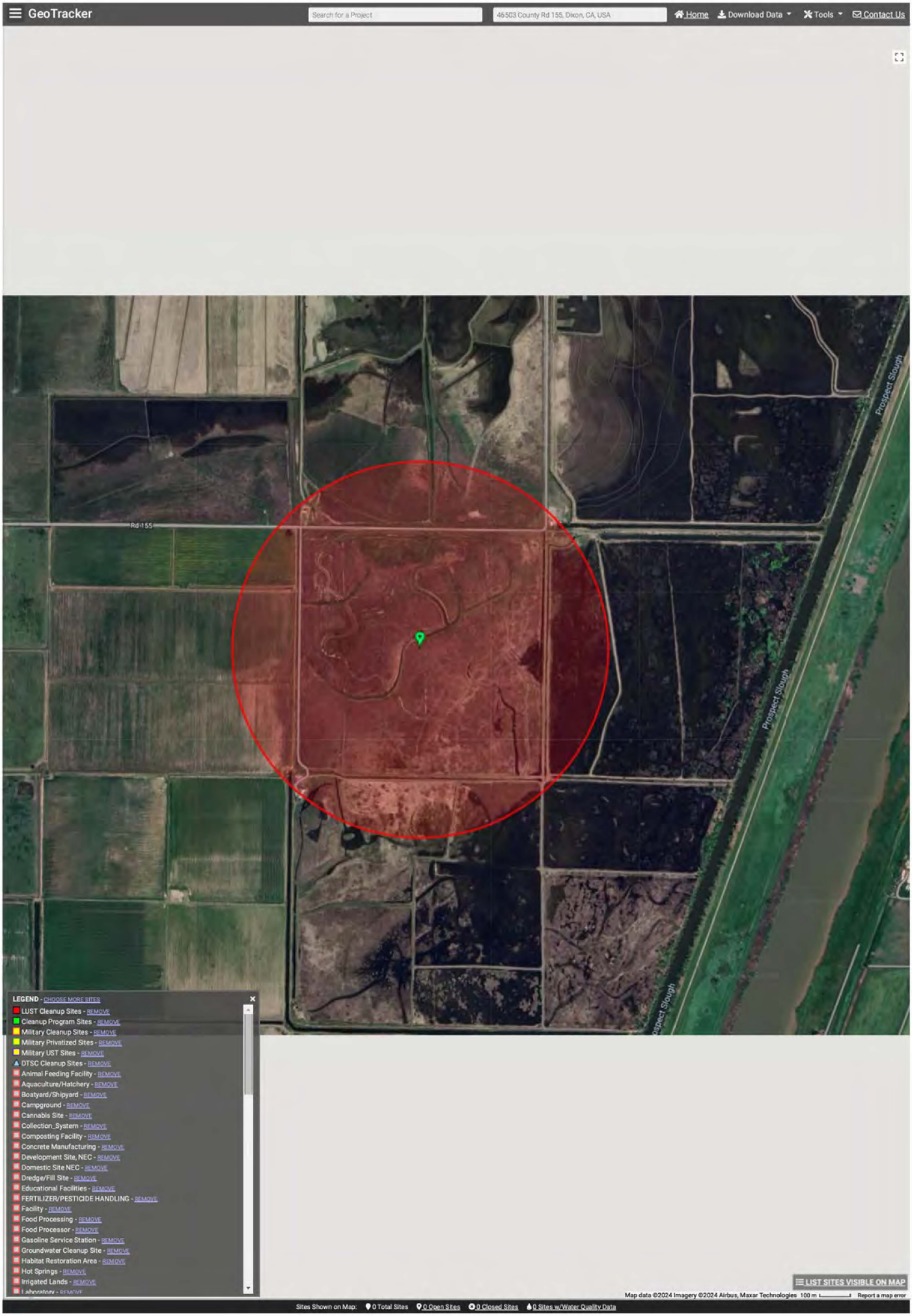
Sincerely,
Shilo Wilson
Public Records Act Coordinator
Sacramento - HQ - Legal Office

To monitor the progress or update this request please log into the CAL FIRE PRA Records Center

Powered by GovQA

Well Finder
CalGEM GIS Powered by WellSTAR
46503 County Road 155, D
Show search results for 46503 ...
County Road 155
County Road 105
County Road 104
County Road 104
600ft
Yolo County, Maxar | Geologic Energy Mar


ENVIROSTOR
46503 County Road 155, Dixon, CA
Map Address
Sites and Facilities
Cleanup Sites
Federal Superfund
State Response
Voluntary Cleanup
School Cleanup
Evaluation
School Investigation
Military Evaluation
Tiered Permit
Corrective Action
Field Points
STATUS
All Statuses
Permitted Sites
Operating
Post-Closure
Non-Operating
Other Sites
GeoTracker LUST Cleanup
GeoTracker Cleanup Program
GeoTracker Military Cleanup
GeoTracker Field Points
GIS Layers
Tools
TAKE A TOUR
SHARE THIS MAP
Google
Map data ©2024 Imagery ©2024 Airbus, Maxar Technologies
100 m
Report a map error
SITES FOUND IN SEARCH RADIUS


GeoTracker
Search for a Project
46503 County Rd 155, Dixon, CA, USA
Home
Download Data
Tools
Contact Us
Rd 155
Prospect Slough
Prospect Slough
Prospect Slough
LEGEND - CHOOSE MORE SITES
LUST Cleanup Sites - REMOVE
Cleanup Program Sites - REMOVE
Military Cleanup Sites - REMOVE
Military Privatized Sites - REMOVE
Military UST Sites - REMOVE
DTSC Cleanup Sites - REMOVE
Animal Feeding Facility - REMOVE
Aquaculture/Hatchery - REMOVE
Boatyard/Shipyard - REMOVE
Campground - REMOVE
Cannabis Site - REMOVE
Collection_System - REMOVE
Composting Facility - REMOVE
Concrete Manufacturing - REMOVE
Development Site, NEC - REMOVE
Domestic Site NEC - REMOVE
Dredge/Fill Site - REMOVE
Educational Facilities - REMOVE
FERTILIZER/PESTICIDE HANDLING - REMOVE
Facility - REMOVE
Food Processing - REMOVE
Food Processor - REMOVE
Gasoline Service Station - REMOVE
Groundwater Cleanup Site - REMOVE
Habitat Restoration Area - REMOVE
Hot Springs - REMOVE
Irrigated Lands - REMOVE
LIST SITES VISIBLE ON MAP
Map data ©2024 Imagery ©2024 Airbus, Maxar Technologies 100 m Report a map error
Sites Shown on Map: 0 Total Sites 0 Open Sites 0 Closed Sites 0 Sites w/Water Quality Data

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

June 4, 2024

Bernard Sentianin
EnviroApplications, Inc.
bsentianin@enviroapplications.com

Public Records Request Number: 1-060324-02
Location(s): Lucky Five
46503 County Road 155, Dixon, California

Dear Requestor:

On June 3, 2024, the Department of Toxic Substances Control (DTSC) received your email of June 3, 2024, requesting records under the Public Records Act. After a thorough review of our files, no site records were found pertaining to the sites/facilities referenced above.

A large number of our records are available on EnviroStor, an online database that provides non-confidential, public access to DTSCs data management system. It tracks our cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. EnviroStor is available 24/7, 365 days a year. The data reflects the latest updates as they are entered in the system. Access it from your computer or smartphone, the local library – anywhere Internet access is available. Just go to www.envirostor.dtsc.ca.gov. You'll find a step-by-step tour of EnviroStor under the "How to Use EnviroStor" menu on the website.

If you have any questions or would like further information regarding your request, please contact me at 916-255-6449 or via email at pubreqact@dtsc.ca.gov.

Sincerely,
Juan Acosta

Juan Acosta
Regional Records Coordinator

RE: Records Request -

Environmental Health <Environmental.Health@yolocounty.gov>
Fri 6/14/2024 3:18 PM
To: Bernard Sentianin <bsentianin@enviroapplications.com>

Good afternoon Bernard,

I am not showing any records for address 46503 CR 155, Dixon, CA. If you have an APN I can try to search it that way also.

Best regards,

Cristina Jaimes
Environmental Health Technician I
Yolo County Department of Community Services
Environmental Health Division
292 W. Beamer Street, Woodland, CA 95695
Main: 530-666-8646 / Direct: 530-666-8595 / Fax: 530-669-1448
www.yolocounty.org / Environmental.Health@yolocounty.org

From: Bernard Sentianin <bsentianin@enviroapplications.com>
Sent: Friday, June 14, 2024 11:12 AM
To: Environmental Health <Environmental.Health@yolocounty.gov>
Subject: Records Request -

Requesting available records, if any, related to the following address:

46503 County Road 155, Dixon, CA

Thanks

RE: Records Request 46503 County Road 155

Cody Hess <CHess@ysaqmd.org>
Wed 6/5/2024 11:04 AM
To: Bernard Sentianin <bsentianin@enviroapplications.com>

Hello (requestor).

Your Public Records Act (PRA) request was received by the Yolo-Solano Air Quality Management District (District) on June 3, 2024 for "records (Permits, Equipment, NOV, Asbestos" for the site location at 46503 County Road 155. Under Section 6253(c) of the Government Code, the District must advise you within ten days of receiving your request whether the records you have requested are disclosable.

After reviewing your request, it appears that the District **does not have records** for the location specified in your request.

As there are no records available that pertain to your request, we consider this request closed. Please let me know if you have any questions regarding this request. If you would like to request District records in the future, please submit a new PRA request either by mail, fax (530-757-3670), or email (pra@ysaqmd.org).

Thank you and have a great day!

Best Regards,

Cody Hess, MPA - *Public Outreach Coordinator*
Yolo-Solano Air Quality Management District
chess@ysaqmd.org (530) 304-5833

From: Paul Hensleigh <PHensleigh@ysaqmd.org>
Sent: Wednesday, June 5, 2024 10:53 AM
To: Cody Hess <CHess@ysaqmd.org>
Cc: Gretchen Bennitt <GBennitt@ysaqmd.org>; Hope Welton <Hope.Welton@yolocounty.org>
Subject: RE: Records Request 46503 County Road 155

OK to proceed.

Thanks,
Paul

From: Cody Hess <CHess@ysaqmd.org>
Sent: Monday, June 3, 2024 10:11 AM
To: Hope Welton <Hope.Welton@yolocounty.org>; Paul Hensleigh <PHensleigh@ysaqmd.org>
Cc: PRA <pra@ysaqmd.org>
Subject: FW: Records Request 46503 County Road 155

PRA request received.

NOTE: No records found. Appears to be an empty field.

Date Received:	06/03/2024
Location(s):	46503 County Road 155
Company Name:	n/a
Information requested:	Permits, Equipment, NOV, Asbestos
Requestor:	Bernard A. Sentianin, PG
Company:	*EnviroApplications, Inc.*

Cody Hess, MPA - *Public Outreach Coordinator*
Yolo-Solano Air Quality Management District
chess@ysaqmd.org (530) 304-5833

APPENDIX B

Historical Aerial Photographs and Topographic Maps

APPENDIX B

Historical Aerial Photographs and Topographic Maps

GeoSearch
On time. On target. In touch.™

Historical Aerial Photographs

***NEW:** GeoLens by Geosearch*

Target Property:

Tides End
Road 107
Clarksburg, Yolo, California 95620

Prepared For:

Environmental Science Assoc-San Francisco

Order #: 161369
Job #: 397579
Project #: D201801197.01
Date: 2/21/2021

Target Property Summary

Tides End
Road 107
Clarksburg, Yolo, California 95620

USGS Quadrangle: ***Liberty Island, Clarksburg, Saxon***
Target Property Geometry: ***Area***

Target Property Longitude(s)/Latitude(s):
(-121.634737331, 38.371660398), (-121.638857204, 38.371794981), (-121.638685542, 38.401262517), (-121.647869426, 38.401127990), (-121.648212749, 38.415722782), (-121.638857204, 38.415655532), (-121.638685542, 38.419488702), (-121.620317775, 38.419354208), (-121.620060283, 38.422716476), (-121.614052135, 38.422649233), (-121.615425426, 38.419892181), (-121.614223796, 38.416193533)

Aerial Research Summary

Date	Source	Scale	Frame
2018	USDA	1" = 1500'	N/A
2016	USDA	1" = 1500'	N/A
2014	USDA	1" = 1500'	N/A
2012	USDA	1" = 1500'	N/A
2010	USDA	1" = 1500'	N/A
2009	USDA	1" = 1500'	N/A
2006	USDA	1" = 1500'	N/A
2005	USDA	1" = 1500'	N/A
2004	USDA	1" = 1500'	N/A
2003	USDA	1" = 1500'	N/A
06/15/1993	USGS	1" = 1500'	N/A
07/10/1987	USGS	1" = 1500'	3-66, 3-68
04/22/1982	NASA	1" = 1500'	3061-56
04/24/1970	USGS	1" = 1500'	1-125
05/02/1968	USGS	1" = 1500'	5-73, 5-139, 5-141
09/18/1957	ASCS	1" = 1500'	41-28, 41-30, 70-96,
07/25/1953	ASCS	1" = 1500'	PI-5
10/06/1937	ASCS	1" = 1500'	50-75, 50-77, 112-65,

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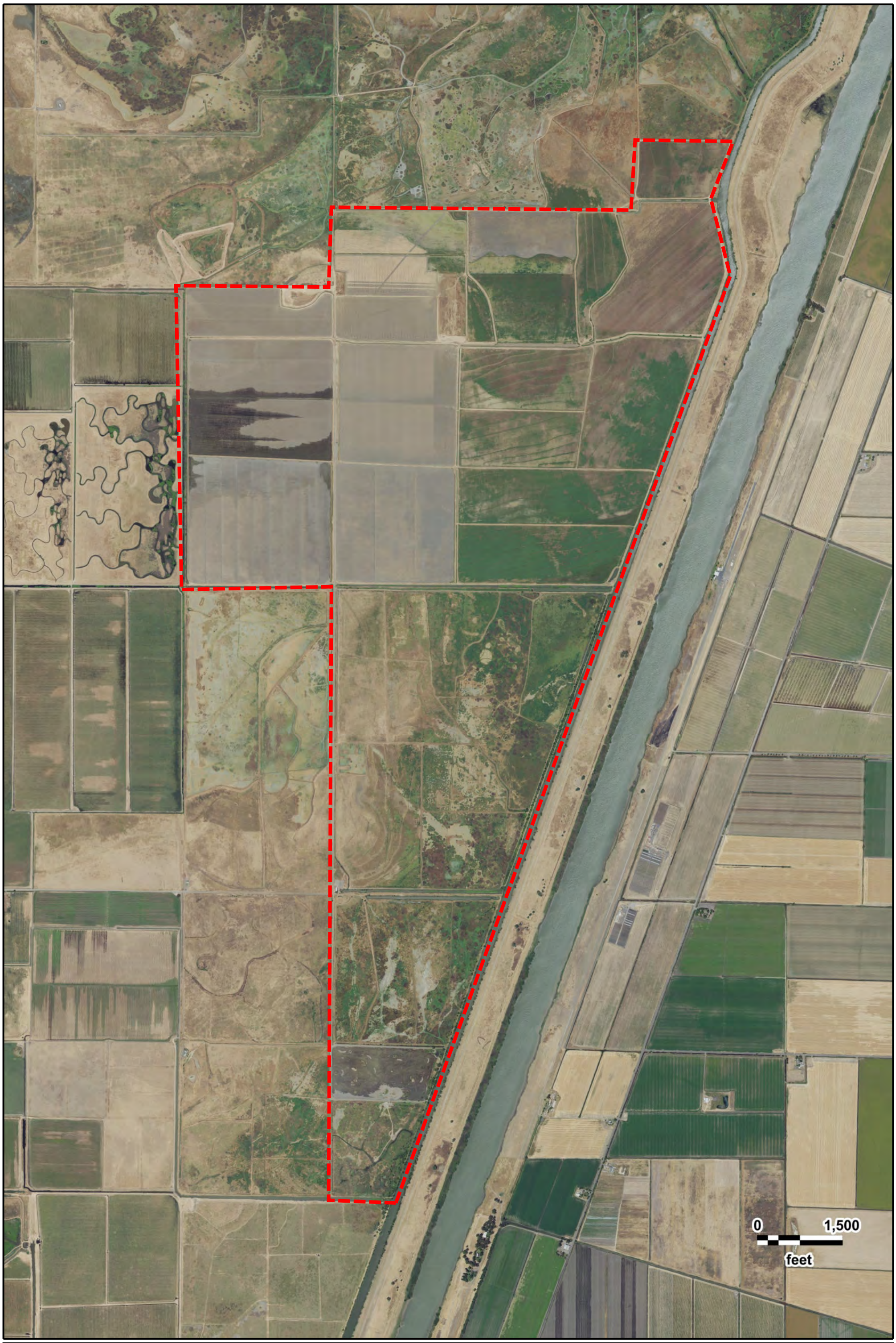
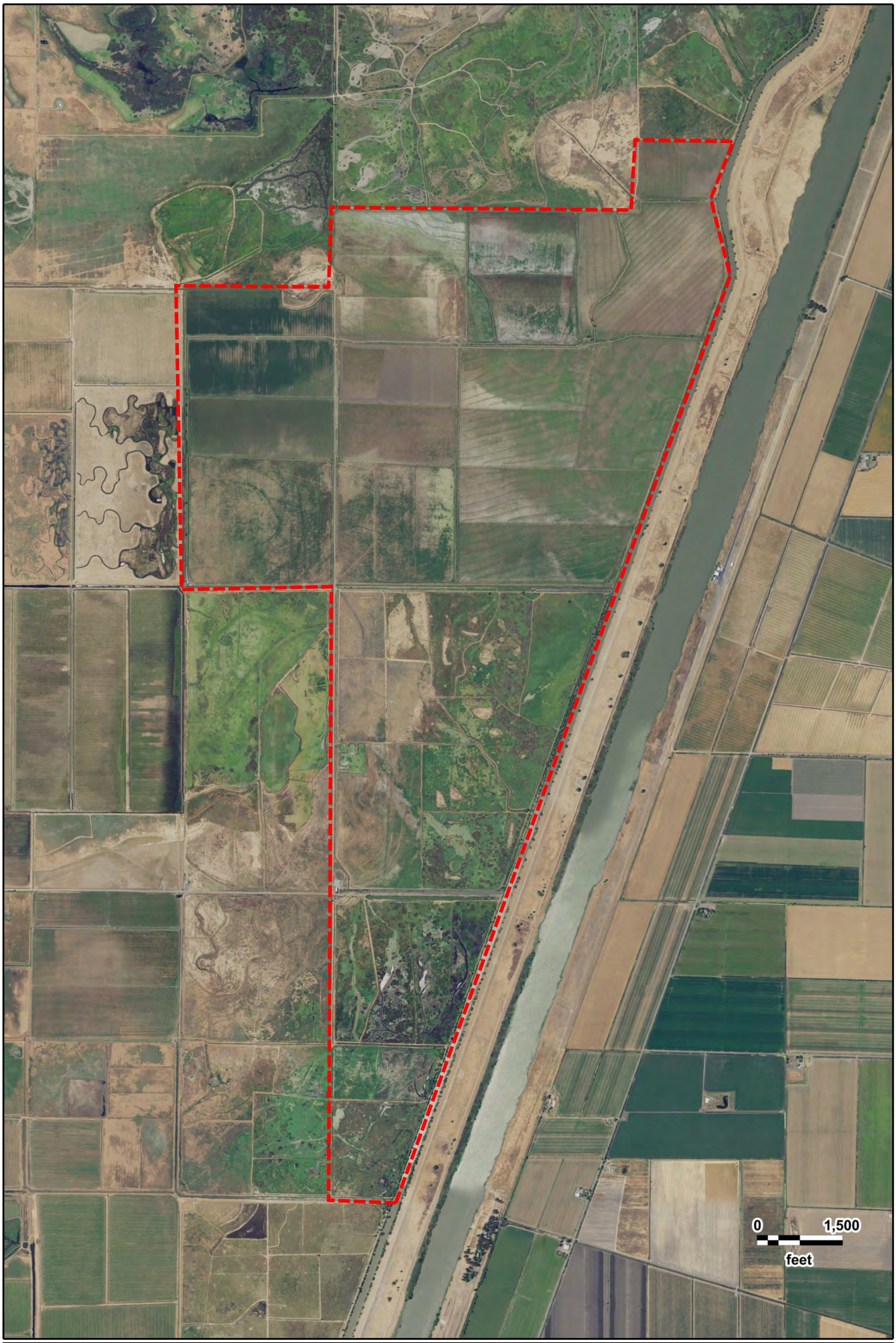


N
W E
S

Tides End
USDA
2018

GeoSearch

JOB #: 397579 - 02/21/2021



N
W E
S

Tides End
USDA
2016

GeoSearch

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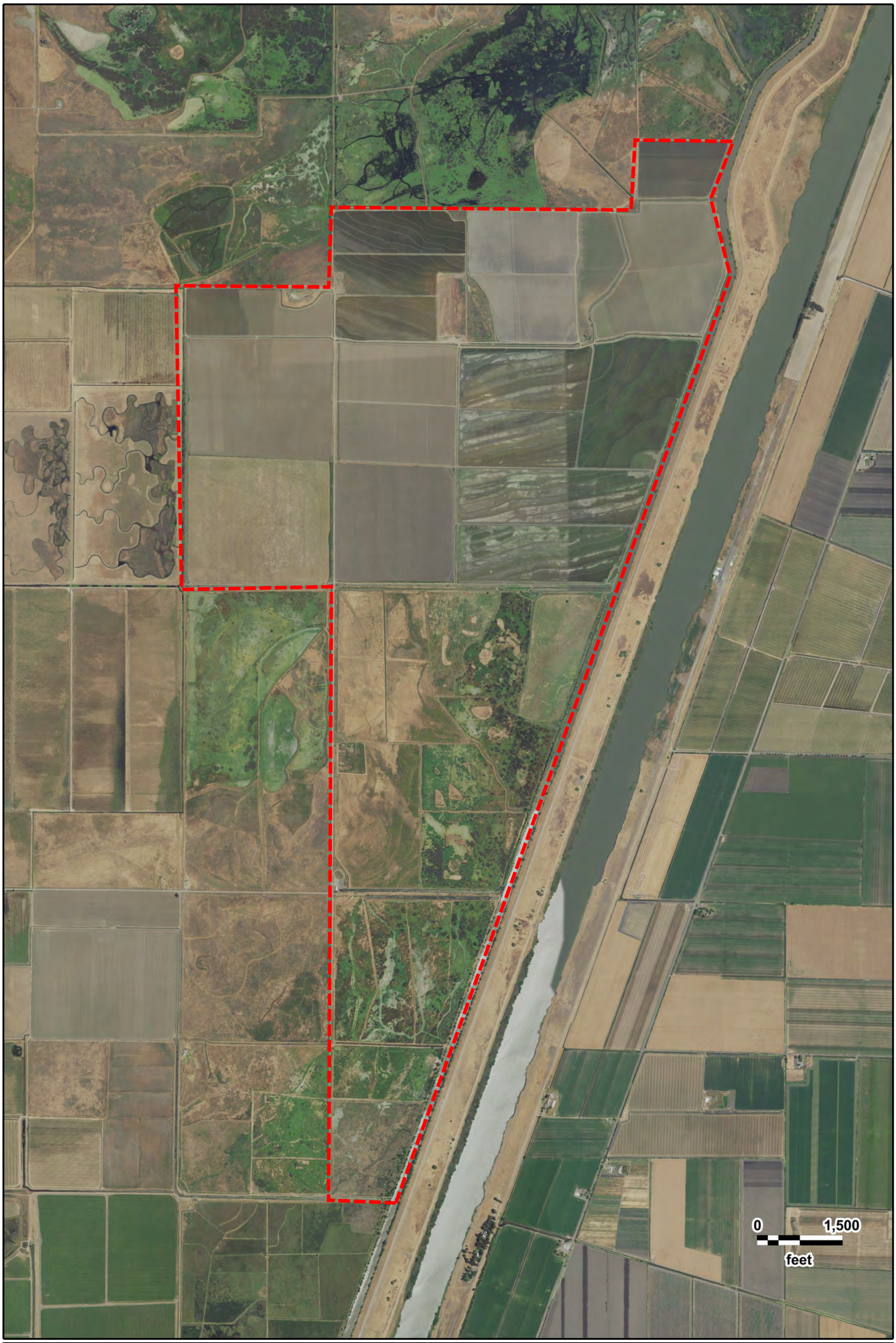


N
W E
S

Tides End
USDA
2014

GeoSearch

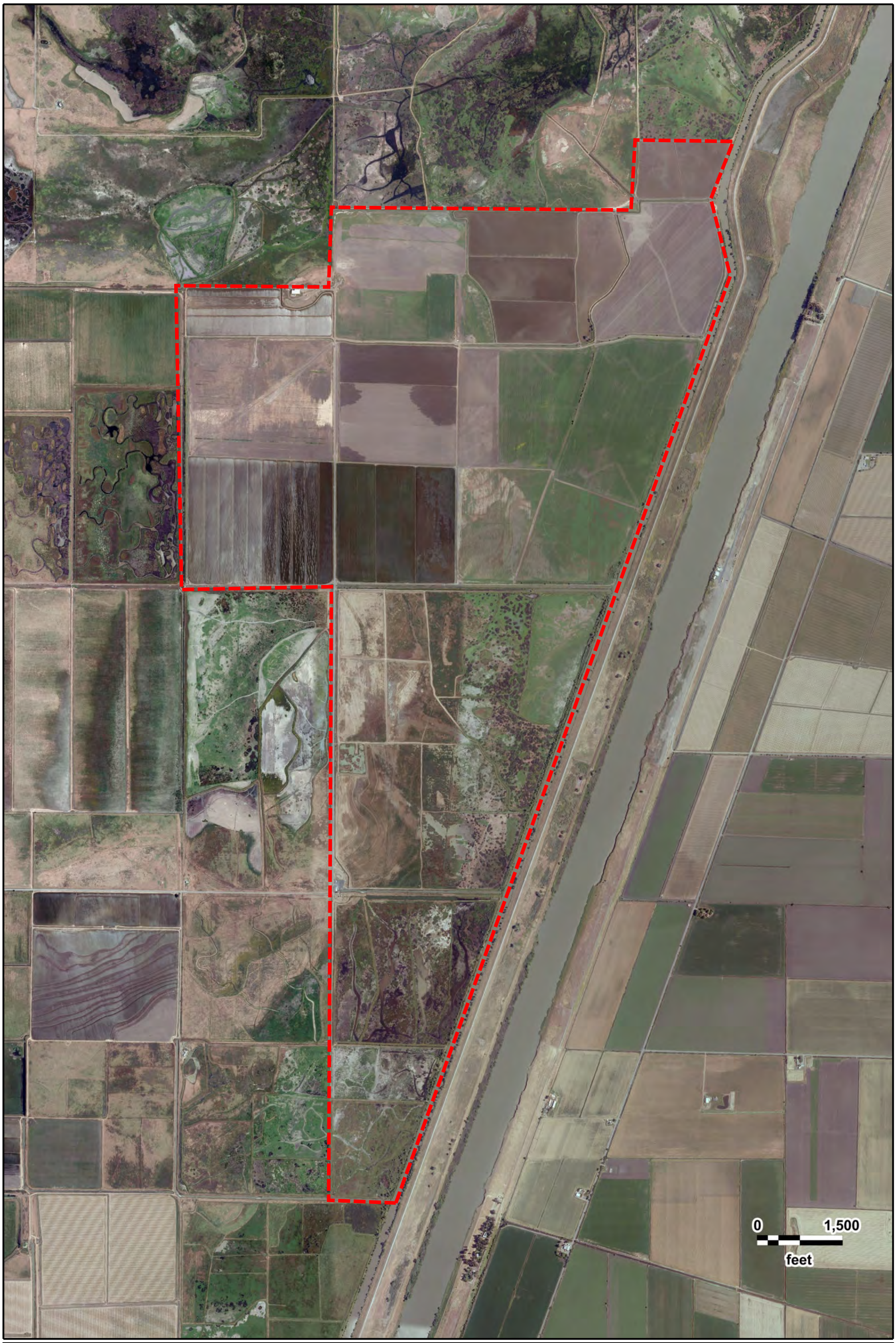
JOB #: 397579 - 02/21/2021

N
W E
S

Tides End
USDA
2012

GeoSearch

JOB #: 397579 - 02/21/2021



N
W E
S

Tides End
USDA
2010

GeoSearch

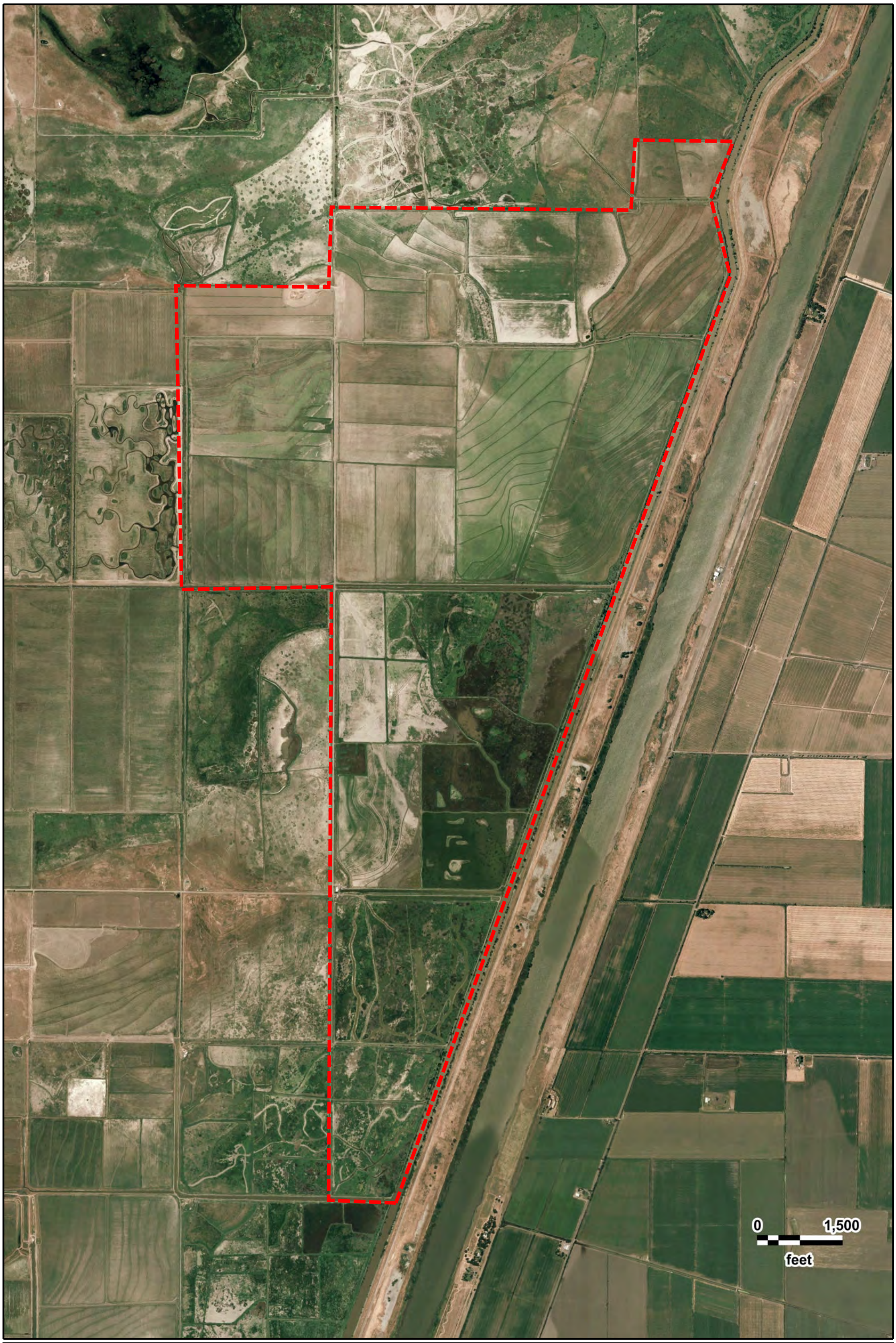
JOB #: 397579 - 02/21/2021

N
W E
S

Tides End
USDA
2009

GeoSearch

JOB #: 397579 - 02/21/2021



N
W E
S

Tides End
USDA
2006

GeoSearch

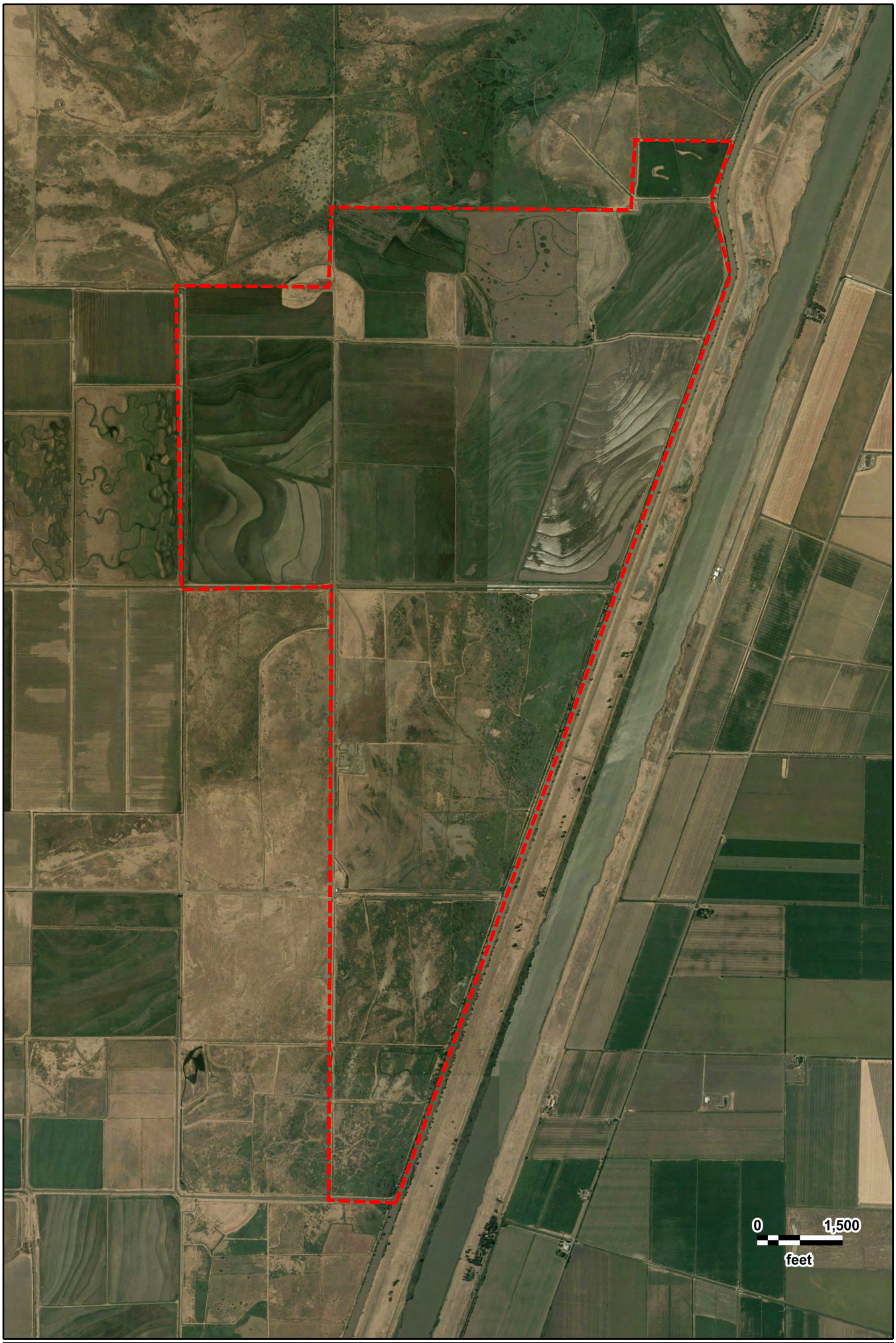
JOB #: 397579 - 02/21/2021

N
W E
S

Tides End
USDA
2005

GeoSearch

JOB #: 397579 - 02/21/2021

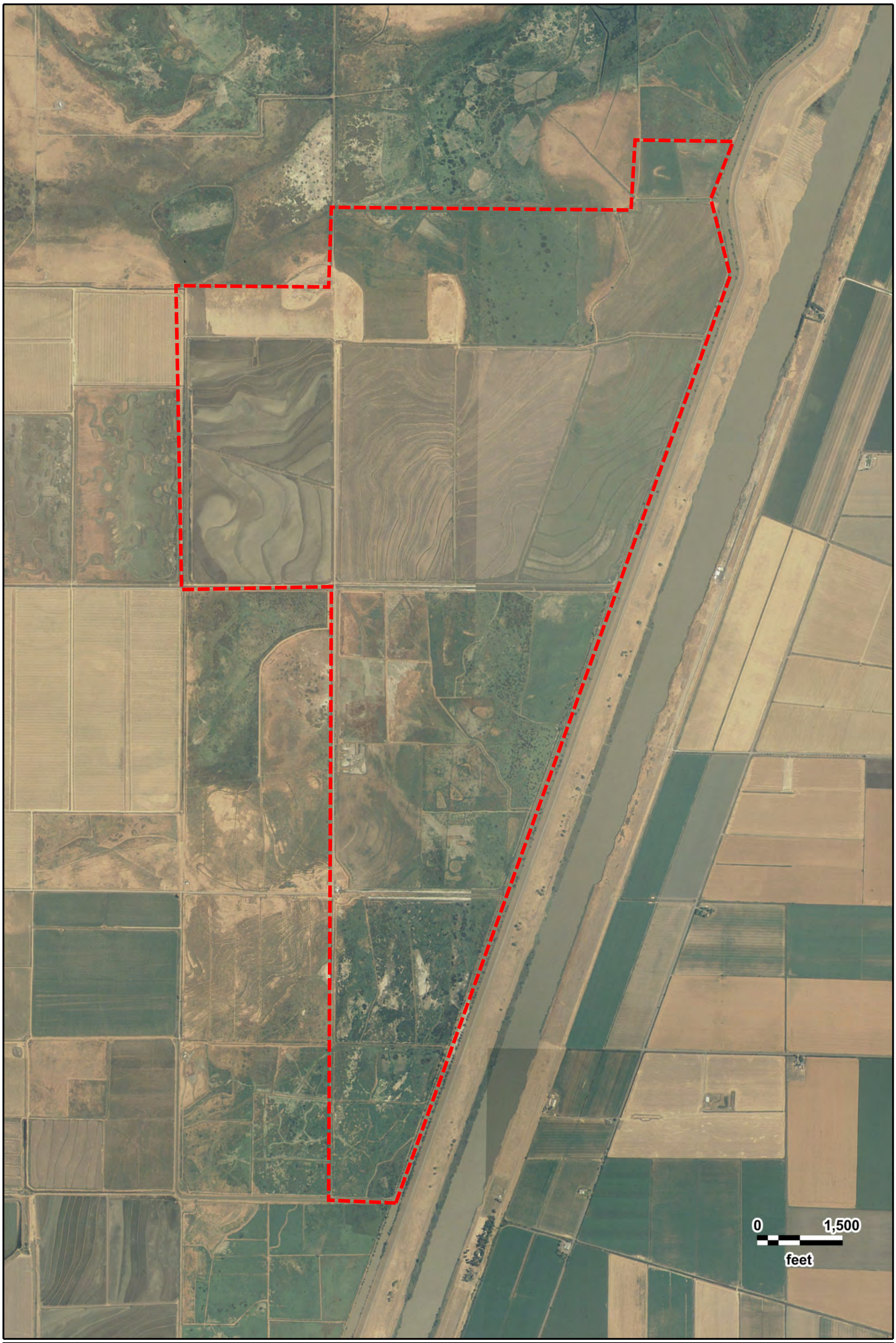


N
W E
S

Tides End
USDA
2004

GeoSearch

JOB #: 397579 - 02/21/2021



N
W E
S

Tides End
USDA
2003

GeoSearch

JOB #: 397579 - 02/21/2021

N
W E
S

Tides End
USGS
06/15/1993

GeoSearch

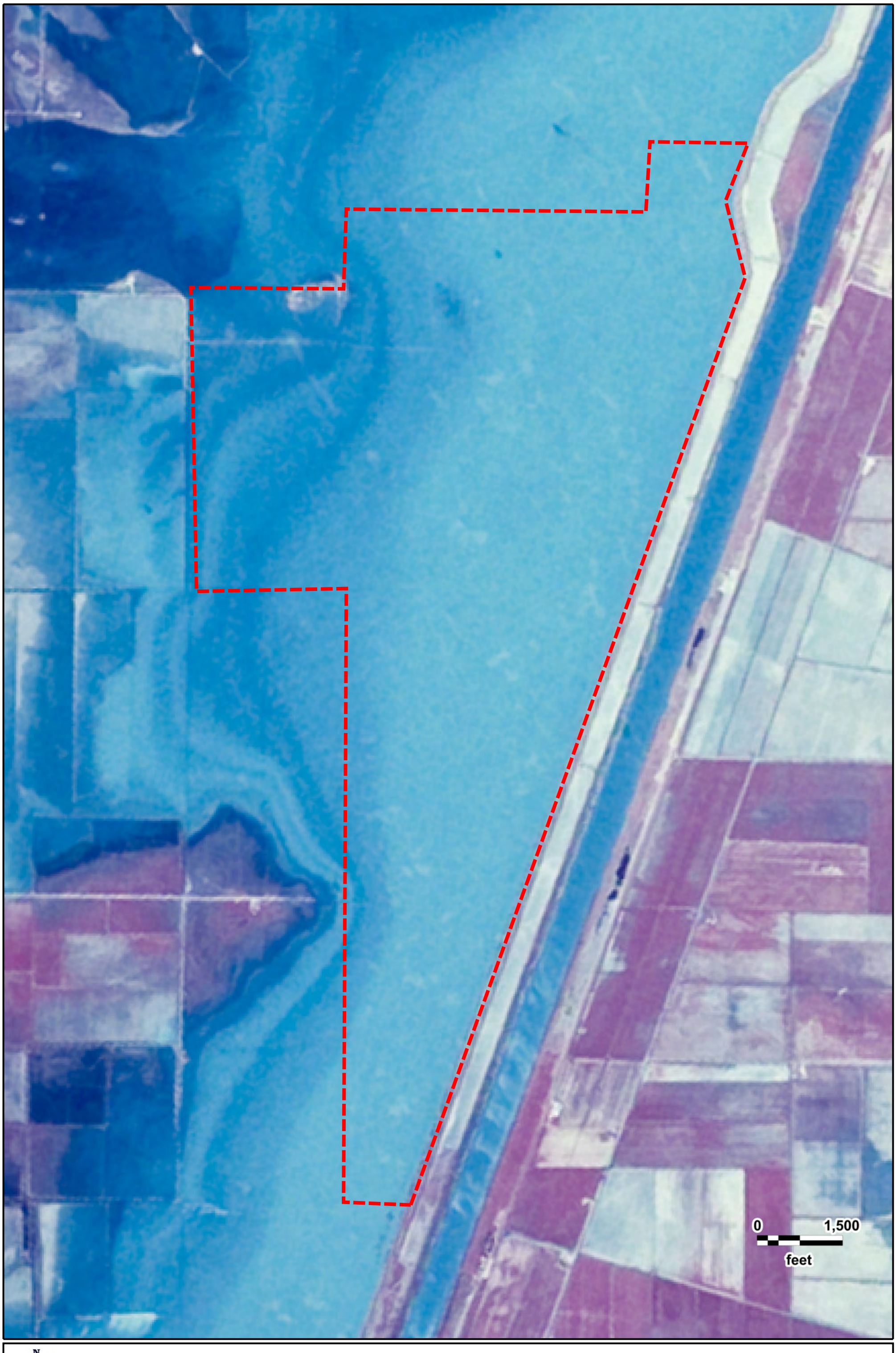
JOB #: 397579 - 02/21/2021

N
W E
S

Tides End
USGS
07/10/1987

GeoSearch

JOB #: 397579 - 02/21/2021



N
W E
S

Tides End
NASA
04/22/1982

GeoSearch

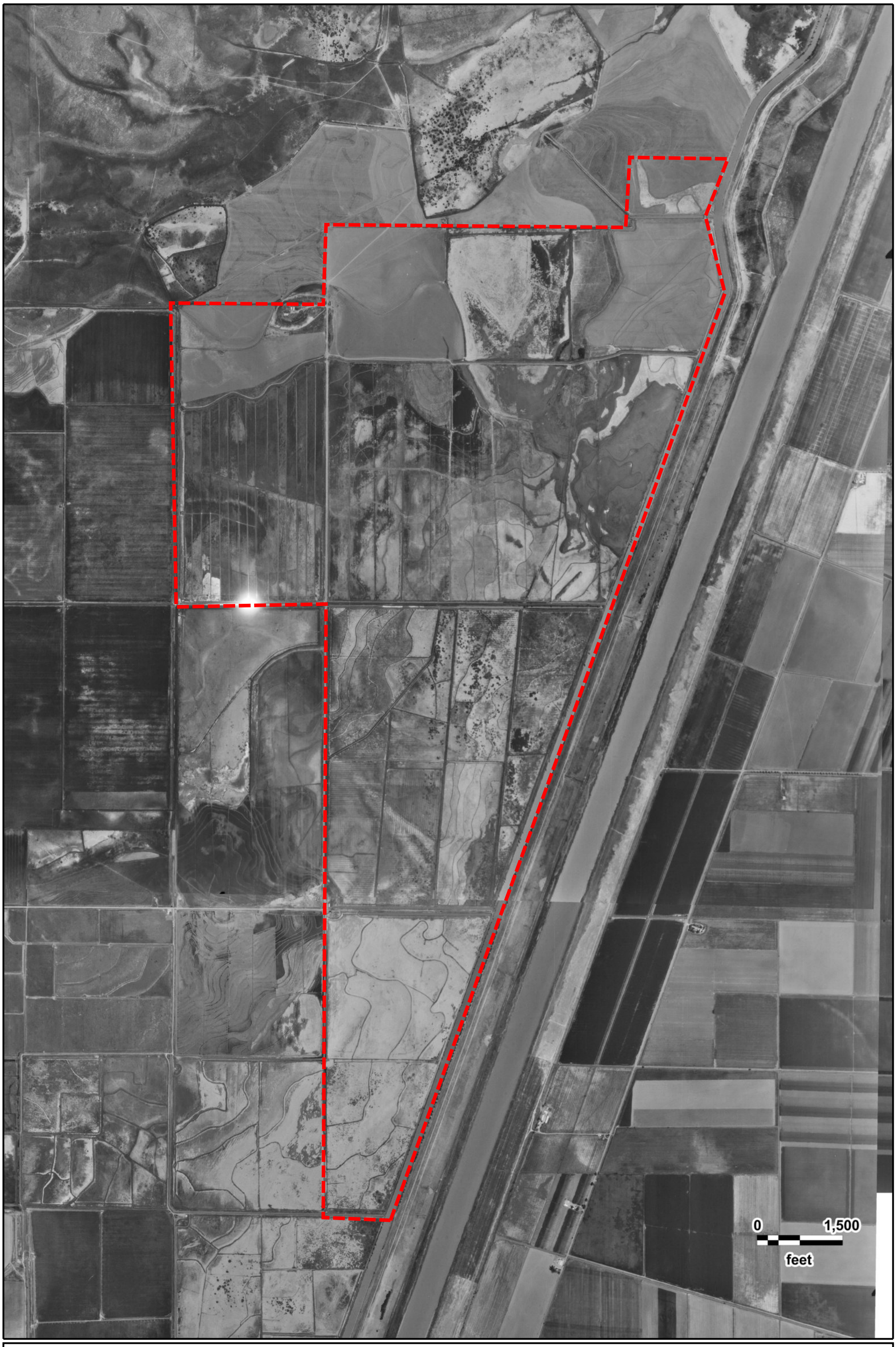
JOB #: 397579 - 02/21/2021

N
W E
S

Tides End
USGS
04/24/1970

GeoSearch

JOB #: 397579 - 02/21/2021

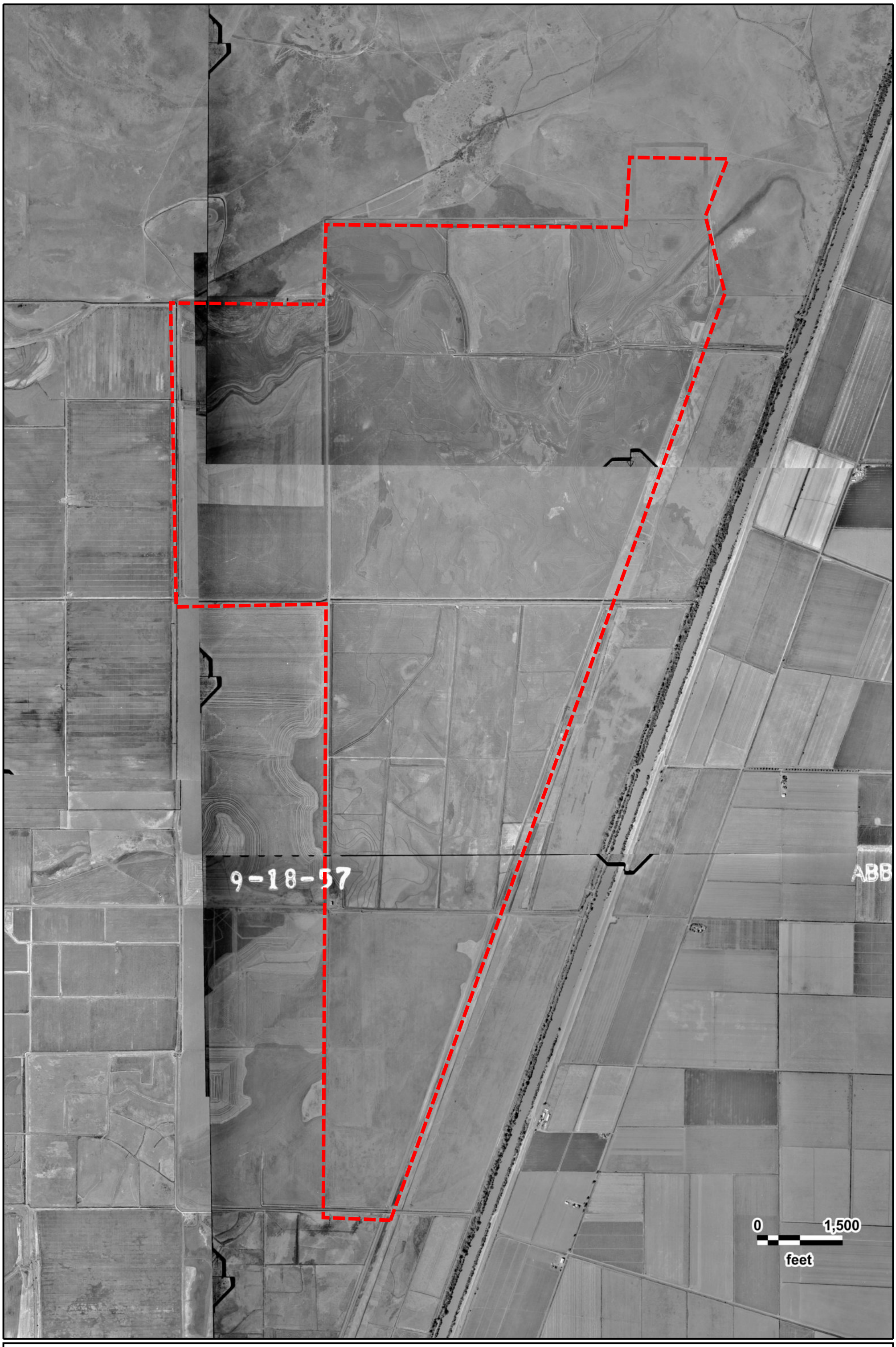


N
W E
S

Tides End
USGS
05/02/1968

GeoSearch

JOB #: 397579 - 02/21/2021

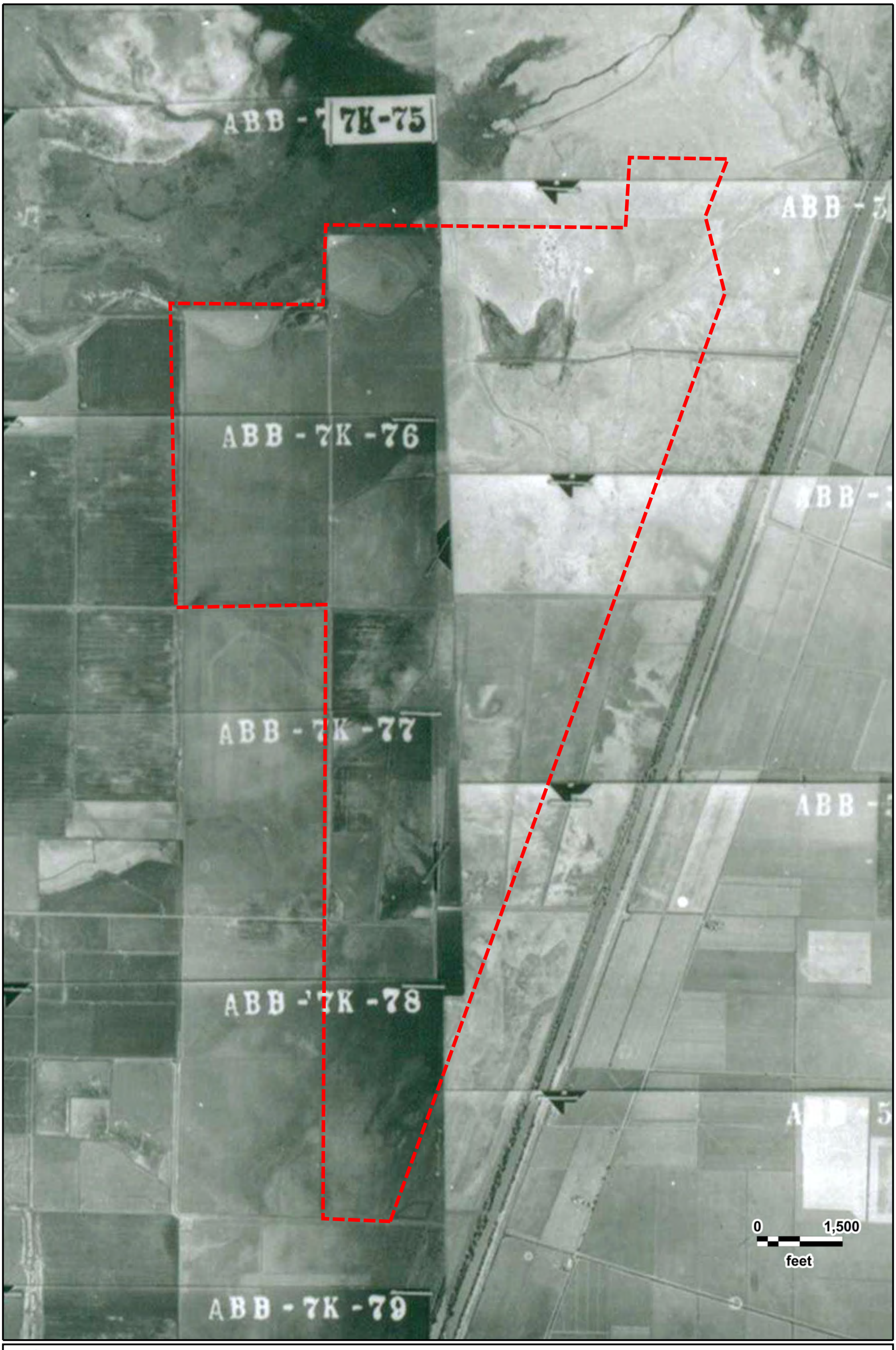


N
W E
S

Tides End
ASCS
09/18/1957

GeoSearch

JOB #: 397579 - 02/21/2021



N
W E
S

Tides End
ASCS
07/25/1953

GeoSearch

JOB #: 397579 - 02/21/2021

N
W E
S

Tides End
ASCS
10/06/1937

GeoSearch

JOB #: 397579 - 02/21/2021

GeoSearch
On time. On target. In touch.™

Historical Topographic Maps

NEW: *GeoLens by Geosearch*

Target Property:

Tides End
Road 107
Clarksburg, Yolo, California 95620

Prepared For:

Environmental Science Assoc-San Francisco

Order #: 161369
Job #: 397578
Project #: D201801197.01
Date: 2/22/2021

Target Property Summary

Tides End
Road 107
Clarksburg, Yolo, California 95620

USGS Quadrangle: ***Liberty Island, Clarksburg, Saxon***
Target Property Geometry: ***Area***

Target Property Longitude(s)/Latitude(s):
(-121.634737331, 38.371660398), (-121.638857204, 38.371794981), (-121.638685542, 38.401262517), (-121.647869426, 38.401127990), (-121.648212749, 38.415722782), (-121.638857204, 38.415655532), (-121.638685542, 38.419488702), (-121.620317775, 38.419354208), (-121.620060283, 38.422716476), (-121.614052135, 38.422649233), (-121.615425426, 38.419892181), (-121.614223796, 38.416193533)

Topographic Map Summary

Date	Quadrangle	Scale
2012	SAXON, CA (2012)	1" = 2000'
	CLARKSBURG, CA (2012)	
	LIBERTY ISLAND, CA (2012)	
	COURTLAND, CA (2012)	
1952 MINOR REVISION 1993	SAXON, CA (1993)	1" = 2000'
	CLARKSBURG, CA (1980)	
	LIBERTY ISLAND, CA (1993)	
	COURTLAND, CA (1993)	
1952 PHOTOINSPECTED 1973	SAXON, CA (1973)	1" = 2000'
	CLARKSBURG, CA (1975)	
	LIBERTY ISLAND, CA (1978)	
	COURTLAND, CA (1978)	
1952 PHOTOREVISED 1968	SAXON, CA (1968)	1" = 2000'
	CLARKSBURG, CA (1967)	
	LIBERTY ISLAND, CA (1968)	
	COURTLAND, CA (1968)	
1952	SAXON, CA (1952)	1" = 2000'
	CLARKSBURG, CA (1952)	
	LIBERTY ISLAND, CA (1952)	
	COURTLAND, CA (1952)	
1908	COURTLAND, CA	1" = 5208'
1906	SAXON, CA (1906)	1" = 2640'
	BABEL SLOUGH, CA (1906)	
	CACHE SLOUGH, CA (1906)	
	VORDEN, CA (1906)	

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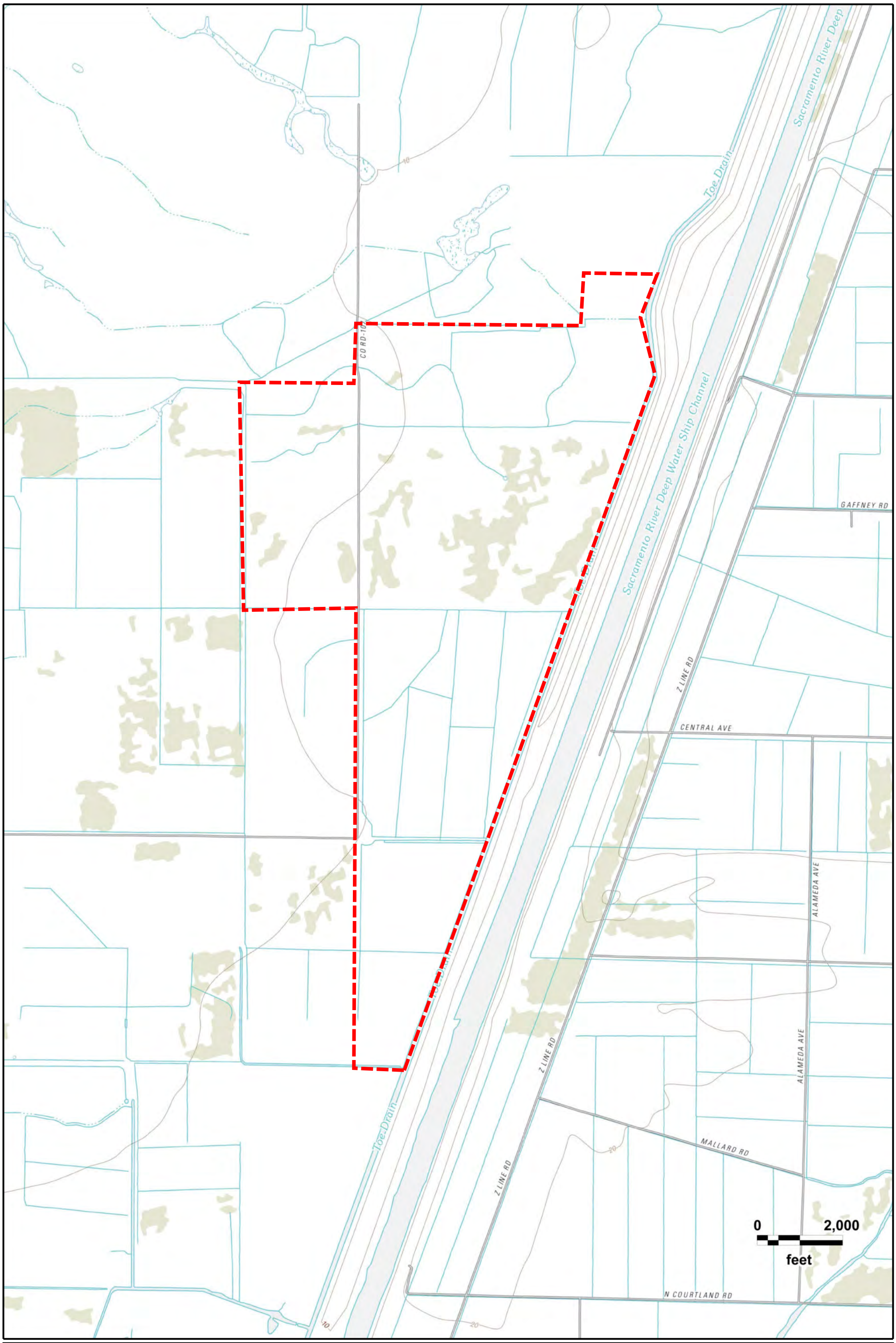
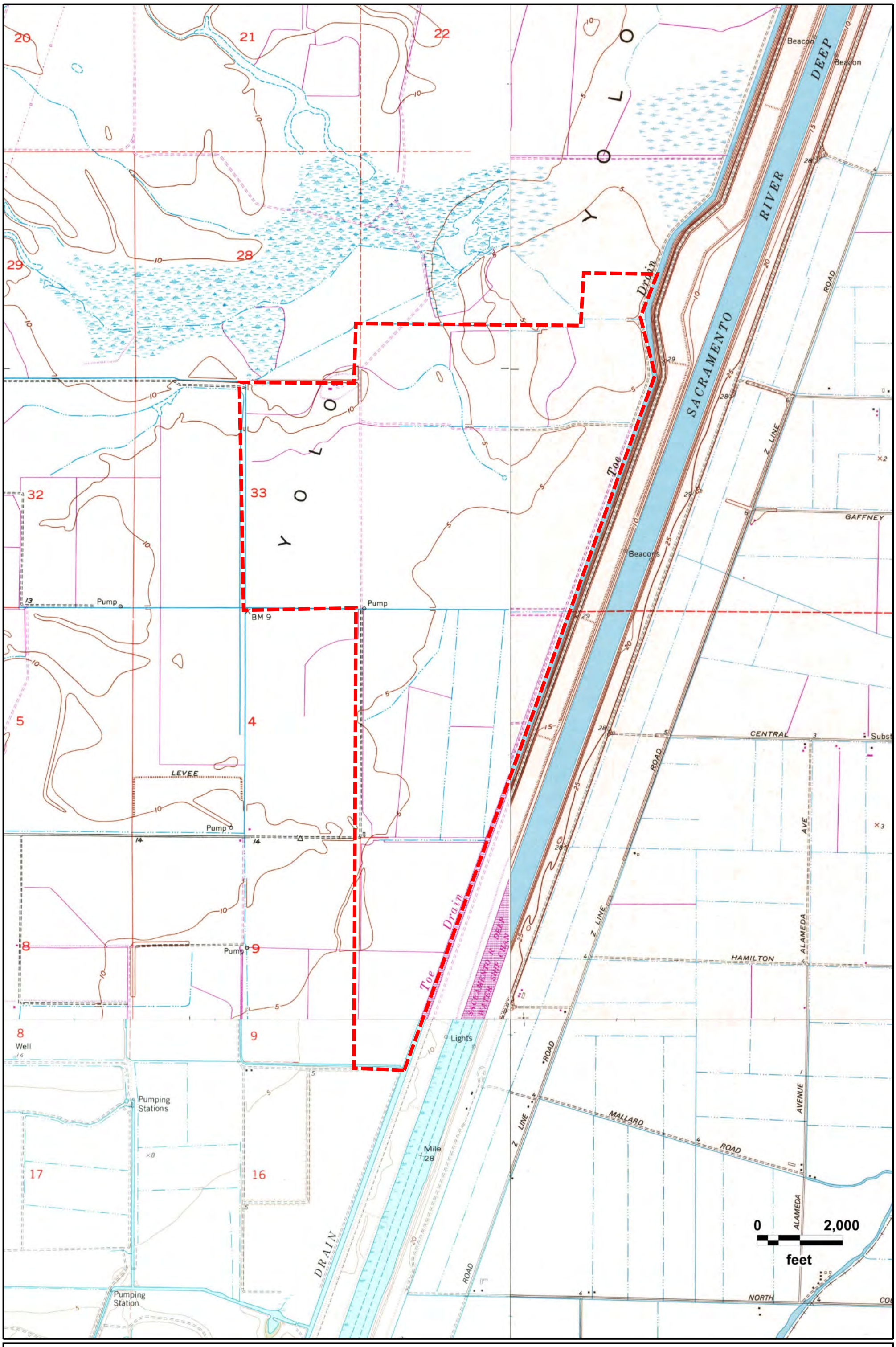


N
W E
S

Tides End
SAXON, CA (2012); CLARKSBURG, CA (2012)
LIBERTY ISLAND, CA (2012); COURTLAND, CA (2012)

GeoSearch

JOB #: 397578 - 02/22/2021

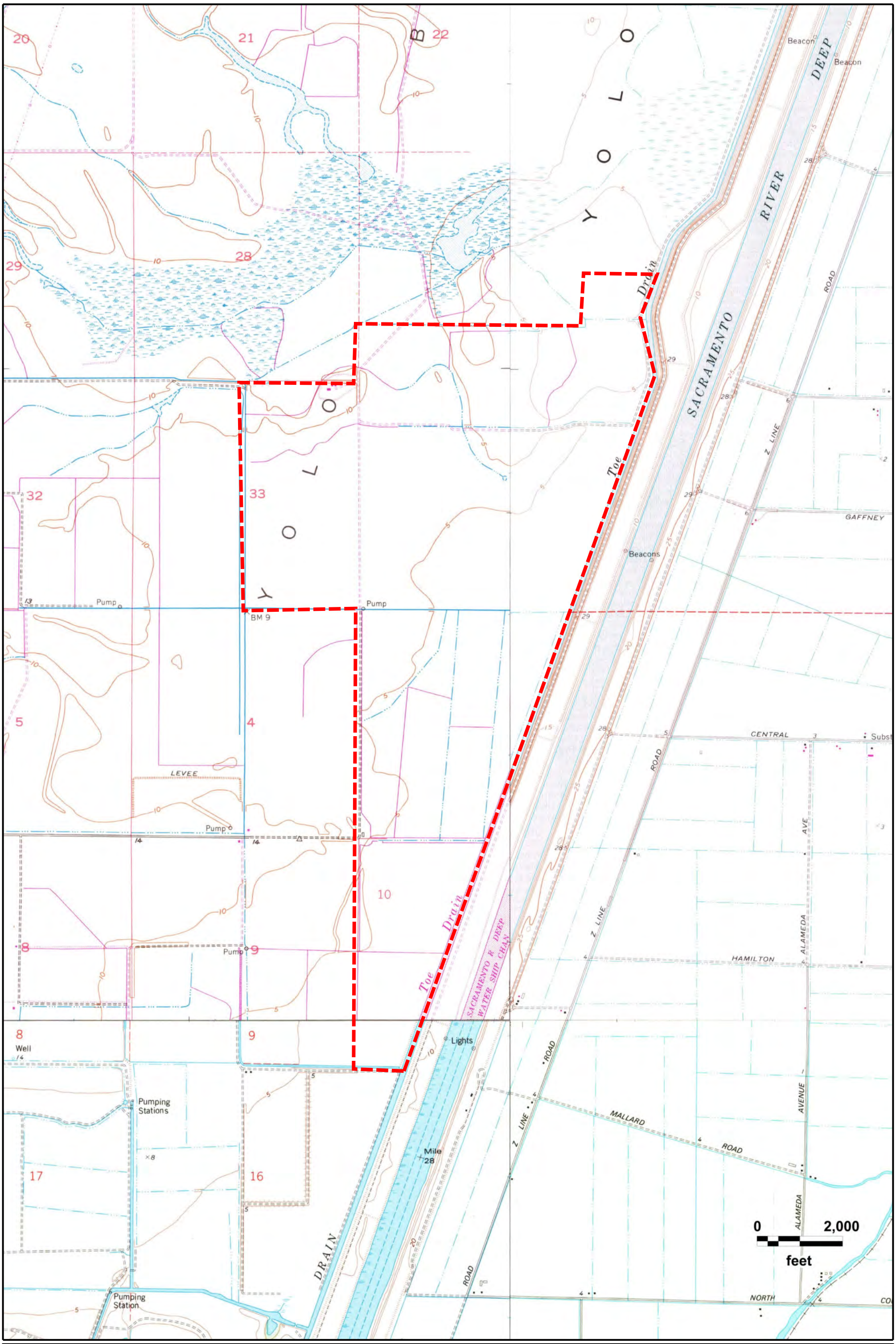


N
W E
S

Tides End
SAXON, CA (1993); CLARKSBURG, CA (1980)
LIBERTY ISLAND, CA (1993); COURTLAND, CA (1993)

GeoSearch

JOB #: 397578 - 02/22/2021

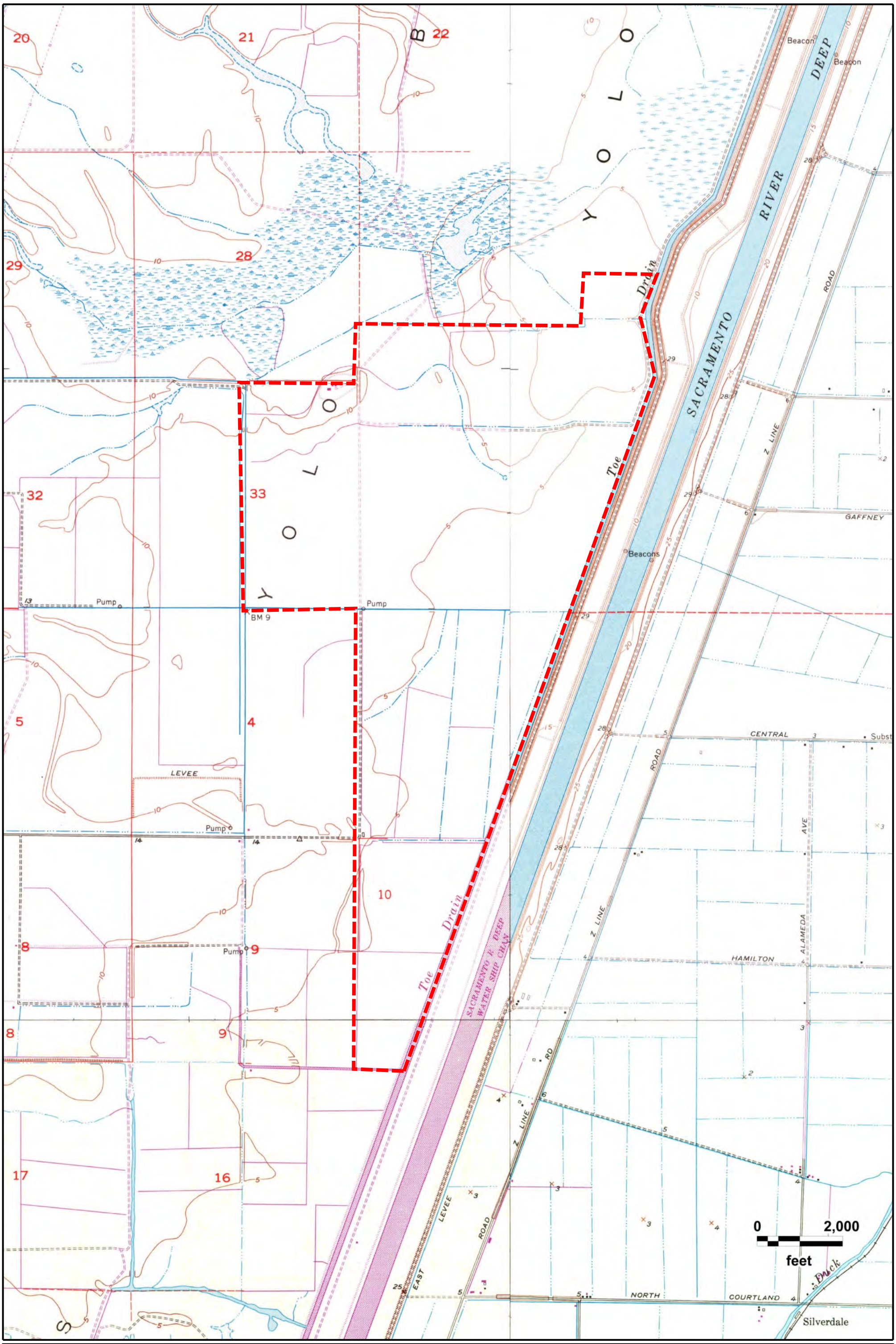


N
W E
S

Tides End
SAXON, CA (1973); CLARKSBURG, CA (1975)
LIBERTY ISLAND, CA (1978); COURTLAND, CA (1978)

GeoSearch

JOB #: 397578 - 02/22/2021

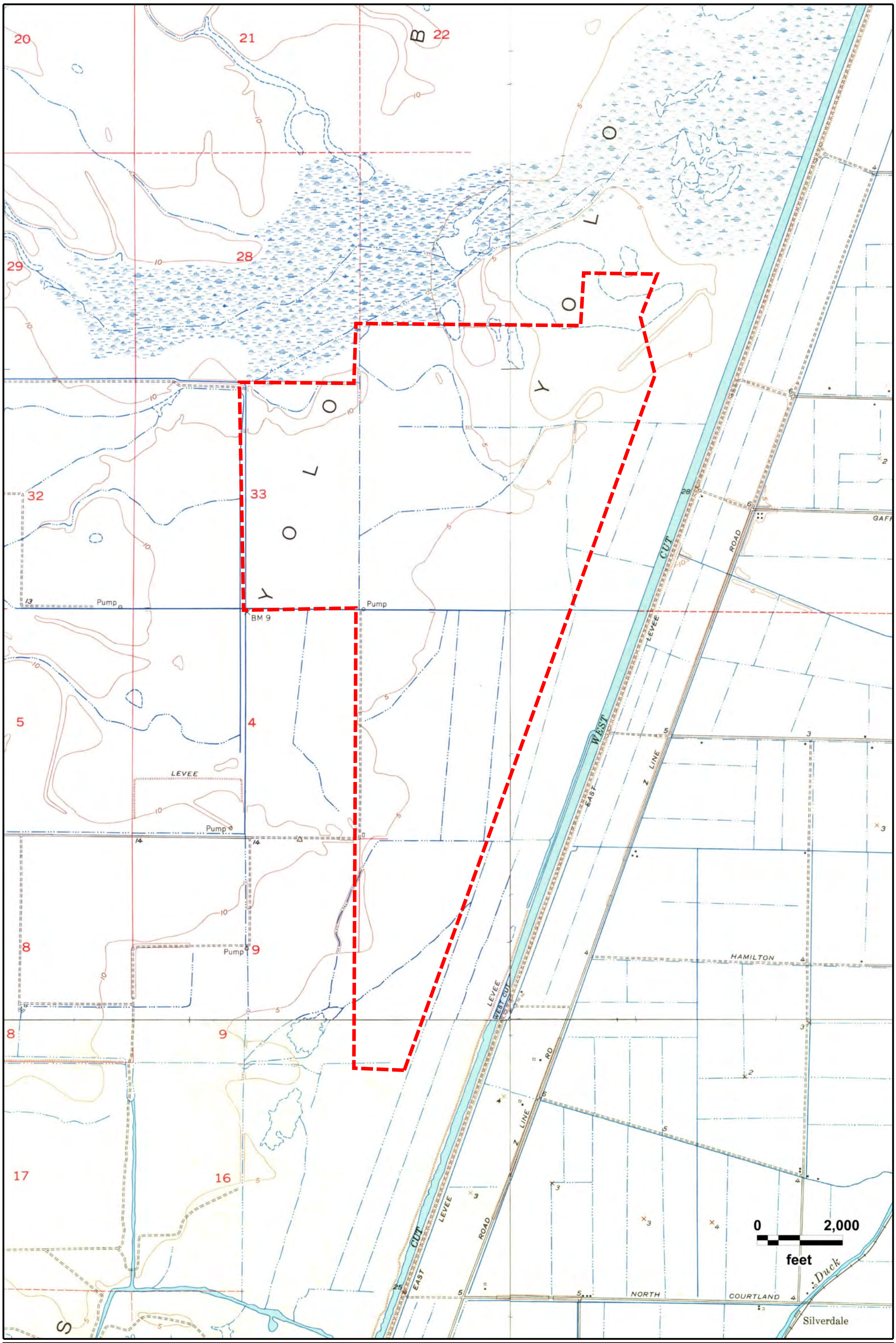


N
W E
S

Tides End
SAXON, CA (1968); CLARKSBURG, CA (1967)
LIBERTY ISLAND, CA (1968); COURTLAND, CA (1968)

GeoSearch

JOB #: 397578 - 02/22/2021

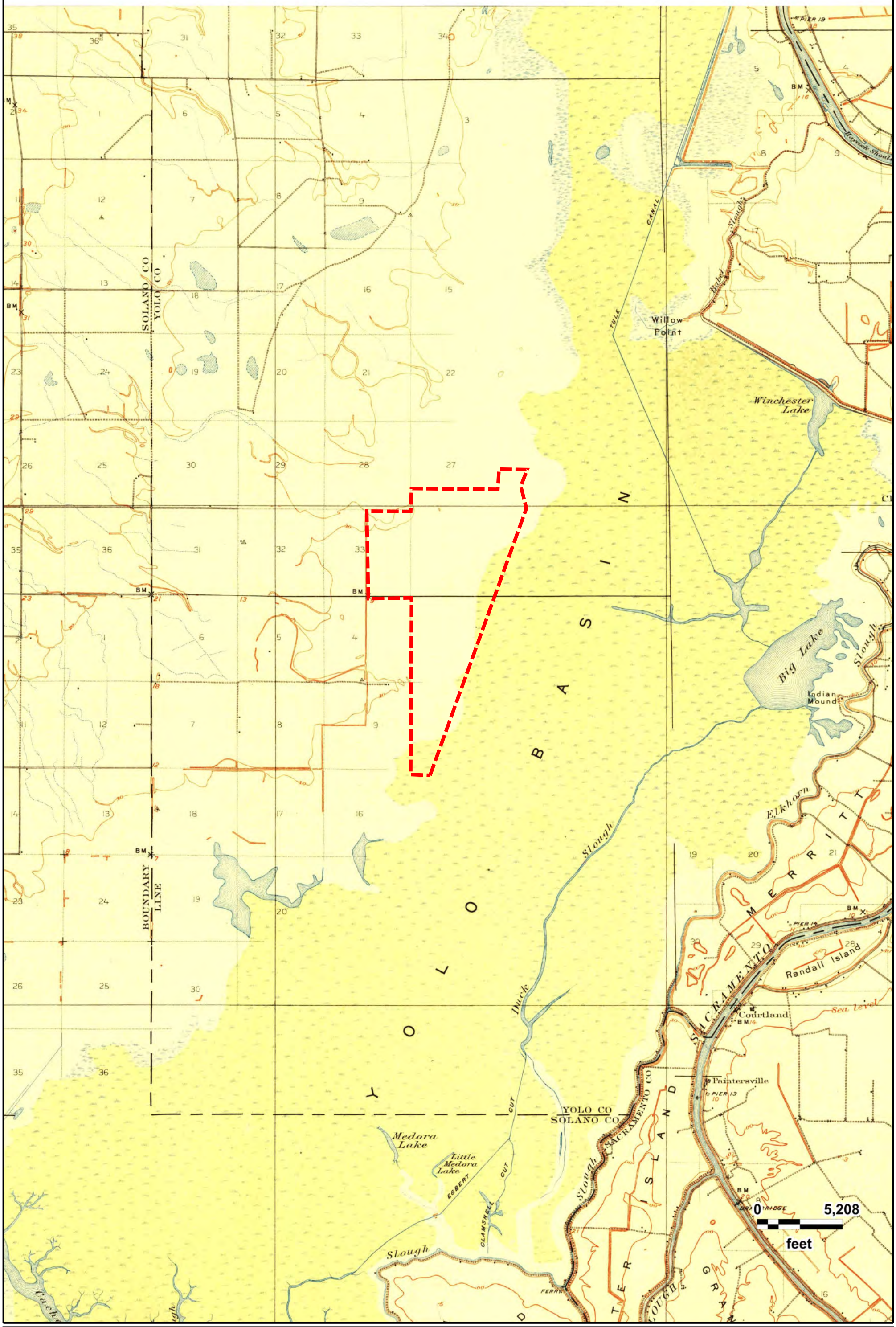


N
W E
S

Tides End
SAXON, CA (1952); CLARKSBURG, CA (1952)
LIBERTY ISLAND, CA (1952); COURTLAND, CA (1952)

GeoSearch

JOB #: 397578 - 02/22/2021

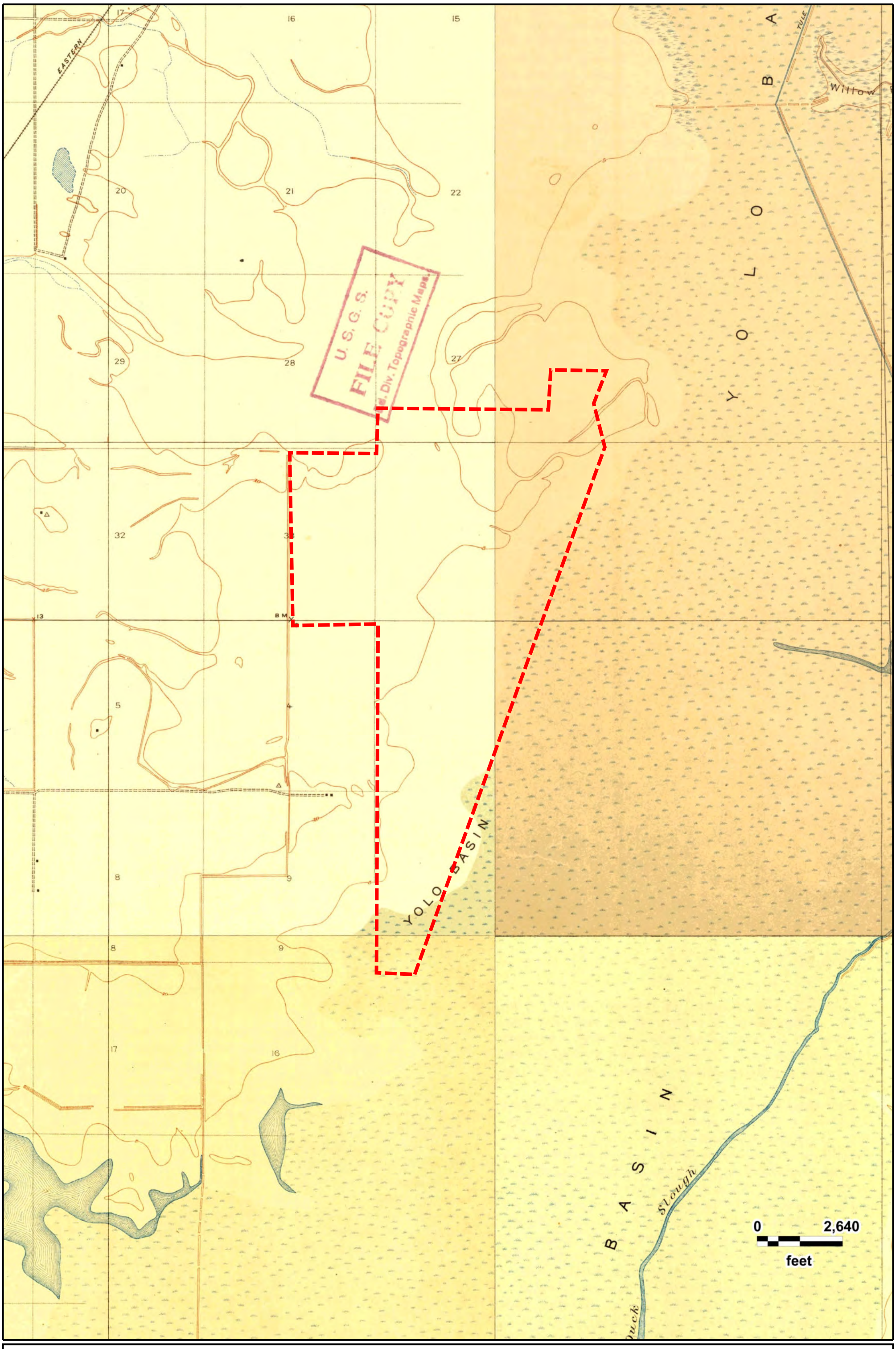


N
W E
S

Tides End
COURTLAND, CA (1908)

GeoSearch

JOB #: 397578 - 02/22/2021



N
W E
S

Tides End
SAXON, CA (1906); BABEL SLOUGH, CA (1906)
CACHE SLOUGH, CA (1906); VORDEN, CA (1906)

GeoSearch

JOB #: 397578 - 02/22/2021

ECOSYS Lucky 5 South

46503 County Road 155

Dixon, CA 95620

Inquiry Number: 7669950.8

June 03, 2024

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.8

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

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Search Results:

Year	*Scale*	*Details*	*Source*
2020	1"=500'	Flight Year: 2020	USDA/NAIP
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1993	1"=500'	Acquisition Date: June 15, 1993	USGS/DOQQ
1984	1"=500'	Flight Date: June 29, 1984	USDA
1974	1"=500'	Flight Date: July 12, 1974	USGS
1972	1"=500'	Flight Date: July 06, 1972	USDA
1968	1"=500'	Flight Date: May 02, 1968	USGS
1966	1"=500'	Flight Date: August 05, 1966	USGS
1953	1"=500'	Flight Date: April 23, 1953	USDA
1937	1"=500'	Flight Date: October 06, 1937	USDA

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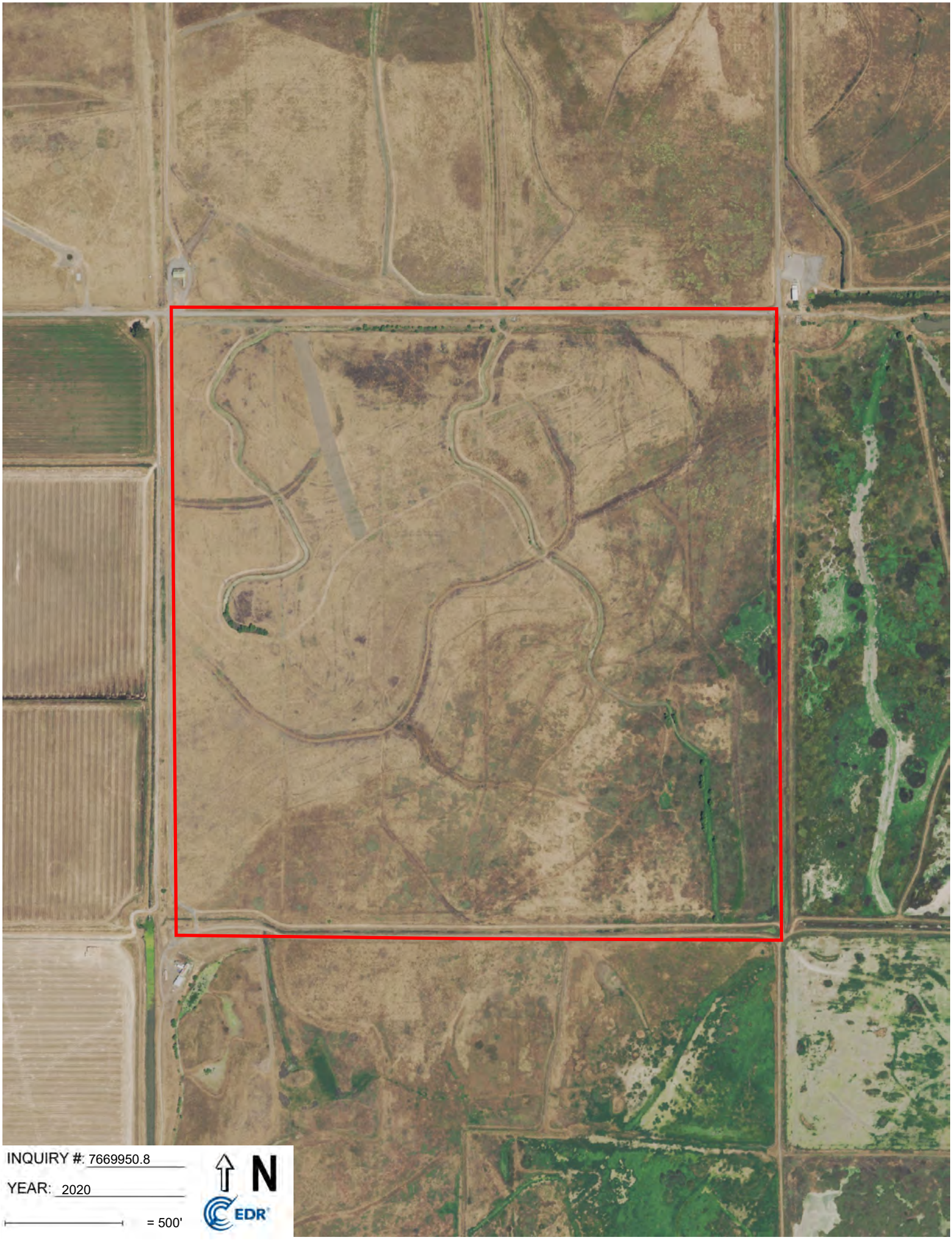
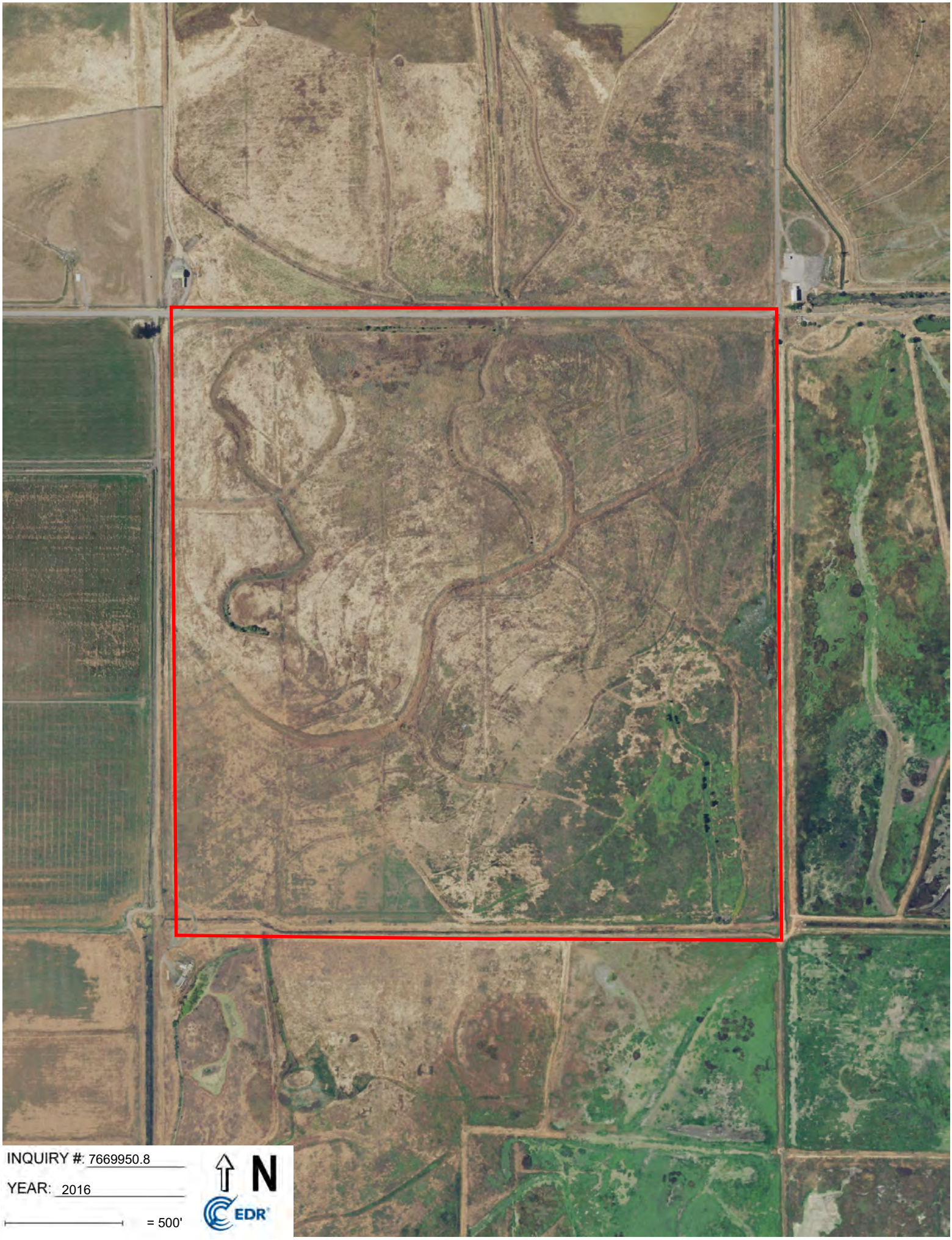
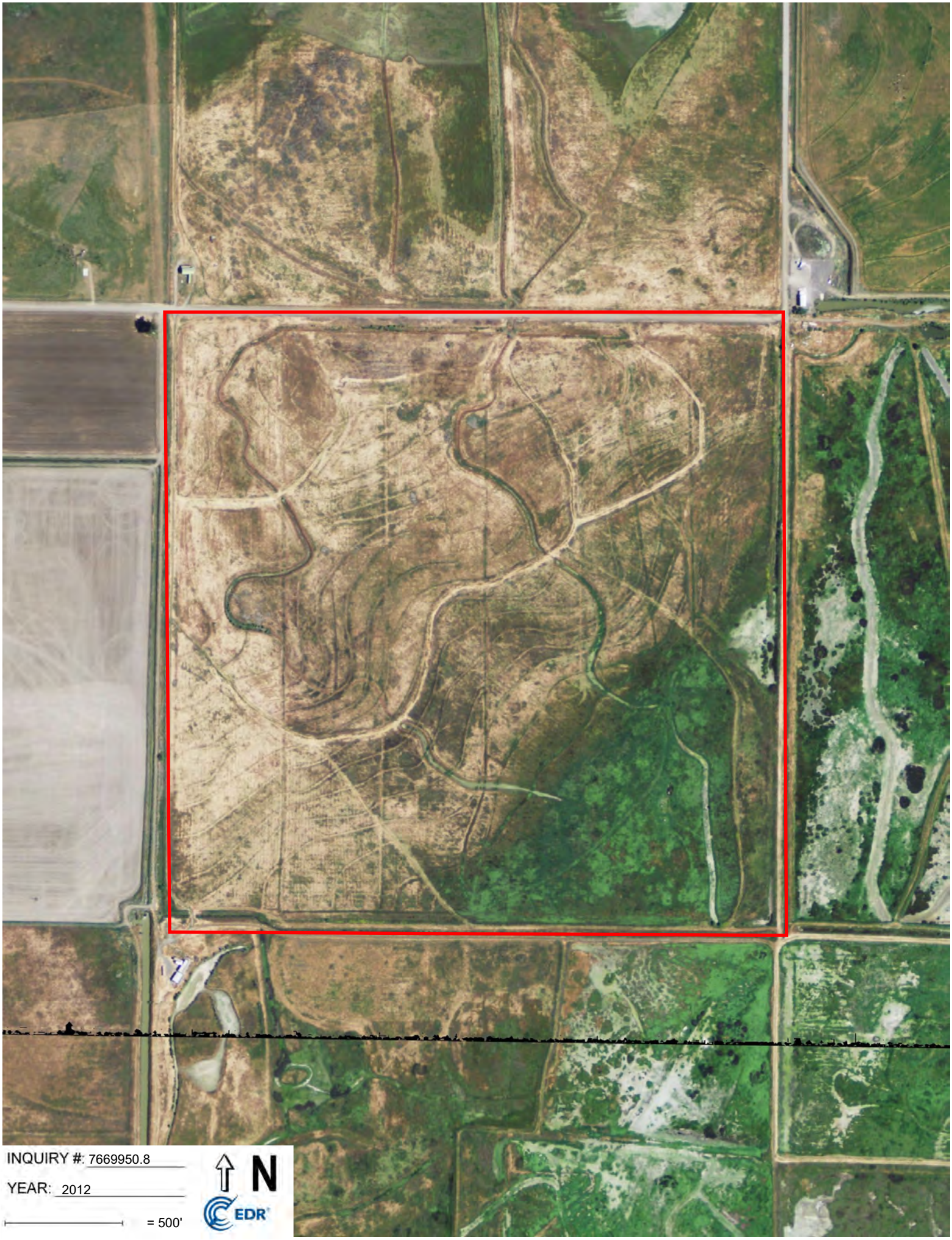

INQUIRY #: 7669950.8
YEAR: 2020
= 500'
N
EDR


INQUIRY #: 7669950.8
YEAR: 2016
= 500'
N
EDR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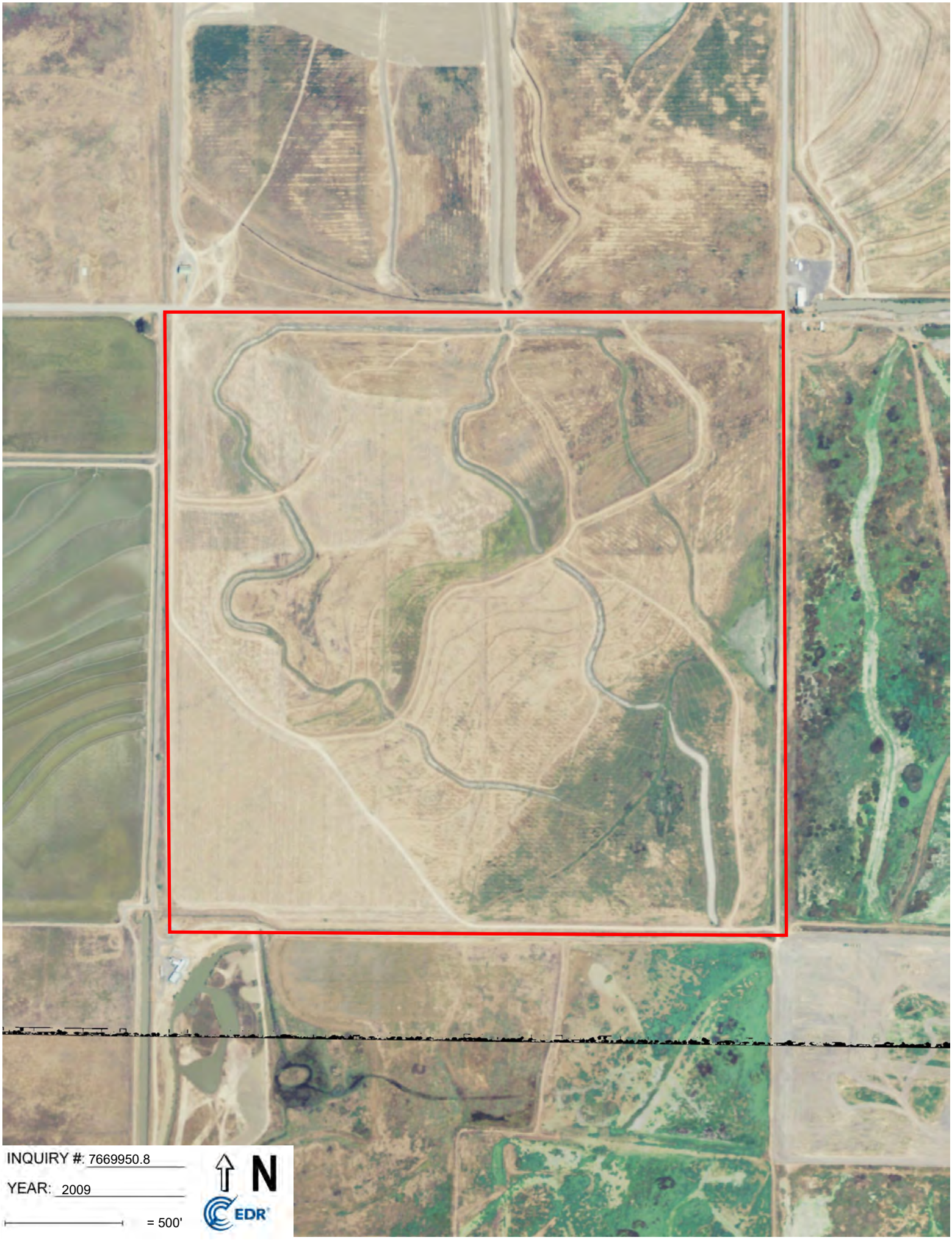
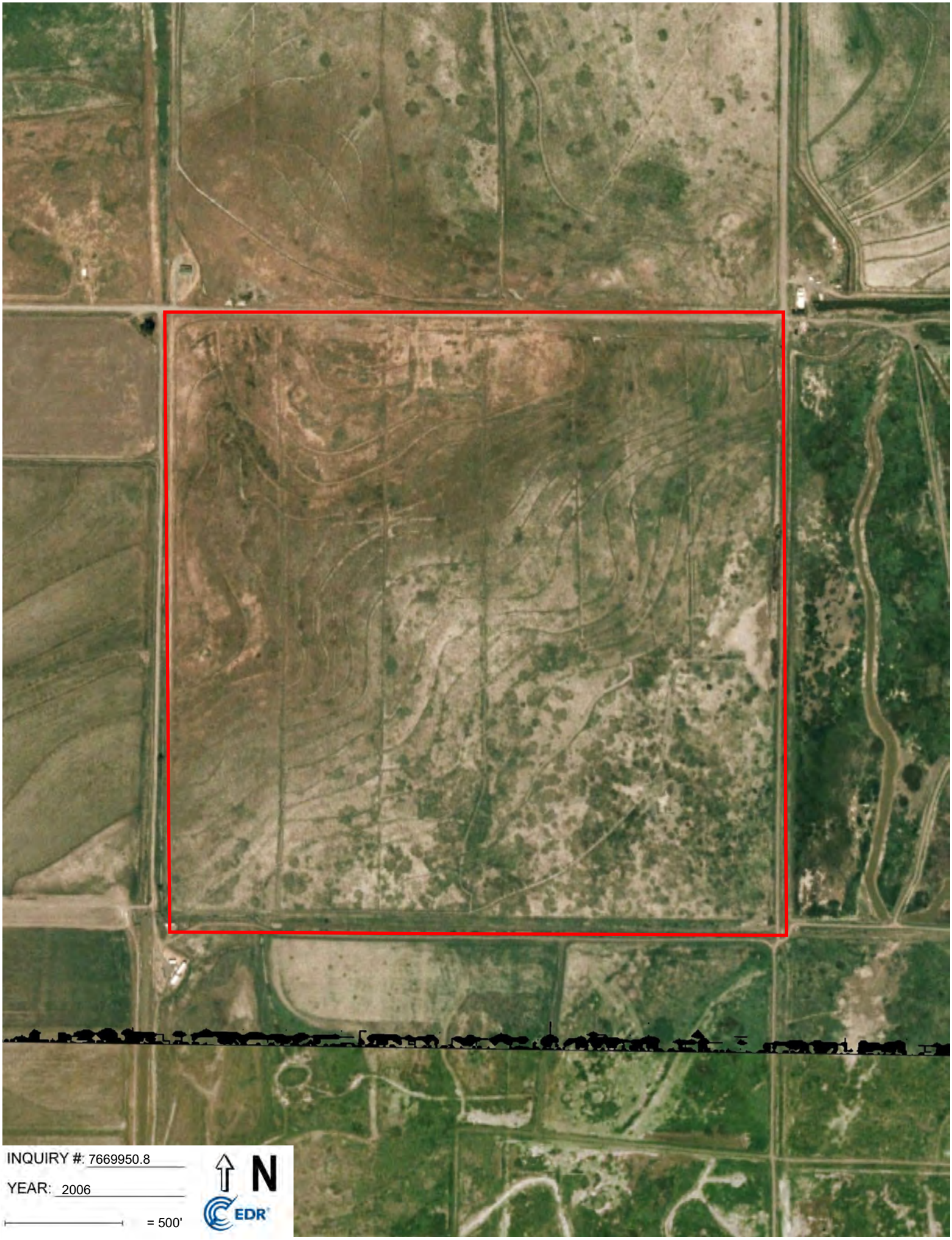
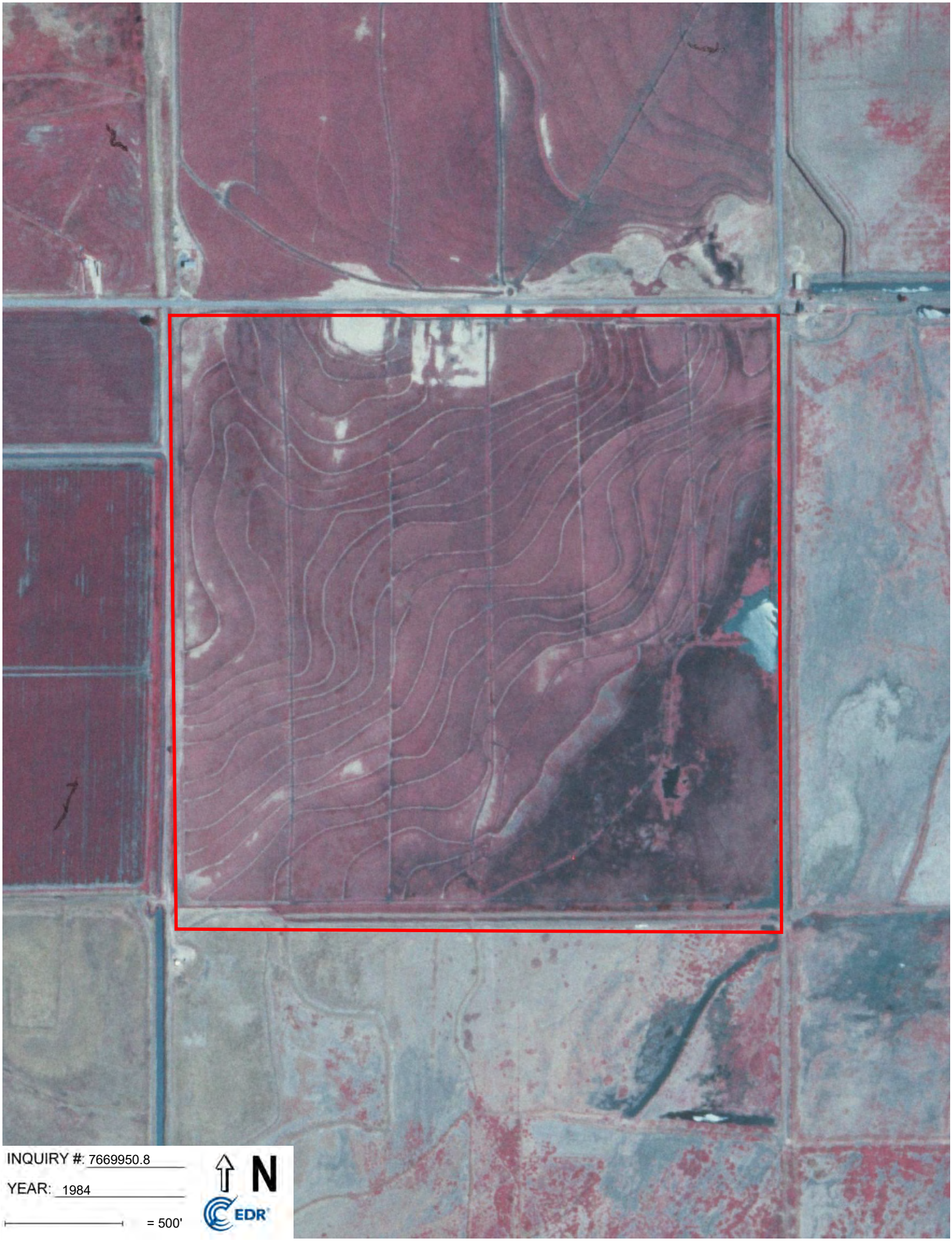
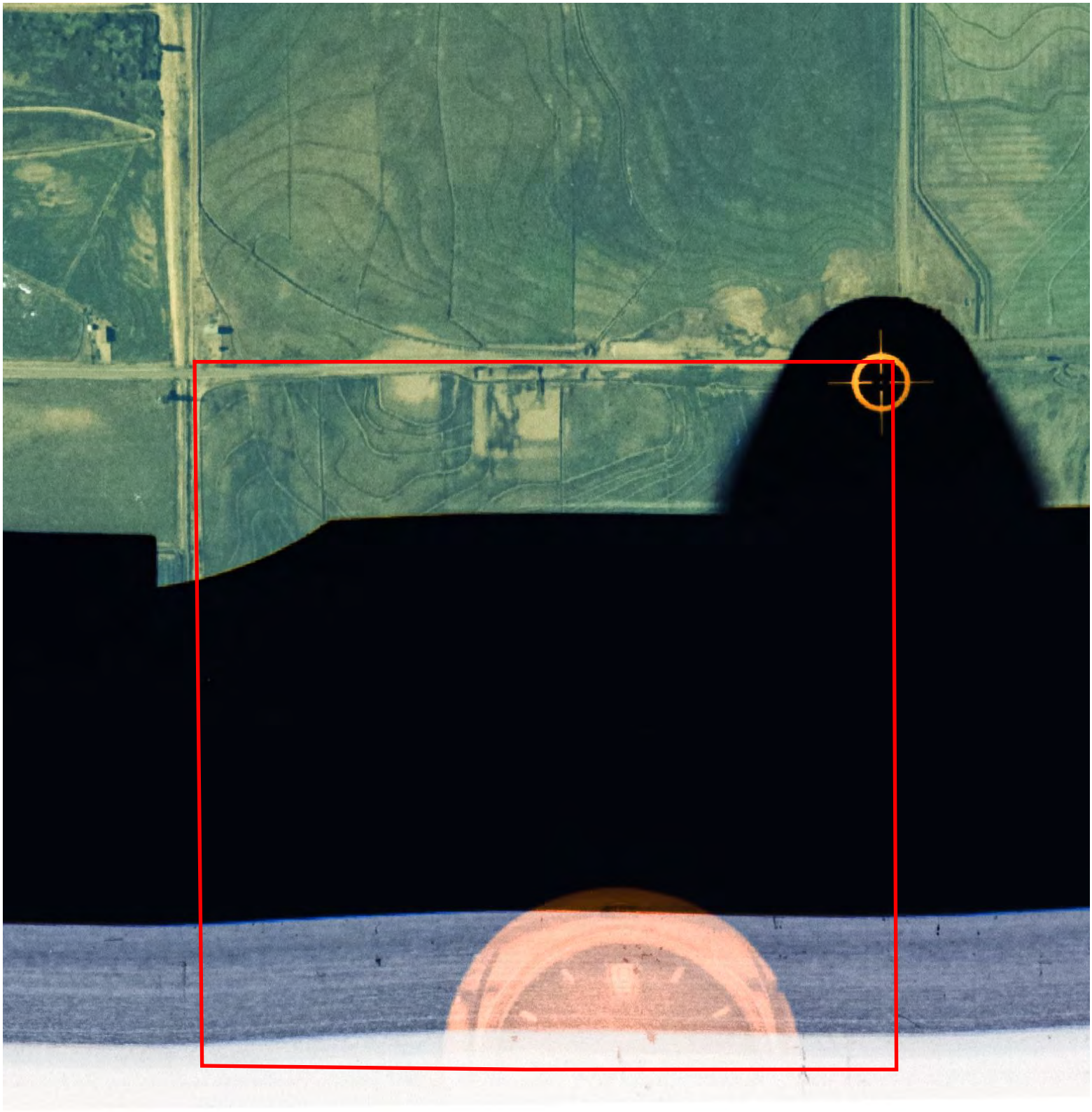
YEAR: 2012
= 500'
N
EDR


INQUIRY #: 7669950.8
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 7669950.8
YEAR: 2006
= 500'
N
EDR

INQUIRY #: 7669950.8
YEAR: 1993
= 500'
N
EDR


INQUIRY #: 7669950.8
YEAR: 1984
= 500'
N
EDR



INQUIRY #: 7669950.8

YEAR: 1974

= 500'

N

EDR

INQUIRY #: 7669950.8
YEAR: 1972
= 500'
N
EDR

INQUIRY #: 7669950.8
YEAR: 1968
= 500'
N
EDR

INQUIRY #: 7669950.8

YEAR: 1966

= 500'

N

EDR

INQUIRY #: 7669950.8

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 7669950.8
YEAR: 1937
= 500'
N
EDR

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.3
June 03, 2024

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.3

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

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Certified Sanborn Results:

Certification # 0171-48F8-B474

PO # 80.ECOSYL5.24

Project ECOSYS Lucky 5 South

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: 0171-48F8-B474

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.4
June 03, 2024

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.4

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Enviroapplications Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# 80.ECOSYL5.24
Project: ECOSYS Lucky 5 South

Coordinates:

Latitude:	38.382958 38° 22' 59" North
Longitude:	-121.643176 -121° 38' 35" West
UTM Zone:	Zone 10 North
UTM X Meters:	618505.94
UTM Y Meters:	4249177.74
Elevation:	11.00' above sea level

Maps Provided:

2022	1916
2018	1908
2015	
2012	
1993	
1973, 1975, 1978	
1967, 1968	
1952	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2022 Source Sheets

Saxon
2022
7.5-minute, 24000

Liberty Island
2022
7.5-minute, 24000

Clarksburg
2022
7.5-minute, 24000

Courtland
2022
7.5-minute, 24000

2018 Source Sheets

Saxon
2018
7.5-minute, 24000

Liberty Island
2018
7.5-minute, 24000

Clarksburg
2018
7.5-minute, 24000

Courtland
2018
7.5-minute, 24000

2015 Source Sheets

Saxon
2015
7.5-minute, 24000

Liberty Island
2015
7.5-minute, 24000

Clarksburg
2015
7.5-minute, 24000

Courtland
2015
7.5-minute, 24000

2012 Source Sheets

Saxon
2012
7.5-minute, 24000

Liberty Island
2012
7.5-minute, 24000

Clarksburg
2012
7.5-minute, 24000

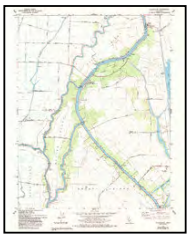
Courtland
2012
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1993 Source Sheets

Liberty Island
1993
7.5-minute, 24000
Aerial Photo Revised 1974



Courtland
1993
7.5-minute, 24000
Aerial Photo Revised 1974

1973, 1975, 1978 Source Sheets

Saxon
1973
7.5-minute, 24000
Aerial Photo Revised 1973

Clarksburg
1975
7.5-minute, 24000
Aerial Photo Revised 1975

Liberty Island
1978
7.5-minute, 24000
Aerial Photo Revised 1974

Courtland
1978
7.5-minute, 24000
Aerial Photo Revised 1974

1967, 1968 Source Sheets

Clarksburg
1967
7.5-minute, 24000
Aerial Photo Revised 1966

Saxon
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Liberty Island
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Courtland
1968
7.5-minute, 24000
Aerial Photo Revised 1968

1952 Source Sheets

Saxon
1952
7.5-minute, 24000

Courtland
1952
7.5-minute, 24000
Aerial Photo Revised 1931

Liberty Island
1952
7.5-minute, 24000
Aerial Photo Revised 1949

Clarksburg
1952
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1916 Source Sheets

Babel Slough
1916
7.5-minute, 31680

Saxon
1916
7.5-minute, 31680

Vorden
1916
7.5-minute, 31680

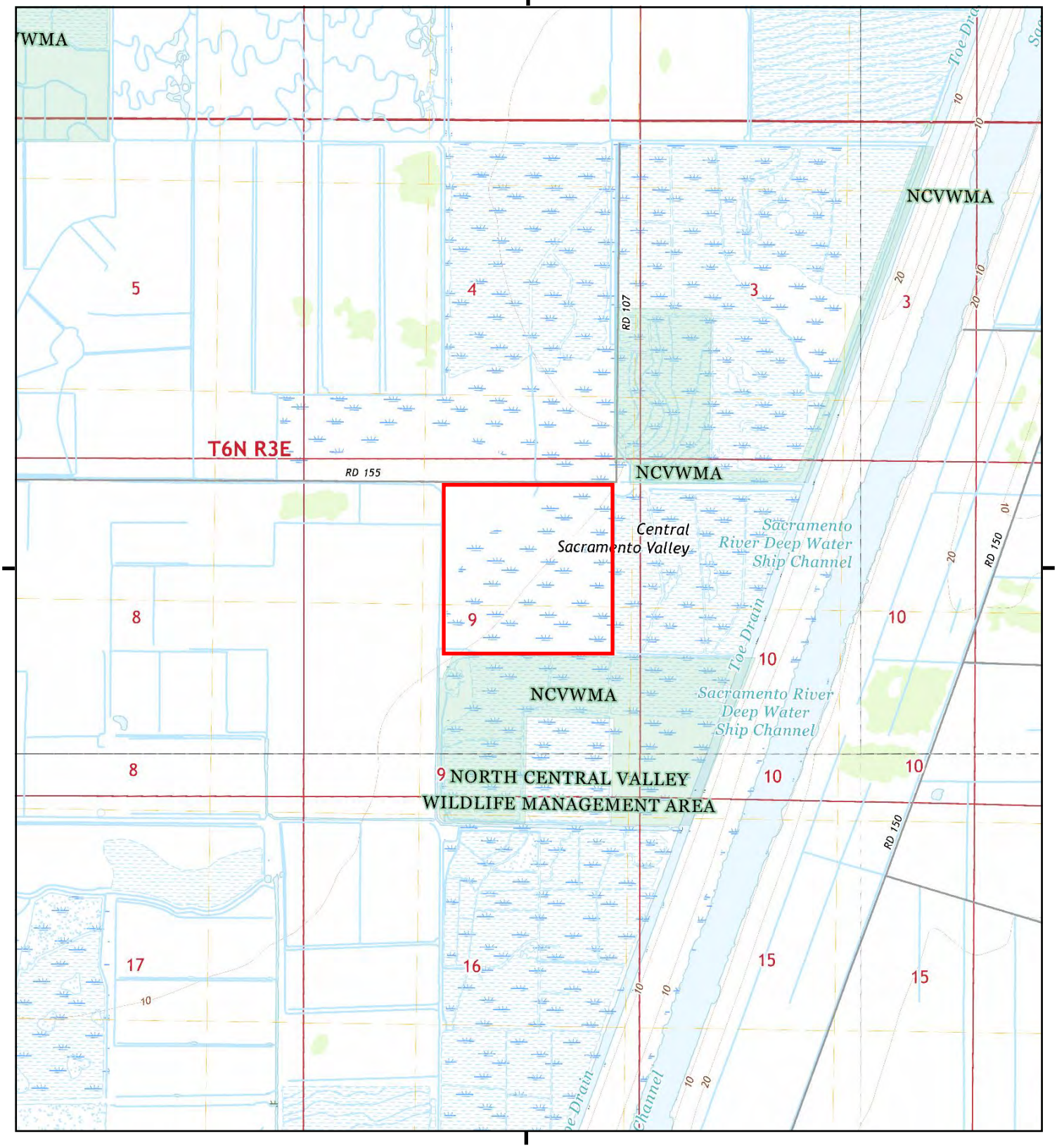
Cache Slough
1916
7.5-minute, 31680

1908 Source Sheets

Courtland
1908
15-minute, 62500

Historical Topo Map

2022



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

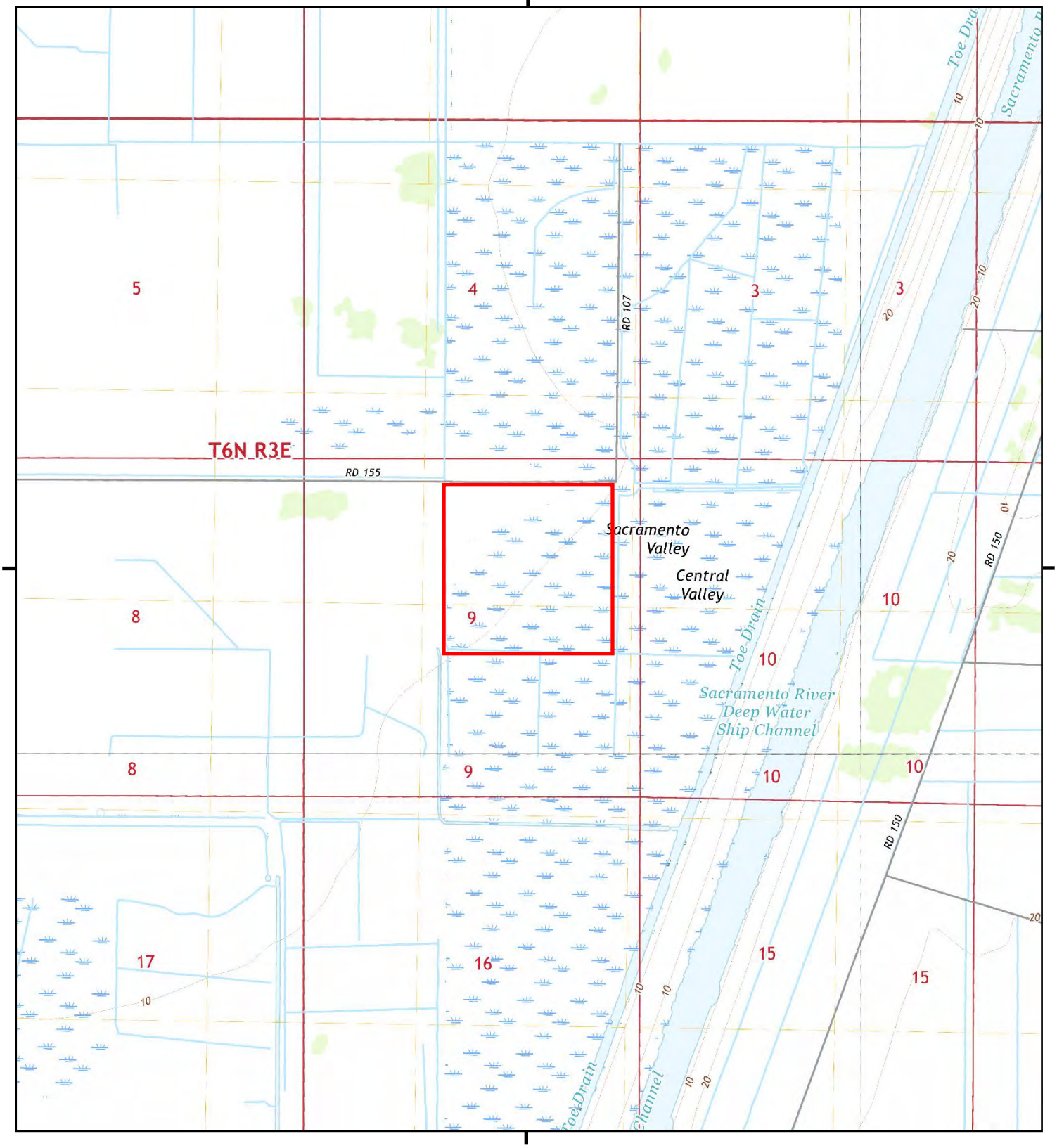
TP, Saxon, 2022, 7.5-minute
NE, Clarksburg, 2022, 7.5-minute
SE, Courtland, 2022, 7.5-minute
SW, Liberty Island, 2022, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2018



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

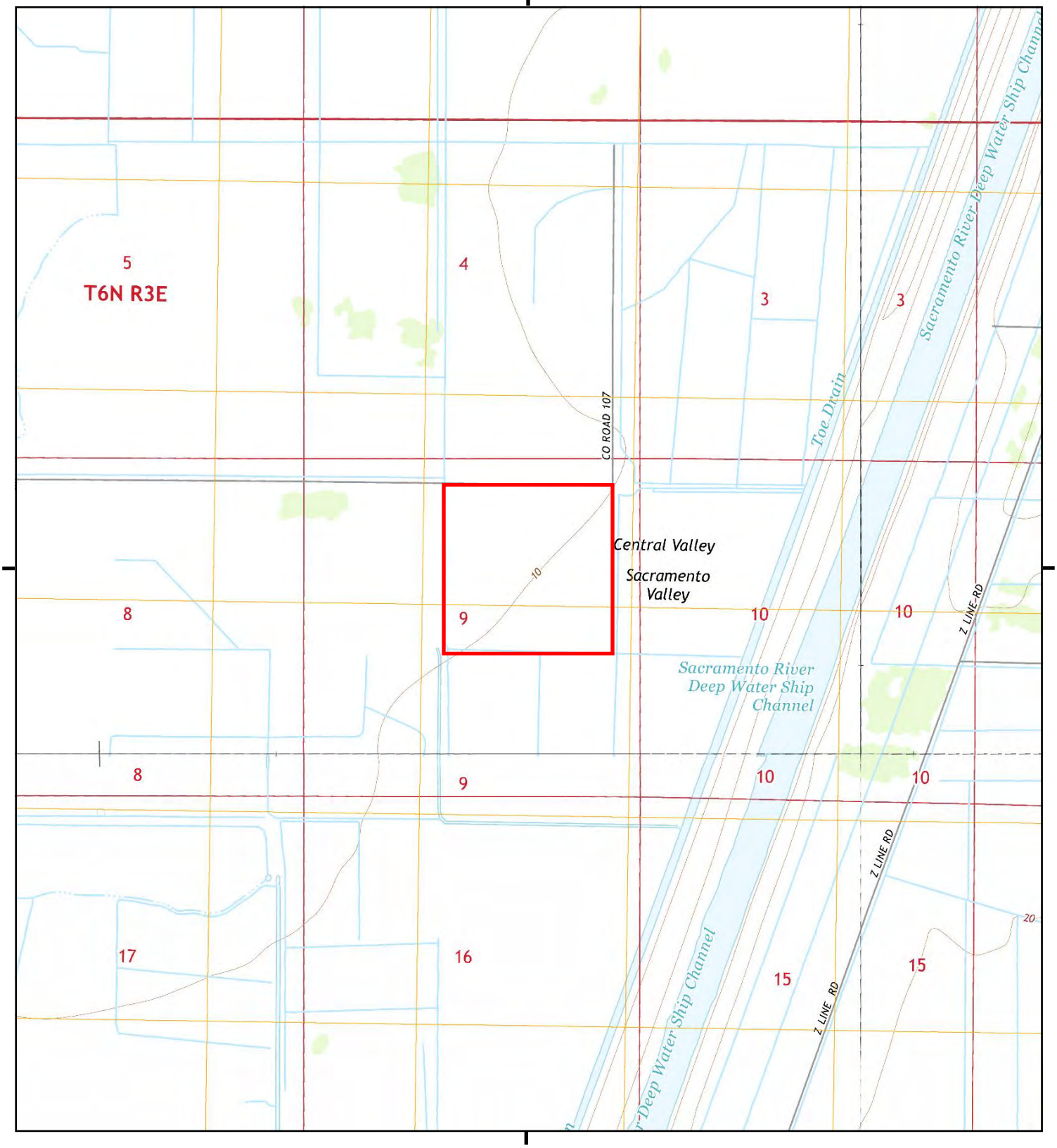
TP, Saxon, 2018, 7.5-minute
NE, Clarksburg, 2018, 7.5-minute
SE, Courtland, 2018, 7.5-minute
SW, Liberty Island, 2018, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2015



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

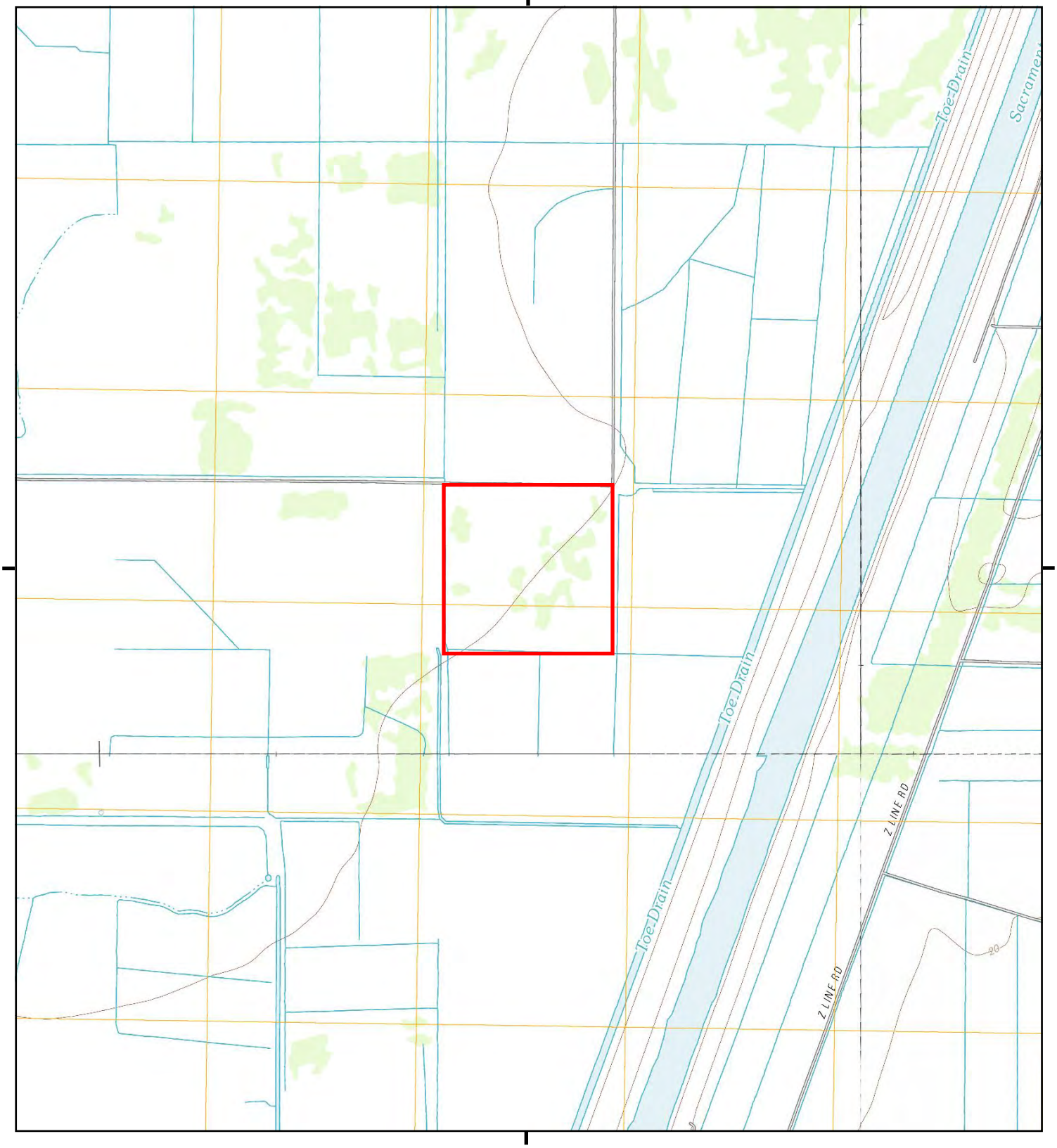
TP, Saxon, 2015, 7.5-minute
NE, Clarksburg, 2015, 7.5-minute
SE, Courtland, 2015, 7.5-minute
SW, Liberty Island, 2015, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2012



This report includes information from the following map sheet(s).

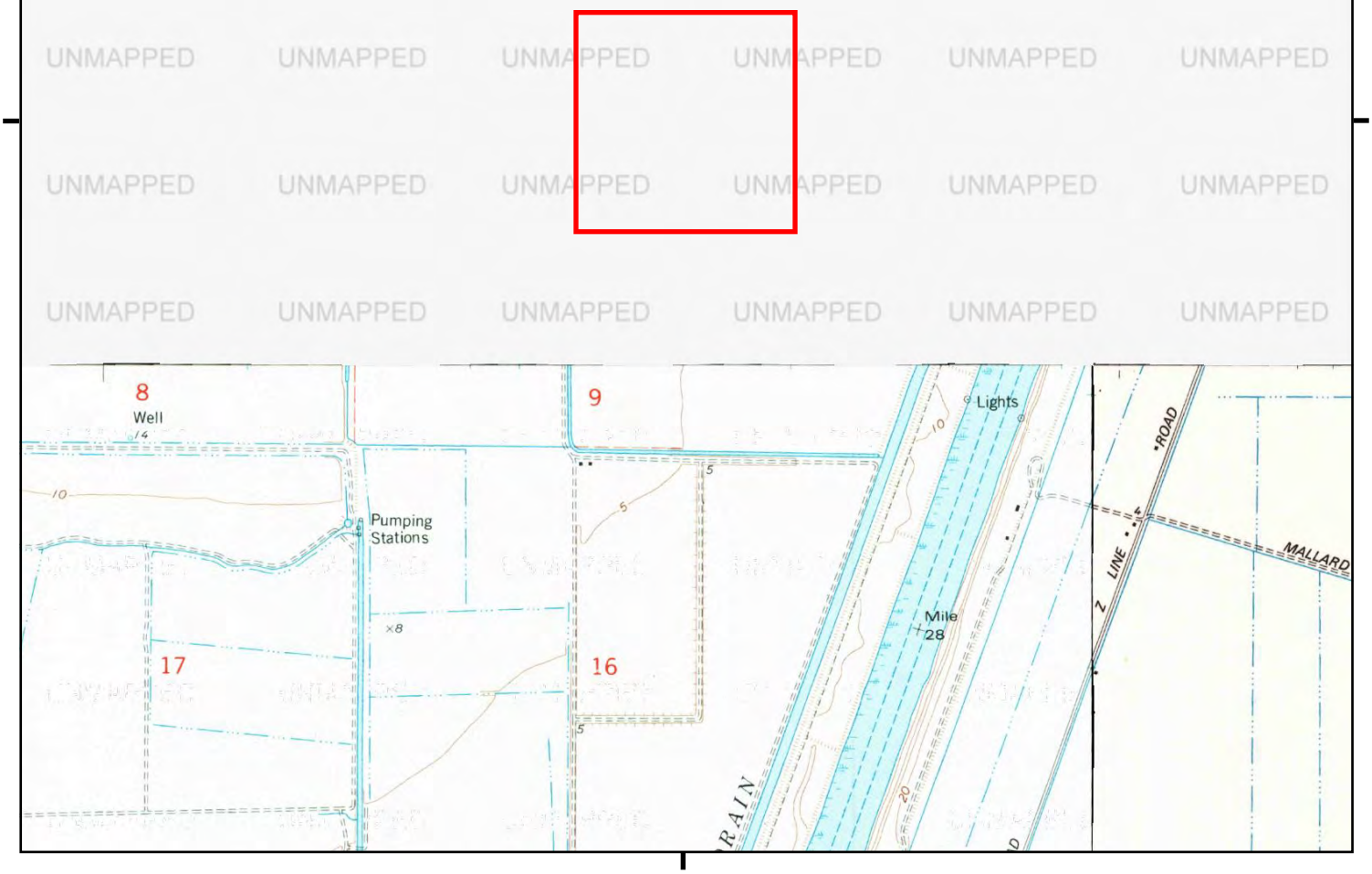
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Saxon, 2012, 7.5-minute
NE, Clarksburg, 2012, 7.5-minute
SE, Courtland, 2012, 7.5-minute
SW, Liberty Island, 2012, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

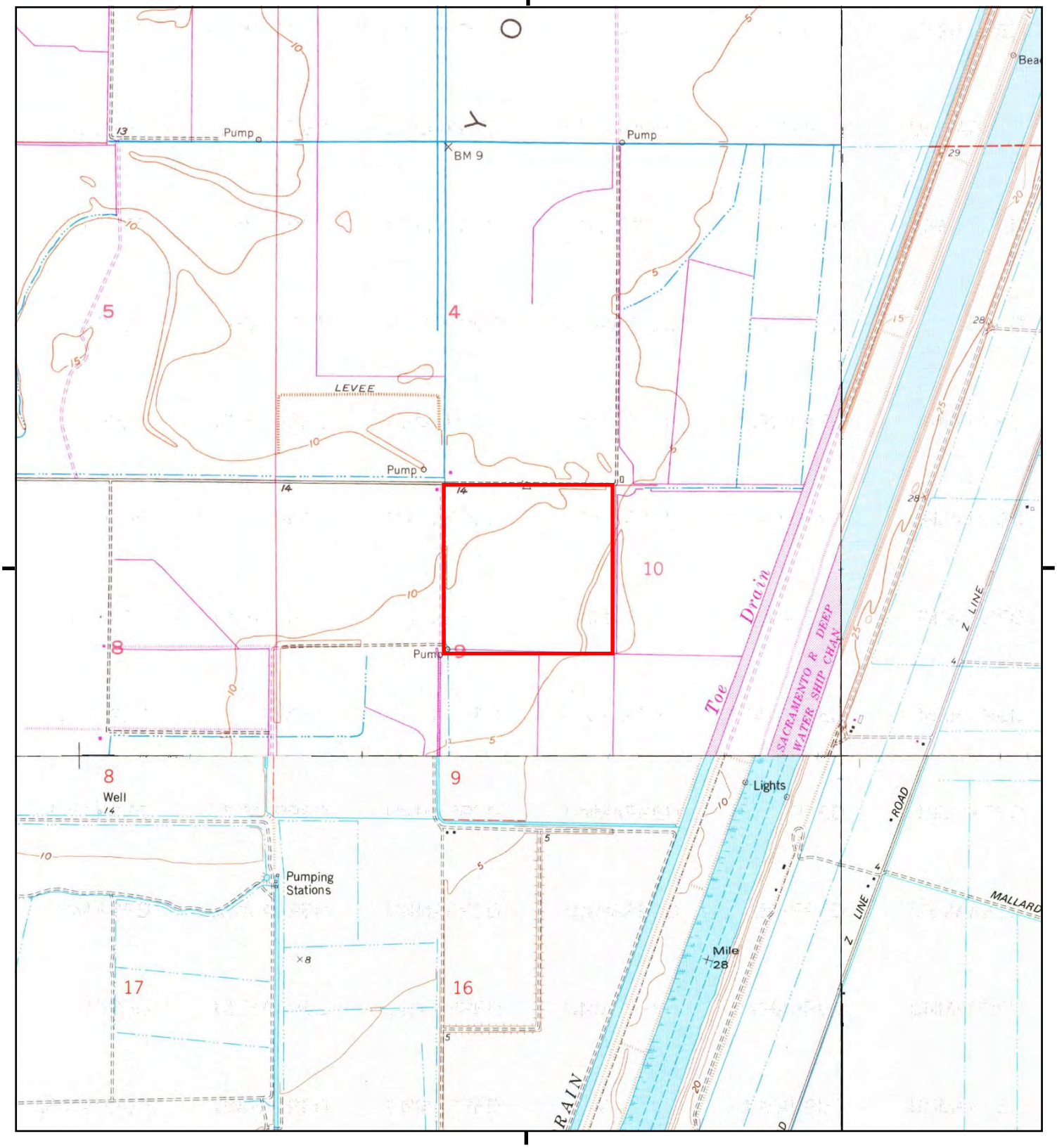
SE, Courtland, 1993, 7.5-minute
SW, Liberty Island, 1993, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

1973, 1975, 1978



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

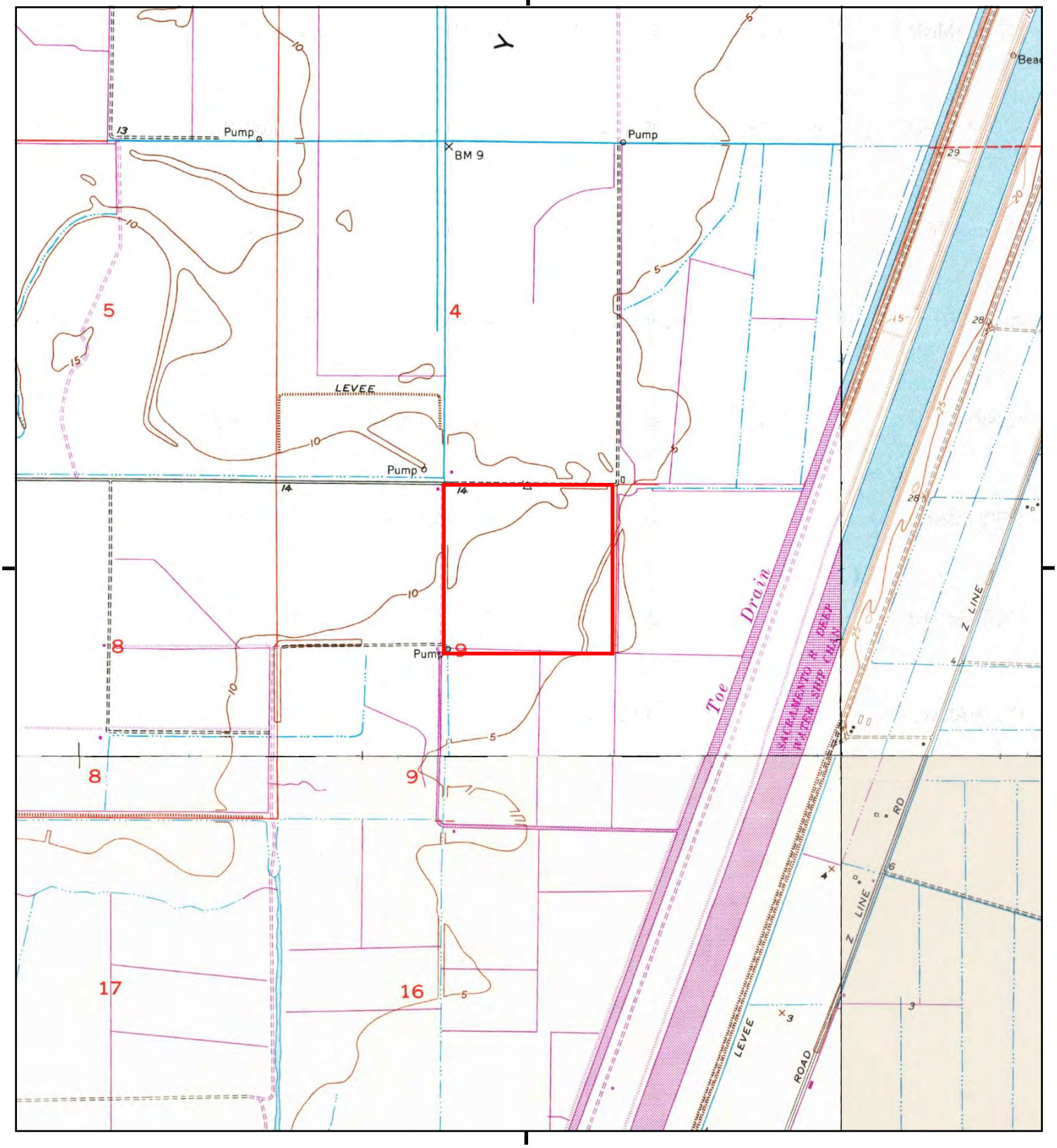
TP, Saxon, 1973, 7.5-minute
NE, Clarksburg, 1975, 7.5-minute
SE, Courtland, 1978, 7.5-minute
SW, Liberty Island, 1978, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

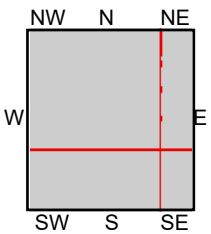
Historical Topo Map

1967, 1968



This report includes information from the following map sheet(s).

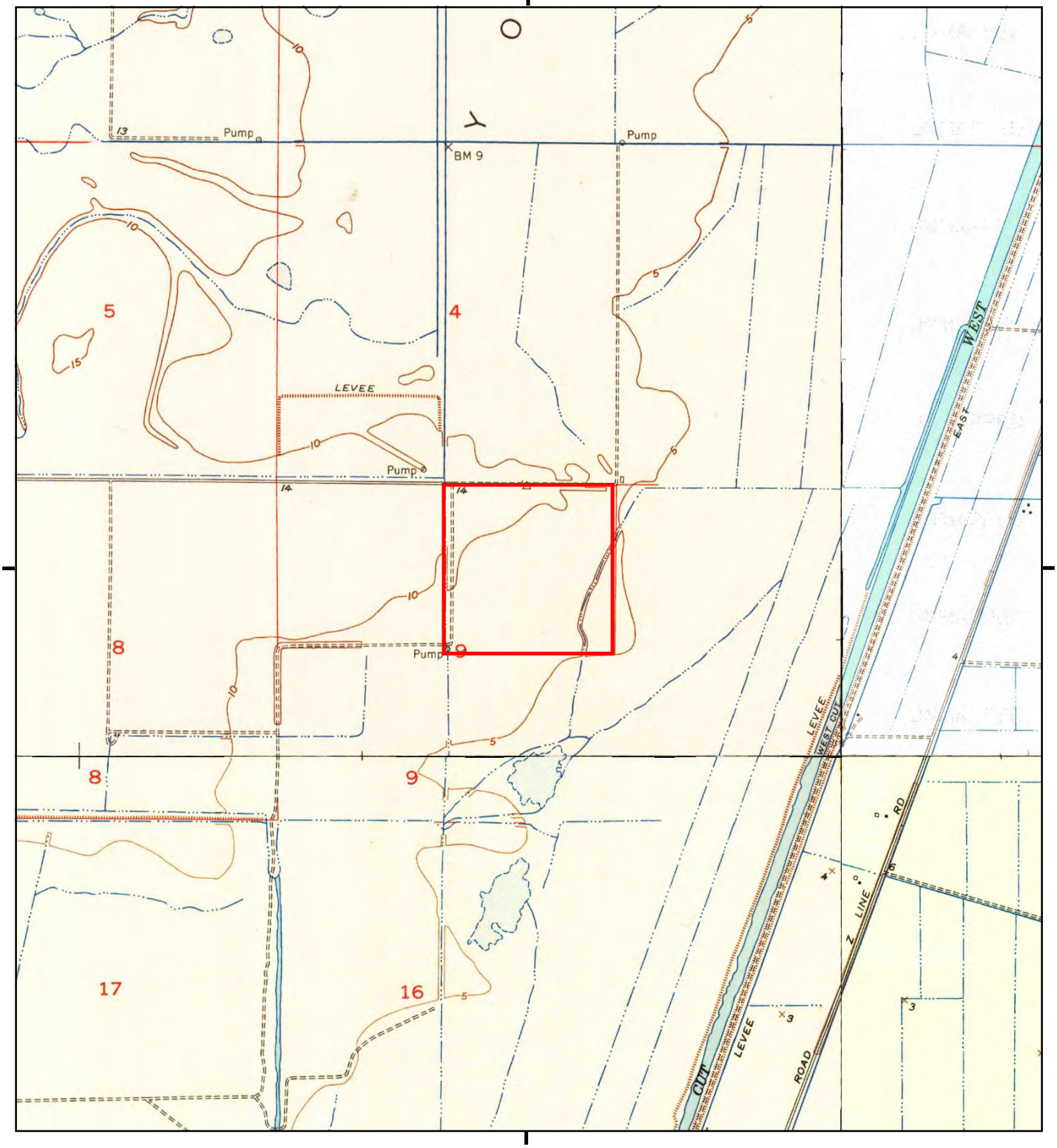
0 Miles 0.25 0.5 1 1.5



TP, Saxon, 1968, 7.5-minute
NE, Clarksburg, 1967, 7.5-minute
SE, Courtland, 1968, 7.5-minute
SW, Liberty Island, 1968, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

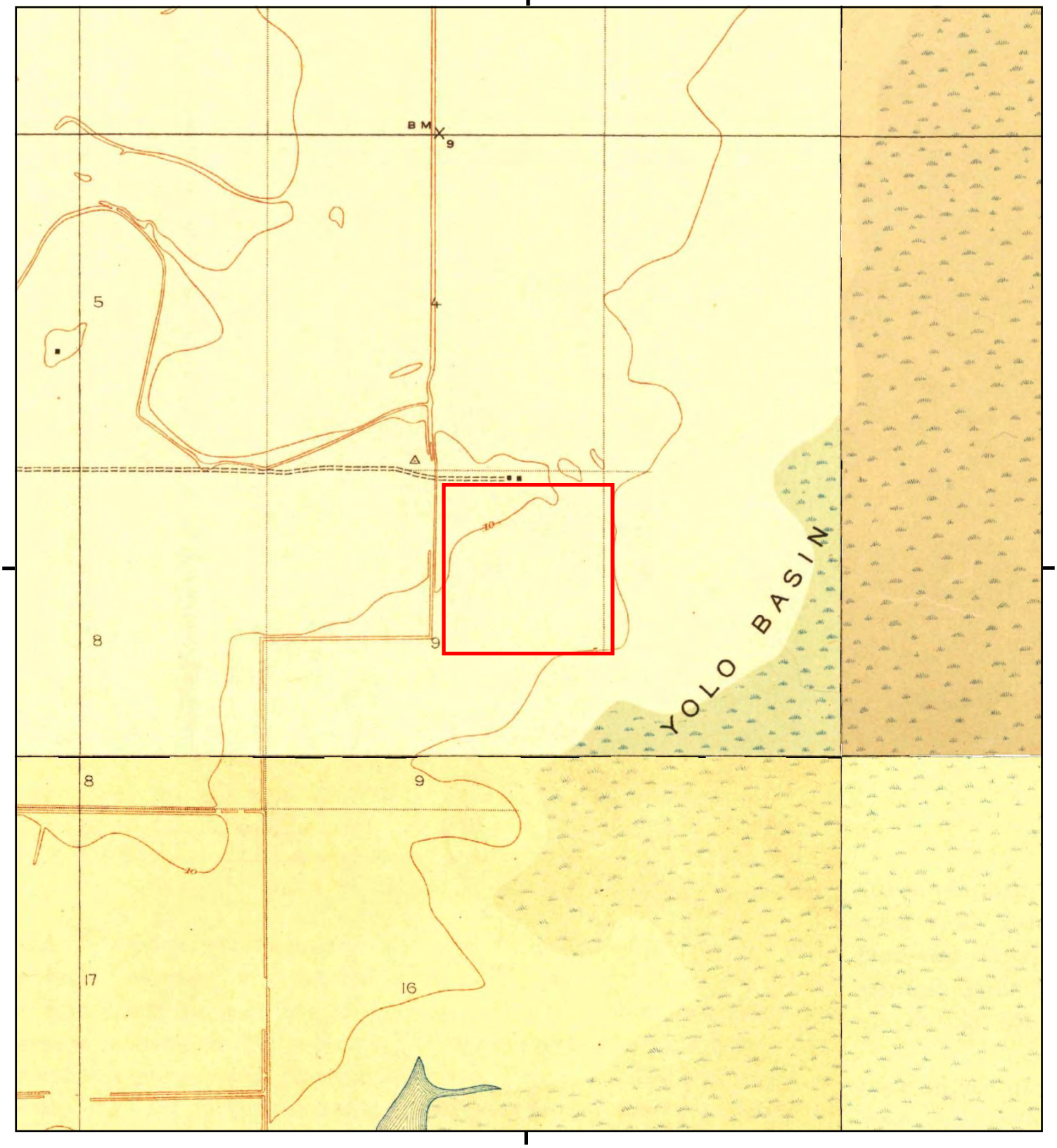
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Saxon, 1952, 7.5-minute
NE, Clarksburg, 1952, 7.5-minute
SE, Courtland, 1952, 7.5-minute
SW, Liberty Island, 1952, 7.5-minute

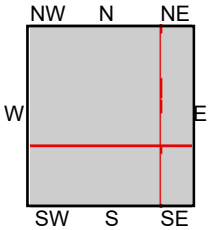
SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

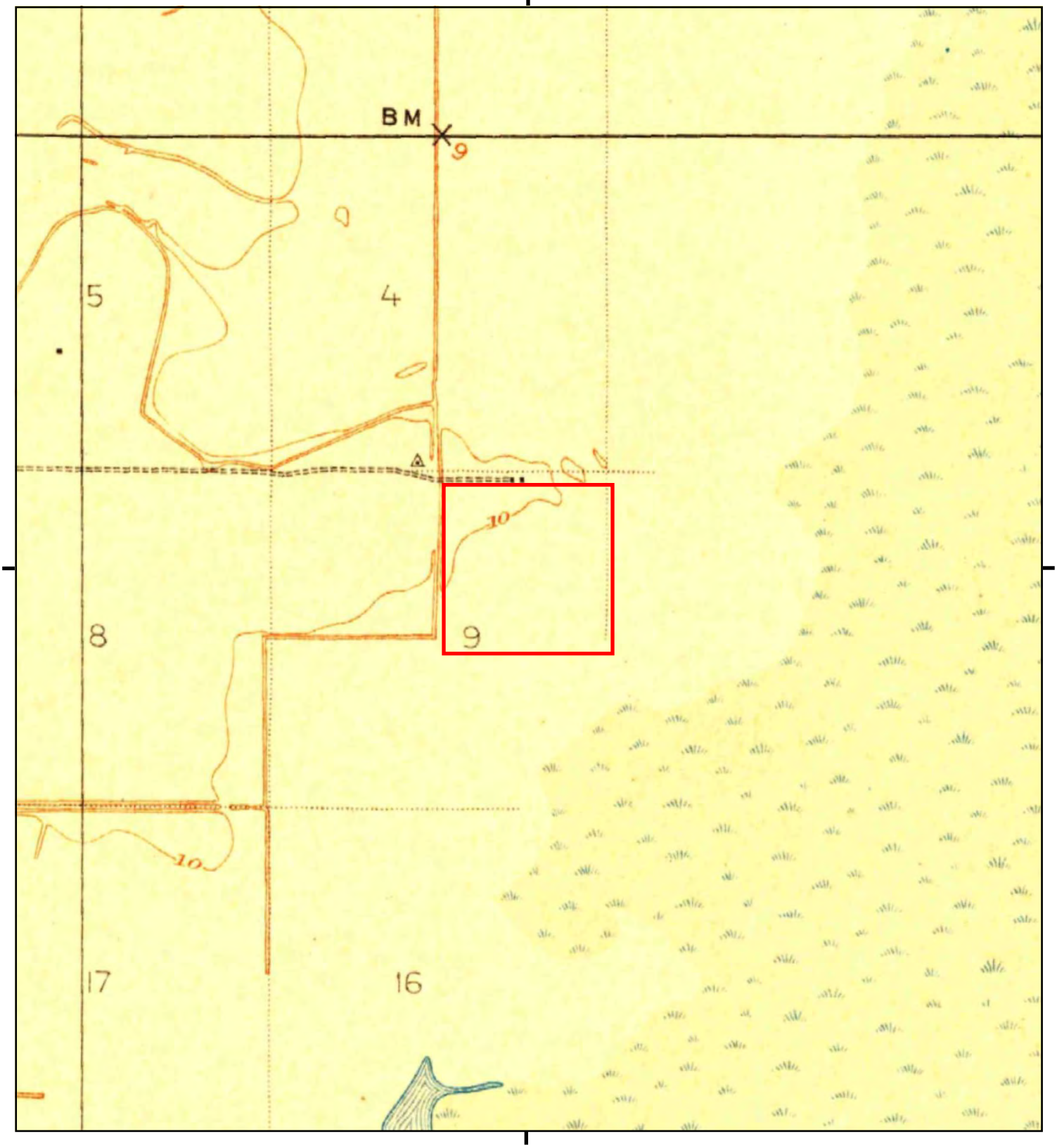
0 Miles 0.25 0.5 1 1.5



TP, Saxon, 1916, 7.5-minute
NE, Babel Slough, 1916, 7.5-minute
SE, Vorden, 1916, 7.5-minute
SW, Cache Slough, 1916, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Courtland, 1908, 15-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

APPENDIX C

Tide's End Multibenefit Restoration Project Lucky Five South Parcel Phase I Environmental Site Assessment

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT FOR

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
46503 County Road 155
Dixon, Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APNs: 033-220-009

Prepared For:

David Urban, Managing Director
Ecosystem Investment Partners
EIP California, LLC
Attn: Glen William, California Projects Director
2330 Marinship Way, Suite 120
Sausalito, CA 94965

Prepared by:

Bernard A. Sentianin, PG
Senior Geologist

Reviewed by:

Craig A. Smith, PG
Senior Project Manager

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ATTACHMENT 2 - User Provided Information
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ATTACHMENT 4 - Database Assessment Criteria
ATTACHMENT 5 - Agency Record Requests and Information Responses
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EXECUTIVE SUMMARY

EnviroApplications, Inc. (*EAI*) is pleased to present this Phase I Environmental Site Assessment (ESA) Report. The following table presents an overview of the project, including a summary of our significant findings:

Property Name (Subject Property):	Lucky Five South Parcel
Subject Property APNs, Addresses (and/or Other Physical Location Description):	APN 033-220-009 46503 County Road 155, Dixon, CA 95820
Subject Property and Area Description:	The subject property is located in an area of mixed farmland and pasture. According to information obtained, the subject property consists of a single parcel encompassing approximately 160 acres. The property is undeveloped and bound by County Road 155 followed by undeveloped land and a duck hunting clubhouse to the north, and undeveloped farmland/pasture to the west, south, and east. Another duck hunting clubhouse is also present to the southwest of the property.
Observed Current Subject Property Use/Operations:	There appear to be no active operations being conducted at the subject property.

Years	Summary of Subject Property History
Circa 1937 to 1953	Undeveloped land.
Circa 1966 to 1984	Agricultural (rice).
Circa 1993 to 2023 (present)	Undeveloped land.

CONCLUSIONS AND RECOMMENDATIONS

EAI has performed a Phase I ESA in conformance with the Scope of Work (SOW) required by Title 40 CFR Part 312 (All Appropriate Inquiry; AAI) and ASTM E1527-21, of the property located 46503 County Road 155 in unincorporated Yolo County, CA 95620. Any exceptions to, or deviations from the SOW are described in this report, where applicable.

The subject property consists of a quarter section of undeveloped land (approximately 160 acres) on the south side of County Road 155, approximately 0.6 miles west of the Sacramento Deep Water Channel. Based on a review of historical data, the property has been undeveloped since at least 1937, with periods of agricultural use starting in the late 1960's through the early 1980's.

The subject property has not come to the attention of the Local (Yolo County EHS), State (Cal/EPA), or Federal (US EPA Region 9) environmental regulatory agencies in association with on-site hazardous materials storage and/or use or any known hazardous waste generation. No known manufacturing operations were found to have ever been located on the subject property.

No release sites that qualify as a potential adverse environmental contaminant impact source condition to the subject property were identified in the Environmental Data Resources, Inc. (EDR) government database search report (EDR Report) obtained and reviewed during performance of this ESA.

No evidence of an ASTM recognized environmental condition (REC), controlled REC (CREC), or historical REC (HREC) of the subject property was found. See the definitions of these ASTM terms in Attachment 4.

No additional environmental assessment work is recommended at this time.

1.0 INTRODUCTION

1.1 Subject Property Name and Location

Property Name (Subject Property):	Port District Parcel
Subject Property APNs, Addresses (and/or Other Physical Location Description):	APN 033-220-009 46503 County Road 155, Dixon, CA 95620

1.2 Contact Information

Client (User):	Ecosystem Investment Partners and EIP California, LLC
Subject Property Owners (According to Preliminary Title Insurance Report [PTIRs], See Attachment 2):	Lucky Five Farm
ASTM Key Site Manager:	Adam Davis (EIP)
Date Project Authorized:	May 30, 2024

1.3 Objective

This Phase I ESA has been completed in accordance with the practices identified in the ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM Designation E1527-21 and pursuant to the terms set forth in the Authorization For Environmental Investigation And Contracting Services (AEICS) between the *EAI* and Ecosystem Investment Partners dated May 30, 2024.

1.4 Scope Of Work, Significant Assumptions, Terms and Conditions, Reliance

The scope of work, significant assumptions, and terms and conditions applicable to this Phase I ESA are identified in the following documents:
AEICS For *EAI* Project 80.ECOSYL5.24.
ASTM E1527-21 and ASTM E2600-15.
Certifications are presented in Section 2 of this report.
This report was prepared for the exclusive use of the following:
Ecosystem Investment Partners and EIP California, LLC.

2.0 SCOPE AND DECLARATIONS

2.1 Introduction

EAI has completed a Phase I ESA of the subject property. This Phase I ESA Report was prepared for Ecosystem Investment Partners for real estate environmental due diligence purposes. Photographs of the subject and surrounding properties are provided in Attachment 1. The regional and community locations of the subject property are depicted on Figure 1 (Site Location Map). Figure 2 is a Site Plan based on a recent aerial photograph showing the subject property and adjacent property uses. Historical maps showing the subject property in its physiographic setting are included in Attachment 6.

2.2 Scope

The objective of this ESA was to perform all appropriate inquiry (AAI) into the past ownership and uses of the subject property consistent with good commercial or customary practice as outlined by the ASTM in Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E1527-21. The purpose of this ESA work was to identify, to the extent feasible, adverse environmental conditions (including ASTM recognized environmental conditions; RECs) of the subject property that potentially have and/or may cause an adverse environmental impact to the subject property. The effective date of this ESA is approximately the same as its date of issue based on when specific ESA components were completed. In accordance with ASTM E1527-21 Section 4.6, its continued viability extends to approximately 180 days after its effective date. The viability of this ESA can be extended beyond 180 days, up to one (1) year, if the specific ESA components specified in ASTM E1527-21 Section 4.0 are updated.

2.3 Declarations

Bernard A. Sentianin and Craig A. Smithof *EAI* declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in Title 40 Code of Federal Regulations (CFR) Part 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in Title 40 CFR Part 312.

The term recognized environmental condition (REC) is defined by ASTM Standard E 1527-21 as:

"… (1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.

The term does not include *de minimis* conditions, which generally do not present a material risk to human health or the environment and would not likely be subject to enforcement action if brought to the attention of governmental agencies. An example of such a *de minimis* condition

would be the engine oil stains typically present on the pavement surfaces of parking spaces due to minor leaks from parked vehicles.

Additional items addressed in this report include:

Historical RECs (HRECs) – *a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations). A historical recognized environmental condition is not a recognized environmental condition.*

Controlled RECs (CRECs) – a r*ecognized environmental condition affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations).*

The SOW for this ESA consisted of a visual reconnaissance of the subject property, interviews, review of historical aerial photographs, maps and telephone directories, a current Environmental Data Resources, Inc. Report (EDR Report), and, a review of the practically available pertinent records of local, state, and federal agencies. The SOW did not include an assessment for historical overall environmental regulatory compliance of every facility or entity that ever operated at the subject property or sampling and analyzing of environmental media. *EAI* was not contracted to perform any independent evaluation of the purchase or lease price of the subject property and its relationship to current fair market value. The conclusions presented in this ESA Report are professional opinions based on data described herein. Any data gaps resulting from the ESA described in this report are listed and discussed in the following table:

Deletions or Exceptions From SOW Referenced in Section 1.4:	None.
Weather-Related Restrictions to Site Reconnaissance:	None.
Facility Access Restrictions to Site Reconnaissance:	None.
Other Site Reconnaissance Restrictions:	None.

Data Gaps from Environmental Records Review:	None.
Data Gaps from Historical records Review:	No historical Sanborn fire insurance industry map coverage was found for the subject property and surrounding area. This data gap does not alter the conclusions of this report, since adequate historical aerial photograph coverage was obtained.
Data Gaps from Interviews:	None.
Other Data Gaps:	No environmental cleanup lien search report was provided by the ASTM User for the subject property. This data gap does not affect the ESA findings since PTIRs were provided that indicate there are no cleanup liens or other activity and use restrictions associated with the subject property lots.

No other entity may rely on the information presented in the report without the expressed written consent of *EAI*. Any use of this Phase I ESA Report constitutes acceptance of the terms and conditions under which it was prepared. The liability of *EAI* extends only to its Client, Ecosystems Investment Partners, EIP California, LLC and their assigns, and not to any third or other parties who may obtain copies of this Phase I ESA Report.

3.0 USER-PROVIDED INFORMATION

Prior to initiating a reconnaissance visit to the subject property, *EAI* reviewed information relevant to performance of this Phase I ESA received from the Client/ASTM User, Ecosystem Investment Partners, for the subject property.

3.1 Information

1) Past Uses	Undeveloped land/Agricultural (rice)
2) Current Conditions	Undeveloped land/pasture
Reason Why the User Wants to Have this Phase I ESA Performed:	Phase I ESA Report prepared as a requirement of Ecosystems Investment Partners for environmental due diligence purposes.

3.2 User-Provided Documents

The following documents were provided by Ecosystems Investment Partners to *EAI* and are summarized as follows:

PTIR, Placer Title Co., dated May 12, 2022	The Preliminary Title Insurance Report (PTIR) provides current ownership information, property tax and title history for the parcel, but contains no information regarding the environmental condition of the subject property parcel (Attachment 2).
Tides End Plat Map (undated)	Graphic illustration of the property location with assessors parcel numbers depicted.

4.0 SUBJECT PROPERTY AND AREA RECONNAISSANCE

The reconnaissance visit to the subject property was conducted by *EAI* on June 10, 2024. *EAI* was unaccompanied during the reconnaissance visit.

4.1 Site Reconnaissance Methodology

EAI utilized the following methodology to observe the subject property:
Walked the reasonably accessible areas of the subject property and boundaries.
Observed adjacent property areas from public thoroughfares.

4.2 General Description

Subject Property and Area Description:	The subject property is currently undeveloped and located in area of mixed farmland/pasture. According to information obtained, the subject property consists of a single parcel (approximately 160 acres) on the south side of County Road 155, approximately 0.6 miles west of the Sacramento River Deep Water Channel. The surrounding properties are either undeveloped or used for pasture.
Structures, Roads, Other Improvements:	There are no structures on the subject property. A single unpaved road on the west side of the property extends south from County Road 155 to an offsite hunting clubhouse.
Subject Property Size:	~64 acres
Estimated % of Property Covered by Buildings/Pavement:	0% (based on reconnaissance visit).
Observed Current Subject Property Use/Operations:	There appear to be no active operations being conducted at the subject property.
Observed Evidence of Past Subject Property Use(s):	None observed.
Sewage Disposal Method (and age):	None observed.
Emergency Generator	None observed or reported to be present.

Potable Water Source:	No private water supply wells were noted on site
Electric Utility:	Pacific Gas & Electric (PG&E) services the subject property area.
Natural Gas Utility:	PG&E services the subject property area.

4.3 Hazardous Substances and Petroleum Products

EAI made the following visual observations during the subject property reconnaissance visit and identified the following information about hazardous substances at the subject property during the interview/records review portions of the ESA:

Observation	Description
Hazardous Substances and Petroleum Products:	None observed.
Drums (≥ 5 gallons):	None observed.
Strong, Pungent, or Noxious Odors:	None observed.
Pools of Liquid:	None observed.
Unidentified Substance Containers:	None observed.
PCB-Containing Equipment:	None observed.
Other Observed Evidence of Hazardous Substances or Petroleum Products:	None.

4.4 Interior Observations

There are no structures present on the subject property, so no interior observations were made.

4.5 Exterior Observations

EAI made the following observations during the reconnaissance of exterior areas of the subject property and/or identified the following information during the interview or records review portions of the assessment:

Observation	Description
On-site Pits, Ponds, or Lagoons:	None observed.

Stained Soil or Pavement:	None observed.
Stressed Vegetation:	None observed.
Waste Streams and Waste Collection Areas:	None observed.
Solid Waste Disposal:	None observed.
Potential Areas of Fill Placement:	None observed or reported to exist.
Wastewater:	No potential sources observed.
Storm water:	Storm water appears to primarily soak into the subject property surface while excess flows southeastward to Prospect Slough. The subject property is not listed on the National Pollutant Discharge and Elimination System (NPDES) database in the EDR Report (Attachment 3). No indication of a discharge that would require a NPDES permit was observed.
Wells:	Private water supply wells were not observed on site.
Septic Systems:	None observed or reported to exist.
Electromagnetic Radiation Source:	None observed.
Other Exterior Observations:	Several unlined drainage channels were observed on the property. An empty steel drum and an approximately 8-foot section of drain pipe were observed in the central portion of the property.

4.6 Underground Storage Tanks/Structures

Existing USTs:	None observed.
Former USTs:	No evidence observed.
Other Underground Structures:	None observed.

4.7 Aboveground Storage Tanks

Existing ASTs:	None observed.
Former ASTs:	No evidence observed.

4.8 Adjoining Properties

4.8.1 Current Uses of Adjoining Properties

As viewed from the subject property and/or from public rights-of-way, *EAI* made the following observations about use and activities on adjoining properties:

North:	County Road 155, followed by a duck hunting clubhouse and undeveloped land.
East:	Undeveloped land.
South:	A hunting clubhouse and undeveloped land.
West:	Undeveloped land.

4.8.2 Observed Evidence of Past Uses of Adjoining Properties

Observations of adjoining properties providing indications of past use and activities, if any, are described as follows:

North:	None observed.
South:	None observed.
East:	None observed.
West:	None observed.

4.8.3 Pits, Ponds or Lagoons on Adjoining Properties

As viewed from the subject property and/or from public right-of-ways, *EAI* made the following observations about the presence of pits, ponds and lagoons on adjoining properties:

North:	None observed.
South:	None observed.
East:	None observed.
West:	None observed.

4.9 Observed Physical Setting

Topography of the Subject Property and Surrounding Area:	The topography of the subject property and surrounding area is generally flat to gently sloping downward to the southeast toward Prospect Slought and the Sacramento River Deep Water Channel.

4.10 Summary of Findings From Subject Property Reconnaissance

There were no observed potential adverse environmental conditions and no evidence of an ASTM REC or HREC of the subject property based on the reconnaissance visit.

5.0 PHYSICAL SETTING

Topography:	The subject property has an approximate, average surface elevation of 1 to 2 feet above mean sea level (AMSL). Area topography slopes is generally flat to gently sloping downward to the south.
Soil/Bedrock Data:	Soil in the vicinity of the site is identified by the United States Department of Agriculture - Soil Conservation Service as Capay soils and overwash, 0 percent, frequently flooded (USDA, 2024). Capay soils consist of silts and clays that form on basin floors and are poorly drained with rapid runoff. The subject property is located in the Sacramento Valley which comprises the northern half of the Great Valley Geomorphic Province (Norris and Webb, 1990). It is bound by the Coast Ranges to the west, the Sierra Nevada Mountains to the east, the Klamath and Cascade Mountains north, and the San Joaquin Valley to the south. The Great Valley is an asymmetrical synclinal trough overlain with a thick sequence (over 20,000 feet) of sedimentary deposits. These deposits range in age from early Cretaceous to early Quaternary and represent deep to shallow-water marine and nonmarine depositional environments. Recent alluvial soil, derived primarily from the erosion granitic terraces in the Sierra Nevada Mountains, fills the basin
Estimated Depth to Groundwater:	Depth to groundwater in the area of the subject property is estimated at approximately 3 to 7 feet below ground surface (bgs) based on State Well Number 07N03E30Q002M. The subject property is located in a semi-inundated area and the depth to groundwater can vary depending on seasonal rainfall and tidal influence.
Estimated Direction of Gradient:	Groundwater movement is assumed to be south toward the Sacramento River Delta, except where impacted by localized pumping.
Known Regional Groundwater Impairment:	None.

Sources of this information:

- California Department of Conservation, Division of Mines and Geology (CDMG), 2002 California Geological Survey, California Geomorphic Provinces Note 36, Electronic Copy, Revised December 2002.

- California Department of Conversation, Division of Mines and Geology (CDMG), 1998, Maps of Known Active Fault Near-Source Zones In California and Adjacent Portions of Nevada, published by International Conference of Building Officials.

- California Department of Water Resources, 2024, SGMA Data Viewer, https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels/

- Norris and Webb, 1990, Geology of California, published by John Wiley and Sons, Inc.

- USDA-NRCS, 2024, Web Soil Survey https://websoilsurvey.nrcs.usda.gov/.

- USGS Topographic Map, Saxon, CA Quadrangle, 2022.

6.0 ENVIRONMENTAL RECORDS REVIEW

6.1 Federal, State and Tribal Environmental Records

A government agency database search report was obtained from Environmental Data Resources, Inc. (EDR), a third-party environmental database search firm. A complete copy of the database search report, including the date the report was prepared, the date the information was last updated, and the definition of databases searched, is provided in Attachment 3.

EAI evaluated the properties listed within the EDR Report on the basis of their potential to environmentally impact the subject property. As part of this process, inferences have been made regarding the likely groundwater movement direction (south). The following table summarizes the listings:

Agency List/Database	Search Radius	Number of Listed Sites	ASTM REC?
Federal NPL Sites	1.0 mile	0	No.
Federal Delisted NPL Sites	1.0 mile	0	No.
Federal CERCLIS List	0.5 mile	0	No.
Federal CERCLIS NFRAP List	0.5 mile	0	No.
Federal RCRA CORRACTS Facilities	1.0 mile	0	No.
Federal RCRA Non-CORRACTS TSDF	0.5 mile	0	No.
Federal RCRA SQG Generators	0.25 mile	0	No.
Federal RCRA CESQG/LQG Generators	0.25 mile	0 (LQG) 0 (CESQ)	No.
Federal RCRA Non-Gen/NLR	0.25 mile	0	No.
Federal ERNS	Subject Property	Not Listed	No.
State and Tribal - Equivalent NPL (a.k.a. RESPONSE)	1.0 mile	0	No.
State and Tribal - Equivalent CERCLIS (a.k.a. ENVIROSTOR)	1.0 mile	0	No.
State and Tribal Solid Waste Facilities (a.k.a. SWF/LF); Toxic Pits (TP)	0.5 mile	0	No.
State and Tribal Registered Storage Tank Sites (a.k.a. UST & AST)	0.25 mile	0	No.
State and Tribal Leaking Storage Tank Sites (a.k.a. SLIC & LUST)	0.5 mile	0 LUST 0 SLIC	No.

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT FOR

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
46503 County Road 155
Dixon, Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APNs: 033-220-009

Prepared For:

David Urban, Managing Director
Ecosystem Investment Partners
EIP California, LLC
Attn: Glen William, California Projects Director
2330 Marinship Way, Suite 120
Sausalito, CA 94965

Prepared by:

Bernard A. Sentianin, PG
Senior Geologist

Reviewed by:

Craig A. Smith, PG
Senior Project Manager

6.5 Local Environmental Health Department

Agency Name, Contact Information	Finding
Yolo County Environmental Health Division (EHD): Public Access Viewer	A review of Yolo County's online database indicated no records associated with the subject property.

6.6 Fire Department

Agency Name, Contact Information	Finding
California Department of Forestry and Fire Protection (Cal Fire): Calfire PRA Records Center Calfire@govqa.us	Cal Fire's indicated they have no records associated with the subject property (Attachment 5).

6.7 Building Department

Agency Name, Contact Information	Finding
Yolo County Building Division (YCBD): Public Access Viewer	A review of Yolo County's online database indicated no records associated with the subject property (Attachment 5).

6.8 State Environmental Departments

Agency Name, Contact Information	Finding
DTSC (Cal/EPA): Receptionist - pubreqact@dtsc.ca.gov	A review of DTSC's EnviroStor and HWTS online databases indicated no records associated with the subject property (Attachment 5).

CVRWQCB (Cal/EPA): Receptionist – r5s-pra@waterboards.ca.gov	A review of State Water Resources Control Board's GeoTracker online database indicated no records associated with the subject property (Attachment 5).

6.9 Air District

Agency Name, Contact Information	Finding
Yolo Solano Air Quality Management District: (YSAQMD): Karin Bloesch (530) 757-3539, pra@ysaqmd.gov	According to YSAQMD, there are no permitted facilities on the subject property (Attachment 5).

6.10 Industrial Wastewater Agency

The subject property is vacant land with no manufacturing, or other types of processes, that produce industrial wastewater.

6.11 Discussion and Summary of Findings from Environmental Records Review

The subject property and adjacent properties are not listed in the EDR Report. No regulatory records were found at Yolo County, Cal Fire, DTSC, CVRWQCB, or YSAQMD.

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT FOR

Tide's End Multibenefit Restoration Project
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contamination in a given location. These maps, which were periodically updated from the late 19th Century into the 1980s (when they were replaced with high definition aerial and satellite photography-based maps), often provide valuable insights into historical property uses. *EAI* contracted with EDR to provide copies of historical Sanborn® fire insurance maps covering the subject and immediately adjacent properties.

There is no historical fire insurance industry (Sanborn) map coverage for the subject property area according to EDR. A copy of their no maps found notification is included in Attachment 6.

7.5 Historical Topographic Maps

EAI reviewed U.S. Geological Survey (USGS) maps of the subject property and surrounding area provided by EDR. The following table summarizes the USGS map review results:

Year(s)	Scale(s)	Observations
1908, 1916, 1952, 1967, 1968, 1973, 1975, 1980, 2012 2015,	1:24,000	The subject property and surrounding area are undeveloped, rural land. The West Cut channel is visible approximately 0.6 miles to the east. By 1973 the West Cut channel has been widened and renamed the Sacramento Deep Water Channel.
2018. 2022	1:24,000	The subject property does not contain any individual features or buildings. Properties in the site vicinity, particularly to the north, east, and south, are designated as Freshwater Emergent Wetland.

There are no indicators of potential ASTM RECs depicted on the maps. Copies of the topographic maps are included in Attachment 6.

7.6 Other Historical Sources

No other historical sources were found during this ESA.

7.7 Summary of Findings from Historical Records Review

The historical records reviewed indicate that the subject property was historically undeveloped land in a rural area. The subject property was utilized for agriculture from the 1960's through the 1980's. The surrounding area was developed as farmland/pasture, with the West Cut channel/Sacramento Deep Water Channel constructed to the east in circa 1937 and enlarged in the 1970's. No historical records or information reviewed indicated a potential ASTM HREC or REC of the subject property.

8.0 INTERVIEWS

8.1 Findings From Interview With Property Owner Representatives

- The property owner declined to respond to the owner questionnaire.

9.0 SUMMARY OF HISTORICAL SUBJECT AND ADJOINING PROPERTY USES

The following summary of the historical uses of the subject property and adjoining properties was compiled from the referenced materials and interviews detailed in Sections 5.0, 6.0, and 7.0.

9.1 Subject Property Use

Year	Summary of Subject Property Use
Circa 1937 to 1953	Undeveloped land.
Circa 1966 to 1984	Agricultural (rice).
Circa 1993 to 2023 (present)	Undeveloped land.

9.2 Surrounding Property Use

Direction	Summary of Historical Adjoining Property Use
North:	Originally undeveloped land. Periodically used for pasture or agriculture (rice)
East:	Originally undeveloped land. Periodically used for pasture or agriculture.
South:	Originally undeveloped land. Periodically used for pasture or agriculture.
West:	Originally undeveloped land. Periodically used for pasture or agriculture.

10.0 OTHER AND NON-ASTM ENVIRONMENTAL CONSIDERATIONS

10.1 Lead-Based Paint

There are no structures and no known concerns regarding lead-based paint (LBP) associated with the subject property.

10.2 Asbestos

There are no structures and no known concerns regarding asbestos-containing materials (ACMs) associated with the subject property.

10.3 Flood Zones

EAI reviewed the Federal Emergency Management Agency (FEMA) flood insurance rate maps information for the subject property presented in the EDR Report. They indicate the subject property is located in a regulatory floodway. A copy of the EDR Report is included as Attachment 3 of this report. The information is summarized on the following table:

FLOOD INSURANCE RATE MAPS	
Map Source & Name:	EDR Report – FEMA Panel 06113C0720G FIRM Flood Data.
Subject Property Within 100-Year Flood Plain:	No
Subject Property Within 500-Year Flood Plain:	No

10.4 Wetlands

Wetlands cannot be definitively identified through visual observation alone. Defensible wetland delineations require taxonomic classification of subject site vegetation, an investigation into the surface and subsurface hydrology of the subject property, and identification of hydric soils. This level of delineation is outside of the scope or work for this assessment. However, *EAI* reviewed US Fish and Wildlife Service National Wetland Inventory (NWI) maps and USDA Soil Survey reports included in the EDR Report. The subject property is mapped as Freshwater Emergent Wetlands (NWI, 2024).

10.5 Indoor Air Quality

EAI did not identify any volatile organic compound (VOC) release sites located hydrogeologically up-gradient, or immediately cross-gradient, of the subject property that could act as a source of contamination to soil gas underlying the subject property.

Based on the data contained in the EDR Report (Attachment 3), the potential for subsurface contaminant vapor having reached the subject property boundaries, defined by ASTM Standard E2600-15 as a Vapor Encroachment Condition (VEC), is low.

10.6 Radon

Radon is a colorless, tasteless radioactive gas with a U.S. Environmental Protection Agency (EPA) specified action level of 4.0 picocuries per liter (pCi/L) of air. Radon gas has a very short half-life of 3.8 days. The health risk potential of radon is associated with its rate of accumulation within confined areas, particularly confined areas near to the ground, where vapors can readily transfer to indoor air from the ground through foundation cracks or other pathways. Large, adequately ventilated rooms generally present limited risk for radon exposure. According to the EPA, the radon concentrations in buildings and homes depend on many factors, including soil types, temperature, barometric pressure, and building construction.

EAI reviewed the California Department of Health Services (CDHS) Radon Database for California (last updated in February 2017) and found that in zip code area 95620 where the subject property is located, five tests were taken as part of the survey. None of the test results reported detectable concentrations of radon.

Subject property Location:	**State**	**County & Zip Codes**
	California	Yolo 95620
EPA Radon Zones (with Average Measured Indoor Radon Concentrations)		
Zone 1 – High (> 4.0 pCi/L)	Zone 2 - Moderate (2 to 4 pCi/L)	Zone 3 – Low (< 2 pCi/L)
No.	No.	Yes.
Normally-occupied sub grade areas (i.e., basements, etc.)?		
No (None Exist).		

Information regarding the presence of radon at the subject property relies on regional data and does not represent site-specific data. Based on the Federal EPA Radon Zone rating and CDHS survey results, radon is not expected to represent an environmental impact risk at the subject property and no further consideration appears to be warranted.

10.7 Dry-Cleaning Operations

No dry-cleaning operations were reported or observed to be at or near the subject property. The EDR Report and historical review did not indicate a potential for past dry-cleaning shops operating solvent-based equipment on the subject property or in the vicinity.

10.8 Pesticides & Other Agricultural Chemicals

The historical research for this ESA indicates that the area surrounding the subject property was agricultural land from at least as early as 1937. Irrigated agricultural land use may result in the upper one to two feet of soil being impacted by pesticides in excess of regulatory screening levels. Should residential development be contemplated at some point in the future, near-surface soil sampling and testing should be conducted to screen for agricultural chemical residue.

10.9 Mold

There are no structures and no known concerns regarding mold associated with the subject property.

11.0 OPINION AND CONCLUSIONS

EAI has performed a Phase I ESA in conformance with the Scope of Work (SOW) required by Title 40 CFR Part 312 (All Appropriate Inquiry; AAI) and ASTM E1527-21, of the property located 46503 County Road 155 in unincorporated Yolo County, CA 95620. Any exceptions to, or deviations from the SOW are described in this report, where applicable.

The subject property consists of a quarter section of undeveloped land (approximately 160 acres) on the south side of County Road 155, approximately 0.6 miles west of the Sacramento Deep Water Channel. Based on a review of historical data, the property has been undeveloped since at least 1937, with periods of agricultural use starting in the late 1960's through the early 1980's.

The subject property has not come to the attention of the Local (Yolo County EHS), State (Cal/EPA), or Federal (US EPA Region 9) environmental regulatory agencies in association with on-site hazardous materials storage and/or use or any known hazardous waste generation. No known manufacturing operations were found to have ever been located on the subject property.

No release sites that qualify as a potential adverse environmental contaminant impact source condition to the subject property were identified in the Environmental Data Resources, Inc. (EDR) government database search report (EDR Report) obtained and reviewed during performance of this ESA.

No evidence of an ASTM recognized environmental condition (REC), controlled REC (CREC), or historical REC (HREC) of the subject property was found. See the definitions of these ASTM terms in Attachment 4.

No additional environmental assessment work is recommended at this time.

12.0 LIMITATIONS

The conclusions and recommendations contained in this report/assessment are based upon professional opinions with regard to the subject matter. These opinions were prepared in accordance with generally accepted environmental consulting and engineering standards and practices applicable to this location and existing at this time. The use of this report is subject to the following limitations:

1. The data and findings presented in this report are valid as of the dates when the investigations were performed. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration at the Subject Property, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in the report.
2. The data reported and the findings, observations, and conclusions expressed in the report are limited by the Scope of Work, budget, site access and schedule, as defined in EnviroApplications' Proposal for the work.
3. This report is based, in part, on unverified information supplied to EnviroApplications by third-party sources, such as regulatory agencies, prior owners or operators of the property, analytical laboratories, subcontractors, etc. Whereas efforts may have been made to substantiate this third-party information, EnviroApplications cannot guarantee the completeness or accuracy of this information.
4. The findings, observations, and conclusions expressed by EnviroApplications in this report are not, and should not be, considered an opinion concerning the compliance of any past or present owner or operator of the Subject Property with any Federal, state or local law or regulation.
5. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon conditions in existence at the time of investigation.
6. EnviroApplications' reports present professional opinions and findings of a scientific and technical nature. Whereas attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer a legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of Federal, state or local governmental agencies. Issues raised by the report should be reviewed by appropriate legal counsel.
7. This report is intended for the use of EnviroApplications' Client, Ecosystem Investment Partners; any other use must be approved by EnviroApplications and the Client in writing. If any such unauthorized use occurs, it shall be at the user's sole risk without liability to EnviroApplications.

FIGURES

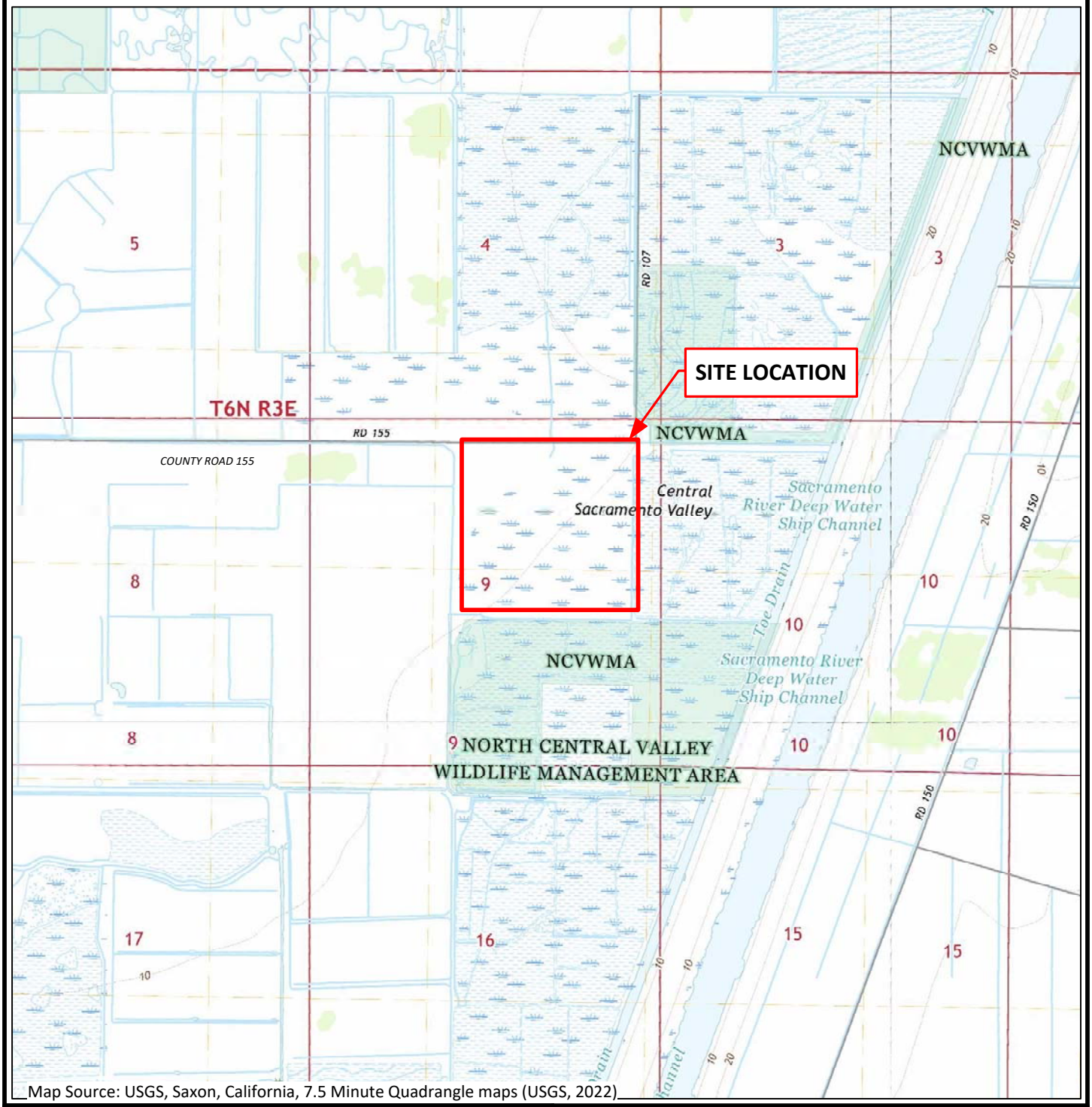
PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009



Map Source: USGS, Saxon, California, 7.5 Minute Quadrangle maps (USGS, 2022)

LEGEND

N

Scale: 1" = 2,000'

0 1,200 ft 2,000 ft 4,000 ft

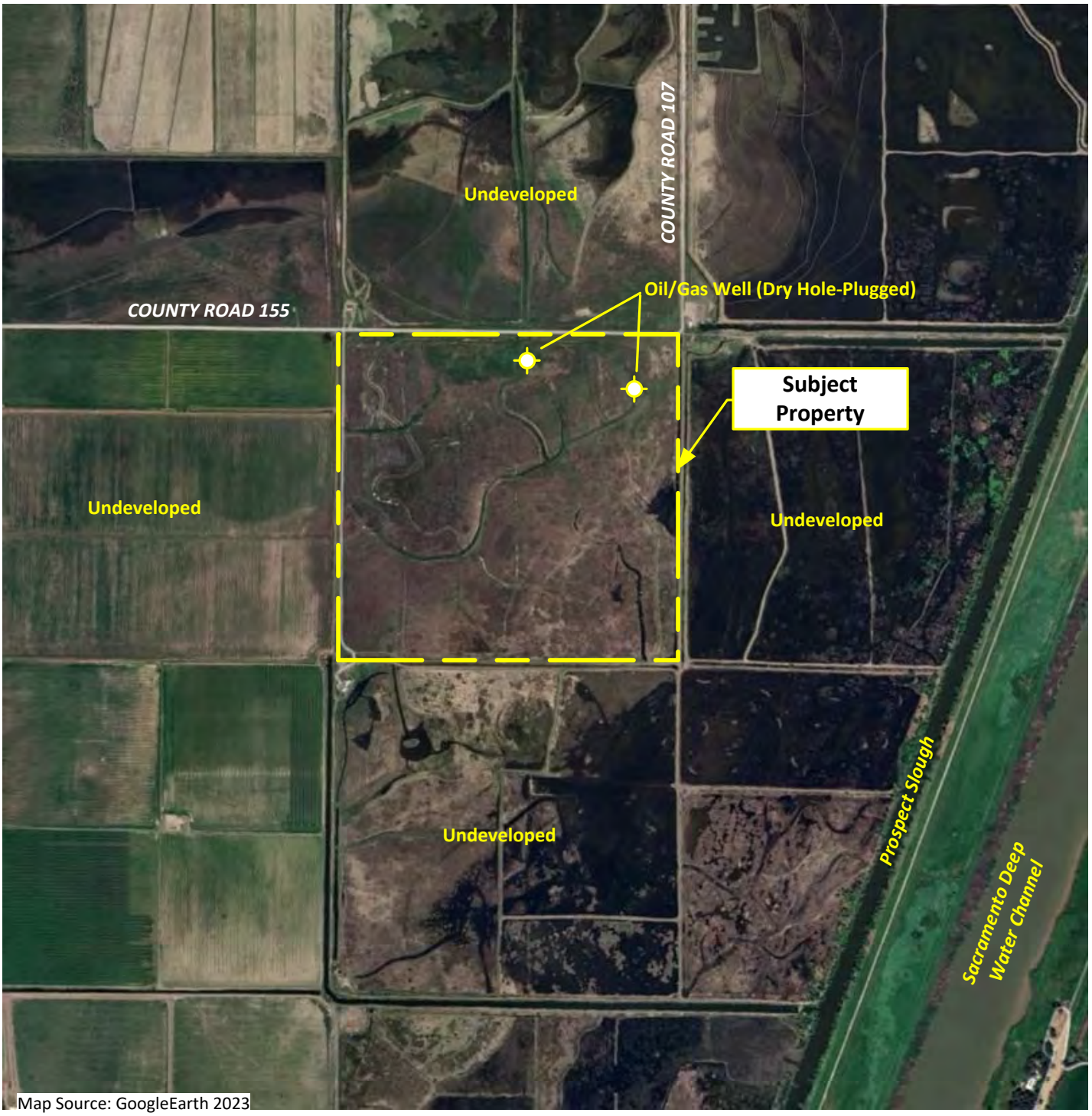
Note: All Locations Are Approximate

SITE LOCATION MAP

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
Assessor's Parcel Number 033-220-009
46503 County Road 155
Dixon, Yolo County, California 95620
EEI Project ECOSYL5.24
Created June 2024

EnviroApplications, Inc.
Engineering & Consulting

FIGURE 1



LEGEND

N

Scale: 1" = 1,000'

0 600 ft 1,000 ft 2,000 ft

Note: All Locations Are Approximate

AERIAL SITE MAP

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
Assessor's Parcel Number 033-220-009
46503 County Road 155
Dixon, Yolo County, California 95620
EEI Project ECOSYL5.24
Created June 2024

EnviroApplications, Inc.
Engineering & Consulting

FIGURE 2

ATTACHMENT 1

PHOTOGRAPHS OF THE SUBJECT & ADJACENT PROPERTIES

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Ecosystems	**Job Number:**	80.ECOSYL5.24
Subject Name:	Lucky Five South APNs: 033-220-009	**Location:**	46503 County Road 155 Dixon, CA 95620
Photographer:	Bernard Sentianin	**Date:**	June 10, 2024

Photograph No. 1 of 10

Looking east along County Road 155 and northern margin of subject property.

Photograph No. 2 of 10

Looking southeast across subject property from County Road 155.

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Ecosystems	**Job Number:**	80.ECOSYL5.24
Subject Name:	Lucky Five South APNs: 033-220-009	**Location:**	46503 County Road 155 Dixon, CA 95620
Photographer:	Bernard Sentianin	**Date:**	June 10, 2024

Photograph No. 3 of 10

Looking south along the western margin of the subject property.

Photograph No. 4 of 10

Looking east along the southern margin of the subject property.

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Ecosystems	**Job Number:**	80.ECOSYL5.24
Subject Name:	Lucky Five South APNs: 033-220-009	**Location:**	46503 County Road 155 Dixon, CA 95620
Photographer:	Bernard Sentianin	**Date:**	June 10, 2024

Photograph No. 5 of 10

Looking south along the eastern margin of the subject property.

Photograph No. 6 of 10

Looking southwest across the subject property.

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Ecosystems	**Job Number:**	80.ECOSYL5.24
Subject Name:	Lucky Five South APNs: 033-220-009	**Location:**	46503 County Road 155 Dixon, CA 95620
Photographer:	Bernard Sentianin	**Date:**	June 10, 2024

Photograph No. 7 of 10

Looking west from center of subject property.

Photograph No. 8 of 10

Looking north from center of subject property.

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Ecosystems	**Job Number:**	80.ECOSYL5.24
Subject Name:	Lucky Five South APNs: 033-220-009	**Location:**	46503 County Road 155 Dixon, CA 95620
Photographer:	Bernard Sentianin	**Date:**	June 10, 2024

Photograph No. 9 of 10

Looking east from center of subject property.

Photograph No. 10 of 10

Looking south from center of subject property.

ATTACHMENT 2

ASTM USER PROVIDED INFORMATION

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

Preliminary Report Top Sheet

♦ HELP US STAY ON TOP OF YOUR TRANSACTION ♦

IF ANY OF THESE QUESTIONS ARE ANSWERED "YES", OR IF YOU HAVE QUESTIONS ABOUT THE BELOW, PLEASE CONTACT YOUR ESCROW OFFICER IMMEDIATELY

- Have any of the principals recently filed bankruptcy?
- Do any of the principals plan to use a power of attorney?
- Are any of the principals going through a divorce? (if so, is there an attorney involved?)
- Is anyone currently vested in title deceased? Has a new Tax I.D. Number been established?
- Do any of the principals NOT have a valid photo identification?
- Is there construction work in progress or incomplete construction?
    - Any construction completed in the last year?
    - Any construction completed in the last 4 months?
- Is there a mobile or manufactured home on the property?
- Are the sellers a non-resident alien or a foreign out of country seller?
- Is the property an investment property or not considered seller's principal residence?
- Will a new entity be formed? (i.e. Partnership, LLC, Corporation)
- If your principals are currently vested or are taking title in their trust, have bank accounts been established in the name of the Trust?
- Will any of the principals be participating in a 1031 Exchange?
- Are any of the principals not able to sign with a Placer Title Company? If so, an approved notary will be required.

THANK YOU FOR CHOOSING

Placer Title Company

PLACER TITLE COMPANY
A MOTHER LODE COMPANY

Escrow Number: P-506079

WIRE FRAUD ADVISORY

Parties to a real estate transaction are often targets for wire fraud and financial confidence schemes, unfortunately with many losing tens or hundreds of thousands of dollars because they relied (without verification) on "revised" or "new" wire instructions appearing to come from a trusted party to the transaction.

IF YOU INTEND TO WIRE FUNDS IN CONJUNCTION WITH THIS REAL ESTATE TRANSACTION, WE STRONGLY RECOMMEND THAT YOU VERBALLY VERIFY THOSE INSTRUCTIONS THROUGH A KNOWN, TRUSTED PHONE NUMBER PRIOR TO SENDING FUNDS.

In addition, the following self-protection strategies are recommended to minimize exposure to possible wire fraud.

- **DO NOT RELY** on emails purporting to change wire instructions. Placer Title Company will never change its wire instructions in the course of a transaction. If you receive a random or unsolicited email from anyone requesting funds to be wired, and attaching "new," "alternate," "updated," "revised" and/or "different" wire instructions, contact your escrow officer immediately (at a verifiable number in the manner noted below) and before wiring any money.

- **VERIFY** the wire instructions you do receive by calling the party who sent the instructions to you. However, **DO NOT** use the phone number provided in the email containing the instructions, and **DO NOT** send a reply email to verify, since the email address may be incorrect, fraudulent or being intercepted by the fraudster. Rather, use phone numbers you have called before and/or can independently verify through other sources (company website or internet search).

- **USE COMPLEX PASSWORDS** that are at least ten (10) characters long and contain a combination of mixed case, numbers, and symbols. You should also change your password often and not reuse the same password for other online accounts.

- **ENABLE MULTI-FACTOR AUTHENTICATION** for all email accounts. Your email provider may have specific instructions on how to implement this feature.

- **CHECK FOR AUTO-FORWARDING** on your email account and disable it. This is one of the most "silent" ways a fraudster can monitor your email account because every email that comes in is automatically forwarded to them, even if you change your password.

This Notice is not intended to provide legal or professional advice, nor is it an exclusive list of self-protection strategies. Customers are encouraged to always be aware of such schemes, and to contact their escrow officer if ever in doubt.

Placer Title Company
30 West Main St., Ste. A
Woodland, CA 95695
Phone: (530)666-1213
Fax: (530) 666-2670

PLACER TITLE COMPANY
A MOTHER LODE COMPANY

Order No.:	P-506079	Update (Version 2)
Reference:		
Escrow Officer:	Kristen Tadlock	
Email:	ktadlock@placertitle.com	
Email Loan Docs To:	301edocs@placertitle.com	

Proposed Underwriter: Old Republic National Title Insurance Company

Property Address: 46503 County Road 155, Davis, CA 95618

PRELIMINARY REPORT

In response to the above referenced application for a policy of title insurance, Placer Title Company hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an Exception below or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said Policy or Policies are set forth in Attachment One. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limit of Liability for certain coverages are also set forth in Attachment One. Copies of the policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Attachment One of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects, and encumbrances affecting title to the land.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

Dated: May 12, 2022 at 7:30AM
Title Officer: Eric Seastrom

The form of policy of title insurance contemplated by this report is:

2006 ALTA Standard Owners Policy

The estate or interest in the land hereinafter described or referred to covered by this report is:

Fee Simple

Title to said estate or interest at the date hereof is vested in:

Lucky Five Farm

The land referred to in this report is described as follows:

See Exhibit “A” Attached for Legal Description

Exhibit "A"
Legal Description

The land described herein is situated in the State of California, County of Yolo, unincorporated area, described as follows:

The Northeast quarter of Section 9, Township 6 North, Range 3 East, M.D.B.&.M.

Excepting therefrom an undivided 1/10 interest in all oil, gas and mineral rights as reserved in Coexecutor's Deed recorded NOvember 9, 1960, in Book 619, Page 76, Official Records.

APN: 033-220-009-000

EXCEPTIONS

At the date hereof, exceptions to coverage in addition to the printed Exceptions and Exclusions in said policy form would be as follows:

1. Taxes, special and general, assessment districts and service areas for the fiscal year 2022-2023, a lien not yet due or payable.

2. The lien of supplemental taxes, if any, assessed pursuant to the provisions of Chapter 3.5, (commencing with Section 75) of the Revenue and Taxation Code, of the State of California.

3. The land described herein lies within the boundaries of the Sacramento and San Joaquin Drainage District, and is subject to all taxes, assessments and obligations thereof. The district presently does not levy any assessments.

   NOTE: (For proration purposes only)

   Taxes, special and general, assessment districts and service areas for the Fiscal Year 2021-2022

1st Installment:	$2,350.82	PAID
2nd Installment:	$2,350.82	PAID
Parcel Number:	033-220-009-000	
Code Area:	61-005	
Land Value:	$188,523.00	
Improvements:	$1,126.00	
Exemption:	$0.00	

4. Riparian or water rights, claims, or title to water whether or not shown by the public records.

5. An easement over said land for passage of flood waters and incidental purposes granted to Sacramento and San Joaquin Drainage District, in deed recorded March 23, 1942, (book) 168 (page) 14, Official Records.

   Affects: said parcel

   No representation is made as to the current ownership of said easement.

6. An easement over said land for road purposes and incidental purposes granted to County of Yolo, in deed recorded June 3, 1948, (book) 283 (page) 103, Official Records.

   Affects: Northerly 30 feet

   No representation is made as to the current ownership of said easement.

7. Rights incidental to the ownership for the use and development of the mineral interests reserved in Deed executed by Isabella M. Lavezzo and Crocker-Anglo National Bank, coexecutors of the last will and testament of H. Nelson French, deceased, recorded November 9, 1960, (book) 619 (page) 76, Official Records.

   Mineral rights not shown further.

8. Land Use Contract made and entered into pursuant to the California Land Conservation Act of 1965, dated December 7, 1970, executed by Lucky Five Farm and the County of Yolo, recorded December 21, 1970, as (book) 961 (page) 298, Official Records.

   Said matter affects the herein described land and other land.

9. The terms, conditions and provisions as contained in the document entitled "License for Diversion and Use of Water", executed by State of California Water Resources Control Board, dated December 21, 1972, recorded December 26, 1972, as (book) 1045 (page) 95, Official Records.

10. The terms, conditions, provisions and easements as contained in the document entitled "Warranty Easement Deed", by and between Lucky Five Farm and United States of America, dated April 11, 2006, recorded May 25, 2006, as (instrument) 2006-0020581, Official Records.

11. Rights of tenants in possession, including any unrecorded leases and/or subleases affecting the herein described property.

********** SPECIAL INFORMATION **********

*** CHAIN OF TITLE REPORT:

According to the public records, no deeds conveying the property described in this report have been recorded within a period of 2 years prior to the date of this report, except as shown herein: NONE

*** LENDER'S SUPPLEMENTAL ADDRESS REPORT:

The above numbered report is hereby modified and/or supplemented to reflect the following additional items relating to the issuance of an American Land Title Association Loan Form Policy:

Placer Title Company states that the herein described property is agricultural land and that the property address is:

38005 County Road 107, Davis, CA 95618
46503 County Road 155, Davis, CA 95618

***NOTICE REGARDING MAPS

Any maps provided herewith are for reference only. The property and/or easements shown are but approximations, and no assurances are given as to accuracy, reliability, dimensions or acreage. This will not limit the coverage provided by a CLTA 116, 116.1 or 116.03 endorsement if issued to the policy.

*** NOTICE REGARDING FUNDS DEPOSITED IN ESCROW:

IMPORTANT NOTICE- ACCEPTABLE TYPE OF FUNDS

Please be advised that in accordance with the provisions of the California Insurance Code, Section 12413.1, any funds deposited for the closing must be deposited into the escrow depository and cleared prior to disbursement. Funds deposited by wire transfer may be disbursed upon receipt. Funds deposit via cashier's checks drawn on a California based bank may be disbursed the next business day. If funds are deposited with the Company by other methods, recording and/or disbursement may be delayed.

IMPORTANT NOTE: PLEASE BE ADVISED THAT ESCROW HOLDER DOES NOT ACCEPT CASH, MONEY ORDERS, ACH TRANSFERS, OR FOREIGN CHECKS.

PLEASE CONTACT ESCROW REGARDING QUESTIONS ON TYPE OF FUNDS REQUIRED IN ORDER TO FACILITATE THE PROMPT CLOSING OF THIS TRANSACTION.

NOTE: If you intend to remit multiple cashier's checks to close your escrow (which may or may not include gift funds or third party funds) IRS cash reporting under IRS Code 8300 may be required. For this reason, you may wish to consider wiring funds in lieu of remitting cashier's checks.

*** DISCLOSURE OF DISCOUNTS ***

You may be entitled to a discount on your title premiums and/or escrow fees if you meet any of the following conditions:

1. You are an employee of the title insurer or Placer Title Company and the property is your primary residence; or
2. The transaction is a loan, the purpose of which is to rebuild the improvements on the property as a result of a governmentally declared disaster; or
3. The property is being purchased or encumbered by a religious, charitable or nonprofit organization for its use within the normal activities for which such entity was intended.

Please advise the company if you believe any of the above discounts apply.

*** LENDER'S NOTE ***

In accordance with Executive Order 13224, and the USA Patriot Act, **PLACER TITLE COMPANY** compares the names of parties to the proposed transaction to the Specially Designated Nationals and Blocked Persons (SDN List) maintained by the United States Office of Foreign Asset Control.

*** BUYER'S NOTE ***

If an ALTA Residential Owner's Policy is requested and if the property described herein is determined to be eligible for this policy, the following Exceptions From Coverage will appear in the policy:

1. Taxes or assessments which are not shown as liens by the public records or by the records of any taxing authority.

2. (a) Water rights, claims or title to water; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) unpatented mining claims; whether or not the matters exception under (a), (b) or (c) are shown by the public records.

3. Any rights, interest or claims of parties in possession of the land which are not shown by the public records.

4. Any easements or liens not shown by the public records. This exception does not limit the lien coverage in Item 8 of the Covered Title Risks.

5. Any facts about the land which a correct survey would disclose and which are not shown by the public records. This exception does not limit the forced removal coverage in Item 12 of the Covered Title Risks.

CLTA PRELIMINARY REPORT FORM
Attachment One (Rev 06-05-14)
CALIFORNIA LAND TITLE ASSOCIATION STANDARD COVERAGE POLICY - 1990
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate of interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I (continued)

2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material not shown by the public records.

CLTA/ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE (12-02-13)
EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning: a) building; b) zoning; c) land use; d) improvements on the Land; e) land division; and f) environmental protection. This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.
2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.
3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.
4. Risks: a) that are created, allowed, or agreed to by You, whether or not they are recorded in the Public Records; b) that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the Policy Date; c) that result in no loss to You; or d) that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.
5. Failure to pay value for Your Title.
6. Lack of a right: a) to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and b) in streets, alleys, or waterways that touch the Land. This Exclusion does not limit the coverage described in Covered Risk 11 or 21.
7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.
8. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
9. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

- For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A.

The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 16:	1% of Policy Amount or $2,500.00 (whichever is less)	$10,000.00
Covered Risk 18:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 19:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 21:	1% of Policy Amount or $2,500.00 (whichever is less)	$5,000.00

2006 ALTA LOAN POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.

EXCLUSIONS FROM COVERAGE (continued)

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

2006 ALTA OWNER'S POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

EXCLUSIONS FROM COVERAGE (continued)

3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

[The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.
7. [Variable exceptions such as taxes, easements, CC&R's, etc. shown here.]

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (12-02-13)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.
6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.
8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.
9. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 27(b) of this policy.
10. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
11. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

NOTICE
FEDERAL FOREIGN INVESTMENT IN REAL PROPERTY TAX ACT OF 1980 (FIRPTA)

Upon the sale of United States real property, by a non-resident alien, foreign corporation, partnership or trust, the Foreign Investment in Real Property Tax Act of 1980 (FIRPTA), and as revised by the Tax Reform Act of 1984 (26 USCA 897 (C)(1)(A)(1) and 26 USCA 1445), Revised by the Path Act of 2015, These changes may be reviewed in full in H.R. 2029, now known as Public Law 114-113. See Section 324 of the law for the full text of FIRPTA changes. Effective February 27, 2016, the amendments to FIRPTA contained in the PATH Act have increased the holdback rate from 10% of gross proceeds to 15% of gross proceeds of the sale, regardless of whether the actual tax due may exceed (or be less than) the amount withheld if ANY of the following conditions are met:

1. If the amount realized (generally the sales price) is $300,000 or less, and the property will be used by the Transferee as a residence (as provided for in the current regulations), no monies need be withheld or remitted to the IRS.

2. If the amount realized exceeds $300,000 but does not exceed $1,000,000, and the property will be used by the Transferee as a residence, (as provided for in the current regulations) then the withholding rate is 10% on the full amount realized (generally the sales prices)

3. If the amount realized exceeds $1,000,000, then the withholding rate is 15% on the entire amount, regardless of use by the Transferee. The exemption for personal use as a residence does not apply in this scenario.
If the purchaser who is required to withhold income tax from the seller fails to do so, the purchaser is subject to fines and penalties as provided under Internal Revenue Code Section 1445.

Escrow Holder will, upon written instructions from the purchaser, withhold Federal Income Tax from the seller and will deposit said tax with the Internal Revenue Service, together with IRS Forms 8288 and 8288-A. The fee charged for this service is $25.00 payable to the escrow holder.

CALIFORNIA WITHHOLDING

In accordance with Sections 18662 and 18668 of the Revenue and Taxation Code, a transferee (Buyer) may be required to withhold an amount equal to 3 1/3 percent of the sales price or an alternative withholding amount certified to by the seller in the case of a disposition of California real property interest by either:

1. A seller who is an individual or when the disbursement instructions authorize the proceeds to be sent to a financial intermediary or the seller, OR
2. A corporate seller that has no permanent place of business in California.

The buyer may become subject to penalty for failure to withhold an amount equal to the greater of 10 percent of the amount required to be withheld or five hundred dollars ($500).

However, notwithstanding any other provision included in the California statutes referenced above, no buyer will be required to withhold any amount or be subject to penalty for failure to withhold if:

1. The sales price of the California real property conveyed does not exceed one hundred thousand dollars ($100,000.00), OR
2. The seller executes a written certificate, under the penalty of perjury, of any of the following:
    a. The property qualifies as the seller's (or decedent's, if being sold by the decedent's estate) principal residence within the meaning of Internal Revenue Code (IRC) Section 121; or
    b. The seller (or decedent, if being sold by the decedent's estate) last used the property as the seller's (decedent's) principal residence within the meaning of IRC Section 121 without regard to the two-year time period; or
    c. The seller has a loss or zero gain for California income tax purposes on this sale; or
    d. The property is being compulsorily or involuntarily converted and the seller intends to acquire property that is similar or related in service or use to qualify for non-recognition of gain for California income tax purposes under IRC Section 1033; or
    e. If the transfer qualifies for non-recognition treatment under IRC Section 351 (transfer to a corporation controlled by the transferor) or IRC Section 721 (contribution to a partnership in exchange for a partnership interest); or
    f. The seller is a corporation (or an LLC classified as a corporation for federal and California income tax purposes) that is either qualified through the California Secretary of State or has a permanent place of Business in California; or
    g. The seller is a partnership (or an LLC that is not a disregarded single member LLC and is classified as a partnership for federal and California income tax purposes) with recorded title to the property in the name of the partnership of LLC; or
    h. The seller is a tax-exempt entity under either California or federal law; or
    i. The seller is an insurance company, individual retirement account, qualified pension/profit sharing plan, or charitable remainder trust; or
    j. The transfer qualifies as a simultaneous like-kind exchange within the meaning of IRC Section 1031; or
    k. The transfer qualifies as a deferred like-kind exchange within the meaning of IRC Section 1031; or
    l. The transfer of this property will be an installment sale that you will report as such for California tax purposes and the buyer has agreed to withhold on each principal payment instead of withholding the full amount at the time of transfer.

The Seller is subject to penalty for knowingly filing a fraudulent certificate for the purpose of avoiding the withholding requirement.

NOTICE
DEPOSIT OF FUNDS AND DISBURSEMENT DISCLOSURE

Unless you elect otherwise (as described below), all funds received by (the "Company") in escrow will be deposited with other escrow funds in one or more non-interest bearing escrow accounts of the Company in a financial institution selected by the Company. The depositor acknowledges that the deposit of funds in a non-interest bearing demand account by Escrow Holder may result in said company receiving a range of economic benefits from the bank in the form of services, credits, considerations, or other things of value. The depositor hereby specifically waives any claim to such economic benefits payable to Escrow Holder resulting from non-interest bearing deposits. Unless you direct the Company to open an interest-bearing account (as described below), the Company shall have no obligation to account to you in any manner for the value of, or to compensate any party for, any benefit received by the Company and/or its affiliated company. Any such benefits shall be deemed additional compensation of the Company for its services in connection with the escrow.

If you elect, funds deposited by you prior to the close of escrow may be placed in an individual interest-bearing account arrangement that the Company has established with one of its financial institutions. You do not have an opportunity to earn interest on the funds deposited by a lender. If you elect to earn interest through this special account arrangement, the Company will charge you an additional fee of $50.00 for the establishment and maintenance of the account. This fee compensates the Company for the costs associated with opening and managing the interest-bearing account, preparing correspondence/documentation, transferring funds, maintaining appropriate records for audit/reconciliation purposes, and filing any required tax withholding statements. It is important that you consider this cost in your decision since the cost may exceed the interest you earn.

Placer Title Co., Montana Title and Escrow, National Closing Solutions, National Closing Solutions of Alabama, National Closing Solutions of Maryland, North Idaho Title Insurance, Placer Title Insurance Agency of Utah, Premier Reverse Closings, Premier Title Agency, Texas National Title, Washington Title and Escrow, Western Auxiliary Corp., Wyoming Title and Escrow

NOTICE AT COLLECTION AND PRIVACY POLICY
updated July 1, 2020

We respect your personal information and are committed to protecting it. We are disclosing how Mother Lode Holding Company and its subsidiaries listed above (together referred to as "we," "us," or "our") collect, use, and share your personal information. Sections 1 and 2 constitute our Notice at Collection, Sections 1 – 9 are our Privacy Policy, and Sections 10 – 11 are additional sections of our Privacy Policy that apply only to California residents.

1. Personal Information We Collect

We may collect and over the last 12 months have collected personal information in the following categories: (A) Identity information such as name, postal address, email address, date of birth, social security number, driver's license, passport, signature, physical characteristics or description, telephone number, or other similar information; (B) Financial information (such as bank account information) and insurance information; (C) Records of services or products requested or purchased; (D) Biometric information (thumbprints obtained by notaries); (E) Internet or other electronic network activity information, such as online identifiers, Internet Protocol address, and information relating to interaction with our Internet websites and mobile applications; (F) Audio (voice messages), electronic, or similar information; (G) Professional or employment-related information; (H) Education information; (I) Characteristics of protected classifications such as marital status; (J) Geolocation information (with consent when using our mobile applications); and (K) information relating to pandemics, including medical, health, and travel information.

2. Purposes

We collect the above information, and have collected it in the last 12 months, for the following purposes: Our operational purposes, including providing escrow and title services, fulfilling a transaction, verifying customer information, and providing and improving customer service (categories A-J); Detecting, protecting against, and reporting malicious, deceptive, fraudulent, or illegal activity (A-I); Providing and improving Websites, and debugging to find and repair errors (A, C E, F, J); Auditing and complying with legal and other similar requirements (A-I); and to reduce the risk of spreading infectious diseases and to protect our employees and guests (K).

3. Sources, Sharing

The sources from which the information is and was collected include: the consumer or their authorized representative (A-J); government entities, service providers, financial institutions, our affiliates, real estate settlement service providers, real estate brokers and agents (A-D, F-I); and our internet websites and mobile applications (A-C, E-J). The categories of third parties with whom we share and have shared personal information include: a consumer's authorized representative (A-I); government entities, service providers and consultants, financial institutions, our affiliates, real estate settlement service providers, real estate brokers and agents, abstractors (A-I); notaries public (K); and data analytics and internet service providers (E, F, J). We may also disclose your information as part of a business transaction, such as a merger, sale, reorganization or acquisition (A-J).

4. Cookies and similar technologies

We use "cookies" and similar technologies when you access our websites or mobile applications. A "cookie" is a piece of information that our website sends to your browser, which then stores this information on your system. If a cookie is used, our website will be able to "remember" information about you and your preferences either until you exit your current browser window (if the cookie is temporary) or until you disable or delete the cookie. Many users prefer to use cookies in order to help them navigate a website as seamlessly as possible.

We use "cookies" in the following situations. The first situation is with respect to temporary cookies. If you are accessing our services through one of our online applications our server may automatically send your browser a temporary cookie, which is used to help your browser navigate our site. The only information contained in these temporary cookies is a direction value that lets our software determine which page to show when you hit the back button in your browser. This bit of information is erased when you close your current browser window. The second situation in which we may use cookies is with respect to permanent cookies. This type of cookie remains on your system, although you can always delete or disable it through your browser preferences. There are two instances in which we use a permanent cookie. First, when you visit our website and request documentation or a response from us. When you are filling out a form, you may be given the option of having our website deliver a cookie to your local hard drive. You might choose to receive this type of cookie in order to save time in filling out forms and/or revisiting our website. We only send this type of cookie to your browser when you have clicked on the box labeled "Please remember my profile information" when submitting information or communicating with us. The second instance where we use a permanent cookie is where we track traffic patterns on our site. Analysis of the collected information by our tracking technologies allows us to improve our website and the user experience. In both instances of a persistent cookie, if you choose not to accept the cookie, you will still be able to use our website. Even if you choose to receive this type of cookie, you can set your browser to notify you when you receive any cookie, giving you the chance to decide whether to accept or reject it each time one is sent.

5. Links to Other Websites and Do Not Track

Our website may contain links to third party websites, which are provided and maintained by the third party. Third party websites are not subject to this notice or privacy policy. Currently, we do not recognize "do not track" requests from Internet browsers or similar devices.

6. Sale

We do not sell personal information about consumers and have not sold information about consumers in the last 12 months.

7. Minors

We do not collect information from minors under the age of 18.

8. Safeguards

We restrict access to the information we collect to individuals and entities who need to know the information to provide services as set forth above. We also maintain physical, electronic and procedural safeguards to protect information, including data encryption.

9. Access and Changes

This notice and policy can be accessed https://www.mlhc.com/privacy-policy. Disabled consumers may access this notice in an alternative format by contacting MLHC Counsel, Legal Dept., 1508 Eureka Rd., #130, Roseville, CA 95661, or calling our toll free number at 1-877-626-0668, or emailing privacy@mlhc.com. This notice and policy will change from time to time. All changes will be provided at https://www.mlhc.com/privacy-policy and furnished through an appropriate method such as electronically, by mail, or in person. The effective date will be stated on the notice and policy.

Questions about this notice and privacy policy may be sent to MLHC Counsel, Legal Dept., 1508 Eureka Rd., #130, Roseville, CA 95661 or privacy@mlhc.com.

CALIFORNIA SUPPLEMENT - THE REMAINDER OF THIS POLICY APPLIES ONLY TO CALIFORNIA RESIDENTS

10. Requests Under the California Consumer Privacy Act ("CCPA")

California residents have the right to make a "request to know" (1) the specific pieces of personal information we have collected about them; (2) categories of personal information we have collected; (3) categories of sources from which the personal information was collected; (4) categories of personal information we disclosed for a business purpose; (5) purpose for collecting the information; and (6) categories of third parties with whom we shared personal information. California residents have the right to request that we deliver to them their personal information free of charge. California residents have the right to make a "request to delete" from our records of their personal information that we have collected, subject to legal limitations. We do not discriminate against consumers for exercising rights under the CCPA or other laws.

11. How to Make a Request under the California Consumer Privacy Act

To make a CCPA "request to know," a "request to delete," or any other request under the CCPA, a California consumer may (1) submit a request to privacy@mlhc.com; (2) call us toll-free at 1-877-626-0668; or (3) send a written request to MLHC Counsel, Legal Dept., 1508 Eureka Rd., #130, Roseville, CA 95661. Please note that you must verify your identity before we take further action. To verify your identity, we will try to use information you have already provided. We may also need additional information. Consistent with California law, you may designate an authorized agent to make a request on your behalf. To do this, you must provide a valid power of attorney, the requester's valid government issued identification, and the authorized agent's valid government issued identification. California residents may "opt out" of the sale of their personal information. However, we do not sell your personal information and therefore we do not offer an "opt out."

Upon receipt of a verified consumer request, we will respond by giving you the information requested for the 12-month period before our receipt of your verified consumer request at no cost to you, or deleting the information and notifying any service providers to delete it, subject to legal limitations. If we have a valid reason to retain personal information or are otherwise unable to comply with a request, we will tell you. For example, the law may not require us or allow us to delete certain information collected. In addition, personal information we collect pursuant to the federal Gramm-Leach-Bliley Act is exempt from most of the provisions of the CCPA.

Questions about this notice and privacy policy may be sent to MLHC Counsel, Legal Dept., 1508 Eureka Rd., #130, Roseville, CA 95661 or privacy@mlhc.com.

GRAMM-LEACH-BLILEY ACT PRIVACY POLICY NOTICE

Title V of the Gramm-Leach-Bliley Act (GLBA) requires financial companies to provide you with a notice of their privacy policies and practices, such as the types of nonpublic personal information that they collect about you and the categories of persons or entities to whom it may be disclosed. In compliance with the Gramm-Leach-Bliley-Act, we are notifying you of the privacy policies and practices of:

Mother Lode Holding Co.
Montana Title and Escrow Co.
National Closing Solutions, Inc.
National Closing Solutions of Alabama
National Closing Solutions of Maryland
Premier Reverse Closings
Placer Title Co.
Placer Title Insurance Agency of Utah
Premier Title Agency
North Idaho Title Insurance Co.
Texas National Title
Western Auxiliary Corp.
Wyoming Title and Escrow Co.

The types of personal information we collect and share depend on the transaction involved. This information may include:

- Identity information such as Social Security number and driver's license information.
- Financial information such as mortgage loan account balances, checking account information and wire transfer instructions
- Information from others involved in your transaction such as documents received from your lender

We collect this information from you, such as on an application or other forms, from our files, and from our affiliates or others involved in your transaction, such as the real estate agent or lender.

We may disclose any of the above information that we collect about our customers or former customers to our affiliates or to non-affiliates as permitted by law for our everyday business purposes, such as to process your transactions and respond to legal and regulatory matters. We do not sell your personal information or share it for marketing purposes.

We do not share any nonpublic personal information about you with anyone for any purpose that is not specifically permitted by law.

We restrict access to nonpublic personal information about you to those employees who need to know that information in order to provide products or services to you. We maintain physical, electronic and procedural safeguards that comply with federal regulations to guard your nonpublic personal information.

Questions about this notice and privacy policy may be sent to MLHC Counsel, Legal Dept., 1508 Eureka Rd., #130, Roseville, CA 95661 or privacy@mlhc.com.

OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

FACTS	WHAT DOES OLD REPUBLIC TITLE DO WITH YOUR PERSONAL INFORMATION?

Why?	Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.
What?	The types of personal information we collect and share depend on the product or service you have with us. This information can include: • Social Security number and employment information • Mortgage rates and payments and account balances • Checking account information and wire transfer instructions When you are *no longer* our customer, we continue to share your information as described in this notice.
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons Old Republic Title chooses to share; and whether you can limit this sharing.

Reasons we can share your personal information	**Does Old Republic Title share?**	**Can you limit this sharing?**
For our everyday business purposes – such as to process your transactions, maintain your account(s), or respond to court orders and legal investigations, or report to credit bureaus	**Yes**	**No**
For our marketing purposes – to offer our products and services to you	**No**	**We don't share**
For joint marketing with other financial companies	**No**	**We don't share**
For our affiliates' everyday business purposes – information about your transactions and experiences	**Yes**	**No**
For our affiliates' everyday business purposes – information about your creditworthiness	**No**	**We don't share**
For our affiliates to market to you	**No**	**We don't share**
For non-affiliates to market to you	**No**	**We don't share**

Questions	Go to www.oldrepublictitle.com (*Contact Us*)

Who we are	
Who is providing this notice?	Companies with an Old Republic Title name and other affiliates. Please see below for a list of affiliates.

What we do	
How does Old Republic Title protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer safeguards and secured files and buildings. For more information, visit http://www.OldRepublicTitle.com/privacy-policy
How does Old Republic Title collect my personal information?	We collect your personal information, for example, when you: • Give us your contact information or show your driver's license • Show your government-issued ID or provide your mortgage information • Make a wire transfer We also collect your personal information from others, such as credit bureaus, affiliates, or other companies.
Why can't I limit all sharing?	Federal law gives you the right to limit only: • Sharing for affiliates' everyday business purposes – information about your creditworthiness • Affiliates from using your information to market to you • Sharing for non-affiliates to market to you. State laws and individual companies may give you additional rights to limit sharing. See the State Privacy Rights section location at https://www.oldrepublictitle.com/privacypolicy for your rights under state law.

Definitions	
Affiliates	Companies related by common ownership or control. They can be financial and nonfinancial companies • Our affiliates include companies with an Old Republic Title name, and financial companies such as Attorneys' Title Fund Services, LLC, Lex Terrae National Title Services, Inc., Mississippi Valley Title Services Company, and The Title Company of North Carolina.
Non-affiliates	Companies not related by common ownership or control. They can be financial and non-financial companies. • Old Republic Title does not share with non-affiliates so they can market to you
Joint Marketing	A formal agreement between non-affiliated financial companies that together market financial products or services to you. • Old Republic Title doesn't jointly market.

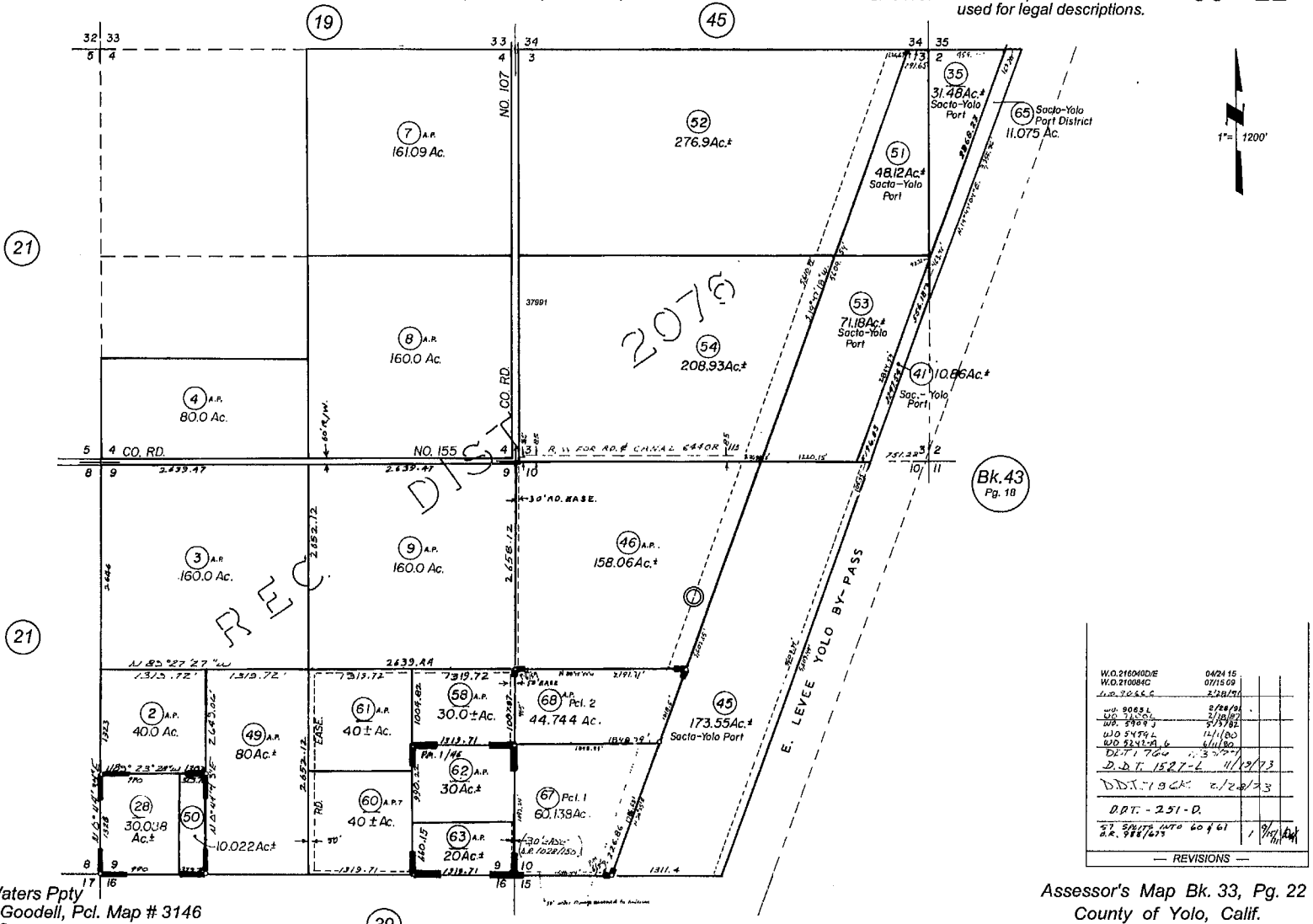
Affiliates Who May be Delivering This Notice				
American First Title & Trust Company	American Guaranty Title Insurance Company	Attorneys' Title Fund Services, LLC	Compass Abstract, Inc.	eRecording Partners Network, LLC
Genesis Abstract, LLC	Guardian Consumer Services, Inc.	iMarc, Inc.	Kansas City Management Group, LLC	L.T. Service Corp.
Lenders Inspection Company	Lex Terrae National Title Services, Inc.	Lex Terrae, Ltd	Mississippi Valley Title Services Company	National Title Agent's Services Company
Old Republic Branch Information Services, Inc.	Old Republic Diversified Services, Inc.	Old Republic Escrow of Vancouver, Inc.	Old Republic Exchange Company	Old Republic National Ancillary Services, Inc.
Old Republic National Commercial Title Services, Inc.	Old Republic Title and Escrow of Hawaii, Ltd.	Old Republic National Title Insurance Company	Old Republic Title Company	Old Republic Title Companies, Inc.
Old Republic Title Company of Conroe	Old Republic Title Company of Indiana	Old Republic Title Company of Nevada	Old Republic Title Company of Oklahoma	Old Republic Title Company of Oregon
Old Republic Title Company of St. Louis	Old Republic Title Company of Tennessee	Old Republic Title Information Concepts	Old Republic Title Insurance Agency, Inc	Old Republic Title, Ltd.
RamQuest Software, Inc.	Republic Abstract & Settlement, LLC	Sentry Abstract Company	Surety Title Agency, Inc.	The Title Company of North Carolina
Trident Land Transfer Company, LLC				

Description: Yolo,CA Assessor Map 33.22 Page: 1 of 1
Order: r Comment:

SEC. 3, 4, 9 & POR. OF SEC. 2 & 10, T. 6N., R .3E., M.D.B. & M.

CAUTION - These Maps ARE NOT to be used for legal descriptions.

33 - 22



W.O.2160/40D/E 04/24 15
W.O.2100/84C 07/15/09
W.O. 9065 L 2/28/80
W.O. 5499 J 5/5/82
W.O 5499 L 12/1/80
W.O 5241-A 6/11/80
D.D.T. 764 1-3-77
D.D.T. 1527-L 11/13/73
D.D.T. 19 CM 2/28/73
D.D.T. - 251 - D.
57 SPLITS INTO 60 & 61 9/11/06
B.R. 988/679
— REVISIONS —

Lucky Five Farms
P.M. Bk. 1, Pg. 46 - David L. Waters Ppty
P.M. Bk. 6, Pg. 59 - Richard J. Goodell, Pcl. Map # 3146
M.S. Bk. 11, Pg. 3 - Record of Survey
M.S. Bk. 2009, Pg. 48 - Record of Survey for

NOTE - Assessor's Block Number Shown in Ellipses.
Assessor's Parcel Number Shown in Circles.

Assessor's Map Bk. 33, Pg. 22
County of Yolo, Calif.

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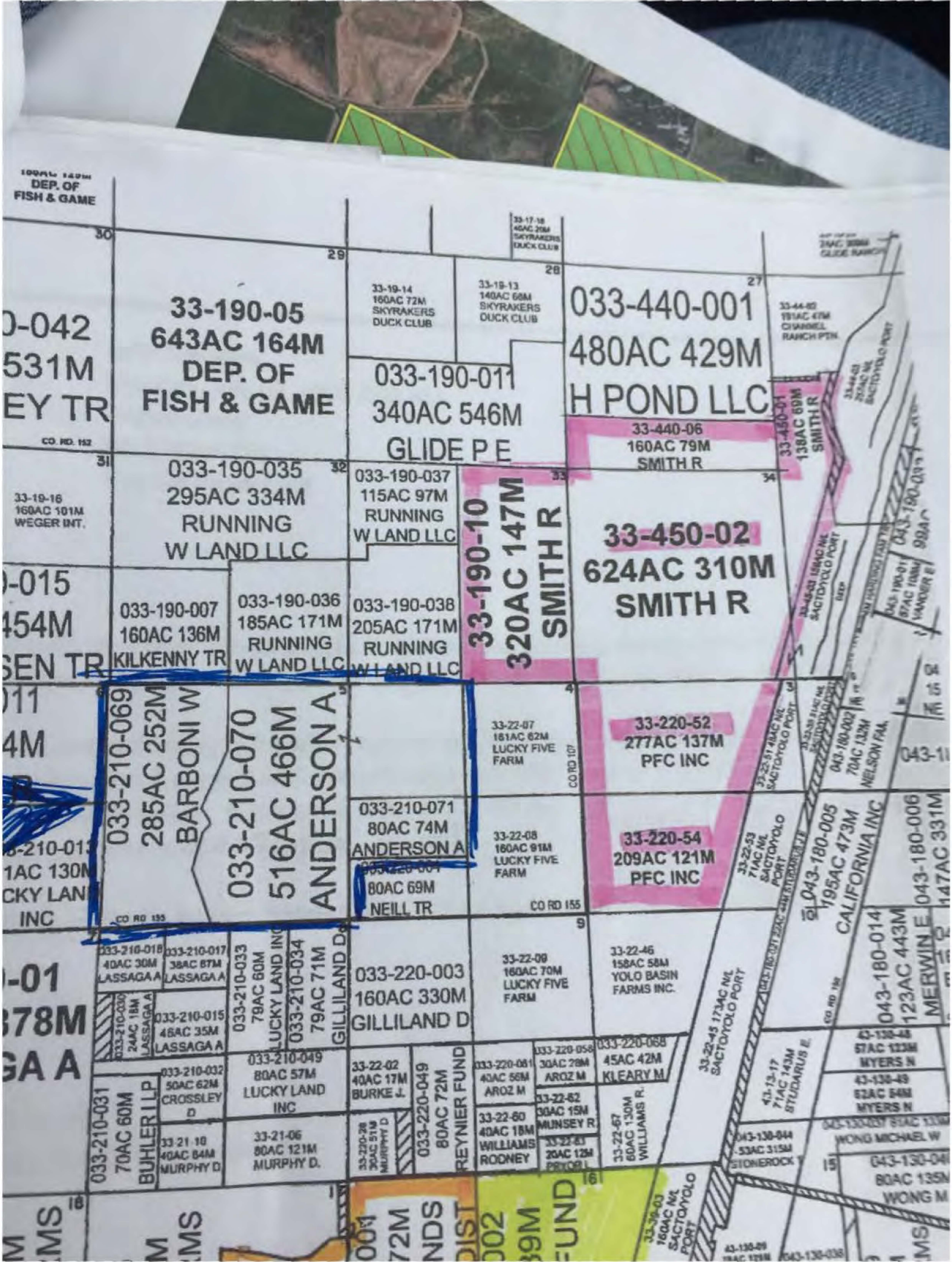
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DEP. OF
FISH & GAME
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H POND LLC
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295AC 334M
RUNNING
W LAND LLC
033-190-037
115AC 97M
RUNNING
W LAND LLC
033-190-007
160AC 136M
KILKENNY TR
033-190-036
185AC 171M
RUNNING
W LAND LLC
033-190-038
205AC 171M
RUNNING
W LAND LLC
033-210-069
285AC 252M
BARBONI W
033-210-070
516AC 466M
ANDERSON A
033-210-071
80AC 74M
ANDERSON A
80AC 69M
NEILL TR
33-220-52
277AC 137M
PFC INC
33-220-54
209AC 121M
PFC INC
033-220-003
160AC 330M
GILLILAND D
033-210-031
70AC 60M
BUHLER I LP
033-210-032
50AC 62M
CROSSLEY
D
033-210-049
80AC 57M
LUCKY LAND
INC
33-21-10
40AC 64M
MURPHY D
33-21-06
80AC 121M
MURPHY D.
033-220-049
80AC 72M
REYNIER FUND
33-22-02
40AC 17M
BURKE J.
33-22-09
160AC 70M
LUCKY FIVE
FARM
33-22-46
158AC 58M
YOLO BASIN
FARMS INC.
33-22-08
160AC 91M
LUCKY FIVE
FARM
33-22-07
161AC 62M
LUCKY FIVE
FARM
033-220-068
45AC 42M
KLEARY M
033-220-067
30AC 15M
MUNSEY R
033-220-066
40AC 18M
WILLIAMS
RODNEY
033-220-065
20AC 12M
033-220-061
40AC 56M
AROZ M
033-220-058
30AC 29M
AROZ M
33-22-67
60AC 130M
WILLIAMS R.
043-180-005
195AC 473M
CALIFORNIA INC
043-180-014
123AC 443M
MERWIN E
043-180-006
147AC 331M
33-19-16
160AC 101M
WEGER INT.
33-19-14
160AC 72M
SKYRAKERS
DUCK CLUB
33-19-13
140AC 68M
SKYRAKERS
DUCK CLUB
33-17-18
40AC 26M
SKYRAKERS
DUCK CLUB
CO. RD. 152
CO RD 155
CO RD 107
CO RD 150
033-210-018
40AC 30M
LASSAGA A
033-210-017
38AC 87M
LASSAGA A
033-210-030
24AC 18M
LASSAGA A
033-210-015
46AC 35M
LASSAGA A
033-210-033
79AC 60M
LUCKY LAND INC
033-210-034
79AC 71M
GILLILAND D
33-22-51 184AC M/L SACTOYOLO PORT
33-22-53 71AC M/L SACTOYOLO PORT
33-22-45 177AC M/L SACTOYOLO PORT
33-39-03 160AC M/L SACTOYOLO PORT
33-450-01
138AC 69M
SMITH R
043-180-002
70AC 132M
NELSON FAM.
043-130-044
53AC 315M
STONEROCK
043-130-048
57AC 123M
MYERS N
043-130-049
52AC 84M
MYERS N
WONG MICHAEL W
043-130-046
80AC 135M
WONG M

ATTACHMENT 3

GOVERNMENT AGENCY DATABASE SEARCH REPORT

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.2s
June 03, 2024

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

46503 COUNTY ROAD 155
DIXON, CA 95620

COORDINATES

Latitude (North):	38.3829580 - 38° 22' 58.64''
Longitude (West):	121.6431760 - 121° 38' 35.43''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	618508.9
UTM Y (Meters):	4248971.0
Elevation:	11 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	50007648 SAXON, CA
Version Date:	2022
Northeast Map:	50006781 CLARKSBURG, CA
Version Date:	2022
Southeast Map:	50006878 COURTLAND, CA
Version Date:	2022
Southwest Map:	50007639 LIBERTY ISLAND, CA
Version Date:	2022

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20200528, 20200617
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
46503 COUNTY ROAD 155
DIXON, CA 95620

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ---- National Priority List
Proposed NPL ---- Proposed National Priority List Sites
NPL LIENS ---- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---- Federal Facility Site Information listing
SEMS ---- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---- RCRA - Large Quantity Generators
RCRA-SQG ---- RCRA - Small Quantity Generators
RCRA-VSQG ---- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---- Land Use Control Information System

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROLS..... Institutional Controls Sites List

Federal ERNS list

ERNS..... Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE..... State Response Sites

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR..... EnviroStor Database

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF..... Solid Waste Information System

Lists of state and tribal leaking storage tanks

LUST..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC..... Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Properties
INDIAN VCP..... Voluntary Cleanup Priority Listing

Lists of state and tribal brownfield sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
ODI..... Open Dump Inventory

DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
CERS HAZ WASTE ..... California Environmental Reporting System Hazardous Waste
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing
HIST UST ..... Hazardous Substance Storage Container Database
CERS TANKS ..... California Environmental Reporting System (CERS) Tanks
CA FID UST ..... Facility Inventory Database

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System

EXECUTIVE SUMMARY

COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
MINES MRDS	Mineral Resources Data System
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
FUELS PROGRAM	EPA Fuels Program Registered Listing
PFAS NPL	Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES	Federal Sites PFAS Information
PFAS TSCA	PFAS Manufacture and Imports Information
PFAS TRIS	List of PFAS Added to the TRI
PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR	PFAS Contamination Site Location Listing
PFAS WQP	Ambient Environmental Sampling for PFAS
PFAS NPDES	Clean Water Act Discharge Monitoring Information
PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING	Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing
BIOSOLIDS	ICIS-NPDES Biosolids Facility Data
PFAS	PFAS Investigation Site Location Listing
AQUEOUS FOAM	Former Fire Training Facility Assessments Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
CHROME PLATING	Chrome Plating Facilities Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	Inspection, Compliance and Enforcement
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
HWTS	Hazardous Waste Tracking System
HAZNET	Facility and Manifest Data
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records

HAZMAT Hazardous Material Facilities
UIC UIC Listing
UIC GEO UIC GEO (GEOTRACKER)
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
WIP Well Investigation Program Case List
MILITARY PRIV SITES MILITARY PRIV SITES (GEOTRACKER)
PROJECT PROJECT (GEOTRACKER)
WDR Waste Discharge Requirements Listing
CIWQS California Integrated Water Quality System
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ Well Stimulation Project (GEOTRACKER)
UST FINDER UST Finder Database
UST FINDER RELEASE UST Finder Releases Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants
EDR Hist Auto EDR Exclusive Historical Auto Stations
EDR Hist Cleaner EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF Recovered Government Archive Solid Waste Facilities List
RGA LUST Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

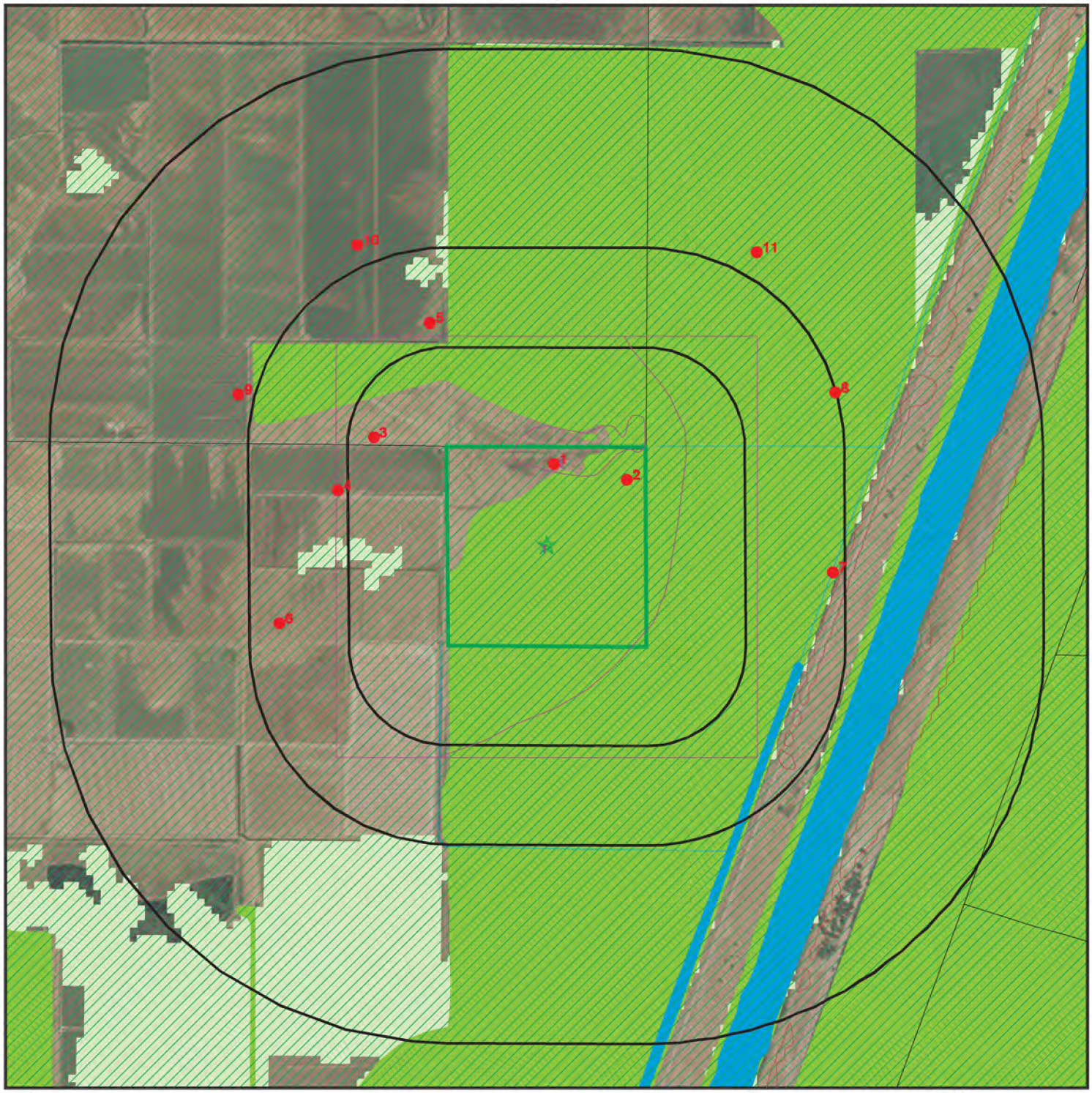
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 7669950.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	ECOSYS Lucky 5 South	CLIENT:	Enviroapplications Inc.
ADDRESS:	46503 County Road 155 Dixon CA 95620	CONTACT:	Bernard Sentianin
LAT/LONG:	38.382958 / 121.643176	INQUIRY #:	7669950.2s
		DATE:	June 03, 2024 1:16 pm

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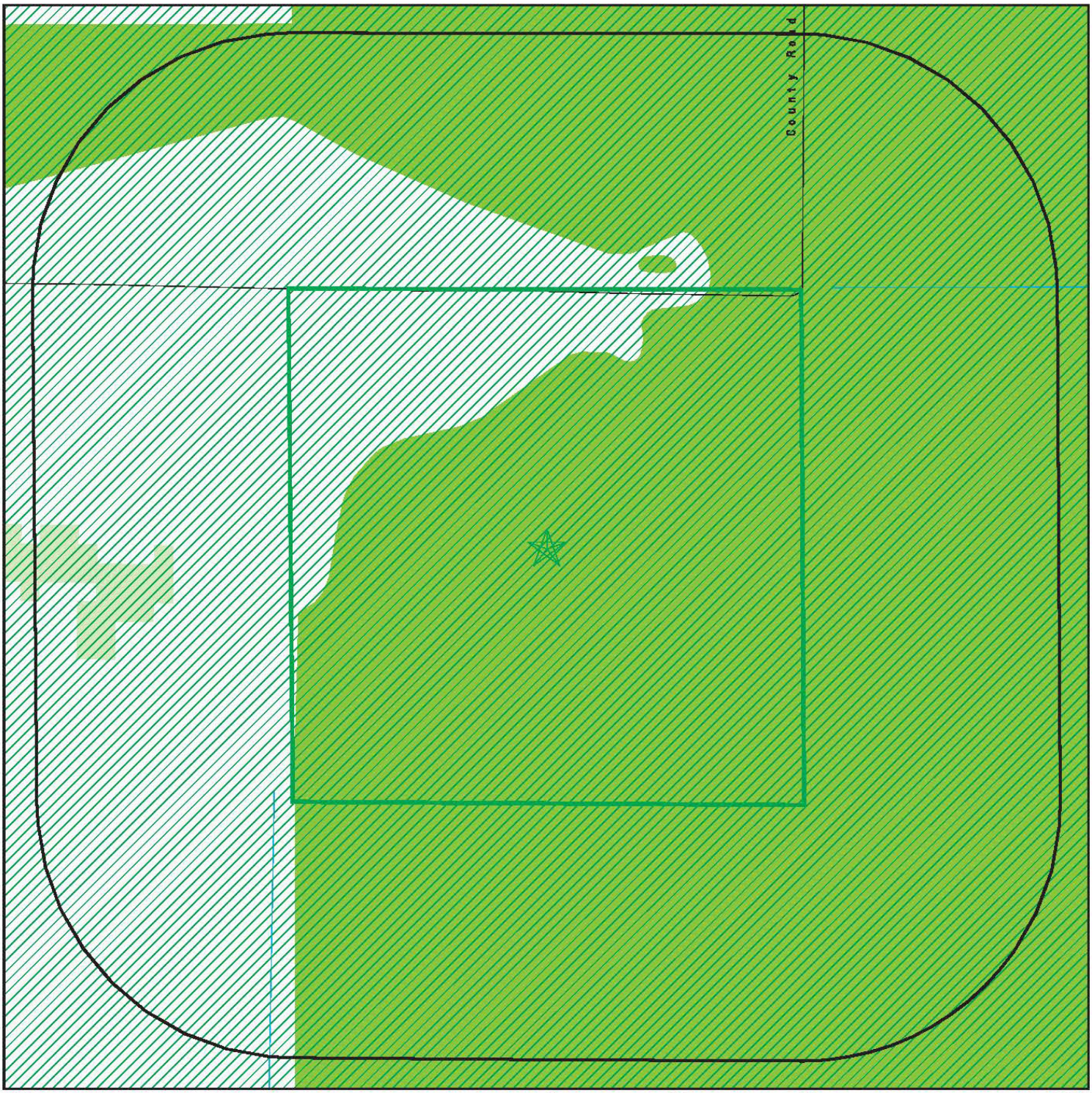
DETAIL MAP - 7669950.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/8 1/4 1/2 Miles

- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: ECOSYS Lucky 5 South	CLIENT: Enviroapplications Inc.
ADDRESS: 46503 County Road 155 Dixon CA 95620	CONTACT: Bernard Sentianin
LAT/LONG: 38.382958 / 121.643176	INQUIRY #: 7669950.2s DATE: June 03, 2024 1:18 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	0	0	NR	0
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
MINES MRDS	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS TRIS	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
BIOSOLIDS	0.001		0	NR	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
CHROME PLATING	0.500		0	0	0	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWTS	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
HAZMAT	0.250		0	0	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
UST FINDER	0.250		0	0	NR	NR	NR	0
UST FINDER RELEASE	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
YOLO COUNTY	S107538895		I-5, NO OF DUNNIGAN AT COUNTY		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/20/2023
Date Data Arrived at EDR: 12/20/2023
Date Made Active in Reports: 01/24/2024
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/26/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/22/2024
Date Data Arrived at EDR: 05/01/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 23

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/22/2024
Date Data Arrived at EDR: 05/01/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 23

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/14/2024
Date Data Arrived at EDR: 02/16/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 48

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/06/2024
Date Made Active in Reports: 04/26/2024
Number of Days to Update: 80

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/04/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 11/16/2023
Date Data Arrived at EDR: 11/16/2023
Date Made Active in Reports: 02/13/2024
Number of Days to Update: 89
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 85
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 11/28/2023
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 89

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/17/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/18/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

Lists of state and tribal brownfield sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/13/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/11/2024
Date Data Arrived at EDR: 03/12/2024
Date Made Active in Reports: 05/10/2024
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/12/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 04/04/2024
Date Data Arrived at EDR: 04/05/2024
Date Made Active in Reports: 04/15/2024
Number of Days to Update: 10

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/04/2024
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 09/28/2023
Date Made Active in Reports: 12/18/2023
Number of Days to Update: 81

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

CERS HAZ WASTE: California Environmental Reporting System Hazardous Waste

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 83

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 78
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing
Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/14/2024
Number of Days to Update: 77
Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/20/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 77

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/30/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239
Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574
Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/11/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA Watch List

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 04/29/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 283

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/14/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 11/13/2023
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 86

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 70

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2023
Date Data Arrived at EDR: 04/04/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 66

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 57
Source: Nuclear Regulatory Commission
Telephone: 301-415-0717
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 11/27/2023
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 87
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 05/28/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 05/28/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/11/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 5

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 03/03/2023
Date Data Arrived at EDR: 03/03/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 98

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 04/26/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 1
Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Quarterly

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 01/07/2022
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 82
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing
Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/23/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines
An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 11/28/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 12

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Quarterly

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 08/23/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/28/2023
Number of Days to Update: 98

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

FINDS: Facility Index System/Facility Registry System
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/09/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 87

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 12/17/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 09/06/2023
Date Data Arrived at EDR: 09/13/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 89

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/12/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TRIS: List of PFAS Added to the TRI

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits. Caveats and Limitations: Less than half of states have required PFAS monitoring for at least one of their permittees and fewer states have established PFAS effluent limits for permittees. New rulemakings have been initiated that may increase the number of facilities monitoring for PFAS in the future.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-267-2675
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/10/2017
Number of Days to Update: 63

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

BIOSOLIDS: ICIS-NPDES Biosolids Facility Data

The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-4700
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS sites included in the Envirostor and GeoTracker databases. Locations of potential sources of per - and polyfluoroalkyl substances (PFAS). This does not mean that PFAS has been produced, used, or discharged at these sites.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/06/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/06/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CHROME PLATING: Chrome Plating Facilities Listing

This listing represents chrome plating facilities the California State Water Resources Control Board staff identified as possibly being a source of Per- and polyfluoroalkyl substance (PFAS) contamination. Sites and locations were identified by staff with the Division of Water Quality in the California State Water Board. Data was collected from the CA Air Resources Board 2013 and 2018 - Cr VI emission survey, CA Emission Inventory, CA HAZ Waste discharge database and by reviewing storm water permits. Former chrome plating sites are also included that are open site investigation or remediation cases with the Regional Water Quality Control Boards and the Department of Toxic Substances Control.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/13/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 02/14/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 77

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

DRYCLEAN VENTURA CO DIST: Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Ventura County Air Pollution Control District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 02/08/2024
Number of Days to Update: 23

Source: Ventura County Air Pollution Control District
Telephone: 805-645-1421
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN AMADOR: Amador Air District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Amador Air Quality Management District

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77

Source: Amador Air Quality Management District
Telephone: 209-257-0112
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/20/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 76

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

DRYCLEAN MOJAVE DESERT DIST: Mojave Desert Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Mojave Desert Air Quality Management District.

Date of Government Version: 04/15/2024
Date Data Arrived at EDR: 04/17/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 7

Source: Mojave Desert Air Quality Management District
Telephone: 760-245-1661
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BUTTE CO DIST: Butte County Air Quality Management DistrictDrycleaner Facility Listing
Butte County Air Quality Management DistrictDrycleaner Facility Listing.

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 10/18/2023
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 90

Source: Butte County Air Quality Management District
Telephone: 530-332-9400
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN FEATHER RIVER DIST: Feather River Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Feather River Air Quality Management District.

Date of Government Version: 03/08/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 06/05/2023
Number of Days to Update: 88

Source: Feather River Air Quality Management District
Telephone: 530-634-7659
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN DIEGO CO DIST: San Diego County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Diego County Air Pollution Control District.

Date of Government Version: 03/19/2024
Date Data Arrived at EDR: 03/21/2024
Date Made Active in Reports: 04/12/2024
Number of Days to Update: 22

Source: San Diego County Air Pollution Control District
Telephone: 858-586-2616
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 04/02/2024
Date Data Arrived at EDR: 04/05/2024
Date Made Active in Reports: 04/15/2024
Number of Days to Update: 10

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Annually

DRYCLEAN GRANT: Grant Recipients List
Assembly Bill 998 (AB 998) established the Non-Toxic Dry Cleaning Incentive Program to provide financial assistance to the dry cleaning industry to switch from systems using perchloroethylene (Perc), an identified toxic air contaminant and potential human carcinogen, to non-toxic and non-smog forming alternatives.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 01/26/2024
Date Made Active in Reports: 04/16/2024
Number of Days to Update: 81

Source: California Air Resources Board
Telephone: 916-323-0006
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

DRYCLEAN LAKE CO DIST: Lake County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Lake County Air Quality Management District,

Date of Government Version: 02/15/2024
Date Data Arrived at EDR: 02/16/2024
Date Made Active in Reports: 05/02/2024
Number of Days to Update: 76

Source: Lake County Air Quality Management District
Telephone: 707-263-7000
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 78

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

DRYCLEAN MENDO CO DIST: Mendocino County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Mendocino County Air Quality Management District.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/28/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 77

Source: Mendocino County Air Quality Management District
Telephone: 707-463-4354
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN EAST KERN DIST: Eastern Kern Air Pollution Control District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Eastern Kern Air Pollution Control District.

Date of Government Version: 01/12/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Eastern Kern Air Pollution Control District
Telephone: 661-862-9684
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN IMPERIAL CO DIST: Imperial County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Imperial County Air Pollution Control District

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Imperial County Air Pollution Control District
Telephone: 442-265-1800
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN YOLO-SOLANO DIST: Yolo-Solano Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Yolo-Solano Air Quality Management District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/05/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 75

Source: Yolo-Solano Air Quality Management District
Telephone: 530-757-3650
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SHASTA CO DIST: Shasta County Air Quality Management District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Shasta County Air Quality Management District.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 78

Source: Shasta County Air Quality Management District
Telephone: 530-225-5674
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MONTEREY BAY DIST: Monterey Bay Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Monterey Bay Air Quality Management District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/05/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 75

Source: Monterey Bay Air Quality Management District
Telephone: 831-647-9411
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN LUIS OB CO DIST: San Luis Obispo County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Luis Obispo County Air Pollution Control District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 76

Source: San Luis Obispo County Air Pollution Control District
Telephone: 805-781-5756
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN PLACER CO DIST: Placer County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Placer County Air Quality Management District.

Date of Government Version: 05/15/2023
Date Data Arrived at EDR: 05/17/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 89

Source: Placer County Air Quality Management District
Telephone: 530-745-2335
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN JOAQ VAL DIST: San Joaquin Valley Air Pollution Control District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Joaquin Valley Air Pollution Control District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 77
Source: San Joaquin Valley Air Pollution Control District
Telephone: 559-230-6001
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BAY AREA DIST: Bay Area Air Quality Management District Drycleaner Facility Listing
Bay Area Air Quality Management District Drycleaner Facility Listing.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1432
Source: Bay Area Air Quality Management District
Telephone: 415-516-1916
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN CALAVERAS CO DIST: Calaveras County Environmental Management Agency Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Calaveras County Environmental Management Agency.

Date of Government Version: 06/17/2019
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1412
Source: Calaveras County Environmental Management Agency
Telephone: 209-754-6399
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

DRYCLEAN NO COAST UNIFIED DIST: North Coast Unified Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the North Coast Unified Air Quality Management District.

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1473
Source: North Coast Unified Air Quality Management District
Telephone: 707-443-3093
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SIERRA DIST: Northern Sierra Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Northern Sierra Air Quality Management District,

Date of Government Version: 05/07/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455
Source: Northern Sierra Air Quality Management District
Telephone: 530-274-9350
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SANTA BARB CO DIST: Santa Barbara County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Santa Barbara County Air Pollution Control District.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Santa Barbara County Air Pollution Control District
Telephone: 805-961-8867
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN TEHAMA CO DIST: Tehama County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Tehama County Air Pollution Control District.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/24/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1468
Source: Tehama County Air Pollution Control District
Telephone: 530-527-3717
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN GLENN CO DIST: Glenn County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Glenn County Air Pollution Control District.

Date of Government Version: 01/08/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Glenn County Air Pollution Control District
Telephone: 530-934-6500
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SONOMA CO DIST: Norther Sonoma County County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Northern Sonoma County Air Pollution Control District.,

Date of Government Version: 01/05/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Santa Barbara County Air Pollution Control District
Telephone: 707-433-5911
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SACRAMENTO METO DIST: Sacramento Metropolitan Air Quality Management DistrictDrycleaner Facility Listing
A listing of drycleaner facility locations, for the Sacramento Metropolitan Air Quality Management District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Sacramento Metropolitan Air Quality Management District
Telephone: 916-874-3958
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 06/09/2023
Date Made Active in Reports: 08/30/2023
Number of Days to Update: 82

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/14/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

FIN ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 01/11/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

FIN ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 02/28/2024
Date Made Active in Reports: 05/15/2024
Number of Days to Update: 77

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

ICE: Inspection, Compliance and Enforcement
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 0

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 0

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 01/26/2024
Date Data Arrived at EDR: 01/30/2024
Date Made Active in Reports: 04/17/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data
Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 01/23/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/16/2024
Number of Days to Update: 79

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/06/2024
Date Made Active in Reports: 04/25/2024
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/17/2024
Number of Days to Update: 80

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/08/2024
Date Data Arrived at EDR: 03/08/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 82
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82
Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Annually

SANTA CRUZ CO SITE MITI: Site Mitigation Listing
Sites may become contaminated with toxic chemicals through illegal dumping or disposal, from leaking underground storage tanks, or through industrial or commercial activities.The goal of the site mitigation program is to protect the public health and the environment while facilitating completion of contaminated site clean-up projects in a timely manner.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 06/23/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 20
Source: Santa Cruz Environmental Health Services
Telephone: 831-454-2761
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region’s active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/28/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 02/27/2024
Date Made Active in Reports: 05/14/2024
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 05/29/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data
The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)
Non-Case Information sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)
Other Oil & Gas Projects sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 03/04/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UST FINDER: UST Finder Database
EPA developed UST Finder, a web map application containing a comprehensive, state-sourced national map of underground storage tank (UST) and leaking UST (LUST) data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states and from Tribal lands and US territories . UST Finder contains information about proximity of UST facilities and LUST sites to: surface and groundwater public drinking water protection areas; estimated number of private domestic wells and number of people living nearby; and flooding and wildfires.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/04/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-564-0394
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

UST FINDER RELEASE: UST Finder Releases Database

US EPA's UST Finder data is a national composite of leaking underground storage tanks. This data contains information about, and locations of, leaking underground storage tanks. Data was collected from state sources and standardized into a national profile by EPA's Office of Underground Storage Tanks, Office of Research and Development, and the Association of State and Territorial Solid Waste Management Officials.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/31/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 79

Source: Environmental Protecton Agency
Telephone: 202-564-0394
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Semi-Annually

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 12/26/2023
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 84

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 04/27/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/18/2023
Date Data Arrived at EDR: 12/18/2023
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 86

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 01/19/2024
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 76

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/26/2024
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 76

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 10/30/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 04/25/2024
Date Data Arrived at EDR: 05/01/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 7

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/26/2024
Number of Days to Update: 78

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 03/26/2024
Number of Days to Update: 68

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/09/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/09/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 01/12/2023
Date Made Active in Reports: 03/29/2023
Number of Days to Update: 76

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/13/2023
Date Data Arrived at EDR: 07/13/2023
Date Made Active in Reports: 09/27/2023
Number of Days to Update: 76

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 12/01/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 12/14/2023
Number of Days to Update: 1

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 12/01/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/11/2023
Date Data Arrived at EDR: 10/17/2023
Date Made Active in Reports: 01/09/2024
Number of Days to Update: 84

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/18/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/12/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 06/13/2023
Number of Days to Update: 42

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/15/2023
Date Data Arrived at EDR: 11/20/2023
Date Made Active in Reports: 02/15/2024
Number of Days to Update: 87

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/31/2023
Date Data Arrived at EDR: 11/03/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 81

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 02/28/2024
Date Data Arrived at EDR: 02/28/2024
Date Made Active in Reports: 05/16/2024
Number of Days to Update: 78

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/29/2024
Number of Days to Update: 85

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/05/2023
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 77

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2022
Date Data Arrived at EDR: 12/21/2022
Date Made Active in Reports: 03/16/2023
Number of Days to Update: 85

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2022
Date Data Arrived at EDR: 12/09/2022
Date Made Active in Reports: 03/01/2023
Number of Days to Update: 82

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 01/26/2024
Number of Days to Update: 8

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/14/2024
Date Made Active in Reports: 05/02/2024
Number of Days to Update: 78

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/2024
Date Data Arrived at EDR: 05/22/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 2

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2023
Date Data Arrived at EDR: 01/31/2024
Date Made Active in Reports: 04/17/2024
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 83

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 04/24/2024
Number of Days to Update: 83

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/15/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/05/2024
Number of Days to Update: 78

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/14/2024
Date Data Arrived at EDR: 02/14/2024
Date Made Active in Reports: 05/02/2024
Number of Days to Update: 78

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/07/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/21/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 05/08/2024
Number of Days to Update: 76
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: No Update Planned

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/03/2023
Date Data Arrived at EDR: 08/24/2023
Date Made Active in Reports: 09/12/2023
Number of Days to Update: 19

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 12/05/2023
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 27

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 10/07/2022
Date Data Arrived at EDR: 10/07/2022
Date Made Active in Reports: 12/21/2022
Number of Days to Update: 75

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 75

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 77

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2024
Date Data Arrived at EDR: 03/05/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 85

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/18/2023
Date Data Arrived at EDR: 12/26/2023
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 84

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/06/2024
Date Made Active in Reports: 04/25/2024
Number of Days to Update: 79

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 12/01/2023
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/13/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/01/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

ECOSYS LUCKY 5 SOUTH
46503 COUNTY ROAD 155
DIXON, CA 95620

TARGET PROPERTY COORDINATES

Latitude (North):	38.382958 - 38° 22’ 58.65’’
Longitude (West):	121.643176 - 121° 38’ 35.43’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	618508.9
UTM Y (Meters):	4248971.0
Elevation:	11 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	50007648 SAXON, CA
Version Date:	2022
Northeast Map:	50006781 CLARKSBURG, CA
Version Date:	2022
Southeast Map:	50006878 COURTLAND, CA
Version Date:	2022
Southwest Map:	50007639 LIBERTY ISLAND, CA
Version Date:	2022

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

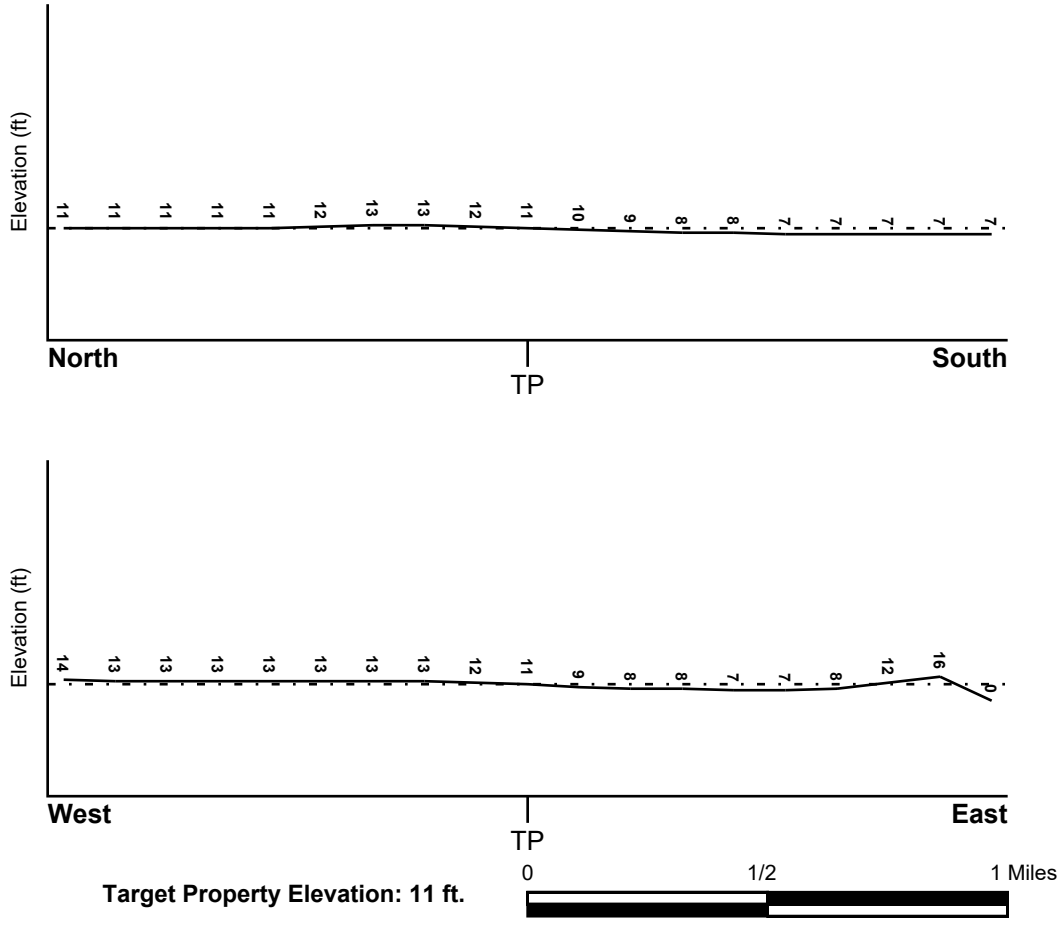
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 11 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06095C0225E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06113C0740G	FEMA FIRM Flood data
06113C0720G	FEMA FIRM Flood data
06095C0335E	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
SAXON	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

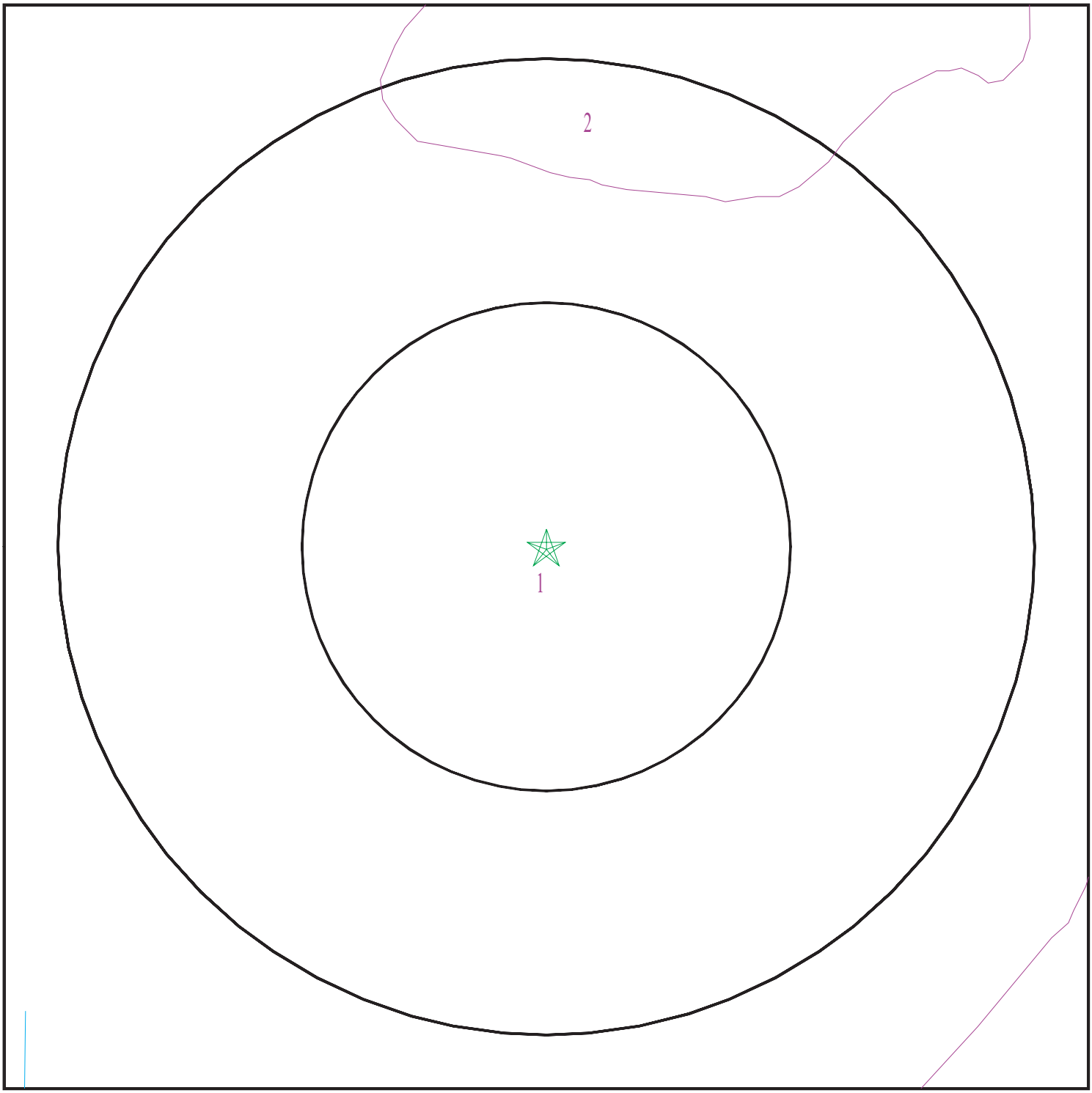
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 7669950.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	ECOSYS Lucky 5 South	CLIENT:	Enviroapplications Inc.
ADDRESS:	46503 County Road 155 Dixon CA 95620	CONTACT:	Bernard Sentianin
LAT/LONG:	38.382958 / 121.643176	INQUIRY #:	7669950.2s
		DATE:	June 03, 2024 1:18 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Capay

Soil Surface Texture: silty clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	35 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
2	35 inches	59 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name: Riz

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 61 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9
2	9 inches	44 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9
3	44 inches	68 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

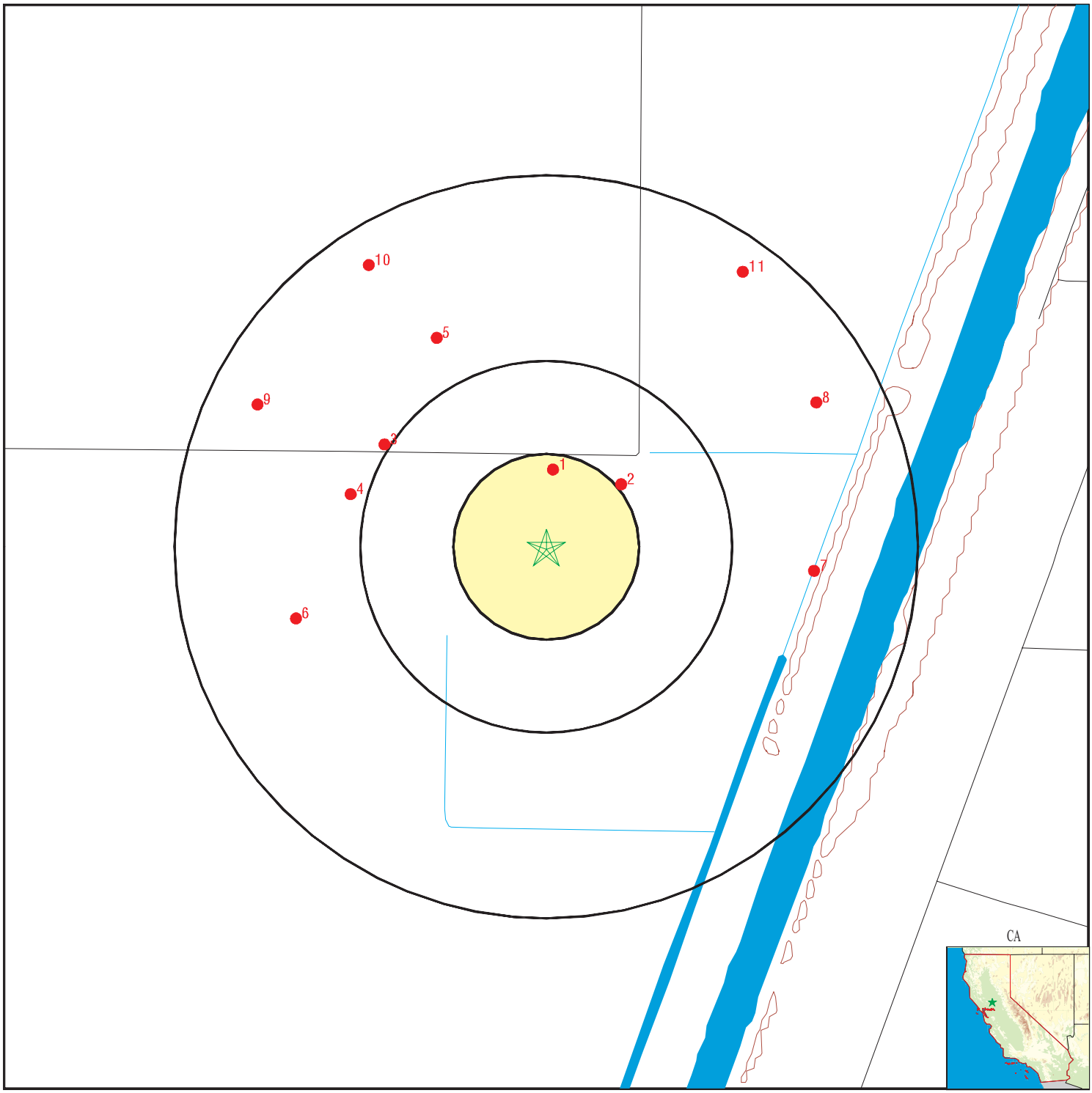
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG17000015248	1/8 - 1/4 Mile North
2	CAOG17000007864	1/4 - 1/2 Mile NE
3	CAOG17000003067	1/2 - 1 Mile WNW
4	CAOG17000011190	1/2 - 1 Mile WNW
5	CAOG17000003070	1/2 - 1 Mile NNW
6	CAOG17000007842	1/2 - 1 Mile WSW
7	CAOG17000002963	1/2 - 1 Mile East
8	CAOG17000002964	1/2 - 1 Mile ENE
9	CAOG17000192270	1/2 - 1 Mile WNW
10	CAOG17000007848	1/2 - 1 Mile NNW
11	CAOG17000002958	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 7669950.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	ECOSYS Lucky 5 South	CLIENT:	Enviroapplications Inc.
ADDRESS:	46503 County Road 155 Dixon CA 95620	CONTACT:	Bernard Sentianin
LAT/LONG:	38.382958 / 121.643176	INQUIRY #:	7669950.2s
		DATE:	June 03, 2024 1:18 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
North **OIL_GAS** **CAOG17000015248**
1/8 - 1/4 Mile

OIL_GAS:

API #:	0411320355	Well #:	W-1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Venada	Well Design:	Venada W-1
Operator ID:	V1000	Operator Name:	Venada National
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/28/1975		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320355		

2
NE **OIL_GAS** **CAOG17000007864**
1/4 - 1/2 Mile

OIL_GAS:

API #:	0411320116	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Tri-Valley Superior	Well Design:	Tri-Valley Superior 1
Operator ID:	H4400	Operator Name:	Hilliard Oil & Gas, Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	08/20/1971		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320116		

3
WNW **OIL_GAS** **CAOG17000003067**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320532	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Morrill Farms, Inc. et al	Well Design:	Morrill Farms, Inc. et al 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	05/11/1979		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320532		

4
WNW **OIL_GAS** **CAOG17000011190**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320768	Well #:	2
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Whiting	Well Design:	Whiting 2
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	04/13/1984		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320768		

5
NNW **OIL_GAS** **CAOG17000003070**
1/2 - 1 Mile

OIL_GAS:

API #:	0411300196	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Union-Amerada-Vaughn	Well Design:	Union-Amerada-Vaughn 1
Operator ID:	08253	Operator Name:	Ted Sterling, Operator
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	04/21/1960		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11300196		

6
WSW **OIL_GAS** **CAOG17000007842**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320346	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Superior-Whiting et al	Well Design:	Superior-Whiting et al 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/18/1975		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320346		

7
East **OIL_GAS** **CAOG17000002963**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320141	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Hilliard	Well Design:	Hilliard 1
Operator ID:	A4400	Operator Name:	Atlantic Oil Company
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	05/18/1972		

Well Record Request URL: https://filerequest.conservation.ca.gov/WellRecord?api=11320141

8
ENE **OIL_GAS** **CAOG17000002964**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320933	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	Channel	Well Design:	Channel 1
Operator ID:	09416	Operator Name:	Zompac Corp.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	09/28/1989		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320933		

9
WNW **OIL_GAS** **CAOG17000192270**
1/2 - 1 Mile

OIL_GAS:

API #:	0411320761	Well #:	1
Well Type:	Dry Gas	Well Status:	Plugged
Lease Name:	Pope	Well Design:	Pope 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Millar Gas	Area Name:	Main
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	10/12/1983		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11320761		

10
NNW **OIL_GAS** **CAOG17000007848**
1/2 - 1 Mile

OIL_GAS:

API #:	0411300310	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	F & C	Well Design:	F & C 1
Operator ID:	A1700	Operator Name:	Amerada Hess Corp.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/06/1941		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11300310		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

11
NE
1/2 - 1 Mile

OIL_GAS **CAOG17000002958**

OIL_GAS:

API #:	0411300195	Well #:	1
Well Type:	Dry Hole	Well Status:	Plugged
Lease Name:	F.T. Swan	Well Design:	F.T. Swan 1
Operator ID:	C5640	Operator Name:	Chevron U.S.A. Inc.
Field Name:	Any Field	Area Name:	Any Area
Place:	Yolo County	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	06/17/1955		
Well Record Request URL:	https://filerequest.conservation.ca.gov/WellRecord?api=11300195		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95620	5	0

Federal EPA Radon Zone for YOLO County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for YOLO COUNTY, CA

Number of sites tested: 13

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.508 pCi/L	92%	8%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.200 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

Geothermal Wells Listing
Department of Conservation
Telephone: 916-445-9686
Geothermal well means a well constructed to extract or return water to the ground after it has been used for heating or cooling purposes. Geothermal wells in California (except for wells on federal leases which are administered by the Bureau of Land Management) are permitted, drilled, operated, and permanently sealed and closed (plugged and abandoned) under requirements and procedures administered by the Geothermal Section of the Department of Conservations Geologic Energy Management Division (CalGEM, formerly DOGGR).

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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ATTACHMENT 4

DATABASE ASSESSMENT CRITIERA

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

DATABASE ASSESSMENT CRITERIA

EnviroApplications, Inc. (*EAI*) used a commercial government database search service in the preparation of this report. Specifically, research into environmental regulatory agency database listings was performed by a third-party database search firm. The purpose of the review was to identify reported environmental issues for the subject property (SP) and other properties in the vicinity. The database search firm utilized the more stringent of the approximate minimum search distances specified in the Scope of Work described in Section 1.4 for each of the referenced Local, State and Federal environmental agency and other databases. The definition of the databases searched and the associated search radius distances from the SP are identified in the regulatory agency database search report.

The regulatory agency database search report commonly lists a number of sites identified as "unmappable and/or orphan." The database search firm was unable to confirm the physical locations of these sites relative to the SP or to assess whether they were located within the designated search radii. *EAI* independently reviewed the locations of these "unmappable" sites, to the extent possible, using various maps and our knowledge of the SP area. Any of the "unmappable" sites determined to be within the designated search radii were included in our evaluation of the various listed release sites that might result in a potential ASTM *recognized environmental condition* (REC) of the SP.

An ASTM REC refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at the SP: due to release into the environment; under conditions indicative of a release into the environment; or under conditions that pose a material threat of a future release into the environment.

An ASTM *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory agency authorities, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

An ASTM *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the SP and has been addressed to the satisfaction of the applicable regulatory agency authorities, or meeting unrestricted use criteria established by a regulatory authority, without subjecting the SP or its improvements to any required engineering or other types of controls.

EAI reviewed the results of the database search report to note reported environmental release sites in the vicinity of the SP that were considered to have a potential to have adversely impacted the SP (i.e., are known to have or are expected to result in an ASTM REC). Reported release sites identified in the regulatory agency database search report were evaluated with respect to the nature and extent of a given release, the distance of the reported release site from the SP, the stratigraphy of soils, the expected soil permeability, and the topographic position of a reported release site with respect to known or expected local and/or regional groundwater movement direction. Those release sites that were considered likely to have impacted the SP are identified in the report as ASTM RECs, as defined in the latest version of ASTM Standard 1527. Sites that were listed in the database search report, but not identified as a release site (for example, a site listed as a hazardous waste generator but not as having had a release), and release sites that were listed as being "closed" by the regulatory agencies were not considered likely to have impacted the SP.

ATTACHMENT 5

AGENCY RECORD REQUESTS AND INFORMATION RESPONSES

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

[Records Center] Public Records Request :: R013492-060324

CALFIRE PRA Records Center <calfire@govqa.us>
Mon 6/10/2024 7:05 AM
To: Bernard Sentianin <bsentianin@enviroapplications.com>

--- Please respond above this line ---

CAL FIRE

RE: PUBLIC RECORDS REQUEST of June 03, 2024, Reference # R013492-060324

Dear Bernard Sentianin,

CAL FIRE received a California Public Records Act (CPRA) request from you on June 03, 2024. Your request mentioned:

"Requesting records pertaining to incident/Hazmat responses at the following locaiton:

Lucky Five, 46503 County Road 155, Dixon, CA"

CAL FIRE has reviewed its files and has determined there are no responsive documents to your request.

For additional publicly available materials please visit the California Environmental Protection Agency Regulated Site Portal: https://siteportal.calepa.ca.gov/nsite/map/help

For information on facilities or locations/areas that have been reported to the State Warning Center for hazardous materials spills or releases may be found on the Governor' s Office of Emergency Services (Cal OES) HazMat Spill Release Reporting Database: (https://w3.calema.ca.gov/operational/malhaz.nsf/$defaultview).

To search for nearby pipelines please visit The National Pipeline Mapping system: https://www.npms.phmsa.dot.gov/

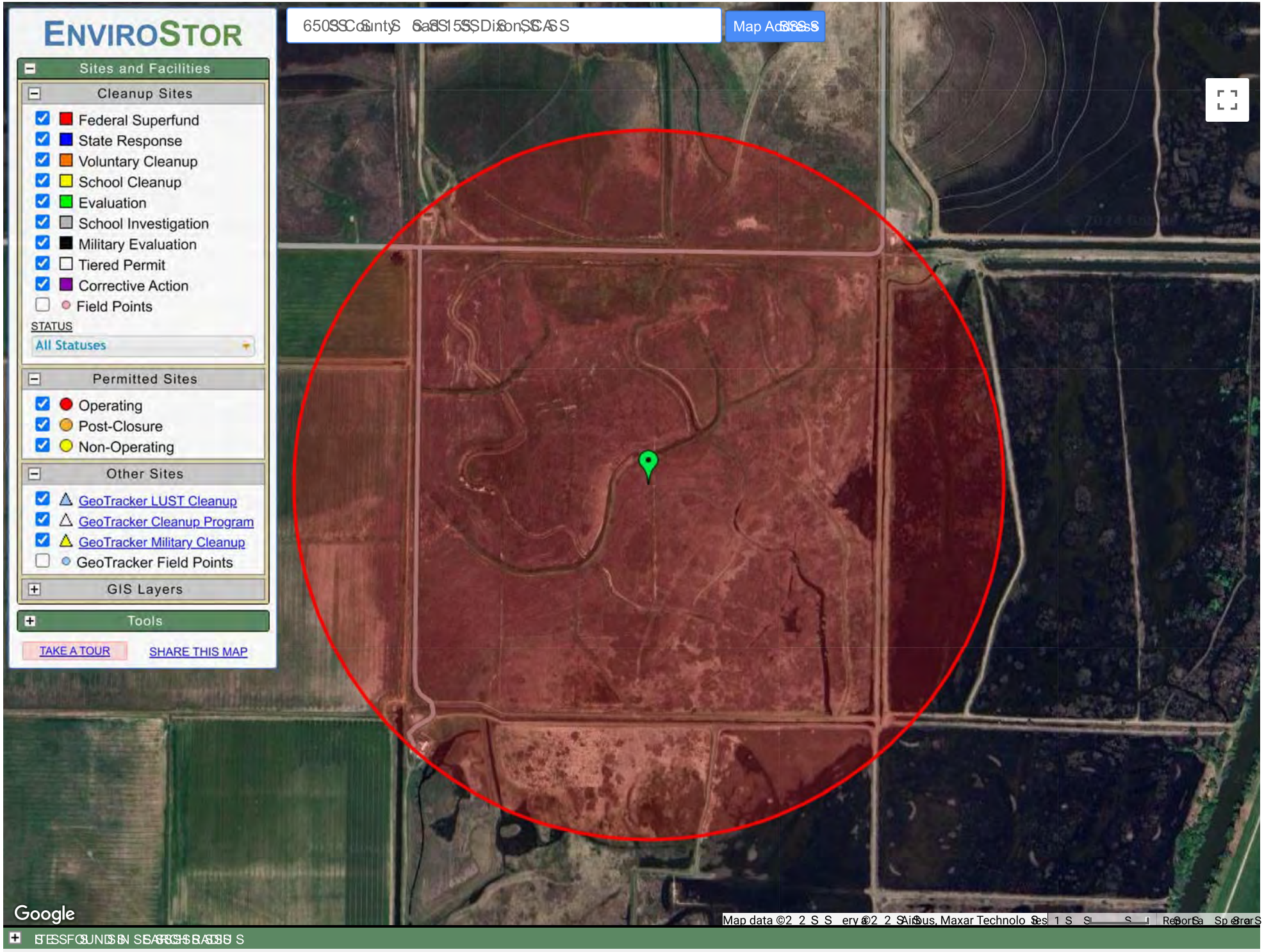
If you have any questions or need additional information, you can manage your request through the CAL FIRE PRA Records Center.

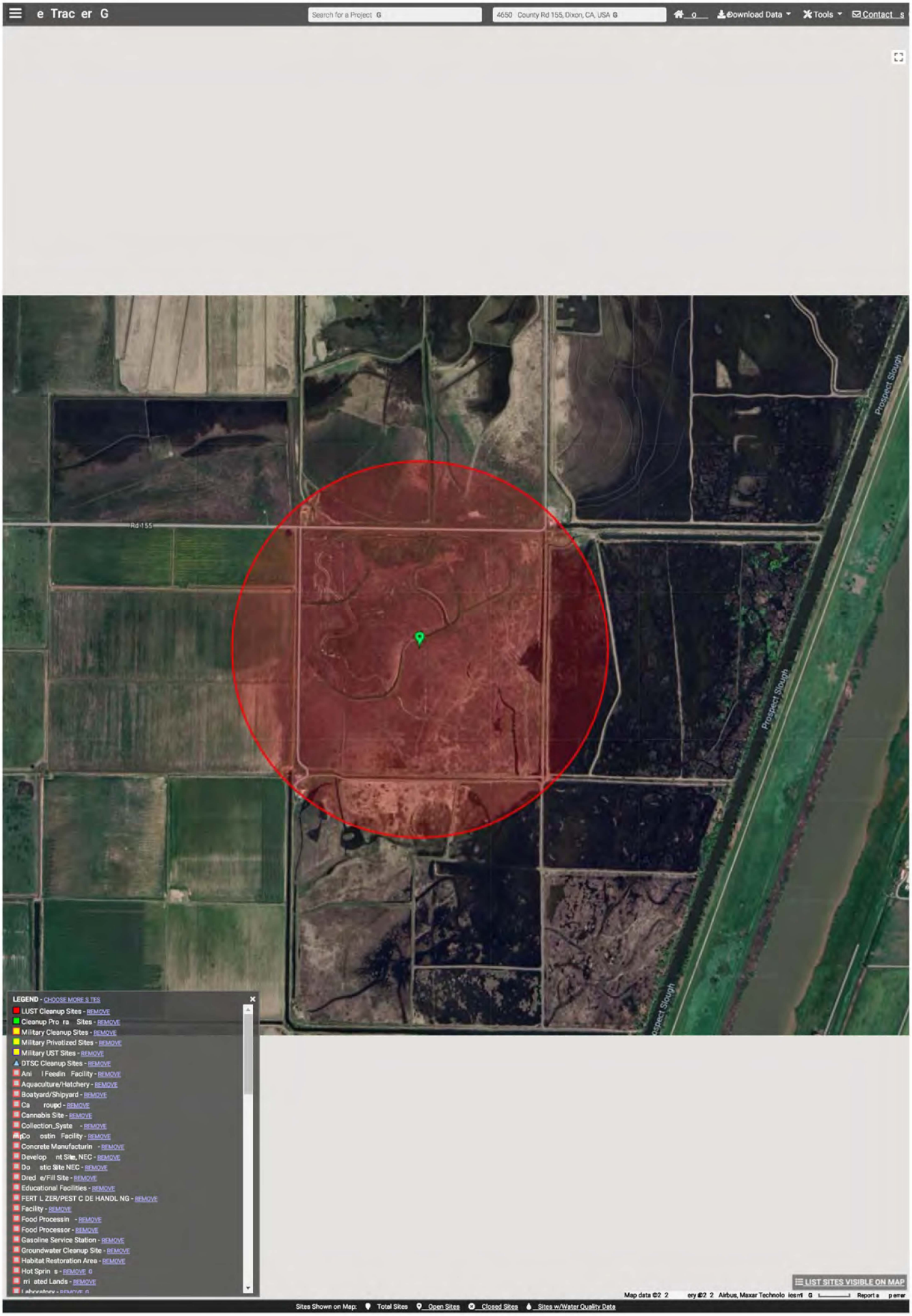
Sincerely,
Shilo Wilson
Public Records Act Coordinator
Sacramento - HQ - Legal Office

To monitor the progress or update this request please log into the CAL FIRE PRA Records Center

Powered by GovQA

Well Finder
CalGEM GIS Powered by WellSTAR
46503 County Road 155, D
Show search results for 46503 ...
County Road 155
County Road 105
County Road 104
County Road 104
600ft
Yolo County, Maxar | Geologic Energy Mar


ENVIROSTOR
Sites and Facilities
Cleanup Sites
Federal Superfund
State Response
Voluntary Cleanup
School Cleanup
Evaluation
School Investigation
Military Evaluation
Tiered Permit
Corrective Action
Field Points
STATUS
All Statuses
Permitted Sites
Operating
Post-Closure
Non-Operating
Other Sites
GeoTracker LUST Cleanup
GeoTracker Cleanup Program
GeoTracker Military Cleanup
GeoTracker Field Points
GIS Layers
Tools
TAKE A TOUR
SHARE THIS MAP
Google


e Trac er G
Search for a Project G
4650 County Rd 155, Dixon, CA, USA G
o
Download Data
Tools
Contact s
Rd 155
Prospect Slough
Prospect Slough
Prospect Slough
LEGEND - CHOOSE MORE S TES
LUST Cleanup Sites - REMOVE
Cleanup Pro ra Sites - REMOVE
Military Cleanup Sites - REMOVE
Military Privatized Sites - REMOVE
Military UST Sites - REMOVE
DTSC Cleanup Sites - REMOVE
Ani l Feedin Facility - REMOVE
Aquaculture/Hatchery - REMOVE
Boatyard/Shipyard - REMOVE
Ca roupd - REMOVE
Cannabis Site - REMOVE
Collection_Syste - REMOVE
Co ostin Facility - REMOVE
Concrete Manufacturin - REMOVE
Develop nt Site, NEC - REMOVE
Do stic Site NEC - REMOVE
Dred e/Fill Site - REMOVE
Educational Facilities - REMOVE
FERT L ZER/PEST C DE HANDL NG - REMOVE
Facility - REMOVE
Food Processin - REMOVE
Food Processor - REMOVE
Gasoline Service Station - REMOVE
Groundwater Cleanup Site - REMOVE
Habitat Restoration Area - REMOVE
Hot Sprin s - REMOVE G
ri ated Lands - REMOVE
LIST SITES VISIBLE ON MAP
Map data ©2 2 ery ©2 2 Airbus, Maxar Technolo iesnt G Report a p erer
Sites Shown on Map: Total Sites Open Sites Closed Sites Sites w/Water Quality Data

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

June 4, 2024

Bernard Sentianin
EnviroApplications, Inc.
bsentianin@enviroapplications.com

Public Records Request Number: 1-060324-02
Location(s): Lucky Five
46503 County Road 155, Dixon, California

Dear Requestor:

On June 3, 2024, the Department of Toxic Substances Control (DTSC) received your email of June 3, 2024, requesting records under the Public Records Act. After a thorough review of our files, no site records were found pertaining to the sites/facilities referenced above.

A large number of our records are available on EnviroStor, an online database that provides non-confidential, public access to DTSCs data management system. It tracks our cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. EnviroStor is available 24/7, 365 days a year. The data reflects the latest updates as they are entered in the system. Access it from your computer or smartphone, the local library – anywhere Internet access is available. Just go to www.envirostor.dtsc.ca.gov. You'll find a step-by-step tour of EnviroStor under the "How to Use EnviroStor" menu on the website.

If you have any questions or would like further information regarding your request, please contact me at 916-255-6449 or via email at pubreqact@dtsc.ca.gov.

Sincerely,
Juan Acosta

Juan Acosta
Regional Records Coordinator

RE: Records Request -

Environmental Health <Environmental.Health@yolocounty.gov>
Fri 6/14/2024 3:18 PM
To: Bernard Sentianin <bsentianin@enviroapplications.com>

Good afternoon Bernard,

I am not showing any records for address 46503 CR 155, Dixon, CA. If you have an APN I can try to search it that way also.

Best regards,

Cristina Jaimes
Environmental Health Technician I
Yolo County Department of Community Services
Environmental Health Division
292 W. Beamer Street, Woodland, CA 95695
Main: 530-666-8646 / Direct: 530-666-8595 / Fax: 530-669-1448
www.yolocounty.org / Environmental.Health@yolocounty.org

From: Bernard Sentianin <bsentianin@enviroapplications.com>
Sent: Friday, June 14, 2024 11:12 AM
To: Environmental Health <Environmental.Health@yolocounty.gov>
Subject: Records Request -

Requesting available records, if any, related to the following address:

46503 County Road 155, Dixon, CA

Thanks

RE: Records Request 46503 County Road 155

Cody Hess <CHess@ysaqmd.org>
Wed 6/5/2024 11:04 AM
To: Bernard Sentianin <bsentianin@enviroapplications.com>

Hello (requestor).

Your Public Records Act (PRA) request was received by the Yolo-Solano Air Quality Management District (District) on June 3, 2024 for "records (Permits, Equipment, NOV, Asbestos" for the site location at 46503 County Road 155. Under Section 6253(c) of the Government Code, the District must advise you within ten days of receiving your request whether the records you have requested are disclosable.

After reviewing your request, it appears that the District **does not have records** for the location specified in your request.

As there are no records available that pertain to your request, we consider this request closed. Please let me know if you have any questions regarding this request. If you would like to request District records in the future, please submit a new PRA request either by mail, fax (530-757-3670), or email (pra@ysaqmd.org).

Thank you and have a great day!

Best Regards,

Cody Hess, MPA - *Public Outreach Coordinator*
Yolo-Solano Air Quality Management District
chess@ysaqmd.org (530) 304-5833

From: Paul Hensleigh <PHensleigh@ysaqmd.org>
Sent: Wednesday, June 5, 2024 10:53 AM
To: Cody Hess <CHess@ysaqmd.org>
Cc: Gretchen Bennitt <GBennitt@ysaqmd.org>; Hope Welton <Hope.Welton@yolocounty.org>
Subject: RE: Records Request 46503 County Road 155

OK to proceed.

Thanks,
Paul

From: Cody Hess <CHess@ysaqmd.org>
Sent: Monday, June 3, 2024 10:11 AM
To: Hope Welton <Hope.Welton@yolocounty.org>; Paul Hensleigh <PHensleigh@ysaqmd.org>
Cc: PRA <pra@ysaqmd.org>
Subject: FW: Records Request 46503 County Road 155

PRA request received.

NOTE: No records found. Appears to be an empty field.

Date Received:	06/03/2024
Location(s):	46503 County Road 155
Company Name:	n/a
Information requested:	Permits, Equipment, NOV, Asbestos
Requestor:	Bernard A. Sentianin, PG
Company:	*EnviroApplications, Inc.*

Cody Hess, MPA - *Public Outreach Coordinator*
Yolo-Solano Air Quality Management District
chess@ysaqmd.org (530) 304-5833

ATTACHMENT 6

HISTORICAL INFORMATION REGARDING THE SUBJECT PROPERTY

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

ECOSYS Lucky 5 South

46503 County Road 155

Dixon, CA 95620

Inquiry Number: 7669950.8

June 03, 2024

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.8

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2020	1"=500'	Flight Year: 2020	USDA/NAIP
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1993	1"=500'	Acquisition Date: June 15, 1993	USGS/DOQQ
1984	1"=500'	Flight Date: June 29, 1984	USDA
1974	1"=500'	Flight Date: July 12, 1974	USGS
1972	1"=500'	Flight Date: July 06, 1972	USDA
1968	1"=500'	Flight Date: May 02, 1968	USGS
1966	1"=500'	Flight Date: August 05, 1966	USGS
1953	1"=500'	Flight Date: April 23, 1953	USDA
1937	1"=500'	Flight Date: October 06, 1937	USDA

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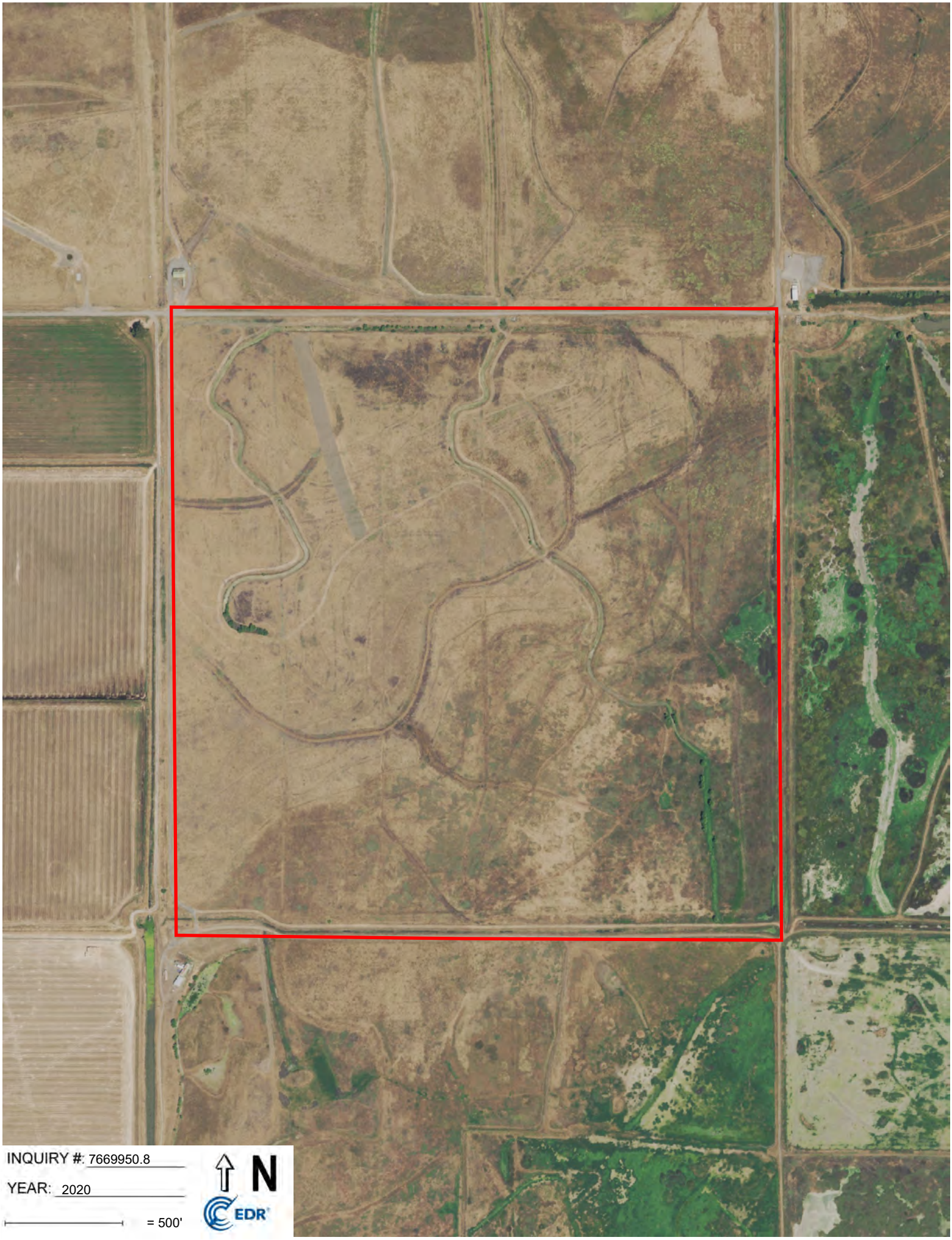
INQUIRY #: 7669950.8
YEAR: 2020
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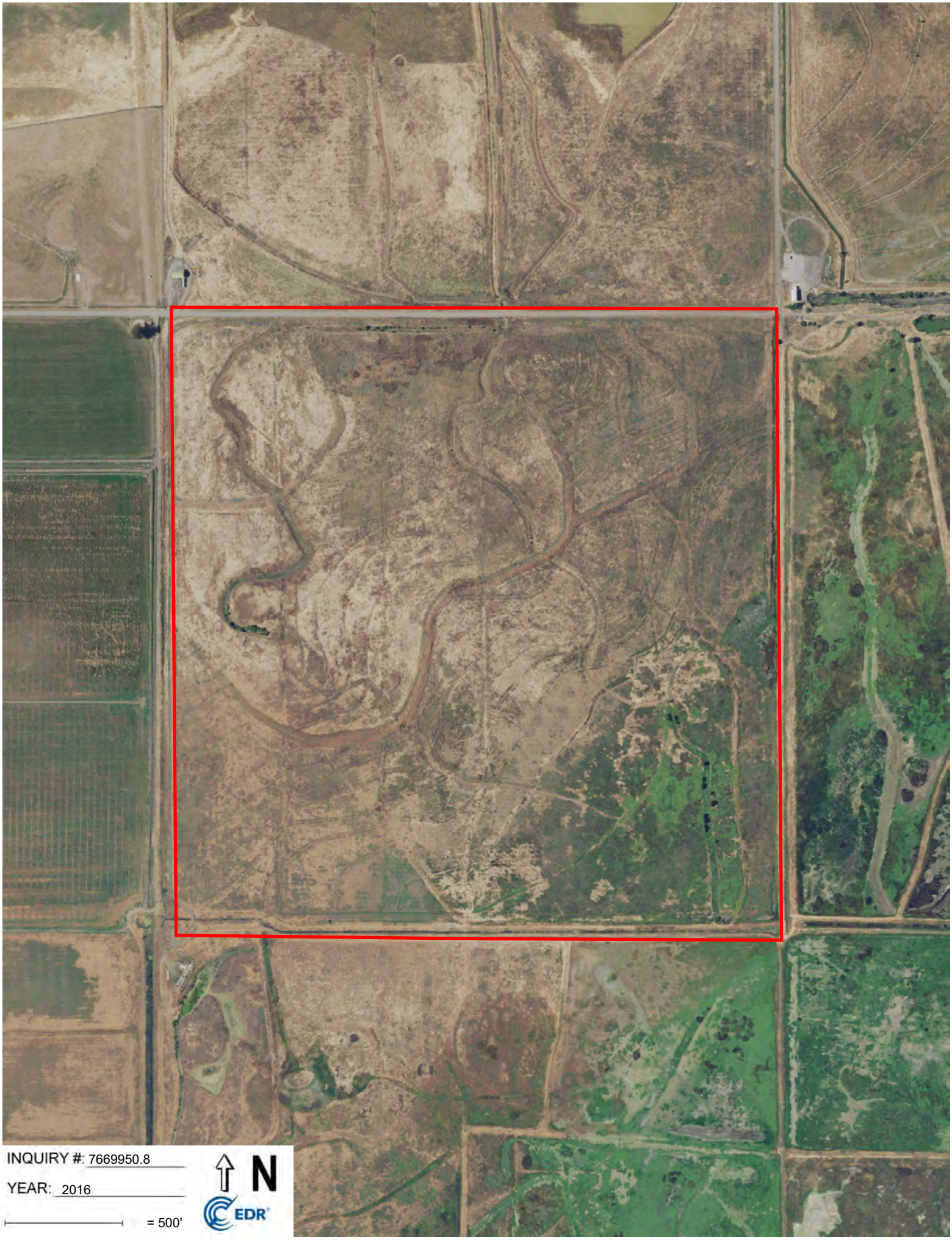
N
EDR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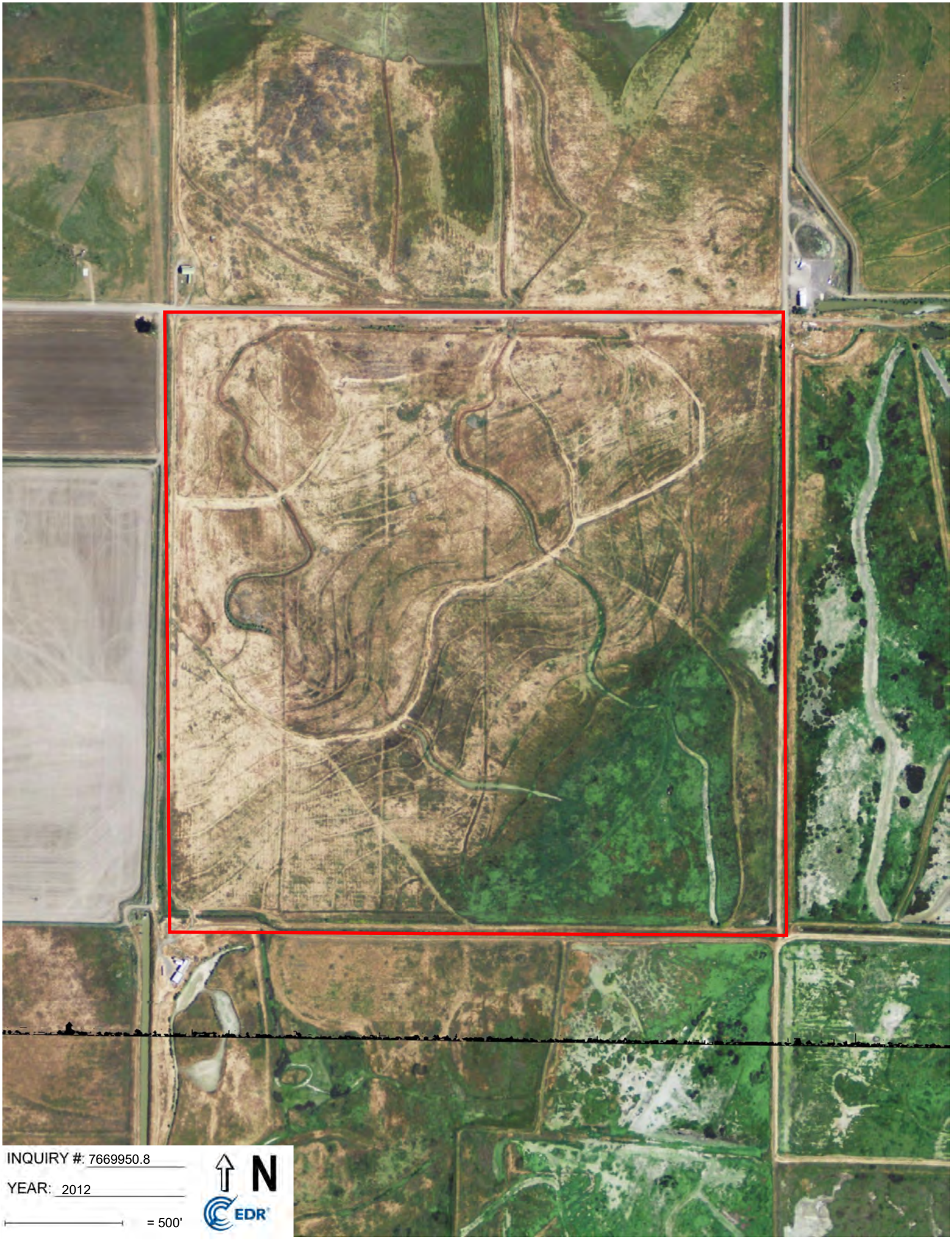
EDR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YEAR: 2012
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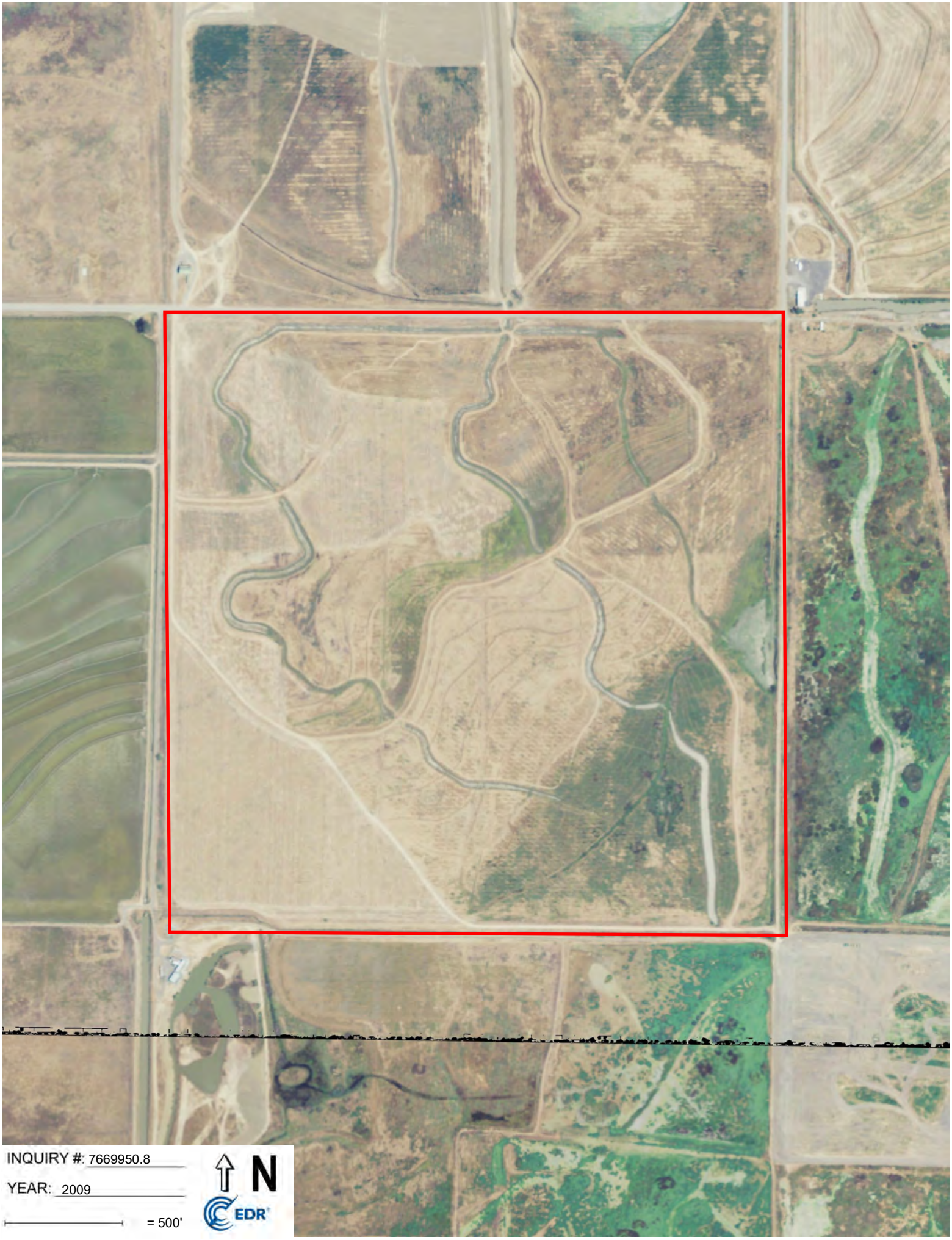
EDR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YEAR: 2009
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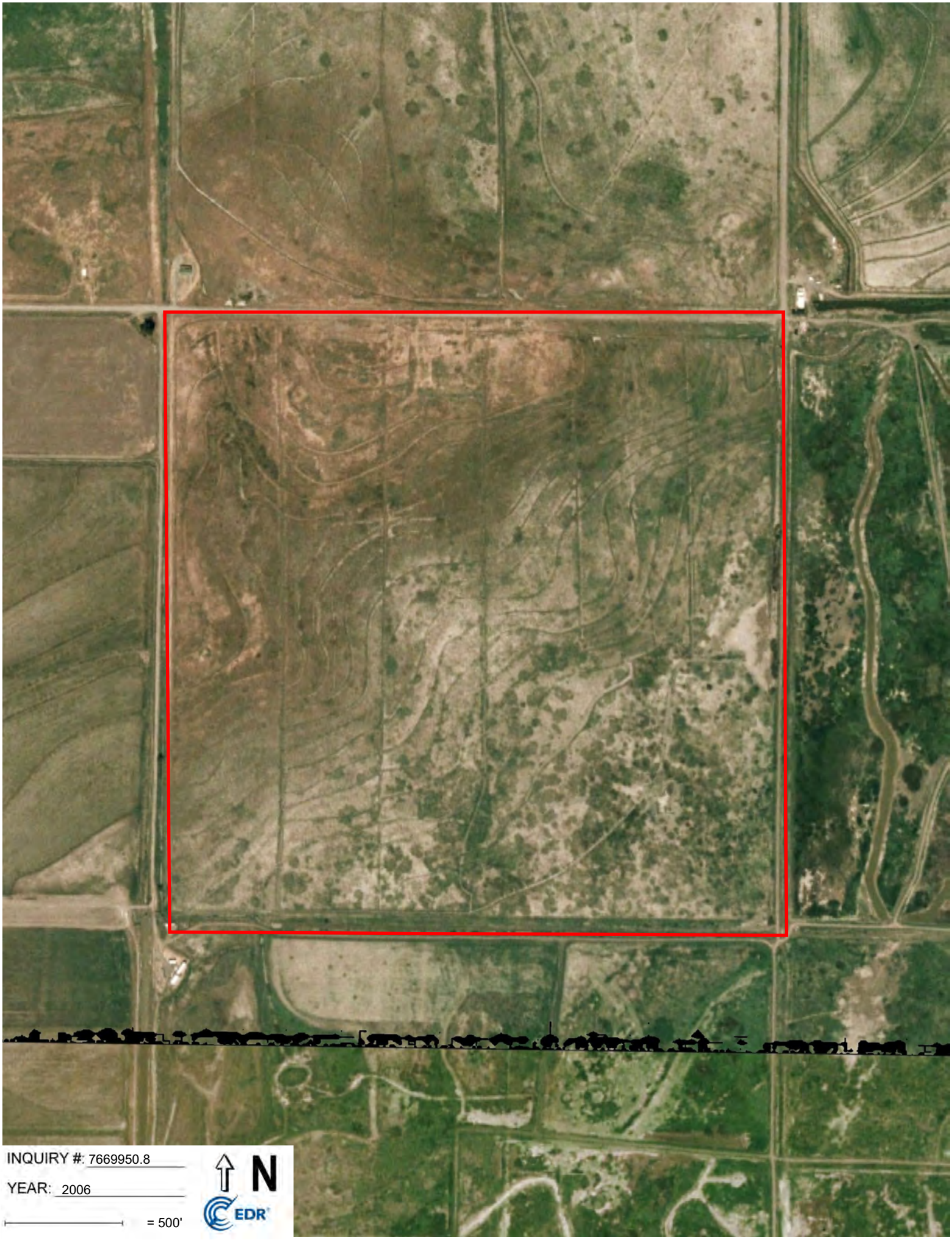
N
EDR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YEAR: 2006
= 500'
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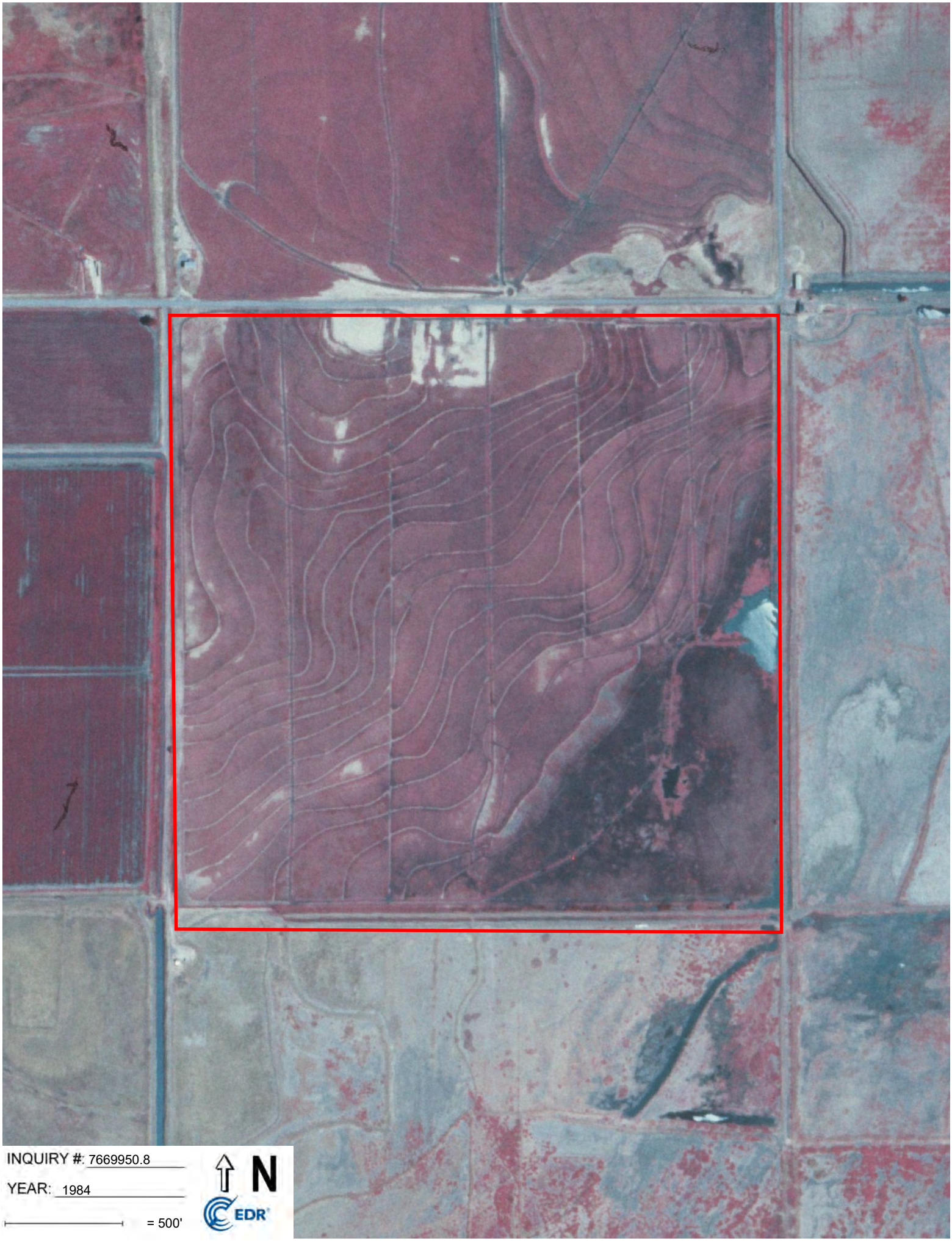
EDR

INQUIRY #: 7669950.8
YEAR: 1993
= 500'
N
EDR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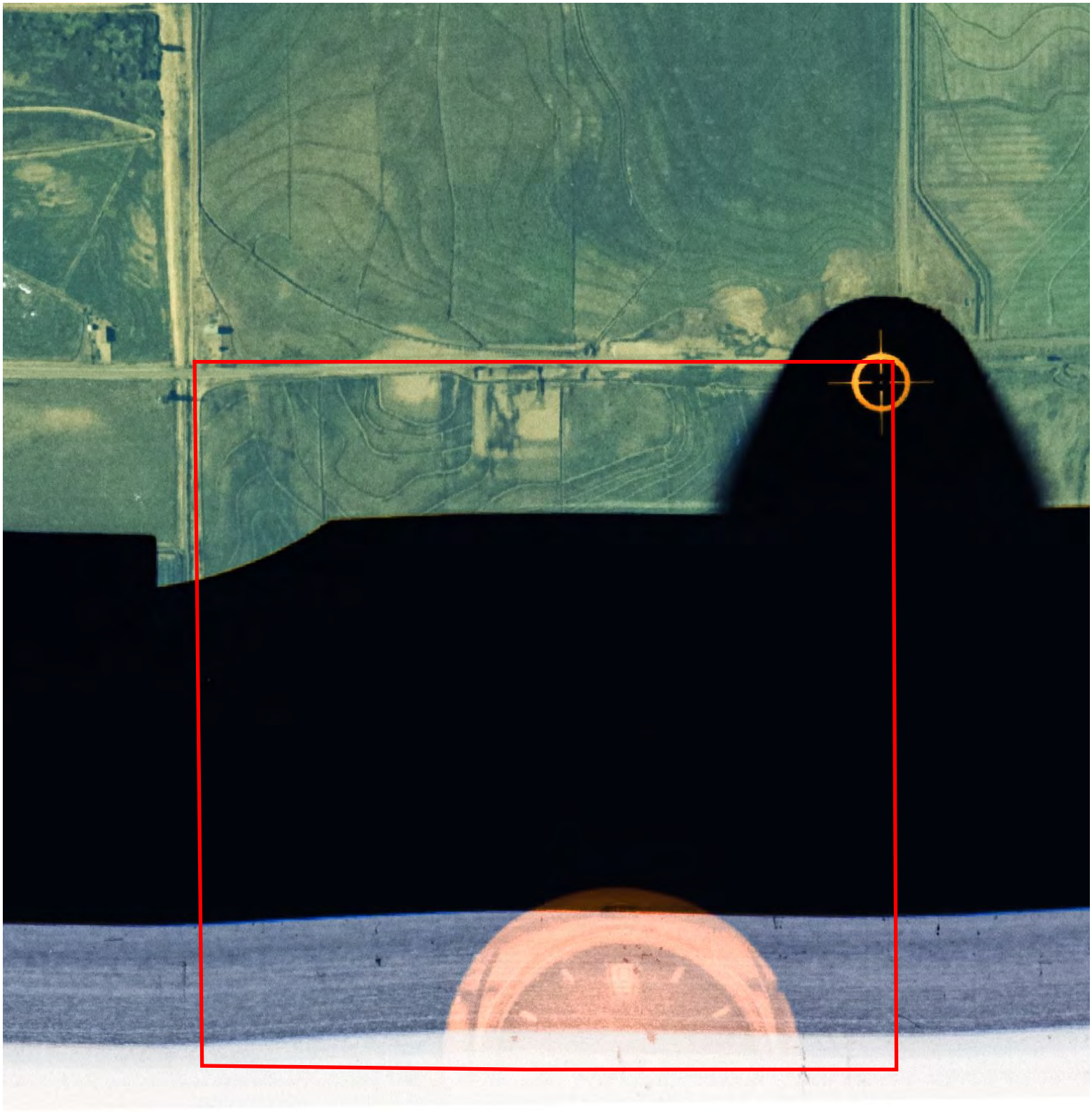
YEAR: 1984
= 500'
N
EDR



INQUIRY #: 7669950.8

YEAR: 1974

= 500'

N

EDR

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YEAR: 1972
= 500'
N
EDR

INQUIRY #: 7669950.8
YEAR: 1968
= 500'
N
EDR

INQUIRY #: 7669950.8

YEAR: 1966

= 500'

N

EDR

INQUIRY #: 7669950.8

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 7669950.8
YEAR: 1937
= 500'
N
EDR

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.3
June 03, 2024

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.3

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Enviroapplications Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 0171-48F8-B474

PO # 80.ECOSYL5.24

Project ECOSYS Lucky 5 South

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 0171-48F8-B474

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.4
June 03, 2024

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.4

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Enviroapplications Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# 80.ECOSYL5.24
Project: ECOSYS Lucky 5 South

Coordinates:

Latitude:	38.382958 38° 22' 59" North
Longitude:	-121.643176 -121° 38' 35" West
UTM Zone:	Zone 10 North
UTM X Meters:	618505.94
UTM Y Meters:	4249177.74
Elevation:	11.00' above sea level

Maps Provided:

2022	1916
2018	1908
2015	
2012	
1993	
1973, 1975, 1978	
1967, 1968	
1952	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2022 Source Sheets

Saxon
2022
7.5-minute, 24000

Liberty Island
2022
7.5-minute, 24000

Clarksburg
2022
7.5-minute, 24000

Courtland
2022
7.5-minute, 24000

2018 Source Sheets

Saxon
2018
7.5-minute, 24000

Liberty Island
2018
7.5-minute, 24000

Clarksburg
2018
7.5-minute, 24000

Courtland
2018
7.5-minute, 24000

2015 Source Sheets

Saxon
2015
7.5-minute, 24000

Liberty Island
2015
7.5-minute, 24000

Clarksburg
2015
7.5-minute, 24000

Courtland
2015
7.5-minute, 24000

2012 Source Sheets

Saxon
2012
7.5-minute, 24000

Liberty Island
2012
7.5-minute, 24000

Clarksburg
2012
7.5-minute, 24000

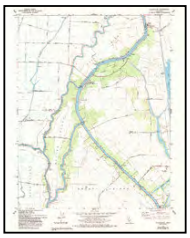
Courtland
2012
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1993 Source Sheets

Liberty Island
1993
7.5-minute, 24000
Aerial Photo Revised 1974



Courtland
1993
7.5-minute, 24000
Aerial Photo Revised 1974

1973, 1975, 1978 Source Sheets

Saxon
1973
7.5-minute, 24000
Aerial Photo Revised 1973

Clarksburg
1975
7.5-minute, 24000
Aerial Photo Revised 1975

Liberty Island
1978
7.5-minute, 24000
Aerial Photo Revised 1974

Courtland
1978
7.5-minute, 24000
Aerial Photo Revised 1974

1967, 1968 Source Sheets

Clarksburg
1967
7.5-minute, 24000
Aerial Photo Revised 1966

Saxon
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Liberty Island
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Courtland
1968
7.5-minute, 24000
Aerial Photo Revised 1968

1952 Source Sheets

Saxon
1952
7.5-minute, 24000

Courtland
1952
7.5-minute, 24000
Aerial Photo Revised 1931

Liberty Island
1952
7.5-minute, 24000
Aerial Photo Revised 1949

Clarksburg
1952
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1916 Source Sheets

Babel Slough
1916
7.5-minute, 31680

Saxon
1916
7.5-minute, 31680

Vorden
1916
7.5-minute, 31680

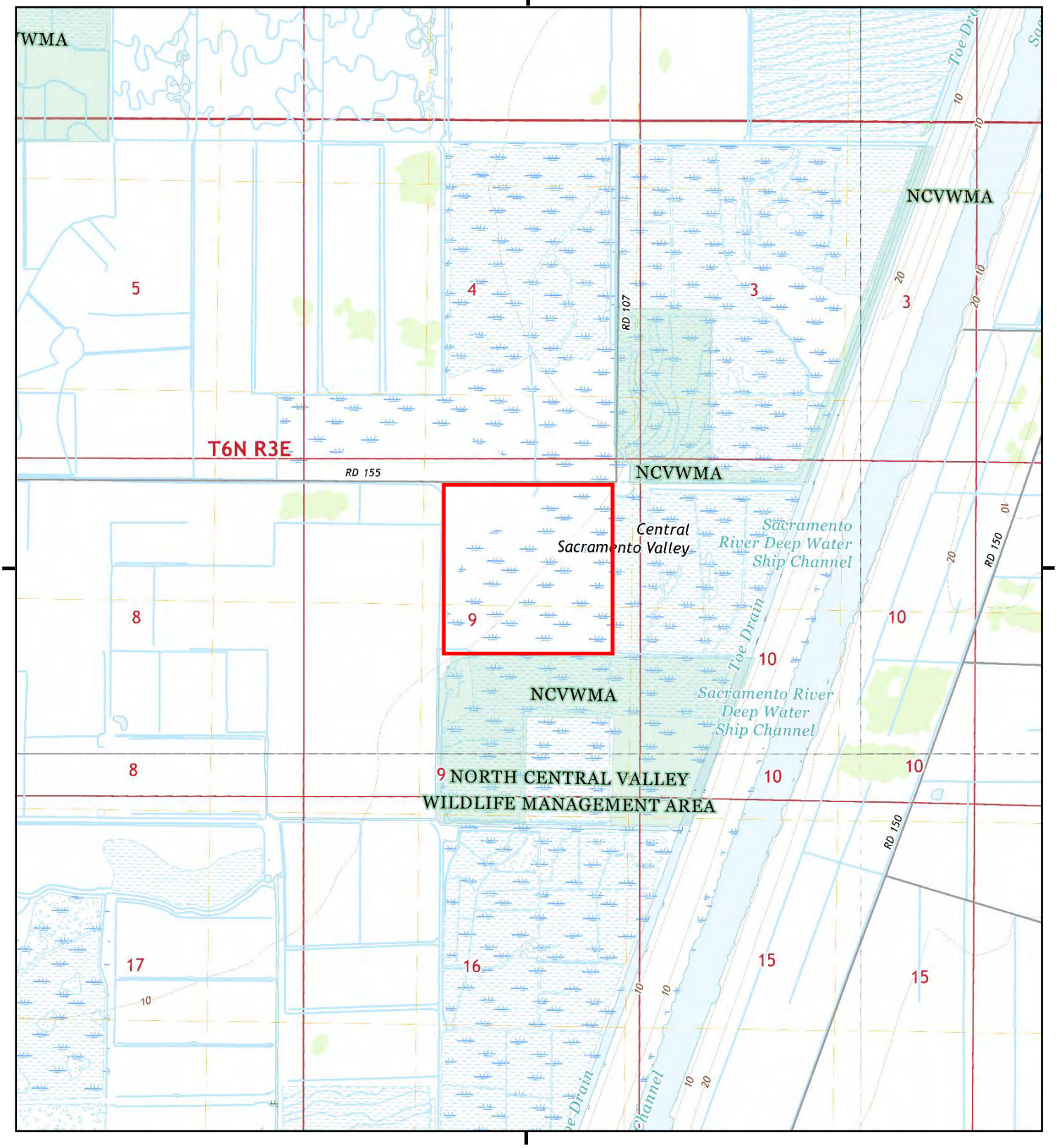
Cache Slough
1916
7.5-minute, 31680

1908 Source Sheets

Courtland
1908
15-minute, 62500

Historical Topo Map

2022



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

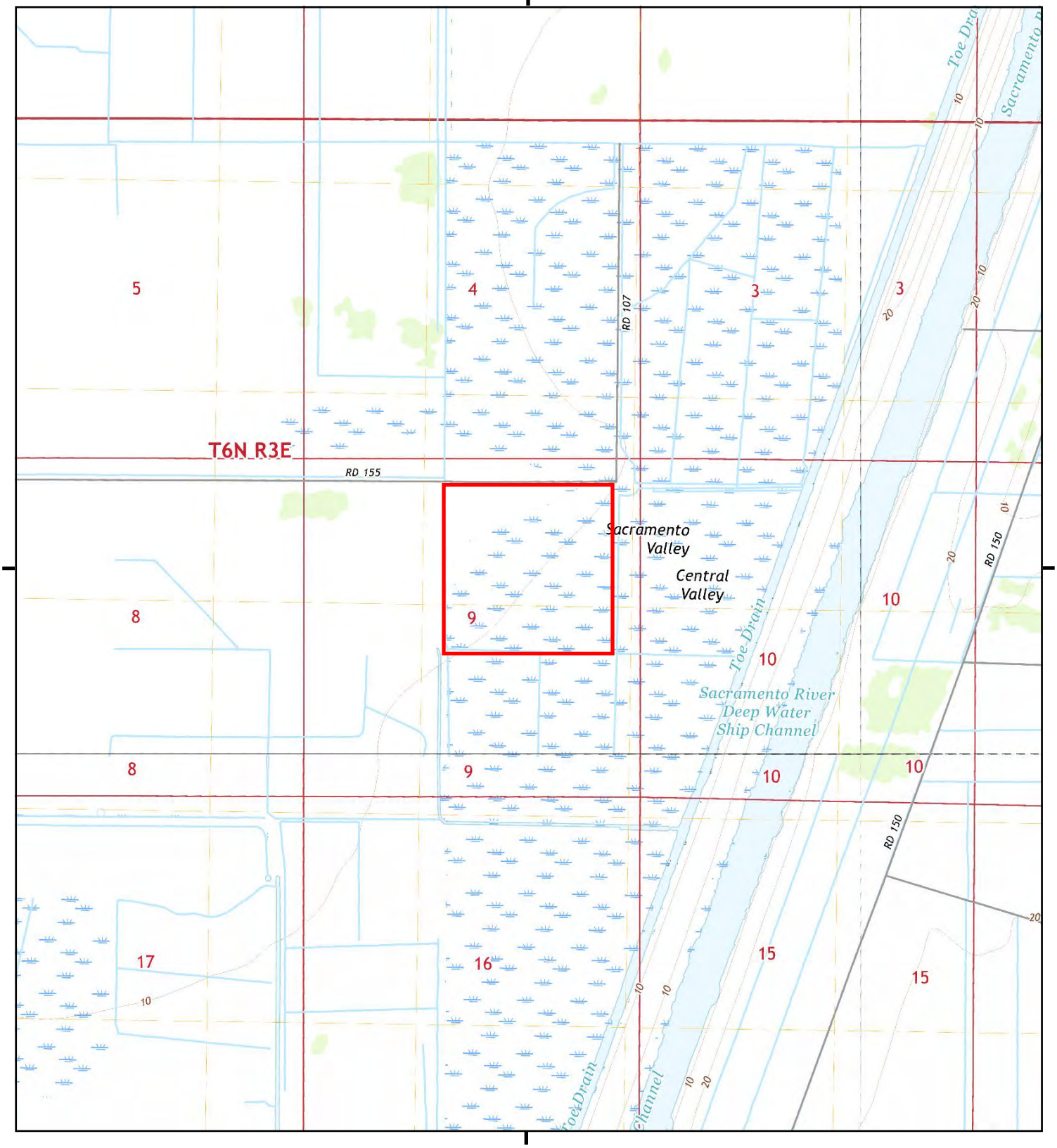
TP, Saxon, 2022, 7.5-minute
NE, Clarksburg, 2022, 7.5-minute
SE, Courtland, 2022, 7.5-minute
SW, Liberty Island, 2022, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2018



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

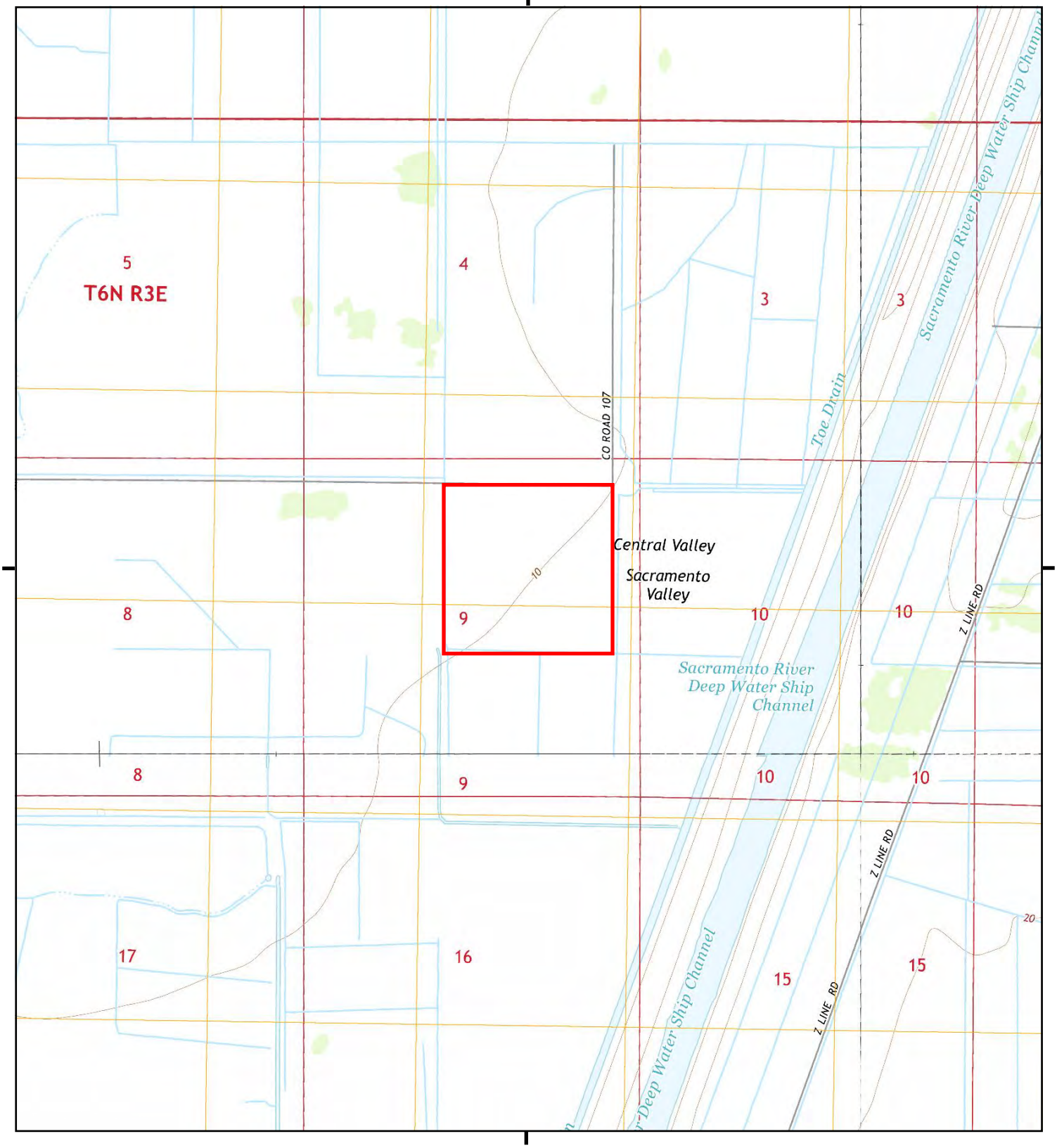
TP, Saxon, 2018, 7.5-minute
NE, Clarksburg, 2018, 7.5-minute
SE, Courtland, 2018, 7.5-minute
SW, Liberty Island, 2018, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2015



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

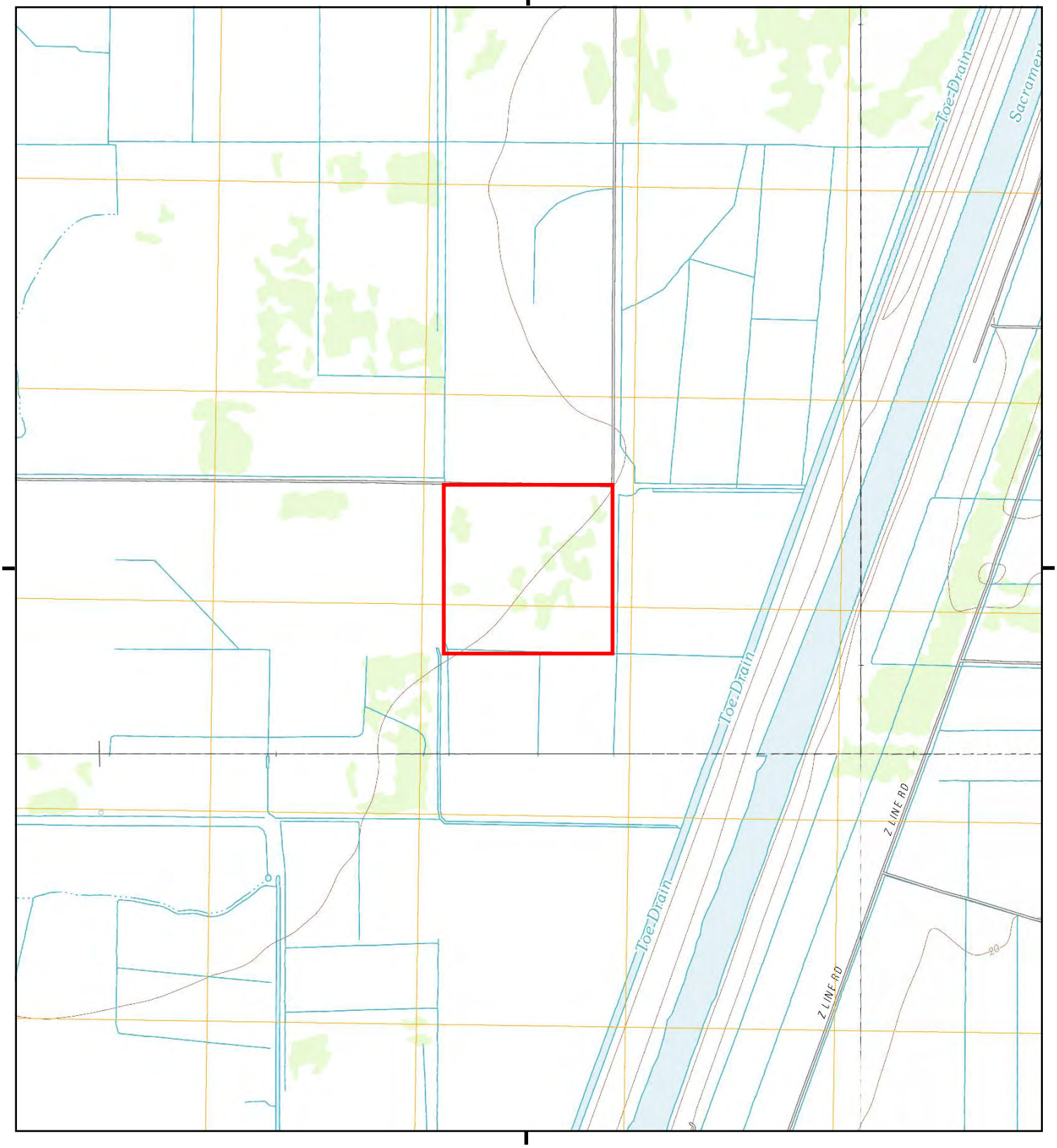
TP, Saxon, 2015, 7.5-minute
NE, Clarksburg, 2015, 7.5-minute
SE, Courtland, 2015, 7.5-minute
SW, Liberty Island, 2015, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2012



This report includes information from the following map sheet(s).

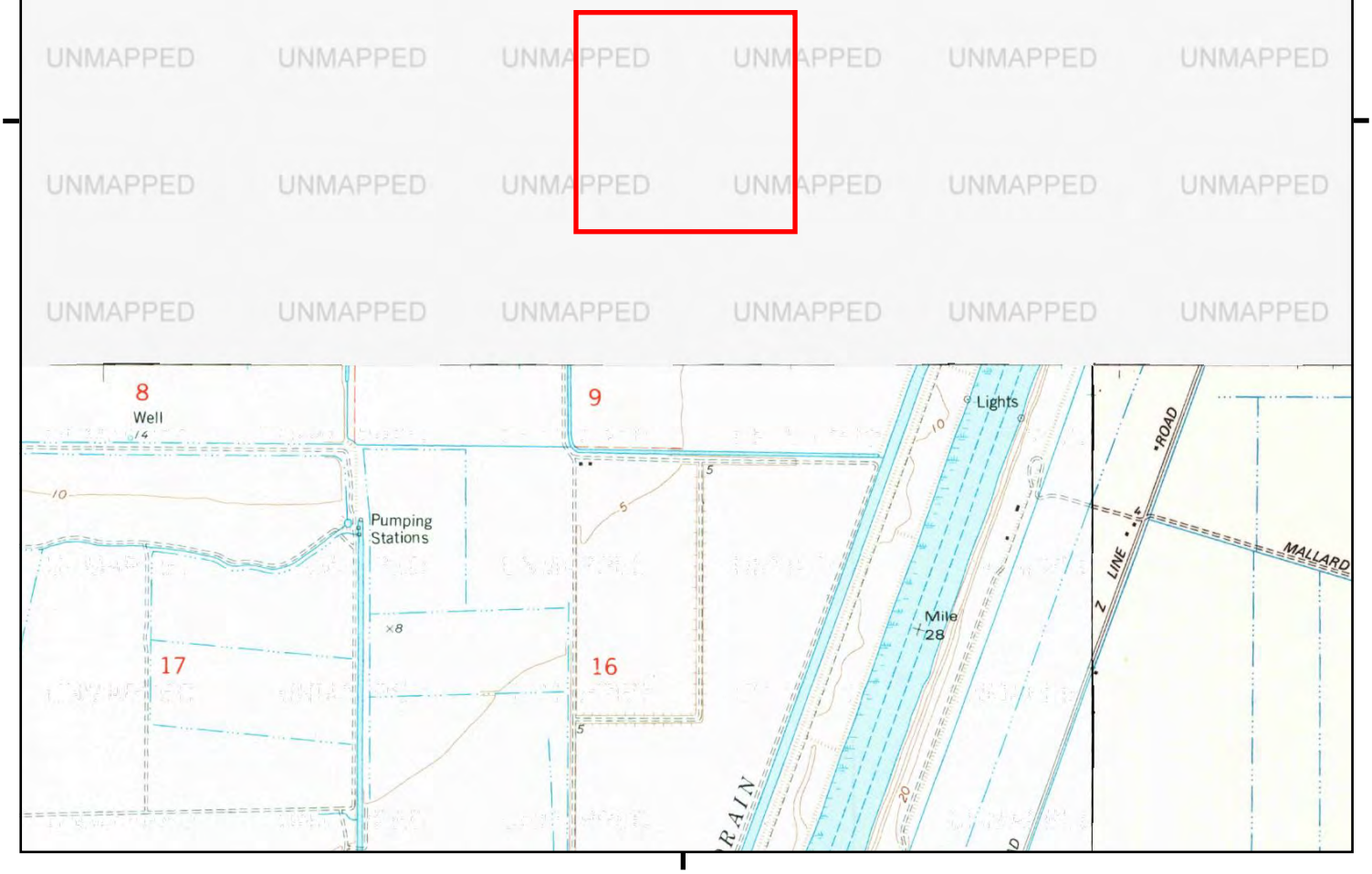
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Saxon, 2012, 7.5-minute
NE, Clarksburg, 2012, 7.5-minute
SE, Courtland, 2012, 7.5-minute
SW, Liberty Island, 2012, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

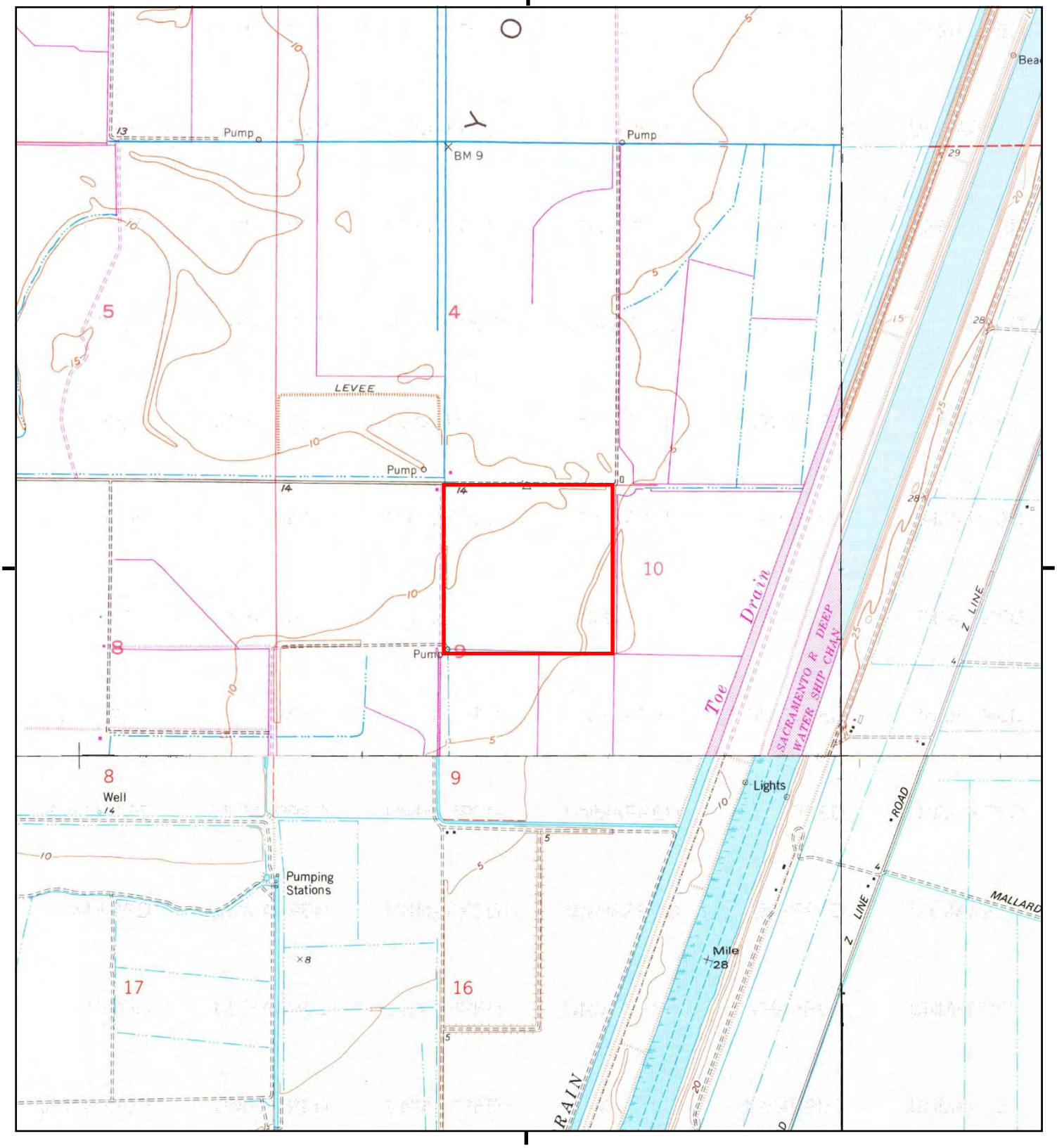
SE, Courtland, 1993, 7.5-minute
SW, Liberty Island, 1993, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

1973, 1975, 1978



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

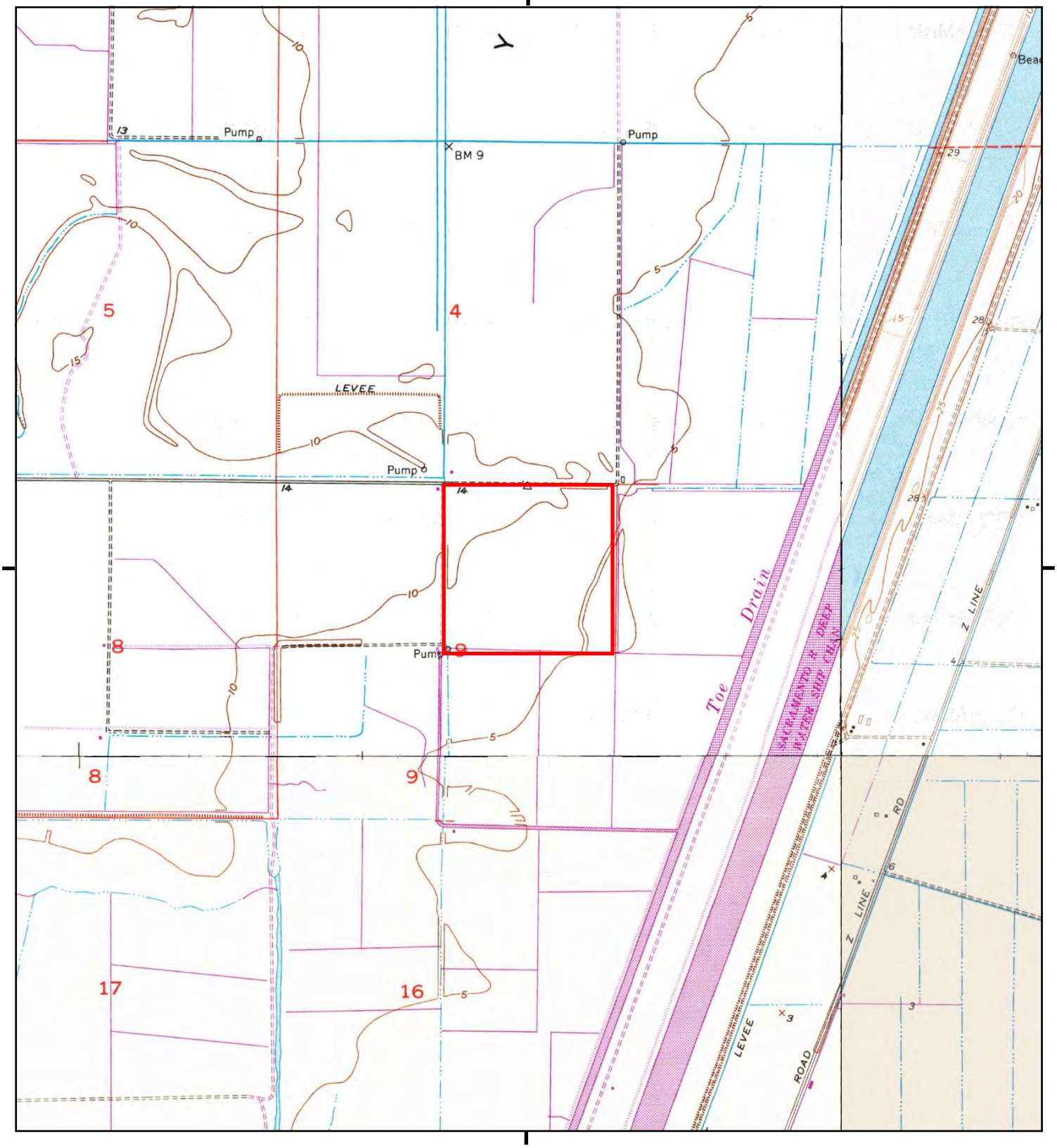
TP, Saxon, 1973, 7.5-minute
NE, Clarksburg, 1975, 7.5-minute
SE, Courtland, 1978, 7.5-minute
SW, Liberty Island, 1978, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

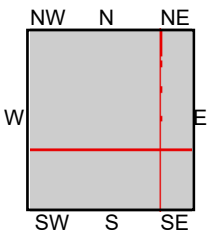
Historical Topo Map

1967, 1968



This report includes information from the following map sheet(s).

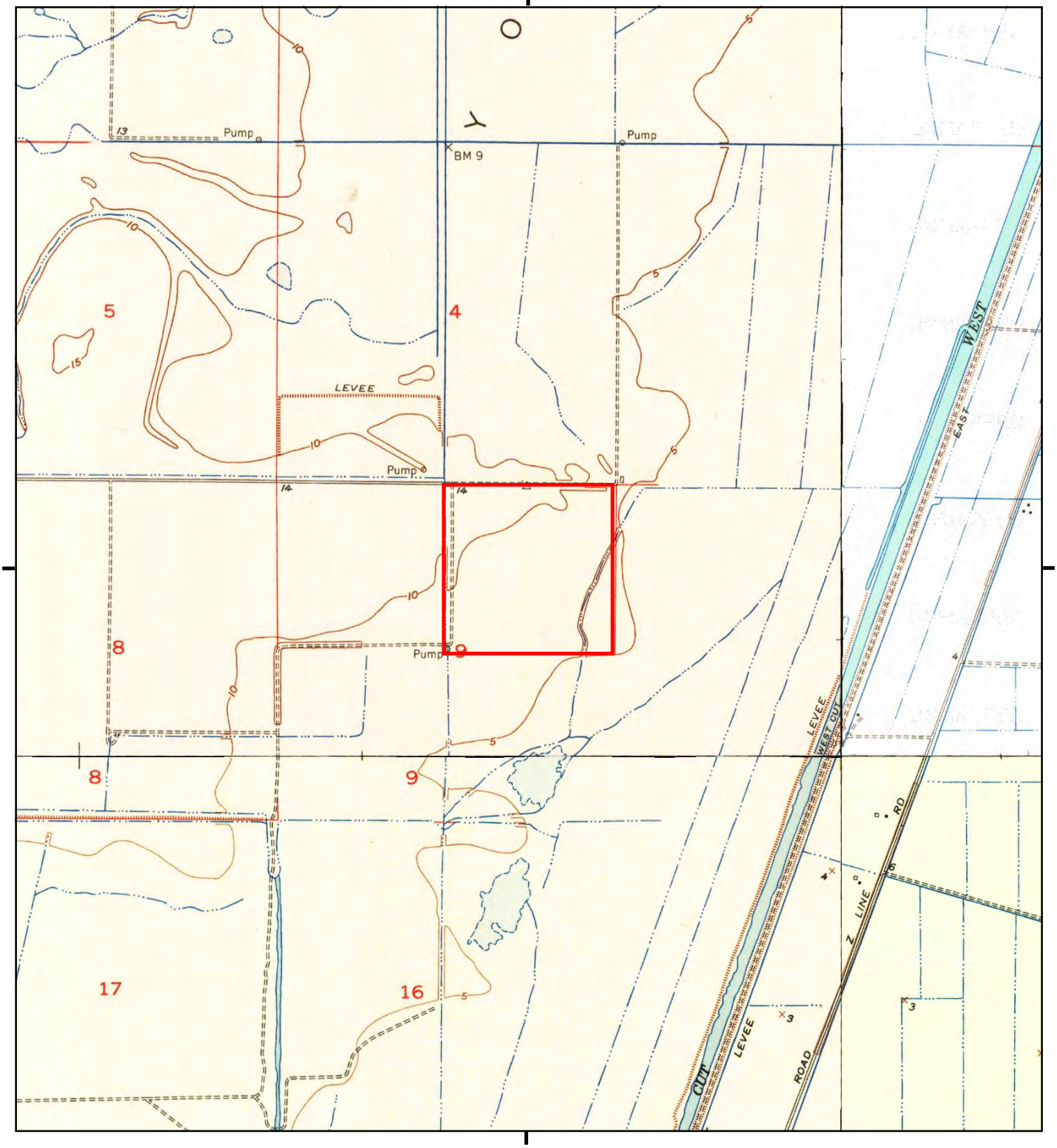
0 Miles 0.25 0.5 1 1.5



TP, Saxon, 1968, 7.5-minute
NE, Clarksburg, 1967, 7.5-minute
SE, Courtland, 1968, 7.5-minute
SW, Liberty Island, 1968, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

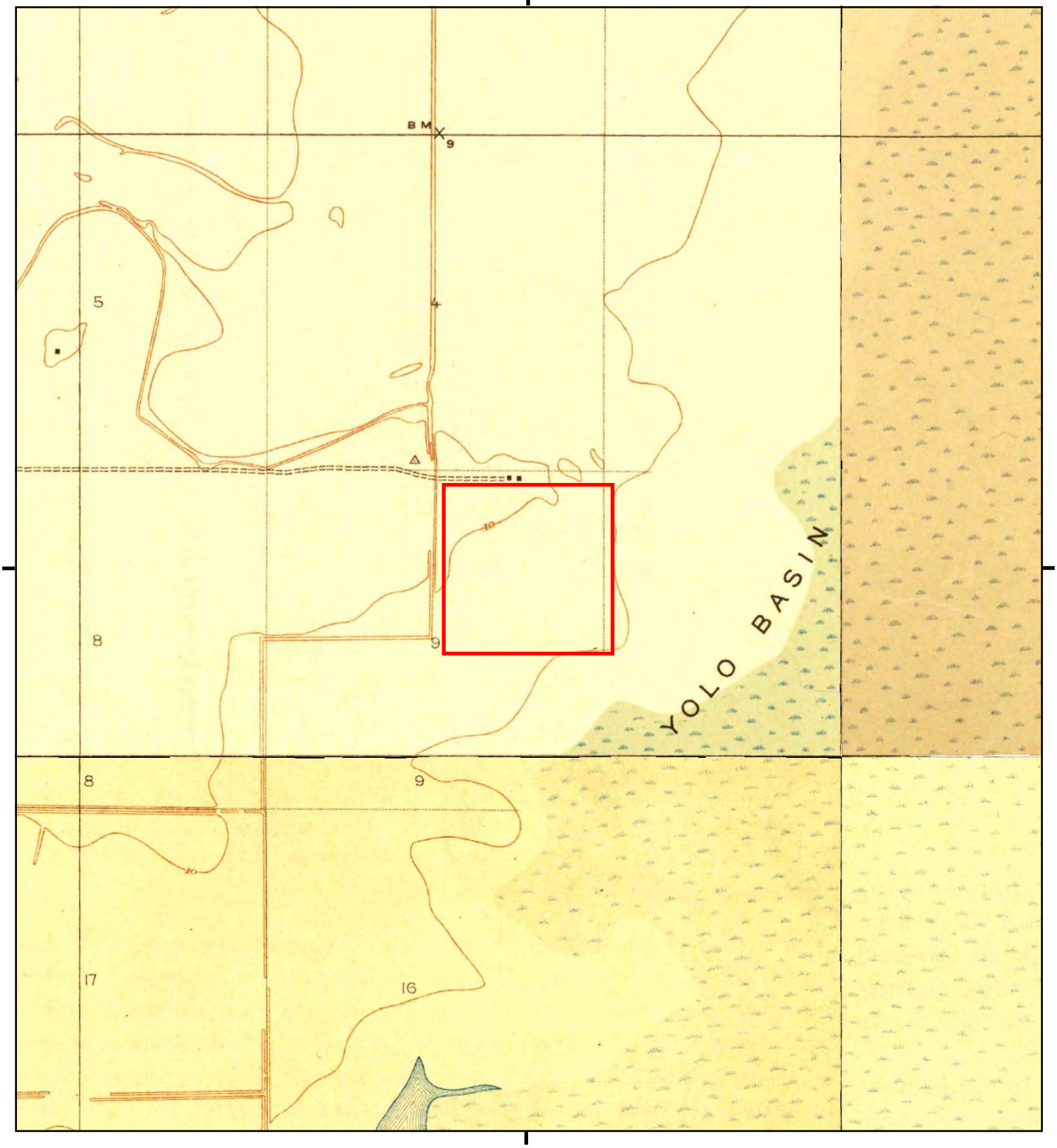
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Saxon, 1952, 7.5-minute
NE, Clarksburg, 1952, 7.5-minute
SE, Courtland, 1952, 7.5-minute
SW, Liberty Island, 1952, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



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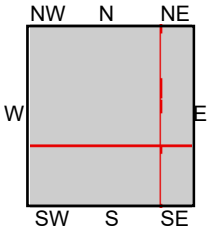
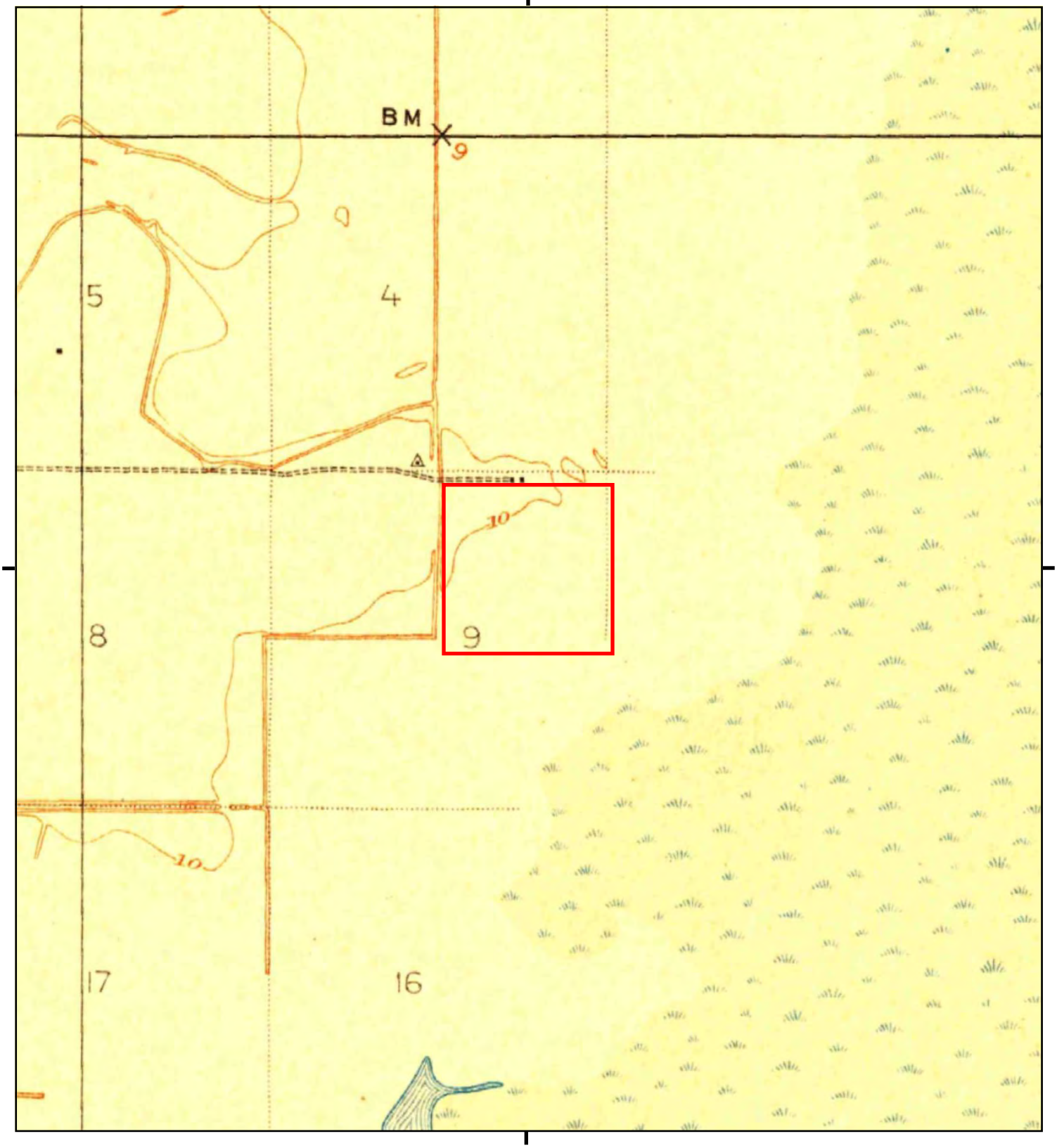
0 Miles 0.25 0.5 1 1.5



TP, Saxon, 1916, 7.5-minute
NE, Babel Slough, 1916, 7.5-minute
SE, Vorden, 1916, 7.5-minute
SW, Cache Slough, 1916, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Courtland, 1908, 15-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

ATTACHMENT 7

ENVIRONMENTAL PROFESSIONALS' QUALIFICATIONS

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Tide's End Multibenefit Restoration Project
Lucky Five South Parcel
40653 County Road 155
Dixon Yolo County, CA 95620

EAI Project Number: 80.ECOSYL5.24

June 14, 2024

APN: Portion of 033-220-009

BERNARD A. SENTIANIN, PG
Senior Geologist

M.S. Geology, 1989
San Diego State University
B.A. Geology, 1985
California State University, Bakersfield

As a senior project manager, he has hands on experience investigating, designing, installing, and managing large scale projects involving excavation/removals, above ground and in-situ remediation, soil vapor extraction, ventilation, and groundwater extraction/treatment. He has 30 years of environmental project management experience, and over 32 years professional geologic experience. Mr. Sentianin has extensive experience in planning, implementing and evaluating Phase I and Phase II environmental assessments in commercial real estate transactions.

Professional Experience

1997 TO 2019 Senior Geologist, EEI - As Senior Geologist of EEI since 1997, Mr. Sentianin provides consulting and technical services as a project manager, expert witness, third party reviewer, and senior geologist for development related due diligence, and well as investigation and cleanup efforts at sites impacted by Petroleum Hydrocarbons, heavy metals, pesticides, and chlorinated solvents.

1991 TO 1997 Senior Geologist, Senior Project Manager for PW Environmental - Established in-house engineering and consulting services for mid-sized environmental contractor. Established regulatory, vendor, and client contacts. Initiated policies governing technical report content and format and instituted in- house training program for new technical staff. Selected prioritized and procured required support equipment. Actively managed Phase I and Phase II investigation and remediation projects. Reviewed assessment data, prepared feasibility studies, and evaluated remedial alternatives while preparing Remedial Action Plans (RAP) for fuel, heavy metal, and solvent-impacted sites. Prepared health-based risk assessment on large cleanup site adjacent to health care facility. Permitted, implemented, and successfully completed the first in-situ groundwater bioremediation system in Ventura County. Reviewed and implemented numerous Phase I and Phase II environmental site assessments throughout Central and Southern California.

1989 TO 1991 Staff/Project Geologist for Nachant Environmental, Inc. - Planned, implemented, and managed environmental site investigations and remediation projects following appropriate regulatory and professional guidelines. Prepared and reviewed project cost proposals, correspondence, regulatory permits, assessment and investigation reports, and remedial action plans.

1987 to 1989 Teaching Assistant - San Diego State University Department of Geological Sciences and Department of Engineering.

Project Experience

Former Asphalt Plant, San Jose, CA. Assisted developer client with managing a large industrial site with multiple issues and negotiating closure requirements with Santa Clara County Environmental Health. Conducted additional investigations necessary to satisfy regulatory requirements, allowing development to continue while keeping residual petroleum contamination in place under managed conditions. Prepared closure report and summary of previous remedial and investigative efforts, obtaining closure.

Former Light Industrial Properties, Campbell, CA. Assisted residential developer with due diligence, investigation, and ultimately remediation of several contiguous industrial properties, formerly utilized for automotive repair, auto body work, construction material sales, and heavy equipment rental. Addressed City of Campbell and San Francisco Regional Water Quality Control Board concerns, obtaining approval/closure of open cases, allowing full development as multifamily residential.

Residential and Commercial Redevelopment Projects, Bay Area, CA. Conducted environmental due diligence and assisted with redevelopment planning for residential and commercial developers throughout the Bay Area and Sacramento Basin, including the communities of San Jose, Millbrae, Menlo Park, Sunnyvale, Oakland, Berkeley, Union City, Fremont, Antioch, Santa Rosa, Windsor, and the greater Sacramento metropolitan area including Stockton, Sacramento, West Sacramento, Roseville, Lincoln, Linda, and Auburn.

Southside Garden and Fremont Mews, Sacramento, CA. Conducted Phase I and Phase II environmental site assessments and evaluated environmental concerns on two community garden projects on behalf of the Capitol Area Development Authority. Coordinated regulatory oversight with Sacramento County Environmental Management Division and the State Office of Environmental Health Hazard Assessment. Prepared and evaluated requests for proposals for cleanup contractors and provided remediation oversight and management. Prepared closure documentation and obtained regulatory signoff form both the Southside Garden and Fremont Mews projects.

K Street Corridor – Sacramento, CA. Evaluated and conducted Phase I environmental site assessments on three block area of downtown Sacramento, as well as a number of individual properties in other areas within the K Street Corridor, on behalf of the City of Sacramento Downtown Development Group.

Globe Mills, Sacramento, CA. Conducted Phase I and Phase II environmental site assessment, evaluated environmental concerns and managed remediation for adaptive reuse project on behalf of Sacramento Housing and Redevelopment Agency. Coordinated regulatory oversight of the project with Sacramento County Environmental Management Division.

Electronics Manufacturing Facility/Fueling Depot, Santa Monica, CA. Performed soil and groundwater investigation, feasibility testing and evaluation of fuel hydrocarbon and chlorinated solvent plumes. Prepared RAP with design criteria for soil vapor extraction. After approval of RAP by State regulators, implemented and successfully completed remediation at site, obtaining closure.

Former Aerospace Facility, Santa Ana, CA. Evaluated existing Phase I and Phase II assessments. Performed soil, soil vapor, and groundwater investigations of chlorinated solvent plumes at multiple locations on site. Modeled and evaluated potential plume source areas. Initiated site-specific sampling protocol for chlorinated solvents. Liaison with lead regulatory agency regarding regional contamination issues and site closure requirements.

Major Land Owner/Developer, San Juan Capistrano, CA. Conducted Phase I and Phase II environmental site assessments at multiple sites in southern Orange County. Evaluated potential environmental concerns related to sand & gravel operations, fueling facilities, ordinance testing facilities, aerospace engineering labs, vehicle maintenance and repair facilities, agricultural operations, and illicit dump sites.

Professional Certifications and Registrations

Professional Geologist No. 5530, State of California.
40-Hour OSHA Health & Safety Training (29 CFR 1910.120)
8-Hour OSHA Health & Safety Annual Refresher Training

CRAIG SMITH, PG
Principal Scientist

M.S. Geology, 1986
San Diego State University
B.A. Chemistry, 1981
University of California, San Diego

Mr. Smith has over 30 years of professional experience in research, development, analyses and project management for both the U.S. Government and private sectors. His areas of expertise include environmental site assessment, due diligence for real estate transactions, site remediation and remedial system design, soil vapor intrusion and indoor air quality with respect to human health risk assessment, chemical engineering, analytical chemistry, groundwater and air modeling, regulatory permitting, project supervision and strategy. Mr. Smith has been involved with development of *in-situ* environmental chemical sensor technology including applications and deployment. Mr. Smith's academic and professional work has resulted in several journal publications.

Professional Experience

Assessment

- Managed hazardous waste site assessments and supervised site remediation activities. Prepared proposals, cost estimates, performed modeling and analysis of environmental data and trends, prepared reports, and supervised all phases of projects. Involved with over 400 subsurface hazardous waste investigations focusing on petroleum, hydrocarbon, volatile organic compounds (VOCs), dry cleaning solvents, pesticide, asbestos, and metal contaminants. Mr. Smith personally managed over 100 of these projects.

- Managed regional account with major financial institution performing Phase I due diligence environmental assessments and subsequent Phase II assessments as necessary; over 100 annually. Assessments performed in accordance with current ASTM Standards, Bank Standards, and SBA.

- Both managed and conducted environmental site assessment of former and active dry cleaning facilities and plants involving tetrachloroethylene, Stoddard Solvent, and associated product impurities and degradation products. Performed vapor intrusion assessment utilizing Summa canister sample collection and temporal spatial sampling utilizing gas chromatograph.

- Managed assessment of downtown San Diego city block occupied by abandoned dairy industrial/commercial outlet. Performed investigation of fuel oil, waste oil, gasoline and kerosene in soil and ground water and ammonia refrigeration system with asbestos insulation. Prepared a feasibility study discussing remedial options, management plans, and cost/benefit analysis.

- Planned and directed assessment of heavy metal contaminated soil (lead, nickel, cadmium, copper, zinc) at a former metal supply company historically specializing in steel distribution, wagon makers' materials, blacksmith's supplies, while later on-site galvanizing was performed.

- Performed subsurface assessment of 50,000-gallon gasoline spill at retail service station. Contamination extended greater than 100 feet below the ground surface. Supervised installation of exploratory soil borings and monitoring wells. Collected soil and groundwater samples.

- Directed assessment of non-permitted landfill at industrial-complex construction site in Southern California. Identified high molecular weight hydrocarbons, metals, pesticides and VOCs. Prepared remedial feasibility/risk assessment study with associate costs/benefit analysis involving 30,000 yards of stockpiled soils and remaining in-situ soils.

Remediation

- Managed and designed over fifteen fuel hydrocarbon remediation projects including high and low-volume soil vacuum extraction, soil ventilation, above- and below-ground water perfusion bioremediation and in-situ bioremediation. Monitored and interpreted data related to changes of subsurface environments due to the effects of remediation. Prepared and obtained Air District Permits and performed source compliance demonstrations.

- Designed and directed air permitting and RAP preparation of in-situ vapor extraction of paint-thinner contaminated soil extending to 50 feet below the ground surface. Both catalytic and thermal-oxidation vapor treatment technologies were implemented. Preliminary verification borings indicate residual hydrocarbon concentration less than 100 ppm remain in subsurface soils.

- Supervised and directed remedial excavation of soil contaminated with fuel hydrocarbons, solvents, and/or metals. Soils were segregated based on olfactory observations and field instrument measurements, and statistically characterized (where beneficial), to assess the most cost-effective disposal/treatment options.

- Installation of dual-pump free-product recovery system at service station. Pump effluent directed through separators and water polished with carbon prior to disclosure to POTW.

- Installed and operated vapor extraction equipment at multiple dry cleaning facilities reducing soil and soil vapor contaminant concentrations to regulatory acceptable levels to allow case site closure.

Research and Development

- Involved with development and improvement of vapor extraction systems and their controls.

- Developed electrode/electrolyte/buffer system to accurately measure pH *in situ*, for use in oceanographic expeditions. pH accuracy to ± 0.001 pH units.

- Synthesized experimental organic semiconductors followed by chemical modification and semiconductor property measurements.

- Performed engineering of water soluble drag reducing polymers. Experience included polymer design, synthesis, and property evaluation. Molecular weight measurements performed using HPLC, LC, LALLS, and viscosity techniques. Polymer performance evaluated using varying diameter pipe flow studies.

- Utilized X-ray diffraction analyses of clay cuttings derived from oil exploration and production wells to assess petroleum mitigation and accumulation. Identified chemical and diagenetic trends and their relationships to natural gas production. Prepared journal publications.

- Performed general DOD chemical research, development, and experimentation using PID, FID, AA, XRD, and FTIR instrumentation. Security clearance: Secret.

- Analyzed oceanographic data, programmed, designed/engineered and executed chemical experiments. Alkalinity, pH, $C0_2$ and O_2 were emphasized for evaluation of bioactivity. Involved with ultrapurification of chemicals used in organic syntheses, extensive use of diffusion pumps; and inert environment settings (glove box). Security clearance: Secret

Professional Memberships

National Water Well Association
Member - San Diego County Health Department guidelines committees:
Past Member Technical Work Group for On-Site Treatment and Permitting
Past Member Technical Work Group for Hazardous Waste Determination

Professional Certifications and Registrations

Professional Geologist, California No. 8225
General Engineering and Contracting License (A), California (900796) w/ HAZ endorsement.
Registered Environmental Assessor, California (No. 3166)
40-Hour OSHA Health & Safety Training (29 CFR 1910.120)
8-Hour OSHA Health & Safety Annual Refresher Training 2019

Publications

"Long-Lived Optically Excited Infrared Modes in Cis-Rich Polyacetylene"; 1987, Bull, Am. Phys. Soc. 32 (3), p. 421.

"Smectite to Illite Transformation in the Forbes Formation"; 1987, 24th Annual Meeting of the Clay Mineral Society, Socorro, New Mexico, Abstracts p. 31.

"Smectite Dehydration and Gas Production in the Forbes Formation, Sacramento Valley, California"; Abstract, 1988, American Association of Petroleum Geologists Bulletin, Vol. 2, p. 395.

"Control of Air Emissions from Soil Venting Systems"; 1990, Innovative Hazardous Waste Technology Series; Physical/Chemical Processes, Technomic Publishing Co., Inc., Vol. 2, pp. 205-210.

"Interchain Decay of Soliton Pairs in Polyacetylene; 1988, Phys. Rev. V. 37, pg. 10814.

"Drag Reduction in Fluid Flows: Techniques for Friction Control", 1989, in Sellin, R. and Moses, R., Ellis Horwood Limited, Chichester, England, Chapter 3.

“The California Ground Water Purging Study for Petroleum Hydrocarbons,” Eleventh National Outdoor Action Conference and Exposition, Las Vegas, Nevada, p. 109, 1997.

F.2 Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation

Tide's End Multibenefit Restoration Project

Phase II Soil Sampling Investigation

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AUGUST 2025

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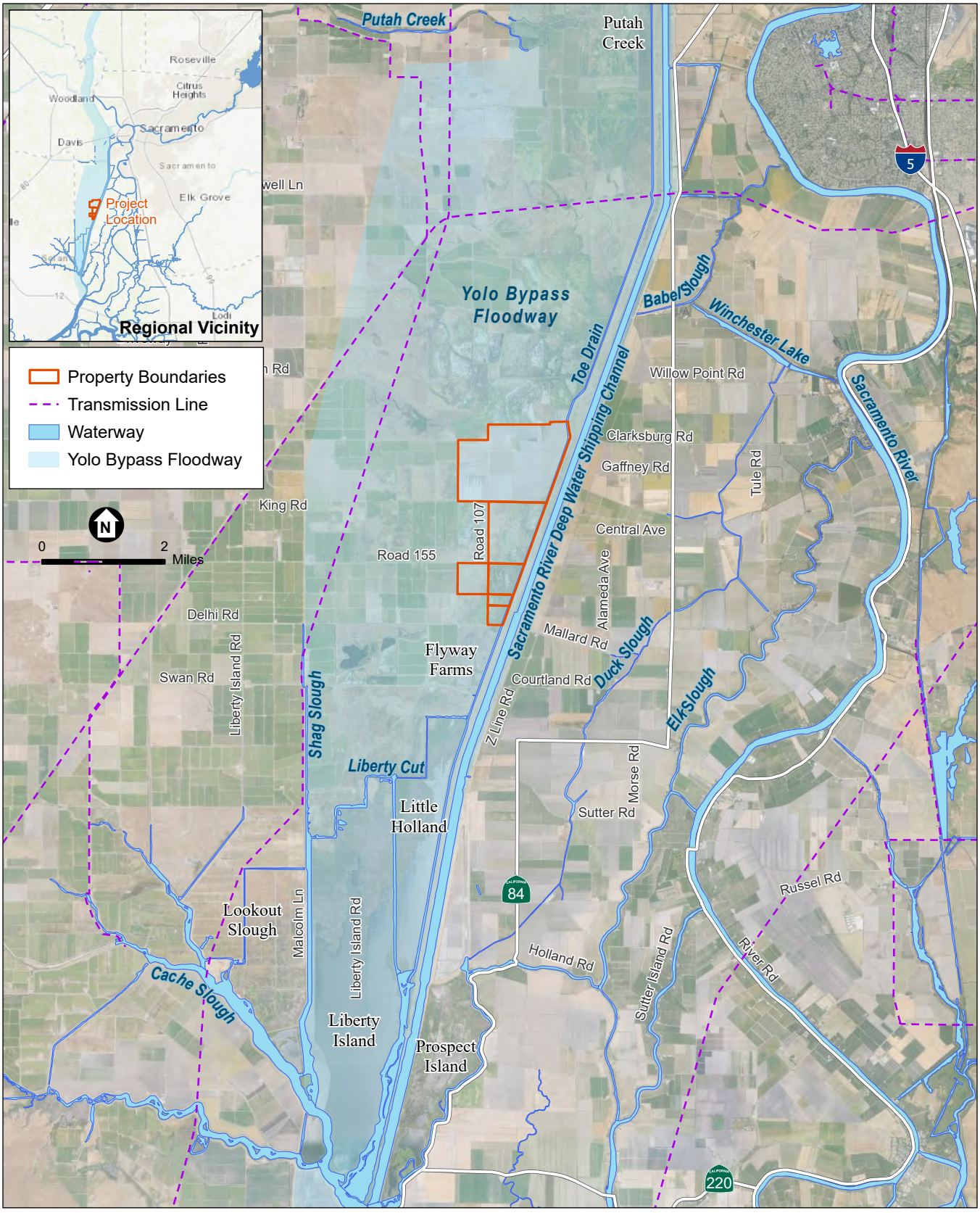
SECTION 1
Introduction

ESA conducted a soil sampling investigation on behalf of EIP California (EIP) for the proposed Tide's End Multibenefit Restoration Project (proposed Project), located about 12 miles south-southwest of Sacramento along the west side of the Sacramento River Deep Water Ship Channel and within the Yolo Bypass floodway in Yolo County, California (see **Figure 1, Regional Setting** and **Figure 2, Composite Sample Locations**).

The proposed Project would restore and enhance tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) across the Capitol Oil, Laurel G, Yolo Basin, Kleary, Williams, and Lucky Five South properties shown on Figure 2. The Phase I Environmental Site Assessments prepared for the properties noted the historical and current agricultural use of the properties that comprise the proposed Project and recommended Phase II soil sampling be conducted.[1]

To evaluate the potential effects of historical and current agricultural use, a soil sampling investigation was conducted in 2021 at the Capitol Oil, Laurel G, and Kleary properties, and in 2024 at the Lucky Five South property. Composite soil samples were collected at the locations shown in blue on Figure 2 and analyzed for chemicals associated with the historical and current agricultural use, including organochlorine pesticides, organophosphorus pesticides, chlorinated herbicides, and metals. Metals were analyzed because some pesticides and herbicides include some metals (e.g., arsenic copper, and chromium).

[1] Environmental Science Associates (ESA), 2025. *Tide's End Multibenefit Restoration Project, Phase I Environmental Site Assessment*.

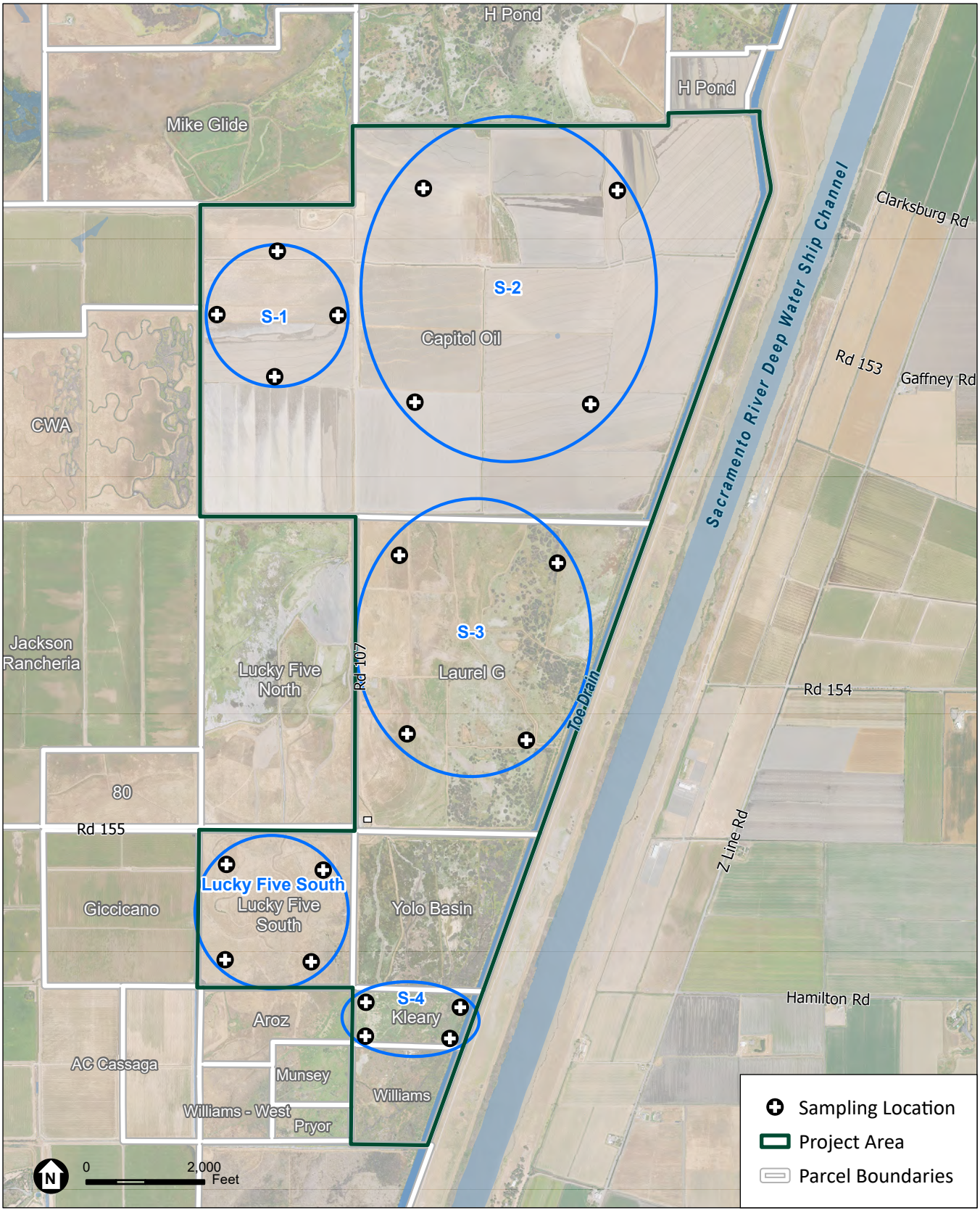


Tide's End Multibenefit Restoration Project

Figure 1
Regional Setting

Prepared by: ESA

SOURCE: NAIP, 2022; DWR, 2005



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 2
Composite Sample Locations

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2025

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SECTION 2
Field Investigation

Five four-part composite soil samples were collected from the locations shown on Figure 2. Composite Samples S-1, S-2, and S-3 were collected on the Capitol Oil and Laurel G properties to evaluate soil conditions on properties that have been recently or are currently farmed. Composite Sample S-4 was collected on the Kleary property, which has not been farmed since around 1968. The Kleary property is next to the Toe Drain for the Sacramento River Deep Water Shipping Channel. Composite Sample Lucky Five South was collected from a property farther west from the Toe Drain and has been farmed for rice up until at least 1993 but not after 2003. Composite Samples S-1, S-2, S-3, and S-4 were collected on June 9, 2021. The Lucky Five South sample was collected on November 19, 2024.

The composite samples consisted of soil collected at four separate locations within each property and composited into a single composite sample. Surface soil was removed to a depth of about 6 inches at each individual location using a trowel previously cleaned with distilled water between each sample location. Approximately 16 ounces of soil collected from each of the four individual locations was placed in a 5-gallon bucket that had also been previously cleaned with distilled water. The soil collected from the four individual locations was blended into a four-part composite sample in the bucket using the trowel. Sixteen ounces of the composited soil was then collected into a laboratory-provided 16-ounce glass jar with a Teflon-lined lid, labeled with a unique identification number, sealed into a plastic bag, and placed in a cooler with ice for sample preservation. The samples were transported to McCampbell Analytical Laboratory, a state certified testing laboratory, under chain-of-custody documentation that same day. The 2021 composite soil samples were analyzed for the chemical constituents using the cited test methods listed below:

- Organochlorine pesticides and polychlorinated biphenyls (PCBs) by SW8081A/8082
- Organophosphorous pesticides by SW8070C
- Chlorinated herbicides by SW8151A
- Total California Administrative Manual (CAM) 17 metals[2] by SW6020
- Iron and manganese by SW6020
- Acid soluble sulfide by SM4500 S2D
- Total organic carbon by SW9060A

[2] CAM 17 metals includes antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc.

Pesticides and herbicides were analyzed due to the historical and current agricultural use of the Project site. Metals were analyzed because some pesticides and herbicides include some metals (e.g., arsenic copper, and chromium). The 2024 composite soil sample was analyzed for the chemical constituents using the same cited test methods. Analyses were not conducted for iron, manganese, acid soluble sulfide and total organic carbon, as the previous 2021 testing results already provided background information on these compounds and there are no screening levels for these compounds.

The laboratory analytical reports for both sampling events are provided in **Appendix A**. The consolidated results are summarized on **Table 1**.

TABLE 1
SAMPLE RESULTS

Samples	S-1	S-2	S-3	S-4	Lucky Five South	Background (a)	Beneficial Reuse Screening Levels (b)		Preliminary Freshwater Threshold Effects Levels (TELs) (c)	Probable Effects Levels (PELs) (c)	Upper Effects Thresholds (UETs) (c)
Pesticides, Herbicides, and PCBs							**Surface**	**Foundation**			
DDT	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	0	Sum of DDTs				
DDD	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	0	0.0070	0.0461	0.007	4.45	0.05
DDE	**0.00023**	**0.00067**	**0.00020**	ND (0.0010)	**0.00047**	0					
Heptachlor	ND (0.0010)	ND (0.0010)	**0.00012**	ND (0.0010)	ND (0.0010)	0	ne	ne	ne	ne	0.01
Organophosphorous pesticides	ND (0.10)	ND (0.10)	ND (1.0)	ND (5.0)	ND (0.10)	0	ne	ne	ne	ne	ne
Chlorinated herbicides	ND (0.05 to 5.0)	ND (0.05 to 5.0)	ND (0.10 to 10)	ND (0.05 to 5.0)	ND (0.50 to 50)	0	ne	ne	ne	ne	ne
Polychlorinated biphenyls (PCBs	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	0	0.0227	0.18	ne	ne	ne
Metals											
Antimony	ND (2.5)	ND (2.5)	ND (2.5)	**0.52**	**0.47**	0.36 – 1.03	ne	ne	ne	ne	3
Arsenic	**9.7**	**12**	**9.6**	**8.2**	**5.6**	0.8 – 3.85	15.3	70	5.9	17	17
Barium	**280**	**320**	**250**	**310**	**190**	379 – 796	ne	ne	ne	ne	ne
Beryllium	ND (2.5)	ND (2.5)	ND (2.5)	**0.56**	**0.55**	0.64 - 1.51	ne	ne	ne	ne	ne
Cadmium	ND (2.5)	ND (2.5)	ND (2.5)	ND (0.5)	**0.082**	0.05 – 0.31	0.33	9.6	0.596	3.53	3.0
Chromium	**130**	**130**	**160**	**100**	**97**	26 – 397	112	370	37.3	90	95
Cobalt	**26**	**31**	**23**	**20**	**15**	4.3 – 22.1	ne	ne	ne	ne	ne
Copper	**48**	**59**	**48**	**41**	**35**	13.7 – 41.5	68.1	270	35.7	197	86
Iron	**40,000**	**48,000**	**44,000**	**32,000**	na	ne	ne	ne	ne	ne	ne
Lead	**11**	**12**	**11**	**7.9**	**7.5**	21.3 – 40.5	43.2	218	35	91.3	127
Manganese	**930**	**1,100**	**660**	**780**	na	436 – 890	ne	ne	ne	ne	ne
Mercury	ND (0.25)	ND (0.25)	**0.44**	**0.12**	**0.16**	0.1 - 2.1	0.43	0.70	0.174	0.486	0.56
Molybdenum	ND (2.5)	ND (2.5)	ND (2.5)	ND (0.5)	**0.34**	0.5 – 2.2	ne	ne	ne	ne	ne
Nickel	**210**	**250**	**280**	**190**	**160**	12 – 212	112	120	18	36	43
Selenium	ND (2.5)	**3.0**	**2.5**	**3.2**	ND (0.50)	0.015 – 0.14	0.64	ne	ne	ne	ne
Silver	ND (2.5)	ND (2.5)	ND (2.5)	ND (0.5)	ND (0.50)	0.2 – 2.6	0.58	3.7	ne	ne	4.5
Thallium	ND (2.5)	ND (2.5)	ND (2.5)	ND (0.5)	**0.12**	9.1 – 23.9	ne	ne	ne	ne	ne
Vanadium	**97**	**110**	**100**	**78**	**69**	55 – 139	ne	ne	ne	ne	ne
Zinc	**90**	**110**	**90**	**71**	**65**	91 – 193	158	410	123	315	520
Other											
Total Organic Carbon	**8,500**	**7,500**	**18,000**	**7,900**	na	5,000 – 30,000 (d)	ne	ne	ne	ne	ne
Acid Soluble Sulfide	**1.0**	ND (1.0)	ND (1.0)	**1.0**	na	ne	ne	ne	ne	ne	ne

Notes:
All concentrations in milligrams per kilogram
Concentrations above reporting limit are in bold text.
Concentrations highlighted in yellow exceed both background levels AND one or more screening levels.
na – not analyzed
ne – not established
a - Kearney Foundation of Soil Science, 1996. *Background Concentrations of Trace and Major Elements in California Soils*. March.
b - Regional Water Quality Control Board (RWQCB), 2000. *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines*. Draft staff report. May.
c - Buchman, 2008. *NOAA Screening Quick Reference Tables*, NOAA OR&R Report 08-1, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration.
d – Background levels from Troeh, Frederick R. and Louis Milton Thompson. Soils and Soil Fertility. 6th ed., Ames, Iowa, USA: Blackwell Publish., 2005

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SECTION 3
Evaluation Criteria

Regional Background Levels for Naturally Occurring Metals

The metal concentrations of the composite soil sample were first compared to regional background levels to ascertain whether concentrations of metals are within background levels. The regional background levels used for the proposed Project are from the regional background study of naturally occurring metals in soil in California published by the Kearney Foundation of Soil Science.[3] The range (i.e., minimum to maximum) of regional background metal concentrations was established by using the following six nearest regional background soil sample locations:

Location Number	Soil Series	Soil Taxonomy, if provided	Longitude and Latitude
9	Merced sl	Fine, montmorillonitic, thermic Pachic Haploxerolls	121°22' 38°05'
11	Hanford sl	Coarse-loamy, mixed, nonacid, themnic Typic Xerorthents	121°14' 38°11'
17	Hugo cl		122°00' 38° 22'
38	Ramona		121 °13' 38°14'
46	Yolo cl	Fine-silty, mixed, nonacid, thermic Typic Xerorthent	121 °47' 38°26'
49	Venice	Eric, thermic Typic Medihemists	121 °31' 37°40'

Chemicals detected at concentrations within regional background levels are concluded to be naturally occurring on a regional scale; the above-listed regional background locations are located within a 48-mile radius of the Project site. However, it is important to note that three of the locations (9, 11, and 38) are located east of the Project site and the Sacramento River, and one of the locations (49) is located south of the Project site and the Sacramento River. The Project site is located west of the Sacramento River. Given that the Project site is located west of the Sacramento River, sediment at the Project site is derived more from the Coast Ranges to the west. The rocks of the Coast Ranges are known to include serpentinite, which can contain metals such as arsenic, chromium, cobalt, nickel, and zinc. Consequently, and as indicated by the sampling results discussed in the Discussion and Summary section further below, the naturally occurring background concentrations of some metals in this local area at the Project site have levels of some metals that are higher than the regional background levels.

[3] Kearney Foundation of Soil Science, 1996, *Background Concentrations of Trace and Major Elements in California Soils.* March.

Beneficial Reuse Criteria

Soil results were evaluated for possible reuse by comparing the results to the screening criteria in the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) Beneficial Reuse Guidelines.[4] The San Francisco Bay Regional Water Board Beneficial Reuse Guidelines provide chemical screening criteria based on the San Francisco Bay Regional Water Board's current understanding of the appropriate physical, chemical, and biological quality requirements of the reuse of dredge materials for various beneficial reuse placement options in wetlands.

Ecological Risk Levels

Soil analytical results were evaluated for protection of ecological receptors in the benthic environment. In environmental science, particularly in sediment quality assessment for freshwater ecosystems, the following threshold values are commonly used to evaluate the potential for adverse biological effects due to contaminants, as summarized in the National Oceanic and Atmospheric Administration's (NOAA) Screening Quick Reference Tables:[5,6]

Threshold Effects Levels (TELs)

- Definition: TELs are contaminant concentrations below which adverse biological effects are expected to occur rarely.
- Derivation: Based on empirical data from field studies, lab toxicity tests, and modeling. TELs are often derived using a weight-of-evidence approach, integrating biological and chemical data.
- Purpose: Serve as a screening tool to identify sediments that are likely safe and help prioritize sites for further investigation.
- Application: Used in environmental monitoring programs and to inform decisions about sediment dredging and disposal.
- Example: A TEL for lead might be set at a concentration where benthic invertebrates show no significant adverse effects in most studies.

Probable Effects Levels (PELs)

- Definition: PELs are contaminant concentrations above which adverse biological effects are expected to occur frequently.
- Derivation: Like TELs, PELs are derived from matching sediment chemistry with biological effects data, but they represent the upper range of concentrations associated with toxicity.
- Purpose: Identify sediments that are likely to be ecologically harmful and guide remediation decisions and risk assessments.

4 San Francisco Bay Regional Water Quality Control Board (RWQCB), 2000. *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines. May 2000 (with minor corrections as of 3/14/19)*.

5 Buchman, 2008, *NOAA Screening Quick Reference Tables*, NOAA OR&R Report 08-1, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration.

6 U.S. Geological Survey (USGS), 1996. A preliminary evaluation of sediment quality assessment values for freshwater ecosystems. Available at https://www.usgs.gov/publications/a-preliminary-evaluation-sediment-quality-assessment-values-freshwater-ecosystems

- Application: Used to flag high-risk areas and often incorporated into regulatory frameworks.
- Example: A PEL for mercury might be set at a level where toxicity to aquatic organisms is observed in a majority of studies.

Upper Effects Thresholds (UETs)

- Definition: UETs are high contaminant concentrations at which severe biological effects are almost certain.
- Derivation: Typically based on the highest observed effect concentrations in toxicity studies or field data.
- Purpose: Serve as a critical action level for urgent remediation and indicate extreme contamination.
- Application: Used in regulatory enforcement and may trigger emergency response or cleanup.
- Example: A UET for PCBs might be set at a concentration where fish and benthic organisms show acute toxicity or reproductive failure.

The thresholds are related to each other and the contaminant concentration increases from TEL to PEL to UET. These thresholds are derived from empirical data, including laboratory toxicity tests, field studies, and modeling efforts. They help environmental scientists and regulators assess sediment quality and make informed decisions about monitoring, management, and remediation of contaminated sites.

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SECTION 4
Results

Organochlorine Pesticides and PCBs

The organochlorine pesticide DDE, a degradation product of DDT, was detected at an estimated concentration below the reporting limit and below all screening criteria. Heptachlor was detected in one sample at a concentration above the reporting limit; heptachlor does not have an established screening level. No other organochlorine pesticides were detected above their respective reporting limits. Based on the results, the residual level of DDE is not expected to have an adverse effect on wetland habitat.

PCBs were not detected at concentrations above reporting limits and the reporting limits were below the screening criteria.

Organophosphorous Pesticides and Chlorinated Herbicides

Organophosphorous pesticides and chlorinated herbicides were not detected at concentrations above reporting limits and do not have established screening criteria.

Metals

With the exception of silver, all of the CAM 17 metals were detected at concentrations above reporting limits. However, estimated concentrations were below the reporting limits in most of the composite soil samples. Silver was not detected at concentrations above reporting limits in any sample.

The detected metals concentrations were first compared to their respective regional background levels and then to screening levels if background levels are exceeded. The results are summarized below.

- Antimony, barium, beryllium, cadmium, lead, molybdenum, selenium, silver, thallium, vanadium, and zinc were not detected at concentrations above background levels, or any established screening levels.
- Arsenic was detected at concentrations that exceeded regional background levels and the TEL in 4 of the 5 samples. The arsenic concentrations did not exceed the PEL or UET. This means that arsenic exceeded the threshold at which adverse biological effects are expected to occur rarely at 80% of the samples but did not exceed the threshold at which biological effects are expected to occur frequently. As discussed further below in the Discussion and Summary section, the naturally occurring levels of some metals in this local area appear to be higher than the regional background levels.
- Chromium was detected at concentrations within regional background levels. Although within the naturally occurring regional background levels and therefore concluded to be naturally occurring, the concentrations exceeded the TEL and UET.

- Cobalt was detected in three samples and manganese was detected in two samples at concentrations above regional background levels. However, cobalt and manganese do not have established screening levels.
- In three of five samples, copper exceeded the regional background level and the TEL, but did not exceed the PEL or UET. In addition, and as discussed further below in the Discussion and Summary section, the naturally occurring levels of some metals in this local area appear to be higher than the regional background levels.
- Mercury was detected in three samples at concentrations within regional background levels. Mercury was not detected in the other two samples Although within the naturally occurring regional background levels and therefore concluded to be naturally occurring, the concentrations exceeded the TEL in one sample but did not exceed the PEL or UET.
- In two of five samples, nickel was detected at concentrations that exceeded the regional background level, the beneficial reuse screening levels, TEL, PEL, and UET . However, the naturally occurring levels of nickel in soil appear to be higher for this local area relative to regional background levels, as discussed further in the Discussion and Summary section.
- In three of five samples, selenium was detected at concentrations that exceeded the regional background level. However, the naturally occurring levels of some metals in soil appear to be higher for this local area relative to regional background levels, as discussed further in the Discussion and Summary section.

It is important to note that the above-summarized results are for total metals. The presence of metals in soil does not necessarily mean that the metals would be dissolved into water once the freshwater tidal connectivity is established, as discussed below.

Total Organic Carbon and Acid Soluble Sulfide

Total organic carbon (TOC) is the amount of carbon found in an organic compound and refers to the amount of organic carbon in soil.[7] The TOC results ranged from 7,500 to 18,000 milligrams per kilogram (mg/kg) or 0.75 to 2 percent. Soil organic carbon tends to be concentrated in the topsoil. Topsoil ranges from 0.5 to 3.0 percent TOC for most upland soils. Soils with less than 0.5 percent TOC are mostly limited to desert areas. Soils containing greater than 12 to 18 percent TOC are generally classified as organic soils. The soils on the Project site are within the typical upland range.

Acid sulfate soils are soils in which sulfuric acid either will be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics.[8] Acid sulfate soils form when sulfide minerals, such as pyrite, and/or elemental sulfur in reduced sulfidic sediments oxidize upon exposure to air. If sulfide bearing subaqueous soils are dredged and placed in a subaerial environment, sulfides will oxidize, creating sulfuric acid. The sulfuric acid will lower soil pH (to less than 4) and result in acid sulfate soil formation. Soils with the potential to become acid sulfate soils pose no threat unless exposed to atmospheric oxygen. Given the

7 Troeh, Frederick R. and Louis Milton Thompson. Soils and Soil Fertility. 6th ed., Ames, Iowa, USA: Blackwell Publish., 2005

8 Natural Resources Conservation Service (NCRS), Soil Survey Technical Note 11, Acid Sulfate Soils in the Coastal and Subaqueous Environment. Accessed June 29, 2021, at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcseprd1461815

relatively low to non-detectable sulfide concentrations, the soil does not appear to be susceptible to becoming acidic.

Discussion and Summary

The reported concentrations of pesticides, herbicides, and PCBs are either not detected above reporting limits or are present at concentrations below screening criteria. Therefore, the residual chemicals in soil from historical use of the properties for agriculture are not expected to adversely affect the proposed tidal wetland and floodplain habitats.

The results of the pesticide and herbicide analyses also indicate that the application of pesticides and herbicides in the past, if any, would not have significantly contributed pesticide- and herbicide-associated metals to the soils at the Project site. Finally, given that the concentrations of pesticides and herbicides are below levels of concern, this indicates that the reported concentrations of some metals, including arsenic, copper, nickel, and selenium are not due to the application of pesticides and herbicides; which may include metals. Instead, the sampling results indicate that the local background concentrations of metals in this local area are higher than the regional background levels, likely due to the contribution to metals from sediment derived from serpentinite in the Coast Ranges to the west, as previously discussed. The proposed Project would introduce freshwater into the eastern portions of the Project, which would become new tidal wetland areas;[9] the western farmlands and managed wetlands will continue to be managed with occasional flood irrigation as is done now. The dissolution of metals from soil into water would require conditions conducive to dissolution. Dissolution of metals from soil into water is influenced by a variety of chemical, physical, and biological factors, such as those listed below.[10,11,12]

- Soil pH: Acidic conditions (low pH) increase the solubility of many metals (e.g., lead, cadmium, zinc), making them more likely to dissolve into water. Alkaline conditions (high pH) can cause metals to precipitate or bind to soil particles, reducing mobility.
- Redox Potential (Eh): In anaerobic (low oxygen) conditions, such as waterlogged soils, certain metals (like iron and manganese) become more soluble. In aerobic (high oxygen) conditions, metals may oxidize and form insoluble compounds.
- Soil Texture and Composition: Clay and organic-rich soils tend to bind metals more strongly than sandy soils. The soils at the Project site are mostly composed of clay and silt and include organic content.

As previously discussed, soil at the Project site does not appear to be susceptible to becoming acidic. Once freshwater tidal connectivity is established, freshwater would circulate through the new tidal wetland areas of the Project site, preventing the formation of areas of stagnant water (i.e., reducing conditions). ESA has conducted hydraulic analysis to confirm that the new tidal wetland areas would experience tidal exchange similar to the existing tide range in the Toe Drain

9 ESA. *Tide's End Multibenefit Restoration Project Ecohydrology and Hydraulics Modeling Analysis Report (30%).* Report Prepared for EIP III Credit Co., LLC. January 2025.
10 Alloway, Brian J., 2013. *Heavy Metals in Soils: Trace Metals and Metalloids in Soils and their Bioavailability*.
11 Water, Air, & Soil Pollution. 2020. *Natural and Human Factors Affect the Distribution of Soil Heavy Metal Pollution: A Review*. Volume 231, Article 350.
12 Plant and Soil, 1991. *Solubility and Dissolution of Iron Oxides*. January.

channel.[13] This tidal exchange is expected to maintain aerobic conditions within the tidal wetland areas of the site. Soils at the Project site were observed to be clayey and include organic materials, which would promote the retention of metals. Consequently, the proposed Project would maintain conditions that would be less susceptible to the dissolution of metals from soil into water.

Finally, note that the proposed Project does not include the import or export of onsite soil. Onsite soil will remain onsite and be excavated or graded to rearrange the drainage patterns within the proposed Project site.

Michael Burns, P.G.
Principal Geologist

[13] ESA. *Tide's End Multibenefit Restoration Project Ecohydrology and Hydraulics Modeling Analysis Report (30%).* Report Prepared for EIP III Credit Co., LLC. January 2025.

APPENDIX A

Laboratory Analytical Reports

McCampbell Analytical, Inc.
"When Quality Counts"

Analytical Report

WorkOrder: 2106609

Report Created for: Environmental Science Associates

2600 Capitol Avenue, Suite 200
Sacramento, CA 95816

Project Contact: Michael Burns
Project P.O.: D201801197.01 Task 3.6
Project: D201801197.01; Tides End

Project Received: 06/09/2021

Analytical Report reviewed & approved for release on 06/16/2021 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.

McCampbell Analytical, Inc.
"When Quality Counts"

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Glossary of Terms & Qualifier Definitions

Client: Environmental Science Associates
Project: D201801197.01; Tides End
WorkOrder: 2106609

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Environmental Science Associates
Project: D201801197.01; Tides End
WorkOrder: 2106609

Analytical Qualifiers

P	Agreement between quantitative confirmation results exceed method recommended limits.
S	Surrogate recovery outside accepted recovery limits.
a1	Sample diluted due to matrix interference.
a3	Sample diluted due to high organic content interfering with quantitative/or qualitative analysis.
c1	Surrogate recovery outside of the control limits due to the dilution of the sample.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.
F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/11/2021	**Analytical Method:**	SW8081A/8082
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	GC40 06112162.d	223322

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	06/11/2021 23:49
a-BHC	ND	0.00010	1	06/11/2021 23:49
b-BHC	ND	0.00030	1	06/11/2021 23:49
d-BHC	ND	0.00020	1	06/11/2021 23:49
g-BHC	ND	0.00010	1	06/11/2021 23:49
Chlordane (Technical)	ND	0.0025	1	06/11/2021 23:49
a-Chlordane	ND	0.00010	1	06/11/2021 23:49
g-Chlordane	ND	0.00010	1	06/11/2021 23:49
p,p-DDD	ND	0.00010	1	06/11/2021 23:49
p,p-DDE	**0.00023**	0.00010	1	06/11/2021 23:49
p,p-DDT	ND	0.00010	1	06/11/2021 23:49
Dieldrin	ND	0.00010	1	06/11/2021 23:49
Endosulfan I	ND	0.00010	1	06/11/2021 23:49
Endosulfan II	ND	0.00010	1	06/11/2021 23:49
Endosulfan sulfate	ND	0.00010	1	06/11/2021 23:49
Endrin	ND	0.00010	1	06/11/2021 23:49
Endrin aldehyde	ND	0.00010	1	06/11/2021 23:49
Endrin ketone	ND	0.00010	1	06/11/2021 23:49
Heptachlor	ND	0.00010	1	06/11/2021 23:49
Heptachlor epoxide	ND	0.00010	1	06/11/2021 23:49
Hexachlorobenzene	ND	0.0010	1	06/11/2021 23:49
Hexachlorocyclopentadiene	ND	0.0020	1	06/11/2021 23:49
Methoxychlor	ND	0.00020	1	06/11/2021 23:49
Toxaphene	ND	0.0050	1	06/11/2021 23:49
Aroclor1016	ND	0.0050	1	06/11/2021 23:49
Aroclor1221	ND	0.0050	1	06/11/2021 23:49
Aroclor1232	ND	0.0050	1	06/11/2021 23:49
Aroclor1242	ND	0.0050	1	06/11/2021 23:49
Aroclor1248	ND	0.0050	1	06/11/2021 23:49
Aroclor1254	ND	0.0050	1	06/11/2021 23:49
Aroclor1260	ND	0.0050	1	06/11/2021 23:49
PCBs, total	ND	0.0050	1	06/11/2021 23:49

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	89	20-145	06/11/2021 23:49

Analyst(s): CN

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/11/2021	**Analytical Method:**	SW8081A/8082
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	GC40 06112163.d	223322

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	06/12/2021 00:03
a-BHC	ND	0.00010	1	06/12/2021 00:03
b-BHC	ND	0.00030	1	06/12/2021 00:03
d-BHC	ND	0.00020	1	06/12/2021 00:03
g-BHC	ND	0.00010	1	06/12/2021 00:03
Chlordane (Technical)	ND	0.0025	1	06/12/2021 00:03
a-Chlordane	ND	0.00010	1	06/12/2021 00:03
g-Chlordane	ND	0.00010	1	06/12/2021 00:03
p,p-DDD	ND	0.00010	1	06/12/2021 00:03
p,p-DDE	**0.00067**	0.00010	1	06/12/2021 00:03
p,p-DDT	ND	0.00010	1	06/12/2021 00:03
Dieldrin	ND	0.00010	1	06/12/2021 00:03
Endosulfan I	ND	0.00010	1	06/12/2021 00:03
Endosulfan II	ND	0.00010	1	06/12/2021 00:03
Endosulfan sulfate	ND	0.00010	1	06/12/2021 00:03
Endrin	ND	0.00010	1	06/12/2021 00:03
Endrin aldehyde	ND	0.00010	1	06/12/2021 00:03
Endrin ketone	ND	0.00010	1	06/12/2021 00:03
Heptachlor	ND	0.00010	1	06/12/2021 00:03
Heptachlor epoxide	ND	0.00010	1	06/12/2021 00:03
Hexachlorobenzene	ND	0.0010	1	06/12/2021 00:03
Hexachlorocyclopentadiene	ND	0.0020	1	06/12/2021 00:03
Methoxychlor	ND	0.00020	1	06/12/2021 00:03
Toxaphene	ND	0.0050	1	06/12/2021 00:03
Aroclor1016	ND	0.0050	1	06/12/2021 00:03
Aroclor1221	ND	0.0050	1	06/12/2021 00:03
Aroclor1232	ND	0.0050	1	06/12/2021 00:03
Aroclor1242	ND	0.0050	1	06/12/2021 00:03
Aroclor1248	ND	0.0050	1	06/12/2021 00:03
Aroclor1254	ND	0.0050	1	06/12/2021 00:03
Aroclor1260	ND	0.0050	1	06/12/2021 00:03
PCBs, total	ND	0.0050	1	06/12/2021 00:03

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	100	20-145	06/12/2021 00:03

Analyst(s): CN

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/11/2021	**Analytical Method:**	SW8081A/8082
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	GC40 06112164.d	223322

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.00010	1	06/12/2021 00:17
a-BHC	ND		0.00010	1	06/12/2021 00:17
b-BHC	ND		0.00030	1	06/12/2021 00:17
d-BHC	ND		0.00020	1	06/12/2021 00:17
g-BHC	ND		0.00010	1	06/12/2021 00:17
Chlordane (Technical)	ND		0.0025	1	06/12/2021 00:17
a-Chlordane	ND		0.00010	1	06/12/2021 00:17
g-Chlordane	ND		0.00010	1	06/12/2021 00:17
p,p-DDD	ND		0.00010	1	06/12/2021 00:17
p,p-DDE	**0.00020**		0.00010	1	06/12/2021 00:17
p,p-DDT	ND		0.00010	1	06/12/2021 00:17
Dieldrin	ND		0.00010	1	06/12/2021 00:17
Endosulfan I	ND		0.00010	1	06/12/2021 00:17
Endosulfan II	ND		0.00010	1	06/12/2021 00:17
Endosulfan sulfate	ND		0.00010	1	06/12/2021 00:17
Endrin	ND		0.00010	1	06/12/2021 00:17
Endrin aldehyde	ND		0.00010	1	06/12/2021 00:17
Endrin ketone	ND		0.00010	1	06/12/2021 00:17
Heptachlor	**0.00012**	P	0.00010	1	06/12/2021 00:17
Heptachlor epoxide	ND		0.00010	1	06/12/2021 00:17
Hexachlorobenzene	ND		0.0010	1	06/12/2021 00:17
Hexachlorocyclopentadiene	ND		0.0020	1	06/12/2021 00:17
Methoxychlor	ND		0.00020	1	06/12/2021 00:17
Toxaphene	ND		0.0050	1	06/12/2021 00:17
Aroclor1016	ND		0.0050	1	06/12/2021 00:17
Aroclor1221	ND		0.0050	1	06/12/2021 00:17
Aroclor1232	ND		0.0050	1	06/12/2021 00:17
Aroclor1242	ND		0.0050	1	06/12/2021 00:17
Aroclor1248	ND		0.0050	1	06/12/2021 00:17
Aroclor1254	ND		0.0050	1	06/12/2021 00:17
Aroclor1260	ND		0.0050	1	06/12/2021 00:17
PCBs, total	ND		0.0050	1	06/12/2021 00:17

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	92	20-145	06/12/2021 00:17

Analyst(s): CN

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/11/2021	**Analytical Method:**	SW8081A/8082
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	GC40 06112165.d	223322

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	06/12/2021 00:31
a-BHC	ND	0.00010	1	06/12/2021 00:31
b-BHC	ND	0.00030	1	06/12/2021 00:31
d-BHC	ND	0.00020	1	06/12/2021 00:31
g-BHC	ND	0.00010	1	06/12/2021 00:31
Chlordane (Technical)	ND	0.0025	1	06/12/2021 00:31
a-Chlordane	ND	0.00010	1	06/12/2021 00:31
g-Chlordane	ND	0.00010	1	06/12/2021 00:31
p,p-DDD	ND	0.00010	1	06/12/2021 00:31
p,p-DDE	ND	0.00010	1	06/12/2021 00:31
p,p-DDT	ND	0.00010	1	06/12/2021 00:31
Dieldrin	ND	0.00010	1	06/12/2021 00:31
Endosulfan I	ND	0.00010	1	06/12/2021 00:31
Endosulfan II	ND	0.00010	1	06/12/2021 00:31
Endosulfan sulfate	ND	0.00010	1	06/12/2021 00:31
Endrin	ND	0.00010	1	06/12/2021 00:31
Endrin aldehyde	ND	0.00010	1	06/12/2021 00:31
Endrin ketone	ND	0.00010	1	06/12/2021 00:31
Heptachlor	ND	0.00010	1	06/12/2021 00:31
Heptachlor epoxide	ND	0.00010	1	06/12/2021 00:31
Hexachlorobenzene	ND	0.0010	1	06/12/2021 00:31
Hexachlorocyclopentadiene	ND	0.0020	1	06/12/2021 00:31
Methoxychlor	ND	0.00020	1	06/12/2021 00:31
Toxaphene	ND	0.0050	1	06/12/2021 00:31
Aroclor1016	ND	0.0050	1	06/12/2021 00:31
Aroclor1221	ND	0.0050	1	06/12/2021 00:31
Aroclor1232	ND	0.0050	1	06/12/2021 00:31
Aroclor1242	ND	0.0050	1	06/12/2021 00:31
Aroclor1248	ND	0.0050	1	06/12/2021 00:31
Aroclor1254	ND	0.0050	1	06/12/2021 00:31
Aroclor1260	ND	0.0050	1	06/12/2021 00:31
PCBs, total	ND	0.0050	1	06/12/2021 00:31

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	82	20-145	06/12/2021 00:31

Analyst(s): CN

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/11/2021	**Analytical Method:**	SW8081A/8082
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	2106609-005A	Soil	06/09/2021 11:44	GC40 06112176.d	223322

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.00010	1	06/12/2021 03:04
a-BHC	ND		0.00010	1	06/12/2021 03:04
b-BHC	**0.00033**	P	0.00030	1	06/12/2021 03:04
d-BHC	ND		0.00020	1	06/12/2021 03:04
g-BHC	ND		0.00010	1	06/12/2021 03:04
Chlordane (Technical)	ND		0.0025	1	06/12/2021 03:04
a-Chlordane	ND		0.00010	1	06/12/2021 03:04
g-Chlordane	ND		0.00010	1	06/12/2021 03:04
p,p-DDD	**0.00010**		0.00010	1	06/12/2021 03:04
p,p-DDE	**0.00046**		0.00010	1	06/12/2021 03:04
p,p-DDT	**0.00017**		0.00010	1	06/12/2021 03:04
Dieldrin	ND		0.00010	1	06/12/2021 03:04
Endosulfan I	ND		0.00010	1	06/12/2021 03:04
Endosulfan II	ND		0.00010	1	06/12/2021 03:04
Endosulfan sulfate	ND		0.00010	1	06/12/2021 03:04
Endrin	ND		0.00010	1	06/12/2021 03:04
Endrin aldehyde	ND		0.00010	1	06/12/2021 03:04
Endrin ketone	ND		0.00010	1	06/12/2021 03:04
Heptachlor	ND		0.00010	1	06/12/2021 03:04
Heptachlor epoxide	**0.00014**		0.00010	1	06/12/2021 03:04
Hexachlorobenzene	ND		0.0010	1	06/12/2021 03:04
Hexachlorocyclopentadiene	ND		0.0020	1	06/12/2021 03:04
Methoxychlor	ND		0.00020	1	06/12/2021 03:04
Toxaphene	ND		0.0050	1	06/12/2021 03:04
Aroclor1016	ND		0.0050	1	06/12/2021 03:04
Aroclor1221	ND		0.0050	1	06/12/2021 03:04
Aroclor1232	ND		0.0050	1	06/12/2021 03:04
Aroclor1242	ND		0.0050	1	06/12/2021 03:04
Aroclor1248	ND		0.0050	1	06/12/2021 03:04
Aroclor1254	ND		0.0050	1	06/12/2021 03:04
Aroclor1260	ND		0.0050	1	06/12/2021 03:04
PCBs, total	ND		0.0050	1	06/12/2021 03:04

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	75	20-145	06/12/2021 03:04

Analyst(s): CN

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	GC25 F0615211004.D	223157

Analytes	Result	RL	DF	Date Analyzed
Alachlor	ND	0.10	1	06/15/2021 15:32
Atrazine	ND	0.10	1	06/15/2021 15:32
Azinphos methyl (Guthion)	ND	0.10	1	06/15/2021 15:32
Bolstar (Sulprofos)	ND	0.10	1	06/15/2021 15:32
Chlorpyrifos	ND	0.10	1	06/15/2021 15:32
Coumaphos	ND	0.10	1	06/15/2021 15:32
Demeton	ND	0.10	1	06/15/2021 15:32
Diazinon	ND	0.10	1	06/15/2021 15:32
Dichlorvos (DDVP)	ND	0.10	1	06/15/2021 15:32
Dimethoate	ND	0.10	1	06/15/2021 15:32
Disulfoton (Di-Syston)	ND	0.10	1	06/15/2021 15:32
EPN	ND	0.10	1	06/15/2021 15:32
EPTC	ND	0.10	1	06/15/2021 15:32
Ethion	ND	0.10	1	06/15/2021 15:32
Ethoprop	ND	0.10	1	06/15/2021 15:32
Ethyl parathion	ND	0.10	1	06/15/2021 15:32
Fensulfothion	ND	0.10	1	06/15/2021 15:32
Fenthion	ND	0.10	1	06/15/2021 15:32
Fonofos	ND	0.10	1	06/15/2021 15:32
Malathion	ND	0.10	1	06/15/2021 15:32
Mevinphos (Phosdrin)	ND	0.10	1	06/15/2021 15:32
Molinate	ND	0.10	1	06/15/2021 15:32
Methyl parathion	ND	0.10	1	06/15/2021 15:32
Phorate (Thimet)	ND	0.10	1	06/15/2021 15:32
Prometon	ND	0.10	1	06/15/2021 15:32
Ronnel	ND	0.10	1	06/15/2021 15:32
Simazine	ND	0.10	1	06/15/2021 15:32
Stirofos (Tetrachlorvinphos)	ND	0.10	1	06/15/2021 15:32
Terbacil	ND	0.10	1	06/15/2021 15:32
Terbufos (Terbuphos)	ND	0.10	1	06/15/2021 15:32
Thiobencarb	ND	0.10	1	06/15/2021 15:32
Tokuthion (Prothiofos)	ND	0.10	1	06/15/2021 15:32
Trichloronate (Agritox)	ND	0.10	1	06/15/2021 15:32

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	GC25 F0615211004.D	223157

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
1-Bromo-2-Nitrobenzene	97	60-140		06/15/2021 15:32

Analyst(s): STA

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	GC25 F0615211005.D	223157

Analytes	Result	RL	DF	Date Analyzed
Alachlor	ND	0.10	1	06/15/2021 15:59
Atrazine	ND	0.10	1	06/15/2021 15:59
Azinphos methyl (Guthion)	ND	0.10	1	06/15/2021 15:59
Bolstar (Sulprofos)	ND	0.10	1	06/15/2021 15:59
Chlorpyrifos	ND	0.10	1	06/15/2021 15:59
Coumaphos	ND	0.10	1	06/15/2021 15:59
Demeton	ND	0.10	1	06/15/2021 15:59
Diazinon	ND	0.10	1	06/15/2021 15:59
Dichlorvos (DDVP)	ND	0.10	1	06/15/2021 15:59
Dimethoate	ND	0.10	1	06/15/2021 15:59
Disulfoton (Di-Syston)	ND	0.10	1	06/15/2021 15:59
EPN	ND	0.10	1	06/15/2021 15:59
EPTC	ND	0.10	1	06/15/2021 15:59
Ethion	ND	0.10	1	06/15/2021 15:59
Ethoprop	ND	0.10	1	06/15/2021 15:59
Ethyl parathion	ND	0.10	1	06/15/2021 15:59
Fensulfothion	ND	0.10	1	06/15/2021 15:59
Fenthion	ND	0.10	1	06/15/2021 15:59
Fonofos	ND	0.10	1	06/15/2021 15:59
Malathion	ND	0.10	1	06/15/2021 15:59
Mevinphos (Phosdrin)	ND	0.10	1	06/15/2021 15:59
Molinate	ND	0.10	1	06/15/2021 15:59
Methyl parathion	ND	0.10	1	06/15/2021 15:59
Phorate (Thimet)	ND	0.10	1	06/15/2021 15:59
Prometon	ND	0.10	1	06/15/2021 15:59
Ronnel	ND	0.10	1	06/15/2021 15:59
Simazine	ND	0.10	1	06/15/2021 15:59
Stirofos (Tetrachlorvinphos)	ND	0.10	1	06/15/2021 15:59
Terbacil	ND	0.10	1	06/15/2021 15:59
Terbufos (Terbuphos)	ND	0.10	1	06/15/2021 15:59
Thiobencarb	ND	0.10	1	06/15/2021 15:59
Tokuthion (Prothiofos)	ND	0.10	1	06/15/2021 15:59
Trichloronate (Agritox)	ND	0.10	1	06/15/2021 15:59

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	GC25 F0615211005.D	223157

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
1-Bromo-2-Nitrobenzene	97	60-140		06/15/2021 15:59

Analyst(s): STA

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	GC25 F0615211006.D	223157

Analytes	Result	RL	DF	Date Analyzed
Alachlor	ND	1.0	10	06/15/2021 16:26
Atrazine	ND	1.0	10	06/15/2021 16:26
Azinphos methyl (Guthion)	ND	1.0	10	06/15/2021 16:26
Bolstar (Sulprofos)	ND	1.0	10	06/15/2021 16:26
Chlorpyrifos	ND	1.0	10	06/15/2021 16:26
Coumaphos	ND	1.0	10	06/15/2021 16:26
Demeton	ND	1.0	10	06/15/2021 16:26
Diazinon	ND	1.0	10	06/15/2021 16:26
Dichlorvos (DDVP)	ND	1.0	10	06/15/2021 16:26
Dimethoate	ND	1.0	10	06/15/2021 16:26
Disulfoton (Di-Syston)	ND	1.0	10	06/15/2021 16:26
EPN	ND	1.0	10	06/15/2021 16:26
EPTC	ND	1.0	10	06/15/2021 16:26
Ethion	ND	1.0	10	06/15/2021 16:26
Ethoprop	ND	1.0	10	06/15/2021 16:26
Ethyl parathion	ND	1.0	10	06/15/2021 16:26
Fensulfothion	ND	1.0	10	06/15/2021 16:26
Fenthion	ND	1.0	10	06/15/2021 16:26
Fonofos	ND	1.0	10	06/15/2021 16:26
Malathion	ND	1.0	10	06/15/2021 16:26
Mevinphos (Phosdrin)	ND	1.0	10	06/15/2021 16:26
Molinate	ND	1.0	10	06/15/2021 16:26
Methyl parathion	ND	1.0	10	06/15/2021 16:26
Phorate (Thimet)	ND	1.0	10	06/15/2021 16:26
Prometon	ND	1.0	10	06/15/2021 16:26
Ronnel	ND	1.0	10	06/15/2021 16:26
Simazine	ND	1.0	10	06/15/2021 16:26
Stirofos (Tetrachlorvinphos)	ND	1.0	10	06/15/2021 16:26
Terbacil	ND	1.0	10	06/15/2021 16:26
Terbufos (Terbuphos)	ND	1.0	10	06/15/2021 16:26
Thiobencarb	ND	1.0	10	06/15/2021 16:26
Tokuthion (Prothiofos)	ND	1.0	10	06/15/2021 16:26
Trichloronate (Agritox)	ND	1.0	10	06/15/2021 16:26

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	GC25 F0615211006.D	223157

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
1-Bromo-2-Nitrobenzene	109	60-140		06/15/2021 16:26

Analyst(s): STA Analytical Comments: a1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	GC25 F0615211007.D	223157

Analytes	Result	RL	DF	Date Analyzed
Alachlor	ND	5.0	50	06/15/2021 16:53
Atrazine	ND	5.0	50	06/15/2021 16:53
Azinphos methyl (Guthion)	ND	5.0	50	06/15/2021 16:53
Bolstar (Sulprofos)	ND	5.0	50	06/15/2021 16:53
Chlorpyrifos	ND	5.0	50	06/15/2021 16:53
Coumaphos	ND	5.0	50	06/15/2021 16:53
Demeton	ND	5.0	50	06/15/2021 16:53
Diazinon	ND	5.0	50	06/15/2021 16:53
Dichlorvos (DDVP)	ND	5.0	50	06/15/2021 16:53
Dimethoate	ND	5.0	50	06/15/2021 16:53
Disulfoton (Di-Syston)	ND	5.0	50	06/15/2021 16:53
EPN	ND	5.0	50	06/15/2021 16:53
EPTC	ND	5.0	50	06/15/2021 16:53
Ethion	ND	5.0	50	06/15/2021 16:53
Ethoprop	ND	5.0	50	06/15/2021 16:53
Ethyl parathion	ND	5.0	50	06/15/2021 16:53
Fensulfothion	ND	5.0	50	06/15/2021 16:53
Fenthion	ND	5.0	50	06/15/2021 16:53
Fonofos	ND	5.0	50	06/15/2021 16:53
Malathion	ND	5.0	50	06/15/2021 16:53
Mevinphos (Phosdrin)	ND	5.0	50	06/15/2021 16:53
Molinate	ND	5.0	50	06/15/2021 16:53
Methyl parathion	ND	5.0	50	06/15/2021 16:53
Phorate (Thimet)	ND	5.0	50	06/15/2021 16:53
Prometon	ND	5.0	50	06/15/2021 16:53
Ronnel	ND	5.0	50	06/15/2021 16:53
Simazine	ND	5.0	50	06/15/2021 16:53
Stirofos (Tetrachlorvinphos)	ND	5.0	50	06/15/2021 16:53
Terbacil	ND	5.0	50	06/15/2021 16:53
Terbufos (Terbuphos)	ND	5.0	50	06/15/2021 16:53
Thiobencarb	ND	5.0	50	06/15/2021 16:53
Tokuthion (Prothiofos)	ND	5.0	50	06/15/2021 16:53
Trichloronate (Agritox)	ND	5.0	50	06/15/2021 16:53

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	GC25 F0615211007.D	223157

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**	
1-Bromo-2-Nitrobenzene	0	S	60-140	06/15/2021 16:53

Analyst(s): STA Analytical Comments: a1,c1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	2106609-005A	Soil	06/09/2021 11:44	GC25 F0615211008.D	223157

Analytes	Result	RL	DF	Date Analyzed
Alachlor	ND	2.0	20	06/15/2021 17:19
Atrazine	ND	2.0	20	06/15/2021 17:19
Azinphos methyl (Guthion)	ND	2.0	20	06/15/2021 17:19
Bolstar (Sulprofos)	ND	2.0	20	06/15/2021 17:19
Chlorpyrifos	ND	2.0	20	06/15/2021 17:19
Coumaphos	ND	2.0	20	06/15/2021 17:19
Demeton	ND	2.0	20	06/15/2021 17:19
Diazinon	ND	2.0	20	06/15/2021 17:19
Dichlorvos (DDVP)	ND	2.0	20	06/15/2021 17:19
Dimethoate	ND	2.0	20	06/15/2021 17:19
Disulfoton (Di-Syston)	ND	2.0	20	06/15/2021 17:19
EPN	ND	2.0	20	06/15/2021 17:19
EPTC	ND	2.0	20	06/15/2021 17:19
Ethion	ND	2.0	20	06/15/2021 17:19
Ethoprop	ND	2.0	20	06/15/2021 17:19
Ethyl parathion	ND	2.0	20	06/15/2021 17:19
Fensulfothion	ND	2.0	20	06/15/2021 17:19
Fenthion	ND	2.0	20	06/15/2021 17:19
Fonofos	ND	2.0	20	06/15/2021 17:19
Malathion	ND	2.0	20	06/15/2021 17:19
Mevinphos (Phosdrin)	ND	2.0	20	06/15/2021 17:19
Molinate	ND	2.0	20	06/15/2021 17:19
Methyl parathion	ND	2.0	20	06/15/2021 17:19
Phorate (Thimet)	ND	2.0	20	06/15/2021 17:19
Prometon	ND	2.0	20	06/15/2021 17:19
Ronnel	ND	2.0	20	06/15/2021 17:19
Simazine	ND	2.0	20	06/15/2021 17:19
Stirofos (Tetrachlorvinphos)	ND	2.0	20	06/15/2021 17:19
Terbacil	ND	2.0	20	06/15/2021 17:19
Terbufos (Terbuphos)	ND	2.0	20	06/15/2021 17:19
Thiobencarb	ND	2.0	20	06/15/2021 17:19
Tokuthion (Prothiofos)	ND	2.0	20	06/15/2021 17:19
Trichloronate (Agritox)	ND	2.0	20	06/15/2021 17:19

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3550B
Date Prepared:	06/10/2021	**Analytical Method:**	SW8270C
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	2106609-005A	Soil	06/09/2021 11:44	GC25 F0615211008.D	223157

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**	
1-Bromo-2-Nitrobenzene	0	S	60-140	06/15/2021 17:19

Analyst(s): STA Analytical Comments: a1,c1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW8151A
Date Prepared:	06/11/2021	**Analytical Method:**	SW8151A
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	GC15A 06142125.D	223251

Analytes	Result	RL	DF	Date Analyzed
Acifluorfen	ND	0.050	5	06/14/2021 23:49
Bentazon	ND	0.050	5	06/14/2021 23:49
Chloramben	ND	0.050	5	06/14/2021 23:49
2,4-D (Dichlorophenoxyacetic acid)	ND	0.050	5	06/14/2021 23:49
2,4-DB	ND	0.050	5	06/14/2021 23:49
Dalapon	ND	0.050	5	06/14/2021 23:49
DCPA (mono & diacid)	ND	0.050	5	06/14/2021 23:49
Dicamba	ND	0.050	5	06/14/2021 23:49
3,5-Dichlorobenzoic Acid	ND	0.050	5	06/14/2021 23:49
Dichloroprop	ND	0.050	5	06/14/2021 23:49
Dinoseb (DNBP)	ND	0.050	5	06/14/2021 23:49
MCPA	ND	5.0	5	06/14/2021 23:49
MCPP	ND	5.0	5	06/14/2021 23:49
4-Nitrophenol	ND	0.050	5	06/14/2021 23:49
Pentachlorophenol (PCP)	ND	0.050	5	06/14/2021 23:49
Picloram	ND	0.050	5	06/14/2021 23:49
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.050	5	06/14/2021 23:49
2,4,5-TP (Silvex)	ND	0.050	5	06/14/2021 23:49

Surrogates	REC (%)	Limits	
DCAA	107	60-140	06/14/2021 23:49

Analyst(s): DP

Analytical Comments: a3

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW8151A
Date Prepared:	06/11/2021	**Analytical Method:**	SW8151A
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	GC15A 06142128.D	223251

Analytes	Result	RL	DF	Date Analyzed
Acifluorfen	ND	0.050	5	06/15/2021 01:04
Bentazon	ND	0.050	5	06/15/2021 01:04
Chloramben	ND	0.050	5	06/15/2021 01:04
2,4-D (Dichlorophenoxyacetic acid)	ND	0.050	5	06/15/2021 01:04
2,4-DB	ND	0.050	5	06/15/2021 01:04
Dalapon	ND	0.050	5	06/15/2021 01:04
DCPA (mono & diacid)	ND	0.050	5	06/15/2021 01:04
Dicamba	ND	0.050	5	06/15/2021 01:04
3,5-Dichlorobenzoic Acid	ND	0.050	5	06/15/2021 01:04
Dichloroprop	ND	0.050	5	06/15/2021 01:04
Dinoseb (DNBP)	ND	0.050	5	06/15/2021 01:04
MCPA	ND	5.0	5	06/15/2021 01:04
MCPP	ND	5.0	5	06/15/2021 01:04
4-Nitrophenol	ND	0.050	5	06/15/2021 01:04
Pentachlorophenol (PCP)	ND	0.050	5	06/15/2021 01:04
Picloram	ND	0.050	5	06/15/2021 01:04
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.050	5	06/15/2021 01:04
2,4,5-TP (Silvex)	ND	0.050	5	06/15/2021 01:04

Surrogates	REC (%)	Limits	
DCAA	116	60-140	06/15/2021 01:04

Analyst(s): DP

Analytical Comments: a3

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW8151A
Date Prepared:	06/11/2021	**Analytical Method:**	SW8151A
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	GC15A 06112175.D	223251

Analytes	Result	RL	DF	Date Analyzed
Acifluorfen	ND	0.10	10	06/12/2021 16:22
Bentazon	ND	0.10	10	06/12/2021 16:22
Chloramben	ND	0.10	10	06/12/2021 16:22
2,4-D (Dichlorophenoxyacetic acid)	ND	0.10	10	06/12/2021 16:22
2,4-DB	ND	0.10	10	06/12/2021 16:22
Dalapon	ND	0.10	10	06/12/2021 16:22
DCPA (mono & diacid)	ND	0.10	10	06/12/2021 16:22
Dicamba	ND	0.10	10	06/12/2021 16:22
3,5-Dichlorobenzoic Acid	ND	0.10	10	06/12/2021 16:22
Dichloroprop	ND	0.10	10	06/12/2021 16:22
Dinoseb (DNBP)	ND	0.10	10	06/12/2021 16:22
MCPA	ND	10	10	06/12/2021 16:22
MCPP	ND	10	10	06/12/2021 16:22
4-Nitrophenol	ND	0.10	10	06/12/2021 16:22
Pentachlorophenol (PCP)	ND	0.10	10	06/12/2021 16:22
Picloram	ND	0.10	10	06/12/2021 16:22
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.10	10	06/12/2021 16:22
2,4,5-TP (Silvex)	ND	0.10	10	06/12/2021 16:22

Surrogates	REC (%)	Limits	
DCAA	105	60-140	06/12/2021 16:22

Analyst(s): DP

Analytical Comments: a3

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW8151A
Date Prepared:	06/11/2021	**Analytical Method:**	SW8151A
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	GC15A 06142129.D	223251

Analytes	Result	RL	DF	Date Analyzed
Acifluorfen	ND	0.050	5	06/15/2021 01:28
Bentazon	ND	0.050	5	06/15/2021 01:28
Chloramben	ND	0.050	5	06/15/2021 01:28
2,4-D (Dichlorophenoxyacetic acid)	ND	0.050	5	06/15/2021 01:28
2,4-DB	ND	0.050	5	06/15/2021 01:28
Dalapon	ND	0.050	5	06/15/2021 01:28
DCPA (mono & diacid)	ND	0.050	5	06/15/2021 01:28
Dicamba	ND	0.050	5	06/15/2021 01:28
3,5-Dichlorobenzoic Acid	ND	0.050	5	06/15/2021 01:28
Dichloroprop	ND	0.050	5	06/15/2021 01:28
Dinoseb (DNBP)	ND	0.050	5	06/15/2021 01:28
MCPA	ND	5.0	5	06/15/2021 01:28
MCPP	ND	5.0	5	06/15/2021 01:28
4-Nitrophenol	ND	0.050	5	06/15/2021 01:28
Pentachlorophenol (PCP)	ND	0.050	5	06/15/2021 01:28
Picloram	ND	0.050	5	06/15/2021 01:28
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.050	5	06/15/2021 01:28
2,4,5-TP (Silvex)	ND	0.050	5	06/15/2021 01:28

Surrogates	REC (%)	Limits	
DCAA	115	60-140	06/15/2021 01:28

Analyst(s): DP Analytical Comments: a3

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW8151A
Date Prepared:	06/11/2021	**Analytical Method:**	SW8151A
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	2106609-005A	Soil	06/09/2021 11:44	GC15A 06112177.D	223251

Analytes	Result	RL	DF	Date Analyzed
Acifluorfen	ND	0.10	10	06/12/2021 17:13
Bentazon	ND	0.10	10	06/12/2021 17:13
Chloramben	ND	0.10	10	06/12/2021 17:13
2,4-D (Dichlorophenoxyacetic acid)	ND	0.10	10	06/12/2021 17:13
2,4-DB	ND	0.10	10	06/12/2021 17:13
Dalapon	ND	0.10	10	06/12/2021 17:13
DCPA (mono & diacid)	ND	0.10	10	06/12/2021 17:13
Dicamba	ND	0.10	10	06/12/2021 17:13
3,5-Dichlorobenzoic Acid	ND	0.10	10	06/12/2021 17:13
Dichloroprop	ND	0.10	10	06/12/2021 17:13
Dinoseb (DNBP)	ND	0.10	10	06/12/2021 17:13
MCPA	ND	10	10	06/12/2021 17:13
MCPP	ND	10	10	06/12/2021 17:13
4-Nitrophenol	ND	0.10	10	06/12/2021 17:13
Pentachlorophenol (PCP)	ND	0.10	10	06/12/2021 17:13
Picloram	ND	0.10	10	06/12/2021 17:13
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.10	10	06/12/2021 17:13
2,4,5-TP (Silvex)	ND	0.10	10	06/12/2021 17:13

Surrogates	REC (%)	Limits	
DCAA	80	60-140	06/12/2021 17:13

Analyst(s): DP

Analytical Comments: a3

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3050B
Date Prepared:	06/09/2021	**Analytical Method:**	SW6020
Project:	D201801197.01; Tides End	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	ICP-MS5 202SMPL.d	223122

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	2.5	5	06/10/2021 15:09
Arsenic	**9.7**	2.5	5	06/10/2021 15:09
Barium	**280**	25	5	06/10/2021 15:09
Beryllium	ND	2.5	5	06/10/2021 15:09
Cadmium	ND	2.5	5	06/10/2021 15:09
Chromium	**130**	2.5	5	06/10/2021 15:09
Cobalt	**26**	2.5	5	06/10/2021 15:09
Copper	**48**	2.5	5	06/10/2021 15:09
Lead	**11**	2.5	5	06/10/2021 15:09
Mercury	ND	0.25	5	06/10/2021 15:09
Molybdenum	ND	2.5	5	06/10/2021 15:09
Nickel	**210**	2.5	5	06/10/2021 15:09
Selenium	ND	2.5	5	06/10/2021 15:09
Silver	ND	2.5	5	06/10/2021 15:09
Thallium	ND	2.5	5	06/10/2021 15:09
Vanadium	**97**	2.5	5	06/10/2021 15:09
Zinc	**90**	25	5	06/10/2021 15:09

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/10/2021 15:09

Analyst(s): WV Analytical Comments: a1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3050B
Date Prepared:	06/09/2021	**Analytical Method:**	SW6020
Project:	D201801197.01; Tides End	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	ICP-MS5 205SMPL.d	223122

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	2.5	5	06/10/2021 15:19
Arsenic	**12**	2.5	5	06/10/2021 15:19
Barium	**320**	25	5	06/10/2021 15:19
Beryllium	ND	2.5	5	06/10/2021 15:19
Cadmium	ND	2.5	5	06/10/2021 15:19
Chromium	**130**	2.5	5	06/10/2021 15:19
Cobalt	**31**	2.5	5	06/10/2021 15:19
Copper	**59**	2.5	5	06/10/2021 15:19
Lead	**12**	2.5	5	06/10/2021 15:19
Mercury	ND	0.25	5	06/10/2021 15:19
Molybdenum	ND	2.5	5	06/10/2021 15:19
Nickel	**250**	2.5	5	06/10/2021 15:19
Selenium	**3.0**	2.5	5	06/10/2021 15:19
Silver	ND	2.5	5	06/10/2021 15:19
Thallium	ND	2.5	5	06/10/2021 15:19
Vanadium	**110**	2.5	5	06/10/2021 15:19
Zinc	**110**	25	5	06/10/2021 15:19

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/10/2021 15:19

Analyst(s): AL Analytical Comments: a1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3050B
Date Prepared:	06/09/2021	**Analytical Method:**	SW6020
Project:	D201801197.01; Tides End	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	ICP-MS5 206SMPL.d	223122

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	2.5	5	06/10/2021 15:23
Arsenic	**9.6**	2.5	5	06/10/2021 15:23
Barium	**250**	25	5	06/10/2021 15:23
Beryllium	ND	2.5	5	06/10/2021 15:23
Cadmium	ND	2.5	5	06/10/2021 15:23
Chromium	**160**	2.5	5	06/10/2021 15:23
Cobalt	**23**	2.5	5	06/10/2021 15:23
Copper	**48**	2.5	5	06/10/2021 15:23
Lead	**11**	2.5	5	06/10/2021 15:23
Mercury	**0.44**	0.25	5	06/10/2021 15:23
Molybdenum	ND	2.5	5	06/10/2021 15:23
Nickel	**280**	2.5	5	06/10/2021 15:23
Selenium	**2.5**	2.5	5	06/10/2021 15:23
Silver	ND	2.5	5	06/10/2021 15:23
Thallium	ND	2.5	5	06/10/2021 15:23
Vanadium	**100**	2.5	5	06/10/2021 15:23
Zinc	**90**	25	5	06/10/2021 15:23

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/10/2021 15:23

Analyst(s): AL Analytical Comments: a1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3050B
Date Prepared:	06/09/2021	**Analytical Method:**	SW6020
Project:	D201801197.01; Tides End	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	ICP-MS5 174SMPL.d	223122

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.52**	0.50	1	06/10/2021 13:32
Arsenic	**8.2**	0.50	1	06/10/2021 13:32
Barium	**310**	5.0	1	06/10/2021 13:32
Beryllium	**0.56**	0.50	1	06/10/2021 13:32
Cadmium	ND	0.50	1	06/10/2021 13:32
Chromium	**100**	0.50	1	06/10/2021 13:32
Cobalt	**20**	0.50	1	06/10/2021 13:32
Copper	**41**	0.50	1	06/10/2021 13:32
Lead	**7.9**	0.50	1	06/10/2021 13:32
Mercury	**0.12**	0.050	1	06/10/2021 13:32
Molybdenum	ND	0.50	1	06/10/2021 13:32
Nickel	**190**	0.50	1	06/10/2021 13:32
Selenium	**3.2**	0.50	1	06/10/2021 13:32
Silver	ND	0.50	1	06/10/2021 13:32
Thallium	ND	0.50	1	06/10/2021 13:32
Vanadium	**78**	0.50	1	06/10/2021 13:32
Zinc	**71**	5.0	1	06/10/2021 13:32

Surrogates	REC (%)	Limits	
Terbium	96	70-130	06/10/2021 13:32

Analyst(s): WV

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3050B
Date Prepared:	06/09/2021	**Analytical Method:**	SW6020
Project:	D201801197.01; Tides End	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	2106609-005A	Soil	06/09/2021 11:44	ICP-MS5 207SMPL.d	223122

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	2.5	5	06/10/2021 15:26
Arsenic	**7.4**	2.5	5	06/10/2021 15:26
Barium	**270**	25	5	06/10/2021 15:26
Beryllium	ND	2.5	5	06/10/2021 15:26
Cadmium	ND	2.5	5	06/10/2021 15:26
Chromium	**120**	2.5	5	06/10/2021 15:26
Cobalt	**24**	2.5	5	06/10/2021 15:26
Copper	**59**	2.5	5	06/10/2021 15:26
Lead	**11**	2.5	5	06/10/2021 15:26
Mercury	ND	0.25	5	06/10/2021 15:26
Molybdenum	ND	2.5	5	06/10/2021 15:26
Nickel	**180**	2.5	5	06/10/2021 15:26
Selenium	**2.5**	2.5	5	06/10/2021 15:26
Silver	ND	2.5	5	06/10/2021 15:26
Thallium	ND	2.5	5	06/10/2021 15:26
Vanadium	**96**	2.5	5	06/10/2021 15:26
Zinc	**120**	25	5	06/10/2021 15:26

Surrogates	REC (%)	Limits	
Terbium	97	70-130	06/10/2021 15:26

Analyst(s): AL

Analytical Comments: a1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3050B
Date Prepared:	06/09/2021	**Analytical Method:**	SW6020
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	ICP-MS5 202SMPLA.D	223122

Analytes	Result	RL	DF	Date Analyzed
Iron	**40,000**	250	5	06/10/2021 15:09
Manganese	**930**	250	5	06/10/2021 15:09

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/10/2021 15:09

Analyst(s): WV Analytical Comments: a1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	ICP-MS5 205SMPLA.D	223122

Analytes	Result	RL	DF	Date Analyzed
Iron	**48,000**	250	5	06/10/2021 15:19
Manganese	**1100**	250	5	06/10/2021 15:19

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/10/2021 15:19

Analyst(s): AL Analytical Comments: a1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	ICP-MS5 206SMPLA.D	223122

Analytes	Result	RL	DF	Date Analyzed
Iron	**44,000**	250	5	06/10/2021 15:23
Manganese	**660**	250	5	06/10/2021 15:23

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/10/2021 15:23

Analyst(s): AL Analytical Comments: a1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW3050B
Date Prepared:	06/09/2021	**Analytical Method:**	SW6020
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	ICP-MS5 174SMPLA.D	223122

Analytes	Result	RL	DF	Date Analyzed
Iron	**32,000**	50	1	06/10/2021 13:32
Manganese	**780**	50	1	06/10/2021 13:32

Surrogates	REC (%)	Limits	
Terbium	96	70-130	06/10/2021 13:32

Analyst(s): WV

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	2106609-005A	Soil	06/09/2021 11:44	ICP-MS5 207SMPLA.D	223122

Analytes	Result	RL	DF	Date Analyzed
Iron	**44,000**	250	5	06/10/2021 15:26
Manganese	**720**	250	5	06/10/2021 15:26

Surrogates	REC (%)	Limits	
Terbium	97	70-130	06/10/2021 15:26

Analyst(s): AL Analytical Comments: a1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW9030B/E376.2
Date Prepared:	06/14/2021	**Analytical Method:**	SM4500 S^{-2} D
Project:	D201801197.01; Tides End	**Unit:**	mg/Kg

Acid Soluble Sulfide - S

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	SPECTROPHOTOMETER	223406

Analytes	Result	RL	DF	Date Analyzed
Acid Soluble Sulfide - S	**1.0**	1.0	1	06/14/2021 13:28

Analyst(s): NYG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	SPECTROPHOTOMETER	223406

Analytes	Result	RL	DF	Date Analyzed
Acid Soluble Sulfide - S	ND	1.0	1	06/14/2021 13:30

Analyst(s): NYG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	SPECTROPHOTOMETER	223406

Analytes	Result	RL	DF	Date Analyzed
Acid Soluble Sulfide - S	ND	1.0	1	06/14/2021 13:32

Analyst(s): NYG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	SPECTROPHOTOMETER	223406

Analytes	Result	RL	DF	Date Analyzed
Acid Soluble Sulfide - S	**1.0**	1.0	1	06/14/2021 13:34

Analyst(s): NYG

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW9030B/E376.2
Date Prepared:	06/14/2021	**Analytical Method:**	SM4500 S^{-2} D
Project:	D201801197.01; Tides End	**Unit:**	mg/Kg

Acid Soluble Sulfide - S

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	2106609-005A	Soil	06/09/2021 11:44	SPECTROPHOTOMETER	223406

Analytes	Result	RL	DF	Date Analyzed
Acid Soluble Sulfide - S	ND	1.0	1	06/14/2021 13:36

Analyst(s): NYG

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW9060A
Date Prepared:	06/11/2021	**Analytical Method:**	SW9060A
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Total Organic Carbon (TOC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2106609-001A	Soil	06/09/2021 09:20	WC_CNS F061121-1_0927_16	223267

Analytes	Result	RL	DF	Date Analyzed
TOC	**8500**	210	1	06/11/2021 17:45

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2106609-002A	Soil	06/09/2021 10:00	WC_CNS F061121-1_0927_19	223267

Analytes	Result	RL	DF	Date Analyzed
TOC	**7500**	220	1	06/11/2021 18:31

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2106609-003A	Soil	06/09/2021 10:45	WC_CNS F061121-1_0927_20	223267

Analytes	Result	RL	DF	Date Analyzed
TOC	**18,000**	220	1	06/11/2021 18:57

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-4	2106609-004A	Soil	06/09/2021 11:01	WC_CNS F061121-1_0927_21	223267

Analytes	Result	RL	DF	Date Analyzed
TOC	**7900**	540	1	06/11/2021 19:09

Analyst(s): RB

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Received:	06/09/2021 14:10	**Extraction Method:**	SW9060A
Date Prepared:	06/11/2021	**Analytical Method:**	SW9060A
Project:	D201801197.01; Tides End	**Unit:**	mg/kg

Total Organic Carbon (TOC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-5	**2106609-005A**	**Soil**	**06/09/2021 11:44**	**WC_CNS F061121-1_0927_22**	**223267**

Analytes	Result	RL	DF	Date Analyzed
TOC	**20,000**	230	1	06/11/2021 19:35

Analyst(s): RB

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/11/2021	**BatchID:**	223322
Date Analyzed:	06/11/2021	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC40	**Analytical Method:**	SW8081A/8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223322

QC Summary Report for SW8081A/8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.0000360	0.000100	-	-	-
a-BHC	ND	0.0000250	0.000100	-	-	-
b-BHC	ND	0.000250	0.000300	-	-	-
d-BHC	ND	0.000130	0.000200	-	-	-
g-BHC	ND	0.0000660	0.000100	-	-	-
Chlordane (Technical)	ND	0.000430	0.00250	-	-	-
a-Chlordane	ND	0.0000950	0.000100	-	-	-
g-Chlordane	ND	0.0000470	0.000100	-	-	-
p,p-DDD	ND	0.0000430	0.000100	-	-	-
p,p-DDE	ND	0.0000940	0.000100	-	-	-
p,p-DDT	ND	0.0000920	0.000100	-	-	-
Dieldrin	ND	0.0000610	0.000100	-	-	-
Endosulfan I	ND	0.0000480	0.000100	-	-	-
Endosulfan II	ND	0.0000760	0.000100	-	-	-
Endosulfan sulfate	ND	0.0000780	0.000100	-	-	-
Endrin	ND	0.0000350	0.000100	-	-	-
Endrin aldehyde	ND	0.0000670	0.000100	-	-	-
Endrin ketone	ND	0.0000840	0.000100	-	-	-
Heptachlor	ND	0.0000400	0.000100	-	-	-
Heptachlor epoxide	ND	0.0000540	0.000100	-	-	-
Hexachlorobenzene	ND	0.000110	0.00100	-	-	-
Hexachlorocyclopentadiene	ND	0.000340	0.00200	-	-	-
Methoxychlor	ND	0.000130	0.000200	-	-	-
Toxaphene	ND	0.00340	0.00500	-	-	-
Aroclor1016	ND	0.00200	0.00500	-	-	-
Aroclor1221	ND	0.00220	0.00500	-	-	-
Aroclor1232	ND	0.00220	0.00500	-	-	-
Aroclor1242	ND	0.00220	0.00500	-	-	-
Aroclor1248	ND	0.00220	0.00500	-	-	-
Aroclor1254	ND	0.00220	0.00500	-	-	-
Aroclor1260	ND	0.00220	0.00500	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.00448			0.005	90	28-170

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/11/2021	**BatchID:**	223322
Date Analyzed:	06/11/2021	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC40	**Analytical Method:**	SW8081A/8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223322

QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.00351	0.00362	0.0050	70	72	31-155	3.03	20
a-BHC	0.00358	0.00371	0.0050	72	74	32-160	3.55	20
b-BHC	0.00406	0.00423	0.0050	81	85	44-149	4.04	20
d-BHC	0.00397	0.00423	0.0050	79	85	37-157	6.27	20
g-BHC	0.00367	0.00381	0.0050	73	76	43-154	3.61	20
a-Chlordane	0.00361	0.00380	0.0050	72	76	39-150	5.27	20
g-Chlordane	0.00354	0.00374	0.0050	71	75	39-151	5.56	20
p,p-DDD	0.00430	0.00460	0.0050	86	92	30-158	6.89	20
p,p-DDE	0.00376	0.00396	0.0050	75	79	47-149	5.13	20
p,p-DDT	0.00397	0.00424	0.0050	79	85	56-166	6.66	20
Dieldrin	0.00436	0.00466	0.0050	87	93	50-163	6.75	20
Endosulfan I	0.00386	0.00421	0.0050	77	84	45-159	8.51	20
Endosulfan II	0.00411	0.00439	0.0050	82	88	41-155	6.51	20
Endosulfan sulfate	0.00392	0.00425	0.0050	78	85	45-156	7.89	20
Endrin	0.00439	0.00471	0.0050	88	94	54-154	7.04	20
Endrin aldehyde	0.00379	0.00409	0.0050	76	82	27-159	7.52	20
Endrin ketone	0.00418	0.00452	0.0050	84	90	40-147	7.80	20
Heptachlor	0.00380	0.00394	0.0050	76	79	52-165	3.55	20
Heptachlor epoxide	0.00358	0.00382	0.0050	72	76	46-145	6.41	20
Hexachlorobenzene	0.00326	0.00339	0.0050	65	68	22-156	3.78	20
Hexachlorocyclopentadiene	0.00234	0.00249	0.0050	47	50	43-173	6.20	20
Methoxychlor	0.00424	0.00452	0.0050	85	90	49-150	6.43	20
Aroclor1016	0.0160	0.0103	0.015	107	69	49-120	42.8,F2	20
Aroclor1260	0.0102	0.00958	0.015	68	64	48-160	6.08	20
Surrogate Recovery								
Decachlorobiphenyl	0.00466	0.00465	0.0050	93	93	28-170	0.145	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/10/2021	**BatchID:**	223157
Date Analyzed:	06/15/2021	**Extraction Method:**	SW3550B
Instrument:	GC25	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223157 2106609-001AMS/MSD

QC Summary Report for SW8270C (ON/P Pesticides)

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Alachlor	ND	0.0470	0.100	-	-	-
Atrazine	ND	0.0560	0.100	-	-	-
Azinphos methyl (Guthion)	ND	0.0720	0.100	-	-	-
Bolstar (Sulprofos)	ND	0.0490	0.100	-	-	-
Chlorpyrifos	ND	0.0510	0.100	-	-	-
Coumaphos	ND	0.0640	0.100	-	-	-
Demeton	ND	0.0490	0.100	-	-	-
Diazinon	ND	0.0450	0.100	-	-	-
Dichlorvos (DDVP)	ND	0.0440	0.100	-	-	-
Dimethoate	ND	0.0370	0.100	-	-	-
Disulfoton (Di-Syston)	ND	0.0460	0.100	-	-	-
EPN	ND	0.0520	0.100	-	-	-
EPTC	ND	0.0370	0.100	-	-	-
Ethion	ND	0.0490	0.100	-	-	-
Ethoprop	ND	0.0400	0.100	-	-	-
Ethyl parathion	ND	0.0470	0.100	-	-	-
Fensulfothion	ND	0.0640	0.100	-	-	-
Fenthion	ND	0.0420	0.100	-	-	-
Fonofos	ND	0.0410	0.100	-	-	-
Malathion	ND	0.0460	0.100	-	-	-
Mevinphos (Phosdrin)	ND	0.0650	0.100	-	-	-
Molinate	ND	0.0380	0.100	-	-	-
Methyl parathion	ND	0.0420	0.100	-	-	-
Phorate (Thimet)	ND	0.0430	0.100	-	-	-
Prometon	ND	0.0490	0.100	-	-	-
Ronnel	ND	0.0430	0.100	-	-	-
Simazine	ND	0.0600	0.100	-	-	-
Stirofos (Tetrachlorvinphos)	ND	0.0490	0.100	-	-	-
Terbacil	ND	0.0500	0.100	-	-	-
Terbufos (Terbuphos)	ND	0.0450	0.100	-	-	-
Thiobencarb	ND	0.0390	0.100	-	-	-
Tokuthion (Prothiofos)	ND	0.0400	0.100	-	-	-
Trichloronate (Agritox)	ND	0.0480	0.100	-	-	-
Surrogate Recovery						
1-Bromo-2-Nitrobenzene	0.188			0.2	94	60-140

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/10/2021	**BatchID:**	223157
Date Analyzed:	06/15/2021	**Extraction Method:**	SW3550B
Instrument:	GC25	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223157 2106609-001AMS/MSD

QC Summary Report for SW8270C (ON/P Pesticides)

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Alachlor	0.618	0.606	0.60	103	101	50-160	2.08	20
Atrazine	0.616	0.594	0.60	103	99	50-160	3.64	20
Azinphos methyl (Guthion)	0.539	0.524	0.60	90	87	60-140	2.85	20
Bolstar (Sulprofos)	0.624	0.613	0.60	104	102	60-140	1.67	20
Chlorpyrifos	0.596	0.623	0.60	99	104	60-140	4.40	20
Coumaphos	0.515	0.519	0.60	86	87	60-140	0.839	20
Demeton	0.576	0.558	0.60	96	93	60-140	3.34	20
Diazinon	0.602	0.609	0.60	100	101	60-140	1.11	20
Dichlorvos (DDVP)	0.600	0.592	0.60	100	99	60-140	1.28	20
Dimethoate	0.657	0.641	0.60	110	107	60-140	2.49	20
Disulfoton (Di-Syston)	0.614	0.592	0.60	102	99	50-160	3.63	20
EPN	0.554	0.550	0.60	92	92	60-140	0.681	20
EPTC	0.588	0.592	0.60	98	99	60-140	0.714	20
Ethion	0.597	0.623	0.60	100	104	60-140	4.23	20
Ethoprop	0.597	0.566	0.60	99	94	60-140	5.35	20
Ethyl parathion	0.602	0.602	0.60	100	100	60-140	0.00631	20
Fensulfothion	0.555	0.530	0.60	93	88	60-140	4.56	20
Fenthion	0.607	0.593	0.60	101	99	50-160	2.37	20
Fonofos	0.629	0.629	0.60	105	105	60-140	0.00382	20
Malathion	0.609	0.594	0.60	101	99	60-140	2.51	20
Mevinphos (Phosdrin)	0.572	0.578	0.60	95	96	60-140	1.12	20
Molinate	0.591	0.604	0.60	98	101	60-140	2.28	20
Methyl parathion	0.565	0.567	0.60	94	95	50-160	0.356	20
Phorate (Thimet)	0.598	0.602	0.60	100	100	60-140	0.618	20
Prometon	0.620	0.605	0.60	103	101	60-140	2.51	20
Ronnel	0.598	0.606	0.60	100	101	60-140	1.45	20
Simazine	0.599	0.594	0.60	100	99	60-140	0.843	20
Stirofos (Tetrachlorvinphos)	0.544	0.542	0.60	91	90	60-140	0.236	20
Terbacil	0.614	0.595	0.60	102	99	60-140	3.08	20
Terbufos (Terbuphos)	0.597	0.592	0.60	99	99	60-140	0.739	20
Thiobencarb	0.627	0.614	0.60	104	102	60-140	2.12	20
Tokuthion (Prothiofos)	0.583	0.583	0.60	97	97	60-140	0.0281	20
Trichloronate (Agritox)	0.610	0.610	0.60	102	102	60-140	0.0220	20
Surrogate Recovery								
1-Bromo-2-Nitrobenzene	0.206	0.184	0.20	103	92	60-140	11.4	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/10/2021	**BatchID:**	223157
Date Analyzed:	06/15/2021	**Extraction Method:**	SW3550B
Instrument:	GC25	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223157 2106609-001AMS/MSD

QC Summary Report for SW8270C (ON/P Pesticides)

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Alachlor	1	0.594	0.578	0.60	ND	99	96	60-140	2.69	20
Atrazine	1	0.581	0.598	0.60	ND	97	100	60-140	2.95	20
Azinphos methyl (Guthion)	1	0.755	0.786	0.60	ND	126	131	60-140	3.99	20
Bolstar (Sulprofos)	1	0.632	0.602	0.60	ND	105	100	60-140	4.83	20
Chlorpyrifos	1	0.561	0.603	0.60	ND	93	101	60-140	7.25	20
Coumaphos	1	0.693	0.690	0.60	ND	115	115	60-140	0.409	20
Demeton	1	0.613	0.632	0.60	ND	102	105	60-140	3.02	20
Diazinon	1	0.582	0.594	0.60	ND	97	99	60-140	1.92	20
Dichlorvos (DDVP)	1	0.616	0.591	0.60	ND	103	99	60-140	4.12	20
Dimethoate	1	0.718	0.707	0.60	ND	120	118	60-140	1.57	20
Disulfoton (Di-Syston)	1	0.581	0.563	0.60	ND	97	94	60-140	3.12	20
EPN	1	0.705	0.707	0.60	ND	118	118	60-140	0.266	20
EPTC	1	0.560	0.563	0.60	ND	93	94	60-140	0.590	20
Ethion	1	0.609	0.601	0.60	ND	102	100	60-140	1.41	20
Ethoprop	1	0.575	0.590	0.60	ND	96	98	60-140	2.57	20
Ethyl parathion	1	0.677	0.672	0.60	ND	113	112	60-140	0.741	20
Fensulfothion	1	0.506	0.460	0.60	ND	84	77	60-140	9.48	20
Fenthion	1	0.601	0.606	0.60	ND	100	101	60-140	0.713	20
Fonofos	1	0.615	0.609	0.60	ND	103	101	60-140	1.08	20
Malathion	1	0.612	0.625	0.60	ND	102	104	60-140	2.06	20
Mevinphos (Phosdrin)	1	0.596	0.597	0.60	ND	99	99	60-140	0.0459	20
Molinate	1	0.586	0.557	0.60	ND	98	93	60-140	5.07	20
Methyl parathion	1	0.640	0.638	0.60	ND	107	106	60-140	0.257	20
Phorate (Thimet)	1	0.581	0.572	0.60	ND	97	95	60-140	1.50	20
Prometon	1	0.608	0.644	0.60	ND	101	107	60-140	5.63	20
Ronnel	1	0.600	0.586	0.60	ND	100	98	60-140	2.40	20
Simazine	1	0.589	0.601	0.60	ND	98	100	60-140	2.10	20
Stirofos (Tetrachlorvinphos)	1	0.656	0.658	0.60	ND	109	110	60-140	0.347	20
Terbacil	1	0.768	0.781	0.60	ND	128	130	60-140	1.67	20
Terbufos (Terbuphos)	1	0.562	0.559	0.60	ND	94	93	60-140	0.598	20
Thiobencarb	1	0.624	0.614	0.60	ND	104	102	60-140	1.67	20
Tokuthion (Prothiofos)	1	0.596	0.593	0.60	ND	99	99	60-140	0.492	20
Trichloronate (Agritox)	1	0.615	0.613	0.60	ND	102	102	60-140	0.344	20
Surrogate Recovery										
1-Bromo-2-Nitrobenzene	1	0.207	0.190	0.20		104	95	60-140	8.90	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/11/2021	**BatchID:**	223251
Date Analyzed:	06/12/2021 - 06/15/2021	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223251 2106609-001AMS/MSD

QC Summary Report for SW8151A

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Acifluorfen	ND	0.00450	0.0100	-	-	-
Bentazon	ND	0.00150	0.0100	-	-	-
Chloramben	ND	0.00180	0.0100	-	-	-
2,4-D (Dichlorophenoxyacetic acid)	ND	0.00220	0.0100	-	-	-
2,4-DB	ND	0.00150	0.0100	-	-	-
Dalapon	ND	0.00340	0.0100	-	-	-
DCPA (mono & diacid)	ND	0.00110	0.0100	-	-	-
Dicamba	ND	0.00130	0.0100	-	-	-
3,5-Dichlorobenzoic Acid	ND	0.00170	0.0100	-	-	-
Dichloroprop	ND	0.00140	0.0100	-	-	-
Dinoseb (DNBP)	ND	0.00170	0.0100	-	-	-
MCPA	ND	0.300	1.00	-	-	-
MCPP	ND	0.360	1.00	-	-	-
4-Nitrophenol	ND	0.00790	0.0100	-	-	-
Pentachlorophenol (PCP)	ND	0.000960	0.0100	-	-	-
Picloram	ND	0.00230	0.0100	-	-	-
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.00180	0.0100	-	-	-
2,4,5-TP (Silvex)	ND	0.00110	0.0100	-	-	-
Surrogate Recovery						
DCAA	0.126			0.1	126	63-129

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/11/2021	**BatchID:**	223251
Date Analyzed:	06/12/2021 - 06/15/2021	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223251 2106609-001AMS/MSD

QC Summary Report for SW8151A

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acifluorfen	0.0845	0.0836	0.10	84	84	60-140	1.08	30
Bentazon	0.0998	0.103	0.10	100	103	60-140	3.38	30
Chloramben	0.104	0.101	0.10	104	101	60-140	2.30	30
2,4-D (Dichlorophenoxyacetic acid)	0.109	0.108	0.10	109	108	67-147	0.905	30
2,4-DB	0.122	0.120	0.10	122	120	61-152	1.86	30
Dalapon	0.124	0.124	0.10	123	124	54-153	0.519	30
DCPA (mono & diacid)	0.0971	0.0980	0.10	97	98	60-140	0.885	30
Dicamba	0.109	0.109	0.10	109	109	60-146	0.442	30
3,5-Dichlorobenzoic Acid	0.110	0.105	0.10	110	105	60-140	4.43	30
Dichloroprop	0.106	0.106	0.10	107	106	60-140	0.623	30
Dinoseb (DNBP)	0.0984	0.100	0.10	98	100	60-140	2.11	30
MCPA	11.8	11.5	10	118	115	60-140	2.67	30
MCPP	12.0	11.2	10	120	112	60-140	6.54	30
MCPP	12.0	11.2	10	120	112	60-140	6.54	30
4-Nitrophenol	0.118	0.117	0.10	118	117	60-140	1.14	30
Pentachlorophenol (PCP)	0.105	0.105	0.10	105	105	60-140	0.528	30
Picloram	0.0880	0.0874	0.10	88	87	60-140	0.659	30
2,4,5-T (Trichlorophenoxy acetic acid)	0.103	0.105	0.10	103	105	60-140	2.01	30
2,4,5-TP (Silvex)	0.0992	0.0999	0.10	99	100	63-145	0.664	30
Surrogate Recovery								
DCAA	0.117	0.114	0.10	117	114	63-129	2.52	30

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acifluorfen	5	0.0911	0.0961	0.10	ND	91	96	60-140	8.52	30
Bentazon	5	0.0949	0.0919	0.10	ND	95	92	60-140	12.7	30
Chloramben	5	0.145	0.134	0.10	ND	145,F1	134	60-140	22.2	30
2,4-D (Dichlorophenoxyacetic acid)	5	0.123	0.119	0.10	ND	100	96	68-142	0.195	30
2,4-DB	5	0.107	0.110	0.10	ND	107	109	60-140	64.3,F1	30
Dalapon	5	0.112	0.102	0.10	ND	112	101	59-136	7.28	30
DCPA (mono & diacid)	5	0.0947	0.0938	0.10	ND	95	94	60-140	1.55	30
Dicamba	5	0.104	0.0969	0.10	ND	104	97	57-139	1.06	30
3,5-Dichlorobenzoic Acid	5	0.118	0.107	0.10	ND	118	107	60-140	12.2	30
Dichloroprop	5	0.123	0.106	0.10	ND	123	106	60-140	4.17	30
Dinoseb (DNBP)	5	0.0961	0.0972	0.10	ND	96	97	60-140	0.225	30
MCPA	5	16.0	11.8	10	ND	160,F1	118	60-140	200,F1	30

(Cont.)

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/11/2021	**BatchID:**	223251
Date Analyzed:	06/12/2021 - 06/15/2021	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223251 2106609-001AMS/MSD

QC Summary Report for SW8151A

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
MCPP	5	15.5	10.7	10	ND	155,F1	107	60-140	200,F1	30
4-Nitrophenol	5	0.0612	0.0845	0.10	ND	61	85	60-140	200,F1	30
Pentachlorophenol (PCP)	5	0.0715	0.0758	0.10	ND	71	76	60-140	4.22	30
Picloram	5	0.0930	0.0829	0.10	ND	93	83	60-140	30.0	30
2,4,5-T (Trichlorophenoxy acetic acid)	5	0.0848	0.0861	0.10	ND	85	86	60-140	4.90	30
2,4,5-TP (Silvex)	5	0.0906	0.0860	0.10	ND	91	86	61-139	3.33	30
Surrogate Recovery										
DCAA	5	0.112	0.0979	0.10		112	98	60-140	10.1	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/09/2021	**BatchID:**	223122
Date Analyzed:	06/10/2021	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223122

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Antimony	ND	0.160	0.500	-	-	-
Arsenic	ND	0.150	0.500	-	-	-
Barium	ND	0.570	5.00	-	-	-
Beryllium	ND	0.0730	0.500	-	-	-
Cadmium	ND	0.0940	0.500	-	-	-
Chromium	ND	0.130	0.500	-	-	-
Cobalt	ND	0.0520	0.500	-	-	-
Copper	ND	0.180	0.500	-	-	-
Lead	ND	0.140	0.500	-	-	-
Mercury	ND	0.0320	0.0500	-	-	-
Molybdenum	ND	0.160	0.500	-	-	-
Nickel	ND	0.170	0.500	-	-	-
Selenium	ND	0.150	0.500	-	-	-
Silver	ND	0.120	0.500	-	-	-
Thallium	ND	0.0670	0.500	-	-	-
Vanadium	ND	0.130	0.500	-	-	-
Zinc	ND	3.00	5.00	-	-	-
Surrogate Recovery						
Terbium	495			500	99	70-130

(Cont.)

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/09/2021	**BatchID:**	223122
Date Analyzed:	06/10/2021	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223122

QC Summary Report for Metals

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Antimony	53.0	52.1	50	106	104	75-125	1.56	20
Arsenic	51.8	52.3	50	104	105	75-125	1.01	20
Barium	500	492	500	100	98	75-125	1.59	20
Beryllium	49.9	50.3	50	100	101	75-125	0.804	20
Cadmium	49.5	49.4	50	99	99	75-125	0.366	20
Chromium	50.4	49.5	50	101	99	75-125	1.87	20
Cobalt	50.1	49.7	50	100	99	75-125	0.751	20
Copper	50.3	51.3	50	101	103	75-125	1.88	20
Lead	51.6	52.1	50	103	104	75-125	0.928	20
Mercury	1.19	1.22	1.25	95	98	75-125	2.66	20
Molybdenum	50.4	50.0	50	101	100	75-125	0.897	20
Nickel	50.7	51.7	50	101	103	75-125	1.96	20
Selenium	52.4	52.3	50	105	105	75-125	0.145	20
Silver	52.0	51.8	50	104	104	75-125	0.530	20
Thallium	52.3	52.9	50	105	106	75-125	1.13	20
Vanadium	49.1	49.9	50	98	100	75-125	1.65	20
Zinc	505	514	500	101	103	75-125	1.88	20
Surrogate Recovery								
Terbium	490	502	500	98	100	70-130	2.28	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/09/2021	**BatchID:**	223122
Date Analyzed:	06/10/2021	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223122

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Iron	ND	18.0	50.0	-	-	-
Manganese	ND	5.80	50.0	-	-	-
Surrogate Recovery						
Terbium	495			500	99	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Iron	5020	4980	5000	100	100	75-125	0.802	20
Manganese	5060	5080	5000	101	102	75-125	0.382	20
Surrogate Recovery								
Terbium	490	502	500	98	100	70-130	2.28	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/14/2021	**BatchID:**	223406
Date Analyzed:	06/14/2021	**Extraction Method:**	SW9030B/E376.2
Instrument:	SPECTROPHOTOMETER	**Analytical Method:**	SM4500 S^{-2} D
Matrix:	Soil	**Unit:**	mg/Kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223406 2106609-005AMS/MSD

QC Summary Report for SM4500 S-2D

Analyte	MB Result	MDL	RL			
Total Sulfide	ND	1.00	1.00	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acid Soluble Sulfide - S	53.2	53.4	50	106	107	80-120	0.369	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acid Soluble Sulfide - S	1	40.6	41.0	50	ND	81	82	75-125	0.867	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2106609
Date Prepared:	06/11/2021	**BatchID:**	223267
Date Analyzed:	06/11/2021	**Extraction Method:**	SW9060A
Instrument:	WC_CNS	**Analytical Method:**	SW9060A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01; Tides End	**Sample ID:**	MB/LCS/LCSD-223267

QC Summary Report for SW9060A

Analyte	MB Result	MDL	RL			
TOC	ND	200	200	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TOC	8250	8160	8200	101	100	80-120	1.13	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2106609 **ClientCode: ESAS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ EQuIS ☐ Dry-Weight ☐ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Excel

Report to:
Michael Burns
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
916.564.4500 FAX:

Email: mburns@esassoc.com
cc/3rd Party:
PO: D201801197.01 Task 3.6
Project: D201801197.01; Tides End

Bill to:
Jeff Trow
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
accountspayable@esassoc.com

Requested TAT: **5 days;**

Date Received: **06/09/2021**
Date Logged: **06/09/2021**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2106609-001	S-1	Soil	6/9/2021 09:20	☐	A	A	A	A	A	A	A	A				
2106609-002	S-2	Soil	6/9/2021 10:00	☐	A	A	A	A	A	A	A	A				
2106609-003	S-3	Soil	6/9/2021 10:45	☐	A	A	A	A	A	A	A	A				
2106609-004	S-4	Soil	6/9/2021 11:01	☐	A	A	A	A	A	A	A	A				
2106609-005	S-5	Soil	6/9/2021 11:44	☐	A	A	A	A	A	A	A	A				

Test Legend:

1	8081pcB_ESL_LL_S	2	8141_S	3	8151_S	4	CAM17MS_TTLC_S
5	cnsTOC_S	6	METALSMS_TTLC_S	7	PRDisposal Fee	8	SULFIDE_S
9		10		11		12	

Project Manager: Angela Rydelius

Prepared by: Adrianna Cardoza

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ENVIRONMENTAL SCIENCE ASSOCIATES **Project:** D201801197.01; Tides End **Work Order:** 2106609
Client Contact: Michael Burns **QC Level:** LEVEL 2
Contact's Email: mburns@esassoc.com **Comments:** **Date Logged:** 6/9/2021

☐WaterTrax ☐WriteOn ☐EDF ☐Excel ☐EQuIS ☐Email ☐HardCopy ☐ThirdParty ☐J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	SubOut
001A	S-1	Soil	SM4500S2D (Acid Soluble Sulfide)	1	8OZ GJ, Unpres	☐	☐	6/9/2021 9:20	5 days	6/16/2021		☐	
			SW6020 (Metals) <Iron, Manganese>			☐	☐		5 days	6/16/2021		☐	
			SW9060A (TOC)			☐	☐		5 days	6/16/2021		☐	
			SW6020 (CAM 17)			☐	☐		5 days	6/16/2021		☐	
			SW8151A (Chlorinated Herbicides)			☐	☐		5 days	6/16/2021		☐	
			SW8270C (ON/P Pesticides - EPA 8141 target list)			☐	☐		5 days	6/16/2021		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐	☐		5 days	6/18/2021		☐	
002A	S-2	Soil	SM4500S2D (Acid Soluble Sulfide)	1	8OZ GJ, Unpres	☐	☐	6/9/2021 10:00	5 days	6/16/2021		☐	
			SW6020 (Metals) <Iron, Manganese>			☐	☐		5 days	6/16/2021		☐	
			SW9060A (TOC)			☐	☐		5 days	6/16/2021		☐	
			SW6020 (CAM 17)			☐	☐		5 days	6/16/2021		☐	
			SW8151A (Chlorinated Herbicides)			☐	☐		5 days	6/16/2021		☐	
			SW8270C (ON/P Pesticides - EPA 8141 target list)			☐	☐		5 days	6/16/2021		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐	☐		5 days	6/18/2021		☐	
003A	S-3	Soil	SM4500S2D (Acid Soluble Sulfide)	1	8OZ GJ, Unpres	☐	☐	6/9/2021 10:45	5 days	6/16/2021		☐	

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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WORK ORDER SUMMARY

Client Name: ENVIRONMENTAL SCIENCE ASSOCIATES **Project:** D201801197.01; Tides End **Work Order:** 2106609
Client Contact: Michael Burns **QC Level:** LEVEL 2
Contact's Email: mburns@esassoc.com **Comments:** **Date Logged:** 6/9/2021

☐WaterTrax ☐WriteOn ☐EDF ☐Excel ☐EQuIS ☐Email ☐HardCopy ☐ThirdParty ☐J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	SubOut
003A	S-3	Soil	SW6020 (Metals) <Iron, Manganese>	1	8OZ GJ, Unpres	☐	☐	6/9/2021 10:45	5 days	6/16/2021		☐	
			SW9060A (TOC)			☐	☐		5 days	6/16/2021		☐	
			SW6020 (CAM 17)			☐	☐		5 days	6/16/2021		☐	
			SW8151A (Chlorinated Herbicides)			☐	☐		5 days	6/16/2021		☐	
			SW8270C (ON/P Pesticides - EPA 8141 target list)			☐	☐		5 days	6/16/2021		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐	☐		5 days	6/18/2021		☐	
004A	S-4	Soil	SM4500S2D (Acid Soluble Sulfide)	1	8OZ GJ, Unpres	☐	☐	6/9/2021 11:01	5 days	6/16/2021		☐	
			SW6020 (Metals) <Iron, Manganese>			☐	☐		5 days	6/16/2021		☐	
			SW9060A (TOC)			☐	☐		5 days	6/16/2021		☐	
			SW6020 (CAM 17)			☐	☐		5 days	6/16/2021		☐	
			SW8151A (Chlorinated Herbicides)			☐	☐		5 days	6/16/2021		☐	
			SW8270C (ON/P Pesticides - EPA 8141 target list)			☐	☐		5 days	6/16/2021		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐	☐		5 days	6/18/2021		☐	
005A	S-5	Soil	SM4500S2D (Acid Soluble Sulfide)	1	8OZ GJ, Unpres	☐	☐	6/9/2021 11:44	5 days	6/16/2021		☐	
			SW6020 (Metals) <Iron, Manganese>			☐	☐		5 days	6/16/2021		☐	

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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WORK ORDER SUMMARY

Client Name: ENVIRONMENTAL SCIENCE ASSOCIATES **Project:** D20 **Work Order:** 2106609
Client Contact: Michael Burns **QC Level:** LEVEL 2
Contact's Email: mburns@esassoc.com **Comments:** **Date Logged:** 6/9/2021

☐WaterTrax ☐WriteOn ☐EDF ☐Excel ☐EQuIS ☐Email ☐HardCopy ☐ThirdParty ☐J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	SubOut
005A	S-5	Soil	SW9060A (TOC)	1	8OZ GJ, Unpres	☐	☐	6/9/2021 11:44	5 days	6/16/2021		☐	
			SW6020 (CAM 17)			☐	☐		5 days	6/16/2021		☐	
			SW8151A (Chlorinated Herbicides)			☐	☐		5 days	6/16/2021		☐	
			SW8270C (ON/P Pesticides - EPA 8141 target list)			☐	☐		5 days	6/16/2021		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐	☐		5 days	6/18/2021		☐	

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- M

the sample prior to sample preparation unless requested in writing by the client.

MAI Work Order # 2106609

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CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	●	Quote #	212412													
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #															
Delivery Format:	PDF	●	GeoTracker EDF		EDD		Write On (DW)		Detect Summary														

Report To: Michael Burns Bill To: ESA

Company: Environmental Science Associates

Email: mburns@esassoc.com

Alt Email: Tele: 707-779-9424

Project Name: Tides End Project #: D201801197.01

Project Location: Yolo Bypass Floodway PO # D201801197.01 Task 3.6

Sampler Signature:

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	OC pesticides+PCBs by 8081A/8082 ESLs	ON/P pesticides 8141 target list	Herbicides 8151A	CAM 17 metals	TOC 9060A	Acid Sol. Sulfide SM4500 S2D	Fe & Mn 6020
S-1	9-June-2021	0920	2	S	1	●	●	●	●	●	●	●
S-2	9-June-2021	1000	2	S	1	●	●	●	●	●	●	●
S-3	9-June-2021	1045	2	S	1	●	●	●	●	●	●	●
S-4	9-June-2021	1101	2	S	1	●	●	●	●	●	●	●
S-5	9-June-2021	1144	2	S	1	●	●	●	●	●	●	●

Analysis Requested

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
ESA	6/9/2021	2:10 PM		6/9/21	

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 0.0 °C wet Initials TP

Page ___ of ___

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Sample Receipt Checklist

Client Name: **Environmental Science Associates**
Project: **D201801197.01; Tides End**

WorkOrder №: **2106609** Matrix: Soil
Carrier: Client Drop-In

Date and Time Received: **6/9/2021 14:10**
Date Logged: **6/9/2021**
Received by: Adrianna Cardoza
Logged by: Adrianna Cardoza

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Sample IDs noted by Client on COC?	Yes ☑	No ☐	
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐	
Sampler's name noted on COC?	Yes ☑	No ☐	
COC agrees with Quote?	Yes ☐	No ☐	NA ☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Custody seals intact on sample bottles?	Yes ☑	No ☐	NA ☐
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		
Sample/Temp Blank temperature	Temp: 0.6°C		NA ☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
UCMR Samples:			
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2411B29

Report Created for: Environmental Science Associates

2600 Capitol Avenue, Suite 200
Sacramento, CA 95816

Project Contact: Michael Burns
Project P.O.: D201801197.01-14-25
Project: D201801197.01-14-25; Lucky 5 South

Project Location: Lucky 5 South Parcel
Project Received: 11/19/2024

Analytical Report reviewed & approved for release on 11/26/2024 by:

Jennifer Lagerbom
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current regulatory standards, where applicable, unless otherwise stated in a case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Environmental Science Associates **WorkOrder:** 2411B29

Project: D201801197.01-14-25; Lucky 5 South

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CCV	Continuing Calibration Verification.
CCV REC (%)	% recovery of Continuing Calibration Verification.
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LCS2	Second LCS for the batch. Spike level is lower than that for the first LCS; applicable to method 1633.
LQL	Lowest Quantitation Level
MB	Method Blank
MB IS/SS % Rec	% Recovery of Internal Standard or Surrogate in Method Blank, if applicable
MB SS % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit [1]
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit [2]
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SNR	Surrogate is diluted out of the calibration range

[1] MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016. Values are based upon our default extraction volume/amount and are subject to change.

[2] RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.) Values are based upon our default extraction volume/amount and are subject to change.

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Glossary of Terms & Qualifier Definitions

Client: Environmental Science Associates **WorkOrder:** 2411B29

Project: D201801197.01-14-25; Lucky 5 South

SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TNTC	“Too Numerous to Count;” greater than 250 colonies observed on the plate.
TZA	TimeZone Net Adjustment for sample collected outside of MAI's Coordinated Universal Time (UTC). (Adjustment for Daylight Saving is not accounted.)
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
S	Surrogate recovery outside accepted recovery limits.
a3	Sample diluted due to high organic content interfering with quantitative/or qualitative analysis.
c1	Surrogate recovery outside of the control limits due to the dilution of the sample.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria.
F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.
F3	The surrogate standard recovery and/or RPD is outside of acceptance limits.

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Received:	11/19/2024 10:18	**Extraction Method:**	SW3546
Date Prepared:	11/19/2024	**Analytical Method:**	SW8081B/8082A
Project:	D201801197.01-14-25; Lucky 5 South	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Lucky 5 South	2411B29-001A	Soil	11/19/2024 08:49	GC20 11202424.D	306273

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.00042	0.0010	1	11/20/2024 13:16
a-BHC	ND		0.00045	0.0010	1	11/20/2024 13:16
b-BHC	ND		0.00038	0.0010	1	11/20/2024 13:16
d-BHC	ND		0.00036	0.0010	1	11/20/2024 13:16
g-BHC	ND		0.00036	0.0010	1	11/20/2024 13:16
Chlordane (Technical)	ND		0.010	0.025	1	11/20/2024 13:16
a-Chlordane	ND		0.00035	0.0010	1	11/20/2024 13:16
g-Chlordane	ND		0.00067	0.0010	1	11/20/2024 13:16
p,p-DDD	ND		0.00057	0.0010	1	11/20/2024 13:16
p,p-DDE	**0.00047**	J	0.00034	0.0010	1	11/20/2024 13:16
p,p-DDT	ND		0.00043	0.0010	1	11/20/2024 13:16
Dieldrin	ND		0.00041	0.0010	1	11/20/2024 13:16
Endosulfan I	ND		0.00040	0.0010	1	11/20/2024 13:16
Endosulfan II	ND		0.00051	0.0010	1	11/20/2024 13:16
Endosulfan sulfate	ND		0.00040	0.0010	1	11/20/2024 13:16
Endrin	ND		0.00045	0.0010	1	11/20/2024 13:16
Endrin aldehyde	ND		0.00045	0.0010	1	11/20/2024 13:16
Endrin ketone	ND		0.00042	0.0010	1	11/20/2024 13:16
Heptachlor	ND		0.00067	0.0010	1	11/20/2024 13:16
Heptachlor epoxide	ND		0.00041	0.0010	1	11/20/2024 13:16
Hexachlorobenzene	ND		0.00038	0.010	1	11/20/2024 13:16
Hexachlorocyclopentadiene	ND		0.00064	0.020	1	11/20/2024 13:16
Methoxychlor	ND		0.00063	0.0010	1	11/20/2024 13:16
Toxaphene	ND		0.064	0.20	1	11/20/2024 13:16
Aroclor1016	ND		0.037	0.050	1	11/20/2024 13:16
Aroclor1221	ND		0.037	0.050	1	11/20/2024 13:16
Aroclor1232	ND		0.037	0.050	1	11/20/2024 13:16
Aroclor1242	ND		0.037	0.050	1	11/20/2024 13:16
Aroclor1248	ND		0.037	0.050	1	11/20/2024 13:16
Aroclor1254	ND		0.037	0.050	1	11/20/2024 13:16
Aroclor1260	ND		0.037	0.050	1	11/20/2024 13:16
PCBs, total	ND		NA	0.050	1	11/20/2024 13:16

(Cont.)

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Received:	11/19/2024 10:18	**Extraction Method:**	SW3546
Date Prepared:	11/19/2024	**Analytical Method:**	SW8081B/8082A
Project:	D201801197.01-14-25; Lucky 5 South	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Lucky 5 South	2411B29-001A	Soil	11/19/2024 08:49	GC20 11202424.D	306273

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**			**Limits**		
Decachlorobiphenyl	103			60-130		11/20/2024 13:16

Analyst(s): CK

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Received:	11/19/2024 10:18	**Extraction Method:**	SW3550B
Date Prepared:	11/25/2024	**Analytical Method:**	SW8270E
Project:	D201801197.01-14-25; Lucky 5 South	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Lucky 5 South	2411B29-001A	Soil	11/19/2024 08:49	GC53 11252407.D	306606

Analytes	Result	MDL	RL	DF	Date Analyzed
Alachlor	ND	0.049	0.10	1	11/25/2024 14:48
Atrazine	ND	0.069	0.10	1	11/25/2024 14:48
Azinphos methyl (Guthion)	ND	0.066	0.10	1	11/25/2024 14:48
Bolstar (Sulprofos)	ND	0.040	0.10	1	11/25/2024 14:48
Chlorpyrifos	ND	0.051	0.10	1	11/25/2024 14:48
Coumaphos	ND	0.062	0.10	1	11/25/2024 14:48
Demeton	ND	0.051	0.10	1	11/25/2024 14:48
Diazinon	ND	0.053	0.10	1	11/25/2024 14:48
Dichlorvos (DDVP)	ND	0.022	0.10	1	11/25/2024 14:48
Dimethoate	ND	0.046	0.10	1	11/25/2024 14:48
Disulfoton (Di-Syston)	ND	0.039	0.10	1	11/25/2024 14:48
EPN	ND	0.059	0.10	1	11/25/2024 14:48
EPTC	ND	0.042	0.10	1	11/25/2024 14:48
Ethion	ND	0.064	0.10	1	11/25/2024 14:48
Ethoprop	ND	0.046	0.10	1	11/25/2024 14:48
Ethyl parathion	ND	0.040	0.10	1	11/25/2024 14:48
Fensulfothion	ND	0.027	0.10	1	11/25/2024 14:48
Fenthion	ND	0.055	0.10	1	11/25/2024 14:48
Fonofos	ND	0.056	0.10	1	11/25/2024 14:48
Malathion	ND	0.040	0.10	1	11/25/2024 14:48
Mevinphos (Phosdrin)	ND	0.054	0.10	1	11/25/2024 14:48
Molinate	ND	0.039	0.10	1	11/25/2024 14:48
Methyl parathion	ND	0.031	0.10	1	11/25/2024 14:48
Phorate (Thimet)	ND	0.035	0.10	1	11/25/2024 14:48
Prometon	ND	0.029	0.10	1	11/25/2024 14:48
Ronnel	ND	0.047	0.10	1	11/25/2024 14:48
Simazine	ND	0.057	0.10	1	11/25/2024 14:48
Stirofos (Tetrachlorvinphos)	ND	0.053	0.10	1	11/25/2024 14:48
Terbacil	ND	0.040	0.10	1	11/25/2024 14:48
Terbufos (Terbuphos)	ND	0.031	0.10	1	11/25/2024 14:48
Thiobencarb	ND	0.070	0.10	1	11/25/2024 14:48
Tokuthion (Prothiofos)	ND	0.054	0.10	1	11/25/2024 14:48
Trichloronate (Agritox)	ND	0.048	0.10	1	11/25/2024 14:48

(Cont.)

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Received:	11/19/2024 10:18	**Extraction Method:**	SW3550B
Date Prepared:	11/25/2024	**Analytical Method:**	SW8270E
Project:	D201801197.01-14-25; Lucky 5 South	**Unit:**	mg/kg

Organophosphorous Pesticides by GC-MS (EPA 8141 Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Lucky 5 South	2411B29-001A	Soil	11/19/2024 08:49	GC53 11252407.D	306606

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**		**Limits**		
1-Bromo-2-Nitrobenzene	96		60-140		11/25/2024 14:48
Triphenyl phosphate	108		60-140		11/25/2024 14:48

Analyst(s): JS

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Received:	11/19/2024 10:18	**Extraction Method:**	SW8151A
Date Prepared:	11/22/2024	**Analytical Method:**	SW8151A
Project:	D201801197.01-14-25; Lucky 5 South	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Lucky 5 South	2411B29-001A	Soil	11/19/2024 08:49	GC15A 11222420.D	306517

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.26	0.50	50	11/22/2024 18:02
Bentazon	ND	0.16	0.50	50	11/22/2024 18:02
Chloramben	ND	0.20	0.50	50	11/22/2024 18:02
2,4-D (Dichlorophenoxyacetic acid)	ND	0.15	0.50	50	11/22/2024 18:02
2,4-DB	ND	0.30	0.50	50	11/22/2024 18:02
Dalapon	ND	0.30	0.50	50	11/22/2024 18:02
DCPA (mono & diacid)	ND	0.16	0.50	50	11/22/2024 18:02
Dicamba	ND	0.16	0.50	50	11/22/2024 18:02
3,5-Dichlorobenzoic Acid	ND	0.16	0.50	50	11/22/2024 18:02
Dichloroprop	ND	0.15	0.50	50	11/22/2024 18:02
Dinoseb (DNBP)	ND	0.16	0.50	50	11/22/2024 18:02
MCPA	ND	19	50	50	11/22/2024 18:02
MCPP	ND	18	50	50	11/22/2024 18:02
4-Nitrophenol	ND	0.37	0.50	50	11/22/2024 18:02
Pentachlorophenol (PCP)	ND	0.24	0.50	50	11/22/2024 18:02
Picloram	ND	0.25	0.50	50	11/22/2024 18:02
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.26	0.50	50	11/22/2024 18:02
2,4,5-TP (Silvex)	ND	0.14	0.50	50	11/22/2024 18:02

Surrogates	REC (%)	Qualifiers	Limits	
DCAA	NR	S	60-140	11/22/2024 18:02

Analyst(s): DP

Analytical Comments: a3,c1

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Analytical Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Received:	11/19/2024 10:18	**Extraction Method:**	SW3050B
Date Prepared:	11/19/2024	**Analytical Method:**	SW6020
Project:	D201801197.01-14-25; Lucky 5 South	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Lucky 5 South	2411B29-001A	Soil	11/19/2024 08:49	ICP-MS4 212SMPL.d	306225

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Antimony	**0.47**	J	0.10	0.50	1	11/20/2024 18:07
Arsenic	**5.6**		0.084	0.50	1	11/20/2024 18:07
Barium	**190**		0.73	5.0	1	11/20/2024 18:07
Beryllium	**0.55**		0.086	0.50	1	11/20/2024 18:07
Cadmium	**0.082**	J	0.080	0.50	1	11/20/2024 18:07
Chromium	**97**		0.17	0.50	1	11/20/2024 18:07
Cobalt	**15**		0.063	0.50	1	11/20/2024 18:07
Copper	**35**		0.19	0.50	1	11/20/2024 18:07
Lead	**7.5**		0.089	0.50	1	11/20/2024 18:07
Mercury	**0.16**		0.039	0.050	1	11/20/2024 18:07
Molybdenum	**0.34**	J	0.093	0.50	1	11/20/2024 18:07
Nickel	**160**		0.28	0.50	1	11/20/2024 18:07
Selenium	ND		0.21	0.50	1	11/20/2024 18:07
Silver	ND		0.084	0.50	1	11/20/2024 18:07
Thallium	**0.12**	J	0.073	0.50	1	11/20/2024 18:07
Vanadium	**69**		0.097	0.50	1	11/20/2024 18:07
Zinc	**65**		1.8	5.0	1	11/20/2024 18:07

Surrogates	REC (%)	Limits	
Terbium	102	70-130	11/20/2024 18:07

Analyst(s): DB

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/19/2024	**BatchID:**	306273
Date Analyzed:	11/20/2024	**Extraction Method:**	SW3546
Instrument:	GC20	**Analytical Method:**	SW8081B/8082A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306273

QC Summary Report for SW8081B/8082A

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Aldrin	ND	0.00042	0.0010	-	-	-
a-BHC	ND	0.00045	0.0010	-	-	-
b-BHC	ND	0.00038	0.0010	-	-	-
d-BHC	ND	0.00036	0.0010	-	-	-
g-BHC	ND	0.00036	0.0010	-	-	-
Chlordane (Technical)	ND	0.010	0.025	-	-	-
a-Chlordane	ND	0.00035	0.0010	-	-	-
g-Chlordane	ND	0.00067	0.0010	-	-	-
p,p-DDD	ND	0.00057	0.0010	-	-	-
p,p-DDE	ND	0.00034	0.0010	-	-	-
p,p-DDT	ND	0.00043	0.0010	-	-	-
Dieldrin	ND	0.00041	0.0010	-	-	-
Endosulfan I	ND	0.00040	0.0010	-	-	-
Endosulfan II	ND	0.00051	0.0010	-	-	-
Endosulfan sulfate	ND	0.00040	0.0010	-	-	-
Endrin	ND	0.00045	0.0010	-	-	-
Endrin aldehyde	ND	0.00045	0.0010	-	-	-
Endrin ketone	ND	0.00042	0.0010	-	-	-
Heptachlor	ND	0.00067	0.0010	-	-	-
Heptachlor epoxide	ND	0.00041	0.0010	-	-	-
Hexachlorobenzene	ND	0.00038	0.010	-	-	-
Hexachlorocyclopentadiene	ND	0.00064	0.020	-	-	-
Methoxychlor	ND	0.00063	0.0010	-	-	-
Toxaphene	ND	0.064	0.20	-	-	-
Aroclor1016	ND	0.037	0.050	-	-	-
Aroclor1221	ND	0.037	0.050	-	-	-
Aroclor1232	ND	0.037	0.050	-	-	-
Aroclor1242	ND	0.037	0.050	-	-	-
Aroclor1248	ND	0.037	0.050	-	-	-
Aroclor1254	ND	0.037	0.050	-	-	-
Aroclor1260	ND	0.037	0.050	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.050			0.05	99	70-130

(Cont.)

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/19/2024	**BatchID:**	306273
Date Analyzed:	11/20/2024	**Extraction Method:**	SW3546
Instrument:	GC20	**Analytical Method:**	SW8081B/8082A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306273

QC Summary Report for SW8081B/8082A

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.041	0.041	0.050	82	83	70-130	0.947	20
a-BHC	0.039	0.039	0.050	78	77	70-130	1.14	20
b-BHC	0.040	0.040	0.050	80	80	70-130	0.686	20
d-BHC	0.015	0.015	0.050	31,F2	31,F2	70-130	0.631	20
g-BHC	0.040	0.040	0.050	79	79	70-130	0.416	20
a-Chlordane	0.041	0.042	0.050	82	83	70-130	1.76	20
g-Chlordane	0.042	0.042	0.050	83	85	70-130	1.52	20
p,p-DDD	0.054	0.056	0.050	108	113	70-130	4.01	20
p,p-DDE	0.047	0.048	0.050	94	97	70-130	2.55	20
p,p-DDT	0.037	0.037	0.050	74	74	70-130	0.168	20
Dieldrin	0.042	0.043	0.050	84	86	70-130	1.88	20
Endosulfan I	0.041	0.042	0.050	82	83	70-130	1.65	20
Endosulfan II	0.041	0.042	0.050	81	84	70-130	3.28	20
Endosulfan sulfate	0.036	0.037	0.050	71	74	70-130	3.85	20
Endrin	0.048	0.047	0.050	96	95	70-130	1.07	20
Endrin aldehyde	0.041	0.041	0.050	82	83	70-130	1.04	20
Endrin ketone	0.043	0.043	0.050	86	86	70-130	0.127	20
Heptachlor	0.043	0.043	0.050	85	86	70-130	0.578	20
Heptachlor epoxide	0.041	0.042	0.050	83	84	70-130	1.04	20
Hexachlorobenzene	0.040	0.040	0.050	80	79	70-130	0.0878	20
Hexachlorocyclopentadiene	0.035	0.036	0.050	70	72	50-130	2.46	20
Methoxychlor	0.040	0.042	0.050	79	84	70-130	6.46	20
Aroclor1016	0.13	0.13	0.15	86	88	70-130	2.92	20
Aroclor1260	0.13	0.14	0.15	89	92	70-130	3.75	20
Surrogate Recovery								
Decachlorobiphenyl	0.050	0.054	0.050	99	107	70-130	7.31	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/19/2024	**BatchID:**	306273
Date Analyzed:	11/20/2024	**Extraction Method:**	SW3546
Instrument:	GC20	**Analytical Method:**	SW8081B/8082A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	2411B29-001AMS/MSD

QC Summary Report for SW8081B/8082A

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aldrin	1	0.041	0.039	0.050	ND	81	77	60-130	5.36	20
a-BHC	1	0.039	0.037	0.050	ND	78	75	60-130	4.93	20
b-BHC	1	0.038	0.036	0.050	ND	76	71	60-130	5.81	20
d-BHC	1	0.015	0.014	0.050	ND	30,F1	29,F1	60-130	6.47	20
g-BHC	1	0.036	0.034	0.050	ND	73	68	60-130	6.04	20
a-Chlordane	1	0.040	0.038	0.050	ND	80	75	60-130	5.82	20
g-Chlordane	1	0.041	0.039	0.050	ND	82	77	60-130	5.78	20
p,p-DDD	1	0.054	0.053	0.050	ND	108	106	60-130	1.36	20
p,p-DDE	1	0.045	0.043	0.050	ND	89	85	60-130	4.36	20
p,p-DDT	1	0.032	0.026	0.050	ND	64	53,F1	60-130	19.4	20
Dieldrin	1	0.043	0.040	0.050	ND	85	80	60-130	6.19	20
Endosulfan I	1	0.042	0.039	0.050	ND	83	78	60-130	6.25	20
Endosulfan II	1	0.041	0.039	0.050	ND	82	78	60-130	5.52	20
Endosulfan sulfate	1	0.044	0.044	0.050	ND	87	88	60-130	1.44	20
Endrin	1	0.074	0.070	0.050	ND	149,F1	140,F1	60-130	6.41	20
Endrin aldehyde	1	0.031	0.030	0.050	ND	62	61	60-130	1.25	20
Endrin ketone	1	0.034	0.032	0.050	ND	68	64	60-130	5.62	20
Heptachlor	1	0.043	0.040	0.050	ND	86	81	60-130	6.49	20
Heptachlor epoxide	1	0.042	0.039	0.050	ND	83	79	60-130	5.68	20
Hexachlorobenzene	1	0.040	0.038	0.050	ND	79	76	60-130	3.83	20
Hexachlorocyclopentadiene	1	0.013	0.0098	0.050	ND	27,F1	20,F1	50-130	30.1,F1	20
Methoxychlor	1	0.038	0.033	0.050	ND	76	65	60-130	15.7	20
Surrogate Recovery										
Decachlorobiphenyl	1	0.051	0.051	0.050		103	102	60-130	0.404	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/25/2024	**BatchID:**	306606
Date Analyzed:	11/25/2024 - 11/26/2024	**Extraction Method:**	SW3550B
Instrument:	GC53	**Analytical Method:**	SW8270E
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306606 2411B29-001AMS/MSD

QC Summary Report for SW8270E (ON/P Pesticides)

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Alachlor	ND	0.049	0.10	-	-	-
Atrazine	ND	0.069	0.10	-	-	-
Azinphos methyl (Guthion)	ND	0.066	0.10	-	-	-
Bolstar (Sulprofos)	ND	0.040	0.10	-	-	-
Chlorpyrifos	ND	0.051	0.10	-	-	-
Coumaphos	ND	0.062	0.10	-	-	-
Demeton	ND	0.051	0.10	-	-	-
Diazinon	ND	0.053	0.10	-	-	-
Dichlorvos (DDVP)	ND	0.022	0.10	-	-	-
Dimethoate	ND	0.046	0.10	-	-	-
Disulfoton (Di-Syston)	ND	0.039	0.10	-	-	-
EPN	ND	0.059	0.10	-	-	-
EPTC	ND	0.042	0.10	-	-	-
Ethion	ND	0.064	0.10	-	-	-
Ethoprop	ND	0.046	0.10	-	-	-
Ethyl parathion	ND	0.040	0.10	-	-	-
Fensulfothion	ND	0.027	0.10	-	-	-
Fenthion	ND	0.055	0.10	-	-	-
Fonofos	ND	0.056	0.10	-	-	-
Malathion	ND	0.040	0.10	-	-	-
Mevinphos (Phosdrin)	ND	0.054	0.10	-	-	-
Molinate	ND	0.039	0.10	-	-	-
Methyl parathion	ND	0.031	0.10	-	-	-
Phorate (Thimet)	ND	0.035	0.10	-	-	-
Prometon	ND	0.029	0.10	-	-	-
Ronnel	ND	0.047	0.10	-	-	-
Simazine	ND	0.057	0.10	-	-	-
Stirofos (Tetrachlorvinphos)	ND	0.053	0.10	-	-	-
Terbacil	ND	0.040	0.10	-	-	-
Terbufos (Terbuphos)	ND	0.031	0.10	-	-	-
Thiobencarb	ND	0.070	0.10	-	-	-
Tokuthion (Prothiofos)	ND	0.054	0.10	-	-	-
Trichloronate (Agritox)	ND	0.048	0.10	-	-	-
Surrogate Recovery						
1-Bromo-2-Nitrobenzene	0.22			0.2	108	60-140
Triphenyl phosphate	0.15			0.2	73	60-140

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/25/2024	**BatchID:**	306606
Date Analyzed:	11/25/2024 - 11/26/2024	**Extraction Method:**	SW3550B
Instrument:	GC53	**Analytical Method:**	SW8270E
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306606 2411B29-001AMS/MSD

QC Summary Report for SW8270E (ON/P Pesticides)

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Alachlor	0.62	0.62	0.60	103	103	50-160	0.506	20
Atrazine	0.60	0.60	0.60	99	100	50-160	1.09	20
Azinphos methyl (Guthion)	0.53	0.49	0.60	88	82	60-140	6.96	20
Bolstar (Sulprofos)	0.63	0.61	0.60	105	101	60-140	3.94	20
Chlorpyrifos	0.60	0.60	0.60	99	100	60-140	0.887	20
Coumaphos	0.67	0.60	0.60	112	100	60-140	11.5	20
Demeton	0.69	0.69	0.60	115	115	60-140	0.342	20
Diazinon	0.59	0.60	0.60	99	101	60-140	2.07	20
Dichlorvos (DDVP)	0.65	0.65	0.60	109	109	60-140	0.0879	20
Dimethoate	0.66	0.66	0.60	110	109	60-140	0.762	20
Disulfoton (Di-Syston)	0.64	0.64	0.60	106	107	50-160	0.442	20
EPN	0.59	0.53	0.60	98	88	60-140	10.6	20
EPTC	0.59	0.59	0.60	99	99	60-140	0.167	20
Ethion	0.63	0.61	0.60	106	102	60-140	3.95	20
Ethoprop	0.72	0.71	0.60	119	119	60-140	0.420	20
Ethyl parathion	0.63	0.60	0.60	105	101	60-140	3.88	20
Fensulfothion	0.53	0.52	0.60	88	86	60-140	1.74	20
Fenthion	0.58	0.59	0.60	97	99	50-160	2.41	20
Fonofos	0.59	0.60	0.60	99	101	60-140	2.19	20
Malathion	0.65	0.65	0.60	108	109	60-140	0.741	20
Mevinphos (Phosdrin)	0.68	0.67	0.60	114	112	60-140	1.37	20
Molinate	0.62	0.61	0.60	103	102	60-140	0.454	20
Methyl parathion	0.61	0.59	0.60	102	99	50-160	3.10	20
Phorate (Thimet)	0.64	0.65	0.60	107	108	60-140	0.511	20
Prometon	0.63	0.64	0.60	106	107	60-140	0.994	20
Ronnel	0.58	0.59	0.60	96	98	60-140	2.13	20
Simazine	0.58	0.58	0.60	96	97	60-140	1.11	20
Stirofos (Tetrachlorvinphos)	0.63	0.61	0.60	104	101	60-140	2.93	20
Terbacil	0.64	0.60	0.60	106	100	60-140	5.32	20
Terbufos (Terbuphos)	0.64	0.64	0.60	107	107	60-140	0.179	20
Thiobencarb	0.61	0.61	0.60	101	102	60-140	0.332	20
Tokuthion (Prothiofos)	0.60	0.58	0.60	101	97	60-140	3.94	20
Trichloronate (Agritox)	0.59	0.59	0.60	99	99	60-140	0.336	20
Surrogate Recovery								
1-Bromo-2-Nitrobenzene	0.22	0.22	0.20	110	111	60-140	0.826	20
Triphenyl phosphate	0.25	0.25	0.20	125	123	60-140	0.976	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/25/2024	**BatchID:**	306606
Date Analyzed:	11/25/2024 - 11/26/2024	**Extraction Method:**	SW3550B
Instrument:	GC53	**Analytical Method:**	SW8270E
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306606 2411B29-001AMS/MSD

QC Summary Report for SW8270E (ON/P Pesticides)

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Alachlor	1	0.59	0.44	0.60	ND	99	73	60-140	30.3,F1	20
Atrazine	1	0.57	0.40	0.60	ND	95	66	60-140	35.1,F1	20
Azinphos methyl (Guthion)	1	0.66	0.59	0.60	ND	111	99	60-140	11.3	20
Bolstar (Sulprofos)	1	0.63	0.51	0.60	ND	104	86	60-140	19.6	20
Chlorpyrifos	1	0.61	0.46	0.60	ND	101	76	60-140	28,F1	20
Coumaphos	1	0.74	0.70	0.60	ND	124	116	60-140	6.33	20
Demeton	1	0.60	0.50	0.60	ND	101	83	60-140	18.9	20
Diazinon	1	0.58	0.41	0.60	ND	96	68	60-140	34.7,F1	20
Dichlorvos (DDVP)	1	0.59	0.46	0.60	ND	98	76	60-140	24.9,F1	20
Dimethoate	1	0.59	0.48	0.60	ND	98	79	60-140	20.8,F1	20
Disulfoton (Di-Syston)	1	0.61	0.43	0.60	ND	101	72	60-140	33.9,F1	20
EPN	1	0.75	0.63	0.60	ND	125	104	60-140	18.0	20
EPTC	1	0.54	0.39	0.60	ND	91	66	60-140	31.7,F1	20
Ethion	1	0.64	0.55	0.60	ND	106	92	60-140	14.3	20
Ethoprop	1	0.60	0.51	0.60	ND	100	84	60-140	17.3	20
Ethyl parathion	1	0.70	0.58	0.60	ND	116	97	60-140	18.2	20
Fensulfothion	1	0.62	0.51	0.60	ND	104	84	60-140	20.7,F1	20
Fenthion	1	0.59	0.42	0.60	ND	98	71	60-140	32.6,F1	20
Fonofos	1	0.57	0.40	0.60	ND	96	67	60-140	35.7,F1	20
Malathion	1	0.71	0.61	0.60	ND	119	102	60-140	14.8	20
Mevinphos (Phosdrin)	1	0.61	0.52	0.60	ND	101	86	60-140	16.0	20
Molinate	1	0.56	0.42	0.60	ND	93	69	60-140	29.5,F1	20
Methyl parathion	1	0.64	0.51	0.60	ND	106	85	60-140	22.4,F1	20
Phorate (Thimet)	1	0.58	0.44	0.60	ND	97	74	60-140	27.4,F1	20
Prometon	1	0.58	0.43	0.60	ND	96	72	60-140	28.1,F1	20
Ronnel	1	0.58	0.41	0.60	ND	97	68	60-140	35,F1	20
Simazine	1	0.55	0.39	0.60	ND	92	65	60-140	34.5,F1	20
Stirofos (Tetrachlorvinphos)	1	0.69	0.64	0.60	ND	114	107	60-140	6.87	20
Terbacil	1	0.71	0.59	0.60	ND	119	99	60-140	18.6	20
Terbufos (Terbuphos)	1	0.62	0.46	0.60	ND	103	76	60-140	30.1,F1	20
Thiobencarb	1	0.61	0.46	0.60	ND	102	77	60-140	28,F1	20
Tokuthion (Prothiofos)	1	0.64	0.54	0.60	ND	107	89	60-140	18.3	20
Trichloronate (Agritox)	1	0.59	0.43	0.60	ND	98	71	60-140	31.6,F1	20
Surrogate Recovery										
1-Bromo-2-Nitrobenzene	1	0.21	0.24	0.20		106	118	60-140	11.5	20
Triphenyl phosphate	1	0.27	0.31	0.20		135	155,F3	60-140	13.9	20

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/22/2024	**BatchID:**	306517
Date Analyzed:	11/22/2024	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306517

QC Summary Report for SW8151A

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Acifluorfen	ND	0.0053	0.010	-	-	-
Bentazon	ND	0.0033	0.010	-	-	-
Chloramben	ND	0.0041	0.010	-	-	-
2,4-D (Dichlorophenoxyacetic acid)	ND	0.0029	0.010	-	-	-
2,4-DB	ND	0.0061	0.010	-	-	-
Dalapon	ND	0.0061	0.010	-	-	-
DCPA (mono & diacid)	ND	0.0032	0.010	-	-	-
Dicamba	ND	0.0033	0.010	-	-	-
3,5-Dichlorobenzoic Acid	ND	0.0032	0.010	-	-	-
Dichloroprop	ND	0.0030	0.010	-	-	-
Dinoseb (DNBP)	ND	0.0032	0.010	-	-	-
MCPA	ND	0.38	1.0	-	-	-
MCPP	ND	0.36	1.0	-	-	-
4-Nitrophenol	ND	0.0074	0.010	-	-	-
Pentachlorophenol (PCP)	ND	0.0047	0.010	-	-	-
Picloram	ND	0.0050	0.010	-	-	-
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.0051	0.010	-	-	-
2,4,5-TP (Silvex)	ND	0.0028	0.010	-	-	-
Surrogate Recovery						
DCAA	0.089			0.1	89	63-129

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/22/2024	**BatchID:**	306517
Date Analyzed:	11/22/2024	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306517

QC Summary Report for SW8151A

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acifluorfen	0.13	0.12	0.10	126	116	60-140	8.09	30
Bentazon	0.10	0.098	0.10	103	98	60-140	4.70	30
Chloramben	0.12	0.11	0.10	115	110	60-140	5.15	30
2,4-D (Dichlorophenoxyacetic acid)	0.099	0.095	0.10	99	95	67-147	3.39	30
2,4-DB	0.10	0.10	0.10	102	101	61-152	1.01	30
Dalapon	0.083	0.082	0.10	83	82	54-153	0.545	30
DCPA (mono & diacid)	0.11	0.10	0.10	113	105	60-140	7.59	30
Dicamba	0.098	0.095	0.10	98	95	60-146	2.76	30
3,5-Dichlorobenzoic Acid	0.097	0.095	0.10	97	95	60-140	2.46	30
Dichloroprop	0.096	0.093	0.10	96	93	60-140	3.26	30
Dinoseb (DNBP)	0.10	0.099	0.10	103	99	60-140	4.30	30
MCPA	9.2	9.0	10	92	90	60-140	1.88	30
MCPP	9.5	9.3	10	95	93	60-140	2.79	30
4-Nitrophenol	0.091	0.099	0.10	91	99	60-140	8.85	30
Pentachlorophenol (PCP)	0.10	0.097	0.10	100	97	60-140	3.59	30
Picloram	0.12	0.11	0.10	115	108	60-140	6.58	30
2,4,5-T (Trichlorophenoxy acetic acid)	0.11	0.10	0.10	106	101	60-140	4.63	30
2,4,5-TP (Silvex)	0.10	0.096	0.10	100	96	63-145	4.02	30
Surrogate Recovery								
DCAA	0.094	0.095	0.10	94	95	63-129	1.03	30

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/19/2024	**BatchID:**	306225
Date Analyzed:	11/19/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306225

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Antimony	ND	0.10	0.50	-	-	-
Arsenic	ND	0.084	0.50	-	-	-
Barium	ND	0.73	5.0	-	-	-
Beryllium	ND	0.086	0.50	-	-	-
Cadmium	ND	0.080	0.50	-	-	-
Chromium	ND	0.17	0.50	-	-	-
Cobalt	ND	0.063	0.50	-	-	-
Copper	ND	0.19	0.50	-	-	-
Lead	ND	0.089	0.50	-	-	-
Mercury	ND	0.039	0.050	-	-	-
Molybdenum	ND	0.093	0.50	-	-	-
Nickel	ND	0.28	0.50	-	-	-
Selenium	ND	0.21	0.50	-	-	-
Silver	ND	0.084	0.50	-	-	-
Thallium	ND	0.073	0.50	-	-	-
Vanadium	ND	0.097	0.50	-	-	-
Zinc	ND	1.8	5.0	-	-	-
Surrogate Recovery						
Terbium	520			500	104	70-130

(Cont.)

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Quality Control Report

Client:	Environmental Science Associates	**WorkOrder:**	2411B29
Date Prepared:	11/19/2024	**BatchID:**	306225
Date Analyzed:	11/19/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	D201801197.01-14-25; Lucky 5 South	**Sample ID:**	MB/LCS/LCSD-306225

QC Summary Report for Metals

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Antimony	51	51	50	103	102	75-125	0.540	20
Arsenic	55	54	50	110	107	75-125	2.79	20
Barium	510	510	500	103	102	75-125	0.839	20
Beryllium	53	53	50	107	105	75-125	1.40	20
Cadmium	51	50	50	101	100	75-125	0.932	20
Chromium	52	51	50	104	103	75-125	1.59	20
Cobalt	53	51	50	105	103	75-125	2.58	20
Copper	53	52	50	107	104	75-125	2.09	20
Lead	52	51	50	104	103	75-125	1.12	20
Mercury	1.3	1.3	1.25	103	104	75-125	0.541	20
Molybdenum	51	50	50	101	100	75-125	0.738	20
Nickel	53	51	50	106	102	75-125	3.86	20
Selenium	53	52	50	107	103	75-125	3.37	20
Silver	51	51	50	101	102	75-125	0.264	20
Thallium	52	52	50	104	103	75-125	1.07	20
Vanadium	52	51	50	104	102	75-125	1.81	20
Zinc	540	520	500	107	105	75-125	2.14	20
Surrogate Recovery								
Terbium	520	520	500	104	104	70-130	0.789	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2411B29 **ClientCode: ESAS**

☐ WaterTrax ☐ CLIP ☐ EDF ☐ EQuIS ☐ Dry-Weight ☐ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Excel

Report to:
Michael Burns
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
(650) 391-4880 FAX:

Email: mburns@esassoc.com
cc/3rd Party:
PO: D201801197.01-14-25
Project: D201801197.01-14-25; Lucky 5 South

Bill to:
Jeff Trow
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
accountspayable@esassoc.com

Requested TAT: 5 days;

Date Received: **11/19/2024**
Date Logged: **11/19/2024**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2411B29-001	Lucky 5 South	Soil	11/19/2024 08:49	☐	A	A	A	A	A							

Test Legend:

1	8081PCB_S	2	8141_S	3	8151_S	4	CAM17MS_TTLC_S
5	PRDisposal Fee	6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ENVIRONMENTAL SCIENCE ASSOCIATES **Project:** D201801197.01-14-25; Lucky 5 South **Work Order:** 2411B29
Client Contact: Michael Burns **QC Level:** LEVEL 2
Contact's Email: mburns@esassoc.com **Comments:** **Date Logged:** 11/19/2024

☐WaterTrax ☐CLIP ☐EDF ☐Excel ☐EQuIS ☐Email ☐HardCopy ☐ThirdParty ☐J-flag

LabID	ClientSampID	Matrix	Test Name	Cont./ Comp.	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	Lucky 5 South	Soil	SW6020 (CAM 17)	1	16OZ GJ, Unpres	☐	☐	☐	11/19/2024 8:49	5 days	11/26/2024		☐	☐
			SW8151A (Chlorinated Herbicides)			☐	☐	☐		5 days	11/26/2024		☐	☐
			SW8270E (ON/P Pesticides - EPA 8141 target list)			☐	☐	☐		5 days	11/26/2024		☐	☐
			SW8081B/8082A (OC Pesticides+PCBs)			☐	☐	☐		5 days	11/26/2024		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

Cont./Comp. = Containers /Composites

General COC

MAI Work Order # 2411B29

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CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	●	Quote #							
J-Flag / MDL	●	ESL		Cleanup Approved		Dry Weight		Bottle Order #							
Delivery Format:	PDF	●	GeoTracker EDF		EDD		Write On (DW)		Detect Summary						

Report To: Michael Burns	Bill To: Michael Burns @ ESA
Company: Environmental Science Associates	
Email: mburns@esassoc.com	
Alt Email:	Tele: 707-779-9424
Project Name: Lucky 5 South	Project #: D201801197.01-14-25
Project Location: Lucky 5 South Parcel	PO # D201801197.01-14-25
Sampler Signature:	

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	OC Pesticides & PCBs SW8081A/8082	Organophosphorous pesticides SW8082C	Chlorinated herbicides SW8151A	CAM 17 metals	Analysis Requested
Lucky 5 South	19-Nov-2024	1849	1	S	1	●	●	●	●	

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
	19-Nov-2024	1018		11/19/24	1018

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 0.4 °C Initials

R30

Page 1 of 1

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Sample Receipt Checklist

Client Name:	Environmental Science Associates	Date and Time Received:	11/19/2024 10:18
Project:	D201801197.01-14-25; Lucky 5 South	Date Logged:	11/19/2024
		Received by:	Agustina Venegas
WorkOrder №:	2411B29 Matrix: Soil	Logged by:	Agustina Venegas
Carrier:	Client Drop-In		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☐	No	☑		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Custody seals intact on sample bottles?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 0.4°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2)?	Yes	☐	No	☐	NA	☑

UCMR Samples:

pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

Appendix G

Tide's End Multibenefit Restoration Project Cultural Resources Inventory Report – Confidential

[Not Included with this Report]

Appendix H

Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment

Tide's End Multibenefit Restoration Project

CEQA Hydraulic Impacts Assessment

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PREPARED BY
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AUGUST 2025

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TIDE'S END MULTIBENEFIT RESTORATION PROJECT

CEQA Hydraulic Impacts Assessment

1 Introduction

The California Department of Water Resources (DWR), as lead agency under the California Environmental Quality Act (CEQA), proposes to implement the Tide's End Multibenefit Restoration Project (proposed Project). The proposed Project would restore tidal wetland and associated floodplain habitat at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento-San Joaquin River Delta (Delta) (**Figure 1**). Implementation of the proposed Project would complete a corridor of floodplain and wetland habitats, stretching from the southern tip of Lookout Slough to the Yolo Bypass Wildlife Area, which are managed for fish and wildlife benefits.

To further evaluate the potential of the proposed Project to change flood conveyance in and around the proposed Project area, hydraulic modeling was conducted. This report documents the methods, data, and assumptions used to analyze potential hydrologic and hydraulic effects of the proposed Project as required under CEQA for the following scenarios: Existing Conditions Baseline, Future No-Action, and Future Cumulative Conditions. Several hydrologic conditions were simulated, including future climate scenarios of increased intensity precipitation and snowmelt, referred to as inland climate change, and associated effects of sea-level rise. This report is an appendix to the Supplemental Environmental Impact Report Chapter 3.10, Hydrology and Water Quality.

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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1
Yolo Bypass Regional Overview and Proposed Project Setting

Prepared by: ESA

SOURCE: NAIP, 2022; CA DWR, 2020; USGS NHD, 2020

2 Background

The proposed Project is located within the Yolo Bypass in the northwest corner of the Delta in Yolo County. The Yolo Bypass is a major component of the Sacramento River Flood Control Project. During periods of intense runoff from the north Central Valley, the Yolo Bypass protects the city of Sacramento and neighboring communities from flooding by intercepting overflows from the Sacramento River and its tributaries.

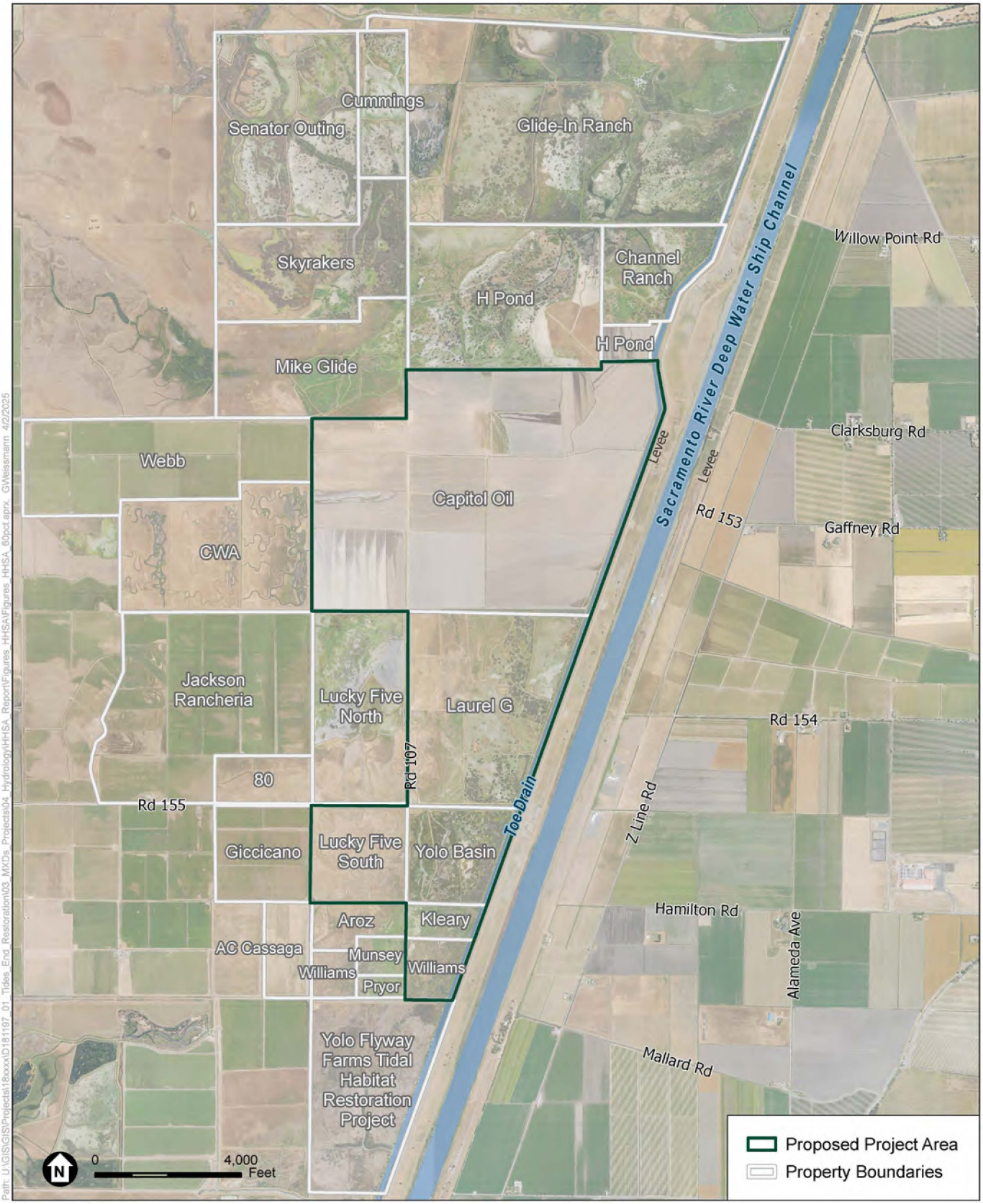
As shown on **Figure 2**, the proposed Project is bounded to the east by the Toe Drain, to the south by Yolo Flyway Farms Tidal Habitat Restoration Project, and to the north and west by private land owners. Land-surface elevations within the proposed Project area range between El. 4.3 feet (NAVD 88) and El. 19.5 feet (NAVD 88), with a general slope downward from west to east. Precipitation in the local region comes from frontal storms originating from the Pacific Ocean during the primary wet season between October and April. The local region receives a mean annual rainfall of approximately 18.7 inches (Wood Rodgers 2010) and is characterized by frequently flooded, poorly drained soils (USDA 2024).

2.1 Historic Landscape

Up to the early 20th century, the proposed Project site was covered by seasonal wetlands at the interface of the historic tidal tule marsh complex (tidal freshwater emergent and seasonal wetland, (**Figure 3**) that formed the low-lying southern portion of the Yolo Basin. The upper portions of the Yolo Basin were formed by Holocene basin deposits laid down by the Sacramento River and the two major west side tributaries, Cache Creek and Putah Creek (**Figure 4**). Site soils primarily consist of Clear Lake and Capay soils formed in fine-textured alluvium from mixed rock sources in flood basins, and both have been altered in the proposed Project area because of past agricultural and management practices. The historical ecology and geology of the site is described in more detail in the proposed Project's Habitat Restoration and Site Plan (ESA 2025c).

Historically, the Yolo Basin was largely cutoff from the Sacramento River, except in times when the natural levees along the banks of the river overtopped, similar to flows cresting Fremont Weir today (Opperman et al. 2017). The Yolo Basin received seasonal runoff from the west side tributaries, including Cache Creek and Putah Creek, as well as groundwater seepage from the Sacramento River. These sources combined with freshwater tidal inundation, fed the historic freshwater tidal wetlands and channels where the proposed Project is located (PWA 2008).

The southeastern portion of the proposed Project area is located within what is understood to have been part of the historic tidally inundated marsh that occupied the lower Yolo Basin. Vegetation on this portion of the site was dominated by tules (S*choenoplectus acutus*, also known as Hardstem Bulrush), a dense perennial wetland plant species which is native to the marshplains of the region. The density of tules and willows in the region is considered one of the reasons that these areas were not carefully surveyed prior to reclamation (Atwater 1982). Land within the proposed Project area would have been relatively level, gradually draining east and south into the Cache Slough Complex, with the marshplain edge dictated by elevation of the highest tides (PWA 2008). Areas upslope of the historic tidal wetlands would have been a mix of wet meadow and seasonal wetlands (Whipple et al. 2012).



Path: U:\GIS\GIS\Projects\18xxxx\D181197_01_Tides_End_Restoration\03_MXDs_Projects\04_Hydrology\HHSA_Report\Figures_HHSAFigures_HHSA_60pct.aprx GWeissmann 4/2/2025

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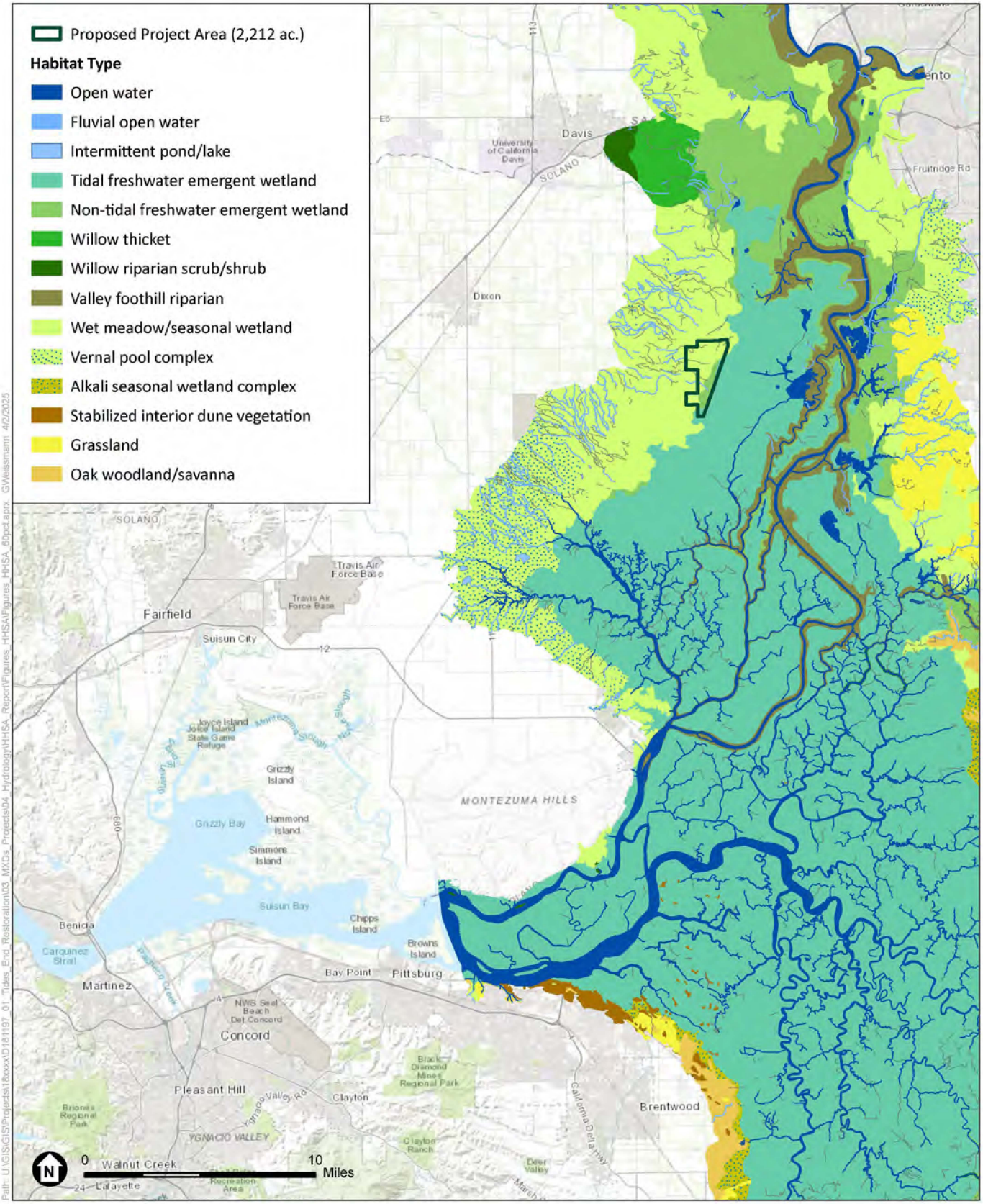
TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 2
Proposed Project Area

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2024

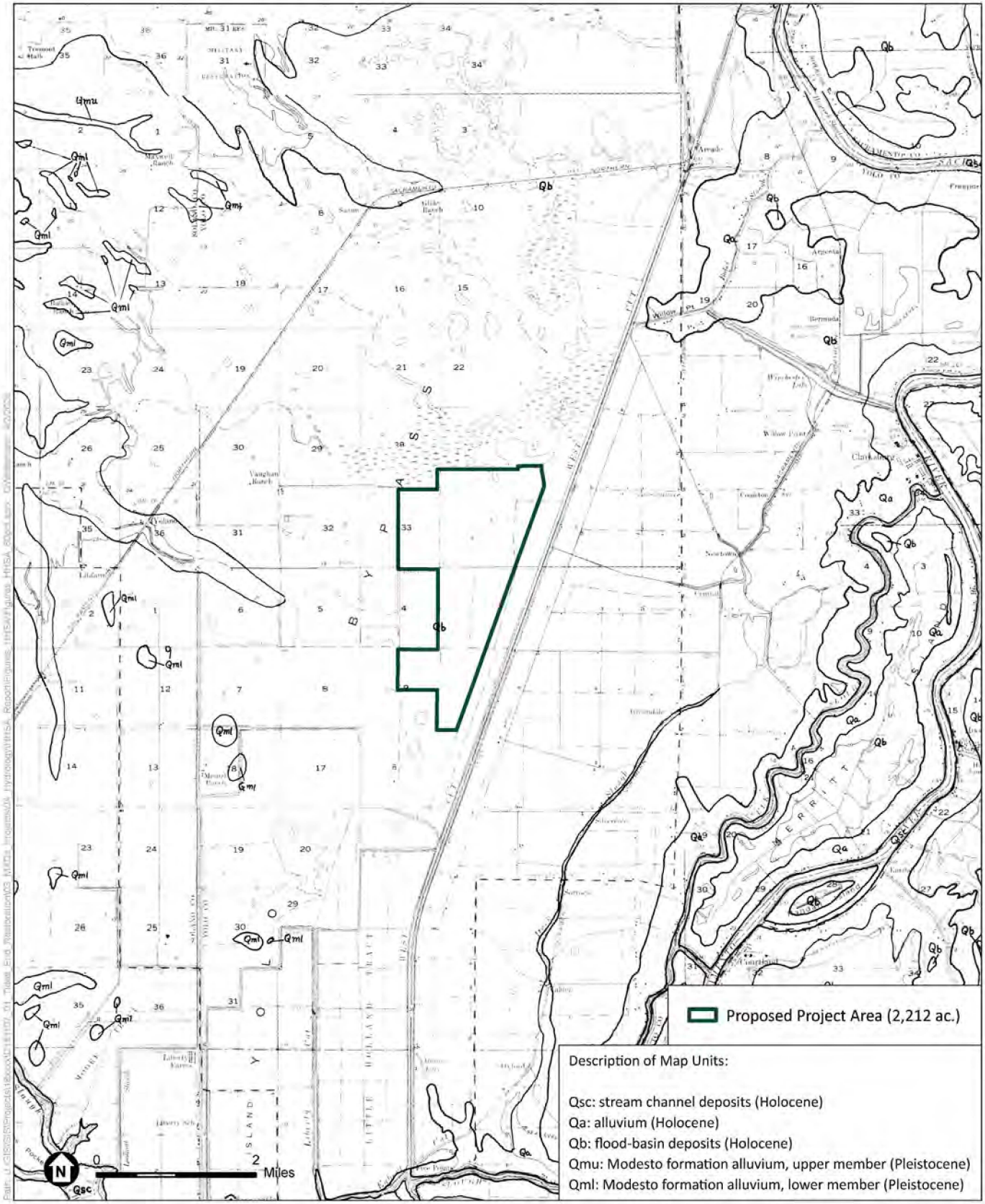


Tide's End Multibenefit Restoration Project

Figure 3
Historical Ecology

Prepared by: ESA

SOURCE: Esri et al., 2024; SFEI, 2012; ESA, 2024g



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 4
Geologic Map of Sacramento-San Joaquin Delta, California

Prepared by: ESA

SOURCE: Helley and Harwood, 1985; ESA, 2024g

2.2 Existing Conditions

The land within the proposed Project area is currently managed for waterfowl habitat, upland bird habitat, and agriculture (mainly rice production). Land management activities in and surrounding the proposed Project area include typical rice cultivation practices and livestock grazing. Managed wetland habitat for waterfowl is the dominant land use within the proposed Project area, with constructed wetlands operated for a duck club via an irrigation system comprised of pumps and drainage ditches. Existing land uses and management practices for the vicinity are described in greater detail in the proposed Project's Land Use Constraints Analysis report (ESA 2024a).

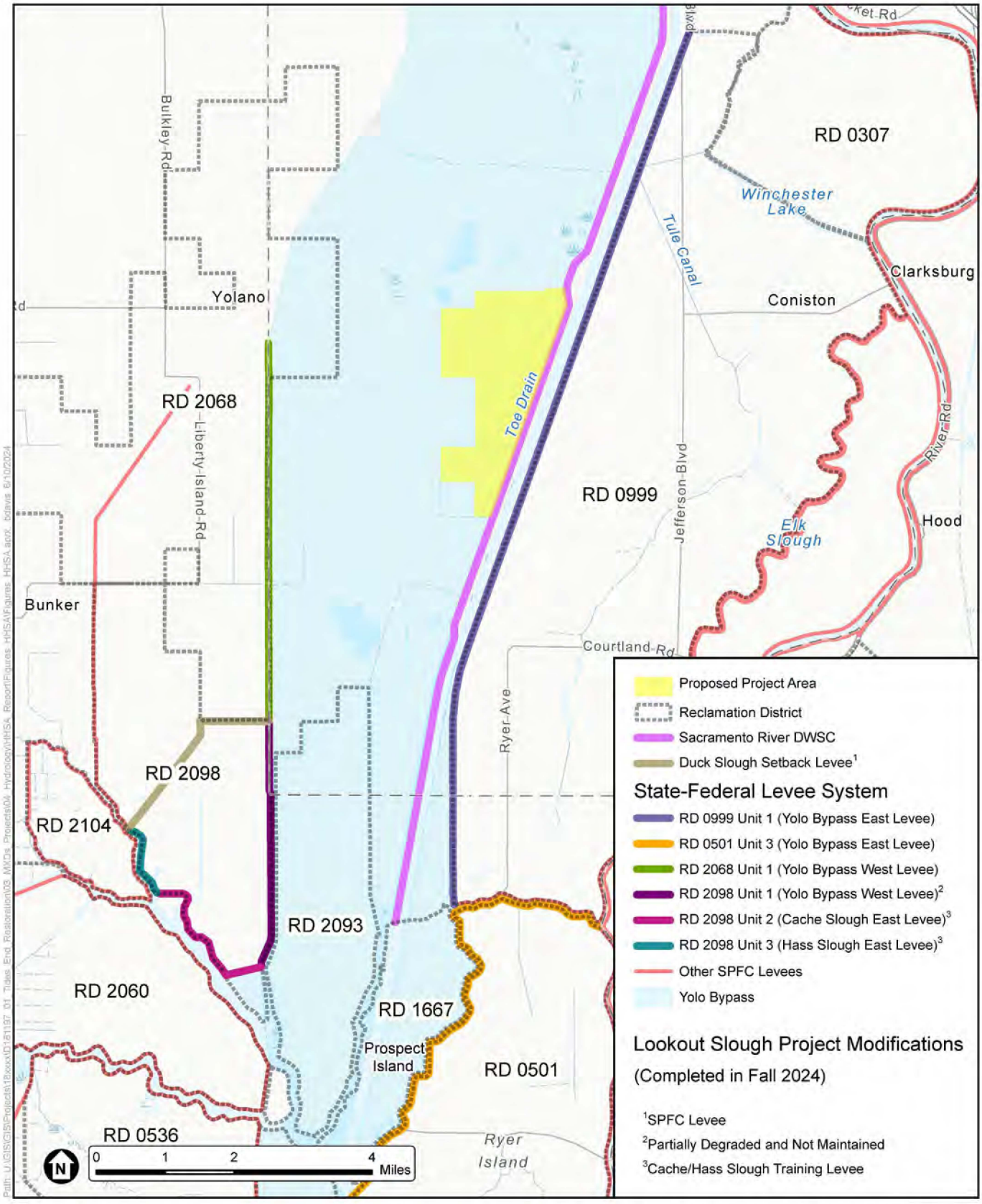
The proposed Project is located within the leveed floodway of the Yolo Bypass, a major component of the Sacramento River Flood Control Project (SRFCP) authorized by the Flood Control Act of 1917. During winter flood season, the levees on the east and west sides of the Yolo Bypass protect thousands of acres of agricultural land and associated structures and roads. The proposed Project is also located adjacent to the Toe Drain and the navigation levee that forms the Sacramento River Deep Water Ship Channel on the eastern side of the Bypass. The existing levee systems in the vicinity of the proposed Project (**Figure 5**) include:

- Sacramento River Flood Control Project Unit No. 109, – West Levee of Yolo Bypass, Duck Slough Setback Levee, and East Levee of Cache and Haas Slough, operated and maintained by Reclamation District 2068 and Reclamation District 2098.
- Sacramento River Flood Control Project Unit No. 113 – East Levee of Yolo Bypass, North Levee of Miner Slough, West Levees of Sutter Slough, Elkhorn Slough and Sacramento River, all bordering Reclamation District No. 999 (RD 999).
- The Sacramento River Deep Water Ship Channel and its navigation levee are maintained by the U.S. Army Corps of Engineers (USACE). Completed in 1963, the Sacramento-Yolo Port District is the sponsor of this local cooperation navigation project.

The above-mentioned levees and the Sacramento River Deep Water Ship Channel are located outside of the proposed Project site, but within the area of study.

3 Proposed Project Datums

All horizontal and geometric control data for the project are referenced to the North American Datum of 1983 (NAD 83) and the California State Plane II (feet) coordinate system. All vertical elevations described in this report are referenced to the North American Vertical Datum of 1988 (NAVD 88) and are reported in units of feet.



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 5
Existing Levee System

Prepared by: ESA

SOURCE: USACE National Levee Database, CA Levee Database, CBI, DWR, ESRI Surface Layers

4 Hydraulic Impacts Assessment Criteria

If approved, the proposed Project has the potential to change hydraulic conditions in the Yolo Bypass. Recognizing this, hydraulic models were developed to determine the significance of any changes to water surface elevation and velocity under both contemporary (i.e., present) and future climate conditions. A summary of the criteria used for assessing the impacts on and by the proposed Project follows below.

4.1 Water Surface Impact Considerations

While not formally codified in any regulations, when permitting projects, the Central Valley Flood Protection Board (CVFPB) and USACE generally consider increases in water levels of 0.10 feet or greater to be significant. This criterion was recently used for the American River Common Features 2016 Flood Risk Management Project (USACE 2025), and has therefore been adopted for purposes of analyzing the significance of hydraulic effects related to the proposed Project. Areas identified as sensitive to the proposed Project performance during flood conditions are described below.

4.1.1 Impacts on the Yolo Bypass

The proposed Project seeks to avoid increasing water levels and velocities in the Yolo Bypass (Figure 1) during flood operations through floodplain contouring (grading) and long-term management of floodplain roughness. This will be critical not only for maintaining adequate freeboard along the levees, but to avoid impacts at the northern terminus of the west levee of the Yolo Bypass. During high water events, there is potential for the Yolo Bypass to outflank the levee system north of Mills Road and spill into RD 2068 under existing conditions. The proposed Project will seek to avoid increasing the potential for this to occur.

4.1.2 Impacts on Downstream Areas, including Rio Vista

The city of Rio Vista (Figure 1) is the first major population area downstream and is vulnerable to flooding from the Sacramento River and the Yolo Bypass. Rio Vista receives modest flood protection from an existing floodwall that extends from the dock at the end of Montezuma Street to just north of Main Street. This floodwall was overtopped in 1986 and was subsequently raised. Since that time, the floodwall has not been overtopped by a flood event. However, downtown Rio Vista regularly experiences flooding from minor storm events and high tides (Flood Protect, 2014).

Elevated water stages in the Sacramento River can potentially overtop the west bank of the Sacramento River upstream of State Highway 12 and flow through the highway underpass, thereby effectively flanking the existing floodwall and flooding downtown Rio Vista. During these high-water events, businesses upstream of State Highway 12 are forced to close until floodwaters recede, since flooding along State Highway 84 makes the businesses inaccessible. The proposed Project will seek to avoid worsening that condition or otherwise induce impacts to other areas downstream.

4.2 Channel Stability and Erosion

The proposed Project improvements may result in localized changes in velocity and bed shear stress. To ensure that these changes do not adversely impact the performance of the State-Federal levee system, modeling results from the 1% Annual Chance Exceedance (ACE) (100-year) design storm will be used as the basis for assessing bank stability and formulating recommendations for selection of lining materials if necessary. For the purposes of the proposed Project model, stability threshold values by material type shown in **Table 1** will be used as reference. Not all material types shown are expected to be used in the proposed Project. In general, with the exception of the agricultural fields and associated infrastructure, the majority of the site will be covered by native grasses or tules where permissible velocities are expected to be in the range of 4-6 fps. During flood season, when the agricultural fields are anticipated to be fallow, permissible velocities are anticipated to governed by the native soil types within the fields which are generally a mix of Capay soils (silty clay), Clear Lake soils (clay loam), and Pescadero soils (loam) (NRCS 2015). While these soil types do not map precisely against the boundary types shown in Table 1, their relatively high clay content (40-45%) suggests permissible velocities will be within the range of 2-3 fps.

TABLE 1
PERMISSIBLE SHEAR AND VELOCITY FOR SELECTED LINING MATERIALS

Boundary Category	Boundary Type	Permissible Shear Stress (psf)	Permissible Velocity (fps)
Soils	Fine colloidal sand	0.02 – 0.03	1.5
	Sandy loam (noncolloidal)	0.03 – 0.04	1.75
	Alluvial silt (noncolloidal)	0.045 – 0.05	2
	Silty loam (noncolloidal)	0.045 – 0.05	1.75 – 2.25
	Firm loam	0.075	2.5
	Fine gravels	0.075	2.5
	Stiff clay	0.26	3 – 4.5
	Alluvial silt (colloidal)	0.26	3.75
	Graded loam to cobbles	0.38	3.75
	Graded silts to cobbles	0.43	4
	Shales and hardpan	0.67	6
Gravel/Cobble	1-in.	0.33	2.5 – 5
	2-in.	0.67	3 – 6
	6-in.	2.0	4 – 7.5
	12-in.	4.0	5.5 – 12
Vegetation	Class A turf	3.7	6 – 8
	Class B turf	2.1	4 – 7
	Class C turf	1.0	3.5
	Long native grasses	1.2 – 1.7	4 – 6
	Short native and bunch grasses	0.70 – 0.95	3 – 4
	Reed plantings	0.10 – 0.60	N/A
	Hardwood tree plantings	0.41 – 2.50	N/A

Boundary Category	Boundary Type	Permissible Shear Stress (psf)	Permissible Velocity (fps)
Temporary Degradable RECPs	Jute net	0.45	1 – 2.5
	Straw with net	1.50 – 1.65	1 – 3
	Coconut fiber with net	2.25	3 – 4
	Fiberglass roving	2.0	2.5 – 7
Non-Degradable RECPs	Unvegetated	3.0	5 – 7
	Partially established	4.0 - 6.0	7.5 – 15
	Fully vegetated	8.0	8 – 21
Riprap	6-in. d50	2.5	5 – 10
	9-in. d50	3.8	7 – 11
	12-in. d50	5.1	10 – 13
	18-in. d50	7.6	12 – 16
	24-in. d50	10.1	14 – 18
Soil Bioengineering	Wattles	0.2 – 1.0	3
	Reed fascine	0.6 – 1.25	5
	Coir roll	3 – 5	8
	Vegetated coir mat	4 – 8	9.5
	Live brush mattress (initial)	0.4 – 4.1	4
	Live brush mattress (grown)	3.9 – 8.2	12
	Brush layering (initial/grown)	0.40 – 6.25	12
	Live fascine	1.25 – 3.10	6 – 8
	Live willow stakes	2.10 – 3.10	3 – 10
Hard surfacing	Gabions	10.0	14 – 19
	Concrete	12.5	> 18

Abbreviations: d50: median grain size; fps: feet per second; psf: pounds per square foot; RECP: rolled erosion control product
Source: Fischenich, 2001

5 Proposed Actions – Concept Plan

The conceptual with-proposed Project design (**Figure 6**) was developed by ESA to restore and reconnect tidal and floodplain habitats to as much of the proposed Project area as is practical, without compromising the flood conveyance capacity of the Yolo Bypass during high-water events. The proposed Project concept seeks to avoid increasing water levels and velocities in the Yolo Bypass, while also supporting habitat function. Proposed elements of the proposed Project that are considered hydraulically significant are described below.

5.1 Grading

Across the proposed Project area, excavation will be used to create new tidal wetland habitat corridors and new tidal channels. At the proposed Project scale, constructed channels will provide habitat, irrigation supply and drainage for nearby agriculture and managed seasonal wetlands. Excavation will also be used to create flat land suitable for agriculture and managed seasonal wetlands.

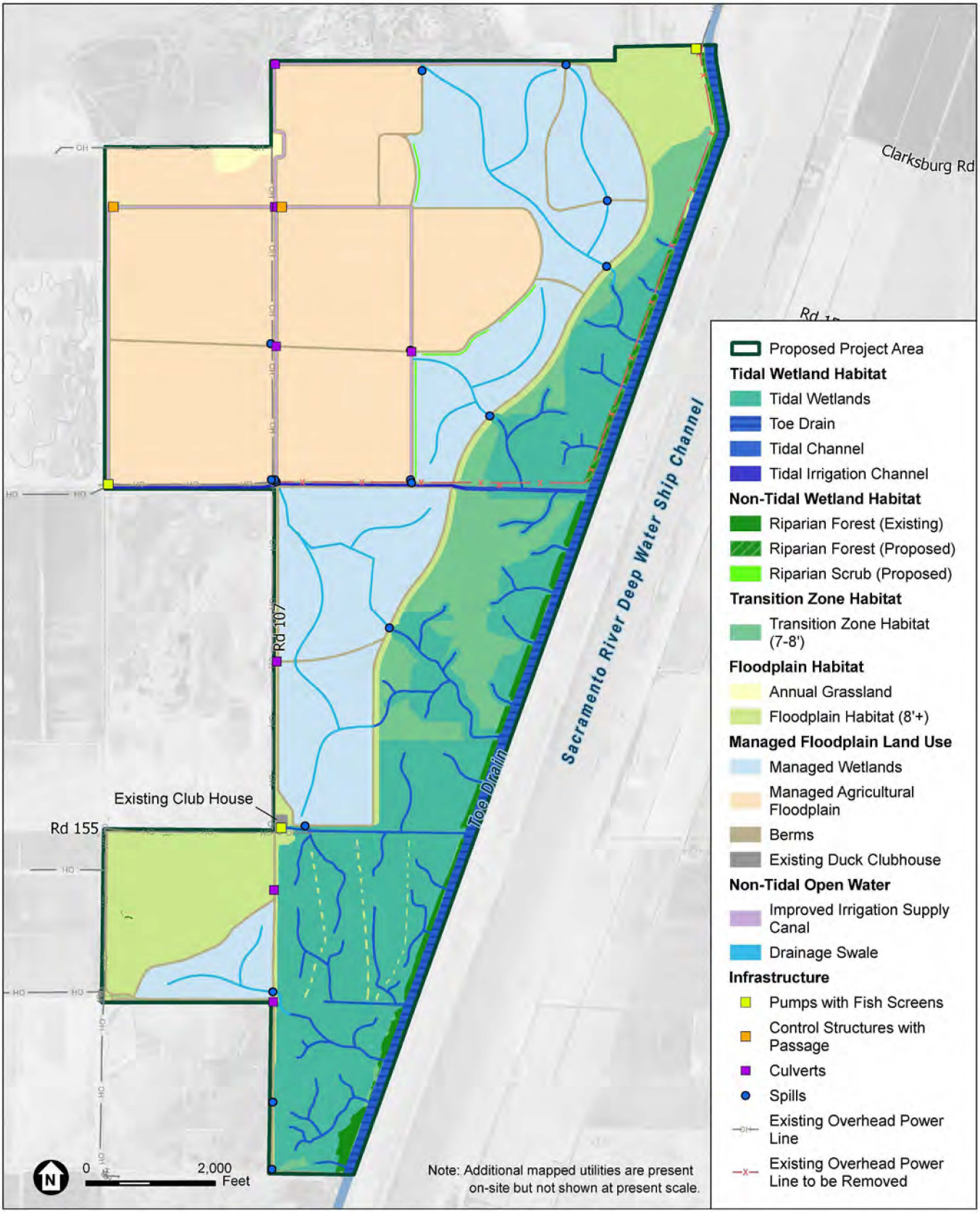
Across the proposed Project area, fill placement will be used to construct berms ranging between one to eight feet high (range of crest elevations: 10 – 15.8 ft NAVD 88) around the new agricultural fields and managed seasonal wetlands. These berms will allow the land managers to control water levels in the fields and ponds to support agricultural operations and wetlands for waterfowl. Select berms provide access for operations, maintenance, and post-construction monitoring. Tidal inundation would be restored by hydrologically connecting the site to the Toe Drain via a series of berm openings, berm lowering, and channel excavation along the eastern side of the property (generally 4-5 feet below the adjacent floodplain grade). Fill will be placed to create habitat features such as mounds and slopes that create a more natural transition between the actively managed areas and areas dedicated to natural habitats. Additionally, fill will be placed in any landscape features that do not support the desired water flow or could potentially trap fish, thus eliminating stranding hazards.

Minor grading will be used to create swales, habitat mounds, and other features to support tidal wetlands, riparian, and floodplain habitats. Minor grading, or local cut and fill, will also be used for the operations, maintenance, and post-construction monitoring (as needed) for agricultural fields and managed seasonal wetlands. These features are intended to enhance the functionality and ecological value of the floodplain habitats, providing varied microenvironments within the larger landscape, as well as function to manage irrigation and drainage for farming.

All proposed Project area grading has been designed to minimize impacts to hydraulic conveyance during flood operations.

5.2 Drainage and Irrigation Infrastructure

The proposed Project design modifies infrastructure by modifying the existing agricultural berms and irrigation systems. The agricultural berm along the western boundary of the Toe Drain channel will be notched in multiple locations to connect the proposed Project area to tidal waters, allowing the proposed Project area to experience tidal inundation during non-flood conditions and greater



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 6
Proposed Project Area
Draft Site Plan

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2025

connectivity to the Toe Drain during flood conditions. Irrigation infrastructure will be modified to allow the installation of a new primary irrigation pump station at the southwest corner of Capital Oil along the Main Drain canal to supply water to the agricultural fields and managed wetlands located on Capital Oil and Laurel G. The existing pump at the Laurel G clubhouse will be refurbished and will continue to supply water to Lucky 5 North and South. A new water control structure and new swales and channels will be installed to allow managed lands located north of the proposed Project to drain to the Toe Drain via the proposed new managed floodplain and tidal habitat areas. Elevations of all irrigation canal berms have been designed to minimize impacts to hydraulic conveyance during flood operations.

5.3 Land Use Modifications

The proposed Project proposes changes to the land uses across the proposed Project area, altering the existing floodplain roughness in this portion of the Yolo Bypass. In general, all land uses proposed are compatible with existing management practices in the Yolo Bypass; which, depending on their size, location, and orientation have potential to alter the conveyance capacity of the floodway. A summary of the proposed changes in land cover types across the site is provided in **Table 2**.

TABLE 2
APPROXIMATE EXISTING AND PROPOSED HABITAT TYPES

Habitat Type		Existing Conditions—Approximate Area (ac)	Proposed Conditions—Approximate Area[1] (ac)
Riparian Habitat (unmanaged)	Riparian forest, riparian scrub	27	37
Tidal Wetland Habitat (unmanaged)	Toe Drain	61	61
	Tidal wetlands, tidal channels, tidal irrigation canals	–	450
Transition Zone Habitat[2]	Transition zone habitat (elevation 6–8 feet NAVD88)	–	152
Grassland	Annual grassland, salt grass flat	10	7
Floodplain Habitat	Floodplain habitat (elevation > 8 feet NAVD88)	300	217
Managed Wetlands (Managed Floodplain)	Managed wetlands, managed tule wetlands, existing waterfowl hunting clubhouse	573	557
Managed Floodplain Agriculture (Managed Floodplain)	Managed floodplain agriculture, berms/access roads (around agricultural fields)	1,205	720
Non-tidal Open Water	Ditches, irrigation supply canal	36	11
	Total	**2,212**	**2,212**

NOTES: ac = acres; NAVD88 = North American Vertical Datum of 1988.

Of the 720 acres of proposed condition managed floodplain agriculture: approximately 670 acres is designated as Unique Farmland and would be retained as farmland and associated infrastructure would be improved. The remaining 50 is designated as grazing land but would be managed as agricultural farmland with the Project area.

1. The distribution of habitats or land use types displayed is approximate; some areas may switch from one habitat type to another during the environmental review process as the design is finalized but the total acreage would remain the same.
2. Section 2.2.4 of SEIR describes this habitat type in more detail.

SOURCE: Data compiled by Environmental Science Associates in 2025

6 Analysis

A description of the methods and assumptions used in analyzing the effects of the proposed Project is provided below.

6.1 System Performance Assumptions

The proposed Project alterations are being evaluated relative to the Existing Conditions Baseline, Future No-Action, and Cumulative Conditions scenarios described below. Per USACE EC 1165-2-220, Appendix F, Section F-3.f (USACE 2018) all project features are assumed to be stable and functional to the top of containment (USACE 2018) in this analysis. Levees are not assumed to breach or otherwise malfunction in the analysis of pre- and post-proposed Project conditions. Levees are allowed to overtop and spill water to storage areas adjacent to levees, without failing. The proposed Project is also assumed to be stabilized to the authorized condition, and based on this assumption, fragility curves are not required.

Levees of the State Plan of Flood Control (SPFC) that do not meet the minimum project standard have been modeled as meeting the minimum authorized height (i.e., the 1957 design profile). Where the existing top of levee heights exceed the authorized height, they are modeled as such (DWR and CVFPB 2025). This approach is consistent with the assumptions used for similar recently constructed projects in the region (e.g., Lower Elkhorn Basin Levee Setback [LEBLS], Lookout Slough, etc.) and provides a conservative estimate of flow delivery in the area of interest.

6.2 Sacramento River Flood Control Project Condition States

A comprehensive list of related projects within the Sacramento River Flood Control Project system that have been included in the hydraulic impacts analysis is presented in **Table 3**. As shown in Table 3, these projects have been grouped into the following physical condition states (or scenarios) relevant to the CEQA hydraulic impacts assessment: Existing Conditions Baseline; Future No-Action; and Future Cumulative Conditions. Table 3 also notes which of these projects are located within the extents of the two-dimensional hydraulic model domain (see Section 6.5.1) and that will be represented explicitly in the hydraulic model geometry. Features outside the two-dimensional model domain are represented explicitly in the regional hydraulic routing models previously developed for the Yolo Bypass Cache Slough (YBCS) Master Plan (DWR and CVFPB 2025). Adapted from information presented in the YBCS Master Plan, **Figure 7** depicts projects located within the YBCS Master Plan planning area, color coded based on the physical condition state(s) they are included in. Additional discussion of the Existing Conditions Baseline, Future No-Action, and Future Cumulative Conditions condition states and associated assumptions follows below.

TABLE 3
CONDITIONS STATE MATRIX

Regional Flood Operations Components/Conditions	Project Status[1]	Inside Tides End Model Domain[2]	Regional Project Elements		
			Existing Conditions Baseline	Future No-Action	Future Cumulative Conditions
Folsom Dam WCM Update (JFP and Dam Raise)	Complete	N	X	X	X
Forecast-Coordinated Operations (2005)	Complete	N	X	X	X
Prospect Island Levee Failure (1995-1997)	Complete	N	X	X	X
Shanghai Bend Setback Levee	Complete	N	X	X	X
Bear River Setback Levee	Complete	N	X	X	X
Star Bend Setback Levee	Complete	N	X	X	X
Feather River Setback Levee	Complete	N	X	X	X
Sacramento River RM 57.2 Setback Levee	Complete	N	X	X	X
Marysville Ring Levee	Complete	N	X	X	X
Feather River West Levee Project	Complete	N	X	X	X
Southport Setback Levee	Complete	N	X	X	X
Yuba Goldfields Setback Levee	Complete	N	X	X	X
Levee Raise – Lower American (US of Mayhew Drain)	Complete	N	X	X	X
Levee Raise – Lower American (near Howe Ave.)	Complete	N	X	X	X
Levee Improvements – Natomas Cross Canal	Complete	N	X	X	X
Mayhew Drain Closure Structure	Complete	N	X	X	X
Natomas Levee Raise (Reaches A through I)	Complete	N	X	X	X
Sacramento Weir Widening	Complete	N	X	X	X
Sacramento Bypass Levee Setback	Complete	N	X	X	X
Levee Raise – Arcade Creek	Complete	N	X	X	X
Levee Improvements – Magpie Creek	Complete	N	X	X	X
Levee Raise – Old Sac and Pocket	Complete	N	X	X	X
Lower Elkhorn Basin Levee Setback Project	Complete	N	X	X	X
Yolo Bypass Wildlife Area Habitat and Drainage Improvement Project	Complete	N	X	X	X

Regional Flood Operations Components/Conditions	Project Status[1]	Inside Tides End Model Domain[2]	Regional Project Elements		
			Existing Conditions Baseline	Future No-Action	Future Cumulative Conditions
Fremont Weir Adult Fish Passage Modification	Complete	N	X	X	X
Levee alignments in 1996	Complete	Y	X	X	X
Liberty Island Levee Failure (1997)	Complete	Y	X	X	X
Yolo Flyway Farms	Complete	Y	X	X	X
Lower Yolo Ranch Restoration Project	Complete	Y	X	X	X
Lookout Slough Tidal Habitat Restoration and Flood Improvement Project	Complete	Y		X	X
Yolo Bypass Salmonid Habitat and Fish Passage Project (Big Notch Project)	Complete, but not operated	N		X	X
Prospect Island Tidal Habitat Restoration Project	Under Construction (through 2026)	Y		X	X
Nigiri-Knaggs Ranch	Planning/Design	N			X
Conaway Ranch Salmonid Project	Planning/Design	N			X
Fremont Weir Expansion - Option B	Planning/Design	N			X
Upper Elkhorn Expansion - Option B	Planning/Design	N			X
Conaway Ranch Levee Setback	Planning/Design	N			X
Tule Canal Corridor Multi-Benefit Enhancement Project	Planning/Design	N			X
Lower Cache Creek Multi-Benefit Project	Planning/Design	N			X
Elk Slough Fish Passage and Flood Improvement Project	Planning/Design	N			X
Deep Water Ship Channel Improvements	Planning/Design	N			X
Swanston Ranch Master Plan	Planning/Design	N			X
Little Egbert Multi-Benefit Project (Alt 17a)	Planning/Design	Y			X
Rio Vista Small Communities Flood Risk Reduction Project	Planning/Design	Y			X
North Delta Fish Conservation Bank	Planning/Design	Y			X
Lisbon Weir[3]	Planning/Design	Y			X

NOTES:
1. Source: DWR and CVFPB (2025)
2. Components/conditions outside the model domain are represented explicitly in the YBCS Master Plan HEC-RAS Routing Models.
3. Project omitted from hydraulic modeling analysis (not hydraulically significant)

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Number	Project Name
1	Fremont Weir Adult Fish Passage Modification
2	Lower Elkhorn Basin Levee Setback Project
3	Lower Yolo Ranch Restoration Project
4	Sacramento Bypass Levee Setback
5	Sacramento Weir Widening
6	Yolo Bypass Wildlife Area Habitat and Drainage Improvement Project
7	Lookout Slough Tidal Habitat Restoration and Flood Improvement Project
8	Prospect Island Tidal Habitat Restoration Project
9	Yolo Bypass Salmonid Habitat and Fish Passage Project (Big Notch Project)
10	Conaway Ranch Salmonid Project
11	Deep Water Ship Channel Improvements
12	Elk Slough Fish Passage and Flood Improvement Project
13	Fremont Weir Expansion - Option B
14	Lisbon Weir
15	Little Egbert Multi-Benefit Project (Alt 17)
16	Lower Cache Creek Multi-Benefit Project
17	Nigiri-Knaggs Ranch
18	North Delta Fish Conservation Bank
19	Rio Vista Small Communities Flood Risk Reduction Project
20	Swanston Ranch Master Plan
21	Tule Canal Corridor Multi-Benefit Enhancement Project
22	Upper Elkhorn Expansion - Option B

Proposed Project Area

CEQA Existing Conditions Baseline (7/22/24 NOP)

NEPA EA and CVFPB/ 408 Permits Baseline (No-Action/No-Project) (2028 Constructed Condition)

CEQA Cumulative Analysis

Yolo Bypass

Toe Drain

0 3 Miles

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Tide's End Multibenefit Restoration Project

Figure 7
Regional Projects Located Within the Yolo Bypass

SOURCE: NAIP, 2022; CA DWR, 2020; USGS NHD, 2020; MBK, 2025

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6.2.1 Existing Conditions Baseline

The Existing Conditions Baseline condition state represents the system at the time of CEQA Notice of Preparation (NOP), which was released on July 22, 2024. As shown in Table 3 and Figure 7, this condition includes recently completed regional projects such as the LEBLS Project and Sacramento Weir Widening Project, but excludes the following:

- The Lookout Slough project was under construction but not completed at the time of the Tide's End NOP. Therefore, for the purposes of the Existing Conditions Baseline analysis it has been represented in its pre-project state (i.e., no habitat breaches along the west levee of the Yolo Bypass as shown in Figure 1).
- Although the Yolo Bypass Salmonid Habitat and Fish Passage Project (Big Notch Project at Fremont Weir) was constructed, operations of the facility had not been approved at the time of the NOP.

6.2.2 Future No-Action

The Future No-Action condition state represents the system at the anticipated time that if approved, the proposed Project would be operational. For purposes of this analysis, this is assumed to be the year 2028. This condition state represents a second baseline condition that was developed in response to comments on the NOP. As shown in Table 3 and Figure 7, this condition includes the list of regional projects within the Existing Conditions Baseline condition state, with the following additions:

- The Lookout Slough project, completed in Fall 2024.
- The Big Notch Project at Fremont Weir is assumed to be fully operational.
- The Prospect Island Tidal Habitat Restoration Project, which is anticipated to complete construction in 2026.

6.2.3 Future Cumulative Conditions

The Future Cumulative Conditions condition state represents ongoing and reasonably foreseeable future regional projects within the Yolo Bypass. For purposes of this analysis, conditions depicted in the YBCS Master Plan Scenario 2 (DWR and CVFPB 2025) condition have been used as the basis for representing this condition state. As shown in Table 3 and Figure 7, this condition includes the list of regional projects within the Existing Conditions Baseline and Future No-Action condition states with the following additions:

- Nigiri-Knaggs Ranch
- Conaway Ranch Salmonid Project
- Fremont Weir Expansion – Option B
- Upper Elkhorn Expansion – Option B
- Conaway Ranch Levee Setback
- Tule Canal Corridor Multi-Benefit Enhancement Project
- Lower Cache Creek Multi-Benefit Project

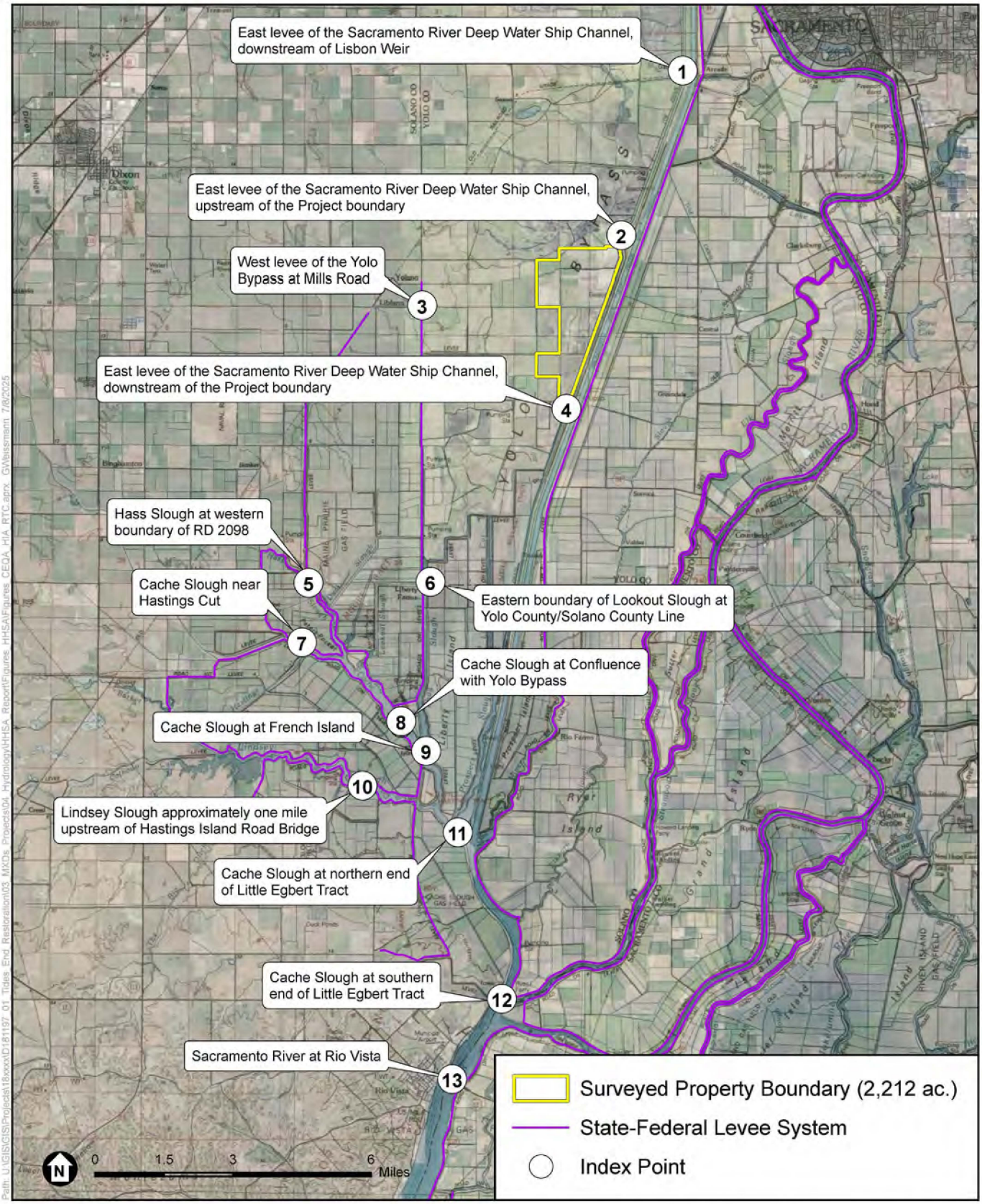
- Elk Slough Fish Passage and Flood Improvement Project
- Deep Water Ship Channel Improvements
- Swanston Ranch Master Plan
- Little Egbert Multi-Benefit Project (Alternative 17A)
- Rio Vista Small Communities Flood Risk Reduction Project
- North Delta Fish Conservation Bank

While the Lisbon Weir project was included in the suite of Master Plan Scenario 2 projects described in the YBCS Master Plan (DWR and CVFPB 2025), it has been omitted from the current analysis at it was not considered hydraulically significant for the range of flows being analyzed. Detailed descriptions of these respective projects can be found in the YBCS Master Plan.

6.3 Index Points

A total of 13 index points were selected as locations to review the hydraulic impacts of the proposed Project in both a Baseline and Future Cumulative Conditions scenarios. Shown on **Figure 8**, the following locations were identified during preliminary hydraulic analysis in close coordination with DWR:

1. East levee of the Sacramento River Deep Water Ship Channel, downstream of Lisbon Weir
2. East levee of the Sacramento River Deep Water Ship Channel, upstream of proposed Project boundary
3. West levee of the Yolo Bypass north of Mills Road
4. East levee of the Sacramento River Deep Water Ship Channel, downstream of proposed Project boundary
5. Hass Slough at western boundary of RD 2098
6. Eastern boundary of Lookout Slough at Yolo County/Solano County Line
7. Cache Slough near Hastings Cut
8. Cache Slough at Confluence with the Yolo Bypass
9. Cache Slough at French Island
10. Lindsey Slough, approximately one mile upstream of Hastings Island Road Bridge
11. Cache Slough at the northern end of Little Egbert Tract
12. Cache Slough at southern end of Little Egbert Tract
13. Sacramento River at Rio Vista



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 8
Index Points

Prepared by: ESA

SOURCE: Esri Service Layers

6.4 Hydrology

Hydrologic input data for hydraulic modeling were developed using data adapted from the YBCS Master Plan (DWR and CVFPB 2025), which includes design storm hydrology suitable for analyzing the 1% ACE (100-year) storm events under contemporary hydrologic conditions, as well as under future climate change conditions. An overview of the data used for these analyses is described in the following sections.

6.4.1 Historic Storms and Design Storm Scalings

Input time series data for evaluating the 1% ACE (100-year) design storms under contemporary hydrologic conditions for the Existing Conditions Baseline, Future No-Action, and Future Cumulative Conditions condition states (or scenarios) were adapted from hydraulic model outputs prepared for the YBCS Master Plan (DWR and CVFPB 2025) which was the most-recent regional flood modeling effort available at the time of analysis. To ensure consistency across studies, these hydrology datasets were prepared using procedures originally developed for the Central Valley Hydrology Study (CVHS) completed by the USACE and DWR in 2013. The CVHS-based hydrology uses historic storm patterns, scaled to correspond to statistically determined return period flows. The YBCS Master Plan adopted storm patterns and scale factors developed by the USACE for the American River Common Features, Water Resources Development Act (WRDA) of 2016 project. In the lower Yolo Bypass where the proposed Project is located, the governing design storm pattern is the American River (AMR) Centering, a WRDA 2016-specfiic flood centering developed by USACE (DWR and CVFPB 2025). The AMR Centering is based on the 1986 historic storm pattern and applies two CVHS scaling factors to balance coincident flow frequencies in this part of the system. In the AMR Centering, the primary CVHS scale factor is applied at the American River at Fair Oaks, while a separate coincident CVHS scale factor is applied to the rest of the system. For the contemporary hydrology scenarios evaluated in this report, the 1% ACE (100-year) design storm is represented by a primary scaling factor of 1.00 and a coincident scaling factor of 0.95 (USACE 2019).

A summary of the flow inputs used in the hydraulic impact analysis is provided in the subsequent hydraulic model boundary conditions discussion.

6.4.2 Sea-Level Rise (SLR) and Inland Climate Change (ICC)

DWR's Climate Action Plan Phase 2: Climate Change Analysis Guidance (CAPII) (DWR 2018) requires that analysis of climate change be completed and documented for projects going through the CEQA process. Sea-level rise (SLR) is the increase in sea levels worldwide associated with warming global temperatures and affects the conveyance of watershed storms to the ocean. As climate changes, hydrologic conditions within the lower Yolo Bypass are expected to become more variable over time, with an increase in the frequency, timing, and intensity of storm events in the watershed, referred to as inland climate change (ICC). As the atmosphere continues to warm, changes in the timing and volume of precipitation and snowmelt runoff are expected to shift, with peak flows arriving earlier in the season with a greater volume over a shorter time period (Delta Stewardship Council 2018). Combined, SLR and ICC are anticipated to result in greater peak flows and flood stages over time.

CAPII provides guidance to quantitatively or qualitatively evaluate a project's vulnerability to climate change based on the level of risk of climate change (low, medium, or high) to the project, as opposed to the project's impact or potential to cause climate change. For this project, DWR has determined the proposed Project to be "low-medium consequence."

The YBCS Master Plan modeling incorporated future SLR assumptions consistent with the Central Valley Flood Protection Plan 2022 Update, which relied on the best available SLR guidance available at that time (OPC 2018) to estimate conditions over a 50-year planning horizon (Year 2072). Following consultation with DWR, it was determined that the effects of the proposed Project with projected SLR be evaluated to consider a 50-year planning horizon relative to the CEQA Notice of Preparation in 2024 (Year 2074), using the State's latest SLR guidance (OPC 2024). The way these updated planning assumptions were applied to the model inputs to incorporate SLR is described in **Appendix A**.

For this modeling study, input time series data for evaluating the 1% ACE (100-year) design storms under ICC conditions for the Future No-Action and Future Cumulative Conditions scenarios were adapted from hydraulic model outputs prepared for the YBCS Master Plan (DWR and CVFPB 2025), under the "medium" ICC scenario. When the AMR Centering is adjusted for the "medium" climate scenario, the CVHS scale factor is applied at the American River at Fair Oaks is 115%, while a separate coincident CVHS scale factor of 120% is applied to the rest of the system (DWR and CVFPB 2025). Additional background describing the ICC design storm event selection and scaling factors is provided in Appendix A.

6.5 Hydraulic Analysis

To address the complex interaction between Yolo Bypass flood flows and the tidal influences of the north Sacramento-San Joaquin Delta, a two-dimensional hydraulic model is necessary for supporting analysis of impacts on and by the proposed Project. This analysis implements the previously calibrated, validated, and approved model to evaluate the effects of the proposed Project. That previous modeling effort (ESA 2020) used a nested-model concept that relies on an existing large-scale DWR regional model (HEC-RAS, documented in DWR 2016) to establish boundary conditions for a nested fine-scale model (TUFLOW, ESA 2020). For this study, a similar approach was adopted using updated boundary conditions hydrology derived from the regional hydraulic modeling developed for the YBCS Master Plan (DWR and CVFPB 2025). This section includes description of updates to the previous model including data used to develop geometric representations of the Existing Conditions Baseline, Future No-Action, and Future Cumulative Conditions condition states, and describes additional adjustments to the model domain boundaries. The modeling approach, tools, supporting data, and system impacts assessment are provided in the following sections.

6.5.1 Hydraulic Model Description

This section describes the model extents, general construction of the TUFLOW hydraulic model and input data sources and application of the model for evaluating the proposed Project design.

The site-specific flood model developed in this work uses the TUFLOW commercial software package (Build: 2018-03-AD-iSP-w64) used previously to design and analyze the effects of the Lookout Slough project (ESA 2020). The high-resolution, two-dimensional model simulates depth-averaged, one- and two-dimensional unsteady-state free-surface flow (to simulate floods and tides) using a two-dimensional finite volume solution occurring over a regular grid of square elements. TUFLOW is computationally efficient, facilitating rapid simulation times and making it advantageous for projects requiring long simulation periods (one or more months), or in cases where several alternatives are under consideration.

This TUFLOW hydraulic model utilizes a grid resolution of 60 feet, which was selected based on previous sensitivity and solution-convergence testing (ESA 2020). The grid resolution has been optimized to balance output requirements with computational efficiency and model stability. Quality assurance checks have been conducted to ensure that the model performs within recommended tolerances for numerical stability and mass balance for all simulations.

Geographic Extents

The TUFLOW model domain extents and boundary conditions locations are shown in **Figure 9**. The model resolves approximately the southern half of the Yolo Bypass. The northern boundary of the model domain is located within the Yolo Bypass at the latitude of the Lisbon Weir, approximately 5 miles north of the proposed Project area. The eastern edge of the model domain is bounded by the east levee of the Yolo Bypass, the lower end of the Sacramento River Deep Water Ship Channel, Prospect Island and the confluences with Miner Slough, Steamboat Slough, and the Sacramento River near Rio Vista. The western edge of the model domain extends west of the Yolo County – Solano County and includes inflows from Hass Slough, Cache Slough, and Lindsey Slough (Figure 9). The southern (downstream) boundary is located downstream of the town of Rio Vista on the Sacramento River (Figure 9). The model domain extents have been defined sufficiently far from the area of interest to avoid the influence of numerical artifacts at the model domain boundaries.

Boundary Conditions

Model boundary conditions were defined using either flow or stage time series at nine locations along the edge of the model domain (Figure 9) as follows:

- Flow at Yolo Bypass near Lisbon Weir
- Flow at the Sacramento River Deep Water Ship Channel
- Flow at Hass Slough
- Flow at Cache Slough
- Flow at Miner Slough
- Flow at Lindsey Slough
- Flow at Steamboat Slough
- Flow at Sacramento River
- Stage (tidally influenced) at the Sacramento River above Three Mile Slough

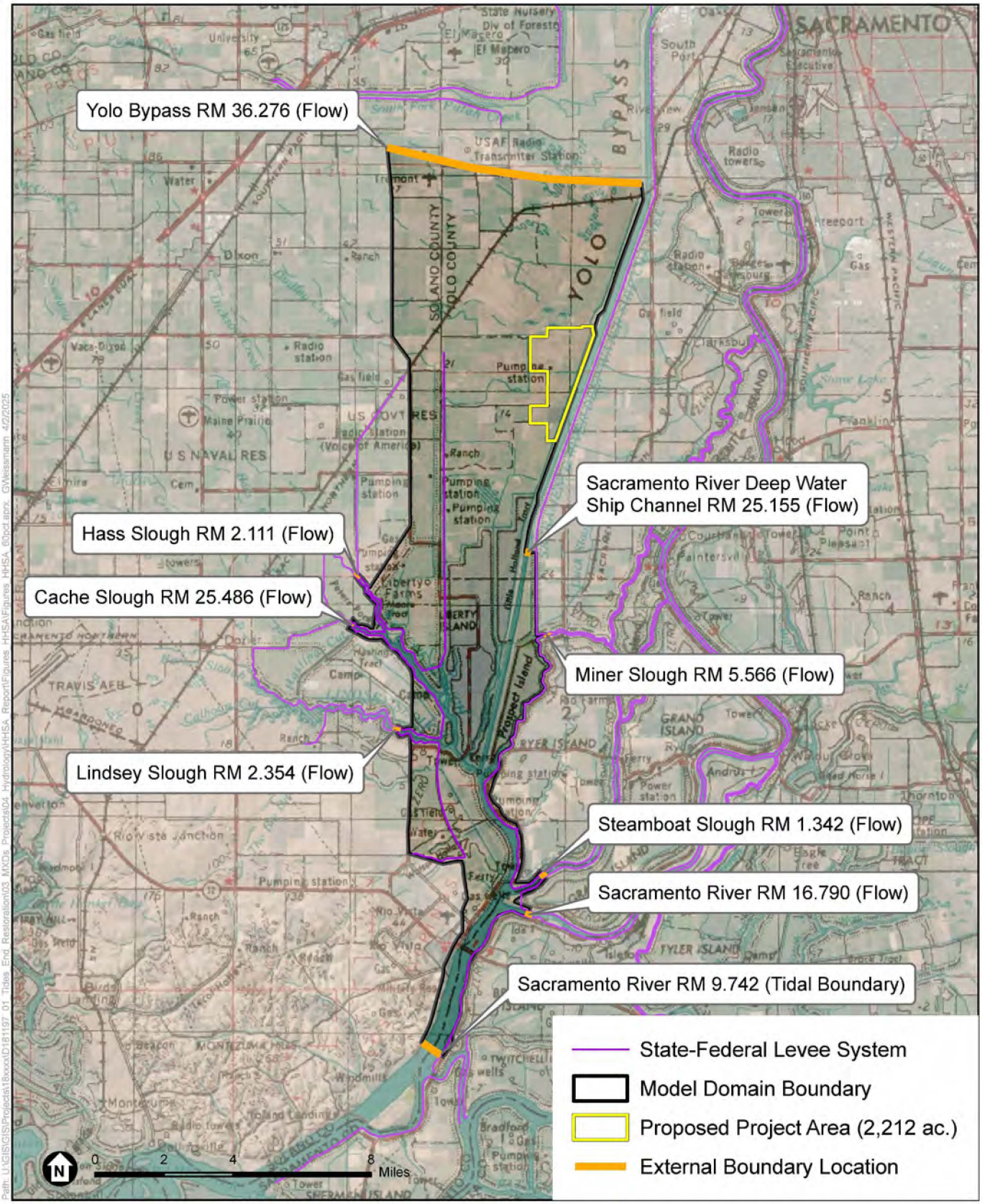

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Figure 9
TUFLOW Model Boundary Conditions

Prepared by: ESA

SOURCE: Esri Service Layers; ESA, 2025

All flow and stage time-series data at the TUFLOW model boundary condition locations were sourced from YBCS Master Plan HEC-RAS model outputs, and adapted as follows:

- The Existing Conditions Baseline condition state inputs are based on results from the YBCS Master Plan "Phase 1" model scenario. Although the YBCS Master Plan reflected Lookout Slough in the "Phase 1" model scenario, that project's hydraulic effects are sufficiently localized as to have negligible effect on diversions into the Yolo Bypass at Fremont Weir and Sacramento Weir (ESA 2020), making the YBCS Master Plan "Phase 1" scenario a suitable basis for simulating the Existing Conditions Baseline.
- The Future No-Action condition state inputs are based on results from the YBCS Master Plan "Phase 2" model scenario, which includes the Big Notch Project at Fremont Weir, Lookout Slough, and Prospect Island Tidal Habitat Restoration Project. Although the YBCS Master Plan "Phase 2" model scenario also included Little Egbert Multi-Benefit Project, Nigiri-Knaggs Ranch, and Conaway Ranch Salmonid Project, the hydraulic effects of those projects are considered sufficiently localized as to have negligible effect on the flow distribution at Fremont Weir and Sacramento Weir, making the YBCS Master Plan "Phase 2" scenario a suitable basis for simulating the Existing Conditions Baseline.
- The Future Cumulative Conditions condition state inputs are based on results from the YBCS Master Plan "MP Scenario 2" model scenario, which represents full buildout of planned and foreseeable projects within the Yolo Bypass.

Table 4 summarizes the peak flow or stage values at each boundary location for the respective hydrologic loading scenarios.

Topographic and Bathymetric Survey Data

Terrain data for the proposed Project are based on the following data sources, which are layered in the hydraulic model input to build a composite bathymetric and terrain surface:

The primary terrain data source representing existing terrain for the southern portion of the model domain is based on the DWR *San Francisco Bay and Sacramento-San Joaquin Delta DEM, v4.2* (Wang et al. 2020) which aggregates a number of data sources. Portions of the CA Sacramento Delta LiDAR 2017 D16 LiDAR project (Dudas 2020) were then added to close gaps in the topographic surface. As shown on **Figure 10** through **Figure 12**, additional terrain datasets sourced from Lookout Slough and the YBCS Master Plan hydraulic models were then added to represent the site-specific conditions for the Existing Conditions Baseline, Future No Action, and Cumulative Conditions condition states. For purposes of preparing the model input, all elevation data were converted to units of feet and re-projected to California State Plane II FIPS 0402 (US Feet) for consistency with the proposed Project datum.

Terrain Enforcement

Using the 3D breaklines prepared previously as part of DWR's CVFED LiDAR surveying efforts and data contained in the DWR California Levee Database (DWR 2010) as a base, a comprehensive breakline dataset was developed to enforce the tops of levees and embankments within the domain area. The respective breakline datasets used to enforce terrain in the model are shown in Figure 10 through Figure 12. The resultant composite terrain and bathymetry surface utilized in the respective model scenarios without- and with-proposed Project are shown on **Figure 13** through **Figure 15**.

TABLE 4
BOUNDARY CONDITION SUMMARY (PEAK FLOW AND STAGE SUMMARY)

Source	HEC-RAS Cross-Section Handoff Designation	Existing Conditions Baseline	Future No-Action		Future Cumulative Conditions	
		1% ACE (100-year) 1986 Pattern AMR Centering CVHS Event Scaling: 95% with 100% at American River	1% ACE (100-year) 1986 Pattern AMR Centering CVHS Event Scaling: 95% with 100% at American River	1% ACE with SLR and ICC (100-year with SLR and ICC) 1986 Pattern AMR Centering CVHS Event Scaling: 120% with 115% at American River	1% ACE (100-year) 1986 Pattern AMR Centering CVHS Event Scaling: 95% with 100% at American River	1% ACE with SLR and ICC (100-year with SLR and ICC) 1986 Pattern AMR Centering CVHS Event Scaling: 120% with 115% at American River
Yolo Bypass	YOL R03	**530,409 cfs**	**529,996 cfs**	**586,998 cfs**	**494,922 cfs**	**543,834 cfs**
	RM 36.276					
Sacramento River Deep Water Ship Channel[1]	SAD R01	**19,357 cfs**	**8,986 cfs**	**13,608 cfs**	**39,979 cfs**	**49,764 cfs**
	RM 25.155					
Hass Slough	HAS R01	**4,424 cfs**	**1,874 cfs**	**2,730 cfs**	**1,863 cfs**	**3,028 cfs**
	RM 2.111					
Cache Slough	CAS R04	**2,208 cfs**	**2,297 cfs**	**3,744 cfs**	**2,252 cfs**	**4,119 cfs**
	RM 25.486					
Miner Slough	MIN R01	**14,796 cfs**	**15,921 cfs**	**14,638 cfs**	**16,083 cfs**	**16,034 cfs**
	RM 5.566					
Lindsey Slough	LIN R01	**10,297 cfs**	**2,627 cfs**	**6,701 cfs**	**2,587 cfs**	**6,482 cfs**
	RM 2.354					
Steamboat Slough	STM R01	**34,076 cfs**	**32,819 cfs**	**36,833 cfs**	**32,624 cfs**	**35,057 cfs**
	RM 1.968					
Sacramento River (Inflow)	SAC R05	**43,275 cfs**	**41,262 cfs**	**43,444 cfs**	**40,595 cfs**	**41,924 cfs**
	RM 15.366					
Sacramento River (Downstream Stage, NAVD 88)	SAC R04	**10.80 feet**	**10.80 feet**	**12.77 feet**	**10.81 feet**	**12.77 feet**
	RM 9.742					

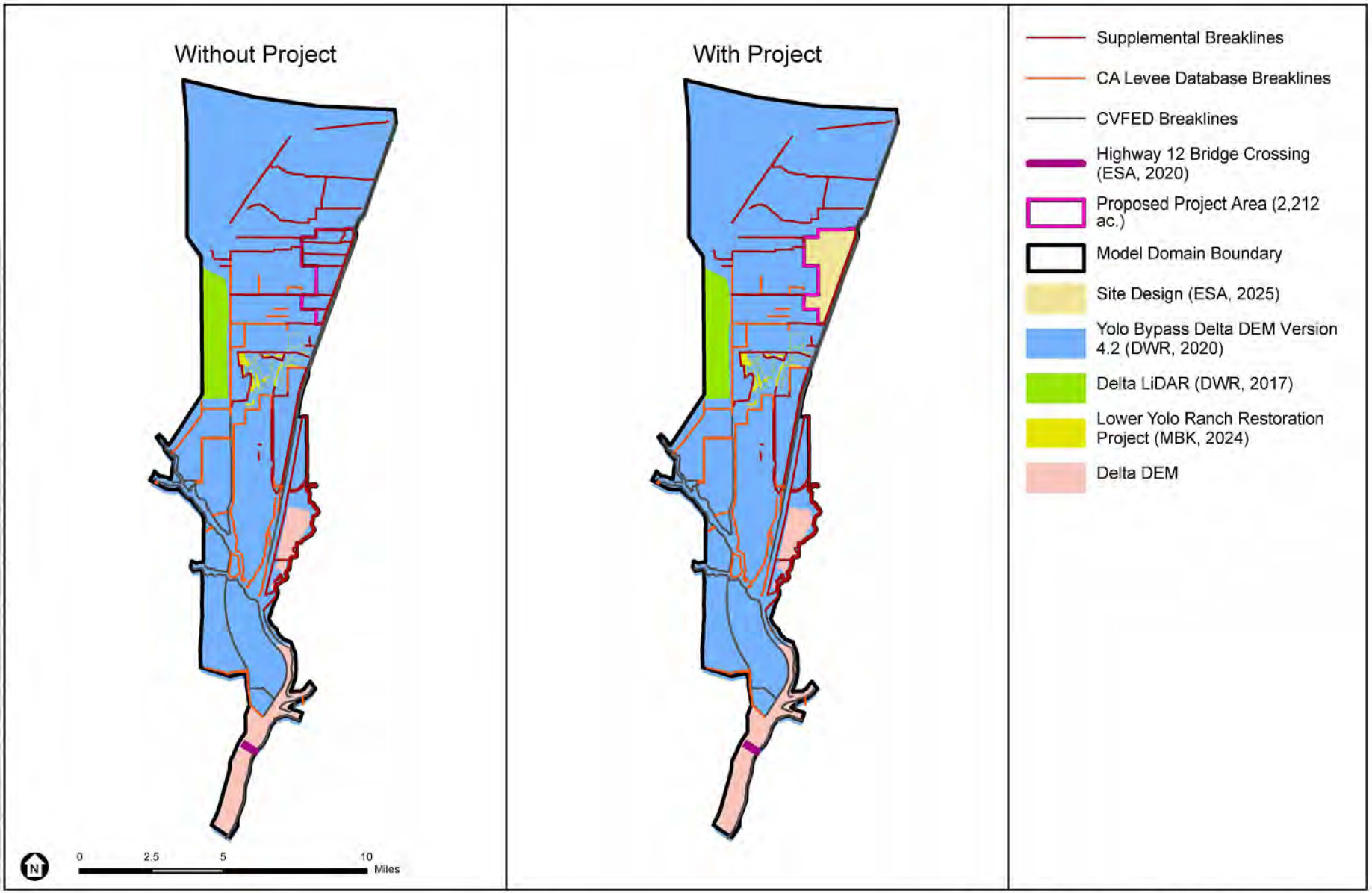

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Figure 10

Topographic and Bathymetric Data Sources and Coverage - Existing Conditions Baseline

SOURCE: ESA, 2025; Wood Rogers, 2018; DWR, 2020; DWR, 2017

Prepared by: ESA

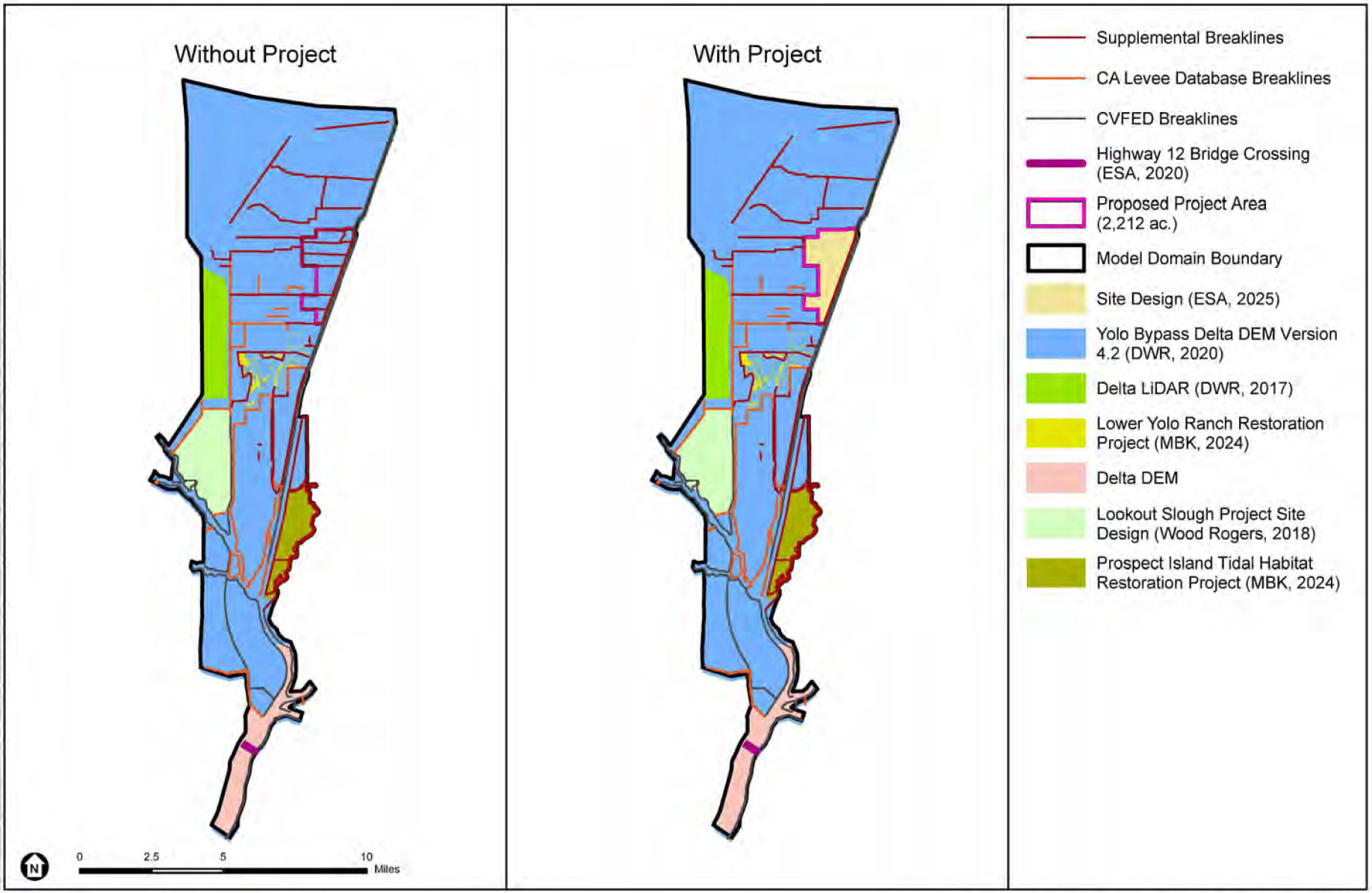

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Figure 11

Topographic and Bathymetric Data Sources and Coverage - Future No-Action

SOURCE: ESA, 2025; Wood Rogers, 2018; DWR, 2020; DWR, 2017

Prepared by: ESA

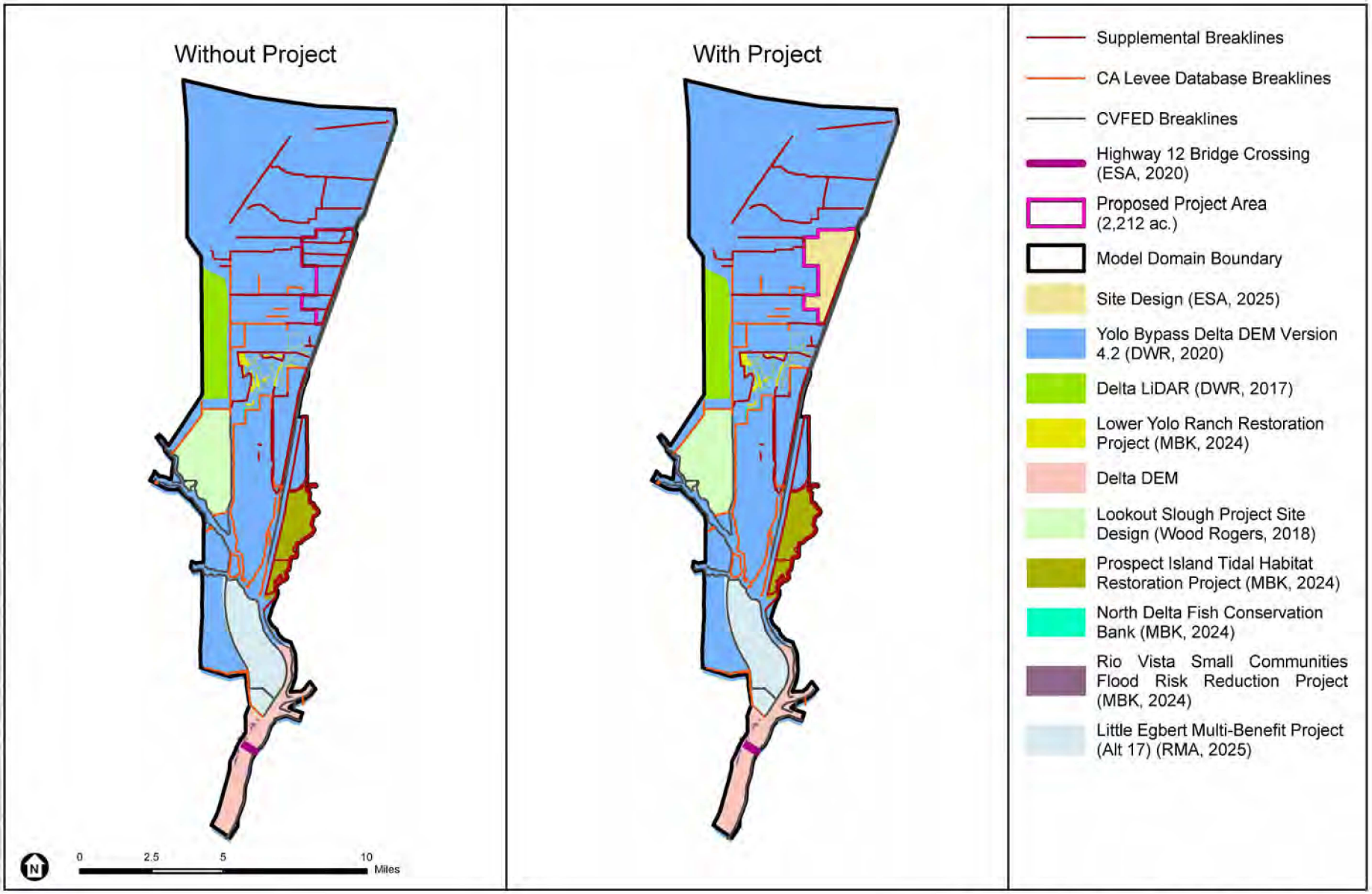

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Figure 12

Topographic and Bathymetric Data Sources and Coverage - Future Cumulative Conditions

SOURCE: ESA, 2025; Wood Rogers, 2018; DWR, 2020; DWR, 2017

Prepared by: ESA

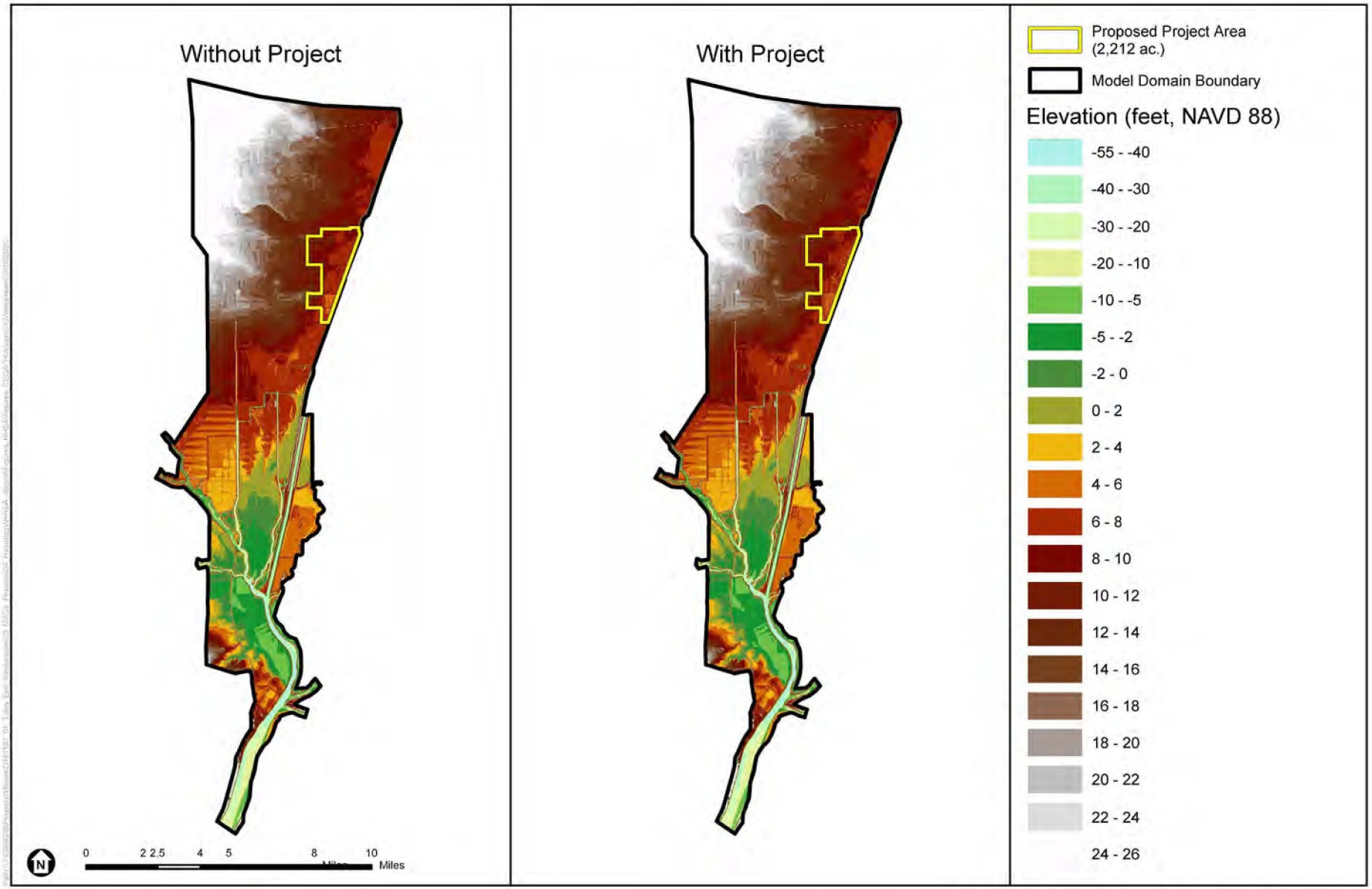

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Figure 13

TUFLOW Composite Digital Elevation Model - Existing Conditions Baseline

SOURCE: ESA, 2025; Wood Rogers, 2018; DWR, 2020; DWR, 2017

Prepared by: ESA

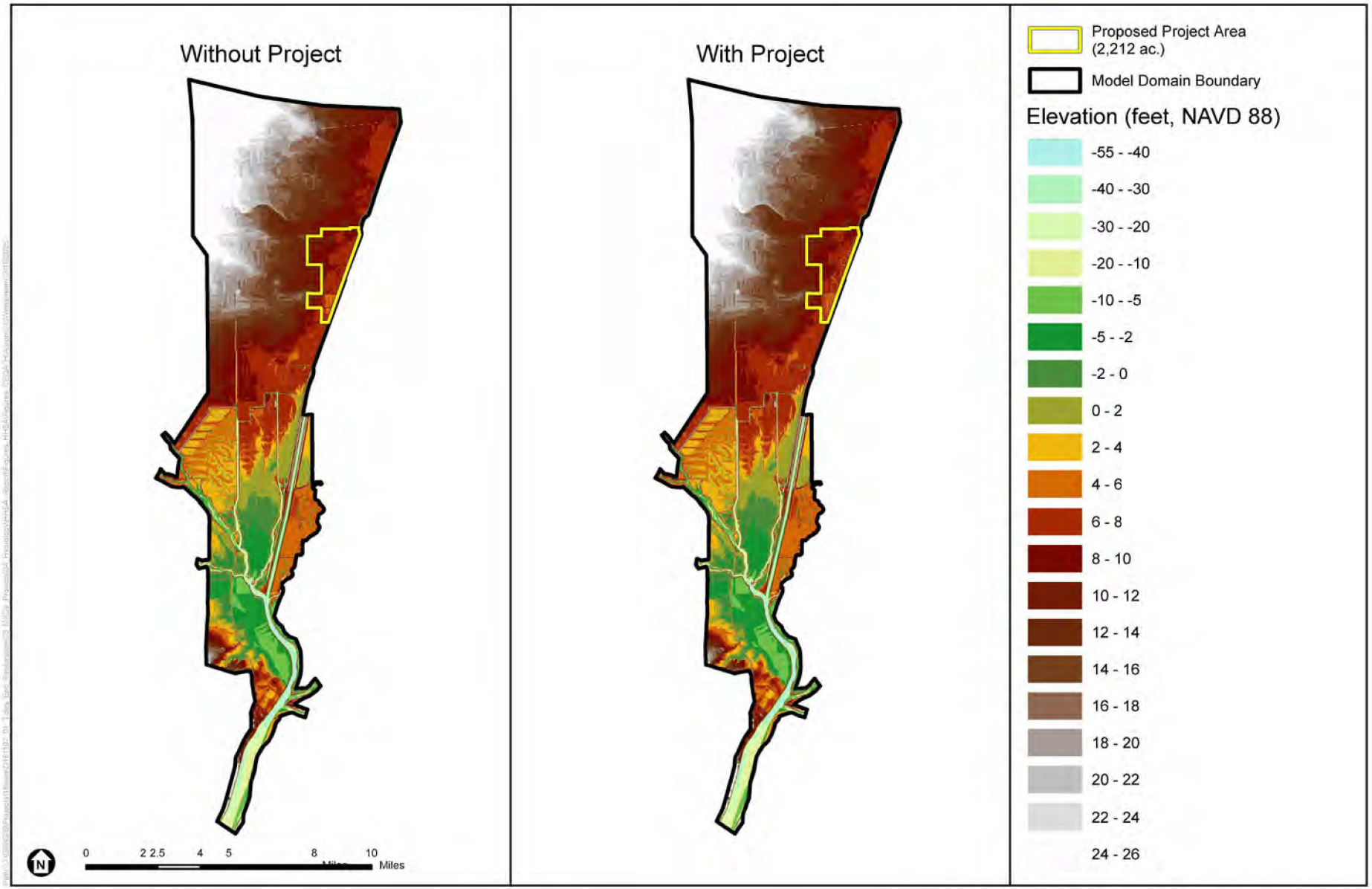

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Figure 14

TUFLOW Composite Digital Elevation Model - Future No-Action With-Project

SOURCE: ESA, 2025; Wood Rogers, 2018; DWR, 2020; DWR, 2017

Prepared by: ESA

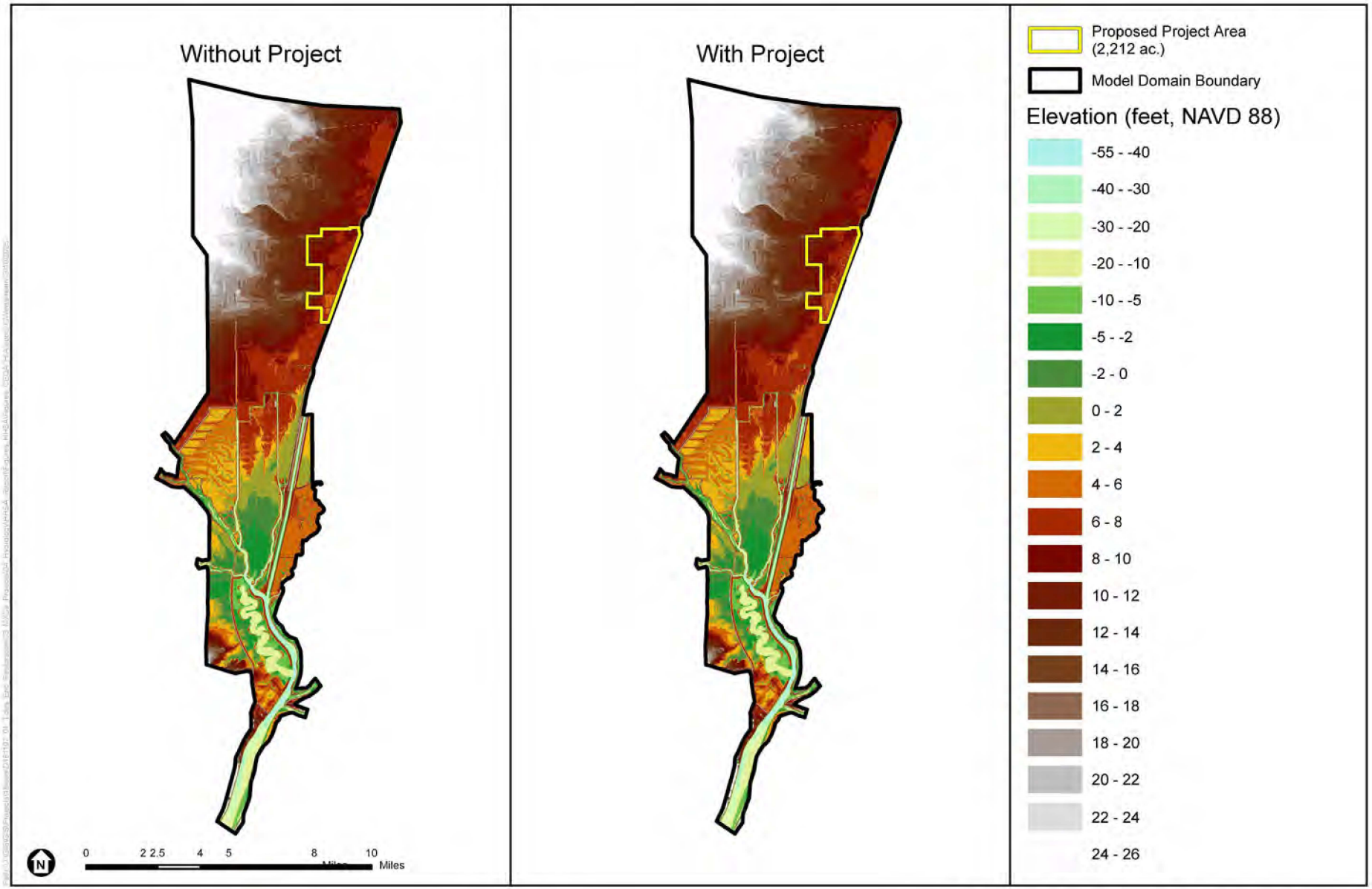

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Figure 15

TUFLOW Composite Digital Elevation Model - Future Cumulative Conditions

SOURCE: ESA, 2025; Wood Rogers, 2018; DWR, 2020; DWR, 2017

Prepared by: ESA

Bed Roughness

To simulate bed roughness, land use classifications previously developed for the Lookout Slough project (ESA 2020) were adapted and updated to reflect the proposed Project area. These classifications were derived from mapping prepared by the California Department of Fish and Game (now Fish and Wildlife, CDFW) in CDFG (2007) and were aggregated into the following land-cover (materials) types for input into the baseline and with-project hydraulic models: open water (subtidal); mudflats and grassland; low and middle marsh; upland; and cropland. These material types are representative of the vegetation densities and land types that are present today in the north Delta and lower Yolo Bypass. The relation between CDFW vegetation and the model material type reclassification scheme used is summarized in **Table 5**.

TABLE 5
MODEL MATERIAL CLASSIFICATION KEY

California Wildlife Habitat Relationship[1]	TUFLOW Model Material Type
Unclassified	Upland
Annual Grassland	Mudflat/Grassland
Barren	Mudflat/Grassland
Coastal Oak Woodland	Upland
Coastal Scrub	Low and Middle Marsh
Cropland	Cropland
Deciduous Orchard	Cropland
Eucalyptus	Upland
Fresh Emergent Wetland	Low and Middle Marsh
Riverine	Riverine
Saline Emergent Wetland	Low and Middle Marsh
Urban	Upland
Valley Foothill Riparian	Upland
Vineyard	Cropland

1. Source: CDFW in CDFG (2007).

Roughness coefficient values for the Mudflat and Grassland, Low and Middle Marsh, Upland, Cropland, and Riparian material types were estimated using the procedure for floodplains described in USGS Water Supply Paper No. 2339 (USGS 1989). Roughness coefficient values for managed seasonal wetland areas (i.e., duck ponds) were developed using guidance from CDFW and the California Waterfowl Association (CWA) (1994) and reflect planned management actions. In the Central Valley, typical seasonal wetlands management practices usually result in a combination of moist-soil plants (watergrass, swamp timothy, smartweed, etc.) and robust emergent vegetation (cattails and/or tules, which can be used for cover). An ideal seasonal wetland is “dominated by waterfowl food plants, contains other moist-soil plants, and provides waterfowl with substantial cover” (CDFW & CWA 1994). Vegetation management within the managed wetland areas can vary seasonally and with the preferences of the land manager.

Given the active management of the seasonal wetland vegetation, the spatial distribution of vegetation will vary from year to year based on discing management practices. For modeling purposes, we assume that 40% of the pond areas are disced on an annual basis. To simulate roughness of seasonal wetlands in the flood model, an area-weighted roughness value was developed assuming the following: 40% of the field is disced annually (cover type open water with Manning's n = 0.023); 40% was disced in the previous year (cover type grassland with Manning's n = 0.035); and 20% was disced two years prior (cover type low and middle marsh with Manning's n = 0.045). The composite value of this areal distribution of cover types is termed "Managed Seasonal Wetlands" with n = 0.032. In the flood model, it is assumed that areas designed as seasonal wetlands use this composite roughness value to represent conditions at the beginning of flood season.

Table 6 summarizes the respective material classification scheme and associated bed roughness coefficient estimates used in the modeling. The materials classifications utilized in the respective model scenarios without- and with-proposed Project are shown on **Figure 16** through **Figure 18**.

TABLE 6
BED ROUGHNESS CLASSIFICATIONS (MANNING'S N)

Vegetation Complex Type	Typical Vegetation	Manning's Roughness[1]	Elevation Range (feet, NAVD 88)
Open Water	Negligible (primarily open water)	0.023 – 0.027	< 2.0 (MLLW)
Mudflat and Grassland	Minor	0.035	2.0 – 3.5 (MTL)
Low and Middle Marsh	Perennial vegetation, dense stands of bulrushes (tules and cattails)	0.045 (*assumes marsh vegetation lies down during flood conditions*)	3.5 – 7.0 (MHHW)
Upland	Riparian vegetation	0.060	> 7.0 (Maximum Tide)
Cropland	Rice, field crops	0.030	> 7.0
Riparian Planting	Riparian trees and scrub	0.140	7.0 – 9.0
Managed Seasonal Wetlands	Combination of bulrushes, grasslands, and open water given annual wetland vegetation management practices described in text	0.032	7.5 – 9.75

NOTES:
1. Manning's n roughness coefficients estimated using USGS (1989) and base values computed previously by RMA (2013).

Bridge Hydraulics

The only hydraulically significant bridge crossing included explicitly in the model is the State Route 12 bridge crossing the Sacramento River at Rio Vista. A detailed description of the bridge modeling approach and parameterization is described in the Hydrologic and Hydraulic System Analysis—Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (ESA 2020).

Other structures such as the Hastings Island Road bridge crossing Lindsey Slough, while also located within the model domain, were not considered hydraulically significant with respect to analyzing the flood impacts of the proposed Project and have been omitted from the model.

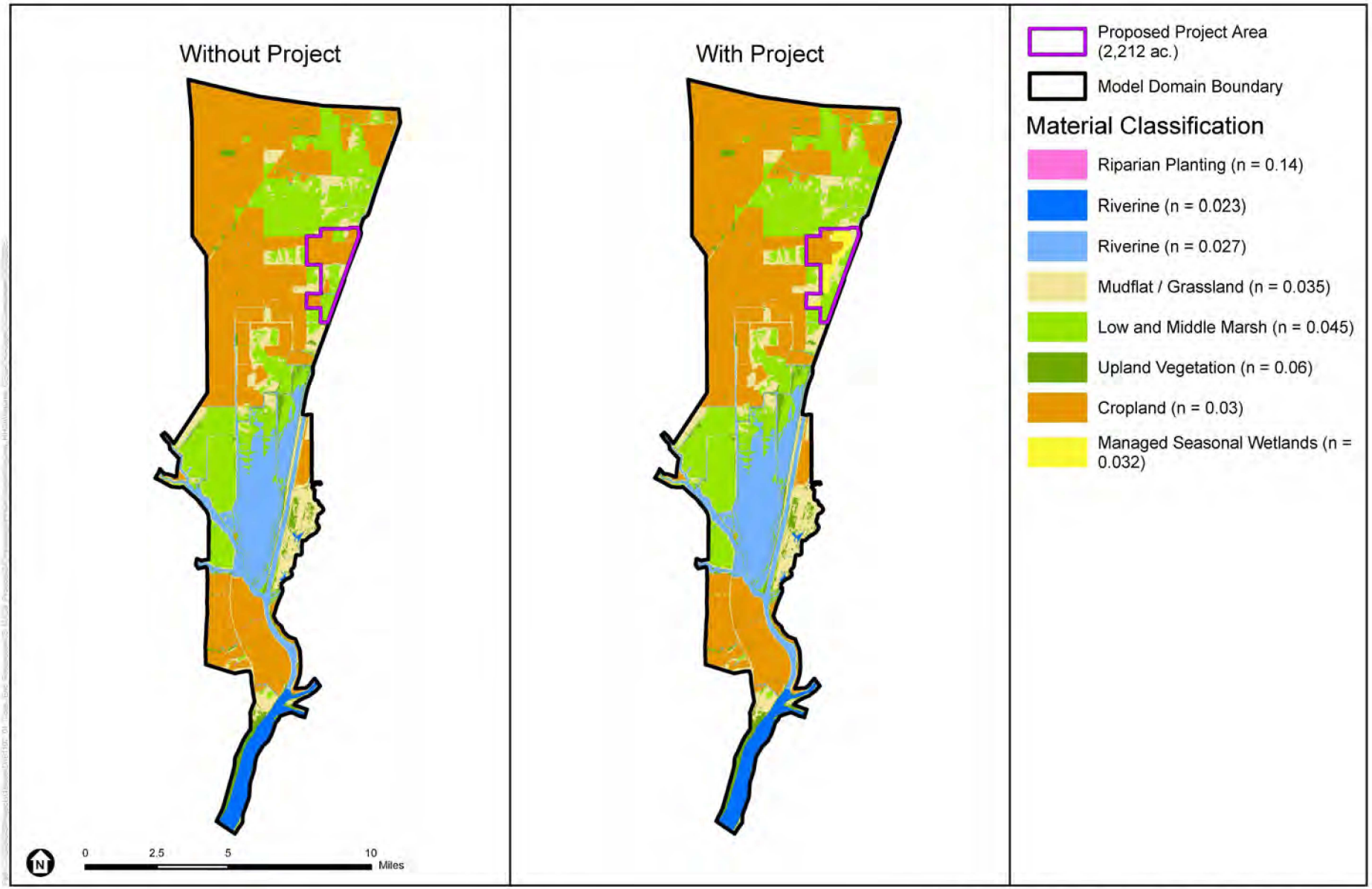

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Figure 16

TUFLOW Materials File - Existing Conditions Baseline

SOURCE: ESA, 2025

Prepared by: ESA

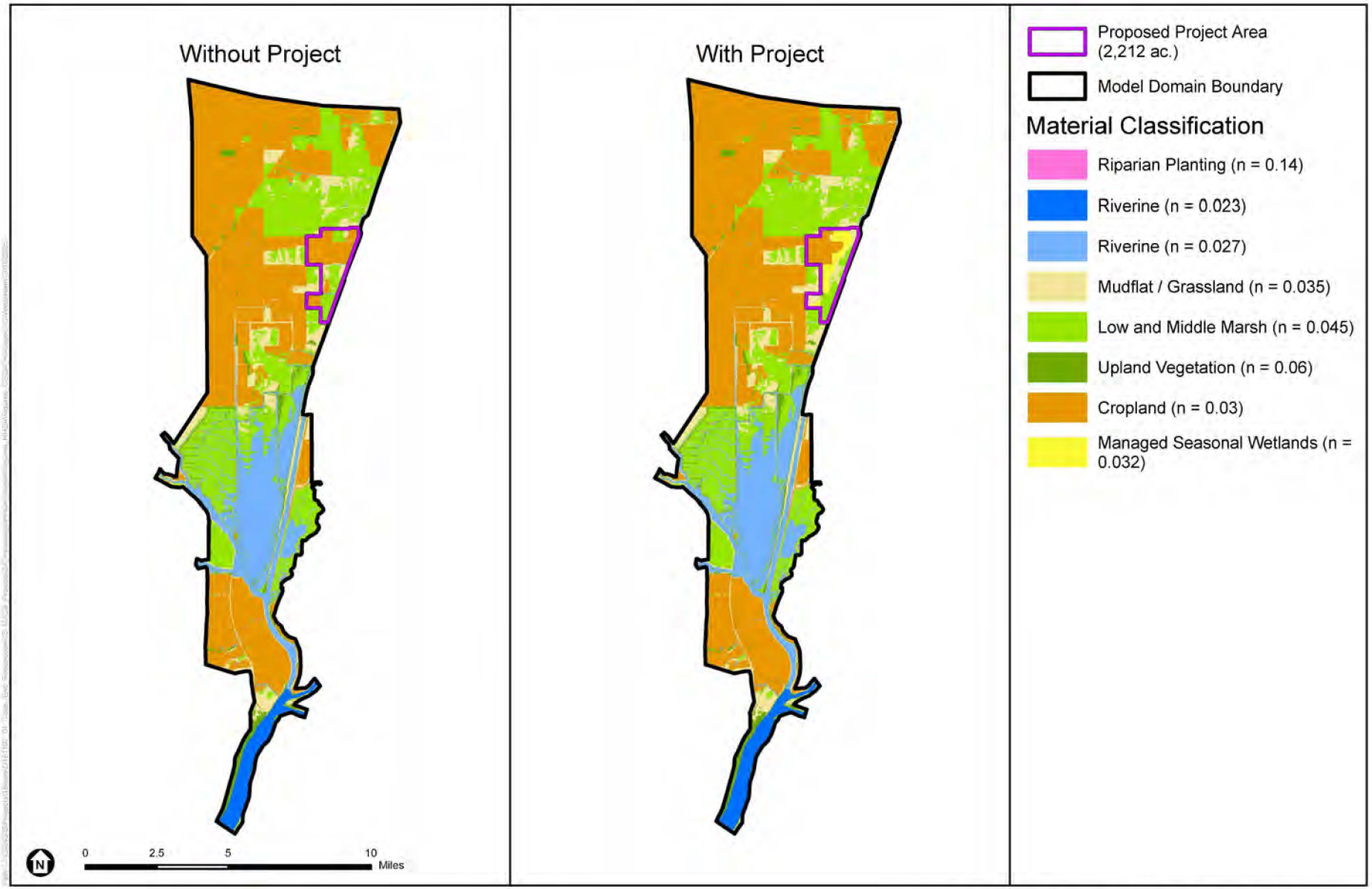

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Figure 17

TUFLOW Materials File - Future No-Action

SOURCE: ESA, 2025

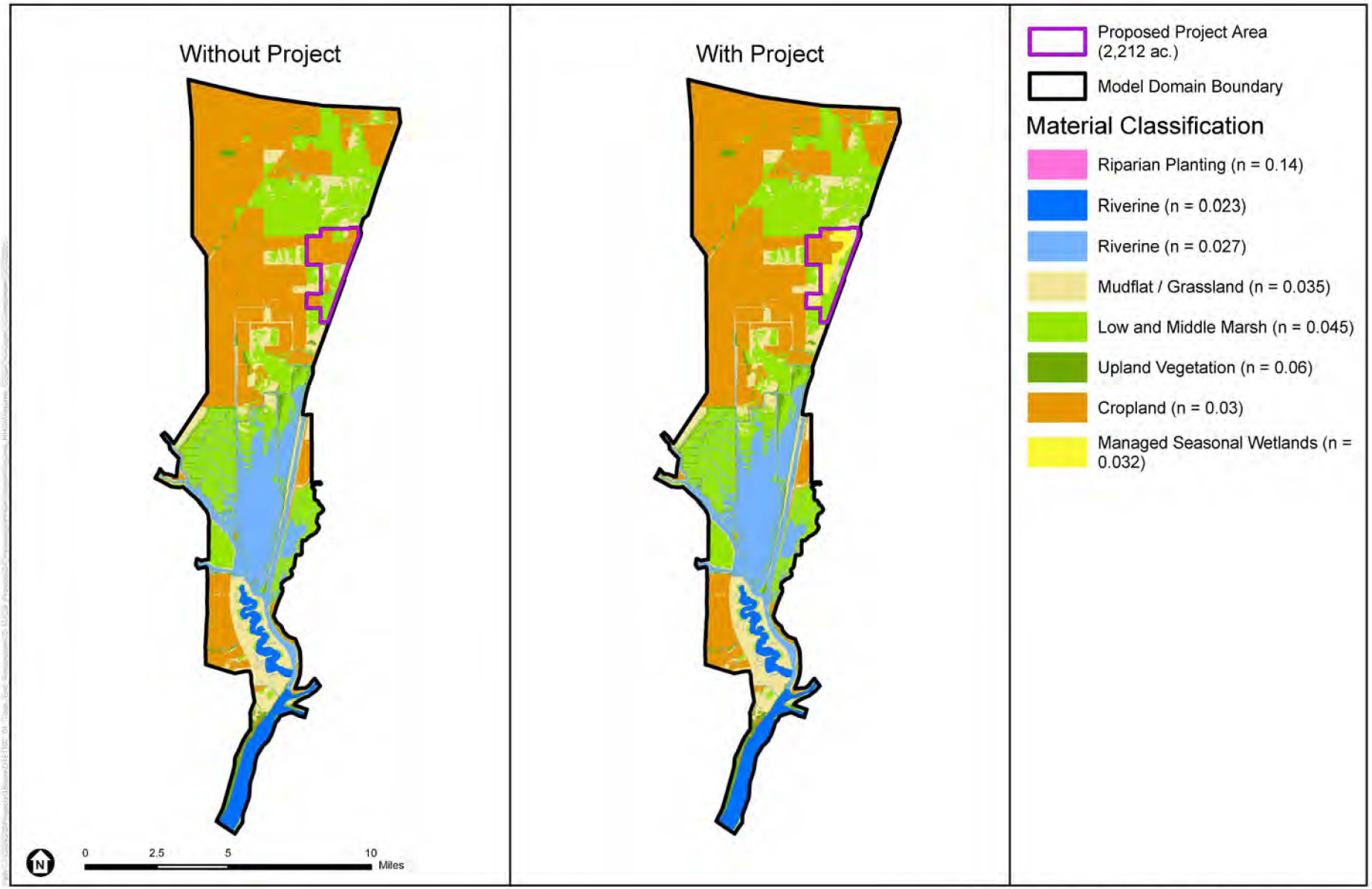

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Figure 18

TUFLOW Materials File - Future Cumulative Conditions

SOURCE: ESA, 2025

6.5.2 Model Calibration and Validation

The model implemented in this work was previously calibrated and validated for the Lookout Slough project (ESA 2020). No changes were made to the model version or geometry that warrant recalibration. During initial testing and internal quality control reviews, model results from this analysis were determined to be consistent with modeling analyses conducted for the Lookout Slough project (ESA 2020) for a similar range of flows.

6.5.3 Uncertainty in Stages for Computed Water Surface Profiles

Uncertainty is the result of imperfect knowledge concerning the present or future state of a system, event, situation, or (sub) population under consideration (USACE 2017). Known sources of uncertainty relevant to the current analysis include (USACE 1996):

- Uncertainty related to structural and geotechnical performance of water-control measures when these are subjected to rare stresses and loads caused by floods. For purposes of assessing the proposed Project performance, the system is assumed to be stable up to the top of containment (no breaching) in accordance with USACE Section 408 guidance (USACE 2018). This is expected to provide the most conservative estimate of flow deliveries and flood stages within the interest area.
- Uncertainty arising from the use of simplified models to describe complex phenomena. Although the hydraulic models used to support this study have been calibrated and validated using historic flood records, residual uncertainty in parameters such as Manning's roughness coefficients is inevitable. As changes to the model are relatively minor, the original uncertainty analysis and reporting from the Lookout Slough project (ESA 2020) is considered valid for the current project.

6.6 Hydraulic Effects of Proposed Project

As described in the preceding section on model calibration and validation, the model reasonably reproduces the drivers of flood risk within the model domain, peak flow and peak stage. While the simulation results may imperfectly reflect measured conditions, the analysis of impacts will focus on the *differences* between the with- and without-proposed Project conditions. The differences in predicted peak stage and peak flow due to proposed Project-induced changes are typically more accurate than the absolute results of the models may be. Thus, it is entirely reasonable to rely on the differences in modeled results to evaluate the impact of the proposed Project.

The hydraulic performance analysis consisted of analyzing the Existing Conditions Baseline, Future No-Action, and Future Cumulative Conditions condition states both without- and with-proposed Project in unsteady state. The with-proposed Project analyses assume that all components of the proposed Project function as designed and remain stable during the design storm events analyzed.

6.6.1 Stage Impacts

As shown in **Table 7** and **Figure 19** the proposed Project alterations result in no significant impacts (increases in water levels of 0.10 feet or greater) at the identified index locations for the range of hydrologic loadings and condition states analyzed. As the hydraulic effects of the proposed Project are localized and generally result in stage decreases for the design events under consideration, the proposed Project's potential to transfer risk from one part of the system to another is considered negligible.

TABLE 7
SUMMARY OF CHANGE IN WATER SURFACE ELEVATION AT RESPECTIVE INDEX POINTS

Index Point	1957 Design WSEL (ft, NAVD 88)	Design Freeboard (feet)	Existing Top of Levee Elevation (ft, NAVD 88)	Condition	WSEL (ft, NAVD 88)		
					Without-proposed Project	With-proposed Project	Change
1	25.72	6	32.03	Existing Conditions Baseline	27.65	27.63	-0.02
				Future No-Action	27.60	27.59	-0.01
				Future No-Action w/SLR and ICC	28.72	28.70	-0.02
				Future Cumulative Conditions	26.99	26.98	-0.01
				Future Cumulative Conditions with SLR and ICC	27.92	27.91	-0.01
2	24.44	6	34.14	Existing Conditions Baseline	25.82	25.81	-0.01
				Future No-Action	25.77	25.75	-0.02
				Future No-Action w/SLR and ICC	26.62	26.61	-0.01
				Future Cumulative Conditions	25.23	25.22	-0.01
				Future Cumulative Conditions with SLR and ICC	26.09	26.07	-0.02
3	23.42	6	29.99	Existing Conditions Baseline	24.26	24.26	0.00
				Future No-Action	24.26	24.26	0.00
				Future No-Action w/SLR and ICC	25.11	25.11	0.00
				Future Cumulative Conditions	24.26	24.26	0.00
				Future Cumulative Conditions with SLR and ICC	24.58	24.57	-0.01
4	22.06	6	28.68	Existing Conditions Baseline	23.60	23.60	0.00
				Future No-Action	23.50	23.50	0.00
				Future No-Action w/SLR and ICC	24.46	24.46	0.00
				Future Cumulative Conditions	22.87	22.87	0.00
				Future Cumulative Conditions with SLR and ICC	23.97	23.97	0.00
5	17.88	3	20.86	Existing Conditions Baseline	19.22	19.22	0.00
				Future No-Action	19.22	19.22	0.00
				Future No-Action w/SLR and ICC	20.46	20.46	0.00
				Future Cumulative Conditions	18.58	18.58	0.00
				Future Cumulative Conditions with SLR and ICC	20.22	20.22	0.00

Index Point	1957 Design WSEL (ft, NAVD 88)	Design Freeboard (feet)	Existing Top of Levee Elevation (ft, NAVD 88)	Condition	WSEL (ft, NAVD 88)		
					Without-proposed Project	With-proposed Project	Change
6	19.71	6	25.34	Existing Conditions Baseline	20.41	20.41	0.00
				Future No-Action	20.18	20.17	-0.01
				Future No-Action w/SLR and ICC	21.32	21.32	0.00
				Future Cumulative Conditions	19.53	19.53	0.00
				Future Cumulative Conditions with SLR and ICC	21.06	21.06	0.00
7	17.88	3	20.86	Existing Conditions Baseline	19.22	19.22	0.00
				Future No-Action	19.22	19.22	0.00
				Future No-Action w/SLR and ICC	20.45	20.45	0.00
				Future Cumulative Conditions	18.58	18.58	0.00
				Future Cumulative Conditions with SLR and ICC	20.21	20.21	0.00
8	17.86	3	20.59	Existing Conditions Baseline	19.21	19.21	0.00
				Future No-Action	19.21	19.21	0.00
				Future No-Action w/SLR and ICC	20.42	20.42	0.00
				Future Cumulative Conditions	18.57	18.57	0.00
				Future Cumulative Conditions with SLR and ICC	20.19	20.19	0.00
9	17.86	N/A	N/A	Existing Conditions Baseline	19.17	19.17	0.00
				Future No-Action	19.18	19.18	0.00
				Future No-Action w/SLR and ICC	20.37	20.37	0.00
				Future Cumulative Conditions	18.53	18.53	0.00
				Future Cumulative Conditions with SLR and ICC	20.15	20.15	0.00
10	17.85	3	19.57	Existing Conditions Baseline	18.84	18.84	0.00
				Future No-Action	18.86	18.86	0.00
				Future No-Action w/SLR and ICC	20.05	20.05	0.00
				Future Cumulative Conditions	18.24	18.24	0.00
				Future Cumulative Conditions with SLR and ICC	19.94	19.94	0.00
11	17.82	3	20.82	Existing Conditions Baseline	18.40	18.40	0.00
				Future No-Action	18.39	18.39	0.00
				Future No-Action w/SLR and ICC	19.70	19.70	0.00
				Future Cumulative Conditions	17.78	17.78	0.00
				Future Cumulative Conditions with SLR and ICC	19.51	19.51	0.00

Index Point	1957 Design WSEL (ft, NAVD 88)	Design Freeboard (feet)	Existing Top of Levee Elevation (ft, NAVD 88)	Condition	WSEL (ft, NAVD 88)		
					Without-proposed Project	With-proposed Project	Change
12	12.42	N/A	11.85 (Restricted Height Levee El.)	Existing Conditions Baseline	15.03	15.03	0.00
				Future No-Action	15.02	15.02	0.00
				Future No-Action w/SLR and ICC	17.02	17.02	0.00
				Future Cumulative Conditions	14.94	14.94	0.00
				Future Cumulative Conditions with SLR and ICC	17.17	17.17	0.00
13	12.01	3	22.99	Existing Conditions Baseline	12.56	12.56	0.00
				Future No-Action	12.56	12.56	0.00
				Future No-Action w/SLR and ICC	14.44	14.44	0.00
				Future Cumulative Conditions	12.57	12.57	0.00
				Future Cumulative Conditions with SLR and ICC	14.47	14.47	0.00

Abbreviations: El = elevation; ft = feet; ICC = inland climate change; NAVD 88 = North American Vertical Datum of 1988; SLR = sea-level rise; w/ = with; WSEL = water surface elevation.

6.6.2 Velocity Impacts

A comparison of the modeled velocities (generally 2-3 feet per second across the proposed Project area) with established erosion thresholds for local soil and cover types (section 4.2) indicates that the existing condition is not prone to erosion of the in-place material for the range of flows being analyzed. Localized changes in velocity and bed shear stress resulting from the proposed Project were also evaluated. Across the proposed Project area, simulated changes in velocity under both the NOP baseline and the future no-action baseline ranged between -1 and 1 foot per second. Although the hydraulic modeling analysis indicates that the proposed Project would result in some changes in velocity, these changes are relatively minor and localized in nature. Maximum velocities in and around the proposed Project site would remain low enough that channel erosion and scour potential along existing and proposed facilities would not change substantially compared to existing conditions, therefore the risk of increased erosion posed by the proposed Project is considered minimal.

West levee of the Yolo Bypass at Mills Road

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	24.26	24.26	0.00
Future Cumulative Conditions	24.26	24.26	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	24.58	24.57	-0.01
Future No-Action	24.26	24.26	0.00
Future No-Action with SLR[1] and ICC[2]	25.11	25.11	0.00

East levee of the Sacramento River Deep Water Ship Channel, downstream of Lisbon Weir

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	27.65	27.63	-0.02
Future Cumulative Conditions	26.99	26.98	-0.01
Future Cumulative Conditions with SLR[1] and ICC[2]	27.92	27.91	-0.01
Future No-Action	27.60	27.59	-0.01
Future No-Action with SLR[1] and ICC[2]	28.72	28.70	-0.02

Hass Slough at western boundary of RD 2098

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	19.22	19.22	0.00
Future Cumulative Conditions	18.58	18.58	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	20.22	20.22	0.00
Future No-Action	19.22	19.22	0.00
Future No-Action with SLR[1] and ICC[2]	20.46	20.46	0.00

East levee of the Sacramento River Deep Water Ship Channel, upstream of the Project boundary

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	25.82	25.81	-0.01
Future Cumulative Conditions	25.23	25.22	-0.01
Future Cumulative Conditions with SLR[1] and ICC[2]	26.09	26.07	-0.02
Future No-Action	25.77	25.75	-0.02
Future No-Action with SLR[1] and ICC[2]	26.62	26.61	-0.01

Cache Slough near Hastings Cut

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	19.22	19.22	0.00
Future Cumulative Conditions	18.58	18.58	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	20.21	20.21	0.00
Future No-Action	19.22	19.22	0.00
Future No-Action with SLR[1] and ICC[2]	20.45	20.45	0.00

East levee of the Sacramento River Deep Water Ship Channel, downstream of the Project boundary

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	23.60	23.60	0.00
Future Cumulative Conditions	22.87	22.87	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	23.97	23.97	0.00
Future No-Action	23.50	23.50	0.00
Future No-Action with SLR[1] and ICC[2]	24.46	24.46	0.00

Cache Slough at Confluence with Yolo Bypass

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	19.21	19.21	0.00
Future Cumulative Conditions	18.57	18.57	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	20.19	20.19	0.00
Future No-Action	19.21	19.21	0.00
Future No-Action with SLR[1] and ICC[2]	20.42	20.42	0.00

Eastern boundary of Lookout Slough at Yolo County/Solano County Line

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	20.41	20.41	0.00
Future Cumulative Conditions	19.53	19.53	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	21.06	21.06	0.00
Future No-Action	20.18	20.17	-0.01
Future No-Action with SLR[1] and ICC[2]	21.32	21.32	0.00

Lindsey Slough approximately one mile upstream of Hastings Island Road Bridge

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	18.84	18.84	0.00
Future Cumulative Conditions	18.24	18.24	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	19.94	19.94	0.00
Future No-Action	18.86	18.86	0.00
Future No-Action with SLR[1] and ICC[2]	20.05	20.05	0.00

Cache Slough at northern end of Little Egbert Tract

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	18.40	18.40	0.00
Future Cumulative Conditions	17.78	17.78	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	19.51	19.51	0.00
Future No-Action	18.39	18.39	0.00
Future No-Action with SLR[1] and ICC[2]	19.70	19.70	0.00

Cache Slough at French Island

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	19.17	19.17	0.00
Future Cumulative Conditions	18.53	18.53	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	20.15	20.15	0.00
Future No-Action	19.18	19.18	0.00
Future No-Action with SLR[1] and ICC[2]	20.37	20.37	0.00

Sacramento River at Rio Vista

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	12.56	12.56	0.00
Future Cumulative Conditions	12.57	12.57	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	14.47	14.47	0.00
Future No-Action	12.56	12.56	0.00
Future No-Action with SLR[1] and ICC[2]	14.44	14.44	0.00

Cache Slough at southern end of Little Egbert Tract

Condition	Without Proposed Project Peak Stage (ft, NAVD 88)	With Proposed Project Peak Stage (ft, NAVD 88)	Difference Between With and Without Proposed Project Peak Stage (ft, NAVD 88)
Existing Conditions Baseline	15.03	15.03	0.00
Future Cumulative Conditions	14.94	14.94	0.00
Future Cumulative Conditions with SLR[1] and ICC[2]	17.17	17.17	0.00
Future No-Action	15.02	15.02	0.00
Future No-Action with SLR[1] and ICC[2]	17.02	17.02	0.00

0 1.5 3 6 Miles

Proposed Project Area

State-Federal Levee System

Index Point

[1] SLR = Sea Level Rise
[2] ICC = Inland Climate Change

Ecosystem Investment Partners

TIDE'S END

Prepared by: ESA

Tide's End Multibenefit Restoration Project

Figure 19
Project Impacts at Index Points

SOURCE: Esri Service Layers

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7 Flood Risk Reduction Goal and Objectives

Goal 3 of the proposed Project's goals is to "reduce flood risk in a manner compatible with tidal and floodplain habitats." Goal 3 is supported by the following objectives:

1. Reduce localized flood stages.
2. Reduce flood encroachments.
3. Maintain or reduce hydraulic roughness.
4. Reduce localized wind-wave erosion.

The following sections describe how the project objectives would be achieved to improve hydraulic performance.

7.1 Goal 3, Objective 1: Reduce Localized Flood Stages

As shown in **Table 8** below, benefits in flood stages upstream of the proposed Project are depth dependent, with the greatest stage reductions being achieved during low-flow operating conditions (i.e., up to a 50% ACE [2-year] design storm event), above which the hydraulic significance of the proposed Project features is increasingly muted. This relationship is expected given that the proposed physical alterations within the floodway are relatively small compared to the total design capacity of the Yolo Bypass. Importantly, the increased conveyance associated with the proposed Project during low-flow conditions will result in more efficient (i.e., faster) drainage of the Yolo Bypass in the latter stages of flooding (i.e., on the receding limb of the hydrograph). This is of great importance to agricultural operations upstream, which rely on timely access for field drying and preparation prior to planting; as well as to recreational hunting, which relies heavily on access to duck blinds in the low-lying marsh areas of the east side of the Yolo Bypass.

TABLE 8
PROPOSED STAGE REDUCTIONS UPSTREAM INDEX POINT 2

Scenario[1]	Peak Flow in Yolo Bypass (cfs)	Change in WSEL Upstream of proposed Project (feet)	Source
Big Notch Operations	11,215	-0.39	ESA 2025b
Big Notch Operations + 6,000 cfs	17,215	-0.30	ESA 2025b
50% ACE (2-year)	29,619	-0.15	ESA 2025a
10% ACE (10-year)	285,632	-0.02	ESA 2025d
1% ACE (100-year)	529,996	-0.02	see Tables 4 and 7
0.5% ACE (200-year)	573,451	-0.01	ESA 2025d

NOTES:
1. Scenarios analyzed reflect the Future No-Action scenario only

7.2 Goal 3, Objective 2: Reduce Flood Encroachments

California Code of Regulations, Title 23, Division 1, § 4 defines encroachments to mean

> *any obstruction or physical intrusion by construction of works or devices, planting or removal of vegetation, or by whatever means for any purpose, into any of the following:*
>
> *(1) any flood control project works;*
>
> *(2) the waterway area of the project;*
>
> *(3) the area covered by an adopted plan of flood control; or*
>
> *(4) any area outside the above limits, if the encroachment could affect any of the above.*

Encroachments such as agricultural berms and vegetation can influence the hydraulic capacity of active floodways such as the Yolo Bypass. Although the proposed Project will increase the density of vegetation across portions of the site; as shown in Table 7, any hydraulic impacts resulting from changes in vegetation will be mitigated by proposed floodplain grading and lowering of agricultural berms that cross the site, many of which are perpendicular to the direction of flow. In combination, the modifications proposed by the Project increase the conveyance capacity within this portion of the Yolo Bypass, particularly during low-flow conditions. As noted above, the increased conveyance associated with these changes during low-flow scenarios is expected to result in more efficient (i.e., faster) drainage of the Yolo Bypass in the latter stages of flooding (i.e., on the receding limb of the hydrograph), which is of great importance to agricultural operations and recreational hunting on the eastern side of the Yolo Bypass. These proposed changes will be complimentary to and supportive of Objective 1: Reduce Localized Flood Stages, as well as Objective 3: Maintain or Reduce Hydraulic Roughness.

7.3 Goal 3, Objective 3: Maintain or Reduce Hydraulic Roughness

Hydraulic roughness refers to the collection of factors that contribute to hydraulic resistance within a floodway or open channel, including irregularities in the channel bed and bank, vegetation, bank protection, hydraulic structures, obstructions, or abrupt changes in channel section. Roughness is also depth- dependent, particularly where vegetation is concerned (Arcement & Schneider 1989 and USACE 1994). Within active floodways, such as the Yolo Bypass, hydraulic conveyance capacity is inversely proportional to floodplain roughness. When floodplain roughness is reduced, friction losses are also reduced, allowing for higher velocities and greater conveyance through the same cross-section (Chow 1959).

The influence of hydraulic roughness on conveyance is also depth dependent. For example, flexible vegetation (e.g., grasses, tules, etc.) tends to lay down as flow increases, providing less hydraulic resistance as depth and velocity increase (Arcement & Schneider 1989). Similarly, as depth increases within the floodway, the proportion of the cross-section obstructed by features such as agricultural berms also decreases. This is most clearly demonstrated when comparing the performance benefits between low-flow scenarios and high-flow scenarios (Table 8). As shown in Table 8, for lower flood flows when the Yolo Bypass is flowing between 11,000 – 17,000 cfs, the proposed Project would lower maximum water surface elevations by up to approximately 0.39

feet upstream of the site, while for high flows (e.g., flows meeting or exceeding the 10% ACE [10-year] storm), maximum water levels would decrease by approximately 0.02 feet in some locations.

At the proposed Project site, the most significant contributions to hydraulic roughness in the floodway for both existing and with-Project conditions are agricultural berms and vegetation. For the proposed Project, changes in grading and land cover will serve to decrease overall hydraulic roughness and increase the conveyance capacity within this portion of the Yolo Bypass relative to existing conditions. As noted above, the increased conveyance associated with these changes during low-flow scenarios is expected to result in more efficient (i.e., faster) drainage of the Yolo Bypass in the latter stages of flooding (i.e., on the receding limb of the hydrograph), which is of great importance to agricultural operations and recreational hunting on the eastern side of the Yolo Bypass.

In addition, if approved, the proposed Project would establish a more predictable regulatory and funding framework to enable efficient, effective, and sustainable operations and maintenance of the Yolo Bypass over the long-term. For example, uncontrolled vegetation growth, particularly woody species, can obstruct water flow during high-flow events. Active management of seasonal wetlands involves annually discing portions of the wetlands to promote growth of successional vegetation. Agricultural fields are also typically cleared and left fallow prior to the winter flood season, resulting in minimal vegetative cover over large areas of the site during flood season. Areas composed of tidal wetlands, transition zones, and floodplain habitats would also be subject to vegetation (riparian) management to maintain flood conveyance as needed. The proposed Project would incorporate these management actions and thereby improve the conveyance capacity of the Yolo Bypass in a manner that is beneficial to ecological, recreation, and agricultural functions. Further, as climate change increases the frequency and intensity of flood operations in the Yolo Bypass, adaptive vegetation management will become more important. Thus, the proposed Project will provide DWR with an opportunity to monitor and adjust vegetation across the site to retain flood system performance under evolving flood regimes and land use pressures.

Changes to floodplain roughness resulting from the proposed Project will be complimentary to and supportive of Objective 1: Reduce Localized Flood Stages, as well as Objective 2: Reduce Flood Encroachments.

7.4 Goal 3, Objective 4: Reduce Localized Wind-wave Erosion

Historically, wind waves can grow to four feet or more in the Yolo Bypass during large storm events due to the combination of long fetch lengths and strong sustained winds (DWR 2016). Site-specific wind-wave modeling suggests that wave heights may be as high as approximately 4.5 feet along the Sacramento River Deep Water Ship Chanel during certain conditions (ESA 2024b). The proposed Project's habitat elements would work collectively as a wind-wave buffer to provide additional protection to portions of the Sacramento River Deep Water Ship Channel levee, which protects the City of West Sacramento. Adjustments to the amount and orientation of

managed wetland, marsh riparian forest and scrub, and tidal wetland vegetation along the eastern side of the Capitol Oil parcel would increase the attenuation of wave energy generated by wind over open water during periods when the Yolo Bypass is flooded, thereby reducing erosion on the levee and enhancing ecological resilience. The alignments of the perimeter berms that form the agricultural fields and managed wetlands throughout the site would also act as wave breaks during periods of shallow flooding in the Yolo Bypass, providing additional wind-wave reduction benefits.

In addition to reducing wave heights on-site, the proposed assemblage of nature-based features and agricultural infrastructure would provide reductions (up to approximately 2.3 feet) in wind-wave runup heights near the Sacramento River Deep Water Ship Channel levee during winter operating conditions (ESA 2025e). This is expected to result in less wind-wave erosion on the levee over time.

8 Summary and Conclusion

This report documents the methods, data, and assumptions used to quantify potential impacts associated with implementation of the proposed Project for both present-day and future conditions using a hydraulic model. The analysis described in this report shows that the proposed Project alterations would result in no adverse impacts to flood stages in the system. As the hydraulic impacts of the proposed Project are localized, the proposed Project's potential to transfer risk from one part of the system to another is also considered negligible. Therefore, the proposed Project has been determined to create no adverse impacts to stage or channel velocity when compared to the Existing Conditions Baseline, Future No-Action, and Future Cumulative Conditions condition states, including for scenarios incorporating future climate conditions of SLR and ICC. This report also finds that Goal 3 Flood Risk Reduction objectives would be met.

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Appendix A

Sea-Level Rise and Inland Climate Change Boundary Conditions for Modeling

ESA

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memorandum

date	March 20, 2025
to	Veronica Pearson and Stephanie Freed, EIP III Credit Co., LLC (EIP)
cc	
from	John Pritchard, PE, CFM, Kelley Sterle, PhD, and Maureen Downing-Kunz, PhD
subject	Tide's End Multibenefit Restoration Project - Sea-Level Rise and Inland Climate Change Boundary Conditions for Modeling

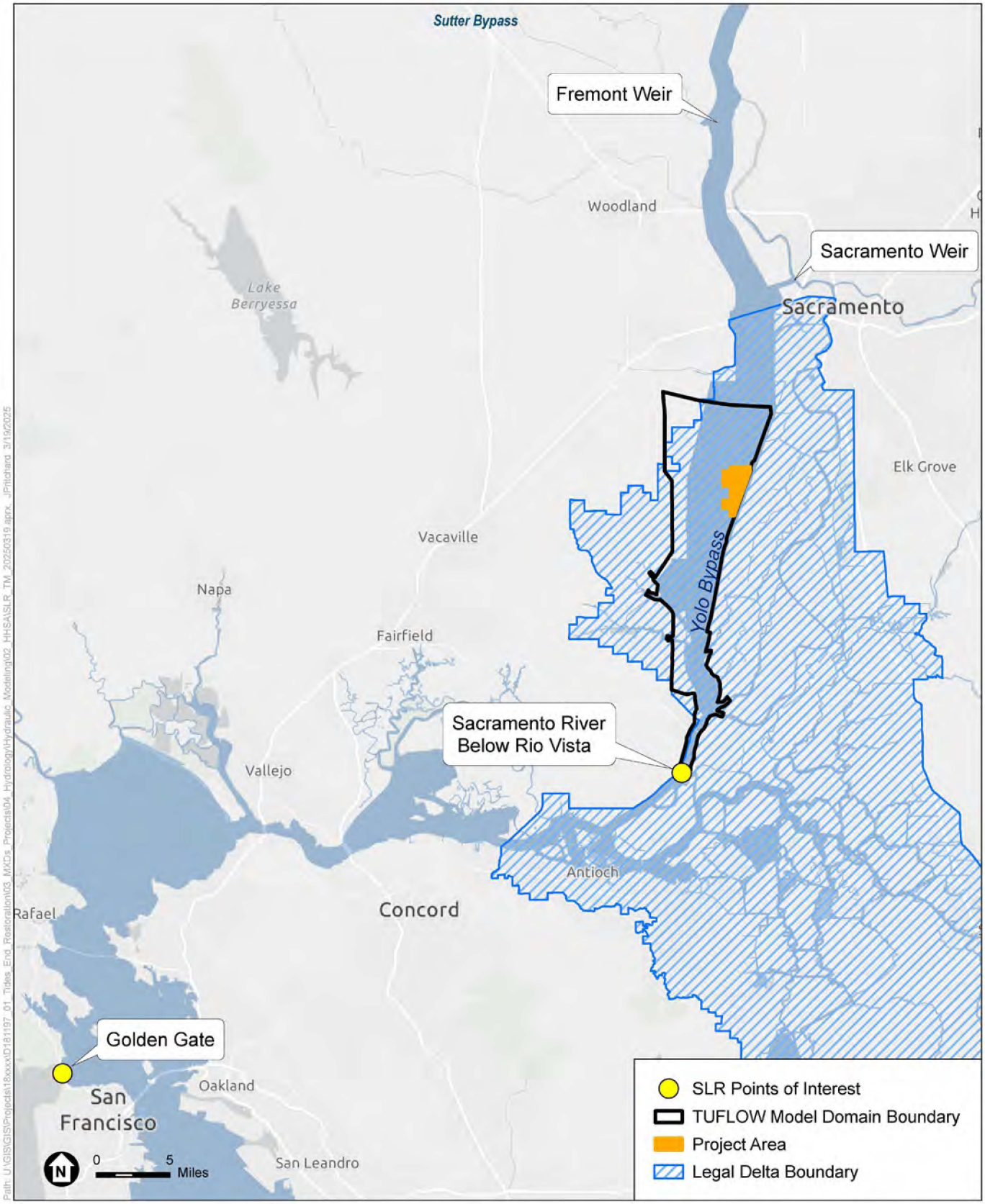
The California Department of Water Resources (DWR) proposes to implement the Tide's End Multibenefit Restoration Project (proposed Project), which would restore 2,212 acres of tidal wetland and associated floodplain habitat at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento-San Joaquin River Delta (Delta) (**Figure 1**). As the climate warms, hydrologic conditions within the lower Yolo Bypass are expected to become more extreme over time, particularly during large flood events. In addition to increased tailwater conditions resulting from sea level rise (SLR), the frequency and intensity of extreme flood events in the Yolo Bypass is expected to increase because of inland climate change (ICC). As the atmosphere continues to warm, changes in the timing and volume of precipitation and snowmelt runoff are expected to shift, with peak flows arriving earlier in the season with a greater volume over a shorter time period (Delta Stewardship Council 2018). Combined, these forces are anticipated to result in greater peak flows and flood stages over time.

Purpose

This technical memorandum has been prepared to document assumptions related to SLR and ICC as they pertain to defining boundary conditions for hydraulic modeling of the proposed Project effects and serves as a technical Appendix to the proposed Project's CEQA Hydraulic Impacts Assessment. Subsequent sections of this document identify sources of data used to define SLR and ICC boundary conditions, and how they have been modified and adapted to support the hydraulic impact assessment.

Background

DWR's *Climate Action Plan Phase 2: Climate Change Analysis Guidance* (CAPII) (DWR 2018) requires that information and analysis of climate change be completed and documented for projects going through the CEQA process. Depending on the level of risk of the project to climate change (low, medium, high), CAPII provides guidance to quantitatively or qualitatively evaluate a project's vulnerability to climate change. For this project, DWR has determined the proposed Project to be "low/medium consequence," which requires the CAPII Climate Change Screening Analysis Form as well as supplemental analysis of the project effects under climate change.



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1
Project Location

Prepared by: ESA

SOURCE: Esri, 2025; CA DWR, 2025

In addition, USACE is the NEPA lead agency for the proposed Project and is responsible for verifying that any changes to authorized USACE Civil Works Projects (in this case, Sacramento River Flood Control Project which includes the Yolo Bypass) will, "not be injurious to the public interest or impair the usefulness of the project" (USACE 2018). USACE has developed guidance for incorporating the direct and indirect physical effects of projected future sea level change across a project's life cycle (USACE 2019).

As described in the main body of the report, the hydraulic impacts assessment of the proposed Project relies on boundary conditions times series datasets derived from the regional hydraulic modeling developed for the Yolo Bypass Cache Slough (YBCS) Master Plan (DWR and CVFPB, 2025), which included modeling scenarios representing both SLR and ICC. The following sections provide background and document decisions related that were reached through discussion with DWR through the course of Fall 2024.

Sea Level Rise (SLR)

To represent future SLR conditions, the YBCS Master Plan hydraulic modeling utilized regional datasets prepared as part of DWR's 2022 Central Valley Flood Protection Plan (CVFPP) Update. To reflect future SLR conditions over a 50-year planning horizon (i.e., conditions in the Year 2072), the CVFPP 2022 Update relied on the California Ocean Protection Council's (OPC) 2018 SLR guidance, using what was then referred to as the *medium-high risk, high emissions scenario*. This resulted in a SLR estimate of 3.68 feet at Golden Gate Bridge for the Year 2072 (DWR 2022). When updating stage-frequency estimates throughout the Delta for the CVFPP 2022 Update, DWR used this value to adjust the downstream tidal boundary of the RMA Delta Model when routing flood flows through the Delta. The results of that analysis were then used as the basis for defining the downstream tailwater conditions for upstream hydraulic models evaluating the effects of SLR on flood operations in the Delta for the CVFPP 2022 Update, and subsequently the hydraulic modeling used in the YBCS Master Plan.

DWR agreed that the model outputs from the YBCS Master Plan hydraulic models were appropriate for evaluating the effects of the proposed Project, but requested the following modifications for consistency with CAPII guidance:

1. For the proposed Project, future climate horizon of Year 2074, representing 50 years following the release of the CEQA Notice of Preparation (NOP) will be assumed.
2. OPC's *State of California Sea-Level Rise Guidance: 2024 Science and Policy Update*, which was released in July 2024, will be used to update the estimated SLR at Golden Gate for the Year 2074.

The manner in which these modifications were applied is described in the subsequent Analysis section of this document.

Inland Climate Change (ICC)

Using data developed from DWR's CVFPP 2022 Update, the YBCS Master Plan evaluated three ICC scenarios based on Coupled Model Inercomparison Project (CMIP) Phase 5, which provides the basis for the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report:

- warmer, drier climate conditions (Low)
- central tendency climate conditions (Medium)

- hotter, wetter climate conditions (High)

During scoping discussions during Fall 2024, DWR agreed that for purposes of evaluating the effects of the proposed Project under future climate conditions the model outputs from the YBCS Master Plan hydraulic models were appropriate for use without modification. DWR also agreed that given the nature of the proposed alterations, only the "medium" climate scenario needed to be analyzed.

For this analysis, input time series data for evaluating the 1% ACE (100-year) design storms under the Future No-Action and Future Cumulative Conditions scenarios were adapted from hydraulic model outputs prepared for the YBCS Master Plan (DWR and CVFPB 2025). These hydrology datasets were prepared using procedures originally developed for the Central Valley Hydrology Study (CVHS) completed by the USACE and DWR in 2013. The CVHS methods use historic storm patterns, scaled to correspond to statistically determined return period flows to represent hydraulic loading conditions (peak flow and volume) for planning and design. The YBCS Master Plan adopted storm patterns and scale factors developed by the USACE for the American River Common Features, Water Resources Development Act (WRDA) of 2016 project. In the lower Yolo Bypass where the proposed Project is located, the governing design storm pattern is the American River (AMR) Centering, a WRDA 2016-specfic flood centering developed by USACE (DWR and CVFPB 2025). The AMR Centering is based on the 1986 historic storm pattern and applies two CVHS scaling factors to balance coincident flow frequencies between the Sacramento and American Rivers. When the AMR Centering is adjusted for the "medium" climate scenario, the CVHS scale factor is applied at the American River at Fair Oaks is 115%, while a separate coincident CVHS scale factor of 120% is applied to the rest of the system (DWR and CVFPB 2025).

Analysis

Sea Level Rise (SLR) at Golden Gate

Since 2010, the California Ocean Protection Council (OPC) has published and periodically updated the *State of California Sea-Level Rise Guidance*, which includes projections for SLR at various locations along the California coast through the year 2150 based on most-recent science (OPC 2024). This guidance provides a range of probabilistic projections of SLR, specifically designed to help inform decision-makers. The projections are based on possible scenarios of SLR that can be related to different levels of risk tolerance for projects.

The CVFPP 2022 Update has served as the basis for informing SLR assumptions in the Delta for other State-led modeling planning and design studies, including the YBCS Master Plan. To reflect future SLR conditions over a 50-year planning horizon (i.e., conditions in the Year 2072), the CVFPP 2022 Update relied on OPC's 2018 SLR guidance, using what was then referred to as the *medium-high risk, high emissions scenario*. This resulted in a SLR estimate of 3.68 feet at Golden Gate Bridge for the Year 2072.

OPC's 2024 SLR guidance synthesizes updated science of sea level rise, provides guidance for application, and includes five sea level scenarios for California. The five sea level rise scenarios are derived from probabilistic projections developed in the Intergovernmental Panel on Climate Change Sixth Assessment Report (IPCC AR6). To support an analysis of the proposed Project, and in consultation with DWR, the *Intermediate-High* scenario was selected for use on this project. While OPC's 2024 SLR guidance uses updated nomenclature for describing SLR scenarios, this scenario was selected consistent with the emissions scenario assumptions adopted in the CVFPP 2022 Update.

OPC **notes** "The Medium-to-High Risk Aversion [2018 OPC] scenarios correspond closely to the Intermediate-High and High Scenarios [OPC 2024] in 2100 and 2150, although are substantially higher in 2050. This difference reflects the narrower and lower range across the more recent IPCC AR6 projections until 2050" (OPC 2024). As a result, using the OPC's 2024 SLR guidance results in lower mid-century SLR estimates than if OPC's 2018 SLR guidance were used.

Appendix 2 of OPC's 2024 guidance provides median estimates of SLR across California for each decade from 2020 to 2150, with a baseline year of 2000. Interpolating the values provided therein, a value of 2.52 feet was determined for the Intermediate-High scenario for Year 2074. **Figure 2** illustrating the relative SLR conversion factors applicable at Golden Gate has been included for reference.

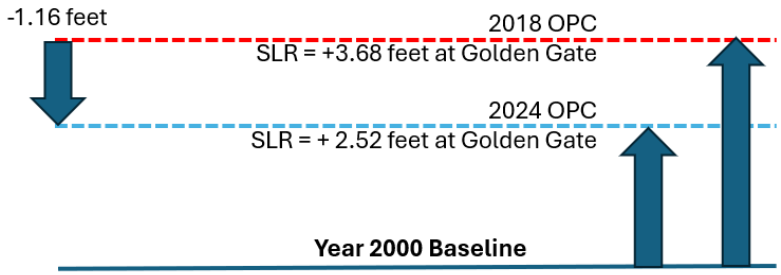


Figure 2
SLR Adjustments at Golden Gate

Sea Level Rise (SLR) Adjustment at TUFLOW Downstream Model Boundary

The downstream boundary of the hydraulic model (TUFLOW) used to analyze the effects of the proposed Project is located on the Sacramento River, approximately two miles downstream of Rio Vista. This location lies within the transition zone between fluvial and tidal influences where tidal range and the effects of SLR are reduced as river flows increase, particularly during flood events (Delta Stewardship Council 2021). The effects of this phenomenon are illustrated in stage-frequency curves developed by DWR throughout the Delta which show increasing convergence between curves based on current hydrology and curves with-SLR adjustments moving upstream through the system (DWR 2022),. Hence, the conversion factors shown in **Figure 3** become muted as flows increase and as one moves upstream.

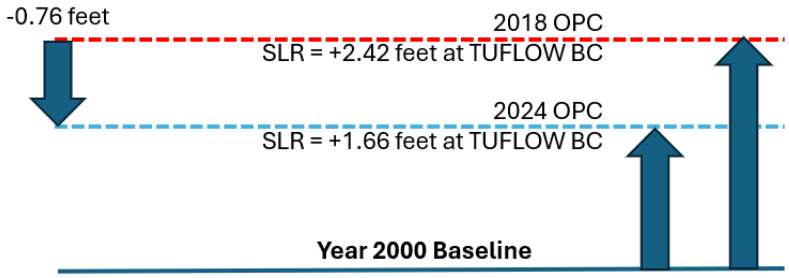


Figure 3
100-year Boundary Condition SLR Adjustments at
TUFLOW Downstream Boundary

To incorporate OPC's 2024 SLR guidance for the current study, it was necessary to address this phenomenon in our modeling. To date, the RMA Delta Model has not been run to simulate conditions under OPC's 2024 SLR guidance update, and doing so was considered cost prohibitive for developing updated boundary conditions for the current analysis. While the YBCS Master Plan model outputs reflect outdated SLR estimates, they are still useful for the current study if an appropriate vertical adjustment factor is applied to adjust the data for OPC's 2024 SLR guidance. Following consultation with DWR, a simplified interpolation approach was developed using outputs from the YBCS Master Plan hydraulic modeling to determine an appropriate adjustment factor at the downstream boundary of the TUFLOW model. The steps in this analysis are described below.

Review of YBCS Master Plan Model Output

Results from the YBCS Master Plan model outputs for the 1% ACE (100-year) event were first reviewed to compare contemporary hydrologic conditions (without SLR) to simulated conditions with SLR that relied on OPC's 2019 SLR guidance. Unfortunately, all future climate scenarios analyzed in the YBCS Master Plan include ICC, which made a like-for-like stage-flow comparison at this location impossible. However, as shown in **Table 1**, differences in computed flows on the Sacramento River downstream of Rio Vista are relatively small (5%) between the contemporary hydrologic conditions and the "SLR and ICC (Low)" scenario analyzed in the YBCS Master Plan. While the flows and corresponding water surface elevations will be slightly higher, this scenario is considered a conservative proxy for understanding the degree to which SLR effects water levels at this location during a 100-year (1% ACE) storm.

TABLE 1
INFLUENCE OF SEA-LEVEL RISE (SLR) ON 100-YEAR (1% ACE) WATER SURFACE ELEVATION (WSEL) NEAR DOWNSTREAM BOUNDARY OF TUFLOW MODEL

Hydrologic Condition	HEC-RAS Model Plan Name	Sacramento River at Rio Vista (Peak Flow, cfs)	Sacramento River at TUFLOW Downstream Boundary (WSEL, feet NAVD 88)
Contemporary Hydrology	MP Scenario 2 1/100 ACE AMR	618,277	10.80
SLR and Inland Climate Change (Low)	MP Scenario 2 1/100 ACE AMR	648,098	13.22
	Relative Difference	**29,821 (5%)**	**2.42**

Source: Model outputs extracted from YBCS Master Plan HEC-RAS models (DWR and CVFPB 2025)

Inland Attenuation Factor for 1% ACE (100-year) Storms

Ignoring the influence of ICC applied in this scenario (i.e., increased peak flows), Table 2 illustrates that during the 1% ACE (100-year) design storm event, the relative change in water level at this location is approximately 2.42 feet when 3.68 feet of SLR at Golden Gate is accounted for. For this range of flows, this results in an inland attenuation factor of 66% at this location. Under these conditions, this relationship is governed primarily by peak flow in the Sacramento River. For purposes of the current study, we assume that relationship remains constant at this location when the OPC's 2024 SLR Guidance is applied. Based on review of the flow-frequency curves computed in DWR's CVFPP 2022 Update, we note that while this scaling factor may be applicable for the 100-year (1% ACE), it may not be appropriate for other storm frequencies or other locations in the Delta.

Table 2 summarizes the SLR assumptions used in the YBCS Master Plan and those used for analysis of the proposed Project, and the corresponding elevation adjustment factors applicable at the downstream boundary of the TUFLOW model. Figure 3 illustrates the relative SLR conversion factors applicable at the downstream boundary of the TUFLOW model and has been included for reference. This information will be used as the basis for incorporating OPC's 2024 SLR Guidance into the TUFLOW model boundary conditions inputs for the 100-year (1% ACE) design storm analysis. As illustrated on Figure 3, incorporating OPC's 2024 SLR guidance in our modeling requires that water surface elevation outputs derived from the YBCS Master Plan models be adjusted by -0.76 feet.

TABLE 2
SUMMARY OF SEA-LEVEL RISE (SLR) ADJUSTMENTS FOR HYDRAULIC MODELING OF 100-YEAR (1% ACE) EVENT

Study/Source	SLR Criteria	SLR Baseline Year	SLR Target Year	Emissions Scenario	SLR Adjustment at Golden Gate (feet)	SLR Adjustment at TUFLOW DS Boundary (feet)
YBCS Master Plan	OPC 2018	2000	2072	medium-high risk, high emissions	3.68	2.42[1]
Tide's End	OPC 2024	2000	2074	intermediate-high	2.52	1.66[2]

NOTES:

1. Value derived from Table 1.
2. Value estimated based on inland attenuation factor of 66 for the 100-year (1% ACE) event.

Summary

This document summarizes assumptions related to SLR (Year 2074) and ICC as they pertain to defining boundary conditions for hydraulic modeling of the proposed Project effects and serves as a technical Appendix to the proposed Project's CEQA Hydraulic Impacts Assessment. SLR estimates for analyzing this project were developed using OPC's 2024 SLR Guidance, which predicts lower increases in SLR at Golden Gate than were used in the YBCS Master Plan hydraulic modeling, which relied on OPC's 2018 SLR guidance. Based on this understanding, a correction factor was developed to adjust water surface elevation outputs derived from the YBCS Master Plan regional hydraulic routing models to represent the effects of SLR using OPC's 2024 SLR guidance. When applied, this correction factor adjusts the water surface elevation time series at the downstream end of the TUFLOW model by -0.76 feet. ICC inflow hydrology from the YBCS Master Plan was also evaluated and determined fit for use without further modification, using the "Medium" climate scenario.

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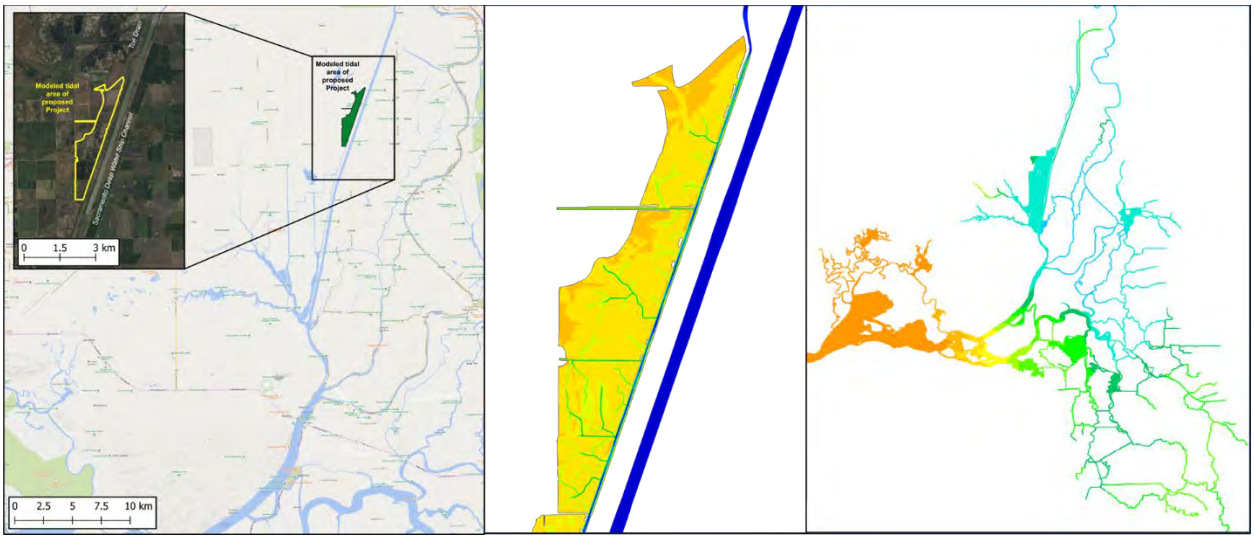
Appendix I

Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts

RESOURCE MANAGEMENT ASSOCIATES
WATER RESOURCES ENGINEERING

Tide's End Multibenefit Restoration Proposed Project Modeling Evaluation of Stage and Water Quality Impacts



TECHNICAL MEMORANDUM

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Executive Summary

The RMA Bay-Delta model was applied to evaluate stage and water quality impacts of the Tide's End Multibenefit Restoration Project (proposed Project) relative to Baseline and Future conditions. Four scenarios were modeled:

1. Baseline – existing conditions as of July 2024
2. Baseline with proposed Project – Baseline with proposed Project restoration (evaluated relative to Baseline)
3. Future – Baseline with Prospect Island, McCormack Willamson Tract Phase B, Little Egbert Multi-Benefit Project (LEMBP), Cache Slough Mitigation Bank, Chipps Island, Grizzly King, Lookout Slough, North Delta Fish Conservation Bank, Peters Pocket and Zacharias Ranch
4. Future with proposed Project – Future with proposed Project restoration (evaluated relative to Future)

The Baseline condition includes projects in the region constructed prior to July 2024. The Future condition includes projects constructed after July 2024 (Lookout Slough) and planned restoration projects. The Baseline and Future condition networks represent the current (2025) state of the proposed Project area (no tidal action and not included in the grid). The proposed Project design includes breaching of the Yolo Bypass Toe Drain on the east side, and construction of proposed Project interior berms and interior channels. The proposed Project and all other restoration sites are represented in sufficient detail to achieve the modeling goal of assessing regional stage and water quality impacts.

The RMA Bay-Delta model is a widely accepted tool that has been shown to be effective at predicting salinity distribution throughout the Delta. RMA has applied the model to hydrodynamic and water quality impacts analysis for numerous tidal marsh restoration projects throughout the Bay-Delta, including Bay Delta Conservation Plan, Regional Salinity, Suisun Marsh PEIR/EIS, Prospect Island, Lookout Slough, LEMBP, Peters Pocket, Cache Slough Mitigation Bank, Zacharias Ranch, McCormack-Williamson Tract, Decker Island, Winter Island, Dutch Slough, Chipps Island, Mallard Farms, Tule Red, Grizzly King, Bradmoor Island, Arnold Slough, Hill Slough and Wings Landing (see for example RMA, 2009, 2012, 2013, 2015a, 2015b and 2018).

The evaluation periods used in the model were January 1 to December 31, 2018 and January 1 to December 31, 2020 with two-month spin-up periods. These evaluation periods cover a below normal hydrology (2018) and a dry year hydrology (2020). Periods were selected to reflect drier

periods in the historical record when salinity constraints are likely to be more demanding, and to include yearly and seasonal fluctuations in the dynamic Bay-Delta system.

The RMA Bay-Delta model is a composite of 2-D depth averaged and 1-D cross-sectionally averaged elements extending from the Golden Gate Bridge to the Sacramento River above the confluence with the American River, and to the San Joaquin River near Vernalis. The 2-D elements are employed to represent areas of open water and large channels (e.g., Suisun Bay, Cache Slough Complex (CSC), Cache Slough, the lower Sacramento River and tidal marsh restoration areas) while the 1-D elements are used to represent the channelized portions of the Delta.

The hydrodynamic model predicts depth and velocity throughout the model domain. These results are used to drive transport in the water quality model. In the water quality model, Electrical Conductivity (EC) is used as a surrogate for salinity, similar to other Delta models such as DWR DSM2.

The model has been calibrated for the years 2018 and 2020 during a previous modeling effort that focused on improving model boundary conditions in the Cache Slough Complex (RMA, 2023). As such, the model provides the most accurate data upon which the water quality impacts analysis may be conducted.

Stage Evaluation

Hydrodynamic model results for the four modeled scenarios were analyzed to determine potential impacts of the proposed Project on stage in the Delta.

July 2018 results were processed to produce average tidal range, mean higher high water (MHHW) and mean lower low water (MLLW) stage values. The proposed Project causes a reduction in tidal range in the Toe Drain, for about 4.4 miles upstream of the proposed Project area, of approximately 0.1 to 0.3 ft. Throughout the rest of the model domain, tidal range changes are less than 0.05 ft. The proposed Project decreases MHHW in the Toe Drain, for about 5.5 miles upstream of the proposed Project area, by approximately 0.08 ft. Throughout the rest of the model domain, MHHW changes are less than 0.05 ft. The proposed Project increases MLLW in the Toe Drain, for about 4.4 miles upstream of the proposed Project area, by approximately 0.05 ft. Throughout the rest of the model domain, MLLW changes are less than 0.05 ft.

Water Quality Evaluation

Electrical conductivity (µmhos/cm or µSiemens/cm), or EC, was modeled as a surrogate for salinity. A Martinez tracer was modeled to calculate Martinez volumetric source fraction (an

estimate of seawater fraction) throughout the Delta. EC was used, along with Martinez volumetric source fraction, to estimate concentrations of chloride and bromide.

Salinity impacts were evaluated for the select D-1641 compliance locations and Contra Costa Water District (CCWD) intake locations. The D-1641 evaluation periods include the Municipal and Industrial, Fish and Wildlife, and Agriculture compliance periods during 2018 and 2020, which vary by location.

To evaluate the proposed Project impacts on water quality, modeled EC for all four scenarios was monthly averaged and compared for the select D-1641 compliance locations and water exports. The modeling results showed that the proposed Project has small impacts on regional salinity in the Delta, relative to Baseline and Future conditions. On a monthly average basis, the largest increases are 0.4%, occurring in Barker Slough during the spring of 2020 under Baseline conditions. The largest decreases of 0.3% occur at Sacramento River at Emmaton during the Winter of 2018 under Baseline conditions. Salinity increases at Barker Slough North Bay Aqueduct (NBA) intake and City of Vallejo Cache Slough intake are generally 0.3% or less and salinity changes at West Canal at Clifton Court, DMC at Tracy Pumping Plant and CCWD intakes are 0.1% or less and tend to be reductions.

Model results were processed to determine the potential for the proposed Project to cause non-compliance with the D-1641 water quality objectives. Seasonal EC standards apply to Agriculture, Fish and Wildlife compliance stations at the Sacramento River at Emmaton (D22), Sacramento River at Collinsville (C2), and the San Joaquin River at Jersey Point (D15) and San Joaquin River at Prisoners Point (D29) and chloride standards at the water intakes. The proposed Project did not cause any EC changes at the D-1641 stations that were large enough to impact compliance.

Modeled EC and Martinez volumetric source fraction results were post-processed to estimate chloride concentrations to assess compliance at the water intakes for this constituent. No violations of the chloride objectives occurred under any of the modeled configurations or time periods. Relative to the Baseline and Future conditions, the proposed Project had no impact on maximum mean daily chloride values upon which the D-1641 standards are based.

Evaluation of changes to X2[1] indicated that the proposed Project would generally decrease monthly averaged X2 by less than 0.02 km (66 ft).

Bromide concentrations were estimated from modeled EC and Martinez volumetric source fraction. Proposed Project impacts on bromide were small throughout the model domain. The

[1] X2 is defined as the distance in kilometers from the Golden Gate Bridge where the average bottom salinity in the water is 2 parts per thousand

largest increases occur at the Barker Slough NBA intake during June 2018 under Baseline conditions. Changes at this location range from -0.2% to 1%. Bromide increases of up to 0.1% occur in the winter and spring of 2018 at the Contra Costa Canal at Pumping Plant 1 for the Baseline condition. Otherwise, bromide is generally decreased by up to 0.2% at the south Delta water intakes (Contra Costa Canal at Pumping Plant 1, West Canal at Clifton Court, DMC at Tracy Pumping Plant, CCWD intake at Old River and CCWD intake at Victoria Canal).

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Introduction

The Tide's End Multibenefit Restoration Project (proposed Project) is an approximately 2,200-acre site located in the Yolo Bypass, adjacent to the Toe Drain (Figure 1). Multibenefit restoration of this site is proposed, which includes approximately 390 acres of tidal wetlands. The remainder of the proposed Project area will be primarily floodplain and managed wetlands.

Hydrodynamic and water quality model simulations were performed to assess potential proposed Project impacts on stage, salinity, chloride and bromide at water intakes and salinity compliance standards, and X2. Impacts were considered relative to Baseline and Future scenarios in which the proposed Project has not been implemented.

Background

The RMA Bay-Delta model of the San Francisco Bay and Sacramento – San Joaquin River Delta system was applied to assess potential stage and water quality impacts due to the proposed Project. The RMA Bay-Delta model is a widely accepted tool that is effective at predicting EC throughout the Bay-Delta. The version of the model used in this study was calibrated with input from Solano County Water Agency (SCWA) (RMA, 2023). SCWA provided estimated flows for agricultural diversions in the Cache Slough Complex (CSC) and the calibration focused on improving EC results in the CSC. The model has been applied to hydrodynamic and water quality impacts analysis for numerous restoration projects in the Bay-Delta system, including Bay Delta Conservation Plan, Regional Salinity, Suisun Marsh PEIR/EIS, LEMBP, Prospect Island, Lookout Slough, Little Egbert Multi-Benefit Project (LEMBP), Peters Pocket, Cache Slough Mitigation Bank, Zacharias Ranch, McCormack-Williamson Tract, Decker Island, Winter Island, Dutch Slough, Chipps Island, Mallard Farms, Tule Red, Grizzly King, Bradmoor Island, Arnold Slough, Hill Slough and Wings Landing (see for example RMA, 2009, 2012, 2013, 2015a, 2015b and 2018). The RMA Bay-Delta model has undergone continual development over more than 25 years to reflect currently available data and meet project needs. Similarly, since their original development in the 1970's, the RMA2 and RMA11 computational models have been updated over the years to best utilize the latest scientific knowledge and technology, and to meet new project needs.

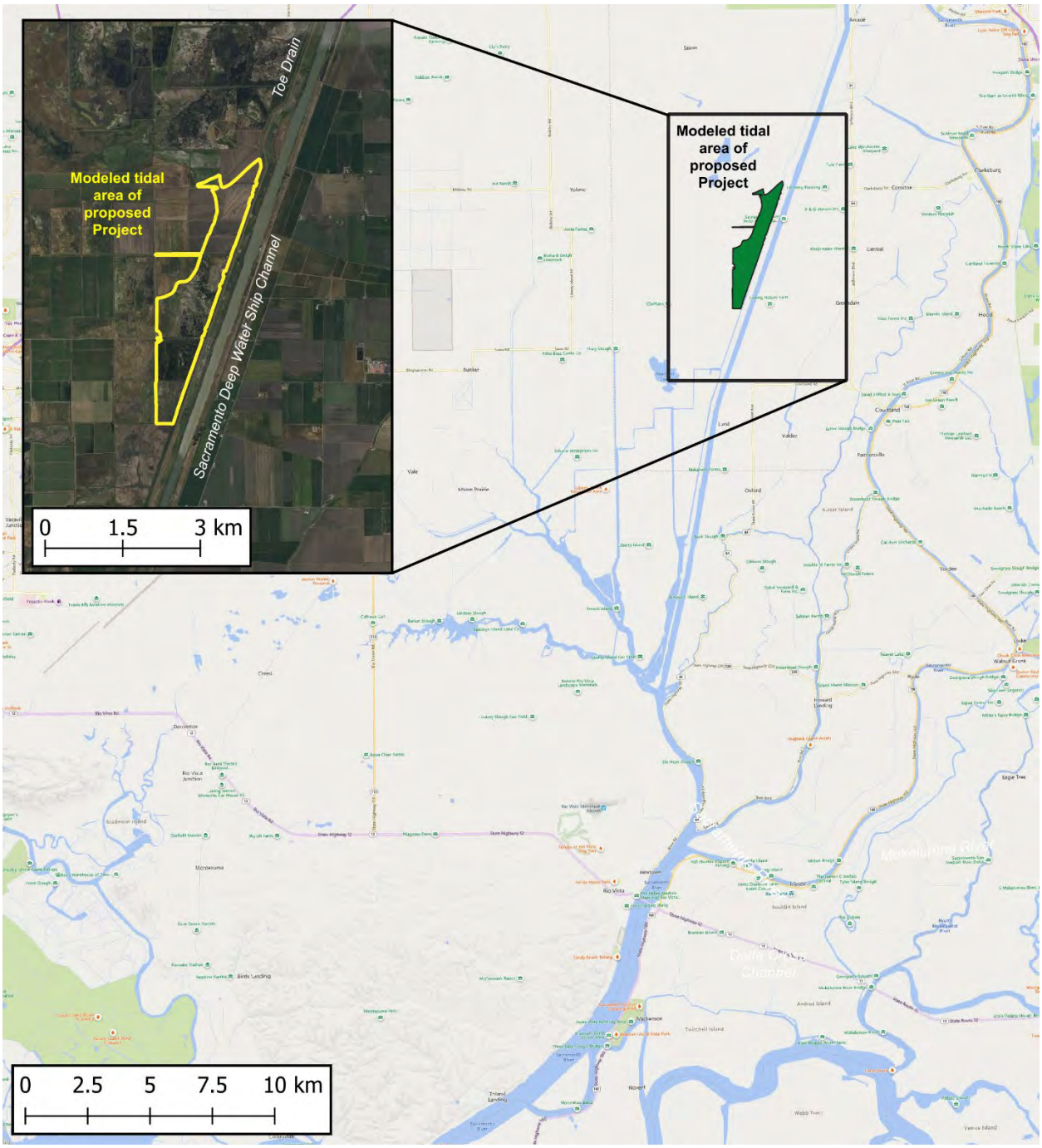

Figure 1 Location of the modeled tidal area of the proposed Project area in the northern Delta.

Methods

The model evaluation was conducted using the RMA Bay-Delta model for flow and water quality. The model utilizes the finite element method to simulate 2-D depth averaged and 1-D cross-sectionally averaged flow and water quality for a 7.5-minute computational time step. All

model results were stored at 15-minute intervals for all model computational points allowing both temporal and spatial analysis.

The methods for hydrodynamic and water quality modeling are summarized below.

Hydrodynamic Modeling and Analysis Methods

Hydrodynamic simulations were performed for the periods of January – December 2018 and January – December 2020 with two-month spin-up periods. According to DWR's hydrologic classification index, the 2018 water year was classified as below normal and the 2020 water year was classified as dry.

Four scenarios were modeled:

1. Baseline – existing conditions as of July 2024
2. Baseline with proposed Project – Baseline with proposed Project restoration (evaluated relative to Baseline)
3. Future – Baseline with Prospect Island, McCormack Willamson Tract Phase B, LEMBP, Cache Slough Mitigation Bank, Chipps Island, Grizzly King, Lookout Slough, North Delta Fish Conservation Bank, Peters Pocket and Zacharias Ranch
4. Future with proposed Project – Future with proposed Project restoration (evaluated relative to Future)

The Baseline condition includes projects constructed prior to July 2024. The Future condition includes projects constructed after July 2024 (Lookout Slough) and planned restoration projects at Prospect Island, McCormack Willamson Tract Phase B, LEMBP, Cache Slough Mitigation Bank, Chipps Island, Grizzly King, North Delta Fish Conservation Bank, Peters Pocket and Zacharias Ranch, as well as Big Notch flows.

Results were post-processed to evaluate relative impacts on stage, including impacts on mean higher high water (MHHW), mean lower low water (MLLW) and tidal range (calculated as mean high water minus mean low water). Spatial plots of average relative change to tidal range, MHHW and MLLW were provided for July 2018.

Water Quality Modeling and Analysis Methods

Constituents and Simulation Setup

Water quality simulations were performed for the same four scenarios and 2018/2020 periods. Electrical Conductivity (EC; µmhos/cm or µS/cm) was modeled as a surrogate for salinity. EC is a readily measurable physical property of water that is used as a stand-in for the more precise term of Specific Conductance (SC) for the electrical conductance corrected to 25° C. EC is

directly correlated with salinity, such that increases in EC correspond to increases in salinity. The RMA Bay-Delta model is limited to computing a depth-averaged EC.

Martinez source-tracer simulations were used to determine seawater fractions throughout the Delta. These fractions were paired with EC predictions to estimate chloride and bromide concentrations at water intake locations.

Regulatory Context

The State Water Resources Control Board (SWRCB) Decision 1641 (D-1641) was adopted December 29, 1999 and revised on March 15, 2000. D-1641 is the implementation water right decision for the 1995 Bay-Delta Plan, with respect to the operation of water projects within the Delta watershed, and includes water quality objectives to protect Municipal and Industrial (M&I), and agricultural beneficial uses in the Delta, as well as water quality objectives to protect Fish and Wildlife beneficial uses.

Evaluation Locations

Water quality impacts were evaluated for the select D-1641 compliance locations and Contra Costa Water District (CCWD) intake locations in Table 1.

Table 1 D-1641 Compliance Stations to be Used for Project Salinity Evaluation

D-1641 Station ID	Location	Beneficial Use
D22	Sacramento River at Emmaton	Agriculture
D15	San Joaquin River (SJR) at Jersey Point	Agriculture, Fish and Wildlife
D29	San Joaquin River (SJR) at Prisoners Point	Fish and Wildlife
C5	Contra Costa Canal at Pumping Plant (PP) 1	Municipal and Industrial
C9	West Canal at Clifton Court	Municipal and Industrial
DMC1	DMC at Tracy Pumping Plant (PP)	Municipal and Industrial
SLBAR3	Barker Slough North Bay Aqueduct (NBA) intake	Municipal and Industrial
C19	City of Vallejo Cache Slough intake	Municipal and Industrial
C2	Sacramento River at Collinsville	Fish and Wildlife
D12	San Joaquin River (SJR) at Antioch	Municipal and Industrial
	CCWD intake at Mallard Slough	
	CCWD intake at Old River	
	CCWD intake at Victoria Canal	

A map of these locations is shown in Figure 2. The locations were selected to assess the potential for the proposed Project to affect salinity intrusion in the Delta. Sacramento River at Emmaton (D22) and San Joaquin River at Jersey Point (D15), chosen for evaluation for their proximity to the proposed Project area, show how the proposed Project affects both the Sacramento and San Joaquin river systems, and also indicate the potential for salinity intrusion into the north and central Delta, as they are just east of the low salinity zone. San Joaquin River at Prisoners Point (D29) and Sacramento River at Collinsville (C2), combined with the Sacramento River at Emmaton and San Joaquin River at Jersey Point locations, provide geographical coverage on salinity effects in relationship to agriculture and fish and wildlife beneficial uses. Contra Costa Canal at Pumping Plant 1 (C5), West Canal at Clifton Court (C9), DMC at Tracy Pumping Plant (DMC1), and Barker Slough NBA intake (SLBAR3) were chosen for analyzing impacts to municipal and industrial uses. These locations cover State Water Project (West Canal and Barker Slough) and Central Valley Project (DMC) operations, in addition to Contra Costa Water District operations.

The D-1641 evaluation periods include the Municipal and Industrial, Fish and Wildlife, and Agriculture compliance periods during 2018 and 2020, which vary by location.

Post-Processing and Impact Assessment

Post-processing and analysis include:

- Tabular monthly average EC comparisons among scenarios for D-1641 stations and export locations
- Time series plots of daily average EC, EC change and EC percent change
- Spatial maps showing relative EC changes for summer and fall periods
- Evaluation of compliance with EC standards, including time series plots of EC results and compliance standards
- Estimation of chloride and bromide concentrations using EC and Martinez source fractions
- Evaluation of compliance with chloride standards
- Calculation of X2, the tidally averaged bottom salinity[2] location of 2 ppt, from model results, and assessment of proposed Project impacts on X2.
- Tabular monthly average bromide comparisons among scenarios for water intakes
- Time series plots of daily average bromide, bromide change and bromide percent change at water intakes

[2] While X2 standards refer to bottom salinity, the model computes depth-averaged salinity and this is used to calculated X2

Chloride and Bromide Estimation Methods

For all scenarios and periods, simulations of Martinez L source fraction were performed to provide additional information for estimation of chloride and bromide concentrations at the water intakes. The source fraction was used to determine whether conditions were seawater-dominant or riverine-dominant for the purpose of applying salinity-constituent conversion equations.

Chloride (mg/L) was estimated from modeled EC (µS/cm) in conjunction with volumetric Martinez fraction based on the following equations (USBR, 2010).

When volumetric Martinez source fraction is greater than or equal to 0.4%:

$$Cl = 0.285(EC) - 50 \quad (1)$$

When volumetric Martinez source fraction is less than 0.4%:

$$Cl = 0.15(EC) - 12 \quad (1)$$

Bromide (mg/L) was estimated from modeled EC (µS/cm) in conjunction with volumetric Martinez fraction based on the following equations (USBR, 2015).

When volumetric Martinez source fraction is greater than or equal to 0.4%:

$$Br = 0.000827(EC) - 0.112 \quad (2)$$

When volumetric Martinez source fraction is less than 0.4%:

$$Br = 0.000552(EC) - 0.073 \quad (3)$$

Seawater is typically the primary source of chloride and bromide in the Delta, so equations (1) and (3) are appropriate for the central and south Delta where EC variations from the proposed Project are predominantly due to changes in the seawater fraction. In the north Delta where seawater fractions are small and salinity is from local sources (neither seawater nor riverine), the USBR equations may not be appropriate. While the USBR equations have been applied to the Barker Slough NBA intake and City of Vallejo Cache Slough intake, they should be interpreted with caution. The direction of chloride and bromide changes likely follows the direction of EC change in the north Delta, however, there is uncertainty in the predicted magnitude of change based on the USBR equations.

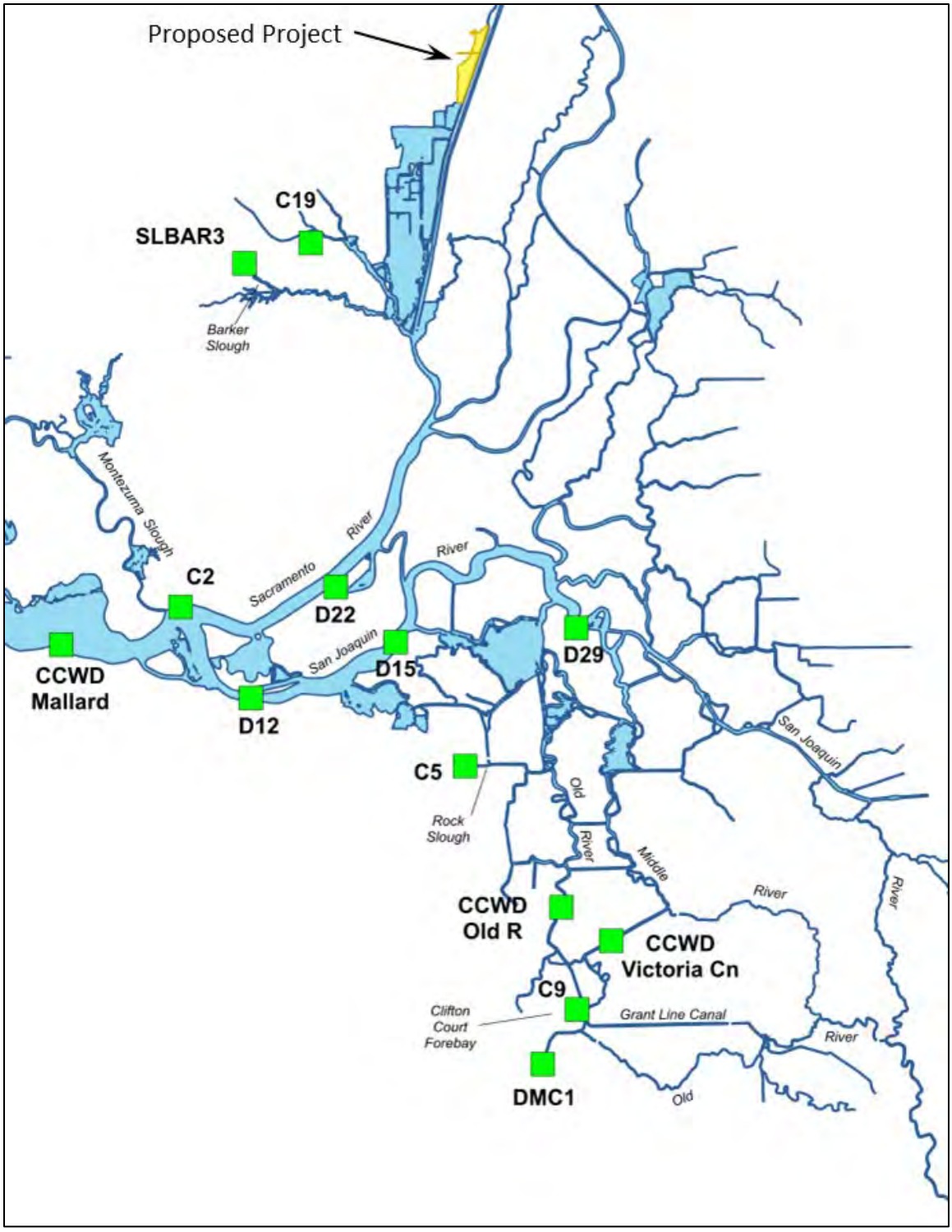

Figure 2 D-1641 compliance locations used for the model evaluation of the proposed Project salinity impacts.

Model Configuration

Geometric Extents

RMA's San Francisco Bay, Sacramento–San Joaquin Delta network was developed using an in-house GIS-based graphical user interface program (RMA, 2003) and the Janet[3] commercial grid generation program. The programs allow for development of the finite element mesh over layers of bathymetry points and bathymetry grids, GIS shapefiles and aerial images.

The RMA Bay-Delta model, shown in Figure 3 for the Future with proposed Project condition, extends from the Golden Gate Bridge to the Sacramento River above the confluence with the American River, and to the San Joaquin River near Vernalis. A two-dimensional depth-averaged approximation is used throughout most of the model domain, including the Suisun Bay and Marsh regions, the downstream reaches of Sacramento and San Joaquin Rivers, and all existing and future restoration areas. The other Delta and Suisun Marsh channels and tributary streams are represented using a one-dimensional cross-sectionally averaged approximation. The model has undergone continuous development through dozens of projects since 1997 (e.g., RMA, 2012, 2015b).

The size and shape of elements are dictated by changes in bottom elevation and other hydraulic and salinity considerations. Wetting and drying of the tidal mudflats has been represented in sufficient detail to provide a good definition of change in the tidal prism with change in tidal stage.

The proposed Project grids include detailed representation of the proposed Project configuration, while the Baseline and Future model networks do not include the proposed Project. A detail view of the proposed Project grid in the proposed Project area is shown in Figure 4. Only areas inundated under the modeled low flow conditions are included in the grid.

All the model networks include the following recently constructed projects:

- Lower Yolo Ranch tidal restoration
- Yolo Flyway Farms tidal habitat restoration
- Lindsey Slough tidal restoration
- Decker Island tidal habitat restoration
- Liberty Island Conservation Bank
- Dutch Slough tidal restoration

The Future condition grids include, in addition to the above (see Figure 5):

[3] https://www.smileconsult.de/web/en/index.html

- Lookout Slough tidal restoration
- Prospect Island restoration
- Little Egbert Multi-Benefit Project
- McCormack-Williamson Tract Phase B Habitat Restoration
- Cache Slough Mitigation Bank
- Chipps Island
- Grizzly King
- North Delta Fish Conservation Bank
- Peters Pocket
- Zacharias Ranch

Figure 3 Extents of the RMA Bay-Delta model for the proposed Project analysis (Future with proposed Project).

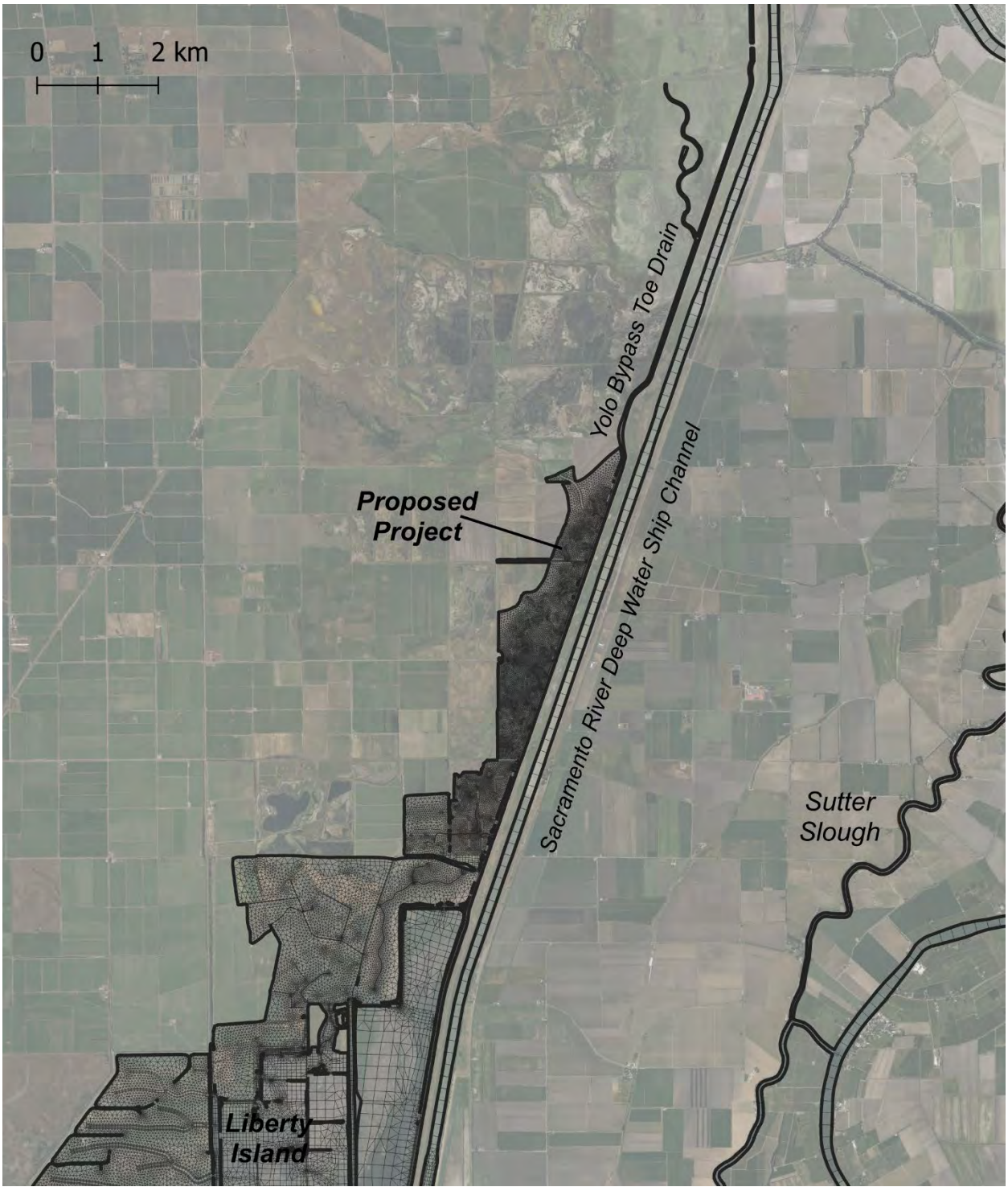

Figure 4 Detail view of the proposed Project model configuration.

1. Cache Slough Mitigation Bank
2. Chipps Island
3. Grizzly King
4. Little Egbert Multi-Benefit Project
5. Lookout Slough tidal restoration
6. McCormack Williamson Phase B Habitat Restoration
7. North Delta Fish Conservation Bank
8. Peters Pocket
9. Prospect Island restoration
10. Zacharias Ranch

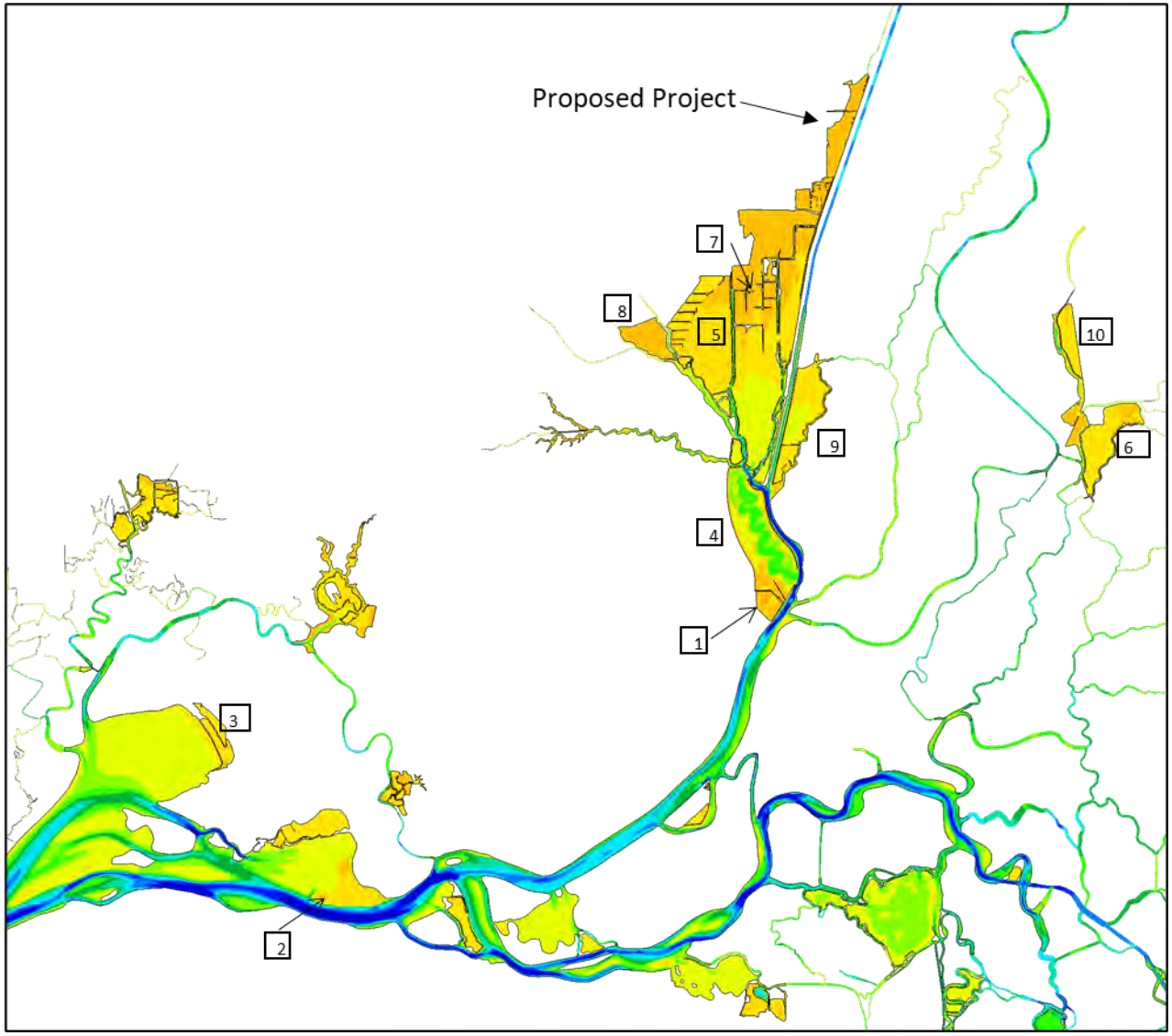

Figure 5 Tidal restoration projects included in Future model grids.

Bathymetry

The RMA Bay-Delta model grid and bathymetry, shown in Figure 6, has been continually updated over the years as new and better bathymetry data becomes available. For all areas of the model grid, the most current, best quality bathymetric data were used to set grid elevations as follows.

- Most recently, elevations were set using data collected in the CSC during 2015, 2017 and 2018 by the USGS[4].
- Deepwater Ship Channel and Miner Slough elevations were set using data collected by DWR (DWR, 2012).
- Elevations in the portions of the Ship Channel upstream of the DWR survey were set using 2005 USACE data (USACE, 2005).
- In Cache Slough and Sutter Slough elevations were set using data collected by Environmental Data Solutions (EDS) 2012.
- For the San Francisco Bay and Suisun Bay, DWR's 2012 10m San Francisco Bay and Sacramento – San Joaquin Delta DEM version 3[5] were used.
- The model grid includes elevations based on the multi-beam bathymetry surveys performed by DWR for selected Suisun Marsh and Delta channels and posted on the DWR Delta Bathymetry websites[6,7]. The sites provide a documentation of the multi-beam and single-beam data sources.
- For all areas not covered by more recent data sets listed above, bottom elevations and the extent of mudflats were based on bathymetry data collected by NOAA, DWR, USACE and USGS. These datasets have been compiled by DWR and can be downloaded from DWR's Cross Section Development Program (CSDP) websites[8].
- The Lower Yolo Ranch tidal restoration grid was based on data provided by cbec.
- The Lower Flyway Farms tidal restoration grid was based on data provided by cbec.
- The Decker Island and Chipps Island tidal restoration grids were based on data provided by Stillwater Sciences.
- The Grizzly King restoration grid was based on data provided by Westervelt Ecological Services
- The Liberty Island Conservation Bank grid was based on USGS[9] topography data.

[4] https://www.sciencebase.gov/catalog/item/5d781129e4b0c4f70d020cdd
[5] https://data.cnra.ca.gov/dataset/san-francisco-bay-and-sacramento-san-joaquin-delta-dem-v3
[6] https://data.cnra.ca.gov/dataset/san-francisco-bay-and-sacramento-san-joaquin-delta-dem-for-modeling-version-4-2
[7] https://data.cnra.ca.gov/dataset/san-francisco-bay-and-sacramento-san-joaquin-delta-dem-for-modeling-version-4-1
[8] https://data.ca.gov/dataset/cross-section-development-program-navd88-update
[9] https://www.sciencebase.gov/catalog/item/5d7810e1e4b0c4f70d020cdb

- The RD 2093 North Delta Fish Conservation Bank tidal restoration grid was based on data provided by cbec.
- The Lookout Slough planned tidal restoration grid was based on design data provided by ESA.
- The Dutch Slough tidal restoration grid was based on data provided by DWR.
- The Prospect Island planned tidal restoration grid was based on data provided by Stillwater Sciences.
- The McCormack Williamson Tract planned tidal restoration grid was based on design data provided by cbec.
- The LEMBP and CSMB restoration grids were based on design data provided by MBK Engineers.
- The Zacharias Ranch restoration grid was based on data provided by Northwest Hydraulic Consultants.
- The Peters Pocket restoration grid was based on data provided by Gillenwater Consulting.

Four versions of the model grid were developed:

1. Baseline – existing conditions as of July 2024
2. Baseline with proposed Project – Baseline with proposed Project restoration (evaluated relative to Baseline)
3. Future – Baseline with Prospect Island, McCormack Willamson Tract Phase B, LEMBP, Cache Slough Mitigation Bank, Chipps Island, Grizzly King, Lookout Slough, North Delta Fish Conservation Bank, Peters Pocket and Zacharias Ranch
4. Future with proposed Project – Future with proposed Project restoration (evaluated relative to Future)

A DEM of the proposed Project restoration design feature was provided by EIP (see Figure 7). A spatial plot of model bathymetry in the vicinity of the proposed Project is shown in Figure 8. The proposed Project is represented in the model using 2-D grid elements.

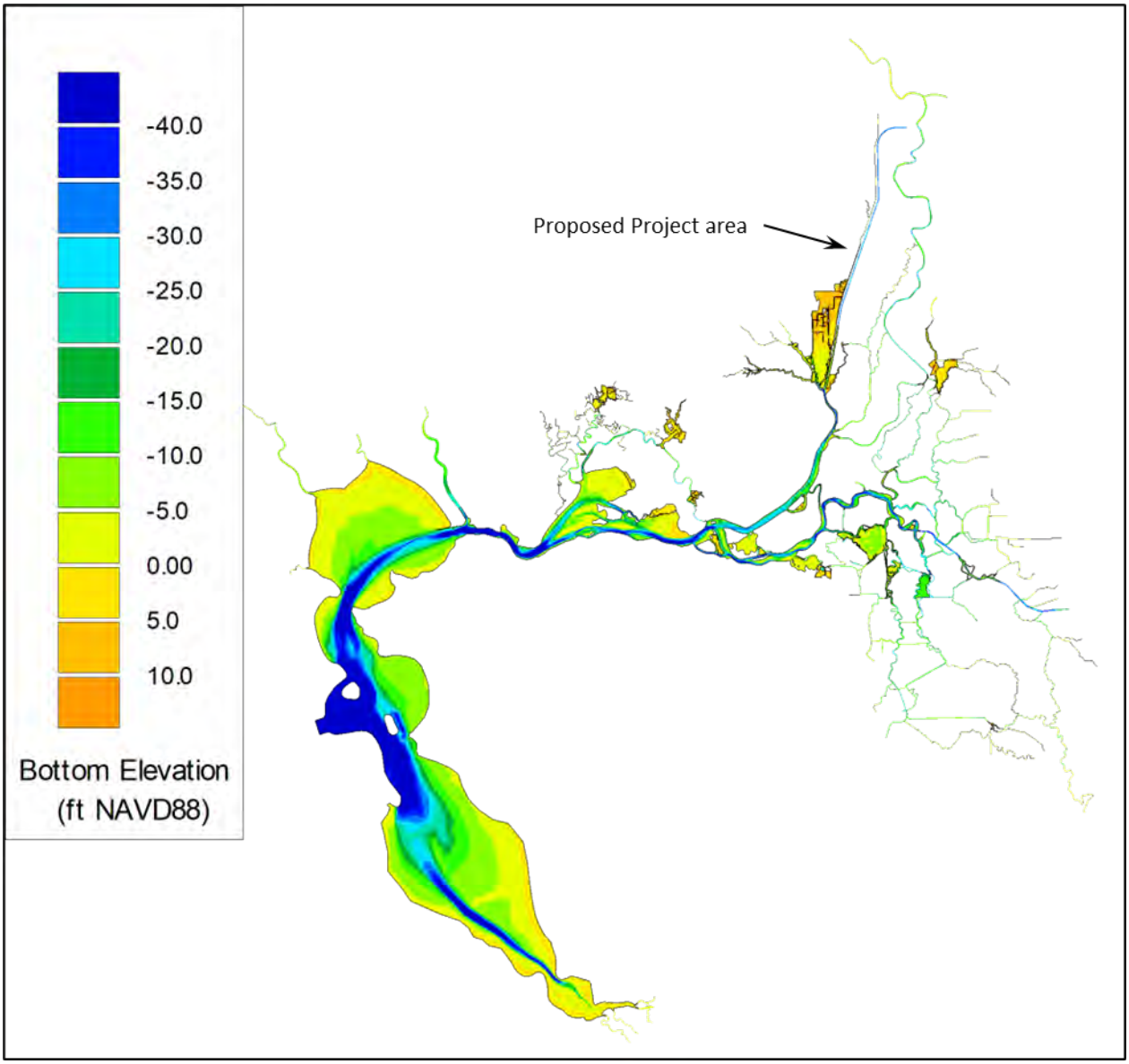

Figure 6 RMA Bay-Delta Baseline model bathymetry.

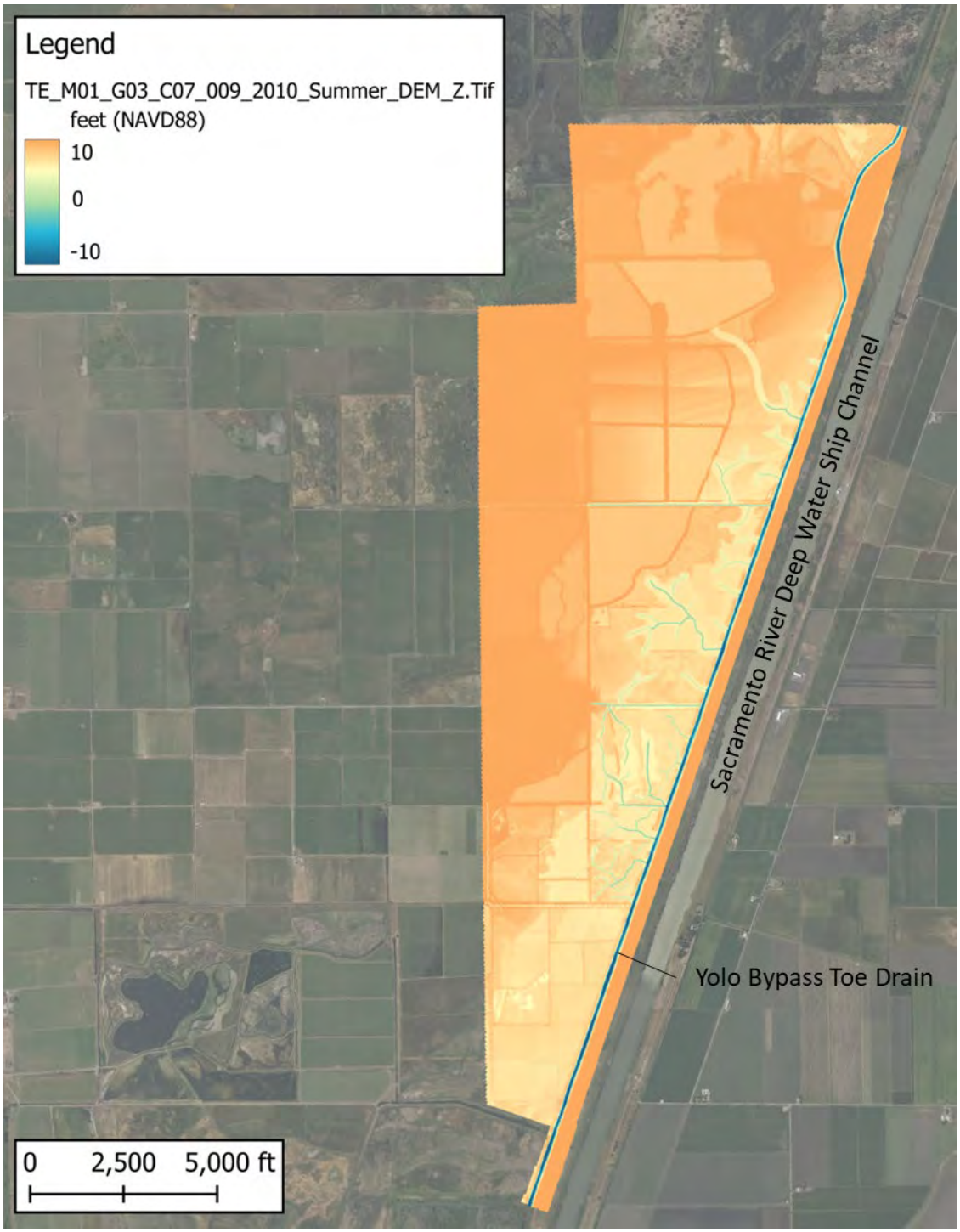

Figure 7 Topography representing proposed Project restoration design.

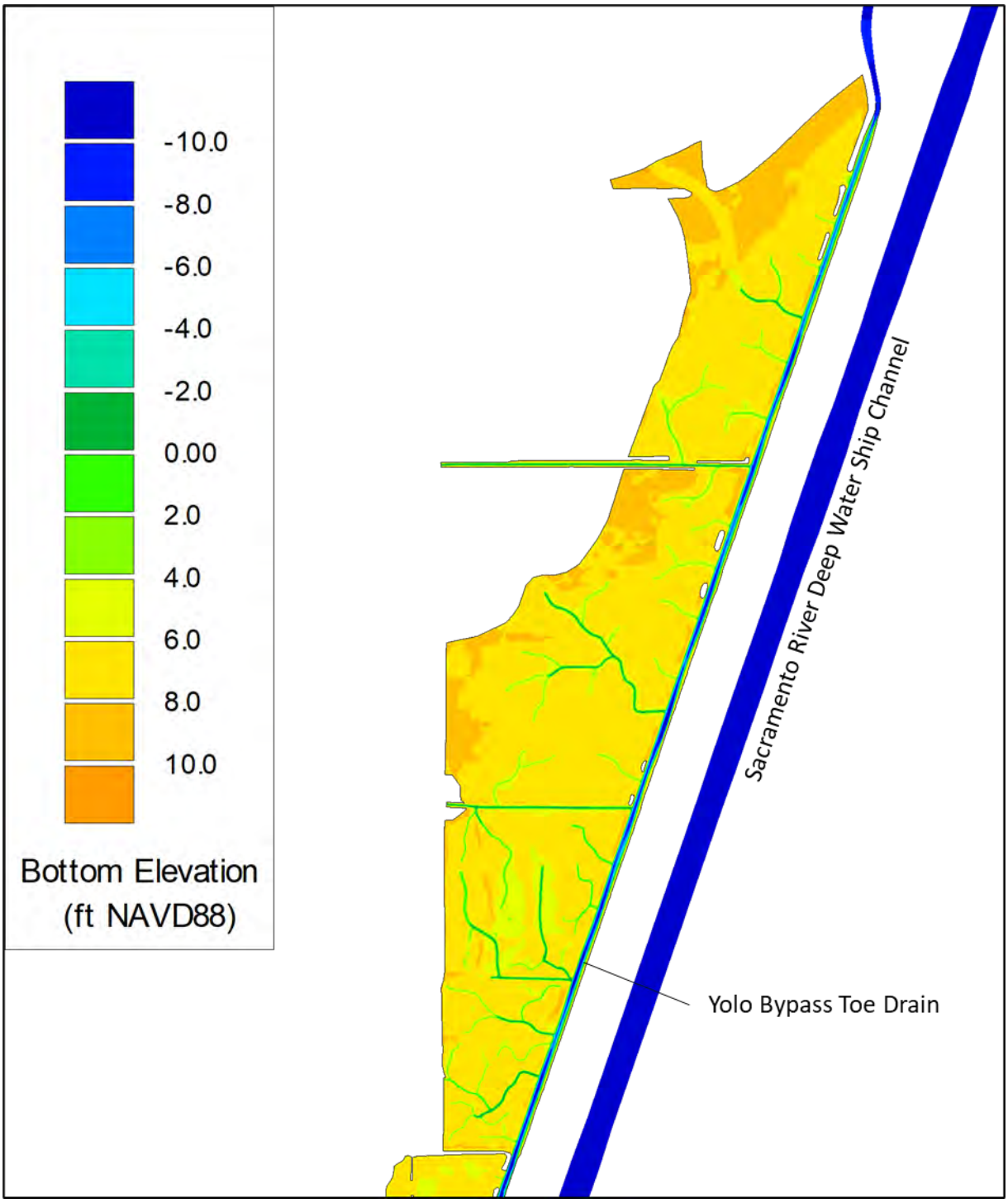

Figure 8 Proposed Project restoration model bathymetry (only areas inundated under the modeled low flow conditions included in model grid)

Model Boundary Conditions

Figure 9 shows the location of the model boundary conditions. A detail view of the Cache Slough Complex is shown in Figure 10. Figure 11 shows the DCD (Delta Channel Depletion) locations and major control structures through the Delta and Suisun Marsh. Each model inflow boundary condition requires a corresponding EC value to be specified (see Appendix A: Model Boundary Conditions). Internal EC boundary conditions are applied on the Sacramento River at Hood and the San Joaquin River at Mossdale. The model boundary conditions are:

Tidal stage boundary at the Golden Gate Bridge (from NOAA, see 2018 Model Boundary conditions - Figure 103 and 2020 Model Boundary conditions - Figure 118). The applied tidal stage is adjusted by +0.46 ft to account for density differences between the higher-salinity waters of San Francisco and Suisun Bays and the lower-salinity water in the Delta. This value is used to achieve best agreement with observed stage in the Delta.

Inflows:
Sacramento River (above American River, Freeport – American River)
American River (near Sacramento)
San Joaquin River near Vernalis
Yolo Bypass and Yolo Bypass Toe Drain
Yolo Bypass, top of Liberty
Fremont Weir Big Notch flows (Future scenarios only)
Mokelumne River (near Thornton)
Cosumnes River
Calaveras River (near Stockton)
Sacramento Regional Wastewater Treatment Plant (WWTP)
CSC Inflows (Ulatis Creek, Vacaville Easterly WWTP discharge, Campbell Lake)
Tracy WWTP
Stockton WWTP
Napa River
Petaluma River
Novato Creek
East Bay Municipal Utilities District discharge (EBMUD)
East Bay Dischargers Authority discharge (EBDA)
South Bay inflows (Alameda Creek, Coyote Creek, Guadalupe River, wastewater discharges)
Agricultural return flows (from Delta Channel Depletion - DCD[10])
Precipitation

[10] https://data.ca.gov/dataset/dsm2

Exports/Diversions:
State Water Project (SWP), Clifton Court Forebay gates
Central Valley Project (CVP) Tracy Pumping Plant
Contra Costa Canal at PP 1, and Contra Costa Water District (CCWD) intakes at Old River and Victoria Canal
North Bay Aqueduct (NBA), Barker Slough Pumping Plant
Delta Channel Depletion (DCD), throughout Delta
Cache Slough Complex agricultural diversions
Evaporation in the Cache Slough Complex and restoration areas

Major Control Structures:
Delta Cross Channel gates
Lisbon Weir
Suisun Marsh Salinity Control Gate (SMSCG)
South Delta Temporary Barriers

- Old River near Tracy (DMC) temporary barrier
- Old River at Head temporary barrier
- Middle River temporary barrier
- Grant Line Canal temporary barrier

Time series plots of model boundary conditions for the model analysis periods of January – December 2018 and January – December 2020 are provided in Appendix A: Model Boundary Conditions.

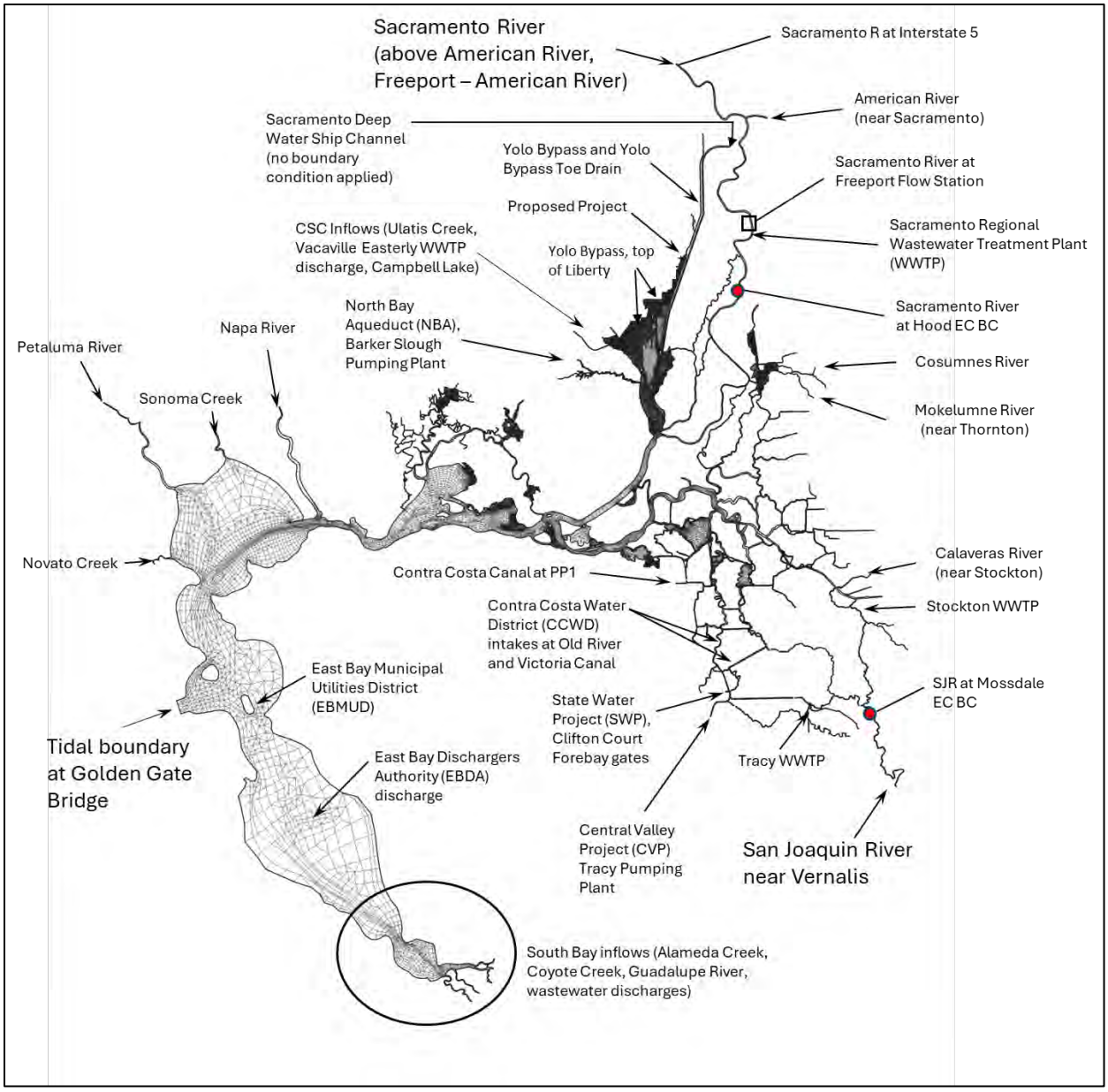

Figure 9 Model boundary condition locations. Internal EC boundary conditions are set for the Sacramento River at Hood and for the San Joaquin River at Mossdale.

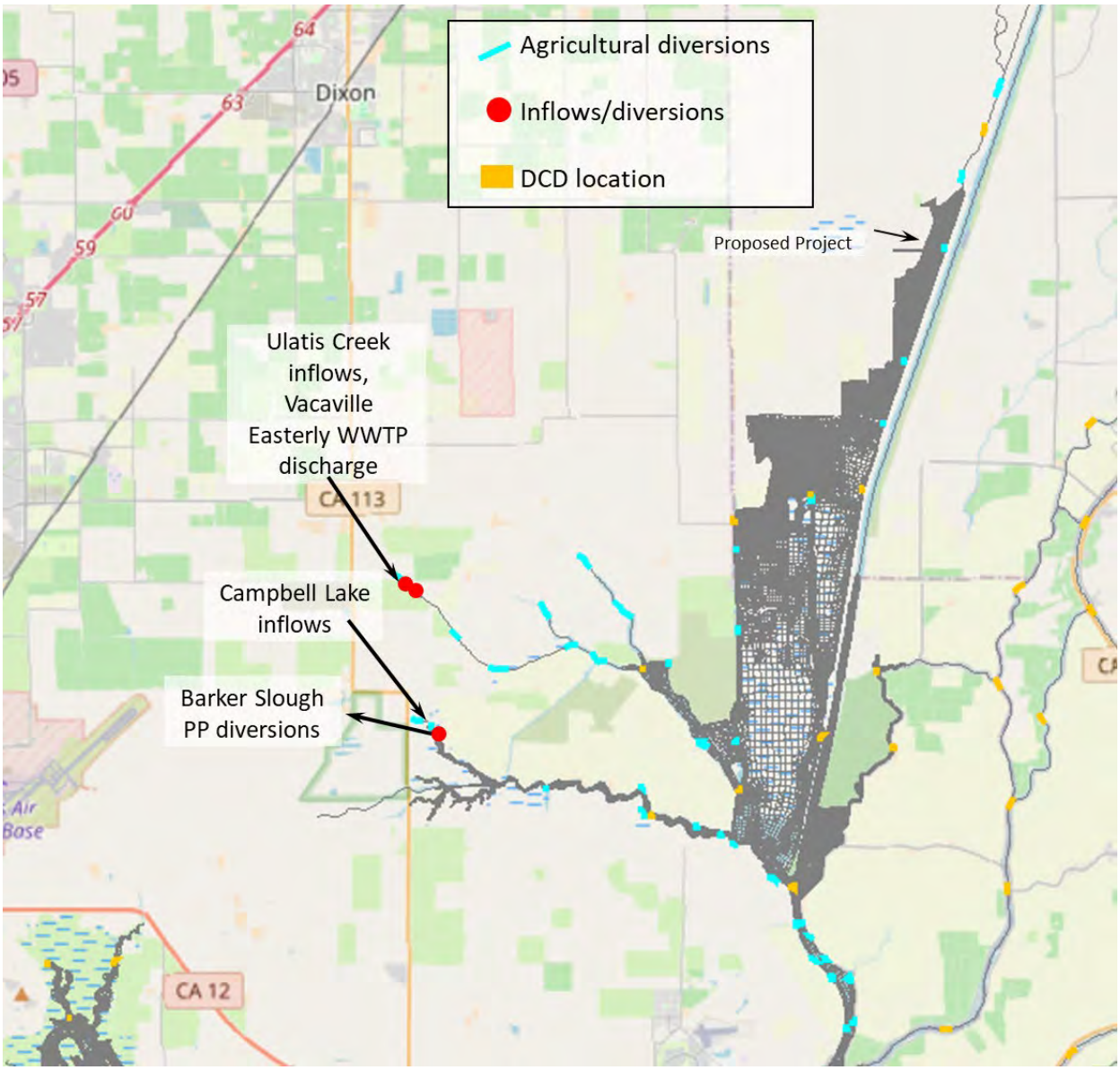

Figure 10 Cache Slough Complex model boundary condition locations

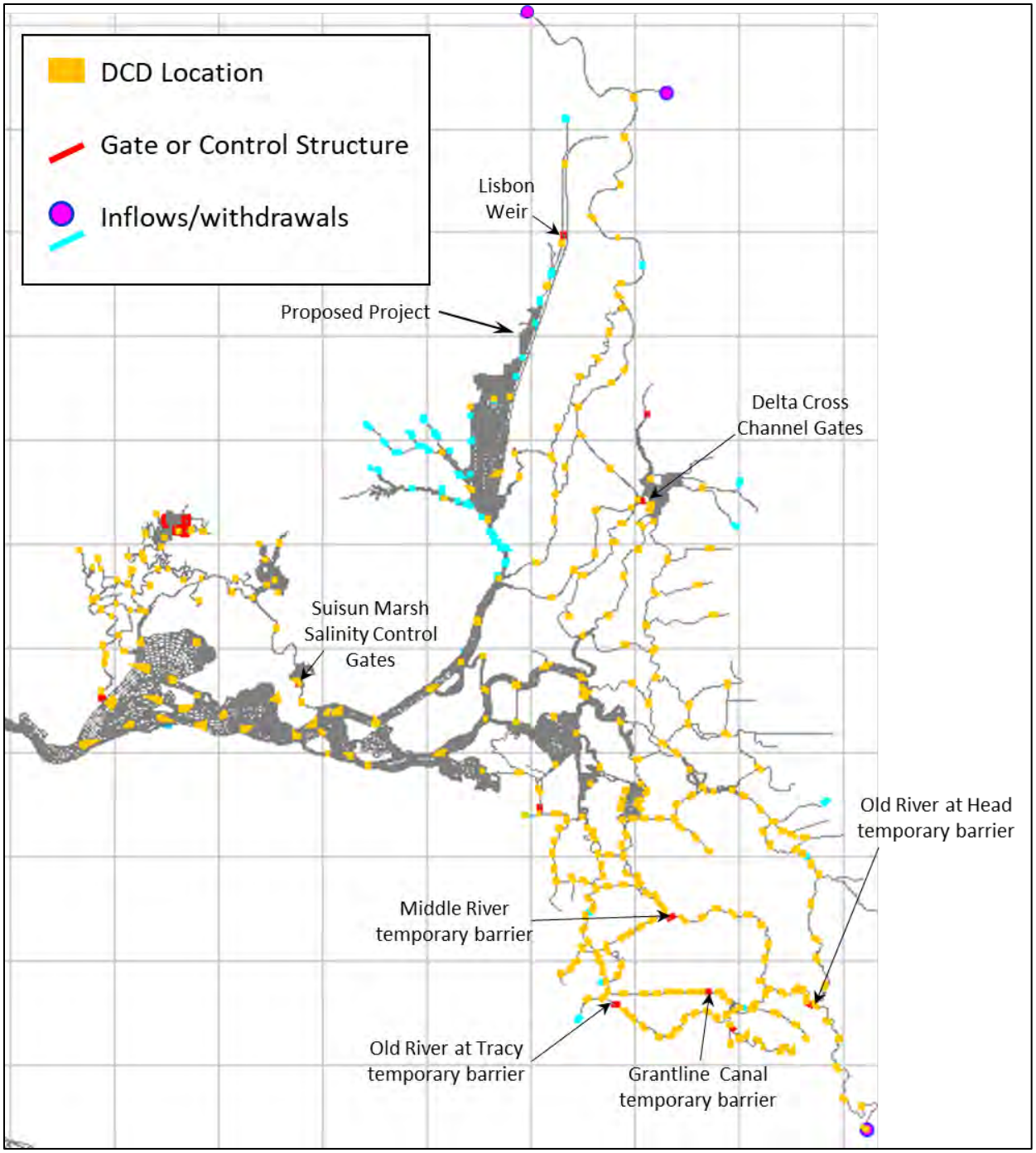

Figure 11 Location of DCD diversions and returns, and the major Delta control structures. DCD diversions in the Cache Slough Complex are replaced with estimated ag diversion flows provided by Solano County Water Agency.

Analysis Periods

The two one-year model analysis periods are January through December 2018 and January through December 2020. The hydrologic conditions for 2018 were classified as below normal (BN) and conditions for 2020 were classified as dry for the Sacramento Valley and San Joaquin Valley[11]. For reference, Figure 12 and Figure 13 present the overall Delta hydrologic conditions for 2008-2020. Figure 12 shows the major Delta inflows. The salinity intrusion in the western Delta over the 2008-2020 period is illustrated with the plot of the observed EC for the San Joaquin River at Jersey Point location in Figure 13.

The water year effectively begins with the freshening of the Delta with the rise of the winter/spring inflows. This was late-March for 2018. There was no significant freshening event in 2020.

The model runs were initialized from observed Delta EC values for November 1, 2017 and November 1, 2019 and spun up for two months.

[11] https://cdec.water.ca.gov/reportapp/javareports?name=wsihist

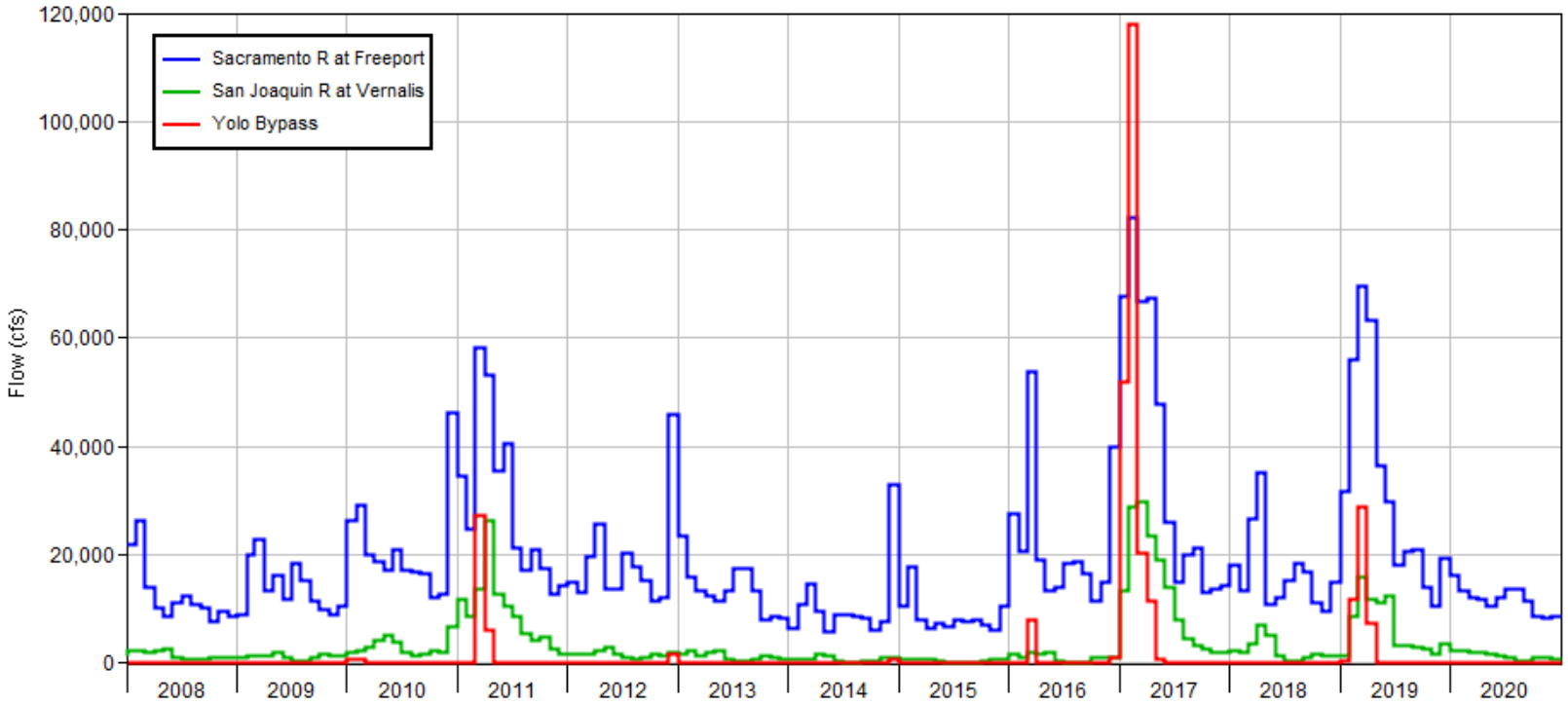

Figure 12 Monthly averaged Delta inflows for the Sacramento River, Yolo Bypass and San Joaquin River for 2008-2020.

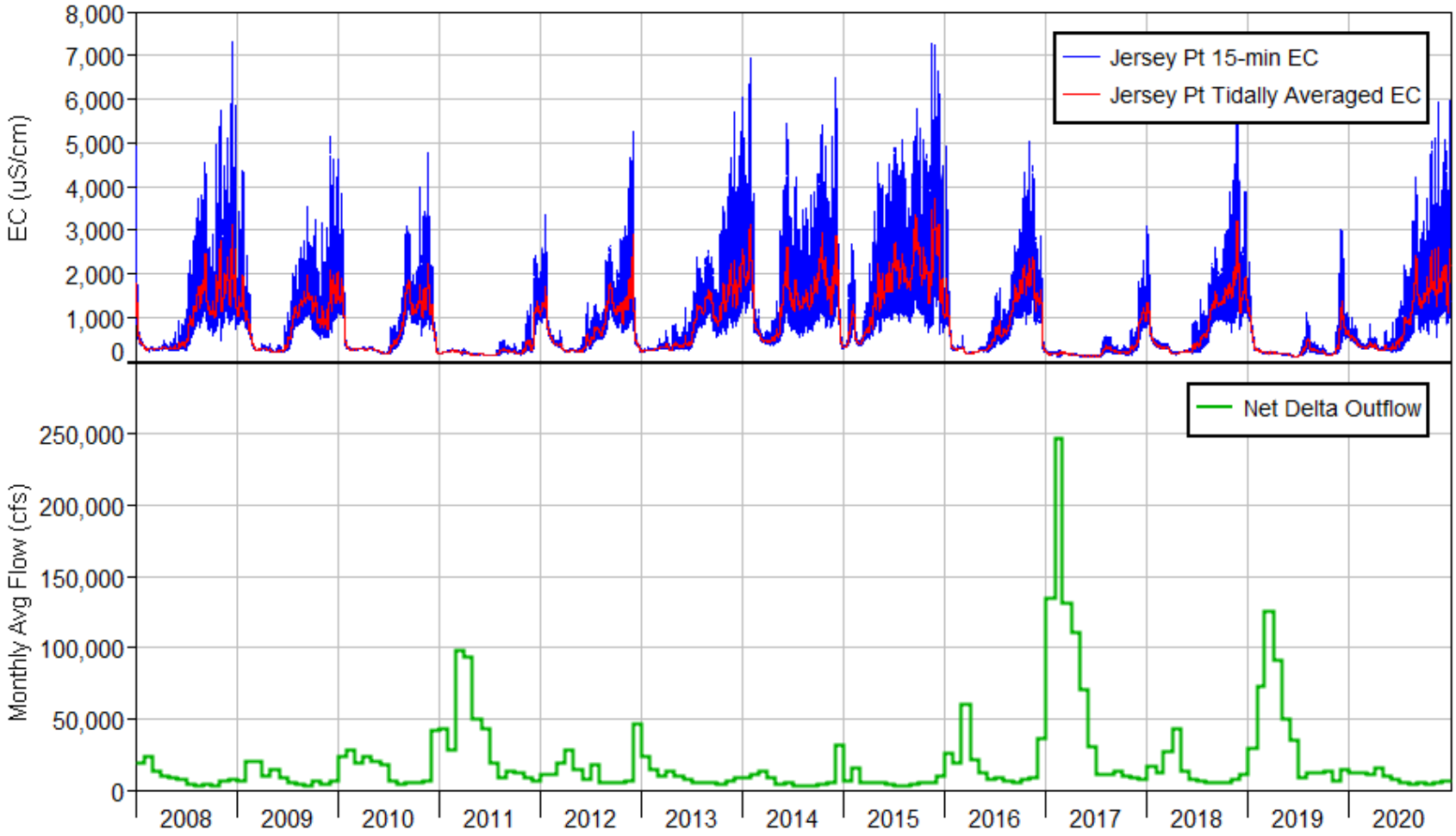

Figure 13 Observed San Joaquin River at Jersey Point EC and monthly averaged Net Delta Outflow (from DAYFLOW) for 2008-2020. The plots illustrate the dry season salinity intrusion into the western Delta with low NDO and the response of the San Joaquin River at Jersey Point EC to variations in the NDO over the different water years.

Evaluation of Stage Impacts

Hydrodynamic model results for the Baseline, Baseline with proposed Project, Future and Future with proposed Project simulations were analyzed to determine potential impacts of the proposed Project on stage in the Delta under low flow conditions. There is very little variation in the hydrodynamic impacts for different low flow periods, therefore results are reported only for 2018. Low flow stage impacts are assessed to explore potential impacts on agricultural operations (siphons, pumps, drains) or existing marsh plant habitat.

July 2018 results were processed to produce average tidal range (mean high water – mean low water), mean higher high water (MHHW) and mean lower low water (MLLW) stage values for all modeled scenarios. Note that these values vary by month, however we are assessing incremental impacts, so these monthly variations are not important. Spatial plots of these tidal datums are shown for the Baseline scenario in Figure 14 (tidal range) Figure 15 (MHHW) and Figure 16 (MLLW), and change from Baseline for each of the analyzed tidal datums are provided in Figure 17 through Figure 19. Tidal datums for the Future scenario are shown in in Figure 20 (tidal range) Figure 21 (MHHW) and Figure 22 (MLLW). For Future with proposed Project, spatial plots of change from Future for each of the analyzed tidal datums are provided in Figure 23 through Figure 25. Changes in tidal range and tidal datum are small for both comparisons.

Relative to the Baseline and Future conditions, the proposed Project causes a reduction in tidal range in the Toe Drain, for about 4.4 miles upstream of the proposed Project area, of approximately 0.1 to 0.3 ft. Throughout the rest of the model domain, tidal range changes are less than 0.05 ft. The proposed Project decreases MHHW in the Toe Drain, for about 5.5 miles upstream of the proposed Project area, by approximately 0.08 ft. Throughout the rest of the model domain, MHHW changes are less than 0.05 ft. The proposed Project increases MLLW in the Toe Drain, for about 4.4 miles upstream of the proposed Project area, by approximately 0.05 ft. Throughout the rest of the model domain, MLLW changes are less than 0.05 ft.

Impacts on MHHW at station LIY in Shag Slough above Liberty Island and HWB in Miner Slough above Prospect Island (locations shown in Figure 26) were evaluated for July 2018 . These values are provided as an indicator of potential proposed Project impacts on high tide elevations in Liberty Island and Prospect Island, which could impact marsh areas. Under Baseline conditions, the proposed Project decreased MHHW at LIY and HWB by 0.01 ft (0.12 in), relative to without proposed Project conditions. Under Future conditions, there were no MHHW changes at either location. The proposed Project is unlikely to have any discernible impact on marsh areas in Liberty Island and Prospect Island under Baseline or Future conditions.

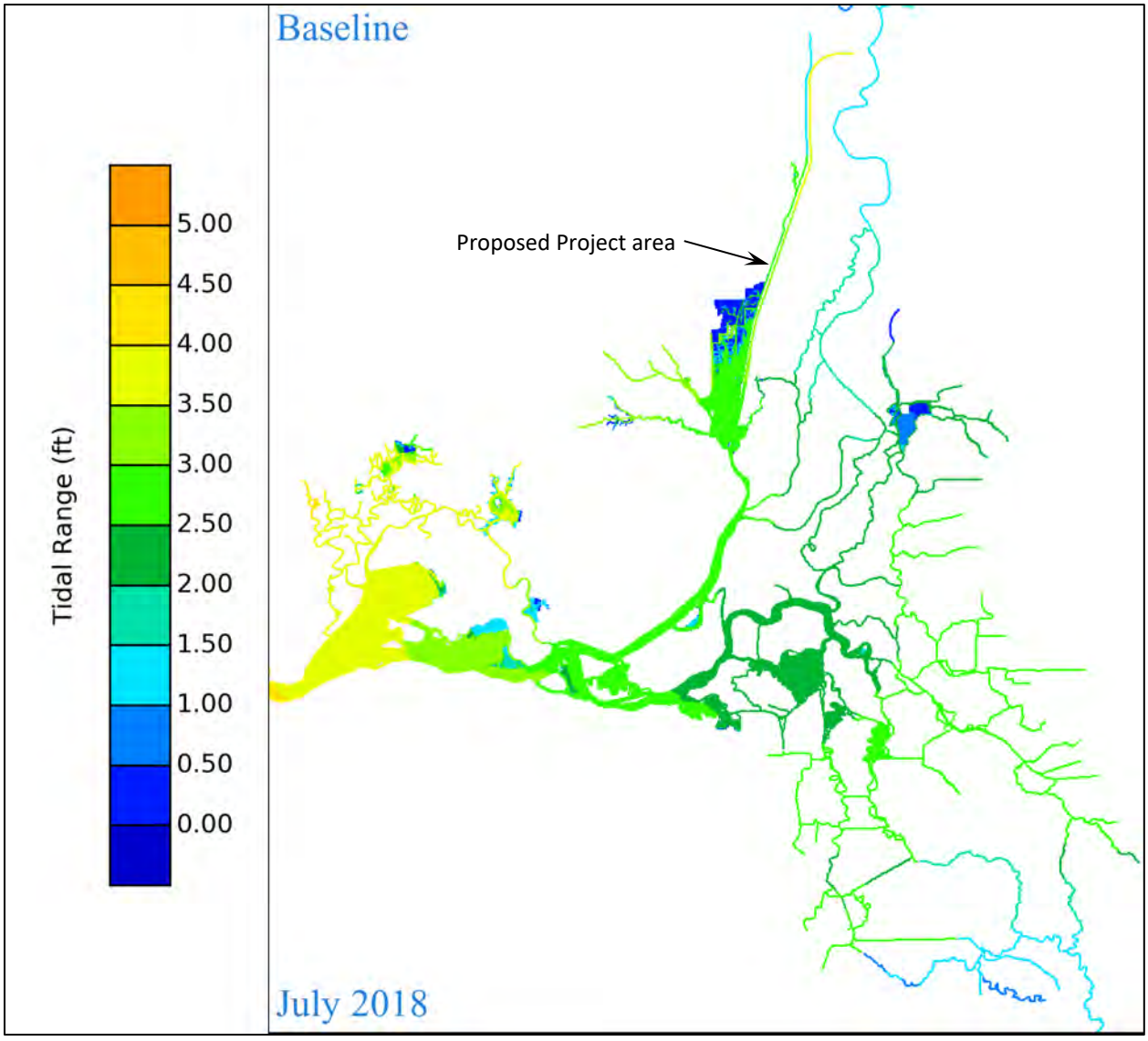

Figure 14 July 2018 average tidal range for the Baseline scenario

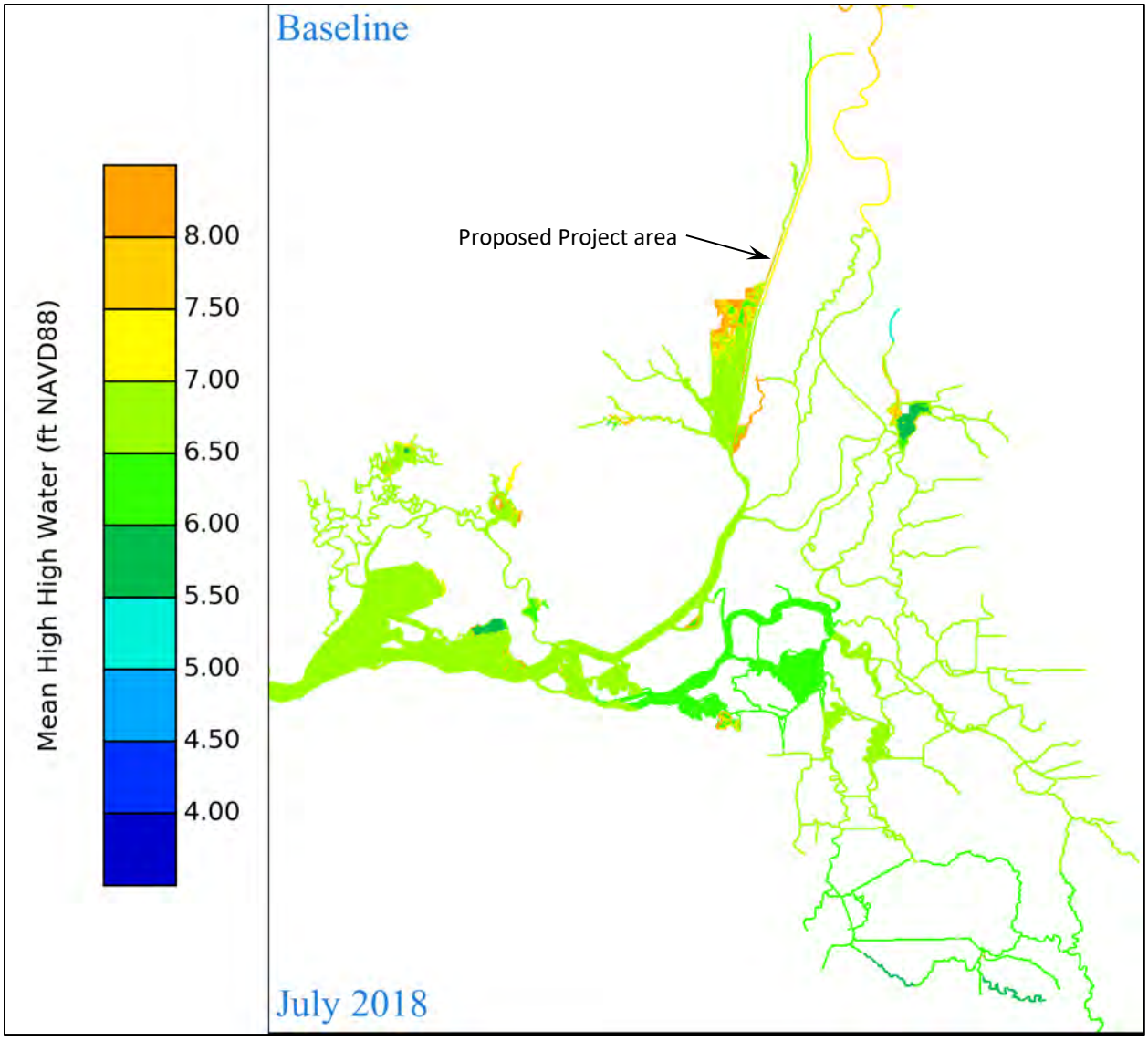

Figure 15 July 2018 average MHHW for the Baseline scenario

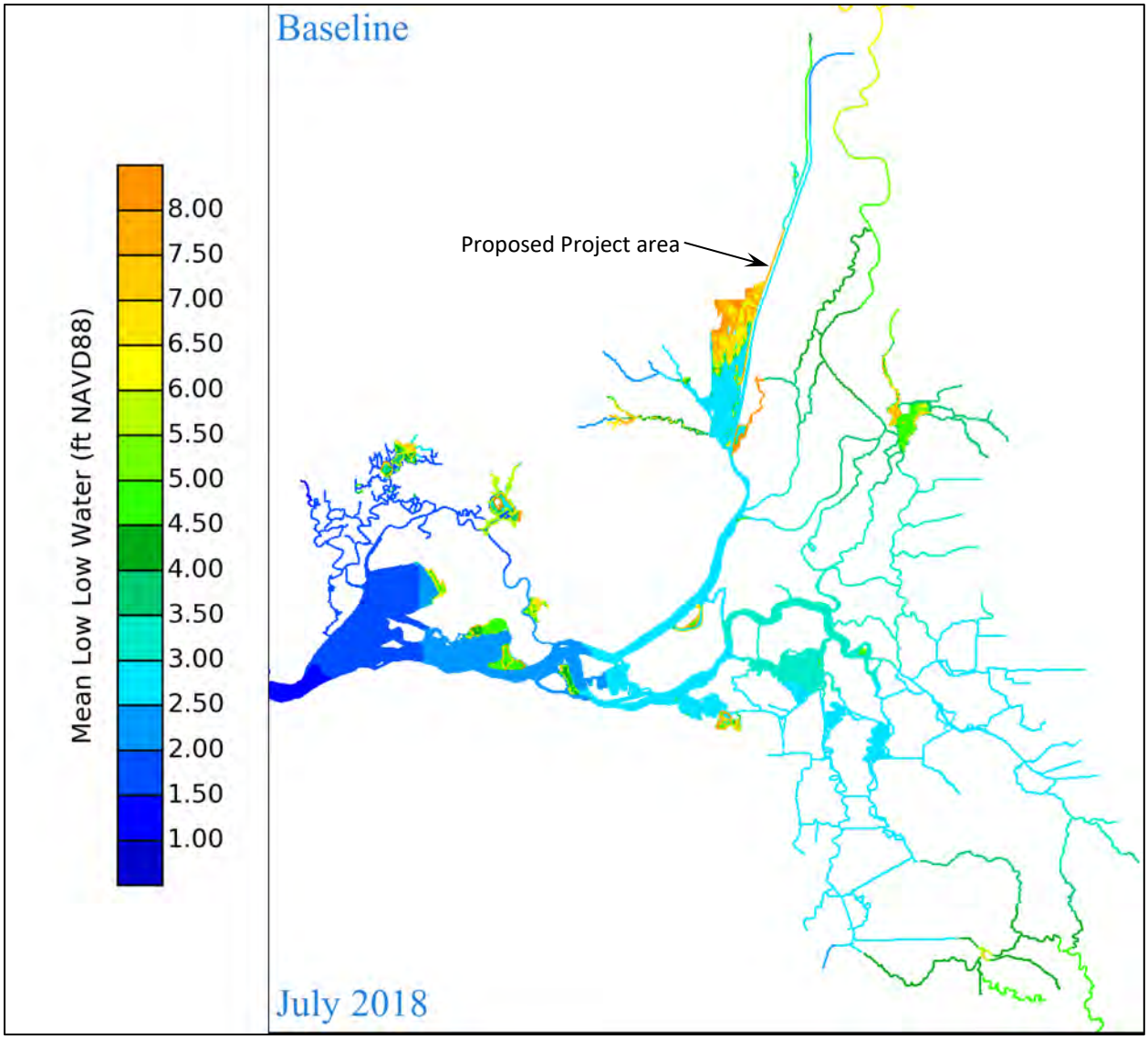

Figure 16 July 2018 average MLLW for the Baseline scenario

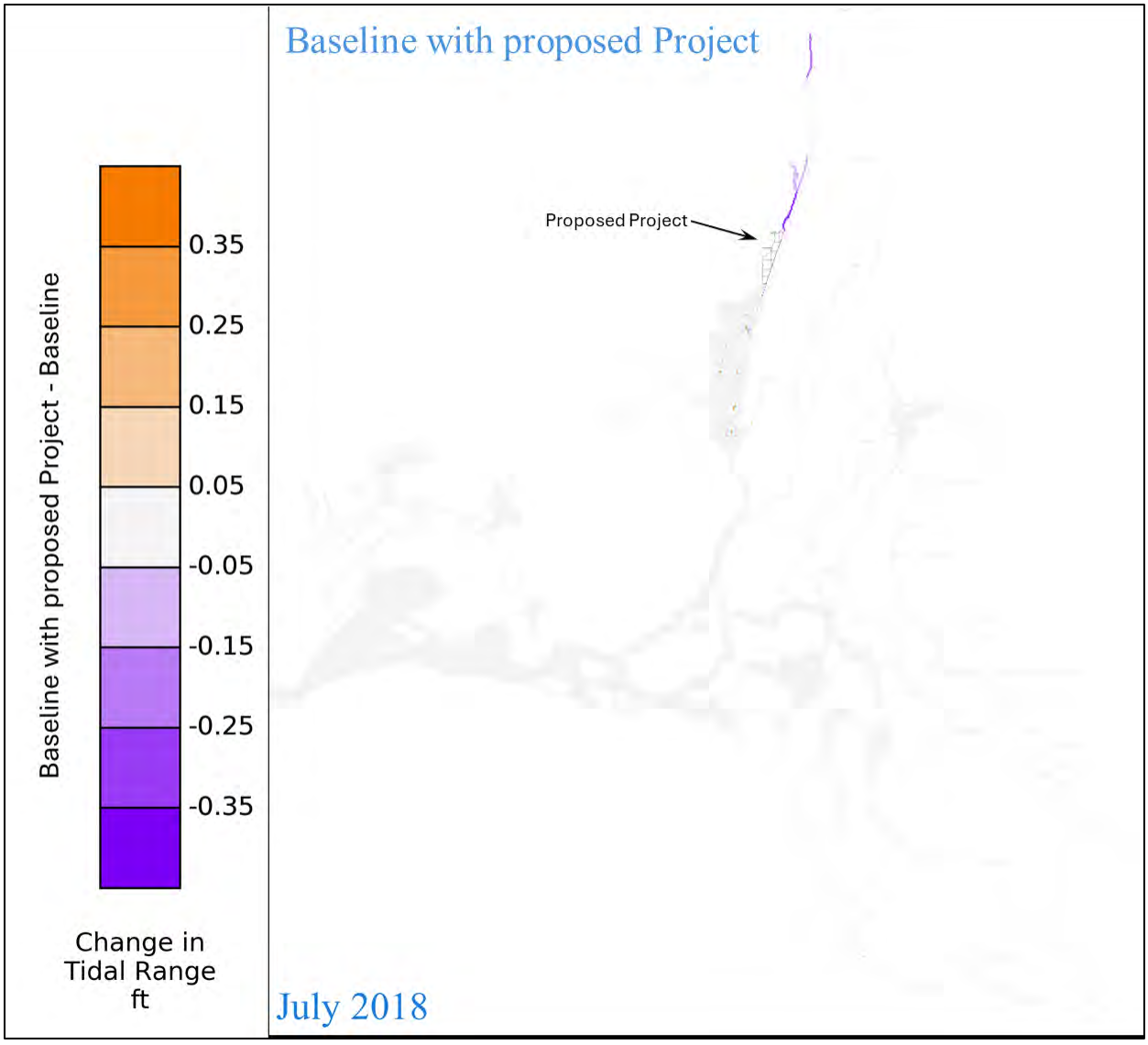

Figure 17 July 2018 Baseline with proposed Project average tidal range change from Baseline.

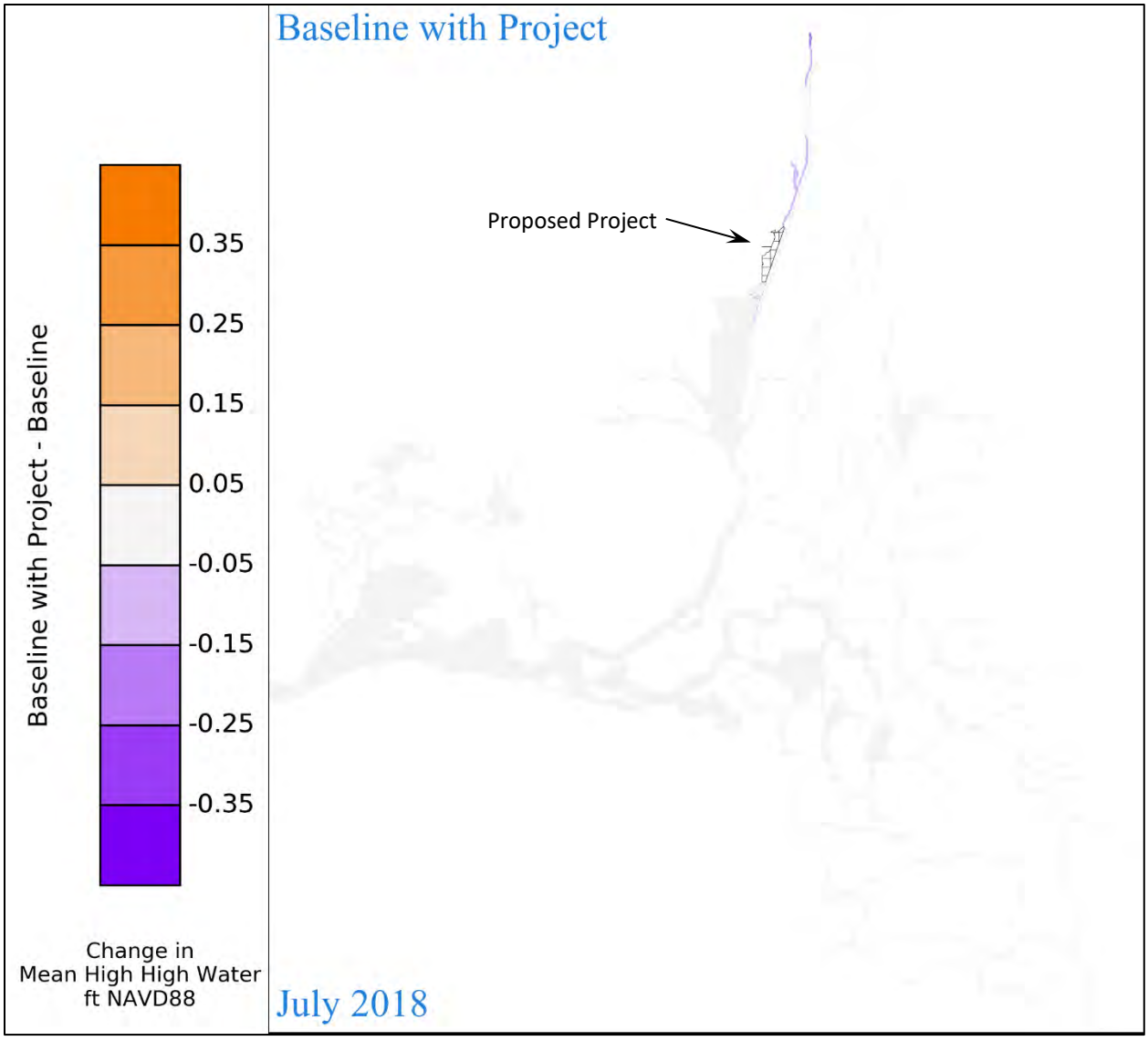

Figure 18 July 2018 Baseline with proposed Project average MHHW change from Baseline.

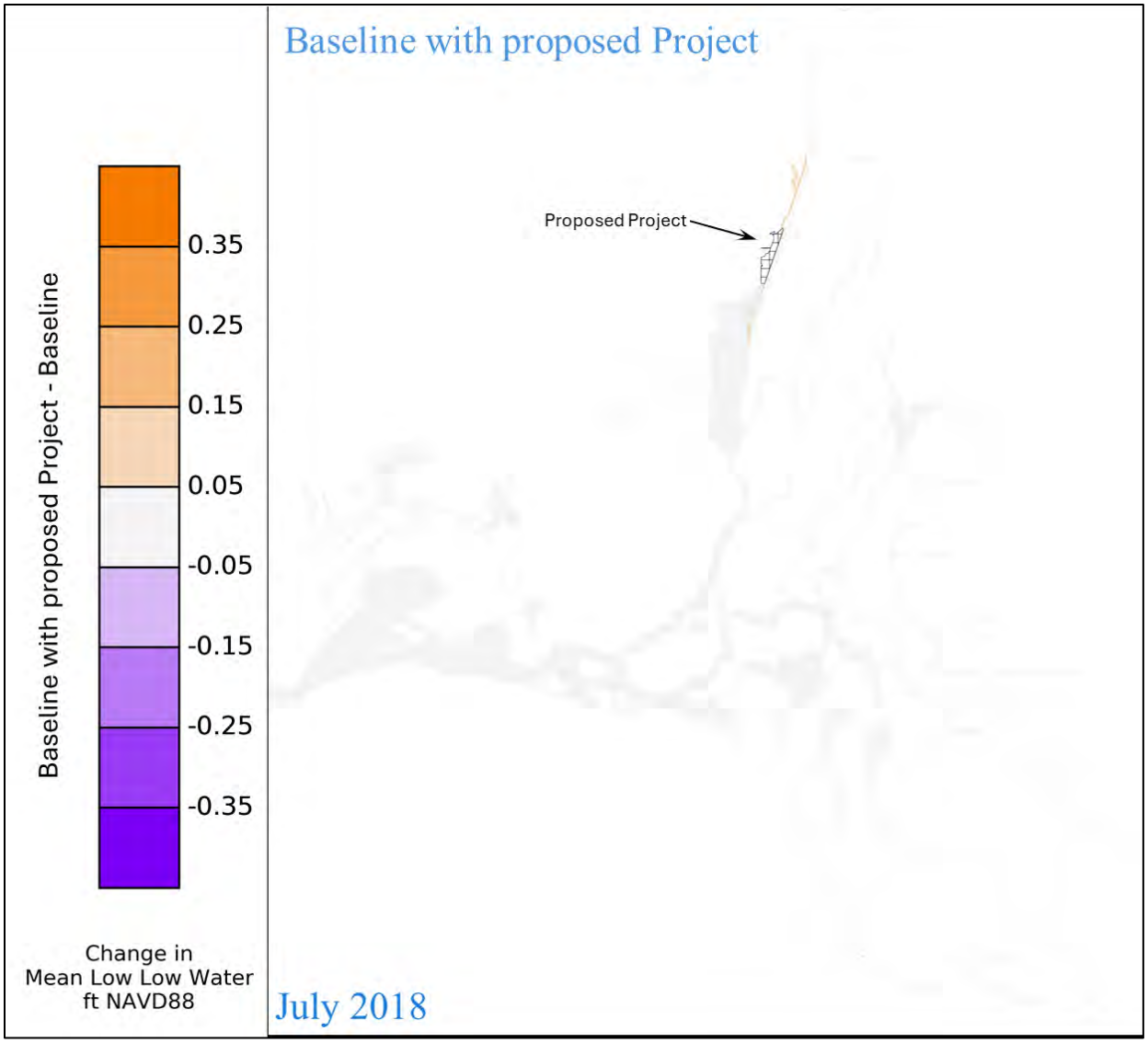

Figure 19 July 2018 Baseline with proposed Project average MLLW change from Baseline

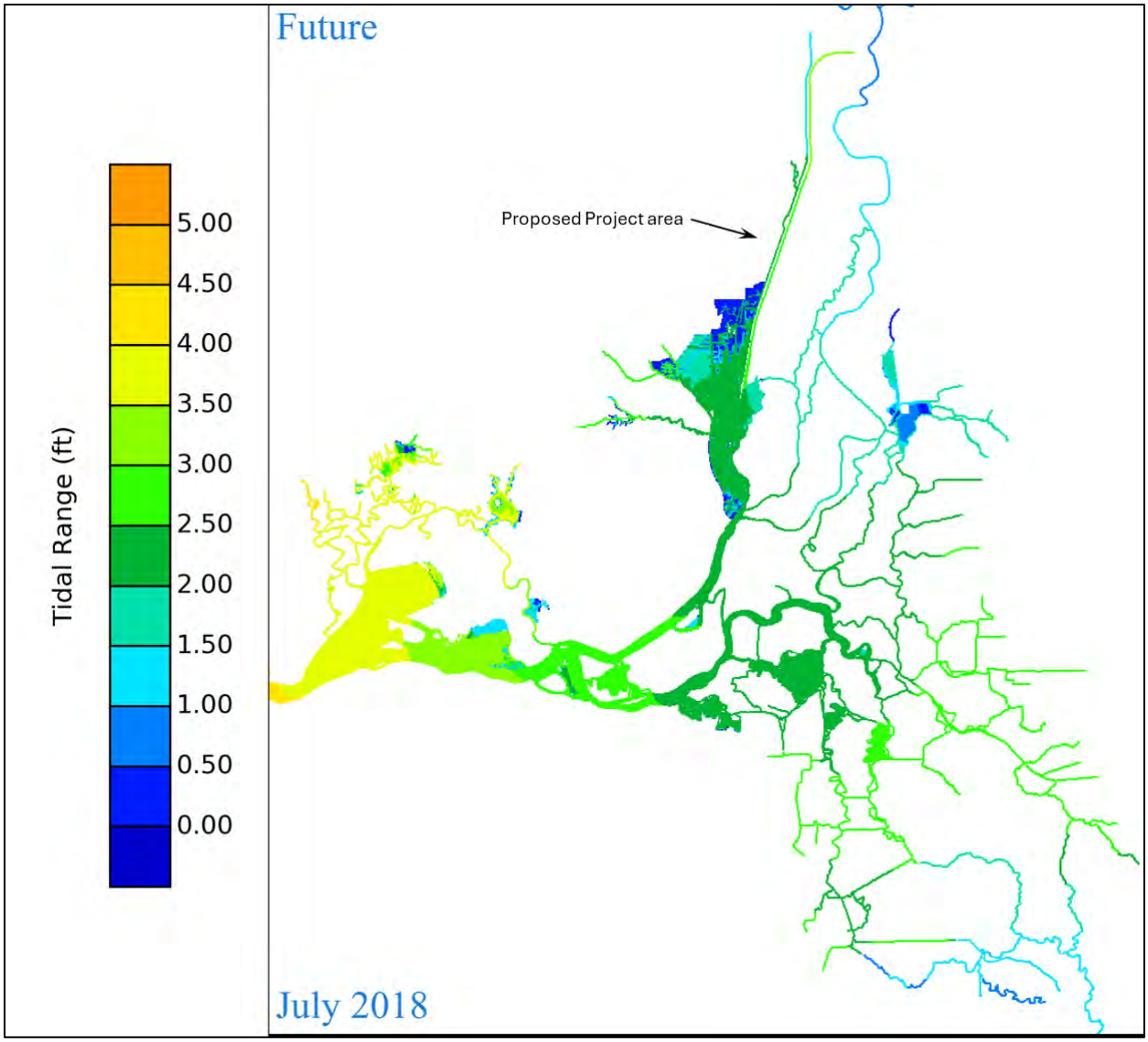

Figure 20 July 2018 average tidal range for the Future scenario

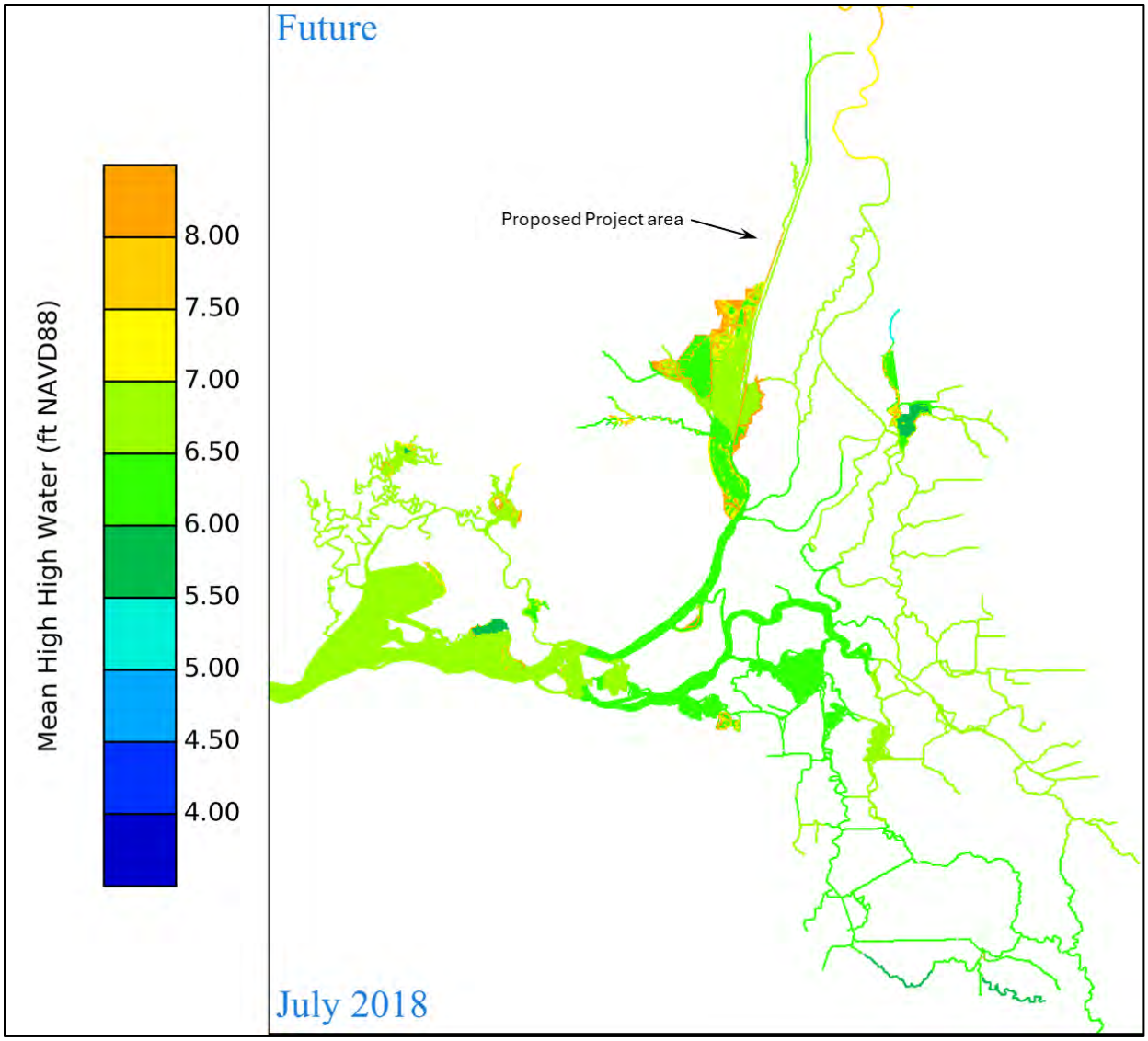

Figure 21 July 2018 average MHHW for the Future scenario

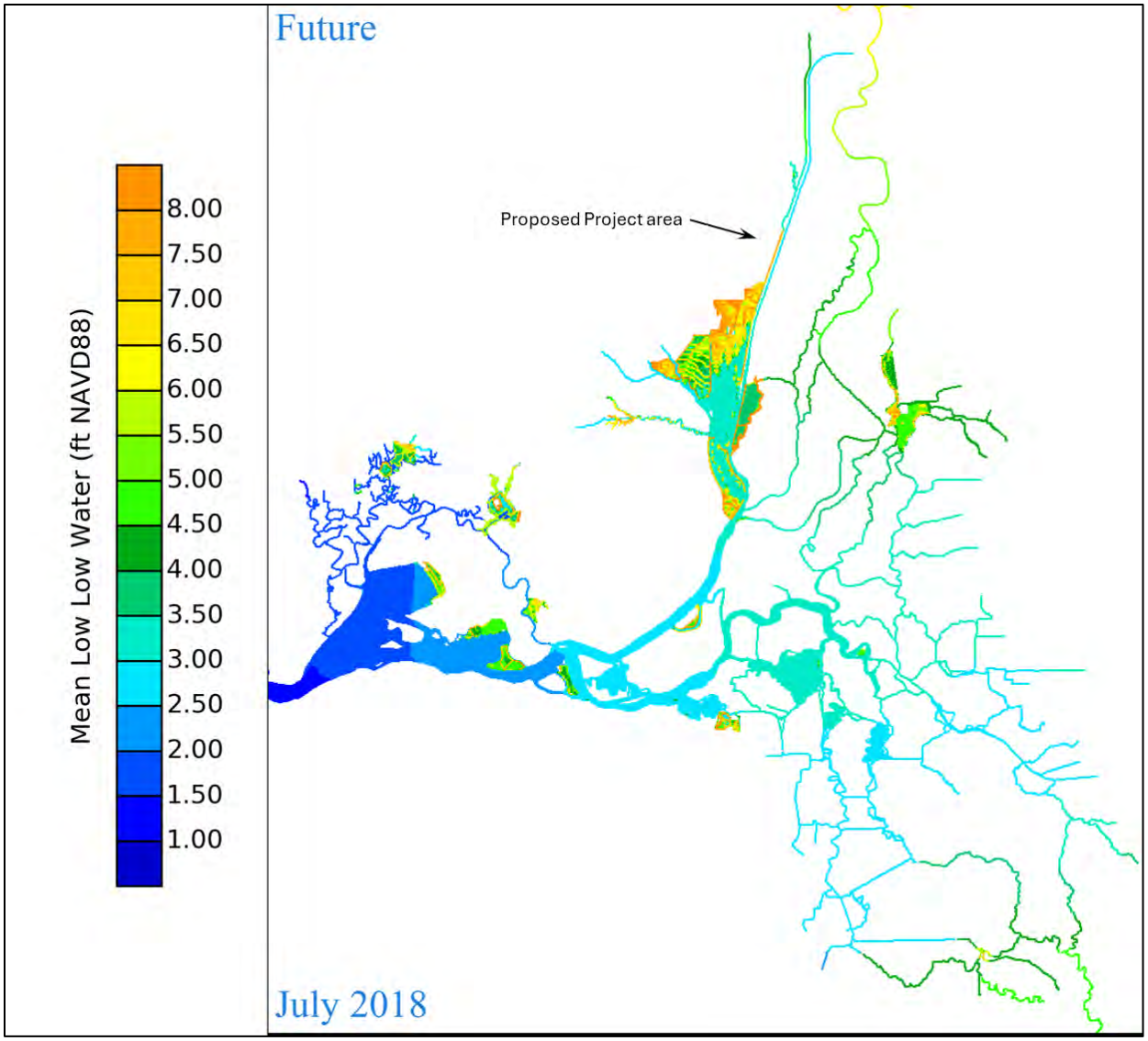

Figure 22 July 2018 average MLLW for the Future scenario

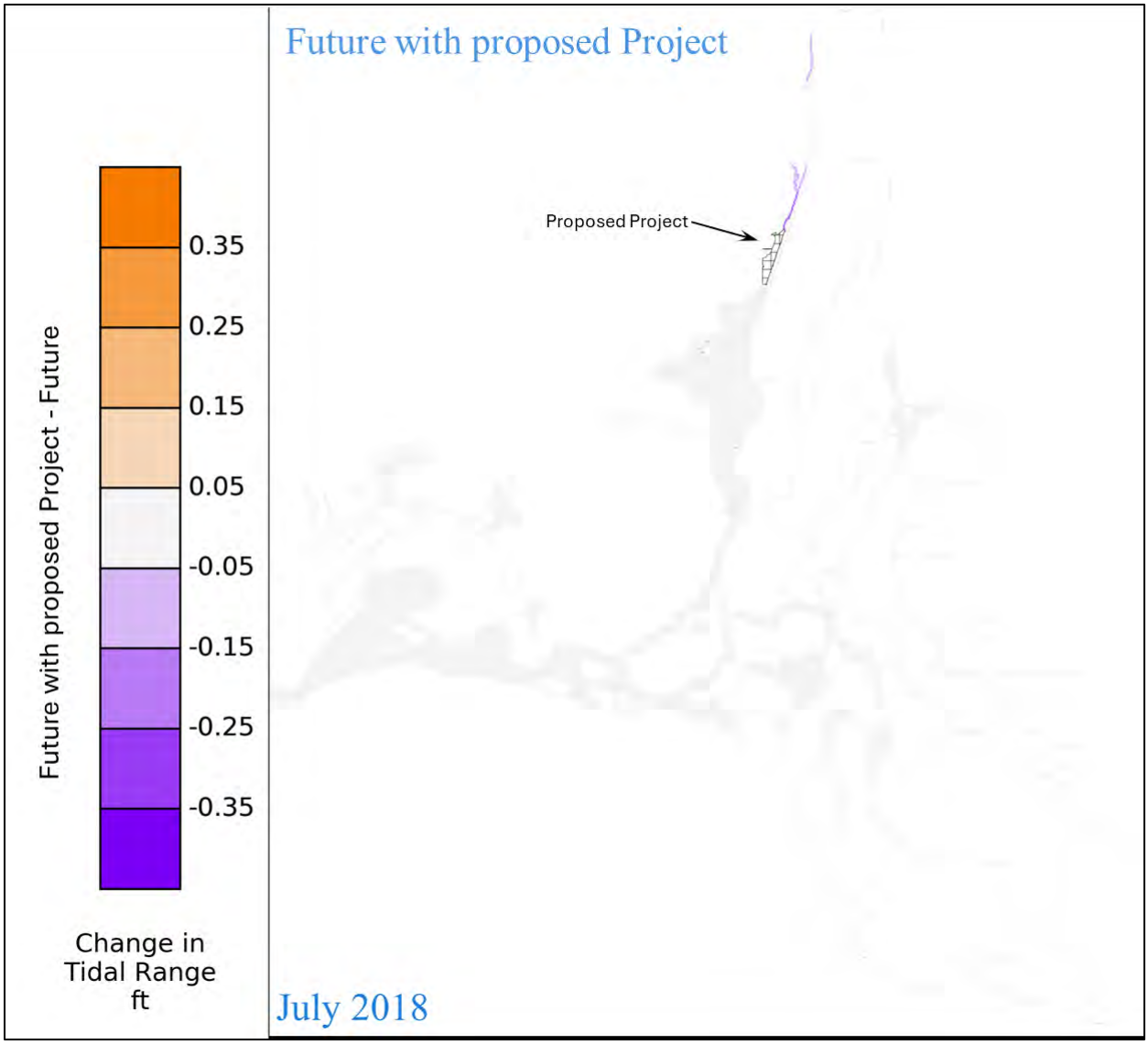

Figure 23 July 2018 Future with proposed Project average tidal range change from Future.

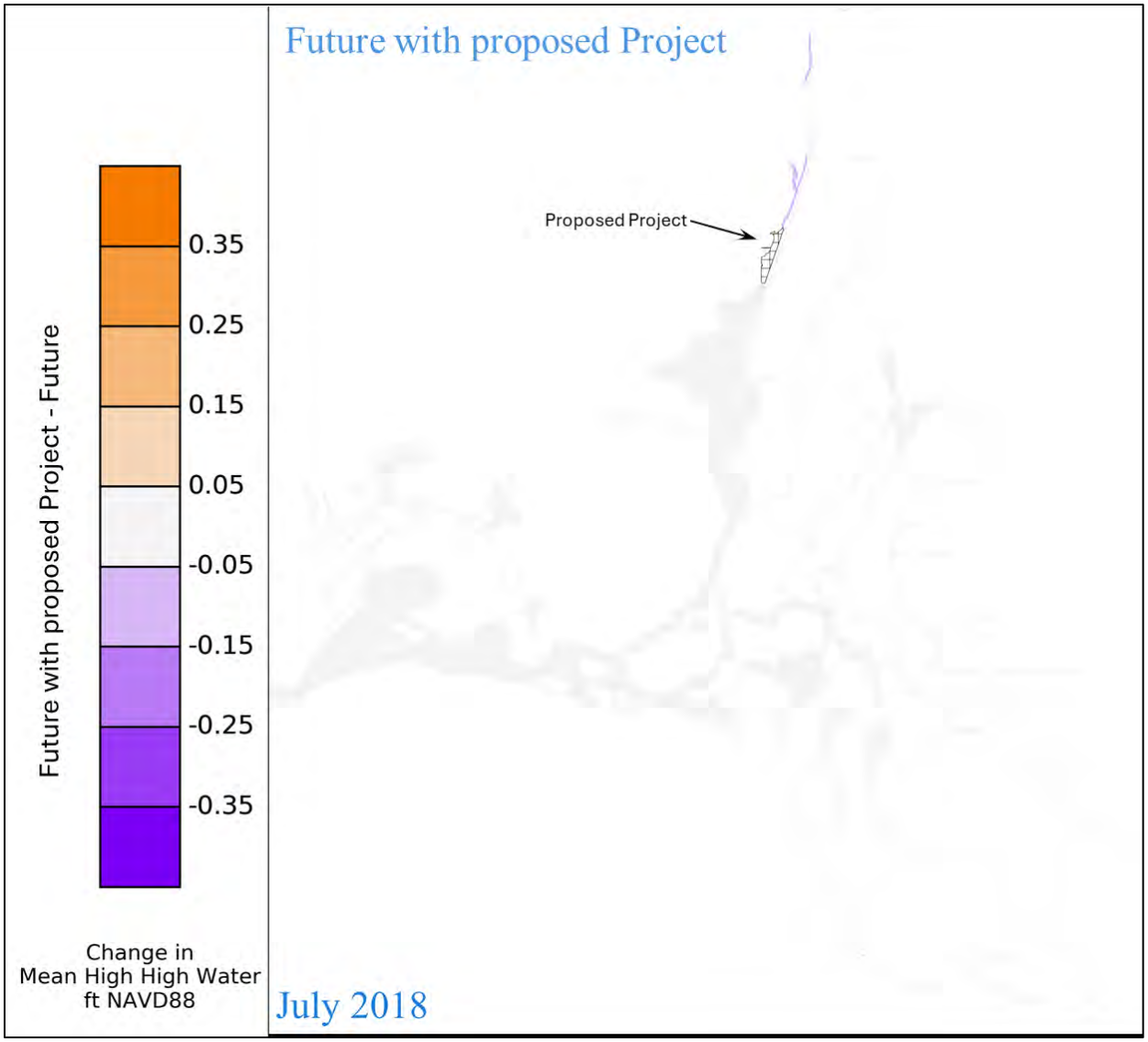

Figure 24 July 2018 Future with proposed Project average MHHW change from Future.

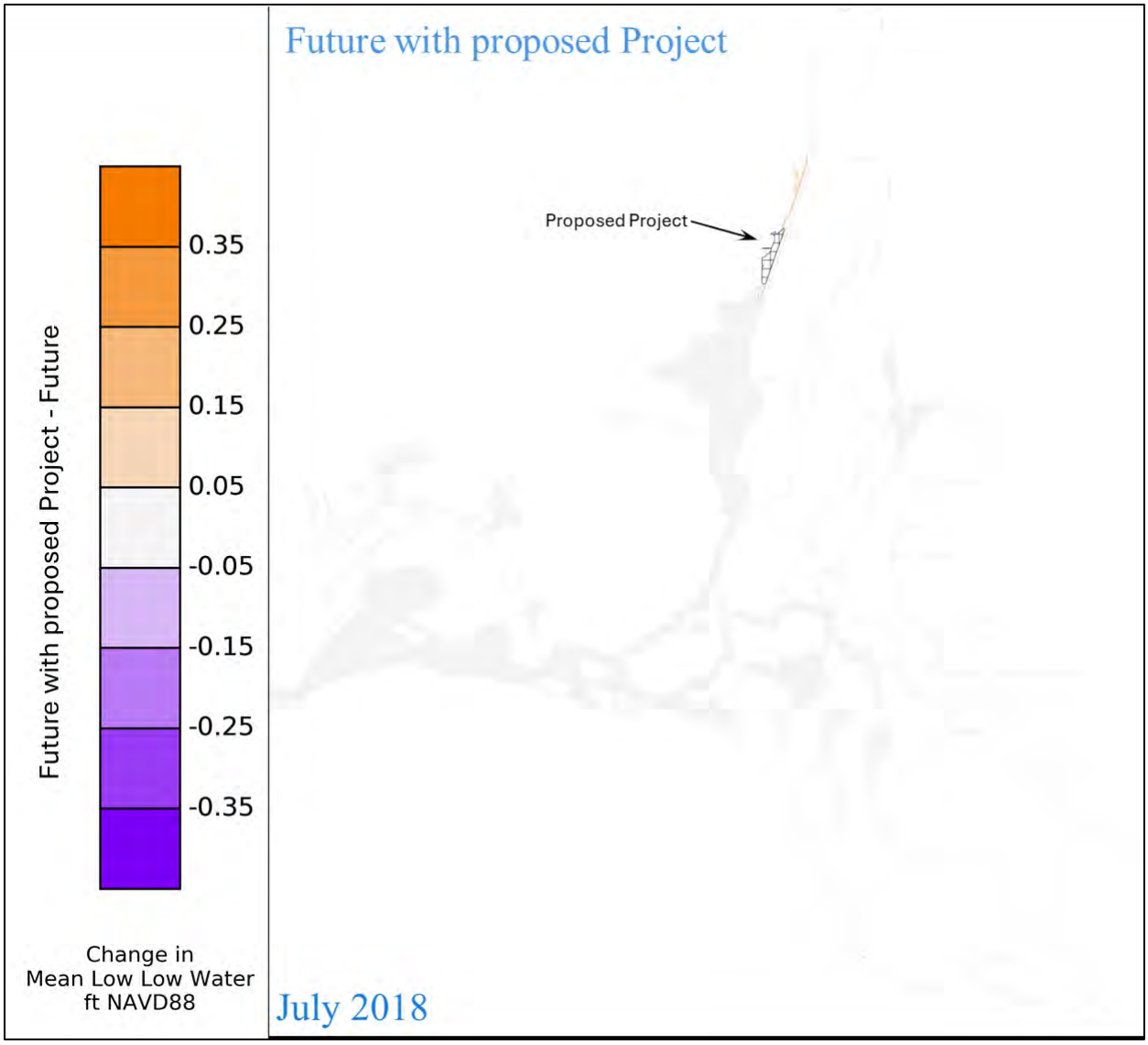

Figure 25 July 2018 Future with proposed Project average MLLW change from Future

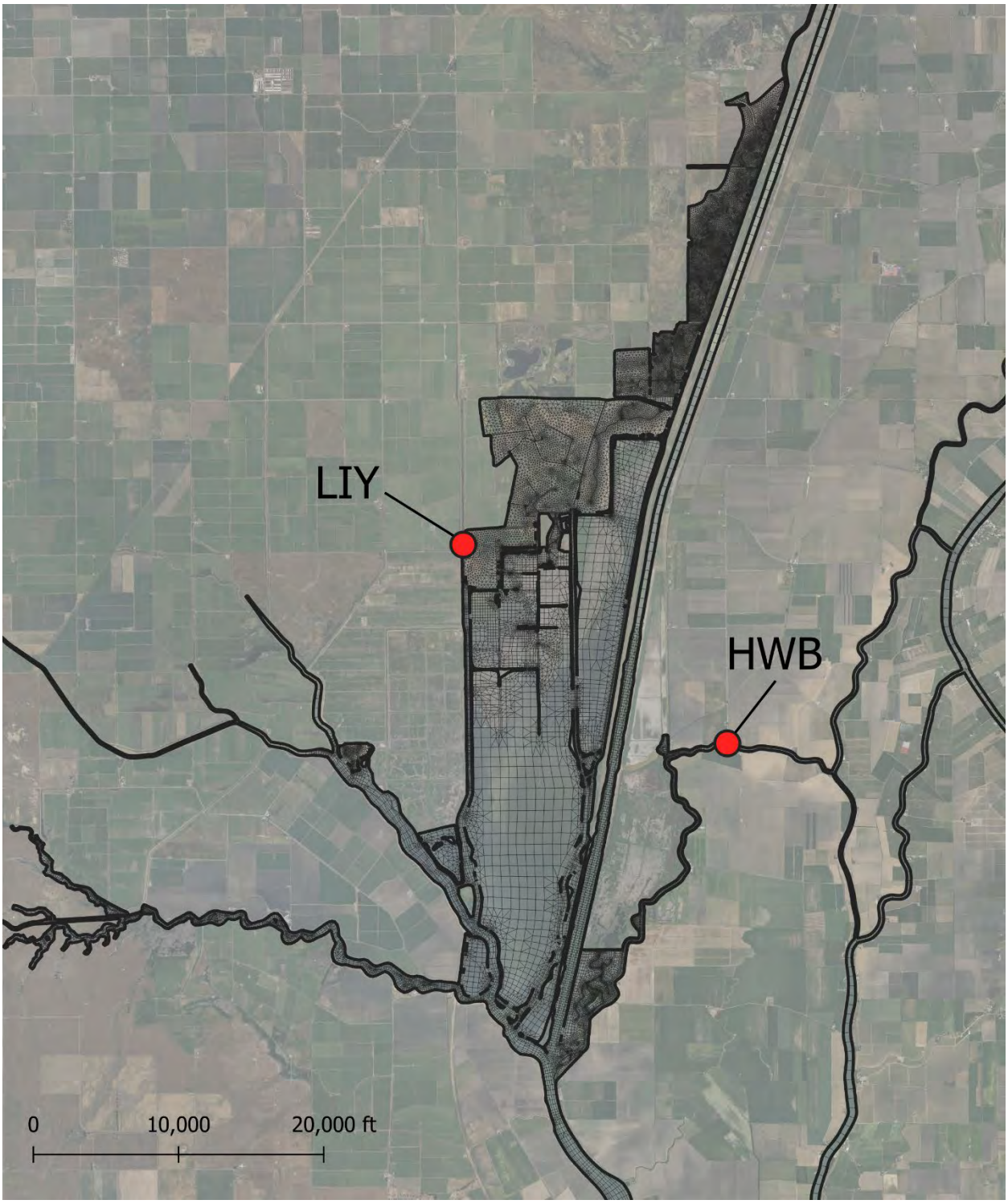

Figure 26 Stage output locations

Evaluation of Water Quality Changes at Select D-1641 Compliance Stations and CCWD intake Locations

Introduction

Proposed Project-related changes to EC, chloride, X2 and bromide, relative to Baseline and Future conditions, are detailed in this section.

EC Changes at Compliance Locations

For 2018, Table 2 provides the monthly average computed Baseline EC and the incremental and relative (%) EC change with the proposed Project (With proposed Project) at each of the compliance locations listed in **Error! Reference source not found.**. Similar data are provided in Table 3 for 2018 Future conditions, Table 4 for 2020 Baseline conditions, and in Table 5 for 2020 Future conditions. For each compliance location, daily average Baseline, Baseline with proposed Project, Future, and Future with proposed Project EC time series are plotted with absolute change and percent change in Figure 27 through Figure 39 for 2018 and Figure 40 through Figure 52 for 2020.

The general observations for the monthly average EC results are:

1) The proposed Project has small impacts on regional salinity in the Delta. The largest increases are 0.4%, occurring at Barker Slough NBA intake during the spring of 2020 under Baseline conditions. The largest decreases of 0.3% occur at Sacramento River at Emmaton during the winter of 2018 under Baseline conditions.
2) Salinity increases at Barker Slough NBA intake and City of Vallejo Cache Slough intake are generally 0.3% or less.
3) Salinity changes at south Delta exports and CCWD water intakes are 0.1% or less and tend to be reductions.

Spatial plots of monthly average computed Baseline condition EC and absolute EC change from Baseline for the proposed Project are provided in Figure 53 for July 2018. Percent change from Baseline EC plots are provided for July through November of 2018 in Figure 54 through Figure 58. Monthly average computed Future condition EC and absolute EC change from Future with proposed Project scenario are provided in Figure 59 for July 2018. Percent change from Future EC plots are provided for July through November of 2018 in Figure 60 through Figure 64.

Monthly average computed Baseline condition EC and absolute EC change from Baseline for the proposed Project are provided in Figure 65 for July 2020. Percent change from Baseline EC plots are provided for July through November of 2020 in Figure 66 through Figure 70. Monthly average computed Future condition EC and absolute EC change from Future with proposed

Project scenario are provided in Figure 71 for July 2020. Percent change from Future EC plots are provided for July through November of 2020 in Figure 72 through Figure 76.

These plots provide a spatial illustration of the EC impacts occurring in the summer and fall, when impacts are the greatest. Salinity increases are small throughout the system. The largest changes, ranging from less than -4.5% to +2%, tend to occur in the early fall near the proposed Project area: in the Toe Drain, Little Holland Tract, and in and north of Liberty Island. These changes correlate with flow pulses in the Toe Drain.

Table 2 Monthly average Baseline EC with change and percent change from Baseline EC with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2018 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -0.5% and the darkest orange is set at 0.5%.

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			C2 - Sacramento River at Collinsville			D22 - Sacramento River at Emmaton		
	Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2018	332	0.1	0.03%	664	0.6	0.09%	2021	-2.5	-0.13%	423	-1.0	-0.23%
Feb 2018	369	0.2	0.05%	752	0.9	0.12%	1056	-1.2	-0.11%	258	-0.3	-0.11%
Mar 2018	513	0.2	0.04%	659	0.5	0.07%	697	-0.9	-0.12%	205	-0.1	-0.04%
Apr 2018	571	0.5	0.08%	635	0.9	0.14%	170	0.0	0.02%	140	0.1	0.07%
May 2018	301	0.8	0.26%	349	0.8	0.23%	924	-0.4	-0.05%	235	-0.2	-0.08%
Jun 2018	185	0.5	0.29%	288	0.6	0.21%	2915	-0.3	-0.01%	590	-1.2	-0.20%
Jul 2018	161	0.2	0.10%	276	0.4	0.13%	4551	-1.1	-0.02%	847	-2.3	-0.27%
Aug 2018	165	0.1	0.04%	290	0.3	0.11%	5077	-1.5	-0.03%	730	-2.3	-0.32%
Sep 2018	198	-0.1	-0.07%	310	0.1	0.03%	4886	-2.3	-0.05%	743	-2.6	-0.34%
Oct 2018	210	0.2	0.11%	395	0.7	0.17%	6746	-2.6	-0.04%	1462	-3.9	-0.27%
Nov 2018	214	0.2	0.08%	453	0.6	0.13%	9042	-2.3	-0.03%	2381	-5.5	-0.23%
Dec 2018	297	0.0	0.01%	519	0.4	0.08%	3822	-6.2	-0.16%	623	-2.5	-0.40%

D12 - San Joaquin River at Antioch			D15 - San Joaquin River at Jersey Point			D29 - San Joaquin River at Prisoners Point			C5 - Contra Costa Canal at PP 1		
Baseline EC	**With proposed Project EC change**		**Baseline EC**	**With proposed Project EC change**		**Baseline EC**	**With proposed Project EC change**		**Baseline EC**	**With proposed Project EC change**	
µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
1427	-1.7	-0.12%	727	-0.4	-0.05%	378	-0.1	-0.02%	725	-0.2	-0.03%
615	-0.6	-0.10%	350	0.0	-0.01%	300	0.0	0.00%	499	0.3	0.07%
471	-0.4	-0.08%	295	0.0	0.00%	291	0.0	0.00%	436	0.0	0.01%
192	0.0	0.01%	198	0.0	0.01%	233	0.0	0.00%	390	0.0	0.00%
454	-0.3	-0.06%	234	0.0	0.00%	229	0.0	0.00%	376	0.1	0.02%
1493	-0.9	-0.06%	399	-0.2	-0.05%	191	0.0	0.00%	295	0.1	0.03%
2705	-2.4	-0.09%	854	-0.8	-0.09%	200	0.0	-0.01%	354	-0.1	-0.02%
3421	-2.9	-0.09%	1381	-1.0	-0.07%	322	-0.1	-0.04%	553	-0.1	-0.02%
3427	-3.4	-0.10%	1572	-0.9	-0.06%	395	0.0	-0.01%	857	-0.1	-0.01%
4207	-3.8	-0.09%	1548	-1.2	-0.08%	338	0.0	-0.01%	805	-0.4	-0.05%
5620	-4.0	-0.07%	1924	-1.7	-0.09%	397	-0.2	-0.05%	782	-0.5	-0.06%
2633	-5.3	-0.20%	1197	-1.8	-0.15%	472	-0.4	-0.09%	848	-0.8	-0.10%

	C9 - West Canal at Clifton Court			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2018	571	-0.1	-0.01%	574	0.0	-0.01%	588	-0.1	-0.02%	513	0.0	0.00%
Feb 2018	493	0.0	0.00%	534	0.0	0.00%	443	0.0	0.00%	464	0.0	0.00%
Mar 2018	473	0.0	0.01%	515	0.0	0.00%	419	0.0	0.00%	502	0.0	0.00%
Apr 2018	268	0.0	0.00%	268	0.0	0.00%	320	0.0	0.00%	343	0.0	0.00%
May 2018	220	0.0	0.00%	229	0.0	0.00%	300	0.0	0.00%	307	0.0	0.00%
Jun 2018	283	0.0	0.00%	295	0.0	0.00%	278	0.0	0.00%	272	0.0	0.00%
Jul 2018	307	-0.1	-0.02%	316	-0.1	-0.02%	332	-0.1	-0.03%	255	0.0	0.00%
Aug 2018	438	-0.2	-0.03%	414	-0.1	-0.03%	514	-0.2	-0.04%	280	0.0	-0.02%
Sep 2018	613	-0.1	-0.01%	547	0.0	0.00%	721	-0.1	-0.01%	367	0.0	0.00%
Oct 2018	569	-0.1	-0.02%	524	-0.1	-0.01%	656	-0.2	-0.02%	369	0.0	0.00%
Nov 2018	569	-0.1	-0.03%	541	-0.1	-0.02%	677	-0.3	-0.04%	403	-0.1	-0.03%
Dec 2018	659	-0.5	-0.07%	674	-0.4	-0.06%	710	-0.6	-0.08%	490	-0.2	-0.05%

	CCWD intake at Mallard Slough		
	Baseline EC	With proposed Project EC change	
	µS/cm	µS/cm	%
Jan 2018	4786	-4.0	-0.08%
Feb 2018	3151	-1.8	-0.06%
Mar 2018	2041	-1.6	-0.08%
Apr 2018	383	-0.1	-0.02%
May 2018	2716	-0.6	-0.02%
Jun 2018	6307	-0.4	-0.01%
Jul 2018	8910	-1.2	-0.01%
Aug 2018	10011	-0.6	-0.01%
Sep 2018	9631	-1.4	-0.01%
Oct 2018	11928	-2.4	-0.02%
Nov 2018	14781	-2.0	-0.01%
Dec 2018	8419	-7.9	-0.09%

Table 3 Monthly average Future EC with change and percent change from Future EC with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2018 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -0.5% and the darkest orange is set at 0.5%.

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			C2 - Sacramento River at Collinsville			D22 - Sacramento River at Emmaton		
	Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2018	335	0.1	0.02%	677	0.6	0.08%	2091	-1.9	-0.09%	428	-0.6	-0.13%
Feb 2018	371	0.1	0.03%	773	0.8	0.10%	1081	-0.8	-0.08%	257	-0.2	-0.08%
Mar 2018	513	0.1	0.02%	670	0.4	0.06%	732	-0.7	-0.10%	207	-0.1	-0.03%
Apr 2018	581	0.3	0.05%	657	0.9	0.14%	171	0.1	0.03%	140	0.1	0.08%
May 2018	303	0.6	0.19%	369	0.9	0.24%	970	-0.2	-0.02%	243	-0.1	-0.05%
Jun 2018	187	0.3	0.18%	304	0.6	0.19%	3062	0.2	0.01%	633	-0.5	-0.08%
Jul 2018	165	0.1	0.08%	294	0.4	0.12%	4764	0.5	0.01%	900	-0.8	-0.09%
Aug 2018	166	0.1	0.03%	306	0.3	0.10%	5321	0.4	0.01%	762	-0.8	-0.11%
Sep 2018	195	-0.1	-0.06%	321	0.1	0.03%	5051	0.0	0.00%	754	-0.9	-0.12%
Oct 2018	209	0.0	0.00%	418	0.5	0.12%	6896	-0.3	0.00%	1466	-1.5	-0.10%
Nov 2018	218	0.1	0.04%	473	0.5	0.12%	9294	-0.7	-0.01%	2466	-2.7	-0.11%
Dec 2018	304	0.0	0.00%	525	0.4	0.07%	3979	-4.5	-0.11%	642	-1.5	-0.24%

	D12 - San Joaquin River at Antioch			D15 - San Joaquin River at Jersey Point			D29 - San Joaquin River at Prisoners Point			C5 - Contra Costa Canal at PP 1		
	Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2018	1368	-1.3	-0.09%	699	-0.5	-0.07%	370	-0.1	-0.03%	705	-0.2	-0.03%
Feb 2018	582	-0.5	-0.09%	343	-0.2	-0.04%	298	0.0	-0.02%	493	-0.2	-0.03%
Mar 2018	459	-0.4	-0.08%	293	-0.1	-0.02%	291	0.0	0.00%	435	-0.1	-0.02%
Apr 2018	192	0.0	0.01%	199	0.0	0.00%	234	0.0	0.00%	391	0.0	-0.01%
May 2018	445	-0.2	-0.04%	236	0.0	0.00%	229	0.0	0.00%	378	0.0	-0.01%
Jun 2018	1483	-0.6	-0.04%	408	-0.1	-0.03%	193	0.0	0.00%	298	0.0	-0.01%
Jul 2018	2696	-1.1	-0.04%	899	-0.5	-0.05%	212	0.0	-0.01%	372	-0.1	-0.02%
Aug 2018	3368	-1.3	-0.04%	1395	-0.7	-0.05%	352	-0.2	-0.04%	591	-0.3	-0.04%
Sep 2018	3329	-1.7	-0.05%	1569	-0.8	-0.05%	435	-0.2	-0.04%	900	-0.3	-0.04%
Oct 2018	4117	-2.1	-0.05%	1590	-1.0	-0.06%	384	-0.2	-0.04%	852	-0.4	-0.05%
Nov 2018	5550	-2.6	-0.05%	1990	-1.3	-0.06%	451	-0.2	-0.05%	854	-0.4	-0.05%
Dec 2018	2549	-3.9	-0.15%	1199	-1.6	-0.13%	502	-0.5	-0.09%	911	-0.6	-0.07%

	C9 - Clifton Ct Forebay intake			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2018	559	-0.2	-0.03%	566	-0.1	-0.02%	572	-0.2	-0.04%	504	-0.1	-0.02%
Feb 2018	490	0.0	-0.01%	533	0.0	-0.01%	438	-0.1	-0.02%	461	-0.1	-0.01%
Mar 2018	473	0.0	0.00%	515	0.0	0.00%	418	0.0	-0.01%	502	0.0	-0.01%
Apr 2018	268	0.0	0.00%	269	0.0	0.00%	320	0.0	0.00%	343	0.0	0.00%
May 2018	220	0.0	0.00%	229	0.0	0.00%	300	0.0	0.00%	307	0.0	0.00%
Jun 2018	285	0.0	0.00%	296	0.0	0.00%	280	0.0	0.00%	273	0.0	0.00%
Jul 2018	320	0.0	-0.01%	328	0.0	-0.01%	350	-0.1	-0.02%	261	0.0	0.00%
Aug 2018	467	-0.2	-0.04%	437	-0.1	-0.03%	547	-0.2	-0.04%	298	-0.1	-0.03%
Sep 2018	650	-0.2	-0.04%	576	-0.2	-0.03%	761	-0.3	-0.04%	395	-0.1	-0.02%
Oct 2018	611	-0.3	-0.05%	558	-0.2	-0.04%	704	-0.4	-0.05%	397	-0.1	-0.03%
Nov 2018	613	-0.2	-0.04%	577	-0.2	-0.03%	740	-0.4	-0.05%	432	-0.1	-0.02%
Dec 2018	698	-0.5	-0.06%	703	-0.3	-0.04%	757	-0.6	-0.08%	520	-0.2	-0.05%

	CCWD intake at Mallard Slough		
	Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%
Jan 2018	4776	-3.6	-0.07%
Feb 2018	3129	-1.5	-0.05%
Mar 2018	2070	-1.5	-0.07%
Apr 2018	383	-0.1	-0.01%
May 2018	2741	-0.4	-0.02%
Jun 2018	6388	-0.2	0.00%
Jul 2018	9043	0.1	0.00%
Aug 2018	10175	0.4	0.00%
Sep 2018	9721	0.1	0.00%
Oct 2018	11966	-0.6	-0.01%
Nov 2018	14837	-1.3	-0.01%
Dec 2018	8465	-6.7	-0.08%

Table 4 Monthly average Baseline EC with change and percent change from Baseline EC with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2020 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -0.5% and the darkest orange is set at 0.5%.

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			C2 - Sacramento River at Collinsville			D22 - Sacramento River at Emmaton		
	Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2020	318	0.0	0.01%	634	0.6	0.10%	1599	-2.2	-0.13%	295	-0.6	-0.20%
Feb 2020	356	0.4	0.12%	728	0.6	0.09%	1160	-1.1	-0.09%	268	-0.3	-0.10%
Mar 2020	388	0.5	0.12%	660	0.4	0.07%	1529	-1.2	-0.08%	286	-0.4	-0.16%
Apr 2020	368	0.9	0.24%	478	1.1	0.24%	1332	-1.1	-0.09%	262	-0.3	-0.12%
May 2020	240	1.0	0.41%	312	1.0	0.31%	2616	-0.7	-0.03%	469	-0.9	-0.20%
Jun 2020	194	0.5	0.25%	274	0.5	0.19%	3436	-0.4	-0.01%	667	-1.7	-0.25%
Jul 2020	172	0.2	0.10%	266	0.3	0.13%	5600	0.0	0.00%	1161	-3.5	-0.30%
Aug 2020	178	0.0	0.02%	296	0.3	0.09%	7748	0.1	0.00%	1688	-4.8	-0.28%
Sep 2020	209	0.0	0.00%	348	0.3	0.10%	7447	-1.8	-0.02%	1567	-5.2	-0.33%
Oct 2020	212	0.2	0.09%	360	0.5	0.14%	9315	-0.9	-0.01%	2357	-4.9	-0.21%
Nov 2020	209	0.1	0.03%	553	0.6	0.11%	8479	-2.0	-0.02%	2010	-5.1	-0.25%
Dec 2020	246	0.1	0.02%	396	0.3	0.06%	7328	-2.9	-0.04%	1599	-4.6	-0.29%

	D12 - San Joaquin River at Antioch			D15 - San Joaquin River at Jersey Point			D29 - San Joaquin River at Prisoners Point			C5 - Contra Costa Canal at PP 1		
	Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2020	997	-1.7	-0.17%	456	-0.4	-0.08%	294	-0.1	-0.03%	412	-0.2	-0.05%
Feb 2020	637	-0.6	-0.10%	339	0.0	-0.01%	297	0.0	0.00%	396	-0.1	-0.02%
Mar 2020	803	-0.7	-0.09%	345	0.0	0.01%	310	0.0	0.01%	425	0.0	0.00%
Apr 2020	689	-0.7	-0.10%	305	0.1	0.02%	277	0.0	0.01%	370	0.1	0.02%
May 2020	1278	-0.9	-0.07%	356	0.0	-0.01%	278	0.0	0.01%	357	0.0	0.01%
Jun 2020	1722	-1.3	-0.08%	433	-0.3	-0.06%	239	0.0	0.00%	337	0.0	0.00%
Jul 2020	3163	-2.5	-0.08%	841	-0.9	-0.11%	200	0.0	-0.02%	364	-0.4	-0.10%
Aug 2020	4924	-3.4	-0.07%	1636	-1.5	-0.09%	298	-0.1	-0.05%	573	-0.9	-0.16%
Sep 2020	4619	-3.7	-0.08%	1629	-1.0	-0.06%	350	-0.1	-0.01%	932	-0.8	-0.09%
Oct 2020	5683	-3.7	-0.07%	1825	-1.5	-0.08%	353	-0.1	-0.04%	801	-0.4	-0.05%
Nov 2020	5215	-4.1	-0.08%	1681	-1.7	-0.10%	395	-0.2	-0.05%	834	-0.5	-0.06%
Dec 2020	4554	-4.2	-0.09%	1573	-1.6	-0.10%	476	-0.3	-0.07%	892	-0.7	-0.08%

	C9 - West Canal at Clifton Court			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change		Baseline EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2020	420	0.0	-0.01%	473	0.0	0.00%	392	-0.1	-0.03%	373	0.1	0.03%
Feb 2020	490	0.0	0.00%	529	0.0	0.00%	412	0.0	0.00%	438	0.0	0.00%
Mar 2020	498	0.0	0.00%	515	0.0	0.00%	420	0.0	0.00%	480	0.0	0.00%
Apr 2020	503	0.0	0.01%	534	0.0	0.00%	403	0.0	0.01%	443	0.0	0.00%
May 2020	399	0.0	0.00%	410	0.0	0.00%	404	0.0	0.00%	424	0.0	0.00%
Jun 2020	357	0.0	0.00%	357	0.0	0.00%	355	0.0	-0.01%	364	0.0	0.00%
Jul 2020	329	-0.1	-0.04%	330	-0.1	-0.03%	354	-0.2	-0.06%	277	0.0	-0.01%
Aug 2020	452	-0.3	-0.07%	440	-0.3	-0.06%	545	-0.4	-0.08%	288	-0.1	-0.03%
Sep 2020	661	-0.2	-0.04%	651	-0.2	-0.03%	791	-0.3	-0.04%	397	-0.1	-0.01%
Oct 2020	573	-0.2	-0.04%	571	-0.2	-0.03%	691	-0.3	-0.05%	400	0.0	-0.01%
Nov 2020	639	-0.3	-0.05%	619	-0.2	-0.04%	740	-0.5	-0.06%	504	-0.2	-0.03%
Dec 2020	749	-0.3	-0.04%	761	-0.2	-0.03%	777	-0.5	-0.07%	591	-0.3	-0.04%

	CCWD intake at Mallard Slough		
	Baseline EC	With proposed Project EC change	
	µS/cm	µS/cm	%
Jan 2020	4516	-3.2	-0.07%
Feb 2020	3478	-1.4	-0.04%
Mar 2020	4218	-1.4	-0.03%
Apr 2020	3781	-1.7	-0.05%
May 2020	6080	-0.9	-0.02%
Jun 2020	7190	-0.7	-0.01%
Jul 2020	10187	-0.3	0.00%
Aug 2020	13039	-0.2	0.00%
Sep 2020	12846	-1.1	-0.01%
Oct 2020	15108	-0.8	-0.01%
Nov 2020	14415	-1.8	-0.01%
Dec 2020	13224	-3.1	-0.02%

Table 5 Monthly average Future EC with change and percent change from Future EC with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2018 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -0.5% and the darkest orange is set at 0.5%.

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			C2 - Sacramento River at Collinsville			D22 - Sacramento River at Emmaton		
	Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2020	327	0.1	0.02%	649	0.7	0.10%	1626	-1.4	-0.09%	297	-0.3	-0.11%
Feb 2020	359	0.4	0.11%	734	0.6	0.08%	1182	-0.6	-0.05%	267	-0.2	-0.06%
Mar 2020	378	0.4	0.09%	664	0.4	0.06%	1608	-0.7	-0.05%	294	-0.3	-0.10%
Apr 2020	364	0.6	0.16%	495	1.1	0.23%	1388	-0.8	-0.06%	269	-0.2	-0.07%
May 2020	236	0.7	0.29%	330	1.1	0.34%	2760	-0.2	-0.01%	512	-0.4	-0.09%
Jun 2020	196	0.4	0.18%	289	0.5	0.19%	3602	0.3	0.01%	721	-0.6	-0.09%
Jul 2020	175	0.1	0.08%	282	0.4	0.13%	5844	1.1	0.02%	1243	-1.1	-0.09%
Aug 2020	179	0.0	0.02%	312	0.3	0.09%	7999	1.3	0.02%	1761	-1.5	-0.09%
Sep 2020	210	0.0	0.00%	366	0.3	0.09%	7577	0.1	0.00%	1563	-1.8	-0.12%
Oct 2020	218	0.1	0.04%	386	0.5	0.12%	9501	0.3	0.00%	2419	-1.9	-0.08%
Nov 2020	221	0.0	0.00%	572	0.6	0.10%	8703	-0.8	-0.01%	2097	-2.6	-0.12%
Dec 2020	254	0.0	0.01%	398	0.2	0.05%	7603	-1.8	-0.02%	1684	-2.6	-0.15%

	D12 - San Joaquin River at Antioch			D15 - San Joaquin River at Jersey Point			D29 - San Joaquin River at Prisoners Point			C5 - Contra Costa Canal at PP 1		
	Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2020	911	-1.2	-0.13%	425	-0.4	-0.08%	288	-0.1	-0.05%	398	-0.3	-0.07%
Feb 2020	589	-0.5	-0.08%	325	-0.1	-0.03%	294	0.0	-0.01%	386	-0.1	-0.03%
Mar 2020	766	-0.6	-0.07%	341	-0.1	-0.02%	310	0.0	0.00%	422	-0.1	-0.02%
Apr 2020	653	-0.6	-0.09%	303	0.0	-0.01%	277	0.0	0.00%	370	0.0	-0.01%
May 2020	1238	-0.6	-0.05%	355	0.0	-0.01%	279	0.0	0.00%	358	0.0	0.00%
Jun 2020	1687	-0.8	-0.05%	437	-0.1	-0.03%	242	0.0	0.00%	341	0.0	-0.01%
Jul 2020	3117	-1.3	-0.04%	866	-0.4	-0.05%	207	0.0	-0.01%	380	-0.1	-0.04%
Aug 2020	4828	-1.8	-0.04%	1666	-0.9	-0.05%	328	-0.1	-0.04%	611	-0.3	-0.05%
Sep 2020	4492	-2.2	-0.05%	1694	-1.0	-0.06%	394	-0.1	-0.03%	1004	-0.5	-0.05%
Oct 2020	5550	-2.5	-0.05%	1890	-1.2	-0.06%	409	-0.2	-0.05%	886	-0.5	-0.06%
Nov 2020	5085	-2.9	-0.06%	1725	-1.3	-0.07%	439	-0.2	-0.04%	917	-0.6	-0.06%
Dec 2020	4441	-3.2	-0.07%	1586	-1.4	-0.09%	515	-0.3	-0.07%	948	-0.6	-0.06%

	C9 - West Canal at Clifton Court			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change		Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%	µS/cm	µS/cm	%
Jan 2020	411	-0.2	-0.04%	468	-0.1	-0.03%	381	-0.2	-0.06%	368	-0.1	-0.04%
Feb 2020	486	-0.1	-0.01%	526	0.0	-0.01%	404	-0.1	-0.03%	433	-0.1	-0.02%
Mar 2020	497	0.0	0.00%	514	0.0	-0.01%	418	0.0	-0.01%	479	0.0	-0.01%
Apr 2020	504	0.0	0.00%	534	0.0	0.00%	403	0.0	0.00%	445	0.0	0.00%
May 2020	399	0.0	0.00%	411	0.0	0.00%	405	0.0	0.00%	427	0.0	-0.01%
Jun 2020	360	0.0	-0.01%	360	0.0	-0.01%	359	0.0	-0.01%	368	0.0	0.00%
Jul 2020	340	-0.1	-0.02%	340	-0.1	-0.02%	369	-0.1	-0.03%	282	0.0	0.00%
Aug 2020	481	-0.2	-0.04%	465	-0.2	-0.04%	582	-0.3	-0.05%	301	-0.1	-0.02%
Sep 2020	716	-0.3	-0.04%	700	-0.3	-0.04%	859	-0.4	-0.05%	426	-0.1	-0.02%
Oct 2020	629	-0.3	-0.05%	622	-0.3	-0.04%	765	-0.4	-0.06%	438	-0.1	-0.03%
Nov 2020	690	-0.3	-0.05%	661	-0.2	-0.04%	811	-0.5	-0.06%	545	-0.2	-0.03%
Dec 2020	783	-0.3	-0.04%	788	-0.2	-0.03%	826	-0.5	-0.06%	624	-0.3	-0.04%

	CCWD intake at Mallard Slough		
	Future EC	With proposed Project EC change	
	µS/cm	µS/cm	%
Jan 2020	4431	-2.6	-0.06%
Feb 2020	3417	-1.1	-0.03%
Mar 2020	4252	-1.1	-0.03%
Apr 2020	3792	-1.5	-0.04%
May 2020	6146	-0.7	-0.01%
Jun 2020	7261	-0.3	0.00%
Jul 2020	10293	0.1	0.00%
Aug 2020	13112	0.2	0.00%
Sep 2020	12829	-0.2	0.00%
Oct 2020	15090	-0.4	0.00%
Nov 2020	14409	-1.5	-0.01%
Dec 2020	13282	-2.9	-0.02%

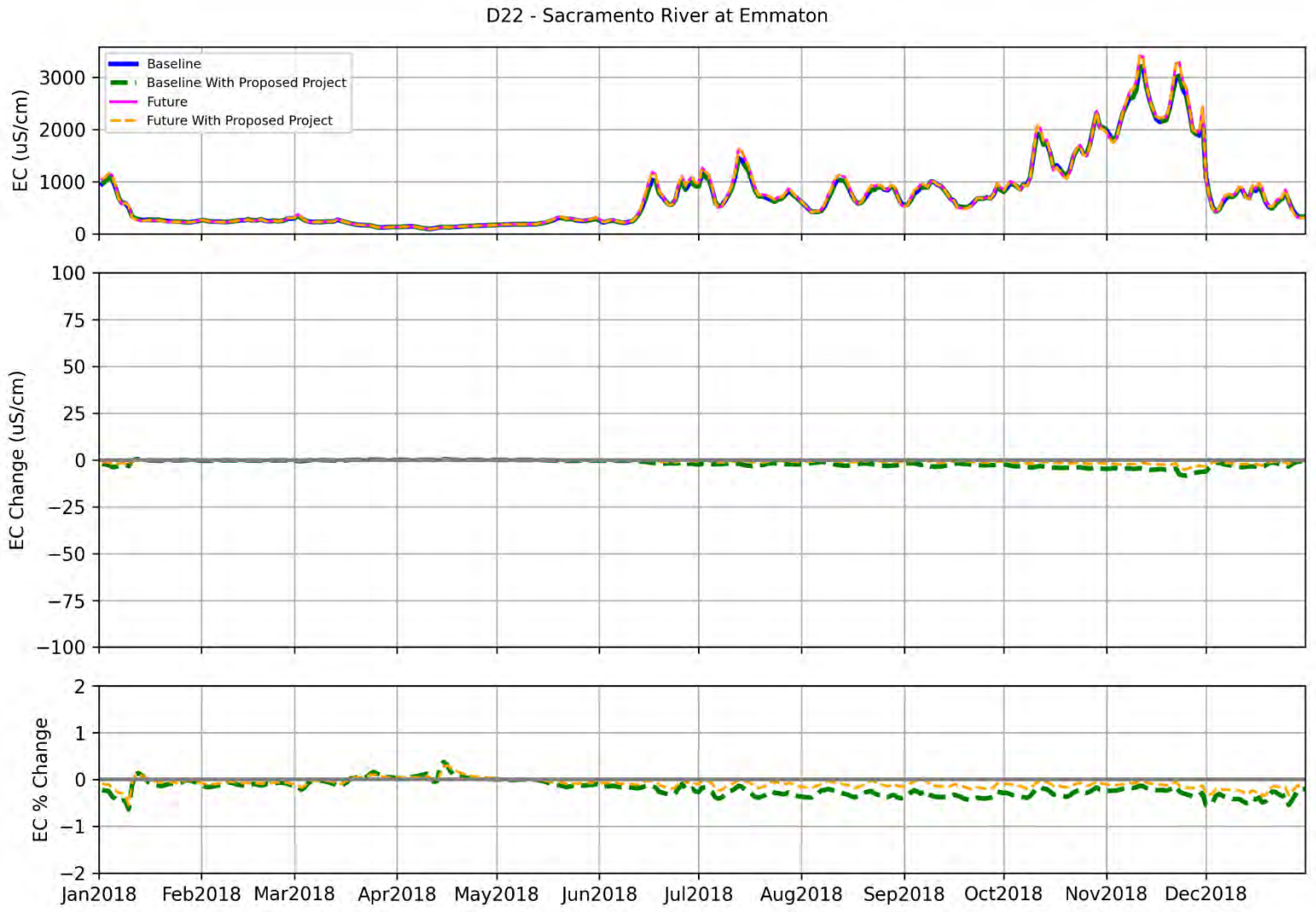

Figure 27 Daily average EC at station D22 – Sacramento River at Emmaton for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

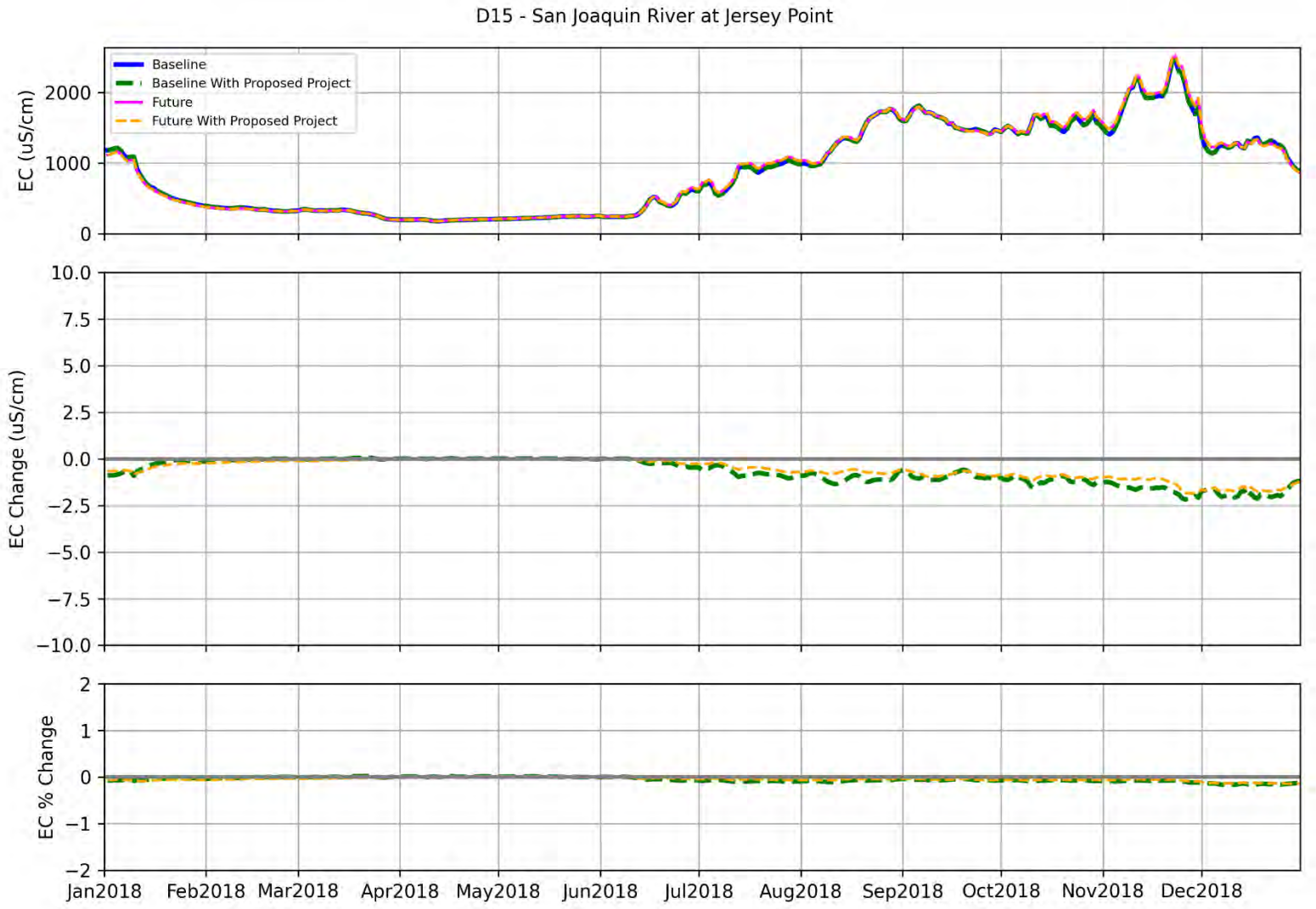

Figure 28 Daily average EC at station D15 - San Joaquin River at Jersey Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

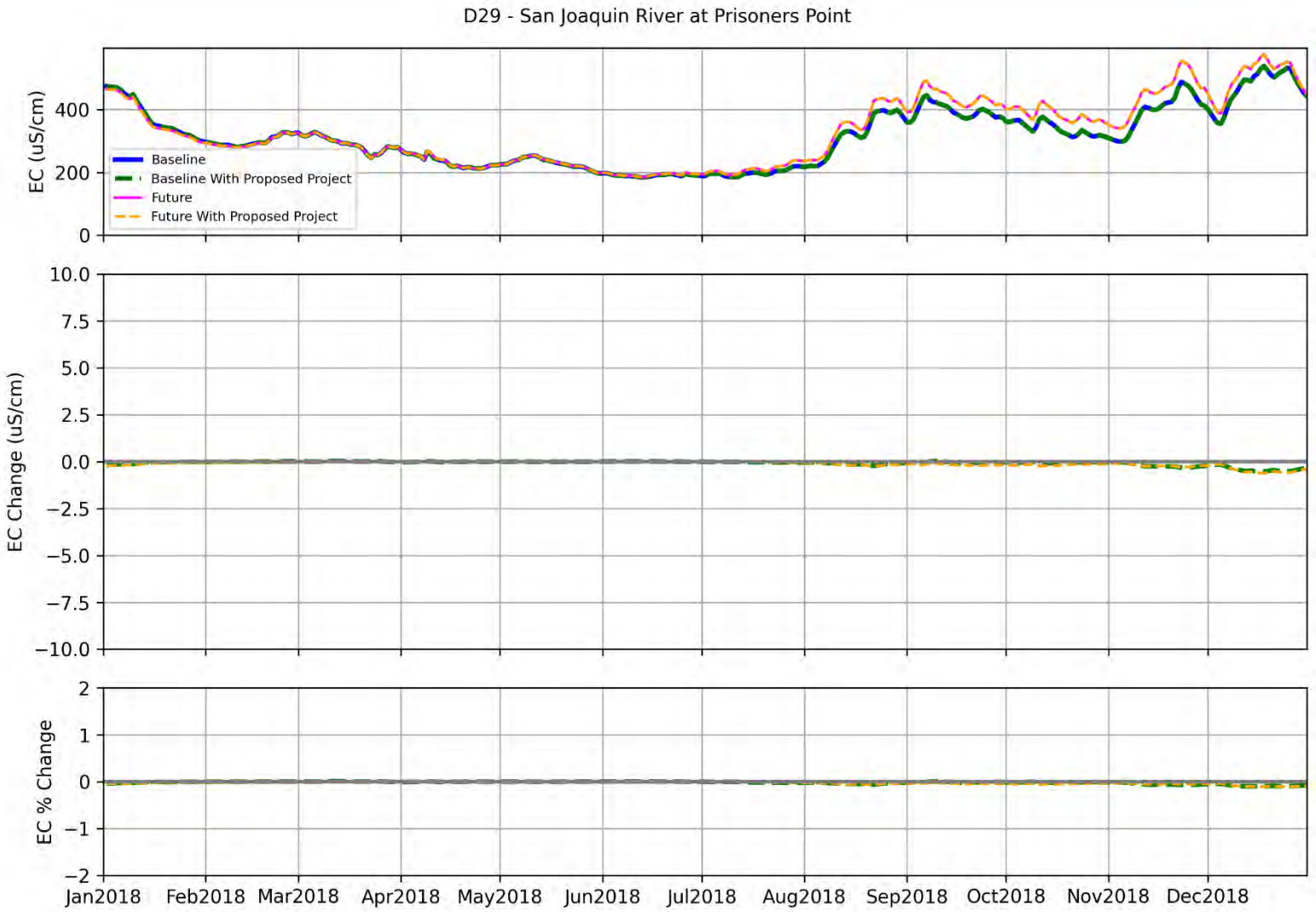

Figure 29 Daily average EC at station D29 - San Joaquin River at Prisoners Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

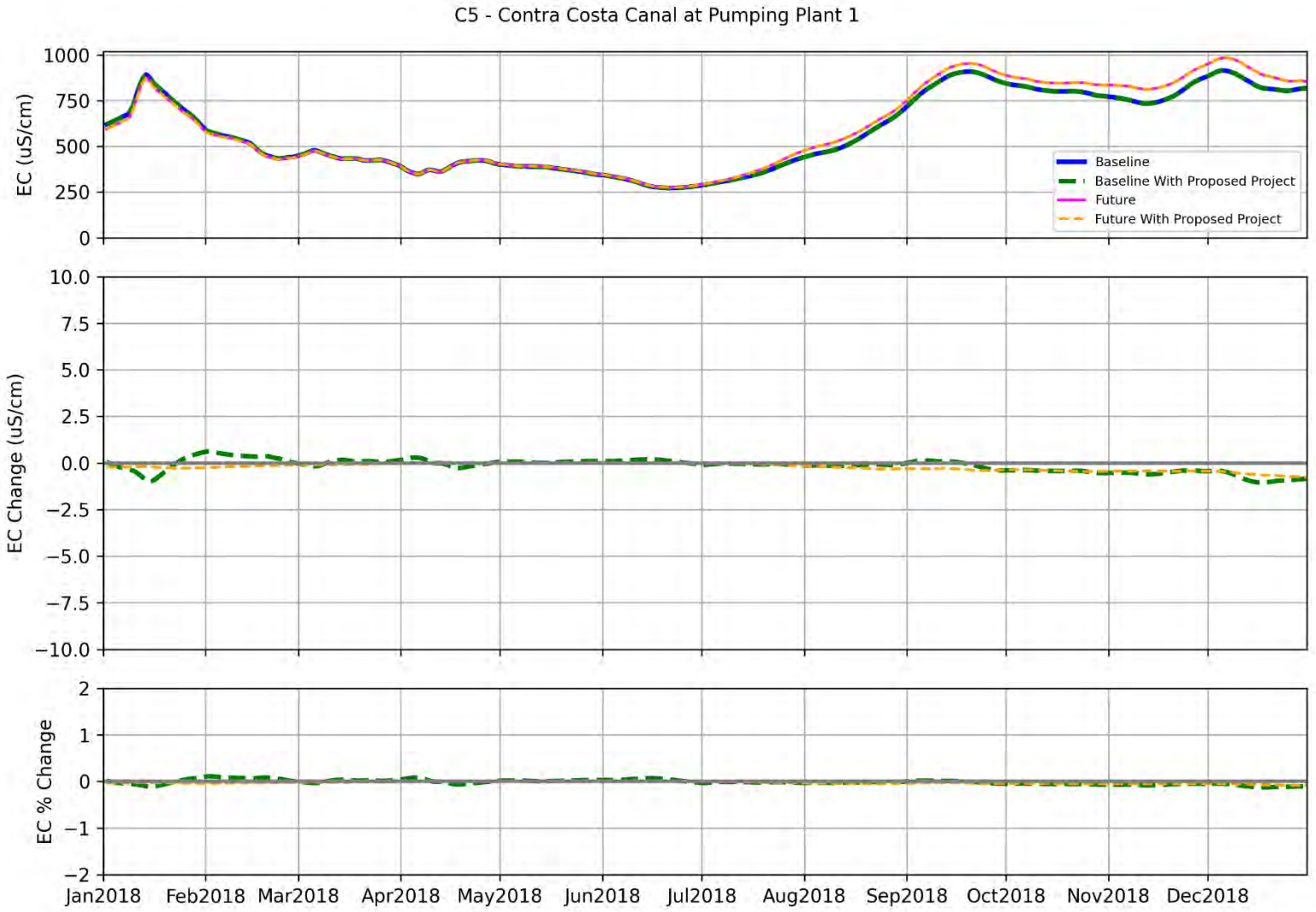

Figure 30 Daily average EC at station C5 - Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

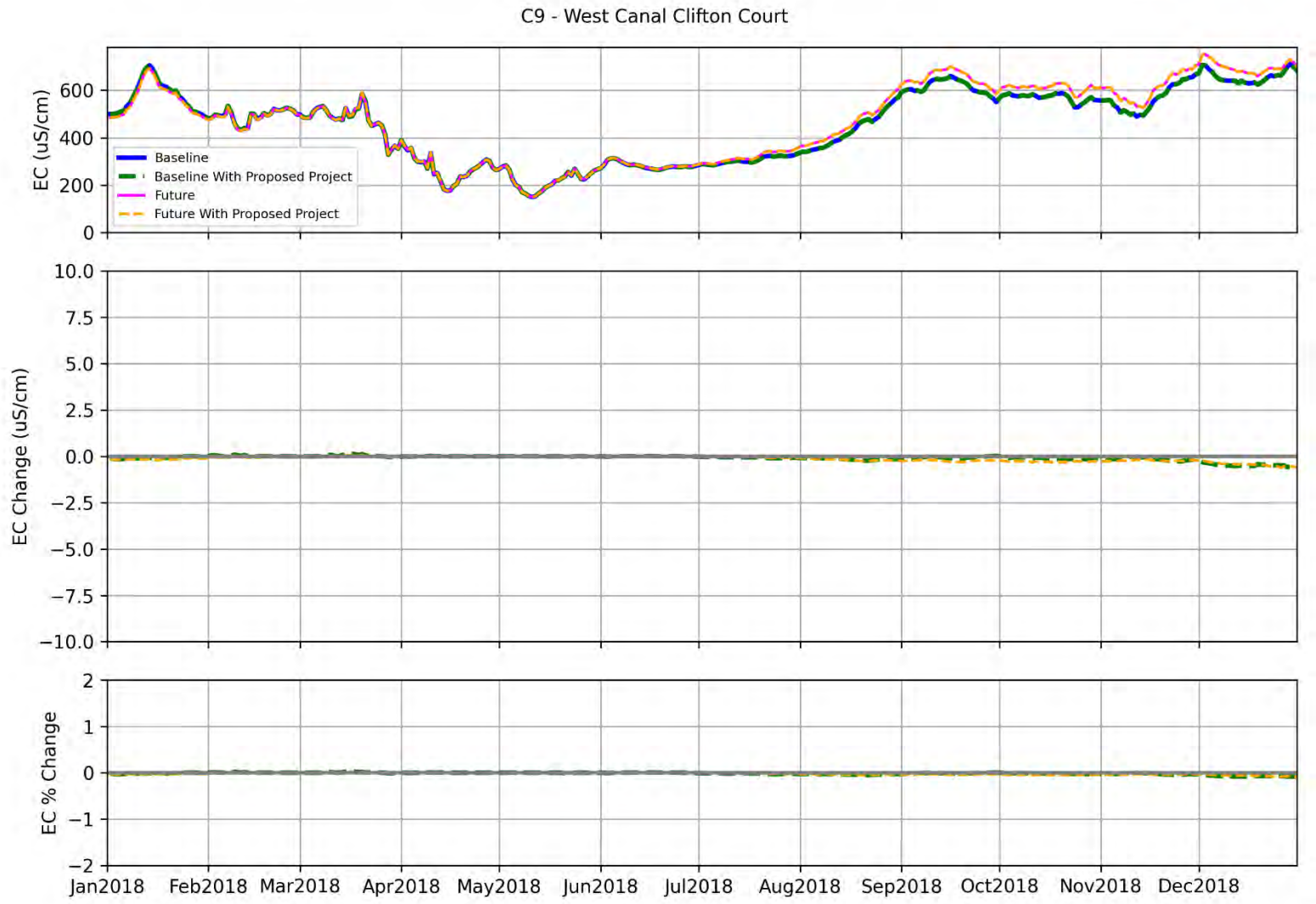

Figure 31 Daily average EC at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

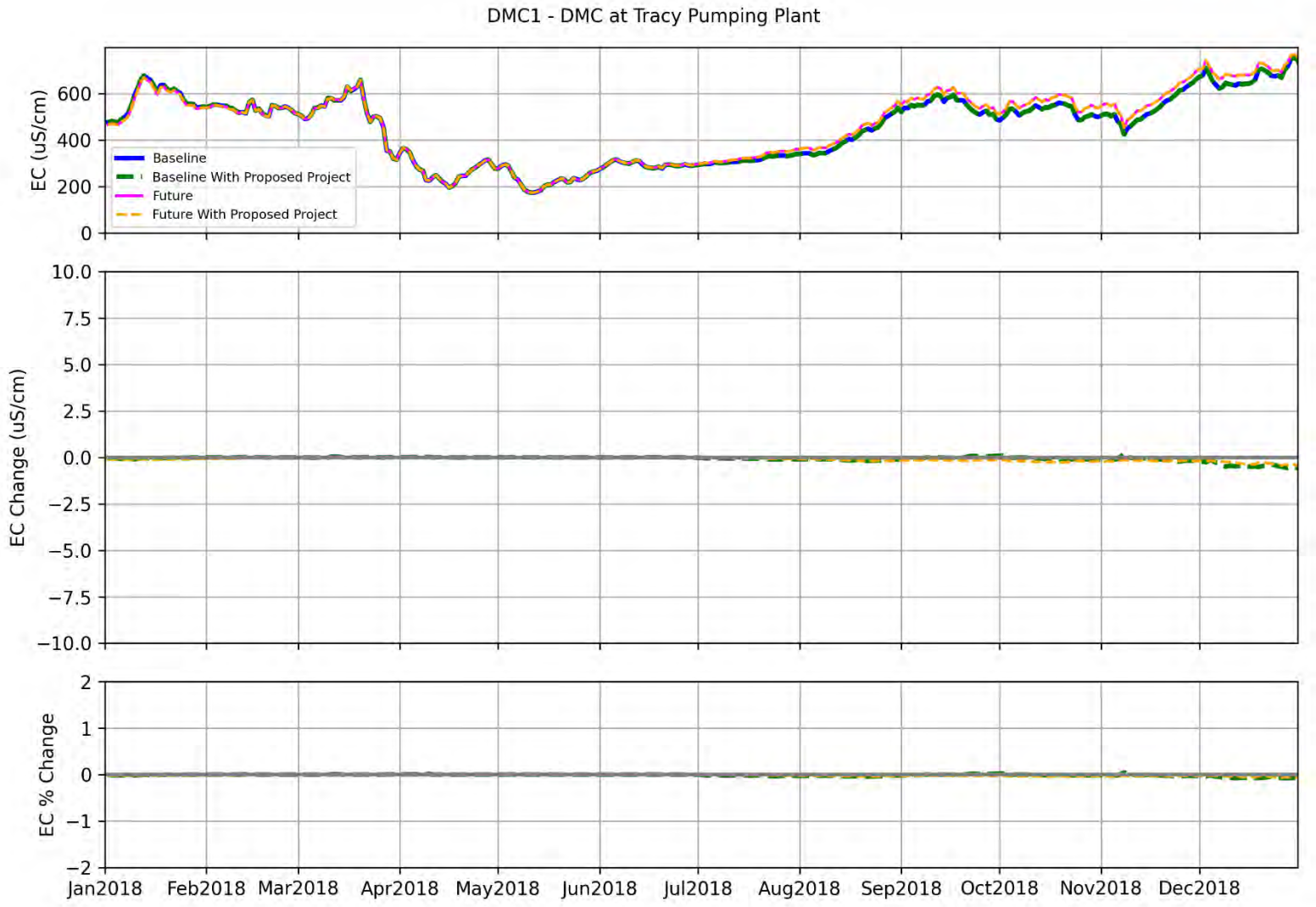

Figure 32 Daily average EC at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

Figure 33 Daily average EC at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

Figure 34 Daily average EC at station C19 – City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

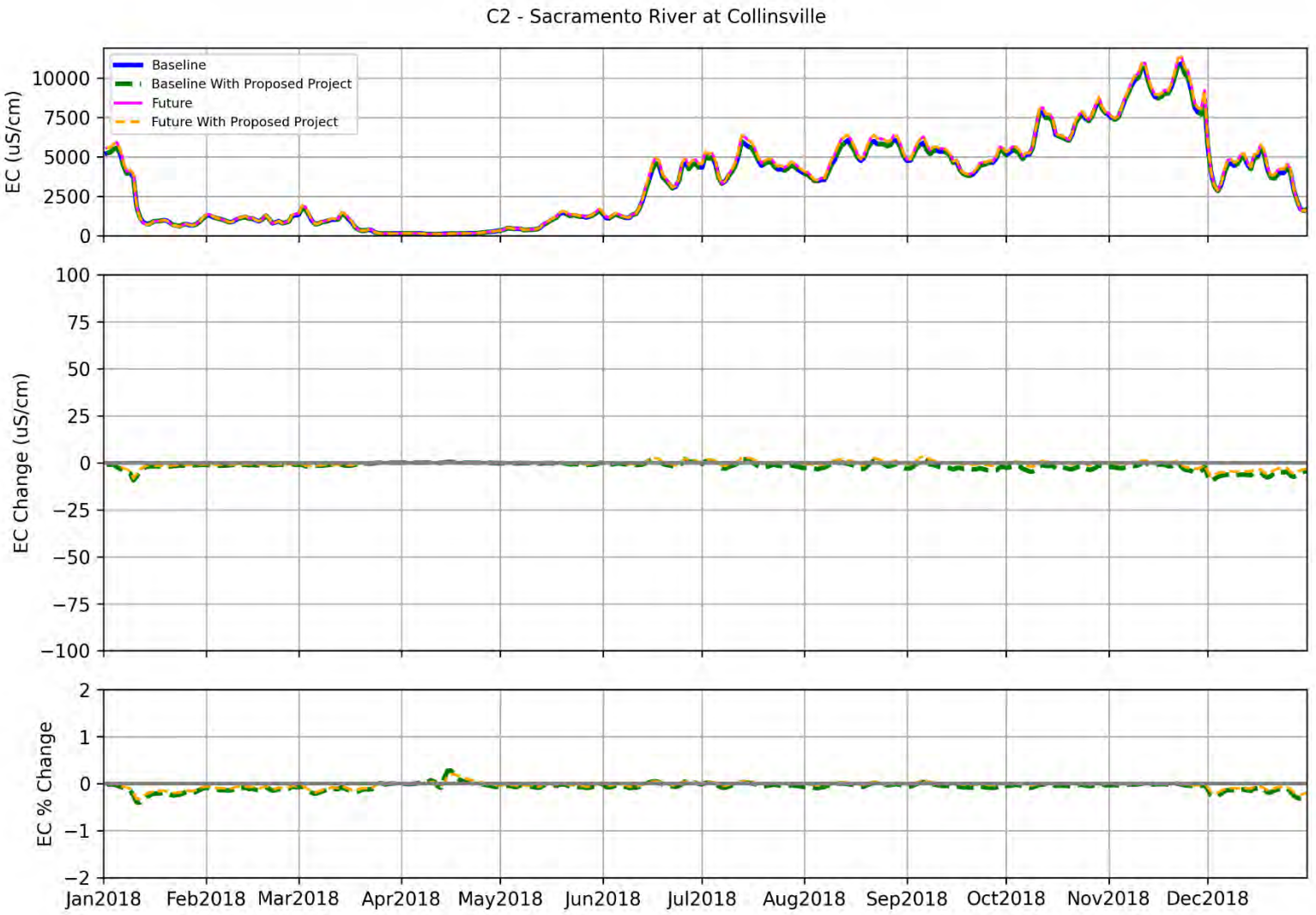

Figure 35 Daily average EC at station C2 – Sacramento River at Collinsville for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

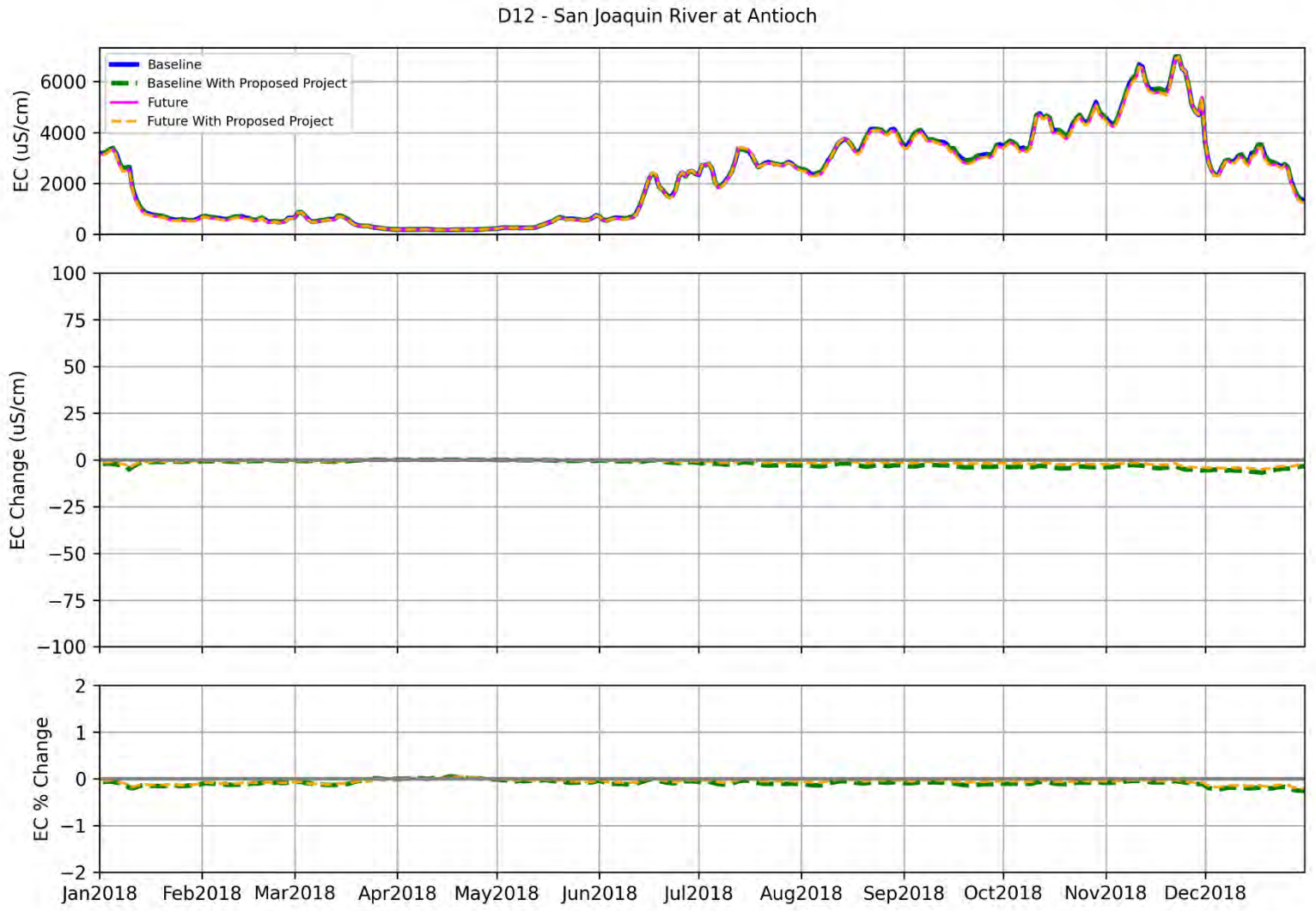

Figure 36 Daily average EC at station D12 – San Joaquin River at Antioch intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

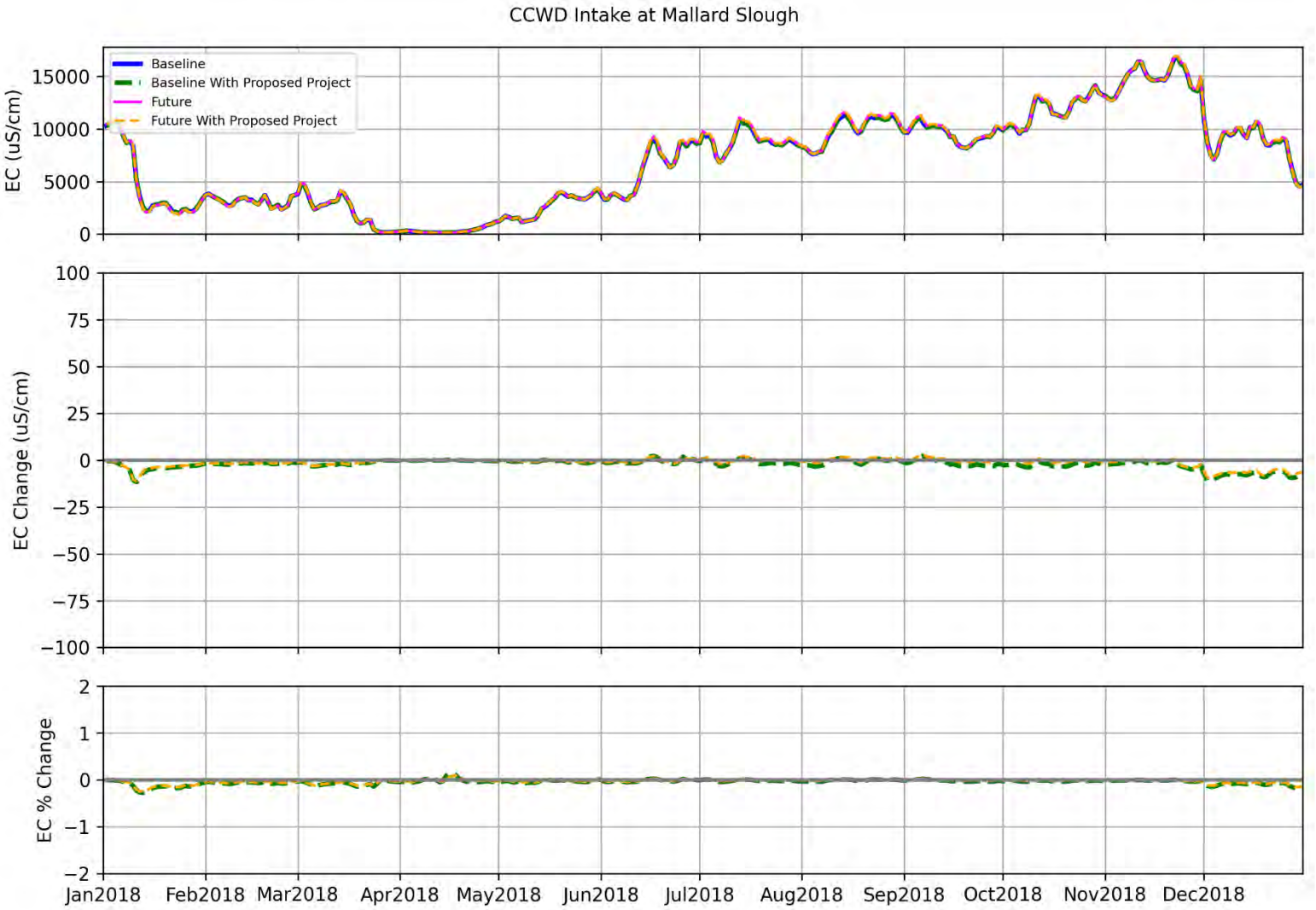

Figure 37 Daily average EC at station for CCWD intake at Mallard Slough for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

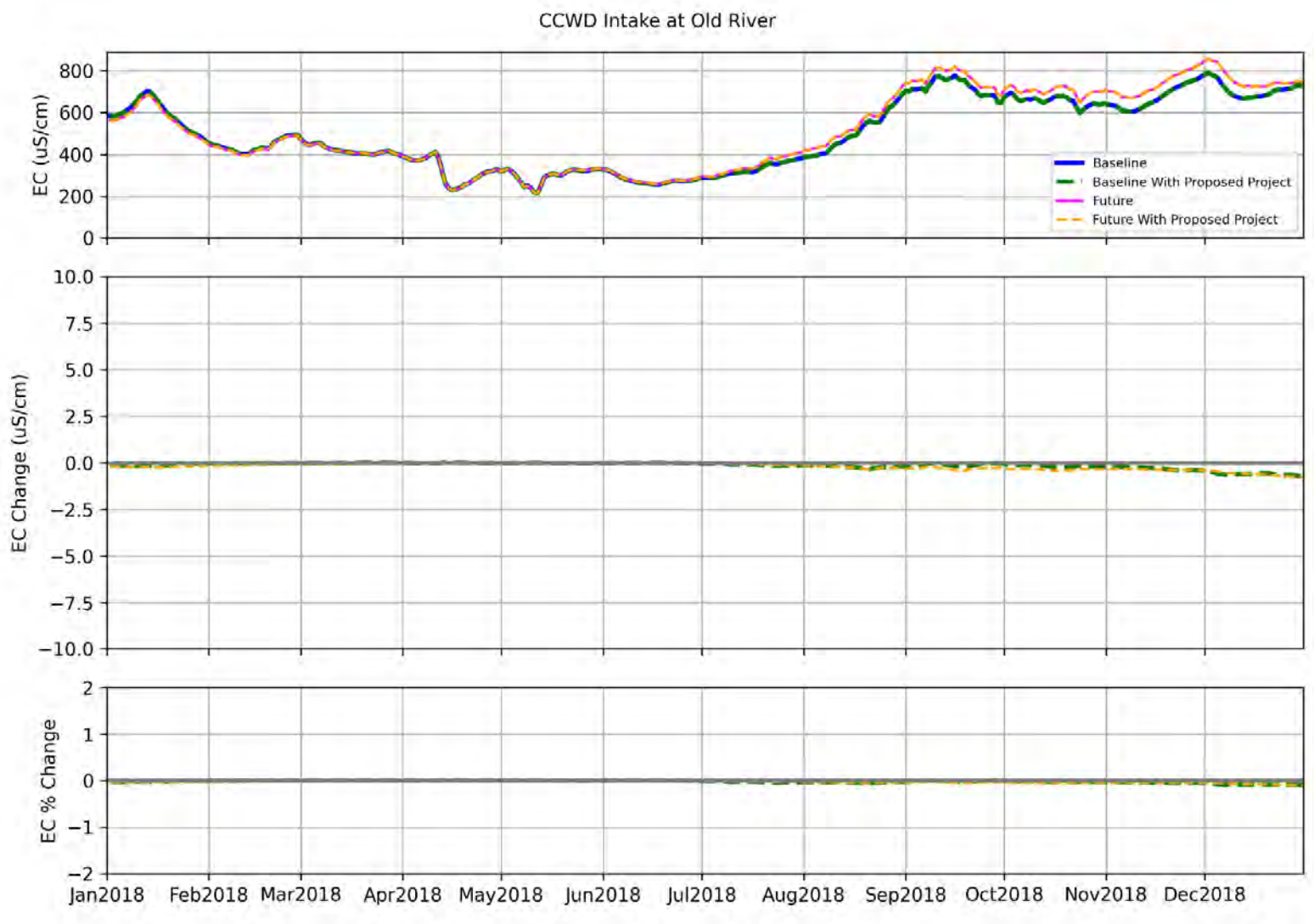

Figure 38 Daily average EC at CCWD intake at Old River for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

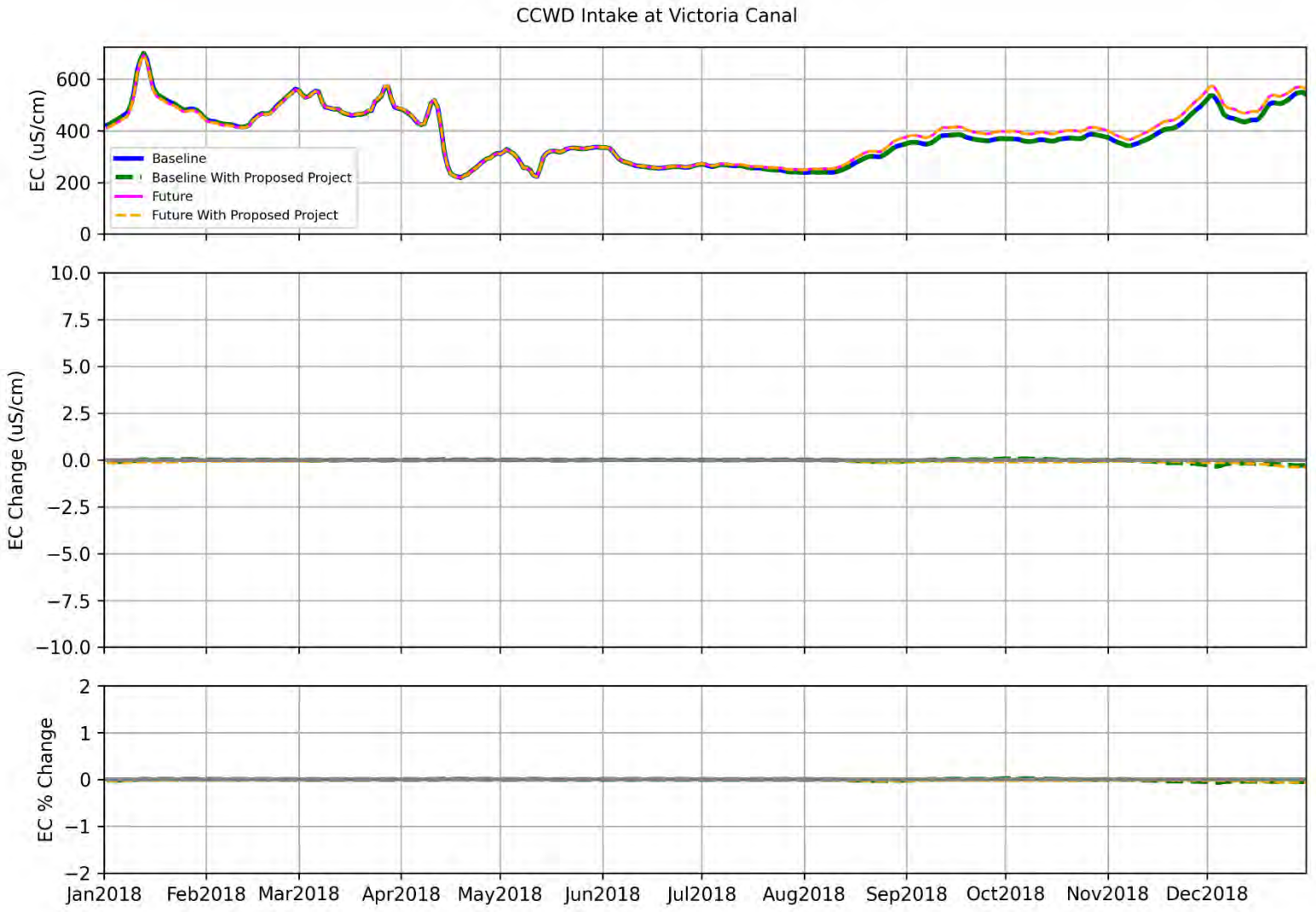

Figure 39 Daily average EC at CCWD intake at Victoria Canal for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

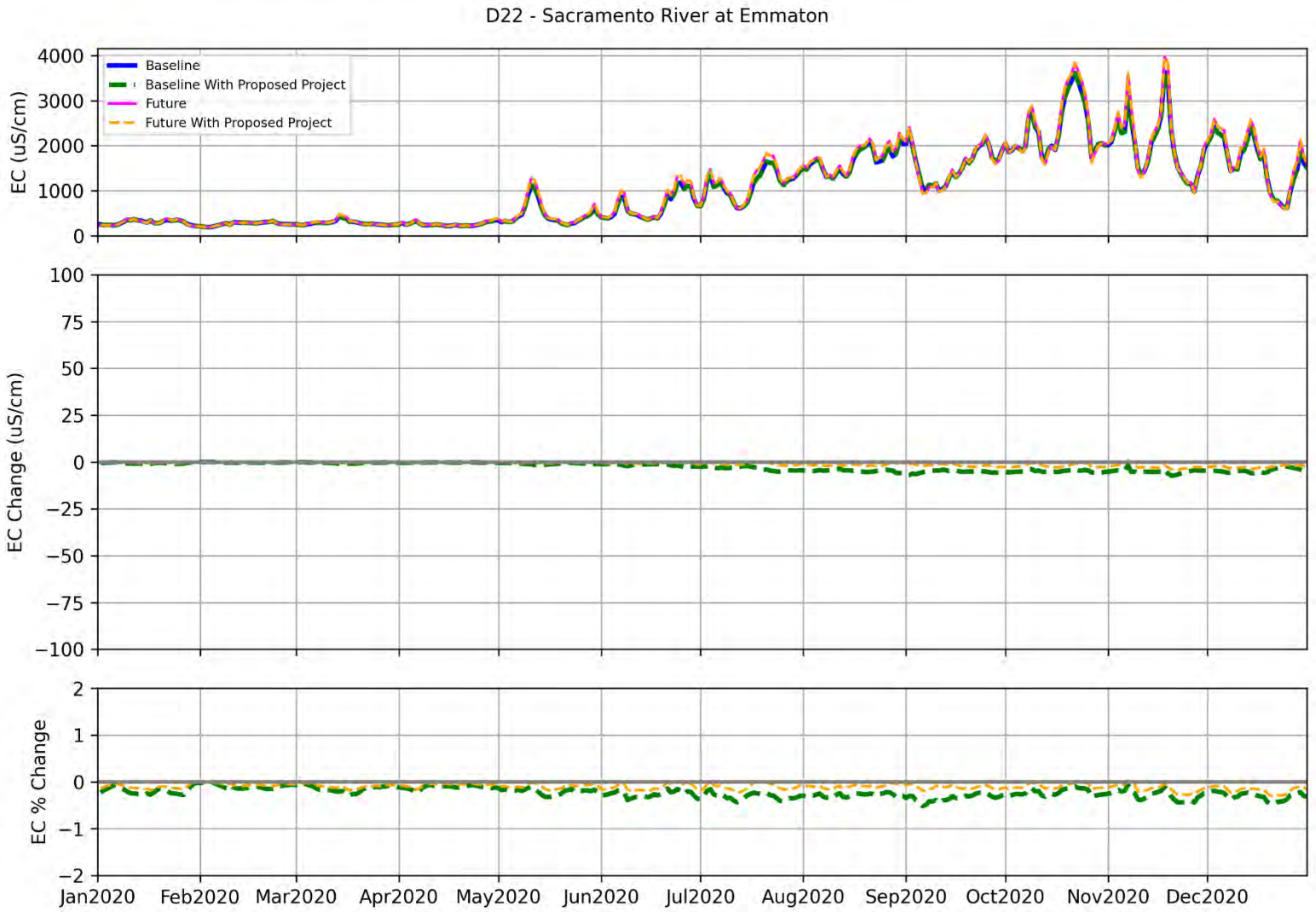

Figure 40 Daily average EC at station D22 – Sacramento River at Emmaton for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

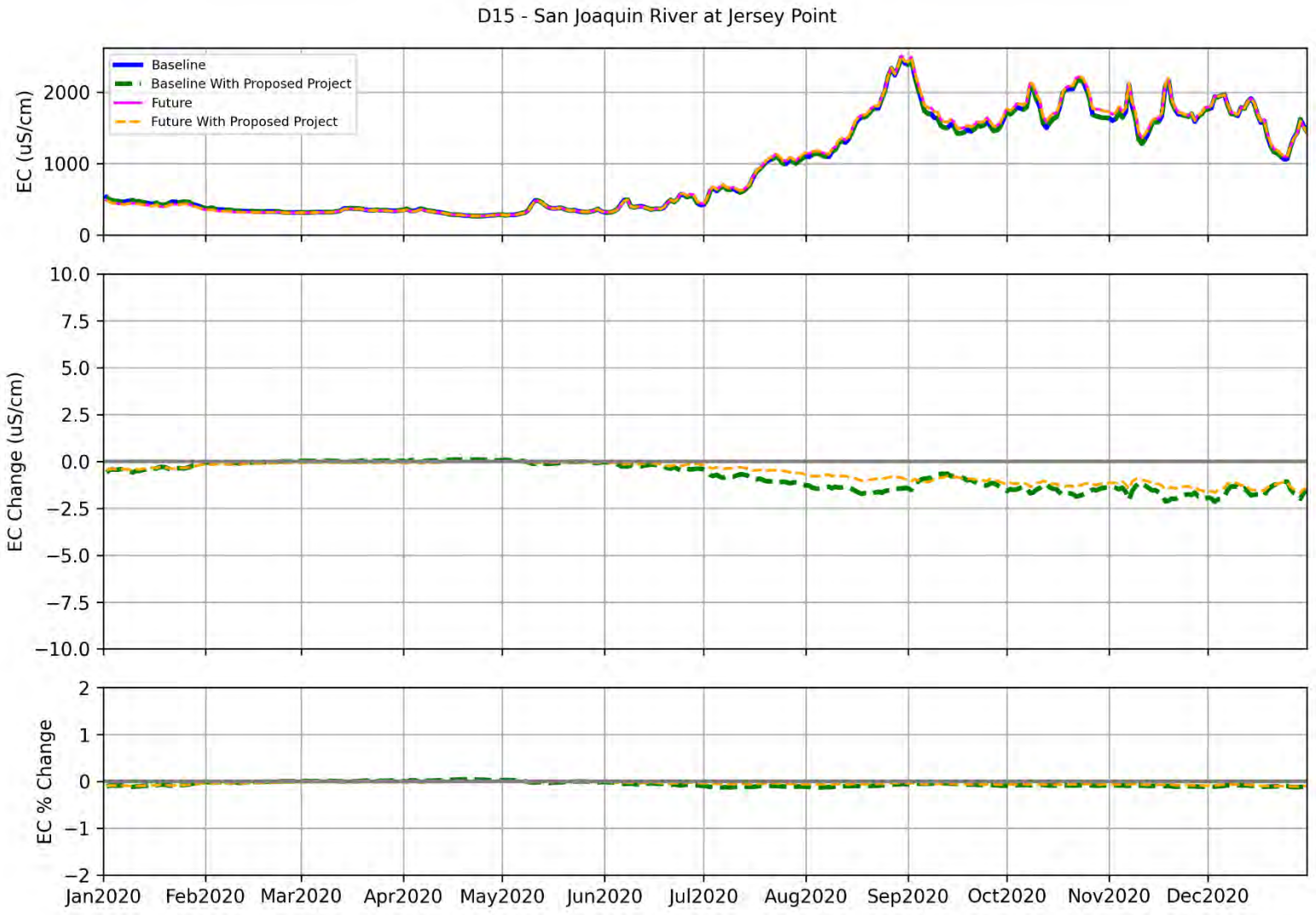

Figure 41 Daily average EC at station D15 - San Joaquin River at Jersey Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

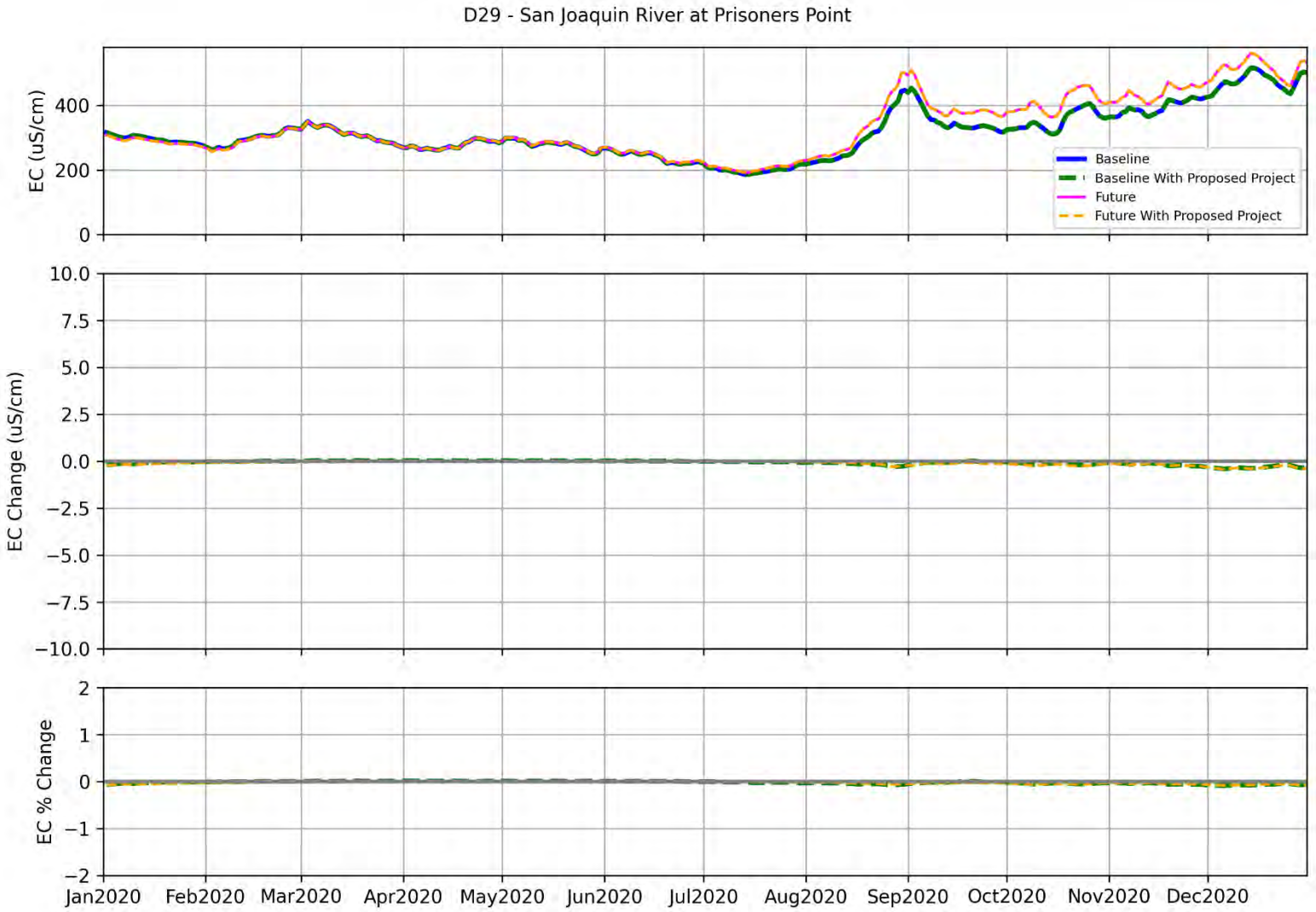

Figure 42 Daily average EC at station D29 - San Joaquin River at Prisoners Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

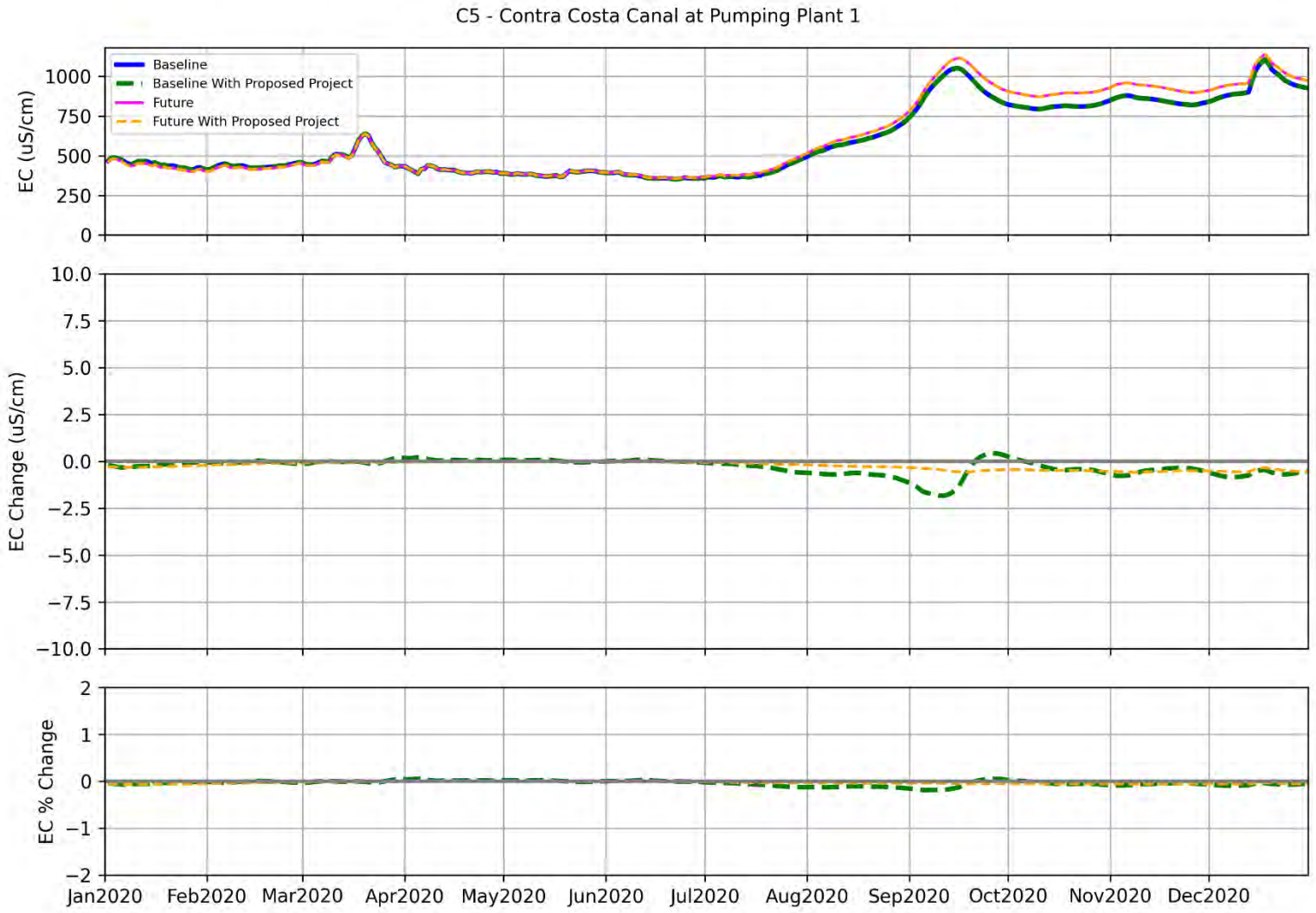

Figure 43 Daily average EC at station C5 - Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

Figure 44 Daily average EC at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

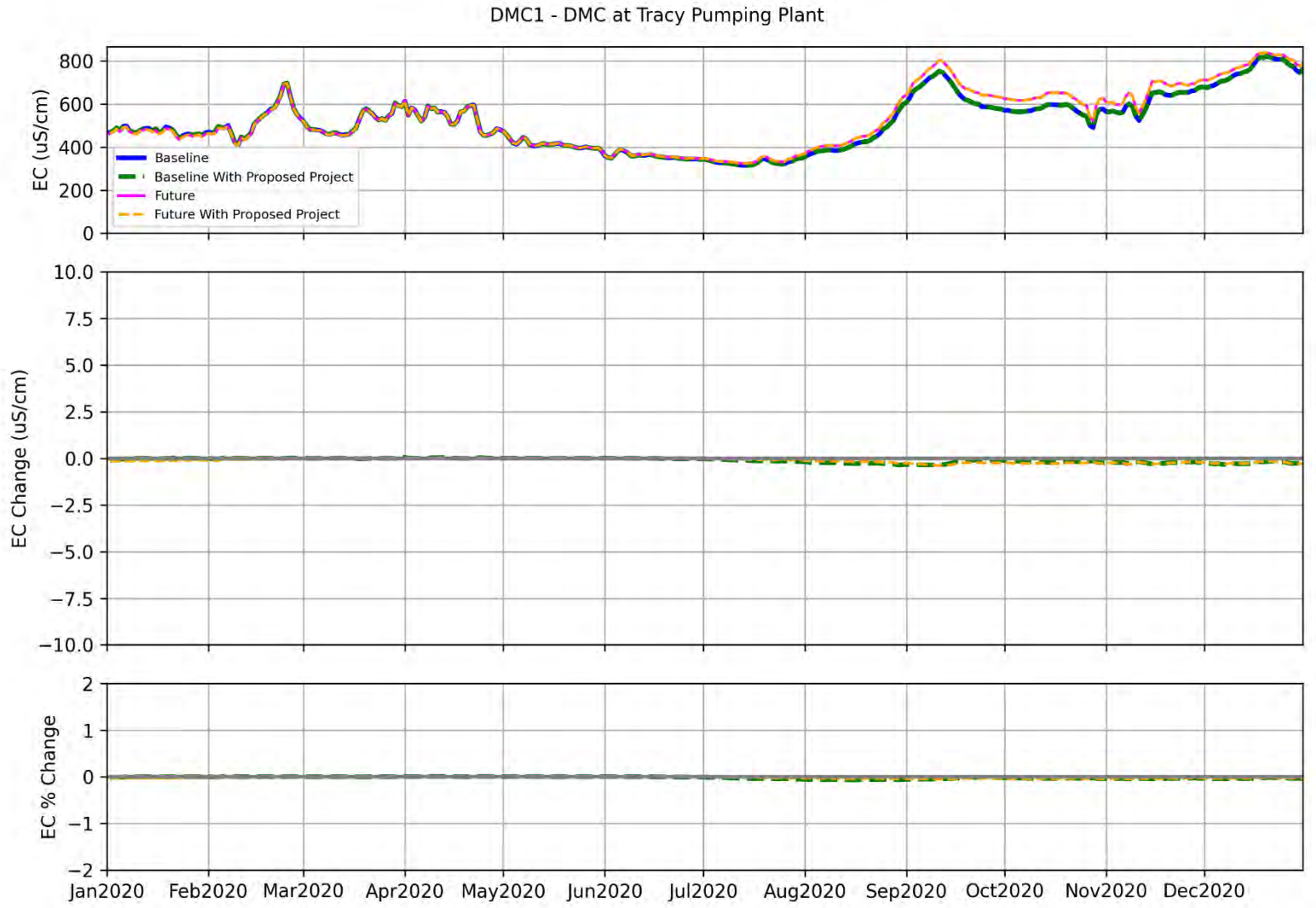

Figure 45 Daily average EC at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

Figure 46 Daily average EC at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

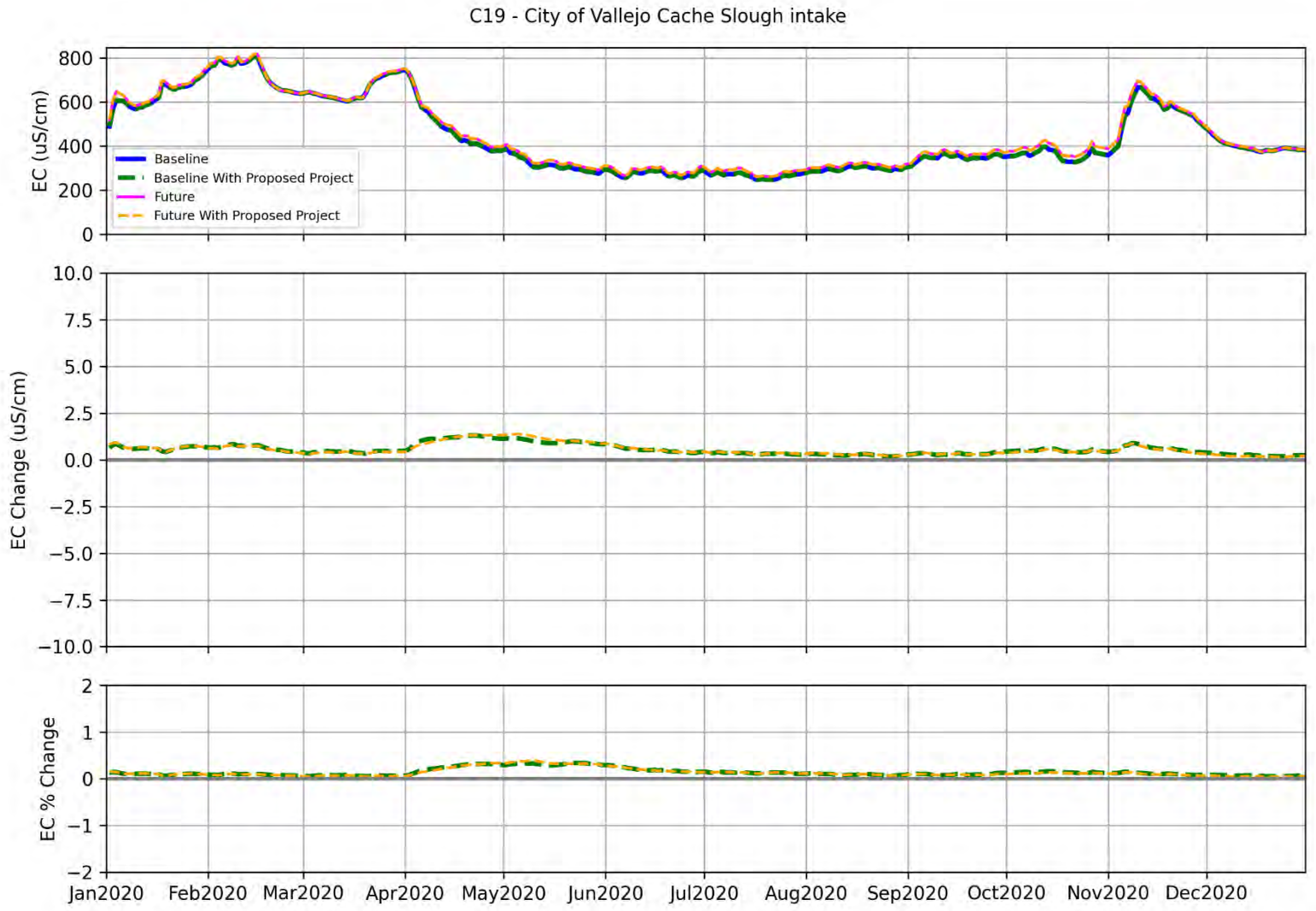

Figure 47 Daily average EC at station C19 –City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

Figure 48 Daily average EC at station C2 – Sacramento River at Collinsville for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

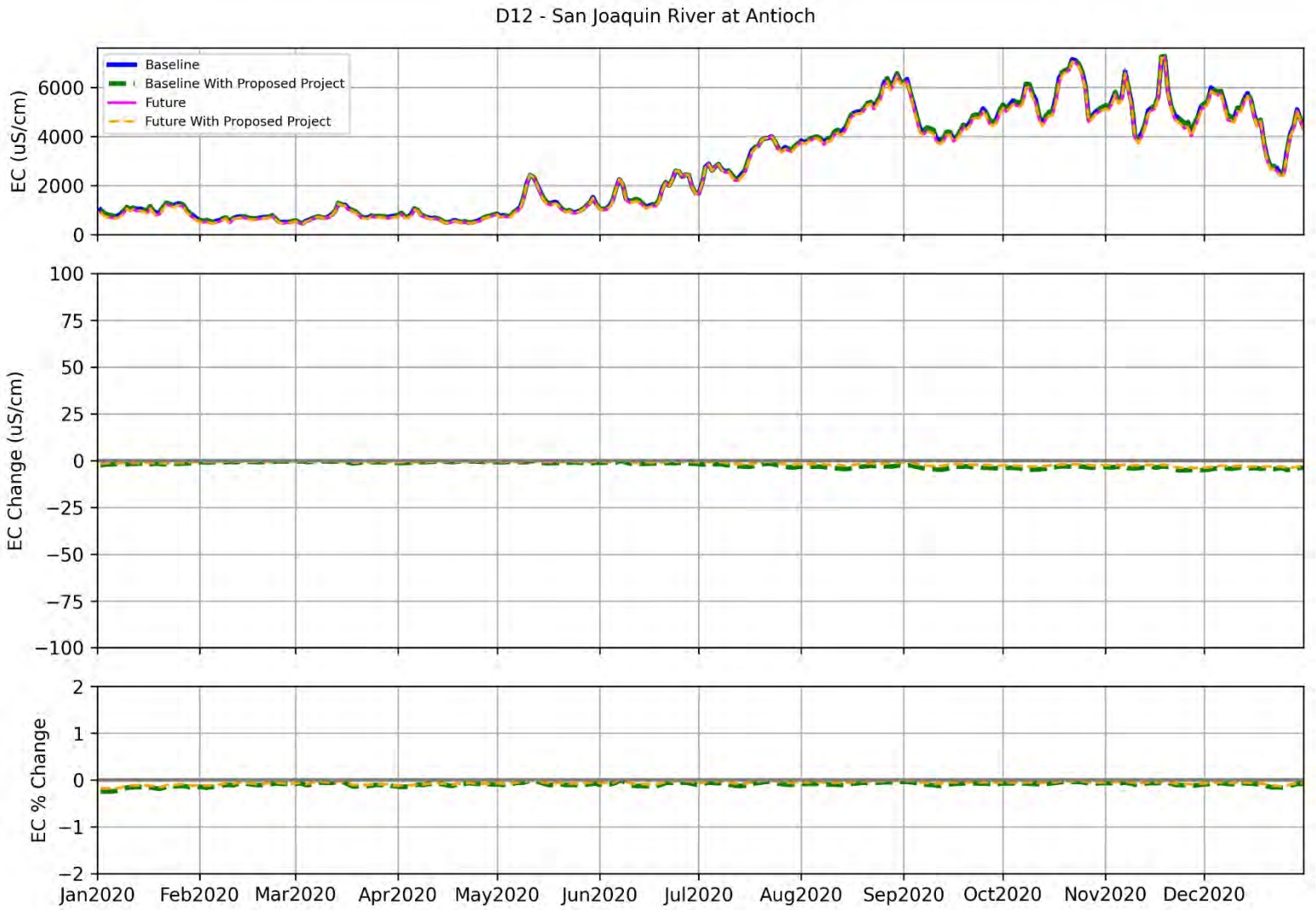

Figure 49 Daily average EC at station D12 – San Joaquin River at Antioch intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

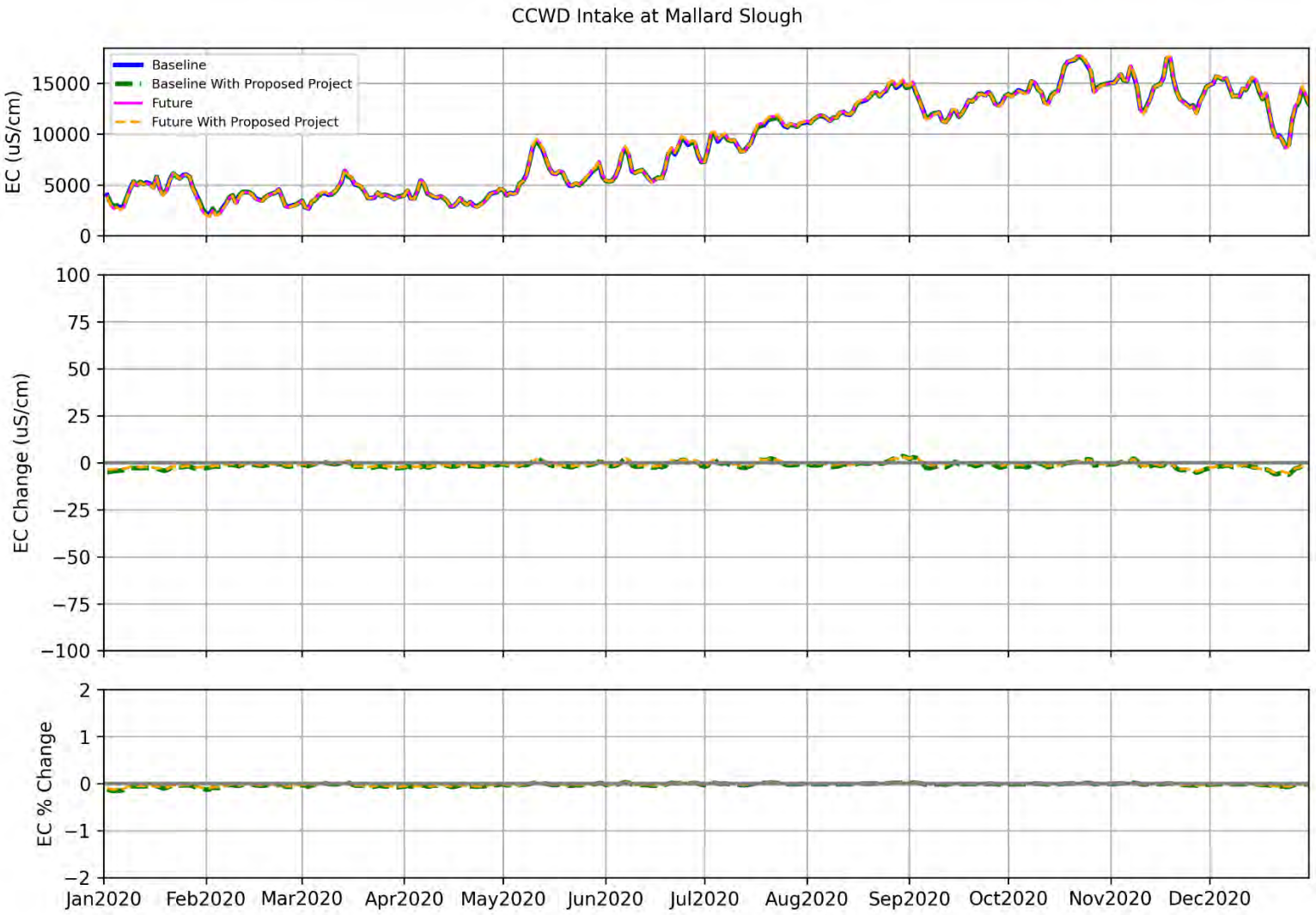

Figure 50 Daily average EC at station for CCWD – Mallard Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

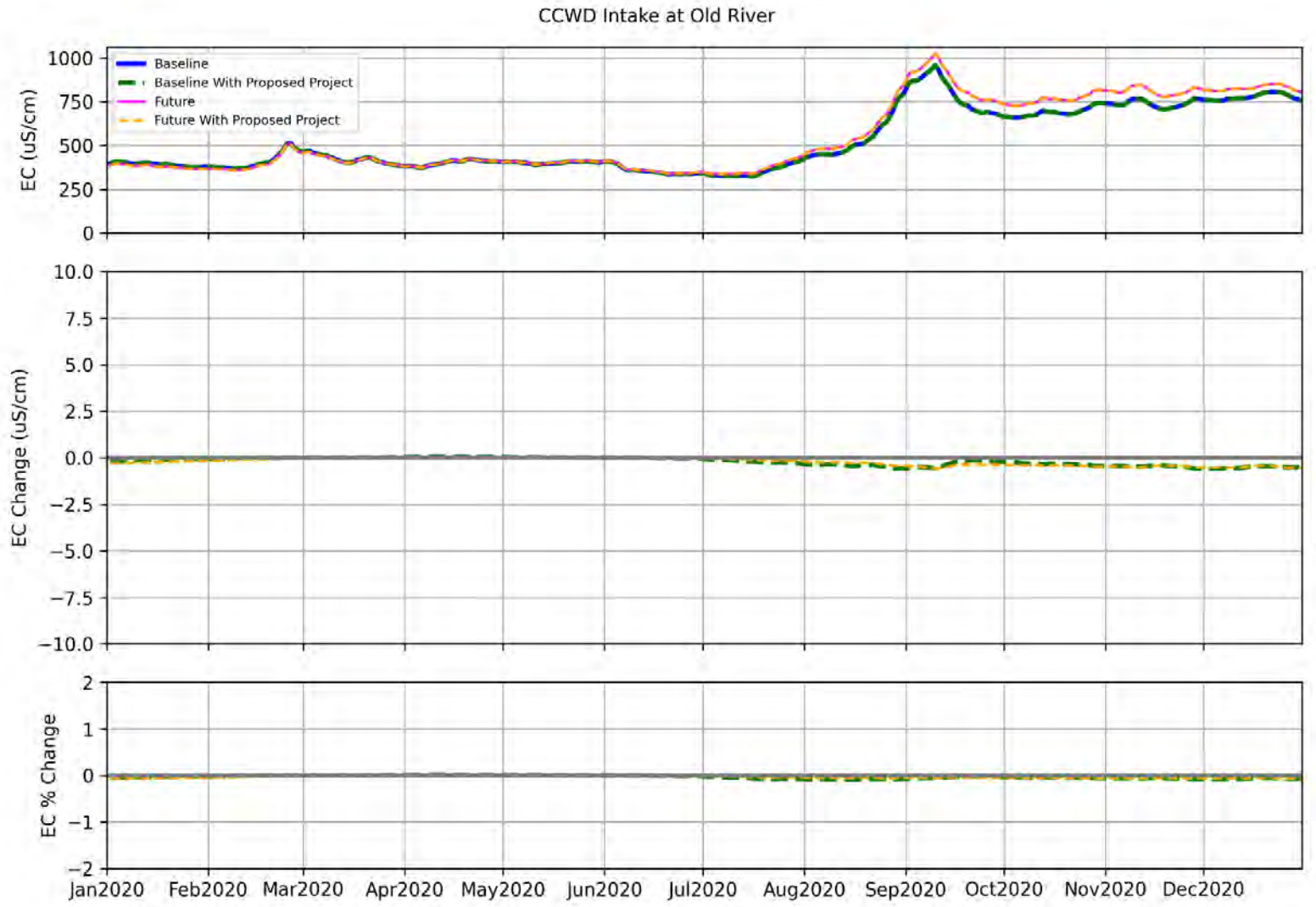

Figure 51 Daily average EC at CCWD – Old River intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

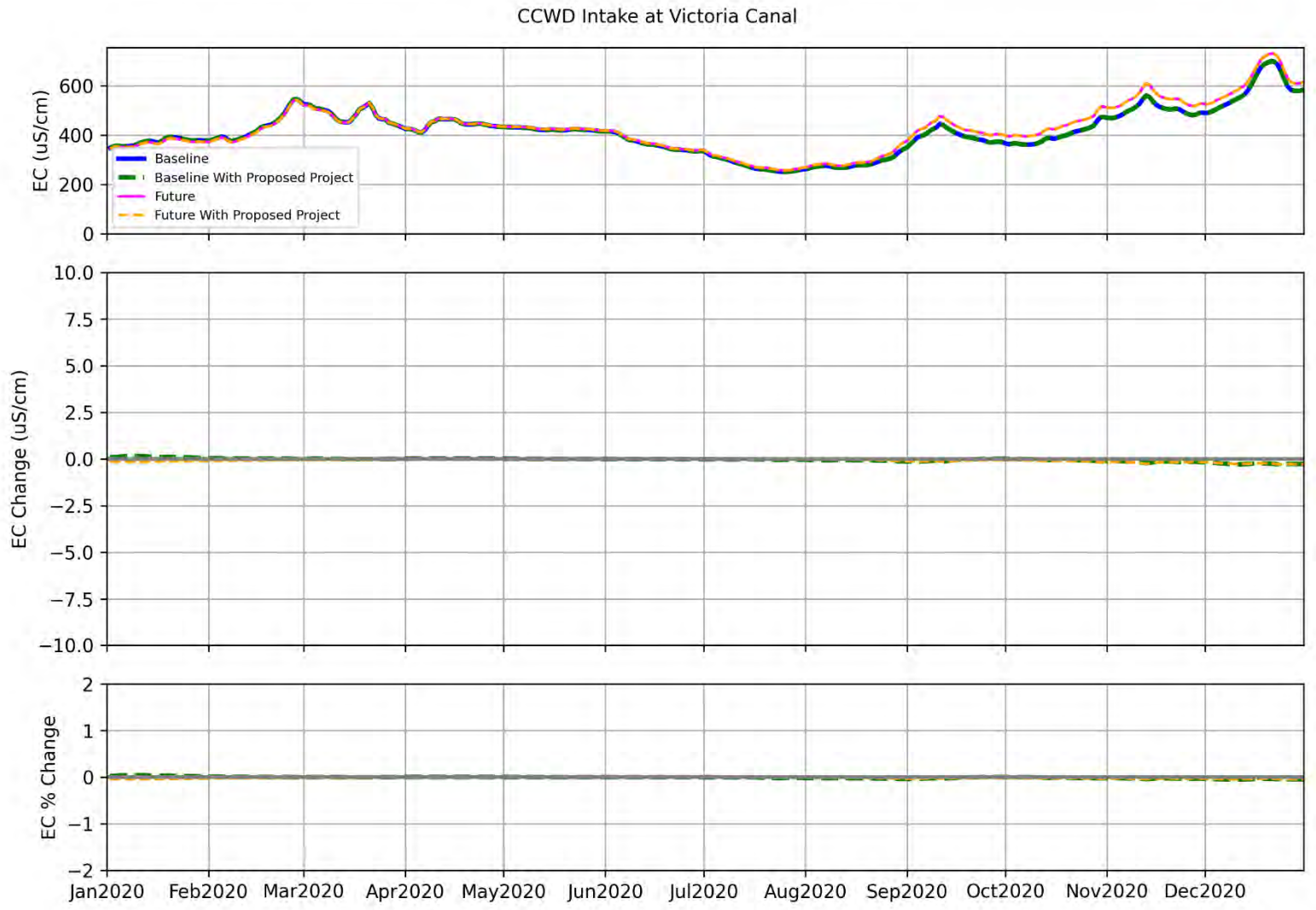

Figure 52 Daily average EC at CCWD – Victoria Canal intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

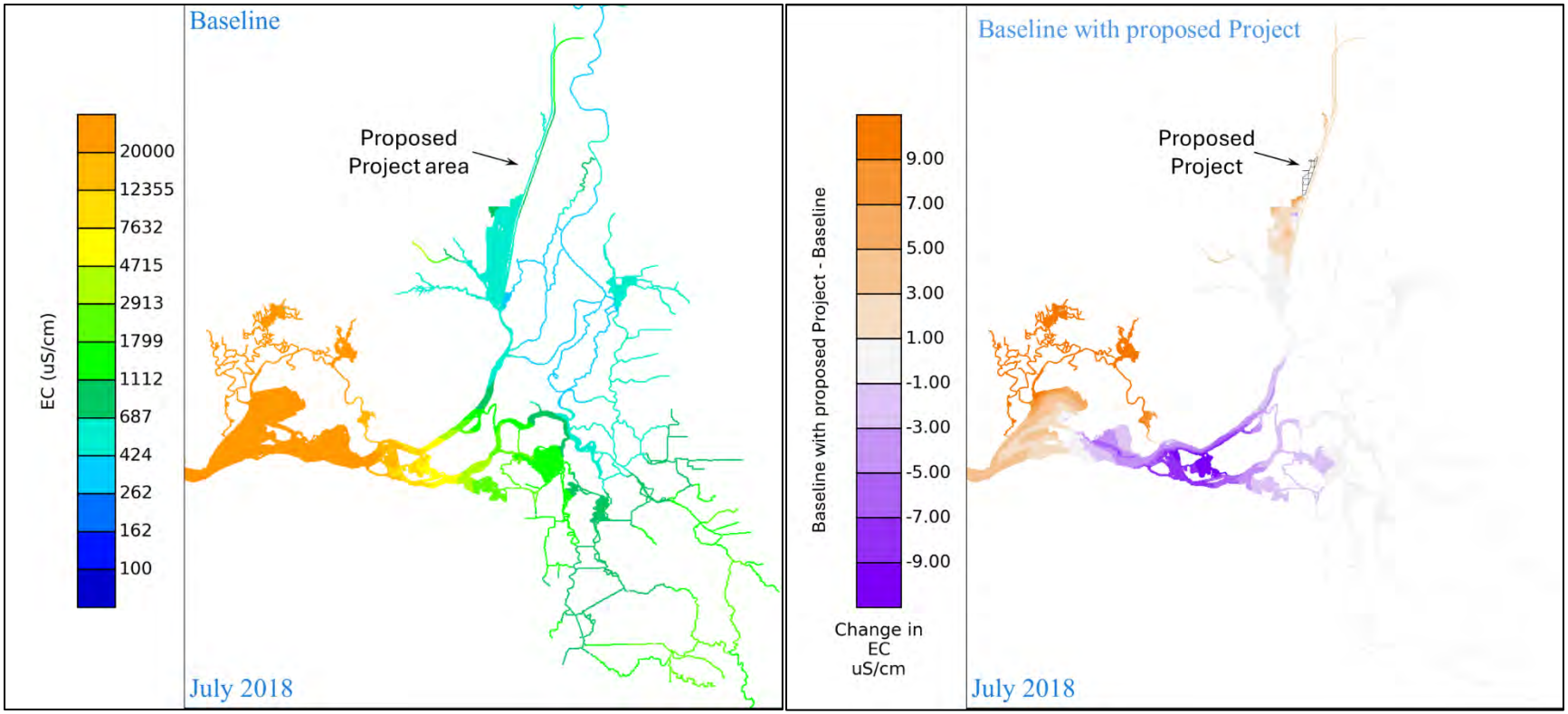

Figure 53 July 2018 (left) average Baseline condition EC and (right) Baseline with proposed Project change from Baseline condition average EC.

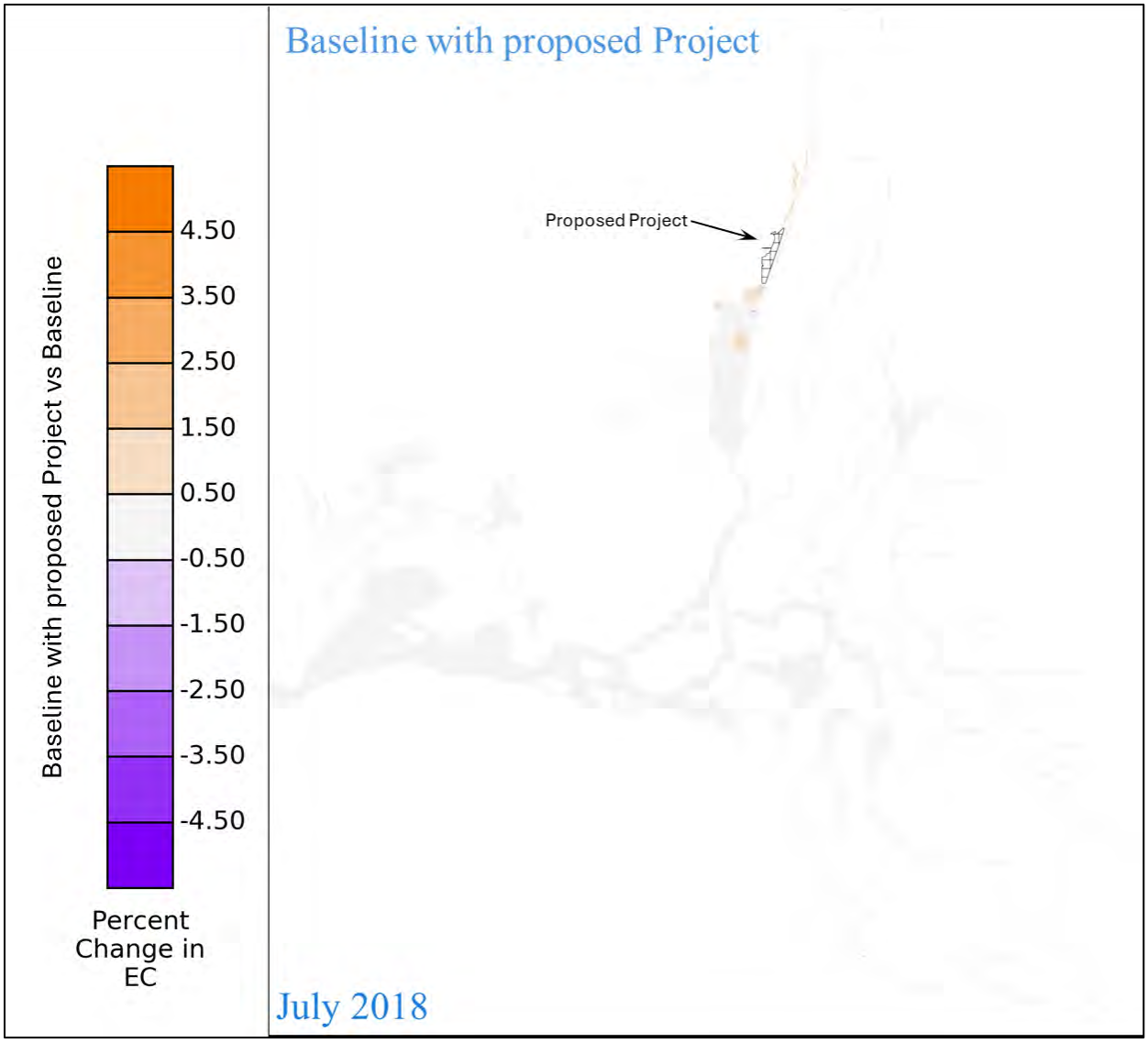

Figure 54 Baseline with proposed Project average percent change from Baseline EC for July 2018.

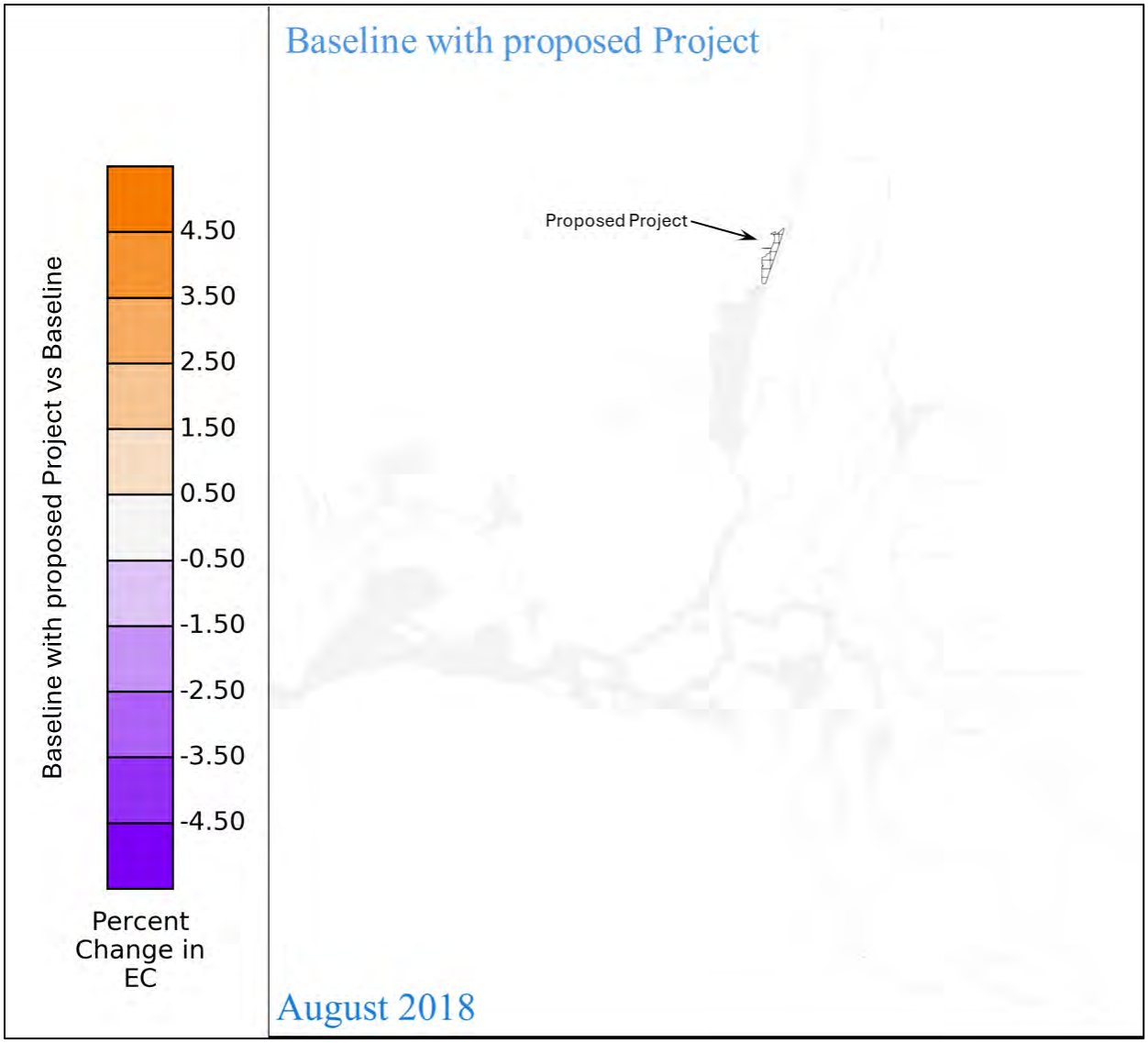

Figure 55 Baseline with proposed Project average percent change from Baseline EC for August 2018.

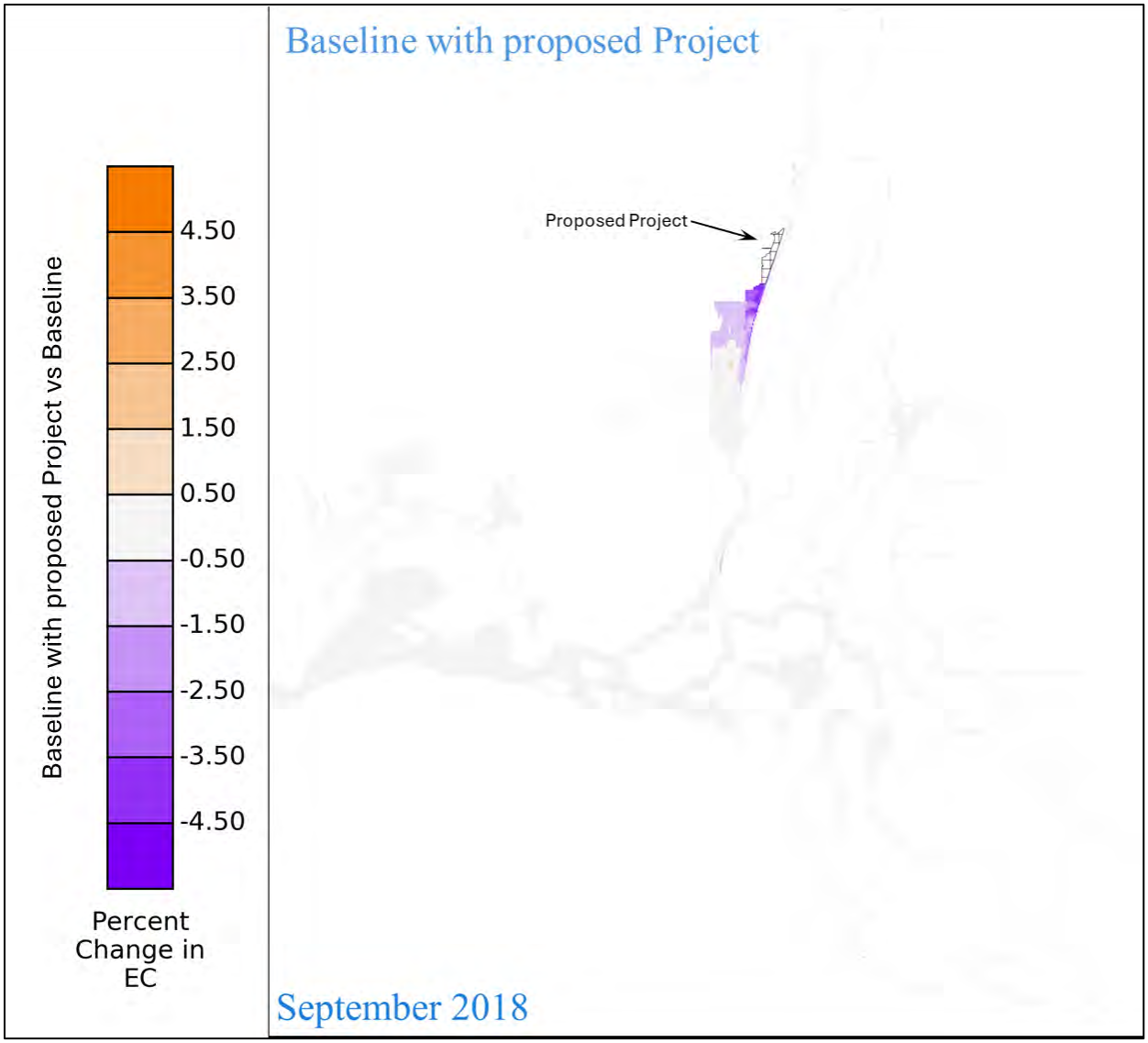

Figure 56 Baseline with proposed Project average percent change from Baseline EC for September 2018.

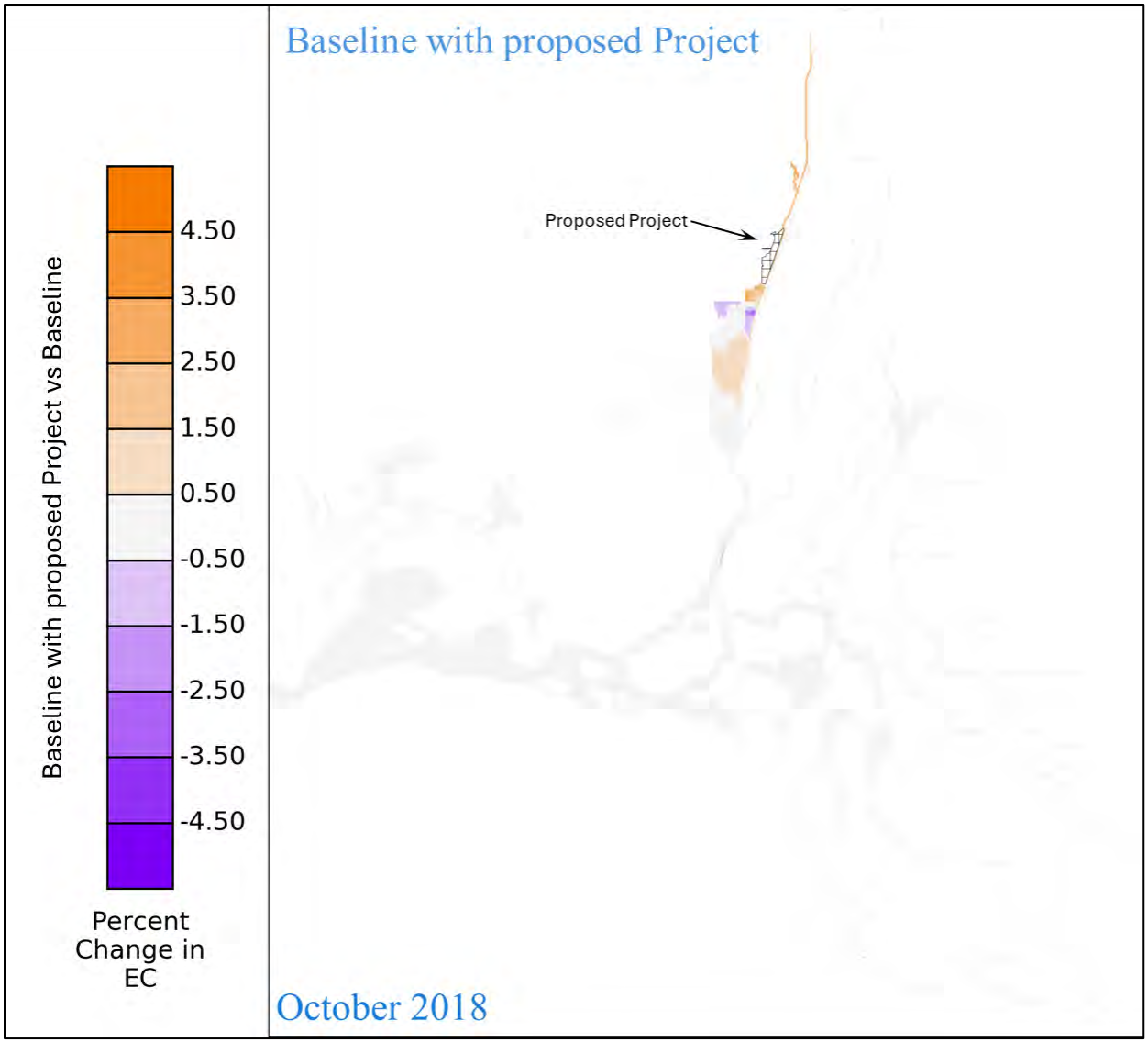

Figure 57 Baseline with proposed Project average percent change from Baseline EC for October 2018.

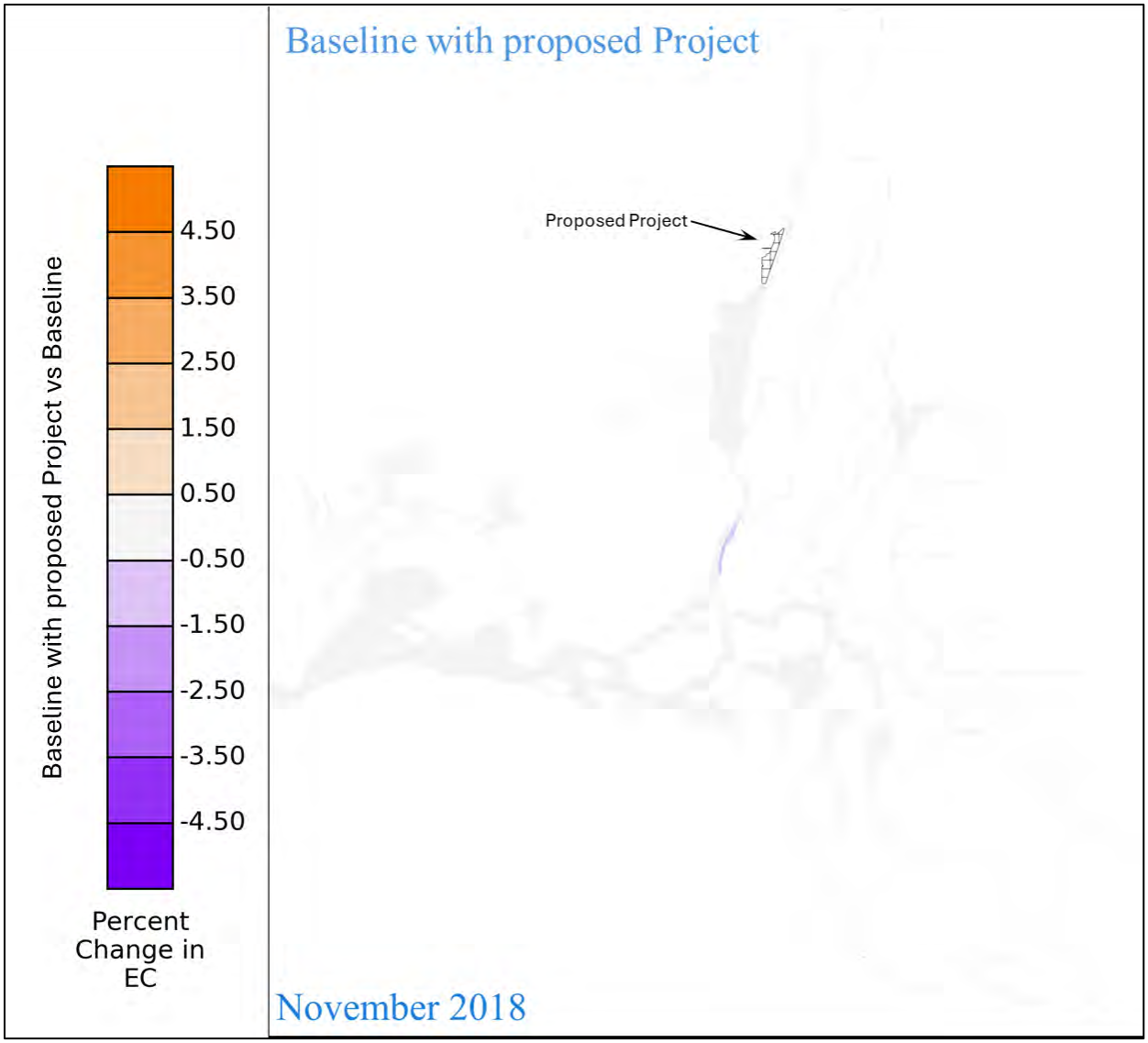

Figure 58 Baseline with proposed Project average percent change from Baseline EC for November 2018.

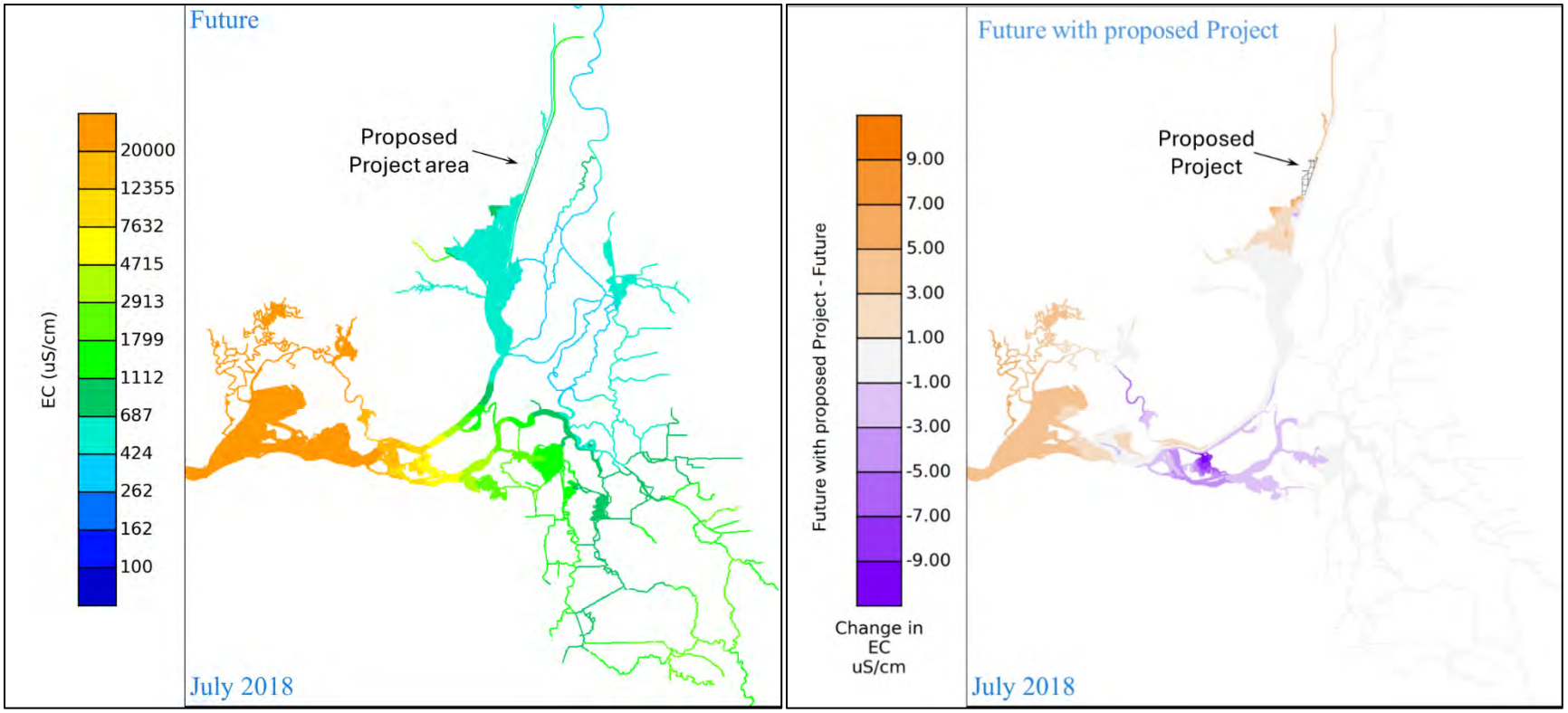

Figure 59 July 2018 (left) average Future condition EC and (right) Future with proposed Project change from Future condition average EC.

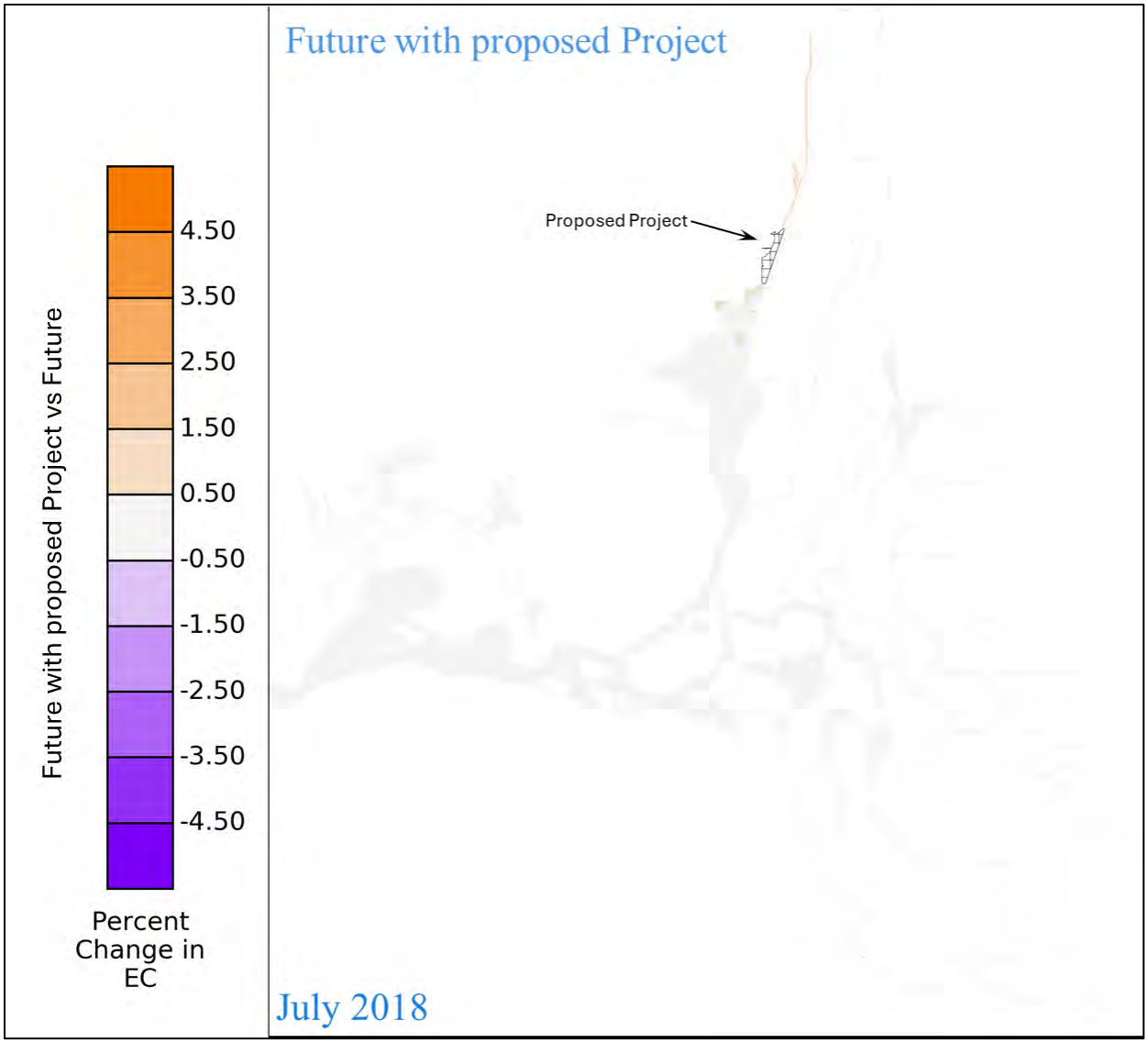

Figure 60 Future with proposed Project average percent change from Future EC for July 2018.

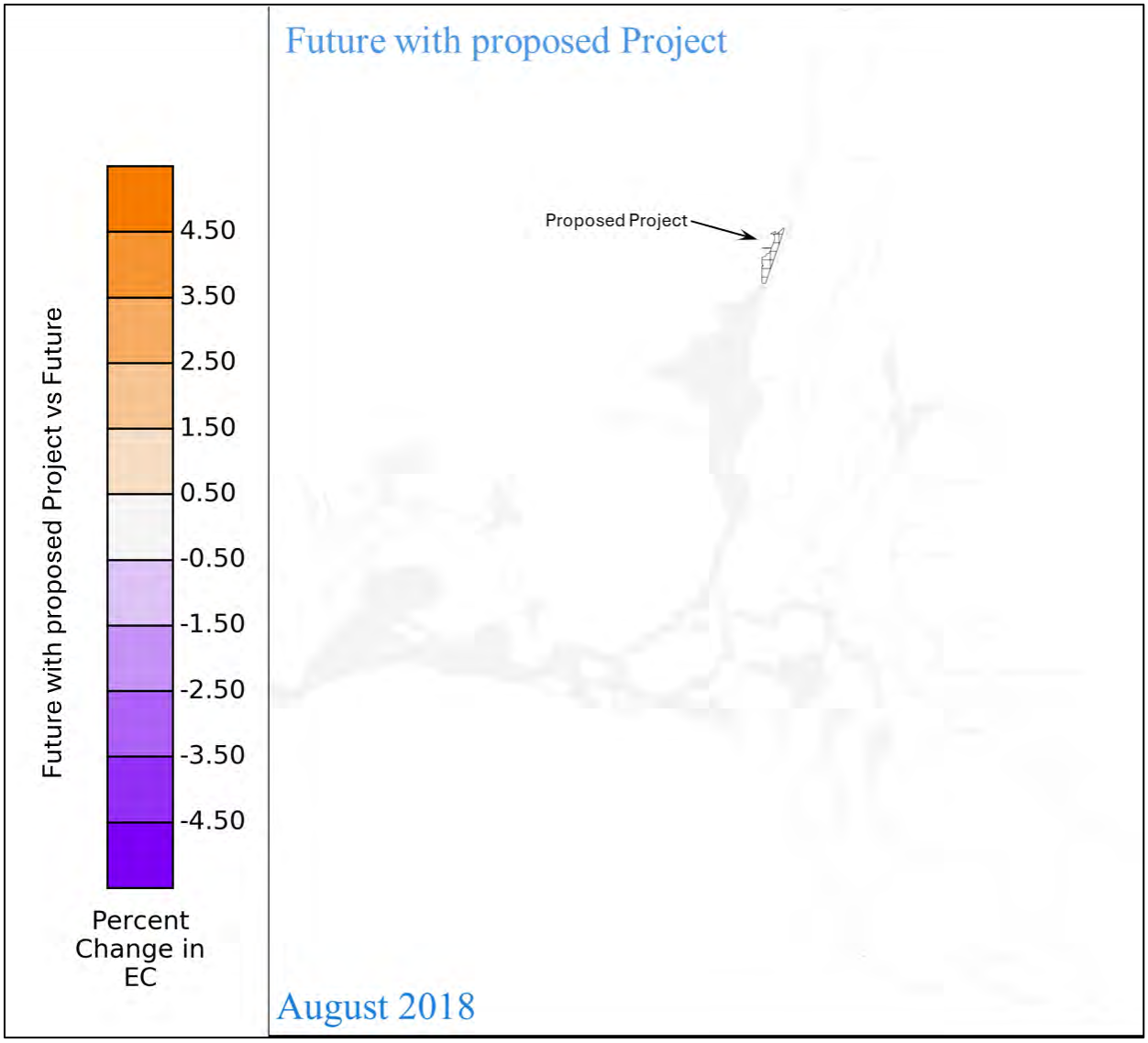

Figure 61 Future with proposed Project average percent change from Future EC for August 2018.

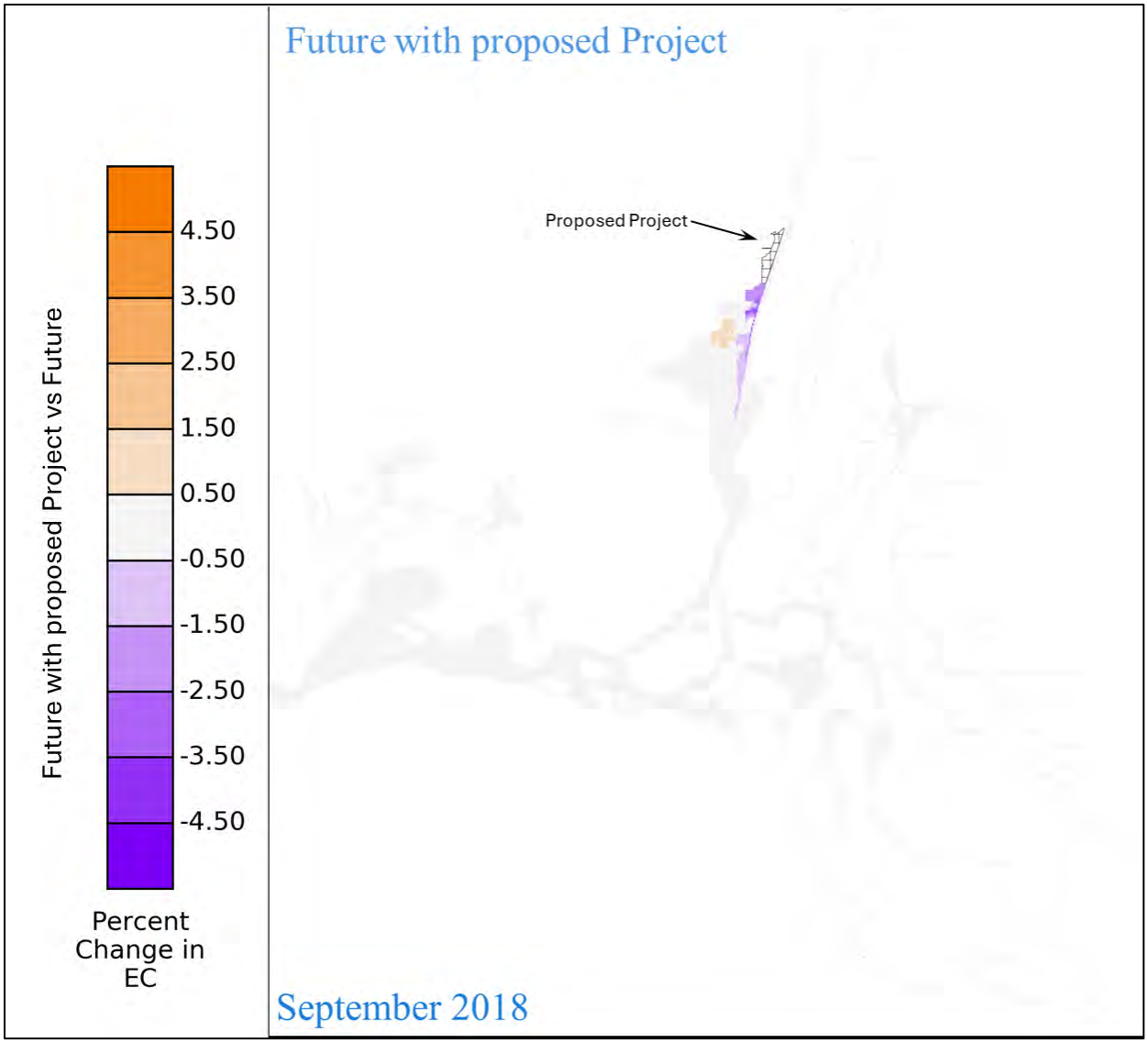

Figure 62 Future with proposed Project average percent change from Future EC for September 2018.

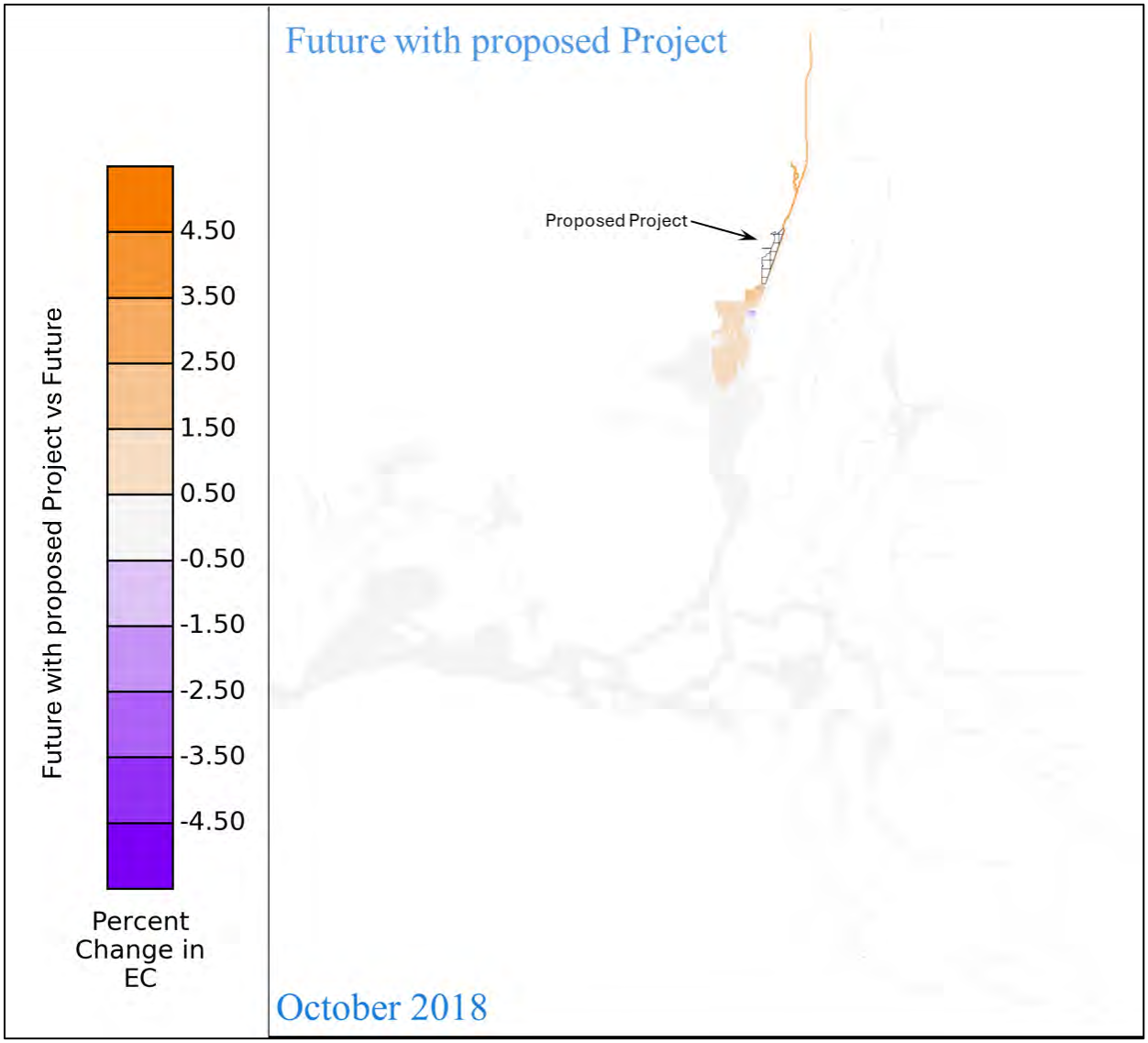

Figure 63 Future with proposed Project average percent change from Future EC for October 2018.

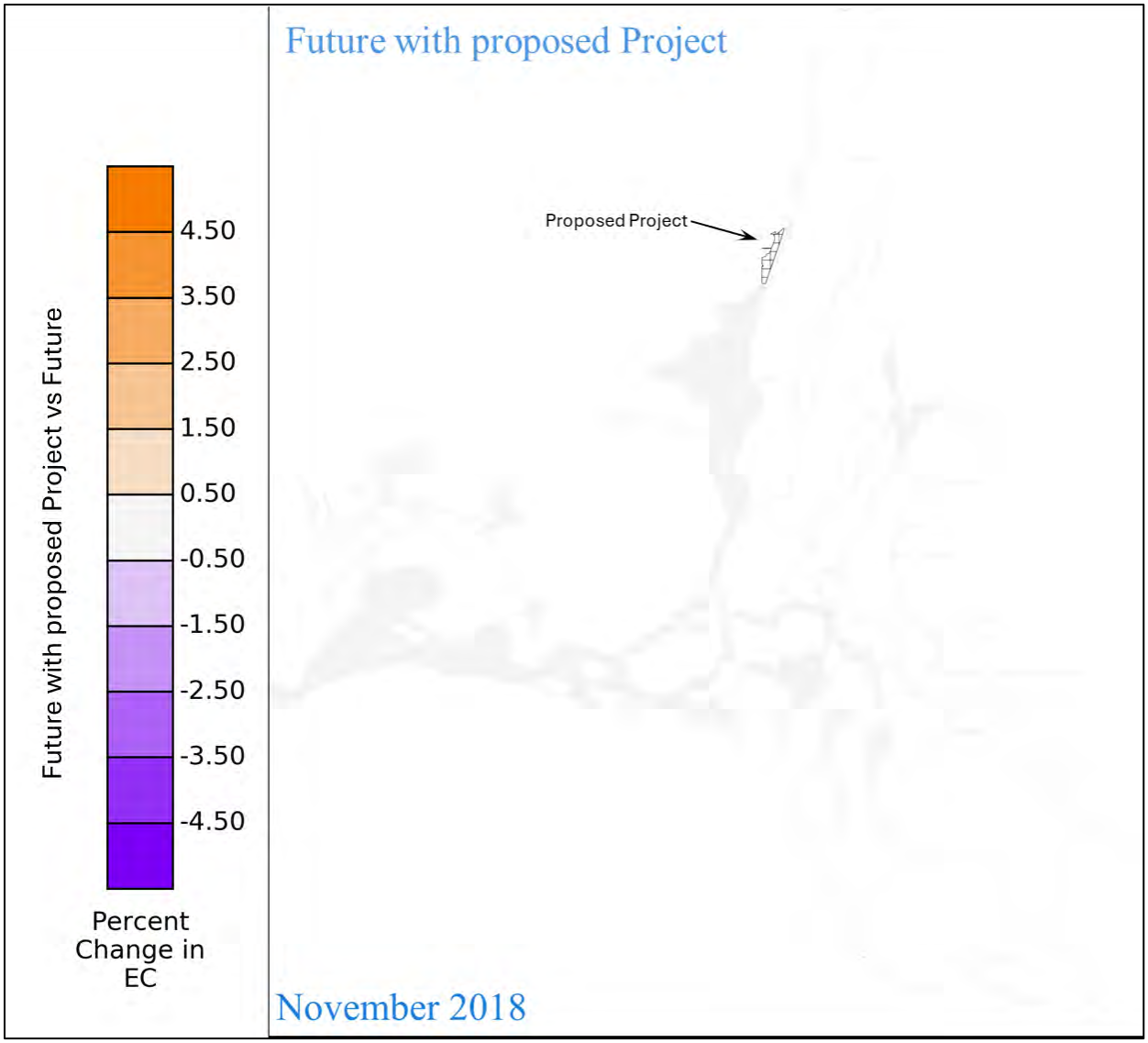

Figure 64 Future with proposed Project average percent change from Future EC for November 2018.

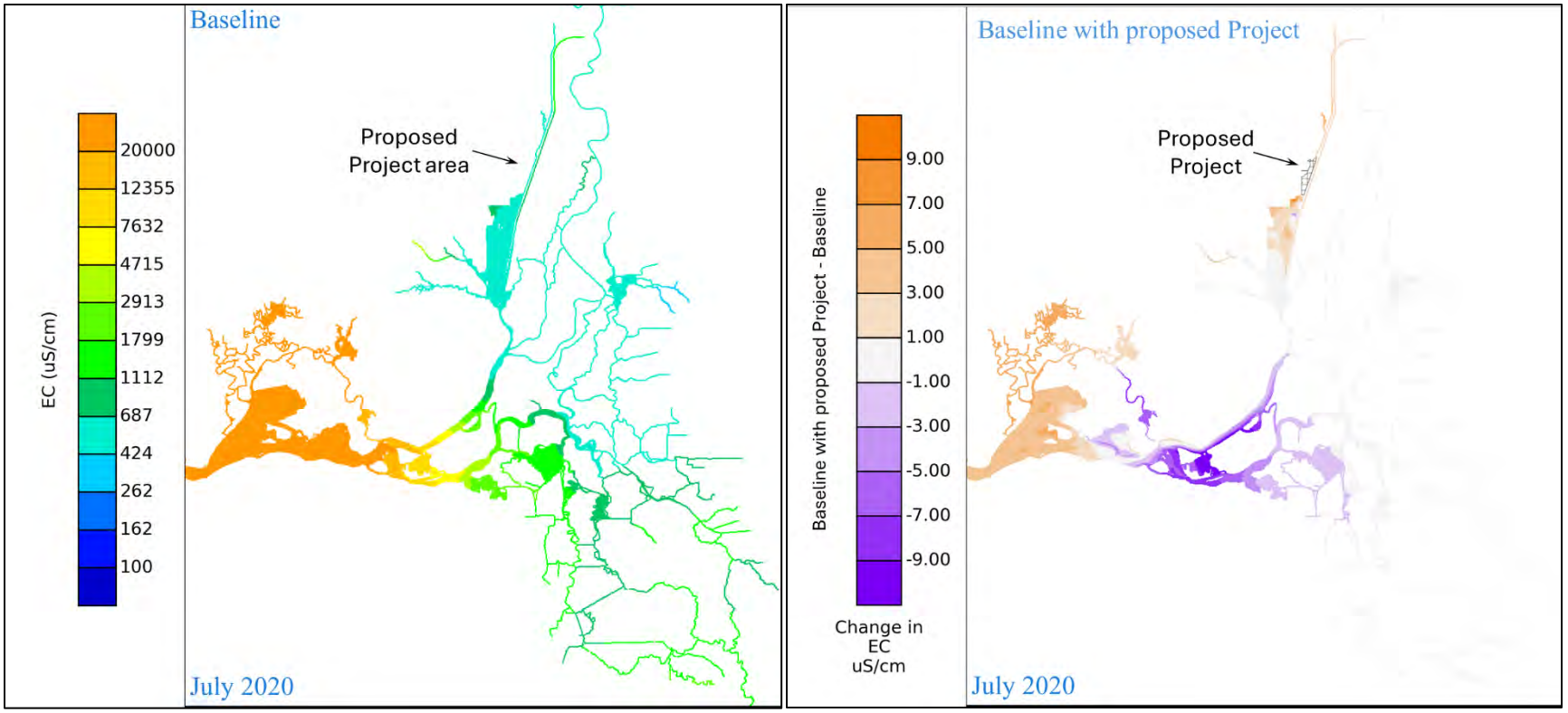

Figure 65 July 2020 (left) average Baseline condition EC and (right) Baseline with proposed Project change from Baseline condition average EC.

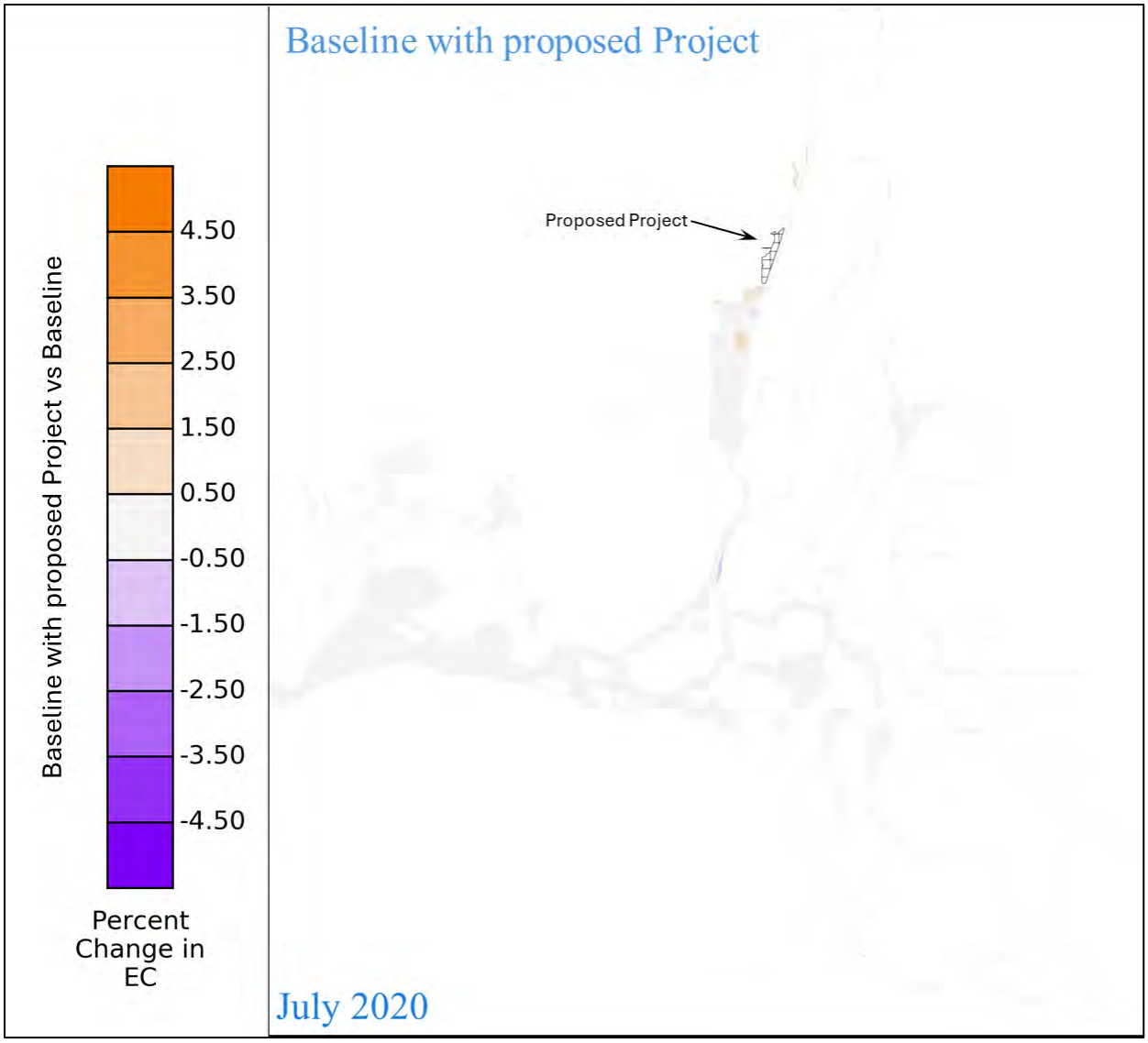

Figure 66 Baseline with proposed Project average percent change from Baseline EC for July 2020.

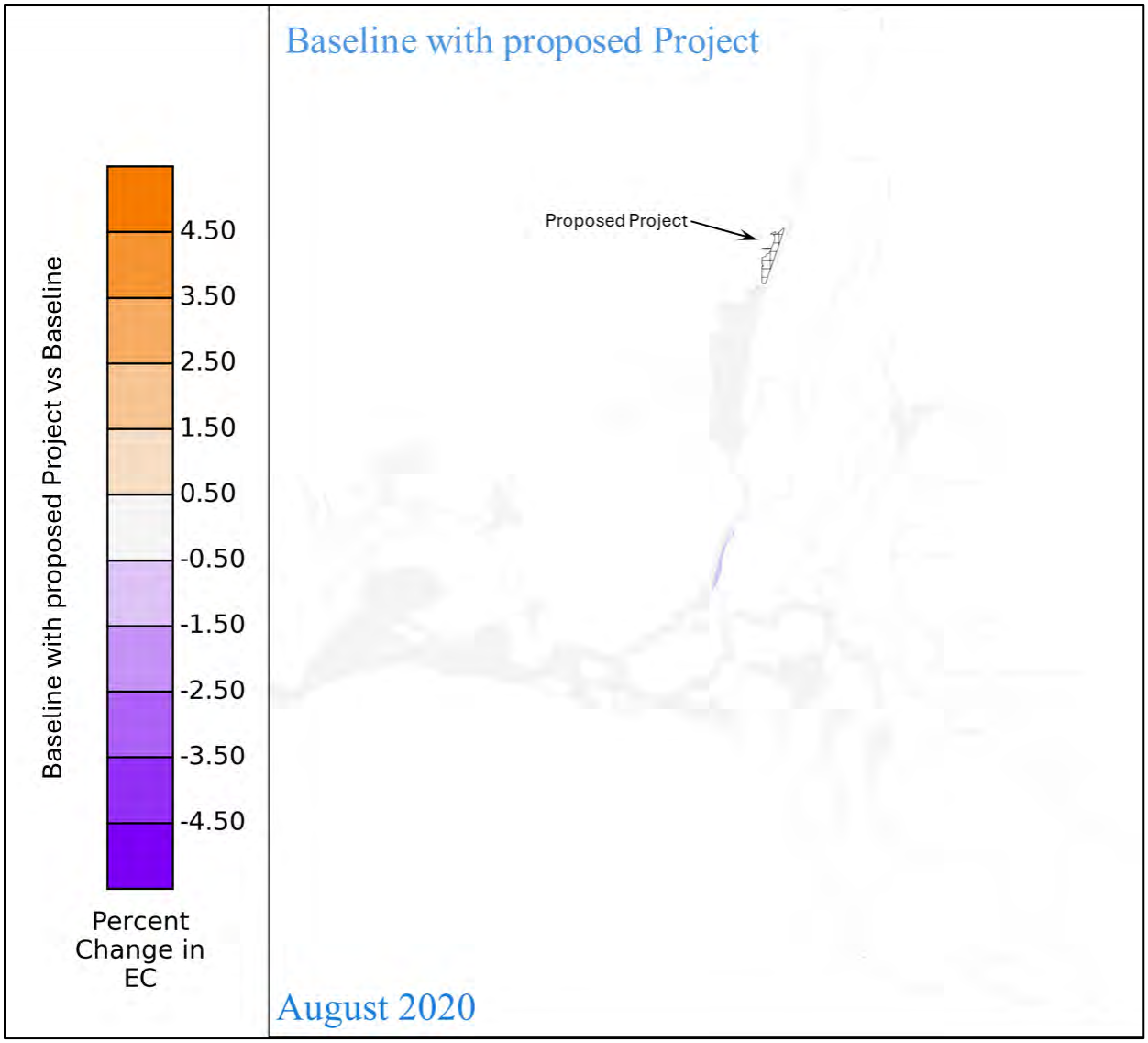

Figure 67 Baseline with proposed Project average percent change from Baseline EC for August 2020.

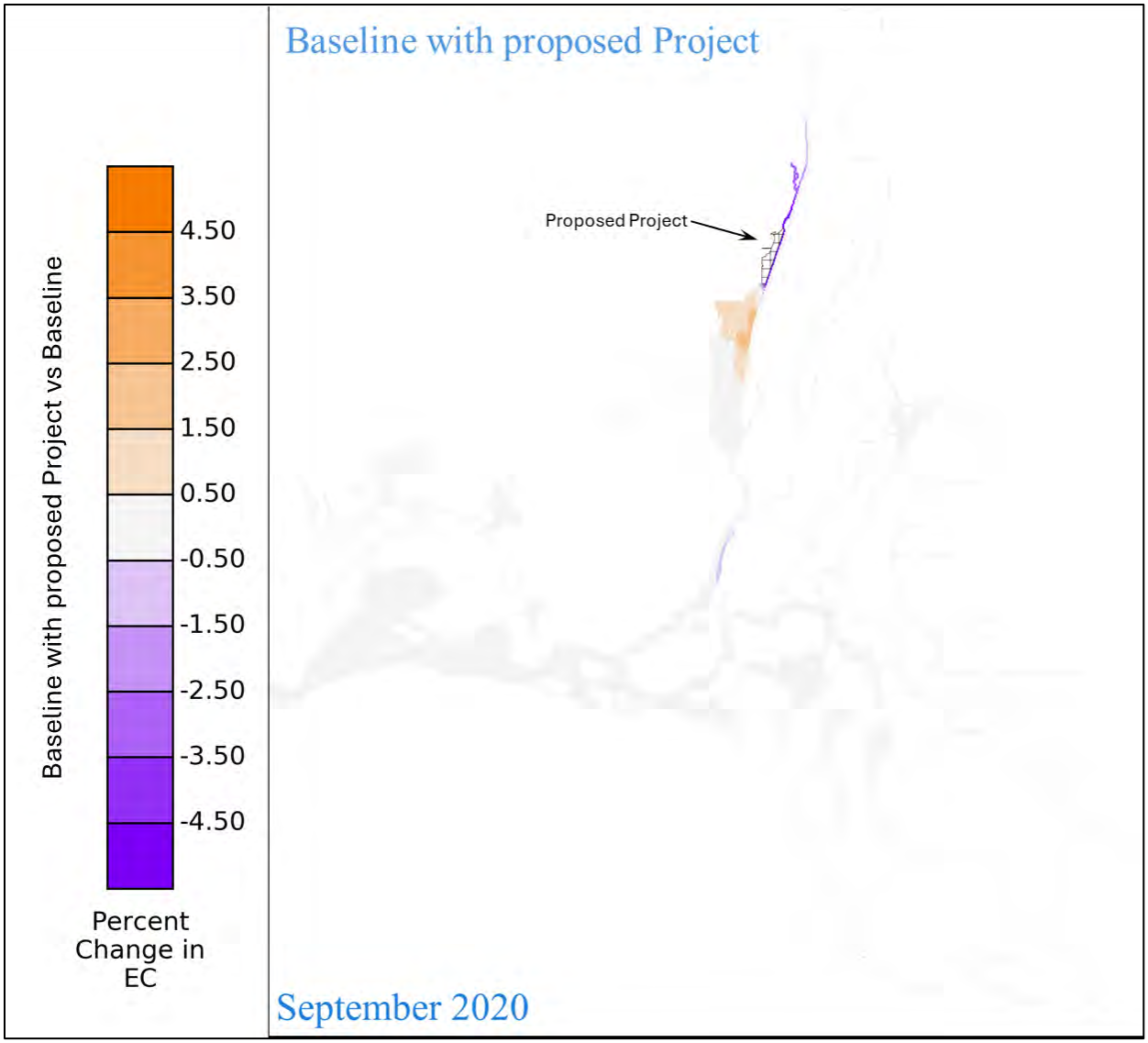

Figure 68 Baseline with proposed Project average percent change from Baseline EC for September 2020.

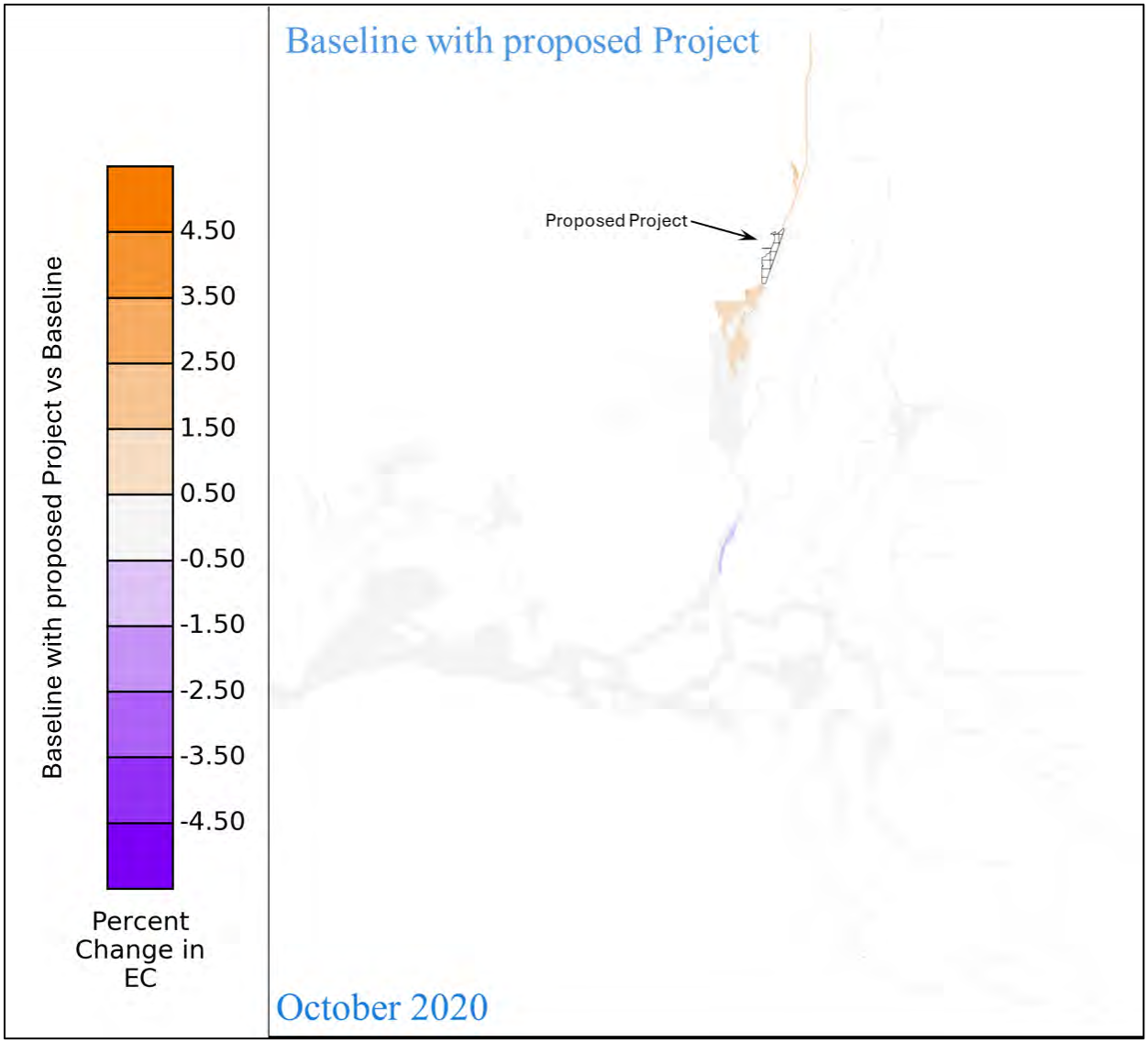

Figure 69 Baseline with proposed Project average percent change from Baseline EC for October 2020.

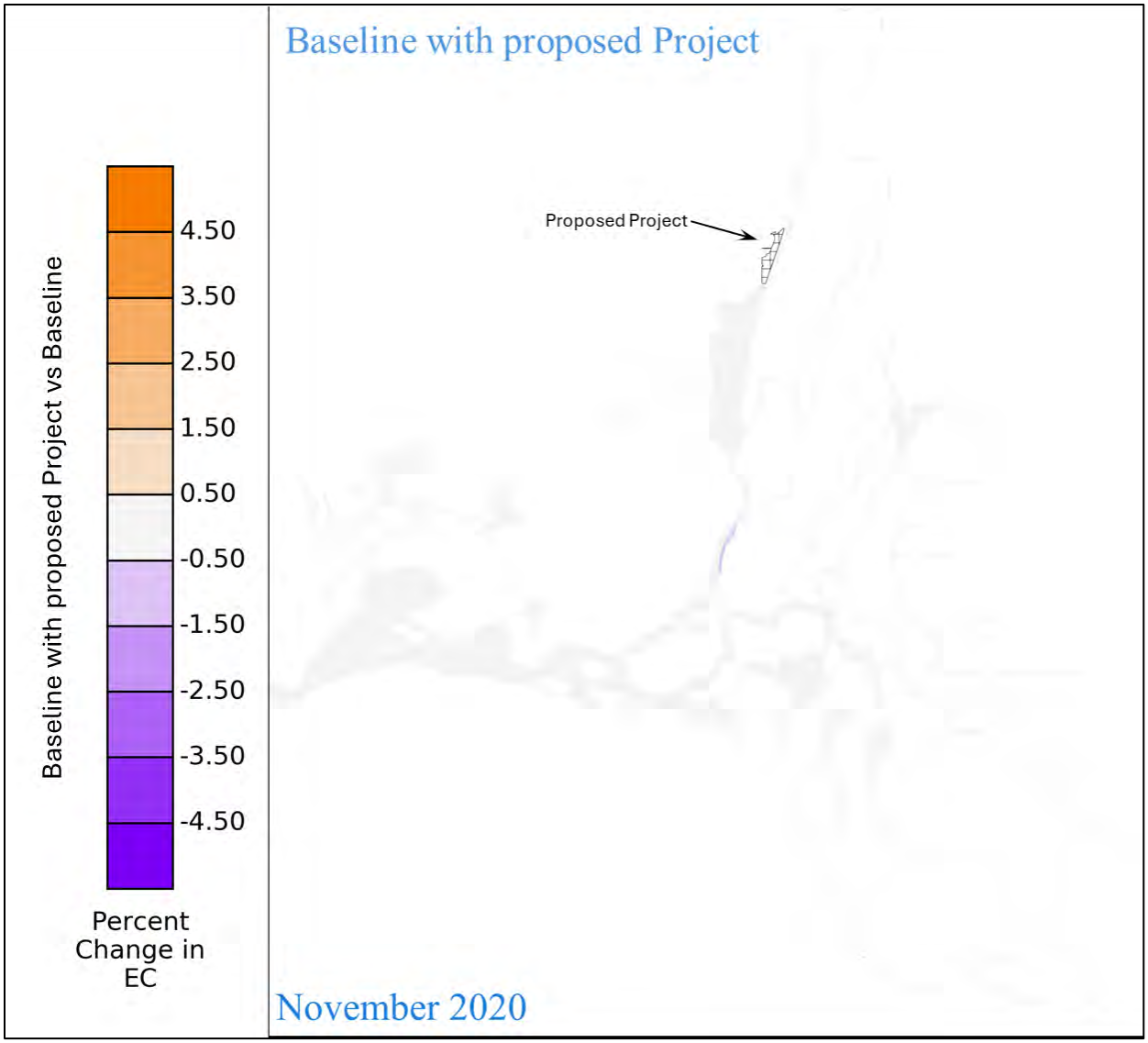

Figure 70 Baseline with proposed Project average percent change from Baseline EC for November 2020.

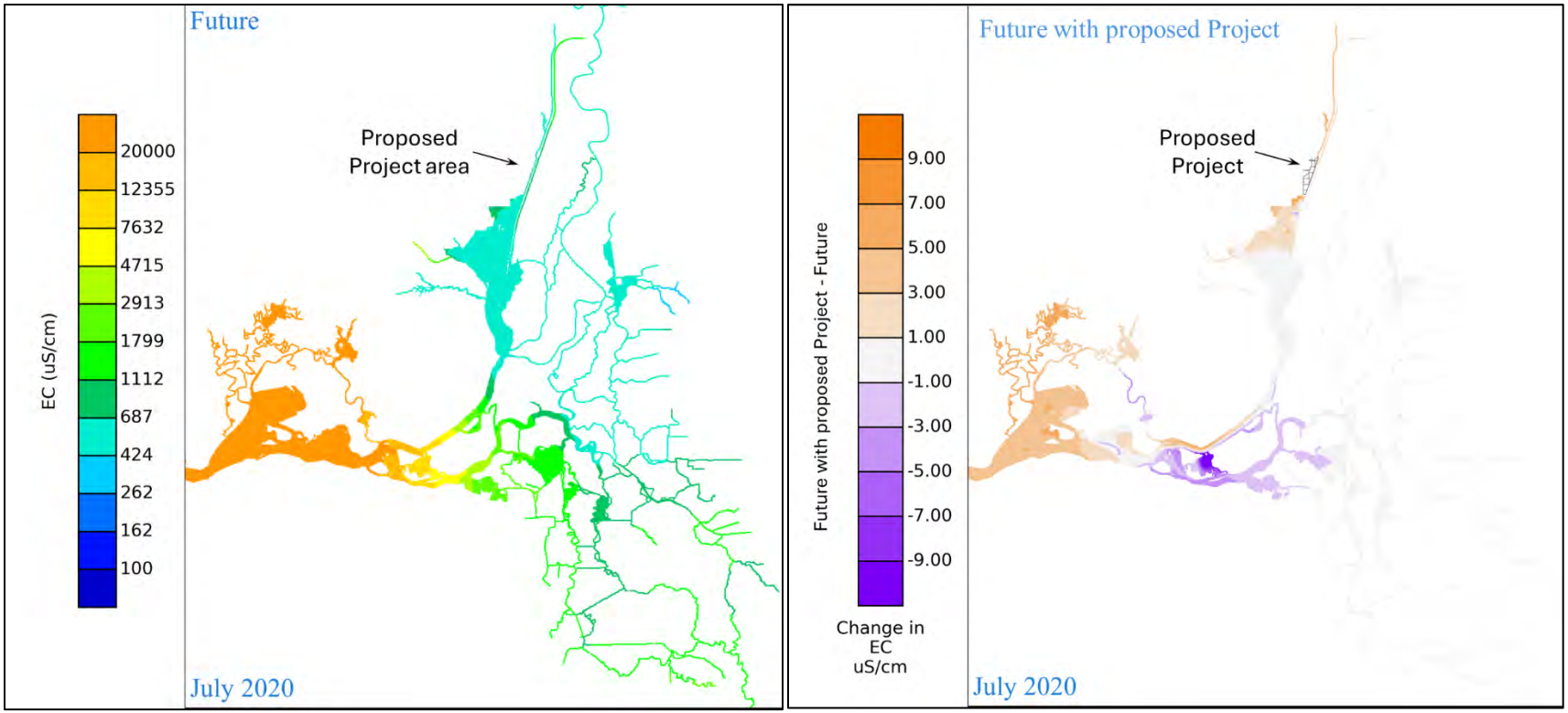

Figure 71 June 2020 (left) average Future condition EC and (right) Future with proposed Project change from Baseline condition average EC.

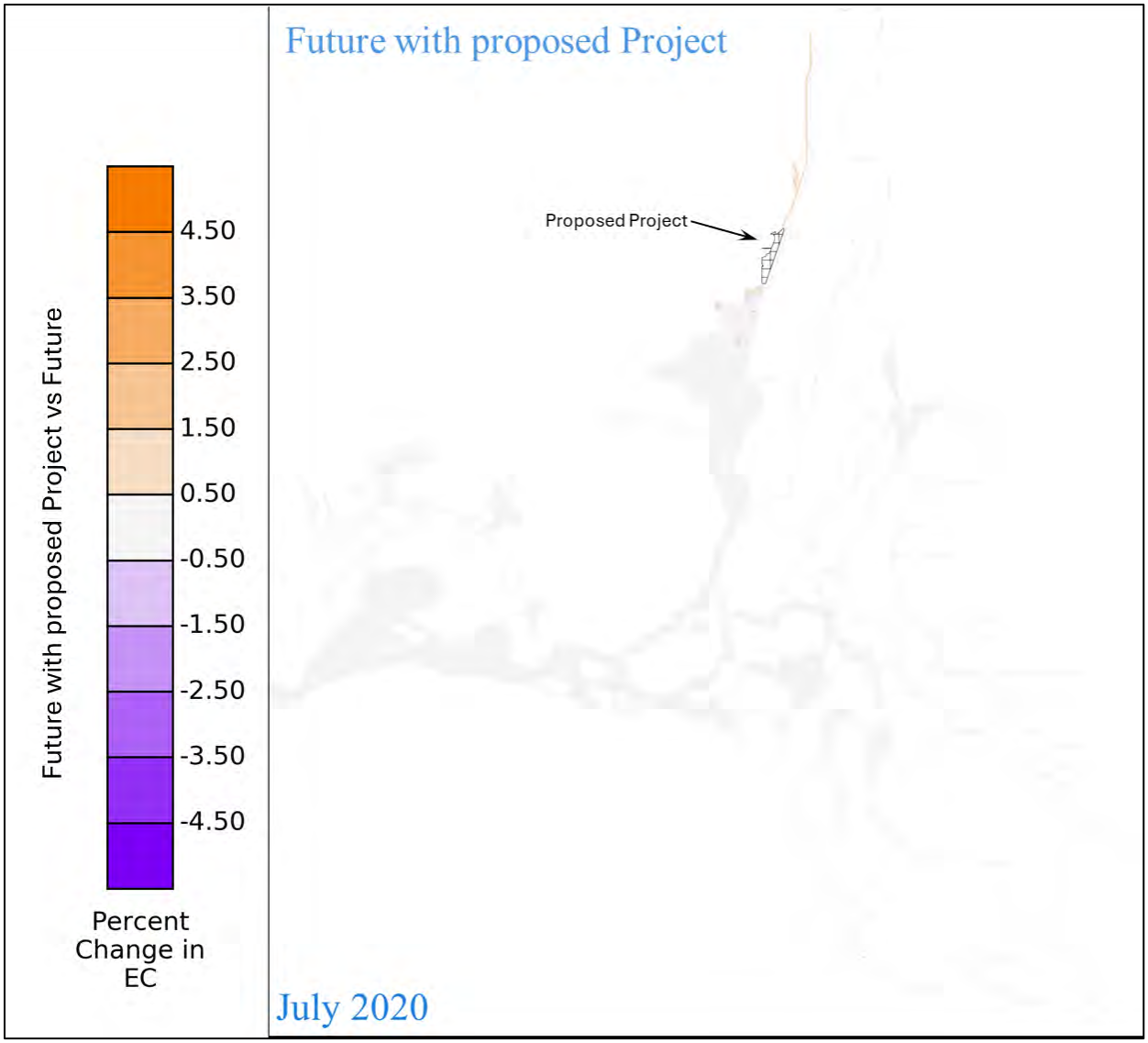

Figure 72 Future with proposed Project average percent change from Future EC for July 2020.

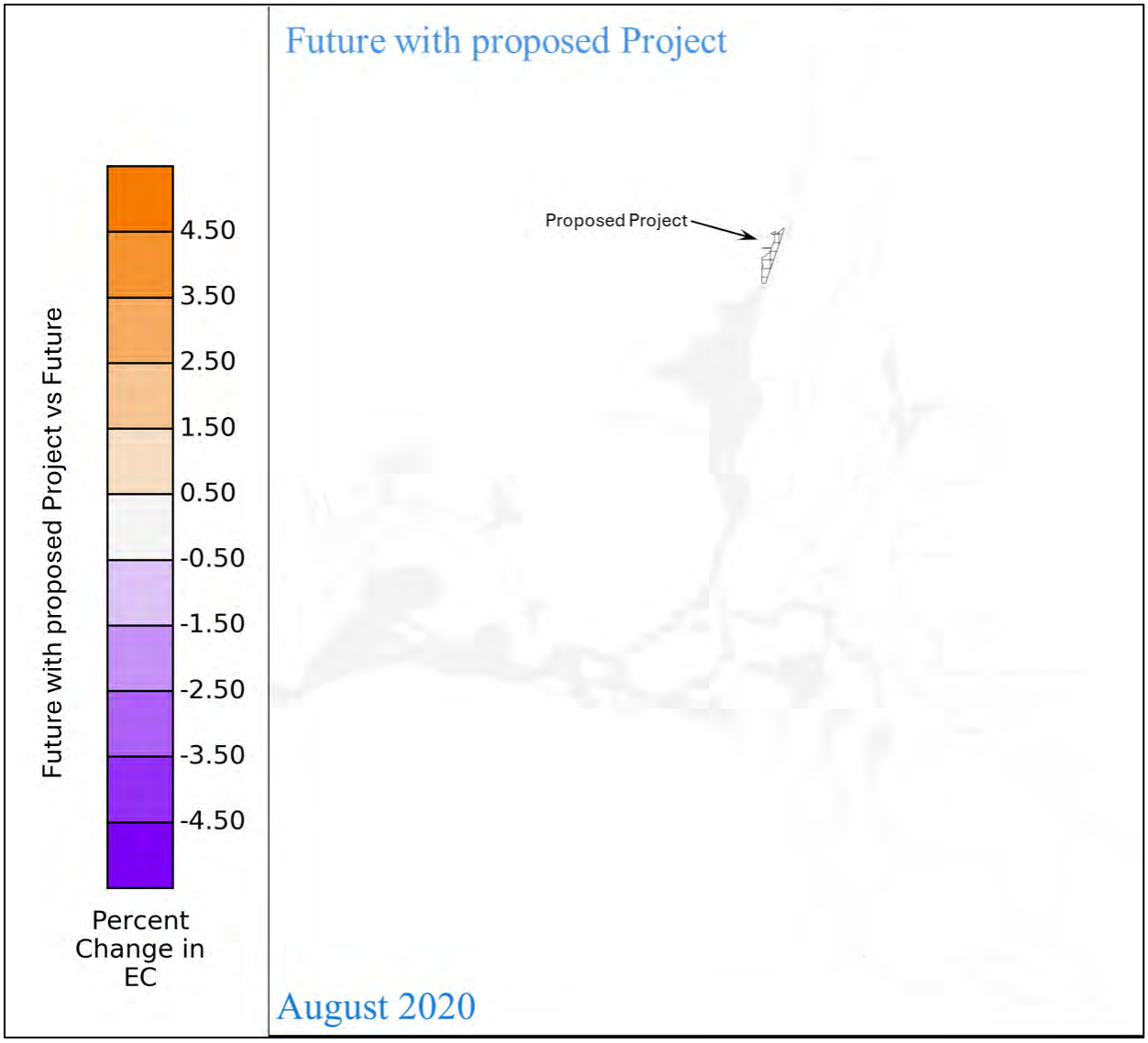

Figure 73 Future with proposed Project average percent change from Future EC for August 2020.

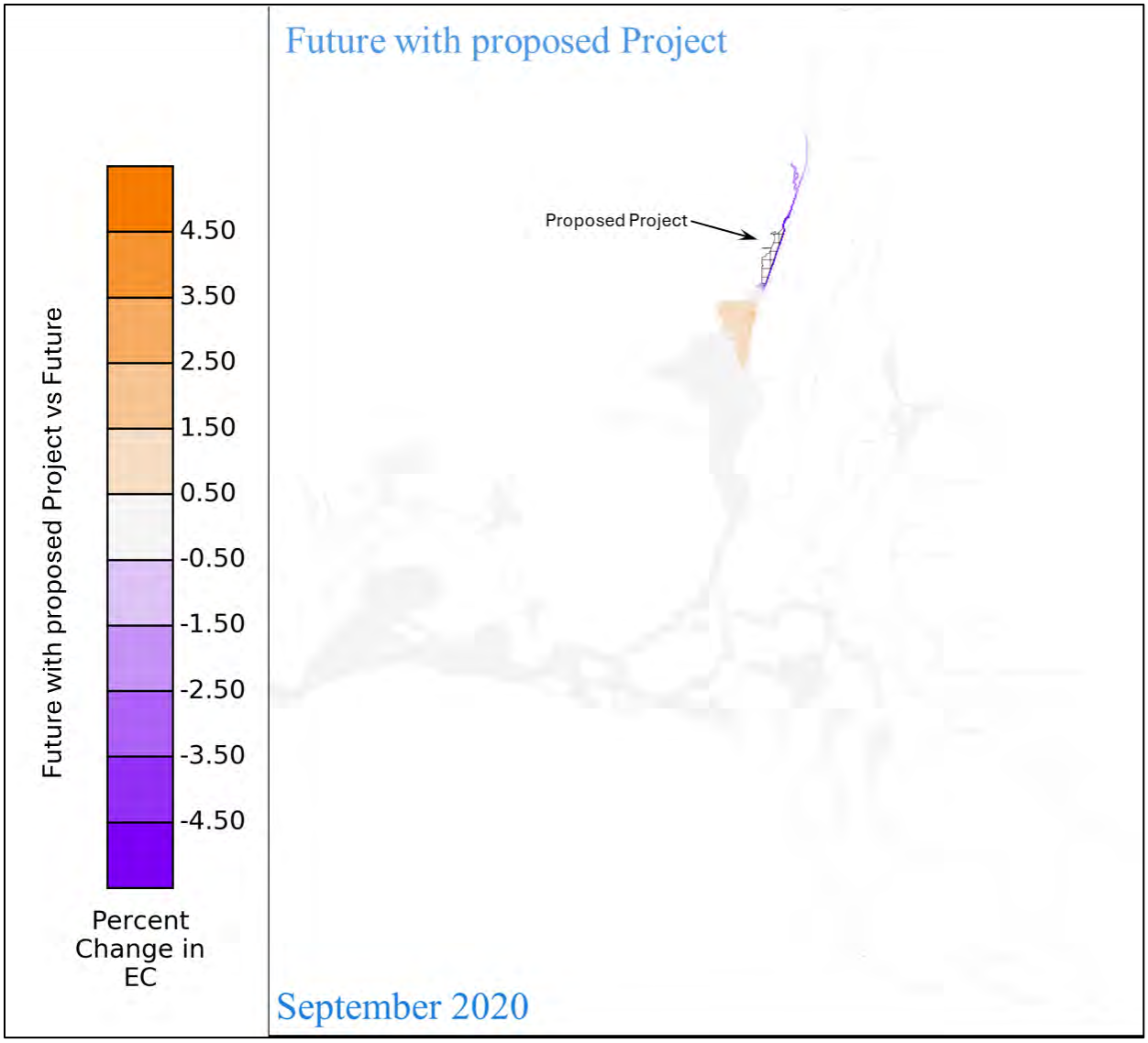

Figure 74 Future with proposed Project average percent change from Future EC for September 2020.

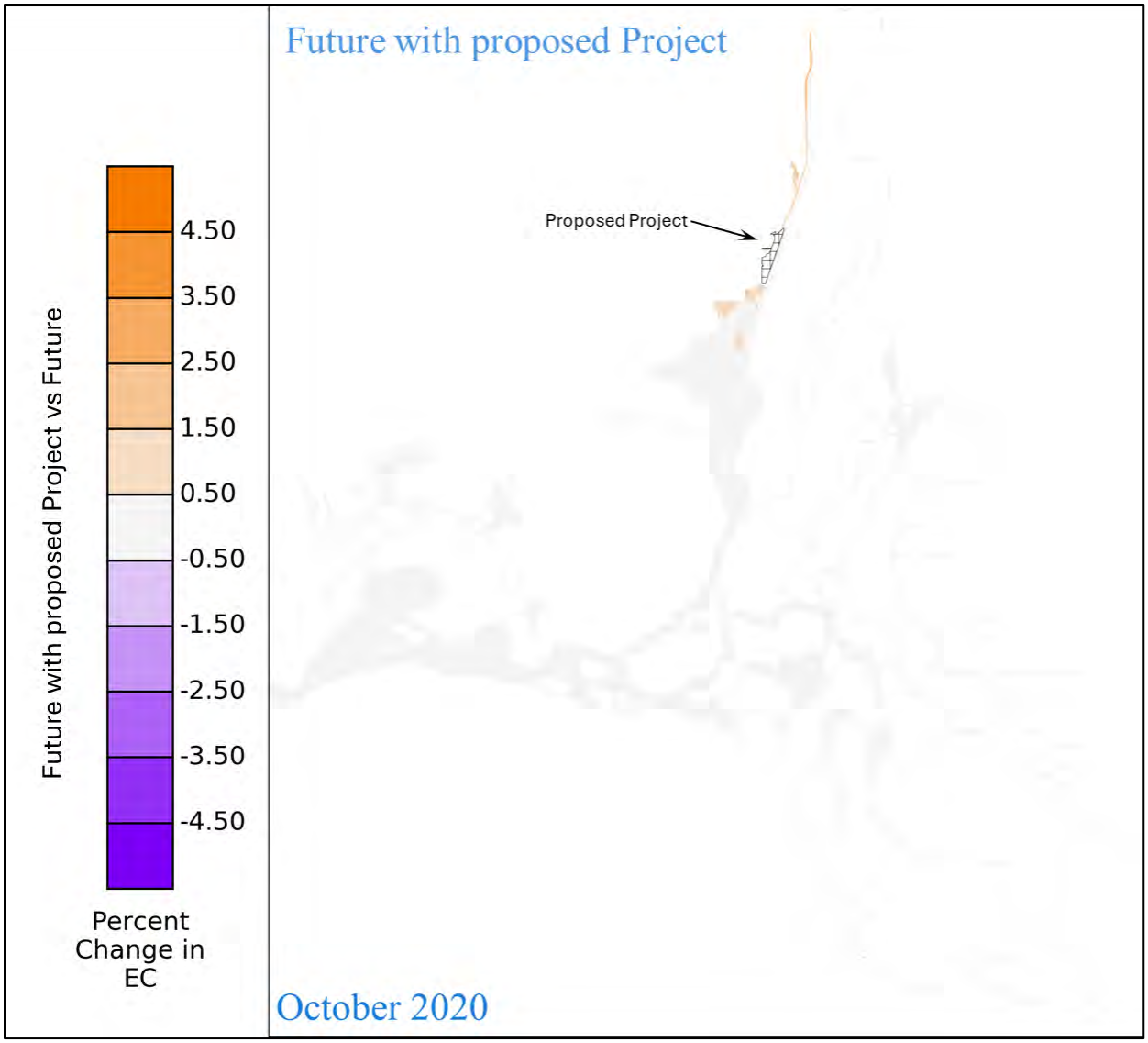

Figure 75 Future with proposed Project average percent change from Future EC for October 2020.

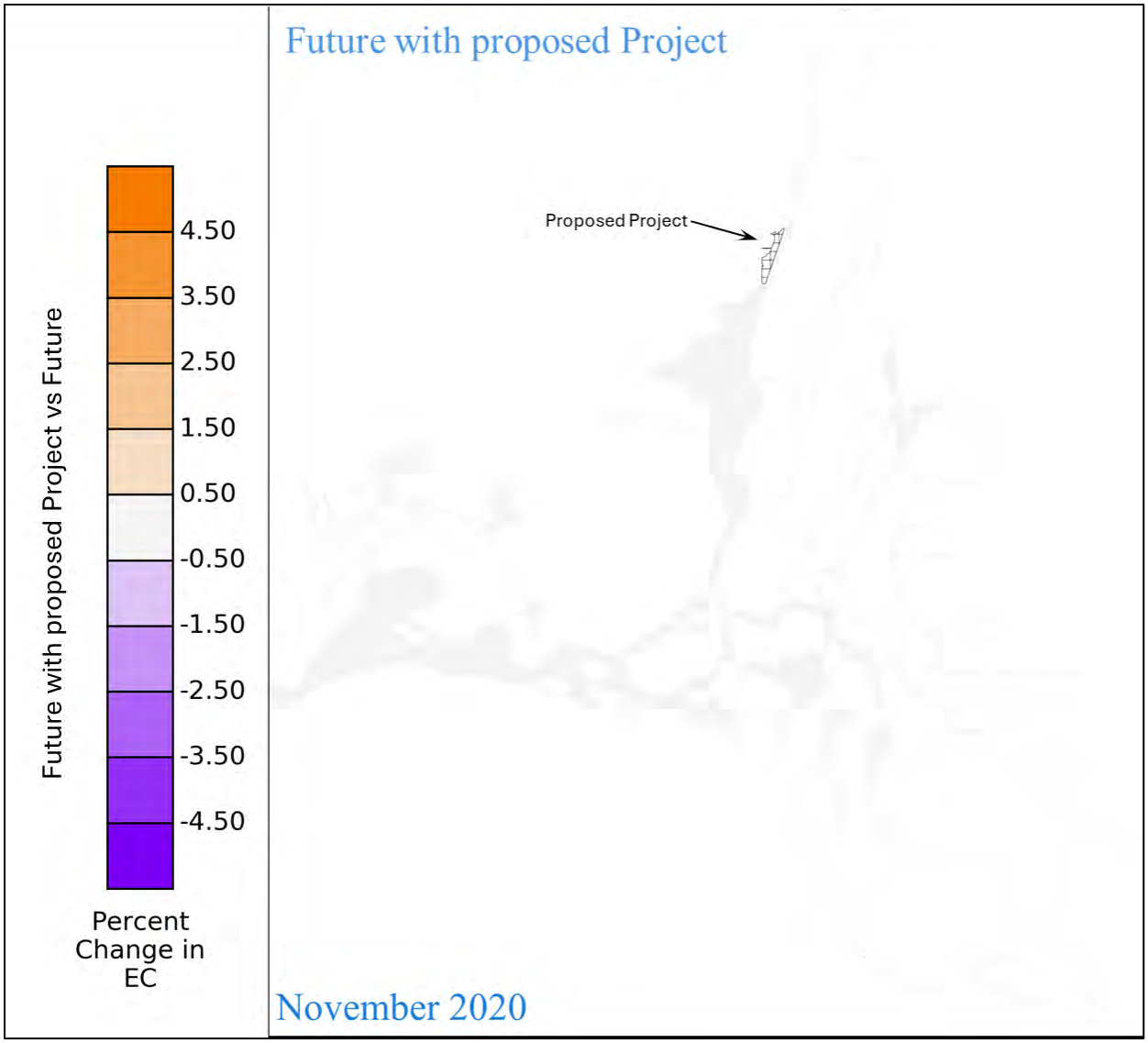

Figure 76 Future with proposed Project average percent change from Future EC for November 2020.

Evaluation of Potential Non-Compliance at Select D-1641 Stations

The second goal of the salinity modeling analysis was to evaluate the potential for the proposed Project to cause non-compliance with the D-1641 water quality objectives. The compliance stations with salinity (EC) water quality objectives for agriculture, and fish and wildlife are listed in Table 6 and chloride objectives for municipal and industrial or water intakes are listed in Table 7. The water quality objectives applied for 2018 are for the "Below Normal" Sacramento Valley hydrologic year type. The water quality objectives used for the 2020 evaluation are for a "Dry" hydrologic year type.

For the D-1641 locations analyzed below, time series plots are provided that include modeled EC results for the Baseline, Baseline with proposed Project, Future and Future with proposed Project scenarios (see Figure 77 through Figure 84).

The model overestimates or underestimates EC at some locations at times during the simulation periods. When comparing the computed EC values to the water quality compliance standards, these discrepancies can be taken into account by including observed data on the plots. Although the simulations are not strictly historical due to recent geometric changes, the observed data still provides a reasonable check of simulated model results.

When larger discrepancies occur, the incremental differences between Baseline/Future and with proposed Project EC should be considered relative to the observed value to determine if compliance standards violations might be expected to occur. However, at all D-1641 locations, the proposed Project did not impact EC values enough to cause any new non-compliance with water quality standards. EC for the Future scenario tends to be higher than the Baseline EC.

Table 6 D-1641 Station Salinity Water Quality Objects – Fish and Wildlife and Agriculture. Standards are presented in mmhos/cm (1 mmho/cm = 1000 µS/cm).

Station	Water Year Type[1]	Fish and Wildlife		Agriculture			
		Value[2]	Time Period	Value[2]	Time Period	Value[2]	Time Period
D22 - Sacramento at Emmaton	Wet	not applicable		0.45	Apr 1 – Aug 15		
	Above Normal			0.45	Apr 1 – Jun 30	0.63	Jul 1 - Aug 15
	Below Normal			0.45	Apr 1 – Jun 19	1.14	Jun 20 - Aug 15
	Dry			0.45	Apr 1 – Jul 14	1.67	Jul 15 - Aug 15
	Critical			2.78	Apr 1 – Aug 15	not applicable	
D15 - San Joaquin at Jersey Point	Wet	0.44	Apr 1 – May 31	0.45	Apr 1 – Aug 15	not applicable	
	Above Normal	0.44	Apr 1 – May 31	0.45	Apr 1 – Aug 15	not applicable	
	Below Normal	0.44	Apr 1 – May 31	0.45	Apr 1 – Jun 19	0.74	Jun 20 - Aug 15
	Dry	0.44	Apr 1 – May 31	0.45	Apr 1 – Jun 14	1.35	Jun 15 - Aug 15
	Critical	not applicable		2.2	Apr 1 – Aug 15	not applicable	
D29 - San Joaquin at Prisoners Point	Wet, Above Normal, Below Normal, Dry	0.44	Apr 1 – May 31	not applicable			
C2 - Collinsville[3]	not applicable	19.0	Oct	not applicable			
		15.5	Nov-Dec				
		12.5	Jan				
		8.0	Feb-Mar				
		11.0	Apr-May				

[1] Sacramento Valley Water Year Hydrologic Classification
[2] Maximum 14-day running average of mean daily EC (mmhos/cm)
[3] Maximum monthly average of both daily high tide EC values (mmhos/cm)

Table 7 D-1641 water quality objectives for water intakes.

Compliance Location	Station Number	Criteria Description	Water Year type	Value
Contra Costa Canal at Pumping Plant 1 or San Joaquin River at Antioch	C5 or D12	Maximum mean daily Chloride of 150 mg/L for required number of days	Wet Abv Norm. Blw Norm. Dry Critical	# of days*[12] each calendar year ≤ 150 mg/L Cl 240 190 175 165 155
Contra Costa Canal at Pumping Plant 1 -and- West Canal at Clifton Court -and- DMC at Tracy PP -and- Barker Slough NBA intake -and- City of Vallejo Cache Slough intake	C5 C9 DMC1 SLBAR3 C19	Maximum mean daily Chloride	All	250 mg/L

[12] # of days must be met in intervals not less than two weeks

Agriculture, Fish and Wildlife Compliance Stations

Compliance for Sacramento River at Emmaton (D22), San Joaquin River at Jersey Point (D15) and San Joaquin River at Prisoners Point (D29) is determined from the 14-day running average of mean daily EC. The compliance period begins on April 1 and ends August 15 for the Sacramento River at Emmaton (D22) and San Joaquin River at Jersey Point (D15) stations, and ends May 31 for the San Joaquin River at Prisoners Point (D29) station. Collinsville (C2) compliance is based on the maximum monthly EC value of the daily average of the two high tides. The compliance periods are January through May and October through December. Specific details are provided in Table 6.

For the analyses below, model results are plotted with compliance standards and historical observed data. The observed data are included for comparison with check model results, although it is important to note that the model geometries include recently constructed tidal marsh restoration sites and therefore do not reflect the historical 2018 and 2020 conditions.

Sacramento River at Emmaton (D22)

No potential compliance issues for the Sacramento River at Emmaton (D22) are expected during the periods analyzed (2018 and 2020). The 14-day average observed, Baseline, Baseline with proposed Project, Future and Future with proposed Project results are compared in Figure 77 for 2018 and Figure 78 for 2020. While Baseline and Future EC values rise above the compliance limits briefly during both simulation periods, comparison with observed data indicate that this is likely due to model overestimation of EC. There are no incremental EC increases resulting from the proposed Project at this location.

San Joaquin River at Jersey Point (D15)

The D-1641 compliance period for the San Joaquin River at Jersey Point location extends from April 1 to August 15. Figure 79 shows that the model predicts non-compliance for Baseline, Baseline with proposed Project, Future and Future with proposed Project results from mid-July through August 15, 2018, however a comparison with observed data shows that the model overpredicts EC during this time. There are no incremental EC increases resulting from the proposed Project at this location. During 2020, shown in Figure 80, no compliance standard violation is predicted.

San Joaquin River at Prisoners Point (D29)

Maximum computed 14-day average San Joaquin River at Prisoners Point EC results for Baseline, Baseline with proposed Project, Future and Future with proposed Project are plotted in Figure 81 and Figure 82 for the 2018 and 2020 simulation periods. There are no incremental EC increases resulting from the proposed Project at this location and all results fall well below the compliance standard.

Sacramento River at Collinsville (C2)

At Collinsville, EC compliance is based on the maximum monthly EC value of the daily average of the two high tides. These values are plotted for observed CDEC EC, Baseline, Baseline with proposed Project, Future and Future with proposed Project EC in Figure 83 for 2018 and Figure 84 for 2020, along with the EC compliance standard. There are no incremental EC increases resulting from the proposed Project at this location and all computed EC values are below the standard during the compliance periods with the exception of November 2020. Comparison with observed data indicate that the November is 2020 standard violation is apparently due to model overestimation of EC. There are no incremental EC increases resulting from the proposed Project at this location. In November 2018, the observed data violates the standard. The model appears to underpredict EC during the fall of 2018 and it is assumed that all scenarios would also be non-compliant in November 2018, however the proposed Project would not exacerbate any non-compliance.

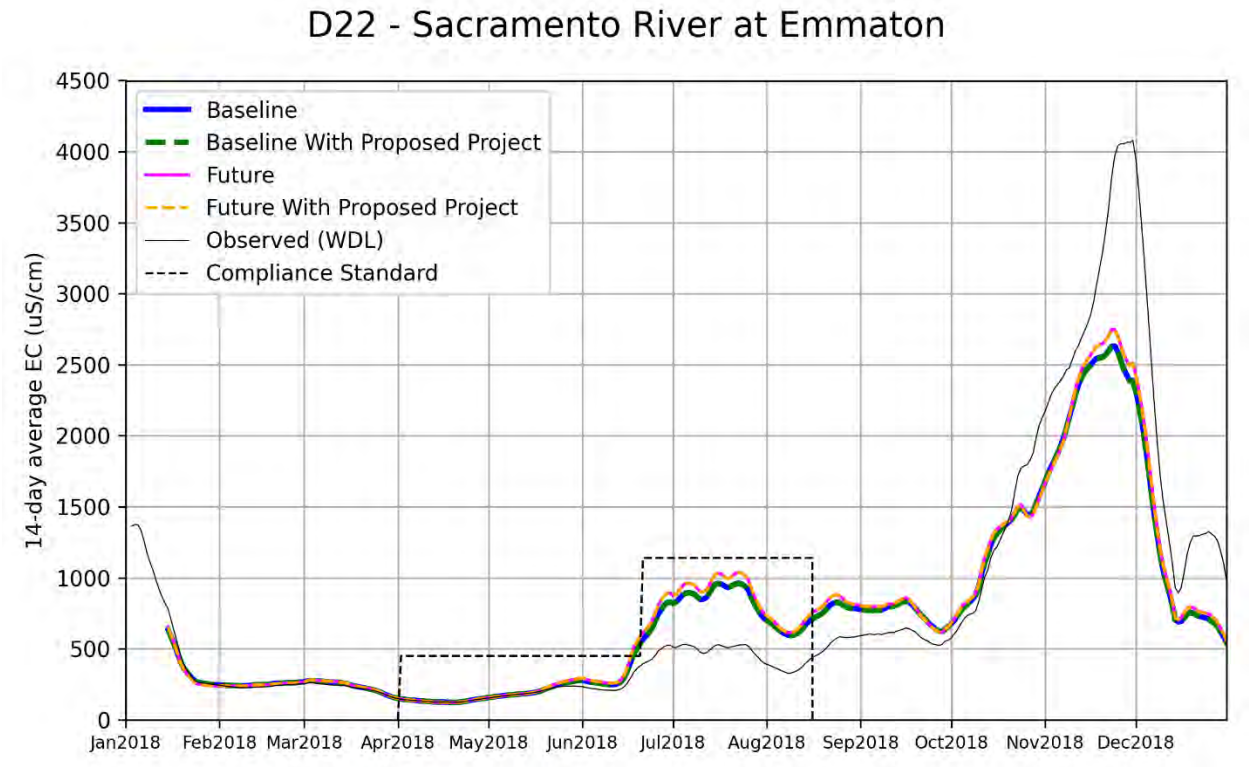

Figure 77 14-Day running average EC for the Sacramento River at Emmaton (D22). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Sacramento River at Emmaton EC for the 2018 simulation period.

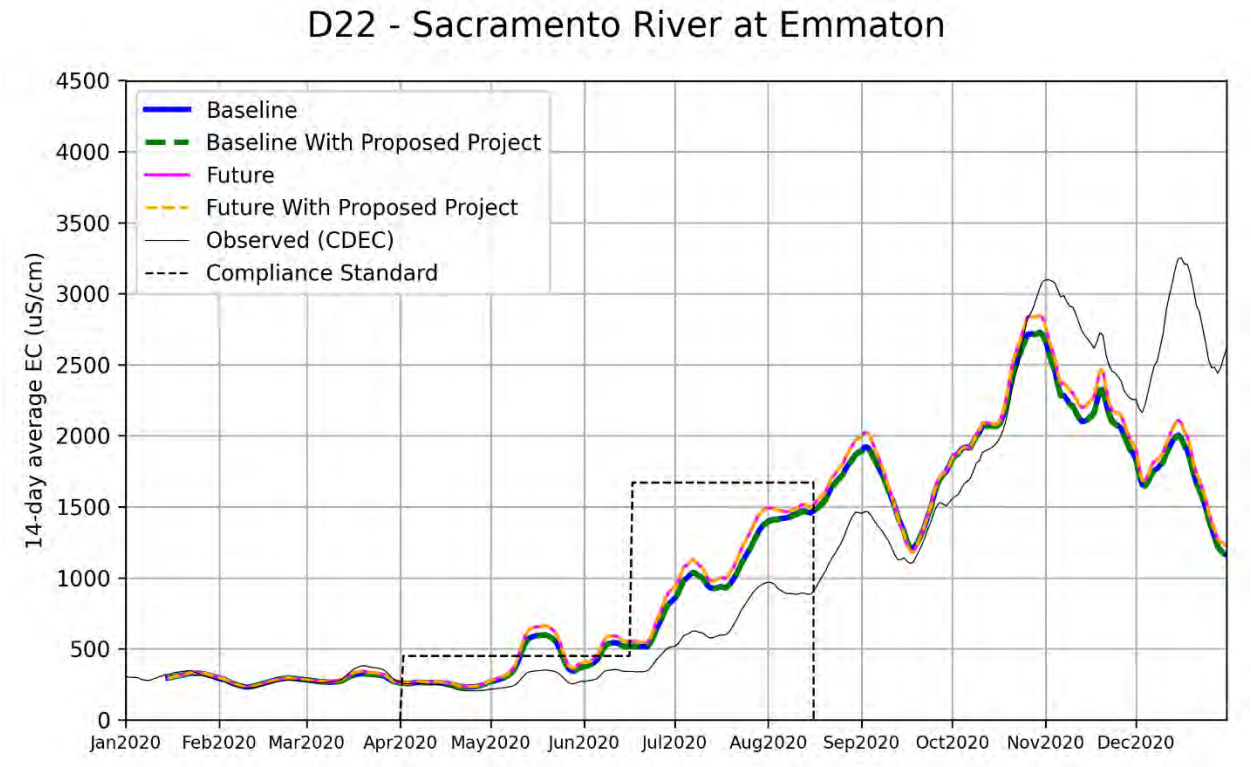

Figure 78 14-Day running average EC for the Sacramento River at Emmaton (D22). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Sacramento River at Emmaton EC for the 2020 simulation period.

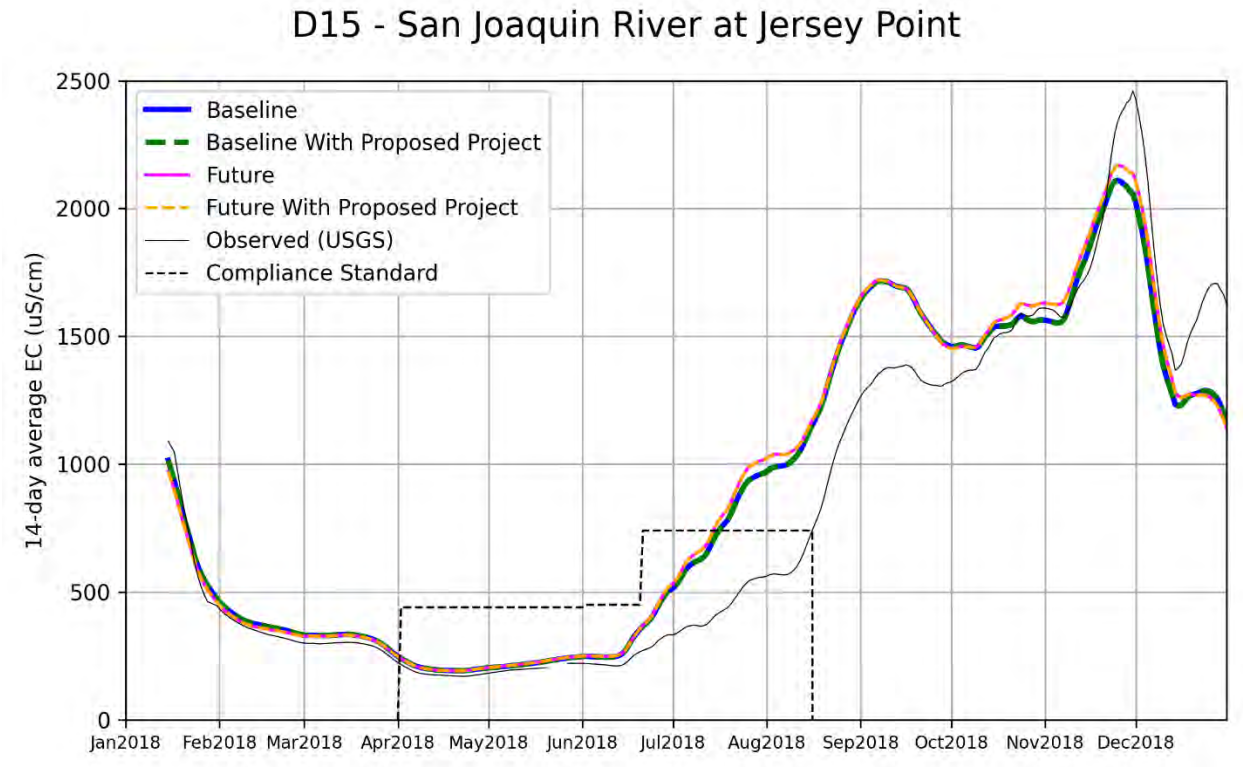

Figure 79 14-Day running average EC for the San Joaquin River at Jersey Point (D15). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Jersey Point EC for the 2018 simulation period.

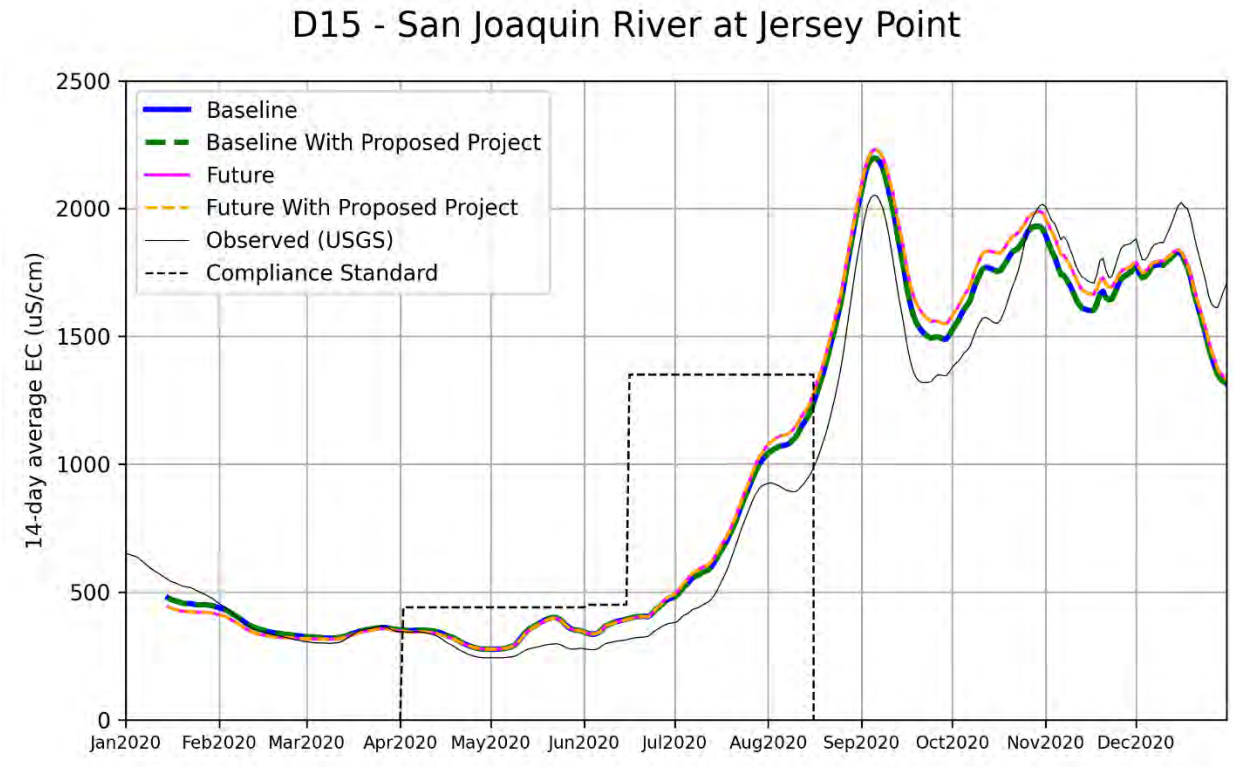

Figure 80 14-Day running average EC for the San Joaquin River at Jersey Point (D15). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Jersey Point EC for the 2020 simulation period.

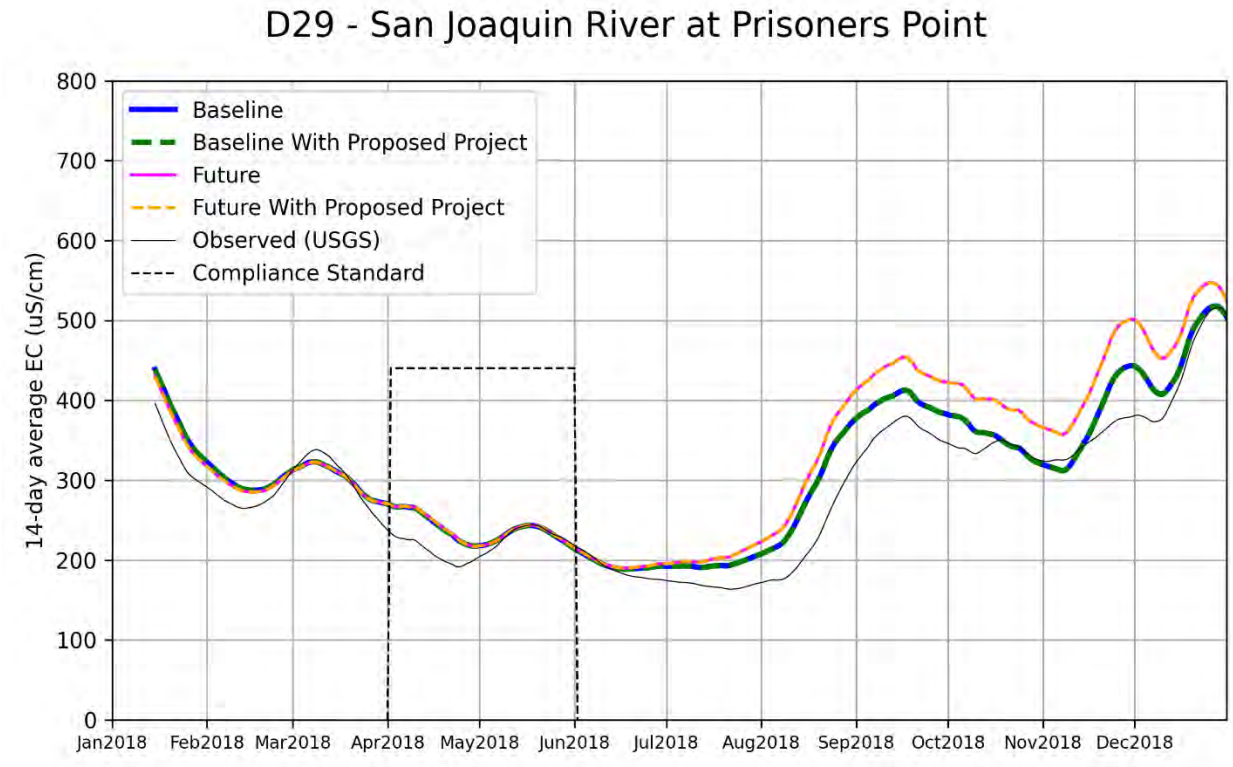

Figure 81 14-Day running average EC for the San Joaquin River at Prisoners Point (D29). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Prisoners Point EC for the 2018 simulation period.

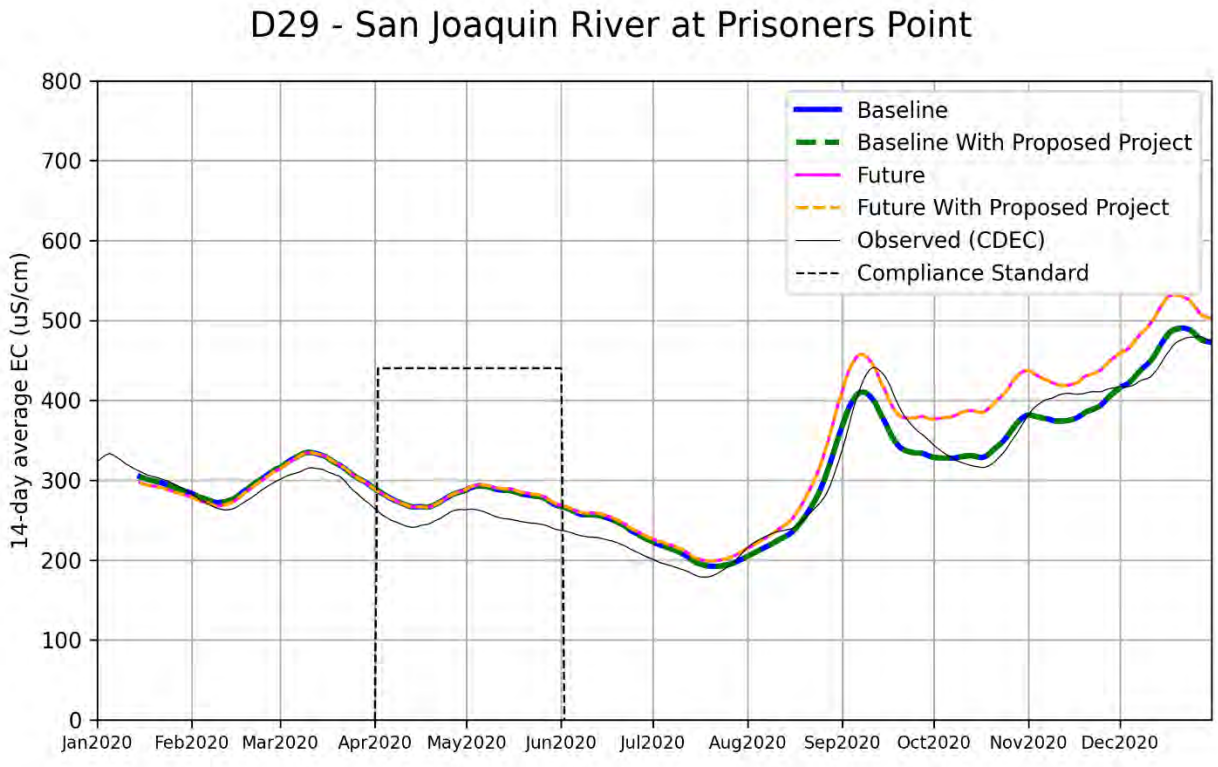

Figure 82 14-Day running average EC for the San Joaquin River at Prisoners Point (D29). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Prisoners Point EC for the 2020 simulation period.

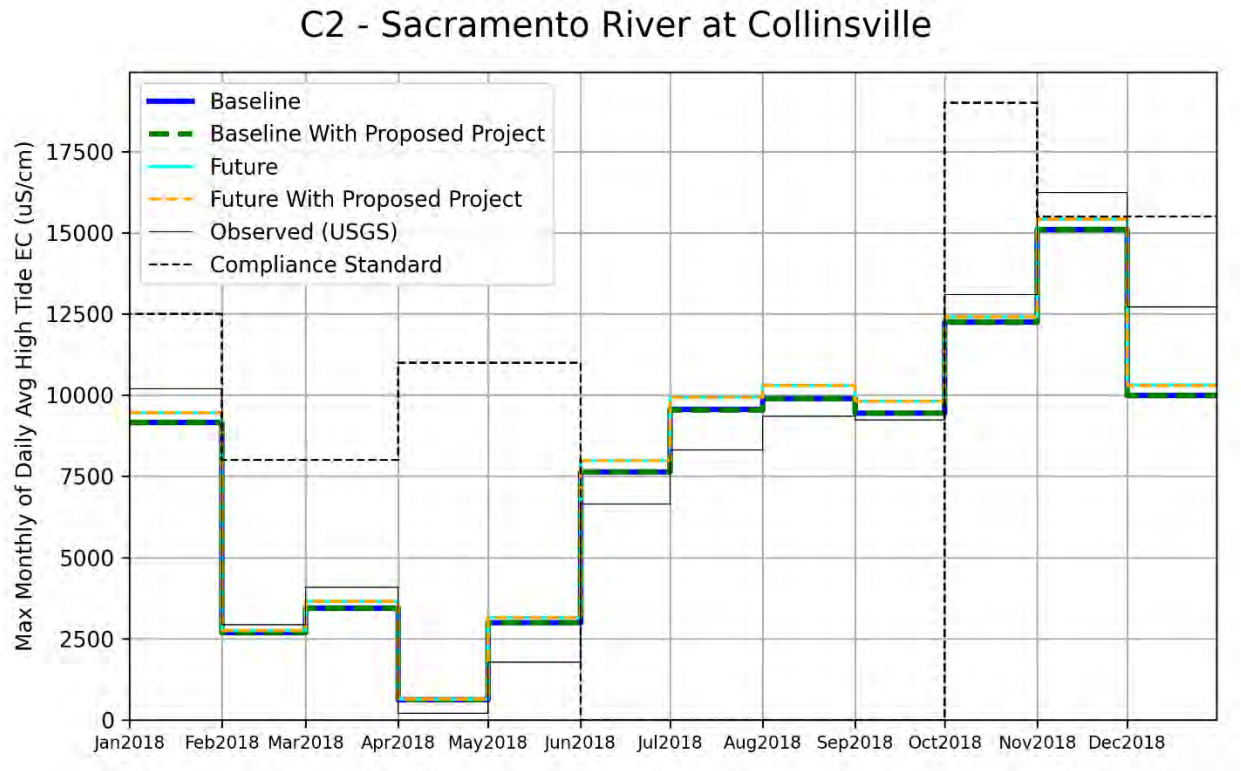

Figure 83 Max monthly of daily average of high tide EC for the Sacramento River at Collinsville (C2). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Collinsville EC for the 2018 simulation period.

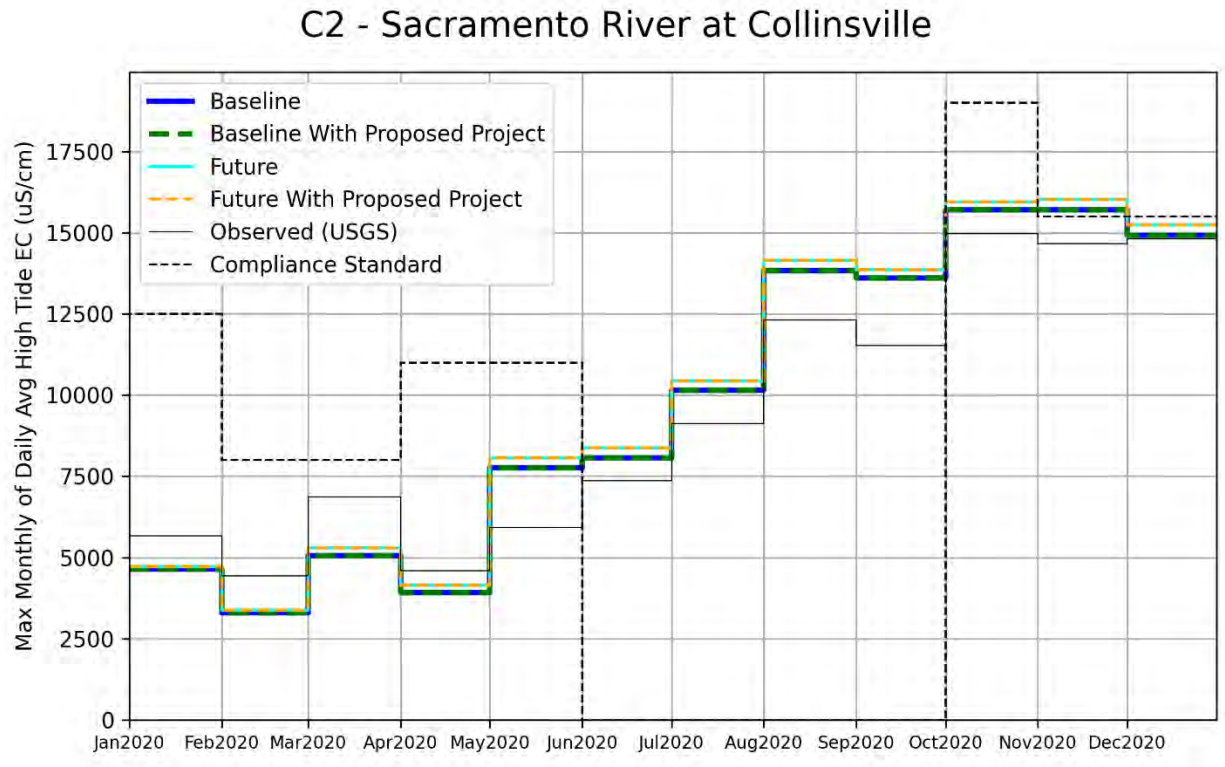

Figure 84 Max monthly of daily average of high tide EC for the Sacramento River at Collinsville (C2). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Collinsville EC for the 2020 simulation period.

Water intakes

Modeled EC and Martinez volumetric source fraction results were post-processed to estimate chloride concentrations to assess D-1641 compliance at the water intakes. Chloride criteria are summarized in Table 7. All water intakes subject to chloride criteria must maintain maximum daily chloride levels below 250 mg/L. An additional criteria requires that either the San Joaquin River at Antioch or Contra Costa Canal at Pumping Plant 1 maintain chloride below 150 mg/L for a certain number of days (number of days varies by year type). No violations of these chloride objectives occurred at any of the intakes under any of the modeled configurations or time periods. Although the San Joaquin River at Antioch does not meet the criteria for number of days below a threshold for any of the scenarios, Contra Costa Canal at Pumping Plant 1 does. Relative to the Baseline and Future conditions, the proposed Project had no impact on maximum mean daily chloride values or number of days below 150 mg/L.

Table 8 Chloride results at D-1641 water intakes for 2018.

Intake Location	Baseline	Baseline with proposed Project	Future	Future with proposed Project
	# days < 150 mg/L (175 days req'd at C5 or D12)			
C5–Contra Costa Canal at PP 1*	218	218	216	216
-or-				
D12–SJR at Antioch*	92	92	119	119
	Max mean daily chloride, mg/L (req'd < 250 mg/L)			
C5–Contra Costa Canal at PP 1	211	211	231	231
CCWD intake at Old River	176	176	194	194
CCWD intake at Victoria Canal	149	149	147	147
C9–West Canal at Clifton Ct	153	153	164	164
DMC1–DMC Canal at Tracy PP	156	156	160	160
SLBAR3–Barker Slough NBA intake	93	93	93	93
C19–City of Vallejo Cache Slough intake	112	112	114	114

Table 9 Chloride results at D-1641 water intakes for 2020.

Intake Location	Baseline	Baseline with proposed Project	Future	Future with proposed Project
	# days < 150 mg/L (165 days req'd at C5 or D12)			
C5–Contra Costa Canal at PP 1*	241	241	238	238
-or-				
D12–SJR at Antioch*	16	16	42	42
	Max mean daily chloride, mg/L (req'd < 250 mg/L)			
C5–Contra Costa Canal at PP 1	252	252	271	271
CCWD intake at Old River	223	223	243	243
CCWD intake at Victoria Canal	150	150	158	158
C9–West Canal at Clifton Ct	182	182	188	188
DMC1–DMC Canal at Tracy PP	185	185	190	190
SLBAR3–Barker Slough NBA intake	52	52	51	52
C19–City of Vallejo Cache Slough intake	109	109	110	111

* # of days are consecutive, meeting the requirement that criteria must be met in intervals of not less than two weeks

X2

X2 is defined as the distance in kilometers from the Golden Gate Bridge where the average bottom salinity in the water is 2 parts per thousand[13]. Baseline, Baseline with proposed Project, Future and Future with proposed Project tidal average X2 distances are plotted with monthly averaged differences in Figure 85 for 2018 and in Figure 86 for 2020. The proposed Project results in monthly average decreases in X2 of less than 0.02 km (66 ft). Lower X2 values correlate with less salinity intrusion into the Delta, and reduction in X2 is a water quality improvement, although the small X2 reduction resulting from the proposed Project is not likely to be an important improvement.

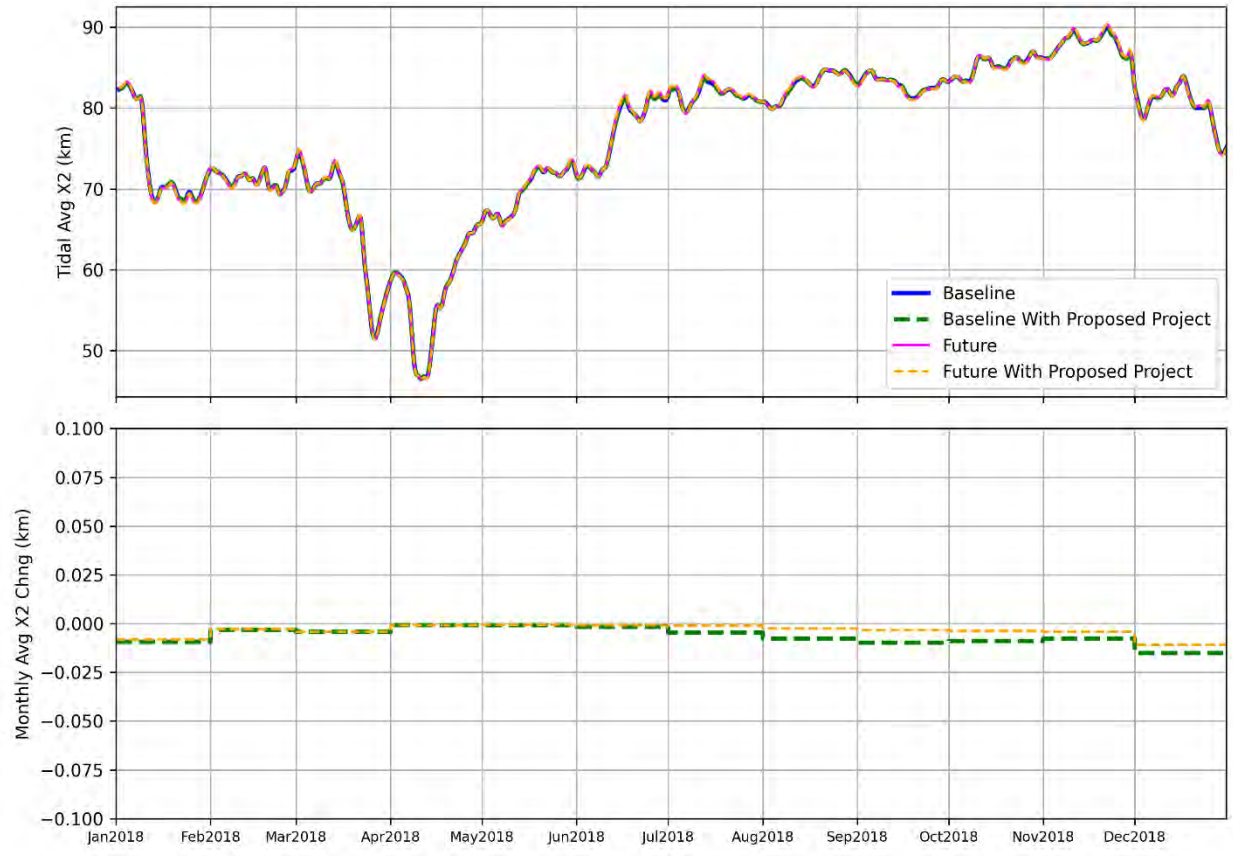

Figure 85 Baseline, Baseline with proposed Project, Future and Future with proposed Project daily average X2 location (top) and monthly average change from Baseline and Future X2 location (bottom) for the 2018 simulation period.

[13] While X2 standards refer to bottom salinity, the model computes depth-averaged salinity and this is used to calculated X2

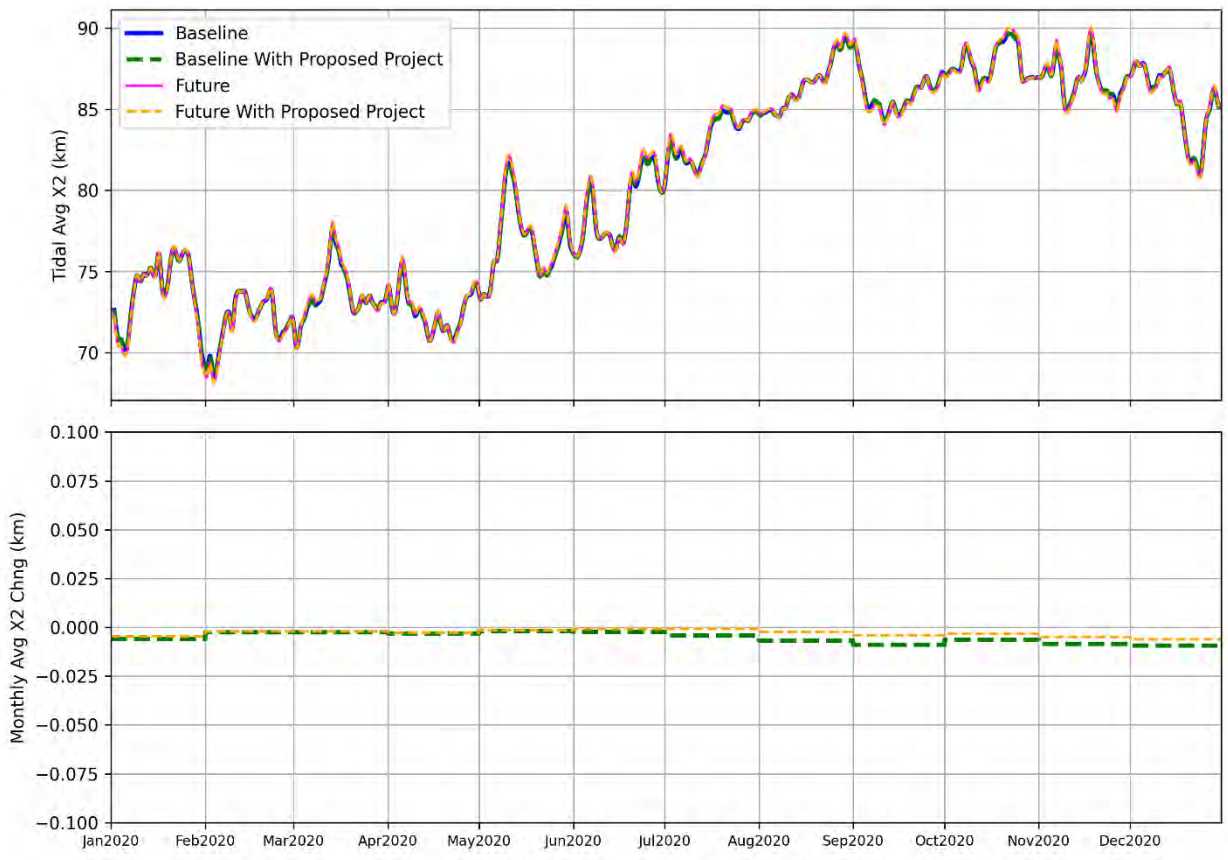

Figure 86 Baseline, Baseline with proposed Project, Future and Future with proposed Project daily average X2 location (top) and monthly average change from Baseline and Future X2 location (bottom) for the 2020 simulation period.

Evaluation of Bromide Impacts at Drinking Water intakes

Bromide values are monthly averaged and summarized in tabular format in Table 10 for 2018 Baseline Conditions, Table 11 for 2018 Future conditions, Table 12 for 2020 Baseline conditions and in Table 13 for 2020 Future conditions. Tabular results are provided with sufficient detail to provide the reader with information about small changes. While this level of precision is available from the water quality (EC) model, the model's accuracy is likely only one to two significant digits with further uncertainty in the EC to bromide conversions. Although there is uncertainty in the results, as reflected by the effective significant digits, the model is considered sufficient for assessing potential impacts, particularly for the direction of change and small % change. Additionally, the USBR (2015) equations are considered sufficient for converting EC to bromide for assessing potential impacts when EC change is primarily due to changes in seawater fraction.

The general observations for proposed Project bromide impacts, relative to Baseline and Future conditions for the 2018 and 2020 simulation period are:

- proposed Project impacts on bromide are small throughout the model domain. The largest increases occur at the Barker Slough NBA intake during June 2018 under Baseline conditions. Changes at this location range from -0.2% to 1%
- Bromide increases of up to 0.1% occur in the winter and spring of 2018 at the Contra Costa Canal at Pumping Plant 1 for the Baseline condition. Otherwise, bromide is generally decreased by up to 0.2% at the south Delta water intakes.
- The largest percent bromide decreases of 0.2% occur for the Baseline conditions at San Joaquin River at Antioch (December 2018 and January 2020) and Contra Costa Canal at Pumping Plant 1 (Summer 2020).

Daily averaged bromide results are provided at the water intake locations as time series of bromide and absolute and relative (%) change from Base/Future bromide in Figure 87 through Figure 94 for 2018 and in Figure 95 through Figure 102 for 2020.

Although results based on published relationships between EC and bromide predict increases in bromide at C19 and at times at Barker Slough NBA intake , there is uncertainty in the magnitude of these changes because the EC to bromide conversion equations were not developed specifically for the conditions occurring in this area, where local inflows are the primary source of salinity. Given the small impacts the proposed Project is shown to have on water quality overall, the bromide impacts are not expected to be cause for concern.

Table 10 Monthly average Baseline bromide with change and percent change from Baseline bromide with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2018 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -1% and the darkest orange is set at 1%.[14,15]

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			D12 - San Joaquin River at Antioch			C5 - Contra Costa Canal at PP 1		
	Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2018	0.11	0.0001	0.06%	0.29	0.0003	0.12%	1.07	-0.0014	-0.13%	0.49	-0.0002	-0.03%
Feb 2018	0.13	0.0001	0.07%	0.34	0.0005	0.14%	0.40	-0.0005	-0.13%	0.29	0.0003	0.09%
Mar 2018	0.21	0.0001	0.06%	0.29	0.0003	0.09%	0.27	-0.0003	-0.12%	0.17	0.0000	0.01%
Apr 2018	0.24	0.0003	0.11%	0.28	0.0005	0.18%	0.03	0.0000	0.03%	0.14	0.0000	0.00%
May 2018	0.09	0.0004	0.46%	0.12	0.0004	0.37%	0.26	-0.0002	-0.08%	0.13	0.0000	0.02%
Jun 2018	0.03	0.0003	1.01%	0.09	0.0003	0.39%	1.12	-0.0008	-0.07%	0.09	0.0001	0.06%
Jul 2018	0.02	0.0001	0.58%	0.08	0.0002	0.25%	2.12	-0.0020	-0.09%	0.17	-0.0001	-0.03%
Aug 2018	0.02	0.0000	0.20%	0.09	0.0002	0.20%	2.72	-0.0024	-0.09%	0.35	-0.0001	-0.03%
Sep 2018	0.04	-0.0001	-0.20%	0.10	0.0001	0.05%	2.72	-0.0028	-0.10%	0.60	-0.0001	-0.01%
Oct 2018	0.04	0.0001	0.30%	0.15	0.0004	0.25%	3.37	-0.0032	-0.09%	0.55	-0.0004	-0.07%
Nov 2018	0.05	0.0001	0.22%	0.18	0.0003	0.19%	4.54	-0.0033	-0.07%	0.54	-0.0004	-0.08%
Dec 2018	0.09	0.0000	0.01%	0.21	0.0002	0.11%	2.07	-0.0044	-0.21%	0.59	-0.0007	-0.11%

[14] Results are provided with sufficient detail to provide reader with information about small changes. While this level of precision is available from the model, the model's accuracy is likely only one-two significant digits.

[15] Equations converting EC to bromide may be less accurate at the SLBAR3 and C19 locations than for other areas in the Delta, given that these equations were not developed for conditions where local inflows are the primary salinity source, as is the case at these locations.

	C9 - West Canal at Clifton Court			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2018	0.36	-0.0001	-0.02%	0.33	0.0000	-0.01%	0.37	-0.0001	-0.02%	0.30	0.0000	0.00%
Feb 2018	0.21	0.0000	0.00%	0.23	0.0000	0.00%	0.22	0.0000	0.00%	0.18	0.0000	0.00%
Mar 2018	0.19	0.0000	0.01%	0.21	0.0000	0.00%	0.16	0.0000	0.00%	0.20	0.0000	0.00%
Apr 2018	0.07	0.0000	0.00%	0.08	0.0000	0.00%	0.10	0.0000	0.00%	0.12	0.0000	0.00%
May 2018	0.05	0.0000	0.00%	0.05	0.0000	0.00%	0.09	0.0000	0.00%	0.10	0.0000	0.00%
Jun 2018	0.08	0.0000	0.00%	0.09	0.0000	0.00%	0.08	0.0000	0.00%	0.08	0.0000	0.00%
Jul 2018	0.12	0.0000	-0.04%	0.12	-0.0001	-0.04%	0.15	-0.0001	-0.05%	0.07	0.0000	0.00%
Aug 2018	0.25	-0.0001	-0.05%	0.23	-0.0001	-0.05%	0.31	-0.0002	-0.05%	0.11	0.0000	-0.03%
Sep 2018	0.40	0.0000	-0.01%	0.34	0.0000	0.00%	0.48	-0.0001	-0.01%	0.19	0.0000	0.01%
Oct 2018	0.36	-0.0001	-0.02%	0.32	-0.0001	-0.02%	0.43	-0.0001	-0.03%	0.19	0.0000	0.01%
Nov 2018	0.36	-0.0001	-0.03%	0.33	-0.0001	-0.03%	0.45	-0.0002	-0.06%	0.22	-0.0001	-0.04%
Dec 2018	0.43	-0.0004	-0.09%	0.43	-0.0004	-0.08%	0.47	-0.0005	-0.10%	0.29	-0.0002	-0.07%

	CCWD intake at Mallard Slough		
	Baseline Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%
Jan 2018	3.85	-0.0033	-0.09%
Feb 2018	2.49	-0.0015	-0.06%
Mar 2018	1.57	-0.0013	-0.08%
Apr 2018	0.20	-0.0001	-0.04%
May 2018	2.13	-0.0005	-0.02%
Jun 2018	5.10	-0.0004	-0.01%
Jul 2018	7.26	-0.0010	-0.01%
Aug 2018	8.17	-0.0005	-0.01%
Sep 2018	7.85	-0.0012	-0.02%
Oct 2018	9.75	-0.0020	-0.02%
Nov 2018	12.11	-0.0017	-0.01%
Dec 2018	6.85	-0.0066	-0.10%

Table 11 Monthly average Future bromide with change and percent change from Future bromide with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2018 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -1% and the darkest orange is set at 1%.[16,17]

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			D12 - San Joaquin River at Antioch			C5 - Contra Costa Canal at PP 1		
	Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2018	0.11	0.0000	0.04%	0.30	0.0003	0.10%	1.02	-0.0011	-0.10%	0.47	-0.0002	-0.04%
Feb 2018	0.13	0.0001	0.04%	0.35	0.0004	0.12%	0.37	-0.0004	-0.11%	0.29	-0.0001	-0.05%
Mar 2018	0.21	0.0001	0.03%	0.30	0.0002	0.08%	0.26	-0.0003	-0.12%	0.17	0.0000	-0.02%
Apr 2018	0.25	0.0002	0.06%	0.29	0.0005	0.18%	0.03	0.0000	0.04%	0.14	0.0000	-0.01%
May 2018	0.09	0.0003	0.33%	0.13	0.0005	0.37%	0.25	-0.0002	-0.06%	0.14	0.0000	-0.01%
Jun 2018	0.03	0.0002	0.63%	0.10	0.0003	0.34%	1.11	-0.0005	-0.04%	0.09	0.0000	-0.01%
Jul 2018	0.02	0.0001	0.39%	0.09	0.0002	0.22%	2.12	-0.0009	-0.04%	0.19	-0.0001	-0.03%
Aug 2018	0.02	0.0000	0.16%	0.10	0.0002	0.18%	2.67	-0.0011	-0.04%	0.38	-0.0002	-0.06%
Sep 2018	0.03	-0.0001	-0.17%	0.10	0.0001	0.06%	2.64	-0.0014	-0.05%	0.63	-0.0003	-0.05%
Oct 2018	0.04	0.0000	0.00%	0.16	0.0003	0.18%	3.29	-0.0017	-0.05%	0.59	-0.0003	-0.06%
Nov 2018	0.05	0.0001	0.11%	0.19	0.0003	0.16%	4.48	-0.0022	-0.05%	0.59	-0.0004	-0.06%
Dec 2018	0.10	0.0000	0.01%	0.22	0.0002	0.10%	2.00	-0.0033	-0.16%	0.64	-0.0005	-0.08%

[16] Results are provided with sufficient detail to provide reader with information about small changes. While this level of precision is available from the model, the model's accuracy is likely only one-two significant digits.

[17] Equations converting EC to bromide may be less accurate at the SLBAR3 and C19 locations than for other areas in the Delta, given that these equations were not developed for conditions where local inflows are the primary salinity source, as is the case at these locations.

	C9 - West Canal at Clifton Court			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2018	0.35	-0.0001	-0.04%	0.32	-0.0001	-0.03%	0.36	-0.0002	-0.05%	0.30	-0.0001	-0.03%
Feb 2018	0.21	0.0000	-0.01%	0.23	0.0000	-0.01%	0.21	-0.0001	-0.04%	0.18	0.0000	-0.02%
Mar 2018	0.19	0.0000	0.00%	0.21	0.0000	0.00%	0.16	0.0000	-0.02%	0.20	0.0000	-0.01%
Apr 2018	0.08	0.0000	0.00%	0.08	0.0000	0.00%	0.10	0.0000	0.00%	0.12	0.0000	0.00%
May 2018	0.05	0.0000	0.00%	0.05	0.0000	0.00%	0.09	0.0000	0.00%	0.10	0.0000	0.00%
Jun 2018	0.08	0.0000	0.00%	0.09	0.0000	0.00%	0.08	0.0000	-0.01%	0.08	0.0000	0.00%
Jul 2018	0.13	0.0000	-0.03%	0.13	0.0000	-0.02%	0.17	-0.0001	-0.03%	0.07	0.0000	0.00%
Aug 2018	0.27	-0.0002	-0.06%	0.25	-0.0001	-0.05%	0.34	-0.0002	-0.06%	0.12	-0.0001	-0.05%
Sep 2018	0.43	-0.0002	-0.05%	0.36	-0.0001	-0.04%	0.52	-0.0002	-0.05%	0.21	-0.0001	-0.04%
Oct 2018	0.39	-0.0002	-0.06%	0.35	-0.0002	-0.05%	0.47	-0.0003	-0.06%	0.22	-0.0001	-0.04%
Nov 2018	0.40	-0.0002	-0.05%	0.36	-0.0002	-0.04%	0.50	-0.0003	-0.06%	0.25	-0.0001	-0.03%
Dec 2018	0.47	-0.0004	-0.08%	0.45	-0.0003	-0.06%	0.51	-0.0005	-0.10%	0.32	-0.0002	-0.06%

	CCWD intake at Mallard Slough		
	Future Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%
Jan 2018	3.84	-0.0030	-0.08%
Feb 2018	2.48	-0.0012	-0.05%
Mar 2018	1.60	-0.0012	-0.08%
Apr 2018	0.20	0.0000	-0.02%
May 2018	2.15	-0.0004	-0.02%
Jun 2018	5.17	-0.0002	0.00%
Jul 2018	7.37	0.0001	0.00%
Aug 2018	8.30	0.0003	0.00%
Sep 2018	7.93	0.0001	0.00%
Oct 2018	9.78	-0.0005	-0.01%
Nov 2018	12.16	-0.0011	-0.01%
Dec 2018	6.89	-0.0055	-0.08%

Table 12 Monthly average Baseline bromide with change and percent change from Baseline bromide with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2020 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -1% and the darkest orange is set at 1%.[18,19]

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			D12 - San Joaquin River at Antioch			C5 - Contra Costa Canal at PP 1		
	Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2020	0.10	0.0000	0.02%	0.28	0.0004	0.13%	0.71	-0.0014	-0.20%	0.23	-0.0002	-0.07%
Feb 2020	0.12	0.0002	0.19%	0.33	0.0004	0.11%	0.41	-0.0005	-0.13%	0.22	-0.0001	-0.03%
Mar 2020	0.14	0.0003	0.18%	0.29	0.0002	0.08%	0.55	-0.0006	-0.11%	0.18	0.0000	0.00%
Apr 2020	0.13	0.0005	0.38%	0.19	0.0006	0.33%	0.46	-0.0006	-0.12%	0.13	0.0001	0.04%
May 2020	0.06	0.0005	0.90%	0.10	0.0005	0.54%	0.95	-0.0008	-0.08%	0.12	0.0000	0.01%
Jun 2020	0.03	0.0003	0.79%	0.08	0.0003	0.37%	1.31	-0.0011	-0.08%	0.11	0.0000	0.00%
Jul 2020	0.02	0.0001	0.43%	0.07	0.0002	0.25%	2.50	-0.0021	-0.08%	0.18	-0.0003	-0.16%
Aug 2020	0.03	0.0000	0.09%	0.09	0.0001	0.16%	3.96	-0.0028	-0.07%	0.36	-0.0007	-0.20%
Sep 2020	0.04	0.0000	0.01%	0.12	0.0002	0.15%	3.71	-0.0031	-0.08%	0.66	-0.0007	-0.10%
Oct 2020	0.04	0.0001	0.25%	0.13	0.0003	0.22%	4.59	-0.0031	-0.07%	0.55	-0.0003	-0.06%
Nov 2020	0.04	0.0000	0.08%	0.23	0.0003	0.14%	4.20	-0.0034	-0.08%	0.58	-0.0004	-0.08%
Dec 2020	0.06	0.0000	0.05%	0.15	0.0001	0.10%	3.65	-0.0035	-0.09%	0.63	-0.0006	-0.10%

[18] Results are provided with sufficient detail to provide reader with information about small changes. While this level of precision is available from the model, the model's accuracy is likely only one-two significant digits.

[19] Equations converting EC to bromide may be less accurate at the SLBAR3 and C19 locations than for other areas in the Delta, given that these equations were not developed for conditions where local inflows are the primary salinity source, as is the case at these locations.

	C9 - West Canal at Clifton Court			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change		Baseline Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2020	0.23	0.0000	-0.01%	0.26	0.0000	0.00%	0.21	-0.0001	-0.04%	0.20	0.0001	0.04%
Feb 2020	0.23	0.0000	0.00%	0.24	0.0000	0.00%	0.22	0.0000	-0.01%	0.20	0.0000	0.01%
Mar 2020	0.20	0.0000	0.00%	0.21	0.0000	0.00%	0.17	0.0000	0.00%	0.19	0.0000	0.00%
Apr 2020	0.20	0.0000	0.01%	0.22	0.0000	0.00%	0.15	0.0000	0.02%	0.17	0.0000	0.01%
May 2020	0.15	0.0000	0.00%	0.15	0.0000	0.00%	0.15	0.0000	0.01%	0.16	0.0000	0.00%
Jun 2020	0.12	0.0000	-0.01%	0.12	0.0000	0.00%	0.12	0.0000	-0.01%	0.13	0.0000	0.00%
Jul 2020	0.13	-0.0001	-0.07%	0.13	-0.0001	-0.06%	0.17	-0.0002	-0.10%	0.08	0.0000	-0.02%
Aug 2020	0.26	-0.0002	-0.09%	0.25	-0.0002	-0.09%	0.34	-0.0004	-0.10%	0.10	0.0000	-0.05%
Sep 2020	0.43	-0.0002	-0.04%	0.43	-0.0002	-0.04%	0.54	-0.0003	-0.05%	0.22	0.0000	-0.02%
Oct 2020	0.36	-0.0002	-0.05%	0.36	-0.0002	-0.04%	0.46	-0.0003	-0.06%	0.22	0.0000	-0.02%
Nov 2020	0.42	-0.0003	-0.06%	0.40	-0.0002	-0.05%	0.50	-0.0004	-0.08%	0.30	-0.0001	-0.04%
Dec 2020	0.51	-0.0003	-0.05%	0.52	-0.0002	-0.04%	0.53	-0.0004	-0.08%	0.38	-0.0002	-0.06%

	CCWD intake at Mallard Slough		
	Baseline Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%
Jan 2020	3.62	-0.0026	-0.07%
Feb 2020	2.76	-0.0012	-0.04%
Mar 2020	3.38	-0.0012	-0.03%
Apr 2020	3.01	-0.0014	-0.05%
May 2020	4.92	-0.0008	-0.02%
Jun 2020	5.83	-0.0006	-0.01%
Jul 2020	8.31	-0.0003	0.00%
Aug 2020	10.67	-0.0002	0.00%
Sep 2020	10.51	-0.0009	-0.01%
Oct 2020	12.38	-0.0007	-0.01%
Nov 2020	11.81	-0.0015	-0.01%
Dec 2020	10.82	-0.0025	-0.02%

Table 13 Monthly average Future bromide with change and percent change from Future bromide with the proposed Project at select D-1641 compliance stations and CCWD water intakes for the 2020 simulation period. A color gradient is used for quick evaluation of % change. The darkest blue is set at -1% and the darkest orange is set at 1%.[20,21]

	SLBAR3 - Barker Slough NBA intake			C19 - City of Vallejo Cache Slough intake			D12 - San Joaquin River at Antioch			C5 - Contra Costa Canal at PP 1		
	Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2020	0.11	0.0000	0.04%	0.29	0.0004	0.13%	0.64	-0.0010	-0.15%	0.22	-0.0002	-0.11%
Feb 2020	0.13	0.0002	0.17%	0.33	0.0003	0.10%	0.37	-0.0004	-0.10%	0.21	-0.0001	-0.05%
Mar 2020	0.14	0.0002	0.14%	0.29	0.0002	0.07%	0.52	-0.0005	-0.09%	0.18	0.0000	-0.02%
Apr 2020	0.13	0.0003	0.25%	0.20	0.0006	0.31%	0.43	-0.0005	-0.11%	0.13	0.0000	-0.01%
May 2020	0.06	0.0004	0.65%	0.11	0.0006	0.56%	0.91	-0.0005	-0.06%	0.12	0.0000	-0.01%
Jun 2020	0.04	0.0002	0.55%	0.09	0.0003	0.35%	1.28	-0.0006	-0.05%	0.12	0.0000	-0.02%
Jul 2020	0.02	0.0001	0.33%	0.08	0.0002	0.24%	2.47	-0.0011	-0.05%	0.20	-0.0001	-0.06%
Aug 2020	0.03	0.0000	0.09%	0.10	0.0002	0.16%	3.88	-0.0015	-0.04%	0.39	-0.0003	-0.07%
Sep 2020	0.04	0.0000	0.00%	0.13	0.0002	0.14%	3.60	-0.0018	-0.05%	0.72	-0.0004	-0.06%
Oct 2020	0.05	0.0000	0.10%	0.14	0.0003	0.18%	4.48	-0.0021	-0.05%	0.62	-0.0004	-0.07%
Nov 2020	0.05	0.0000	0.01%	0.24	0.0003	0.13%	4.09	-0.0024	-0.06%	0.65	-0.0005	-0.07%
Dec 2020	0.07	0.0000	0.02%	0.15	0.0001	0.08%	3.56	-0.0026	-0.07%	0.67	-0.0005	-0.07%

[20] Results are provided with sufficient detail to provide reader with information about small changes. While this level of precision is available from the model, the model's accuracy is likely only one-two significant digits.

[21] Equations converting EC to bromide may be less accurate at the SLBAR3 and C19 locations than for other areas in the Delta, given that these equations were not developed for conditions where local inflows are the primary salinity source, as is the case at these locations.

	C9 - West Canal at Clifton Court			DMC1 - DMC at Tracy PP			CCWD intake at Old River			CCWD intake at Victoria Canal		
	Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change		Future Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%	mg/L	mg/L	%
Jan 2020	0.23	-0.0001	-0.06%	0.25	-0.0001	-0.04%	0.20	-0.0002	-0.09%	0.19	-0.0001	-0.06%
Feb 2020	0.23	0.0000	-0.02%	0.23	0.0000	-0.01%	0.22	-0.0001	-0.04%	0.20	-0.0001	-0.03%
Mar 2020	0.20	0.0000	-0.01%	0.21	0.0000	-0.01%	0.17	0.0000	-0.02%	0.19	0.0000	-0.01%
Apr 2020	0.21	0.0000	0.00%	0.22	0.0000	0.00%	0.15	0.0000	-0.01%	0.17	0.0000	0.00%
May 2020	0.15	0.0000	0.00%	0.15	0.0000	0.00%	0.15	0.0000	-0.01%	0.16	0.0000	-0.01%
Jun 2020	0.13	0.0000	-0.01%	0.13	0.0000	-0.01%	0.13	0.0000	-0.01%	0.13	0.0000	-0.01%
Jul 2020	0.14	-0.0001	-0.04%	0.13	0.0000	-0.03%	0.18	-0.0001	-0.05%	0.08	0.0000	-0.01%
Aug 2020	0.29	-0.0002	-0.06%	0.27	-0.0002	-0.06%	0.37	-0.0002	-0.07%	0.11	0.0000	-0.03%
Sep 2020	0.48	-0.0003	-0.05%	0.47	-0.0002	-0.05%	0.60	-0.0004	-0.06%	0.24	-0.0001	-0.03%
Oct 2020	0.41	-0.0002	-0.06%	0.40	-0.0002	-0.05%	0.52	-0.0003	-0.07%	0.25	-0.0001	-0.04%
Nov 2020	0.46	-0.0003	-0.06%	0.43	-0.0002	-0.05%	0.56	-0.0004	-0.07%	0.34	-0.0001	-0.04%
Dec 2020	0.54	-0.0003	-0.05%	0.54	-0.0002	-0.04%	0.57	-0.0004	-0.07%	0.40	-0.0002	-0.05%

	CCWD intake at Mallard Slough		
	Future Bromide	With proposed Project Bromide change	
	mg/L	mg/L	%
Jan 2020	3.55	-0.0021	-0.06%
Feb 2020	2.71	-0.0009	-0.03%
Mar 2020	3.40	-0.0009	-0.03%
Apr 2020	3.02	-0.0012	-0.04%
May 2020	4.97	-0.0006	-0.01%
Jun 2020	5.89	-0.0002	0.00%
Jul 2020	8.40	0.0001	0.00%
Aug 2020	10.73	0.0002	0.00%
Sep 2020	10.50	-0.0002	0.00%
Oct 2020	12.37	-0.0003	0.00%
Nov 2020	11.80	-0.0012	-0.01%
Dec 2020	10.87	-0.0024	-0.02%

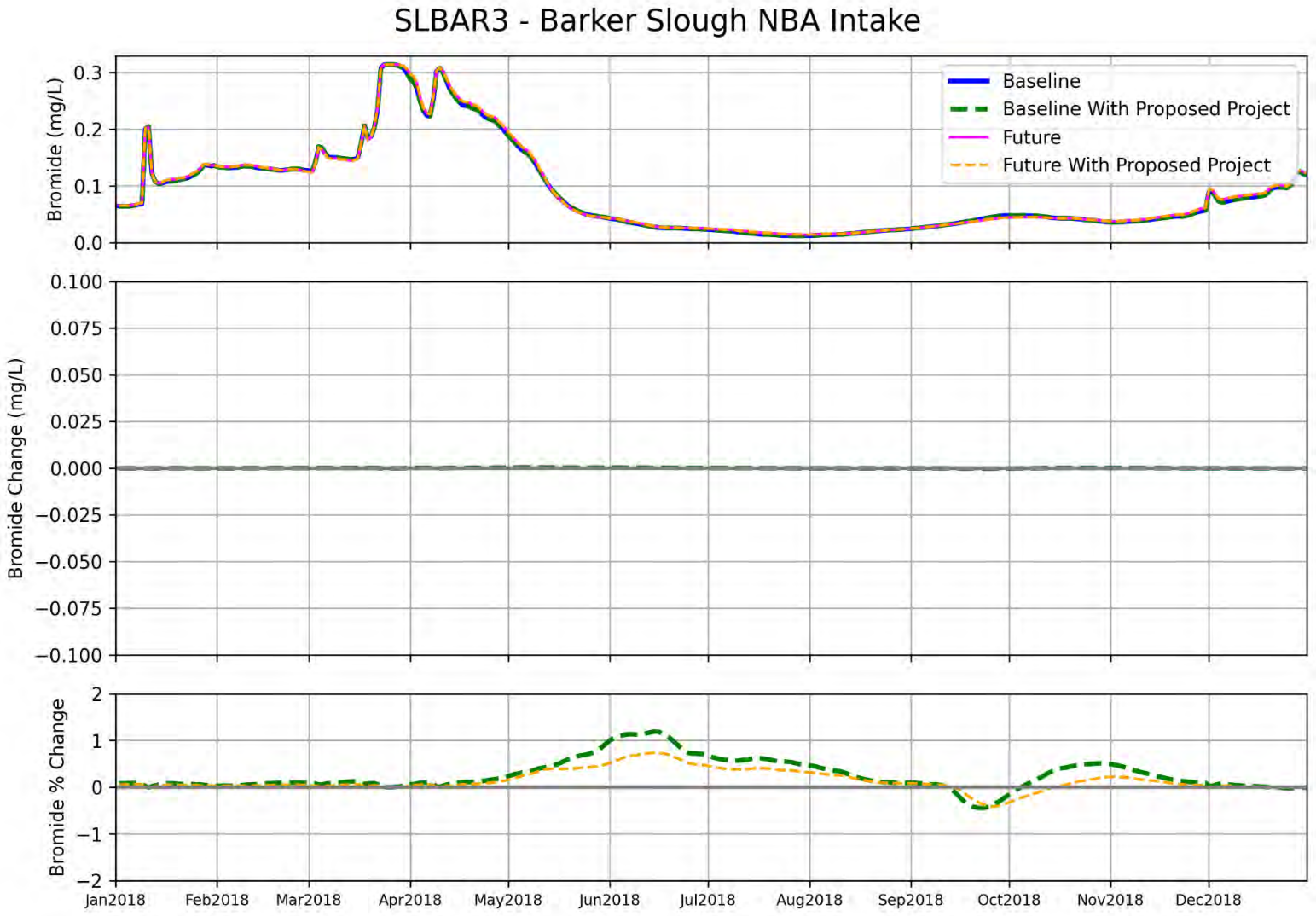

Figure 87 Daily average bromide at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

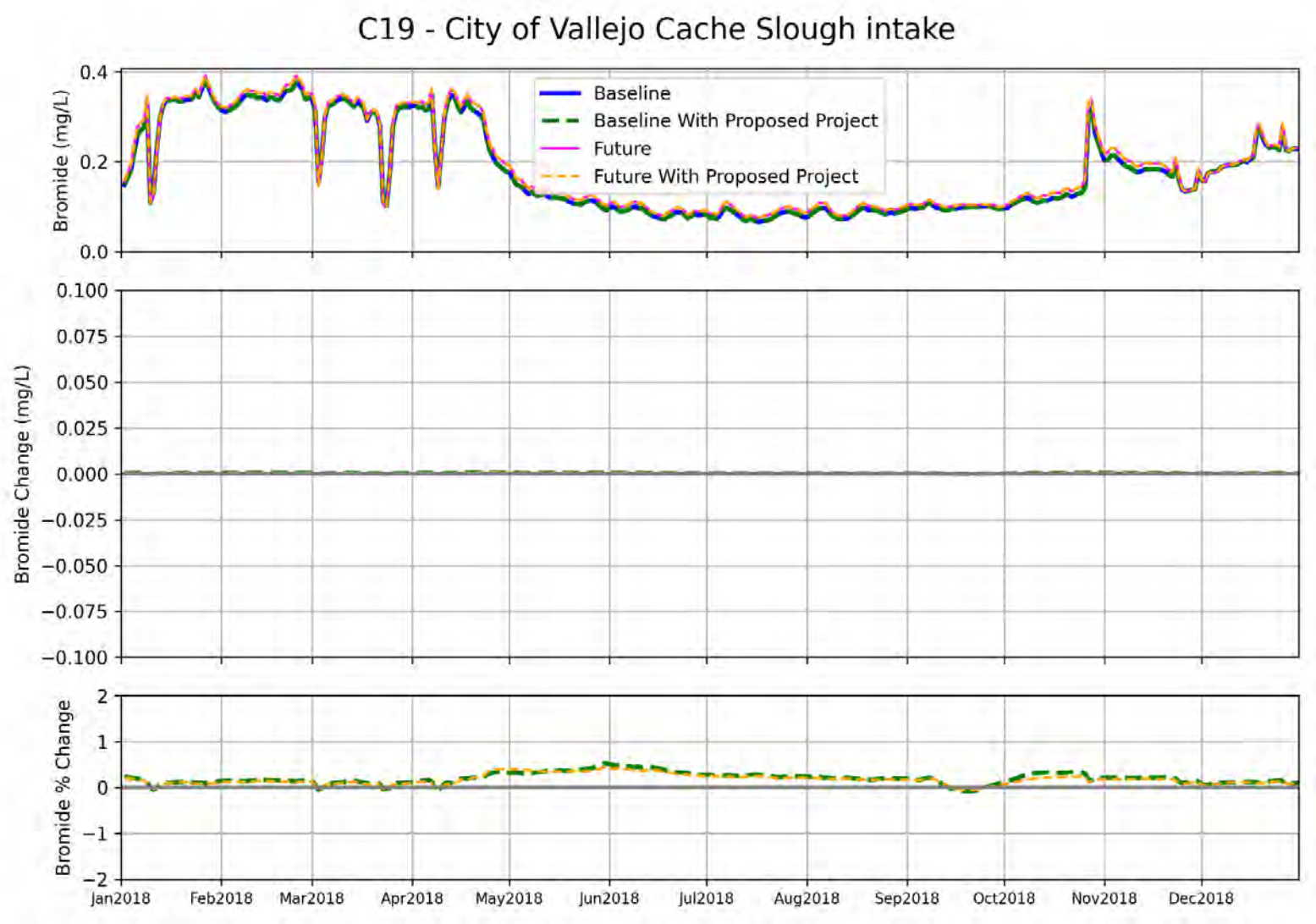

Figure 88 Daily average bromide at station C19 – City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

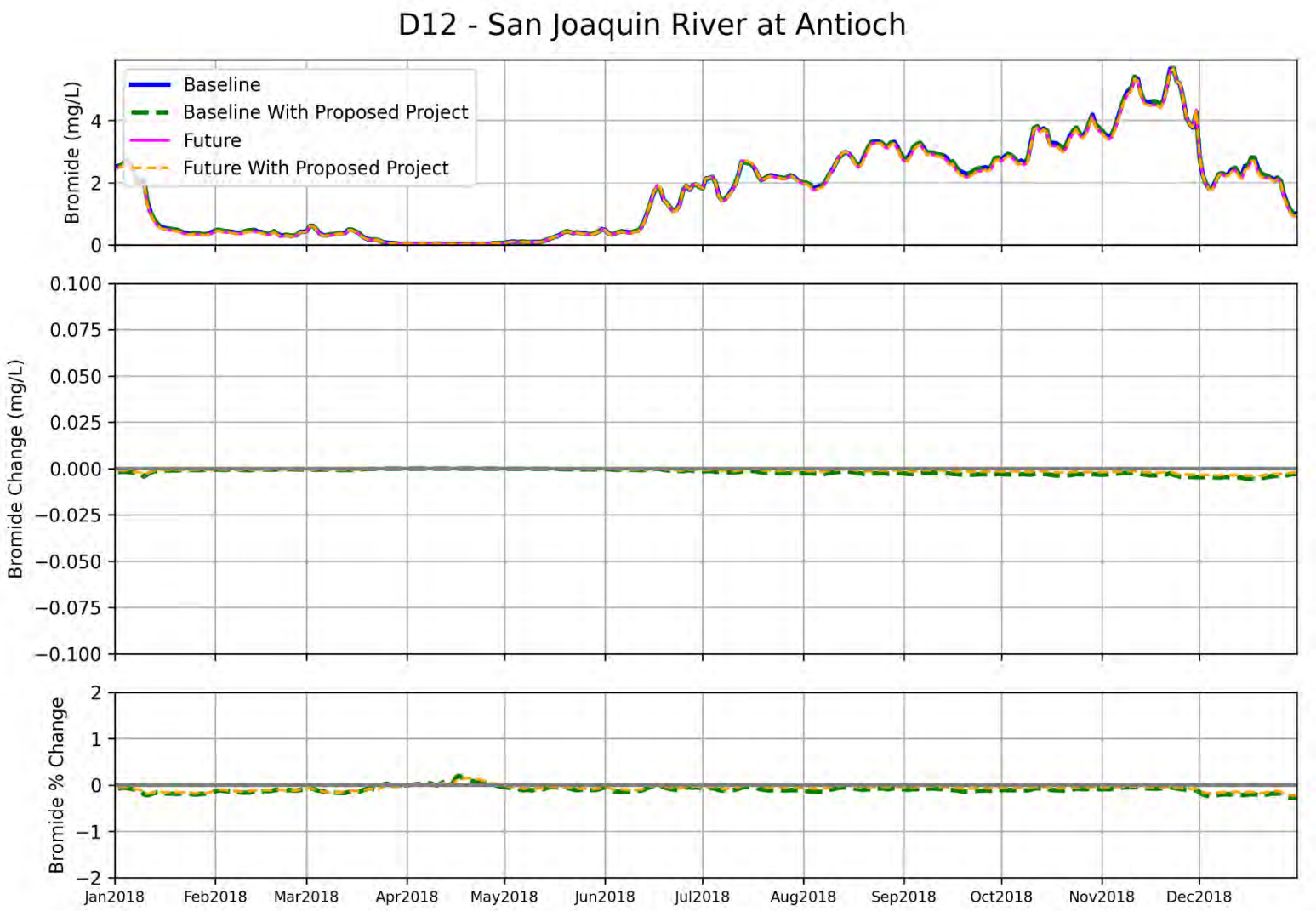

Figure 89 Daily average bromide at station D12 – San Joaquin River at Antioch for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

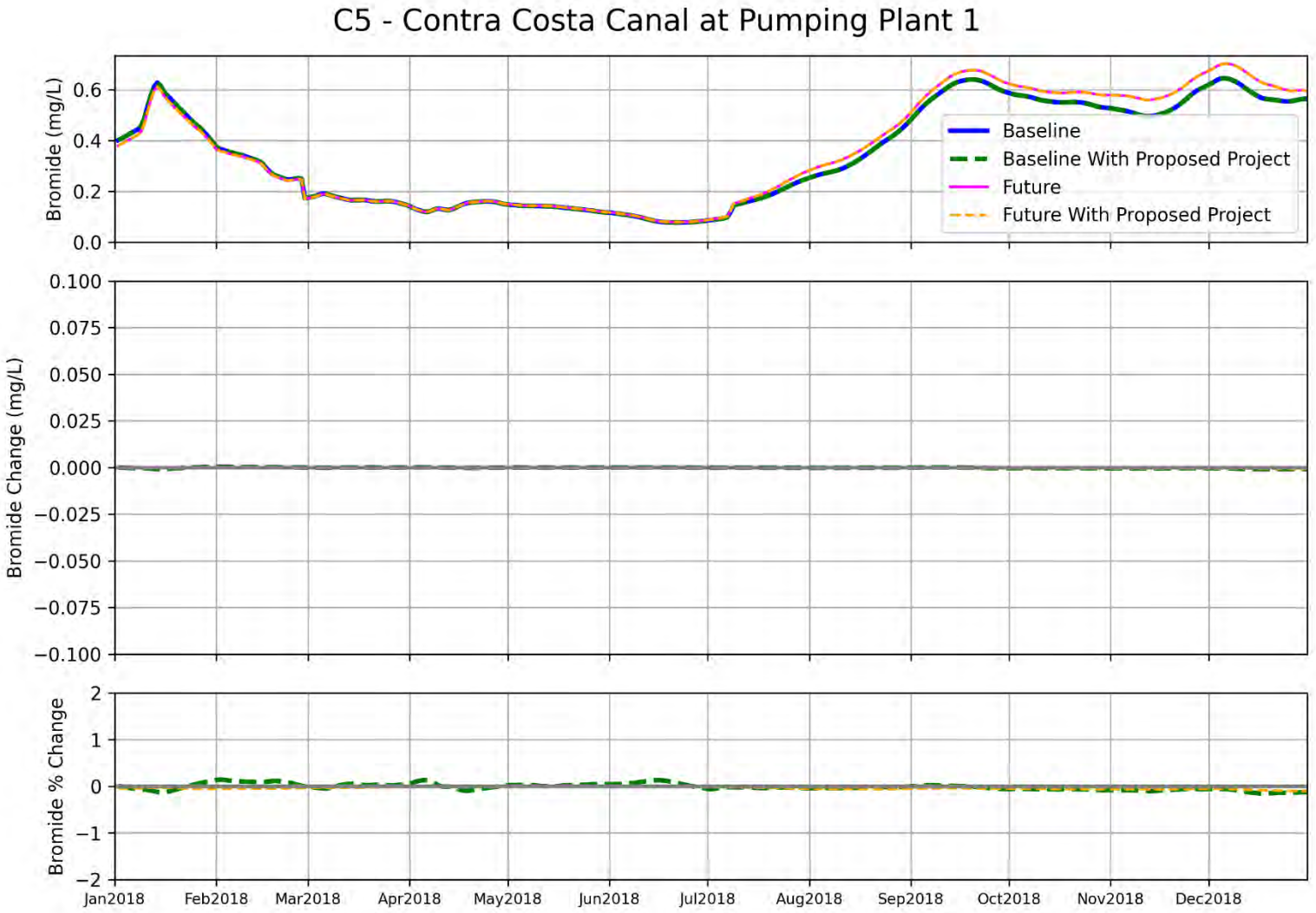

Figure 90 Daily average bromide at station C5 – Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

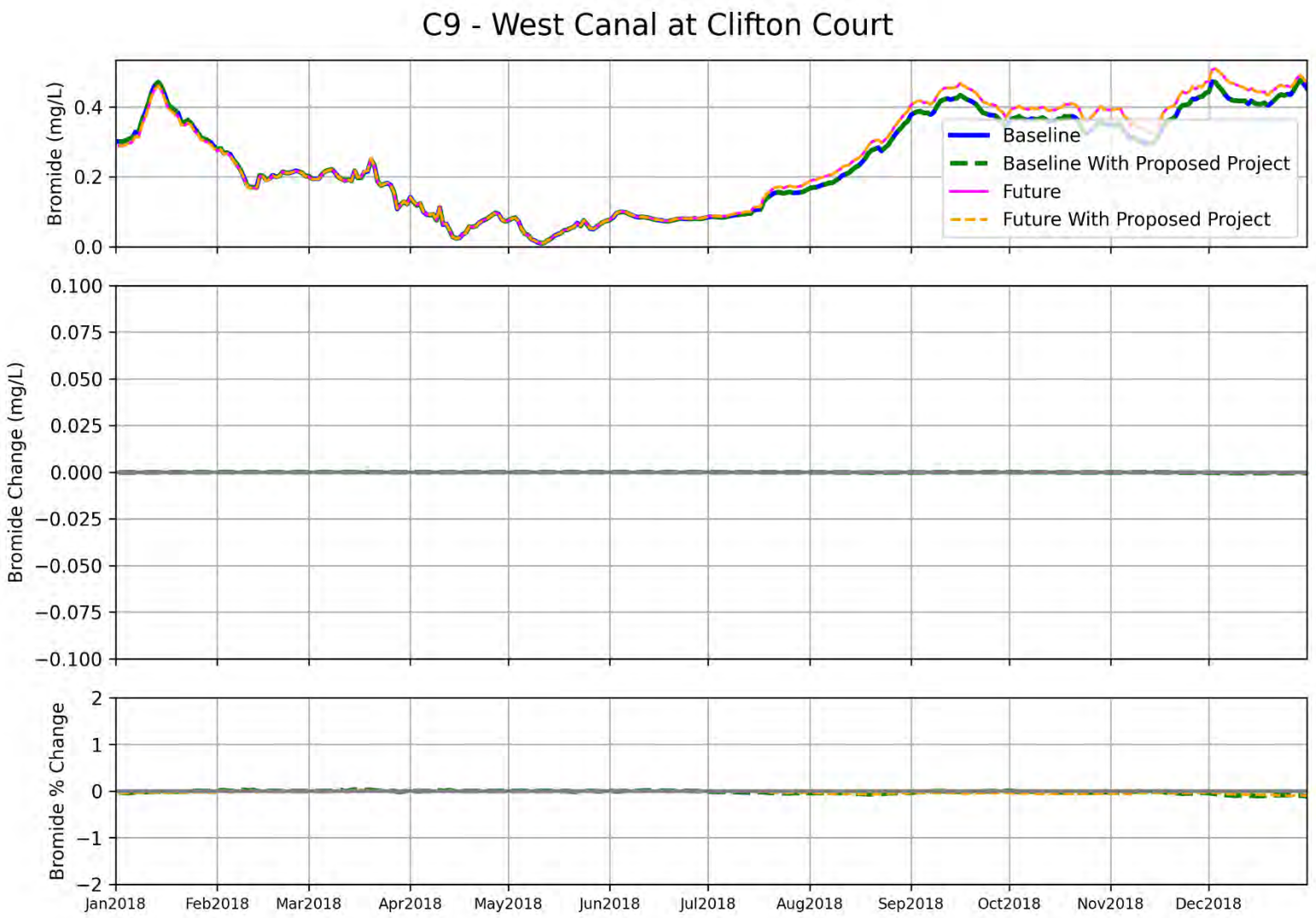

Figure 91 Daily average bromide at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

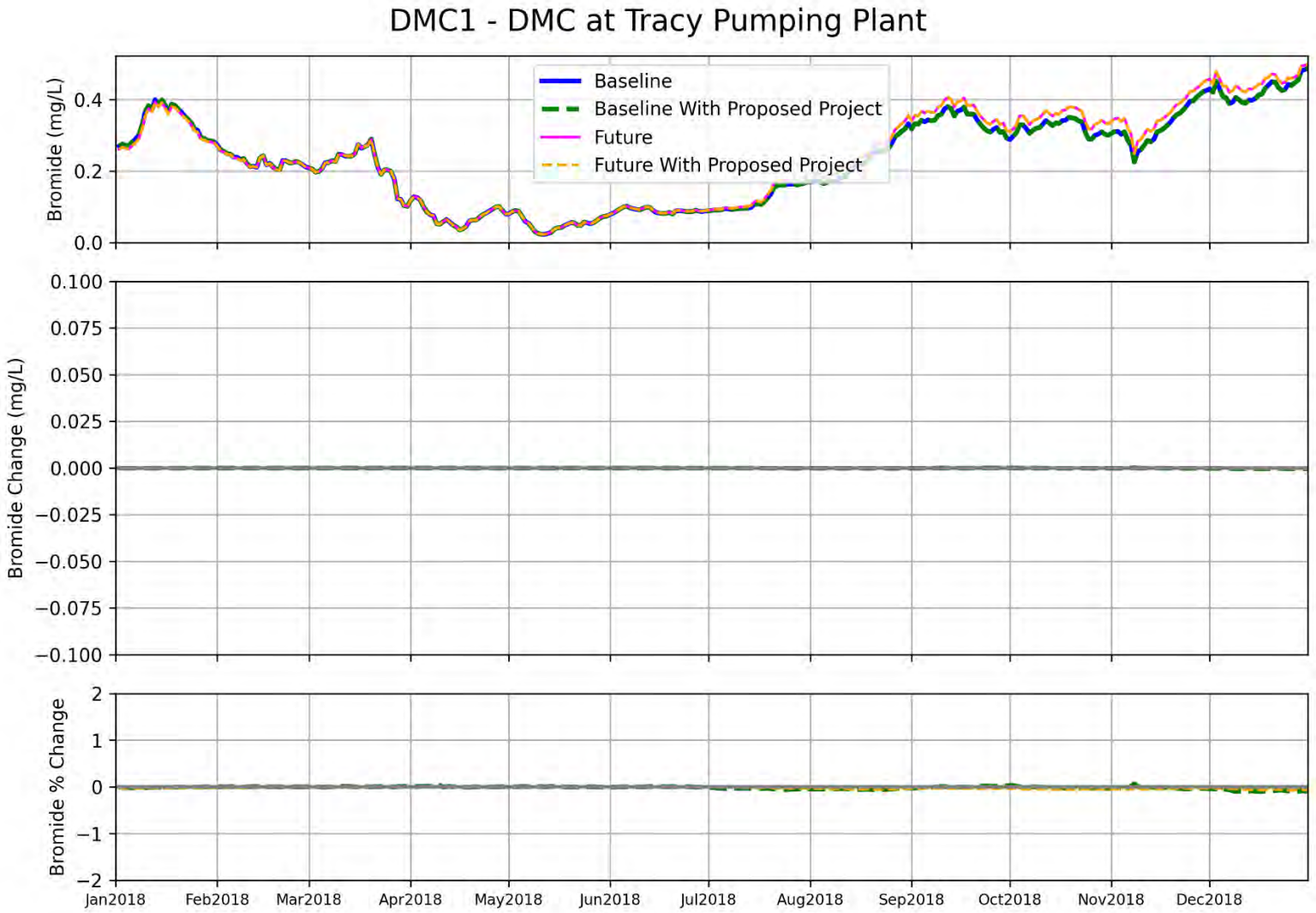

Figure 92 Daily average bromide at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

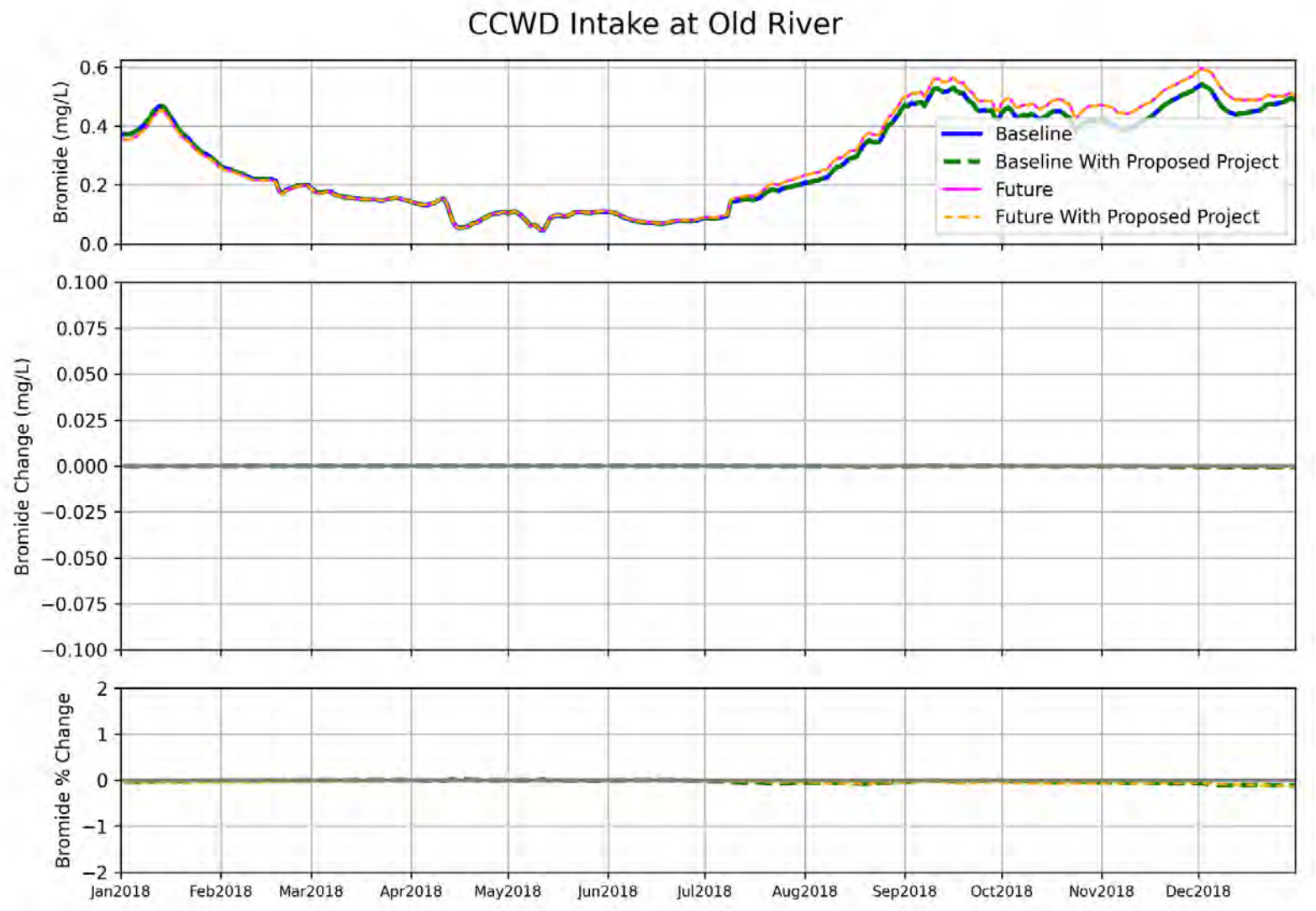

Figure 93 Daily average bromide at CCWD intake at Old River for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

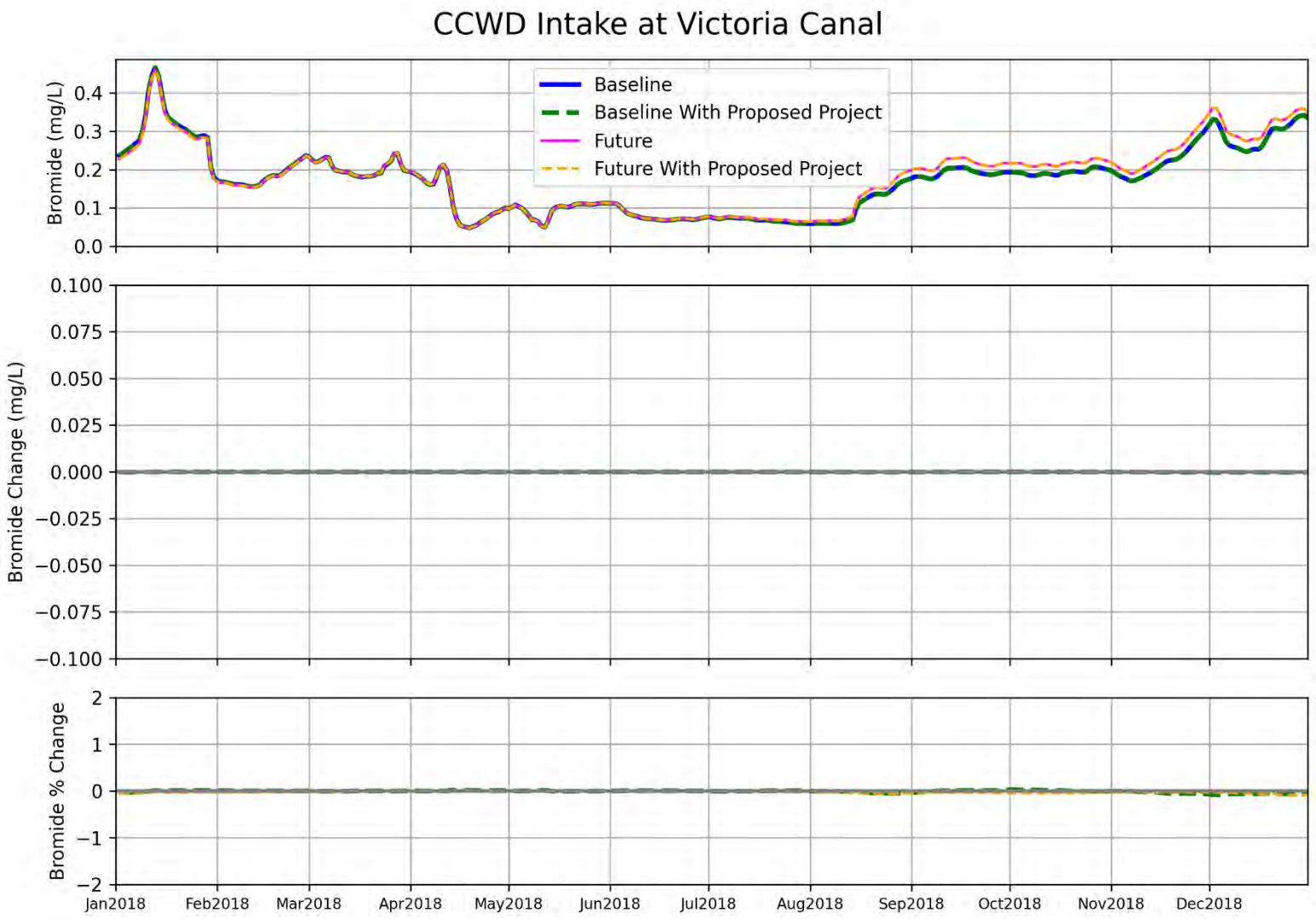

Figure 94 Daily average bromide at station CCWD intake at Victoria Canal for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

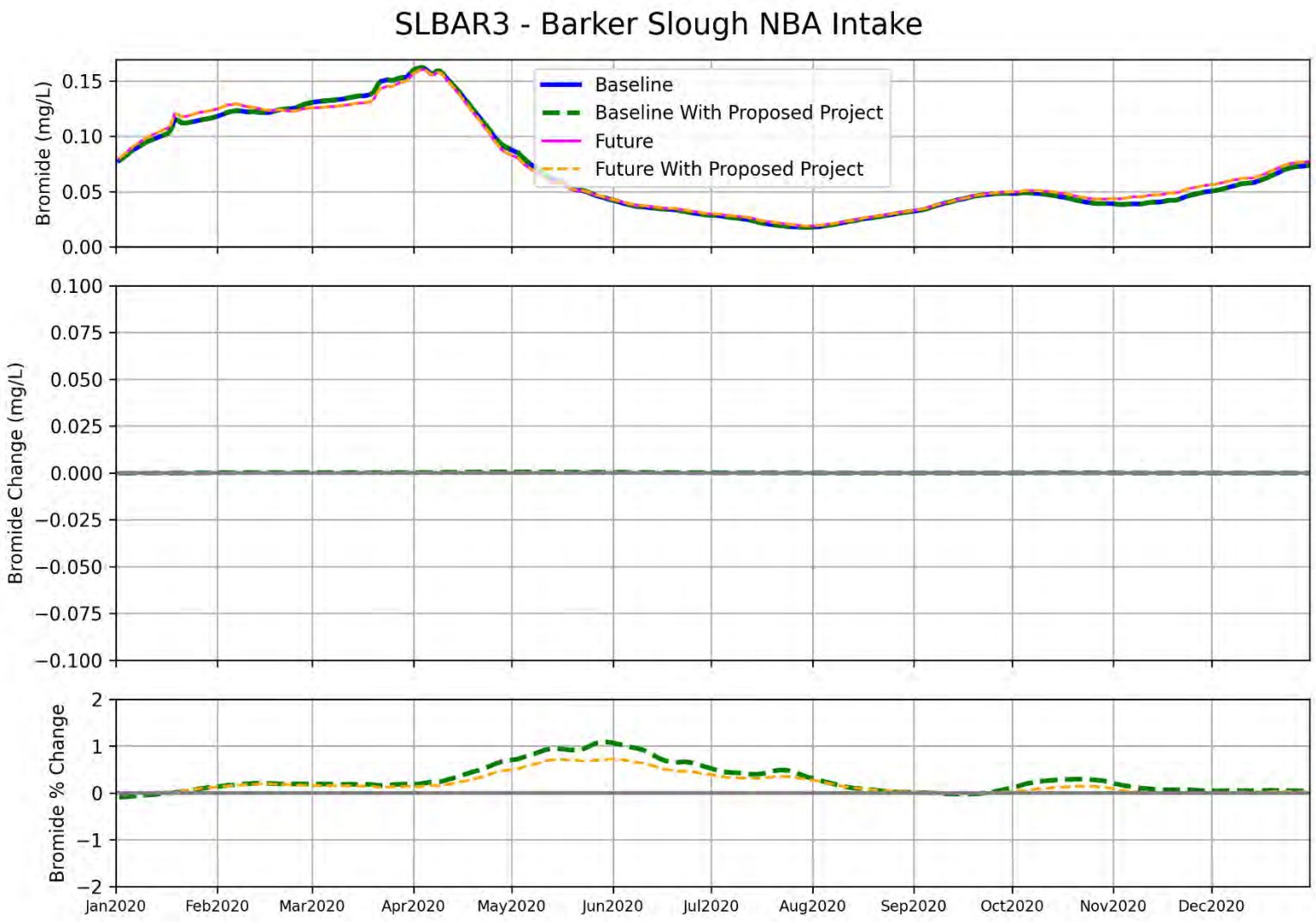

Figure 95 Daily average bromide at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

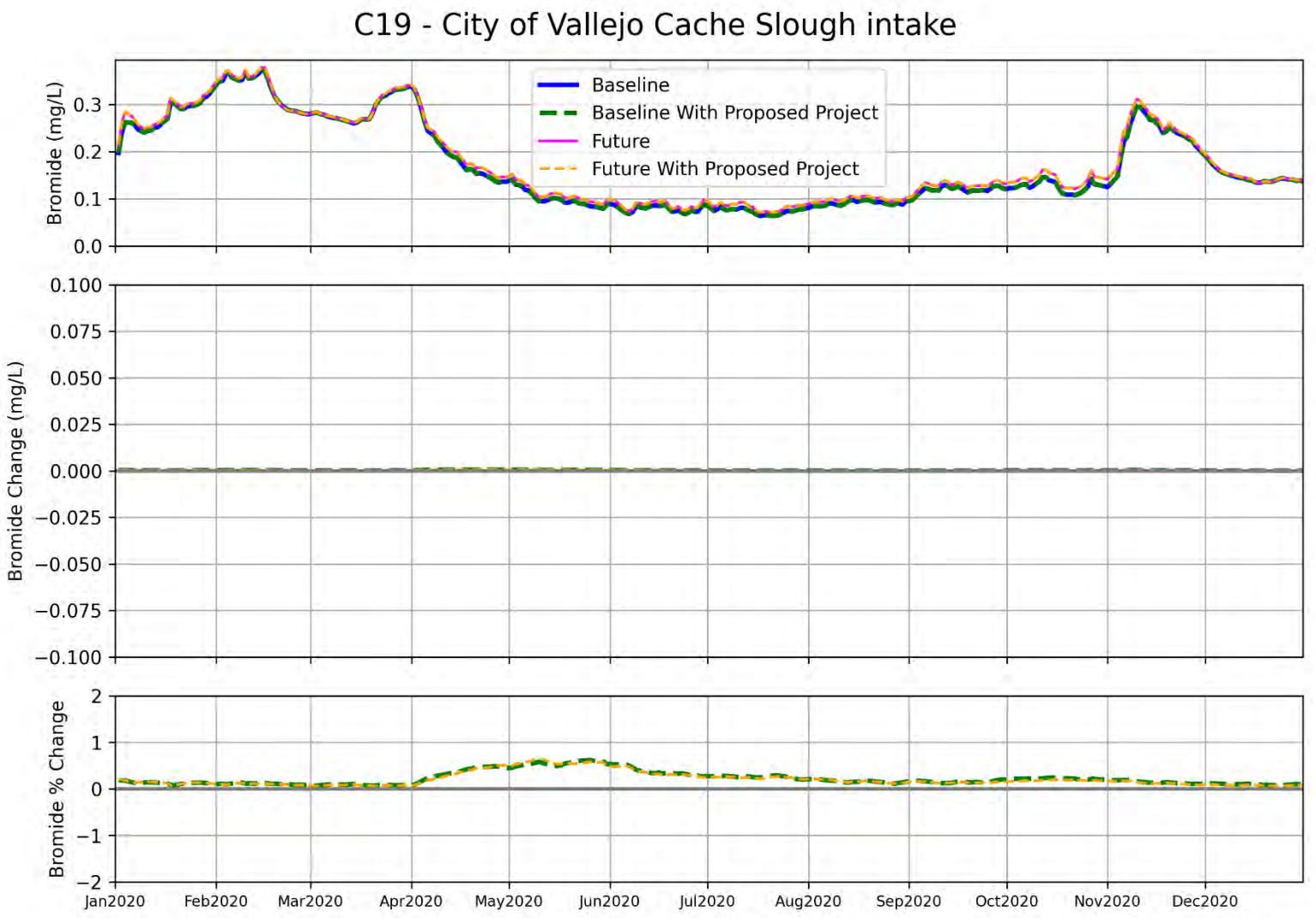

Figure 96 Daily average bromide at station C19 – City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

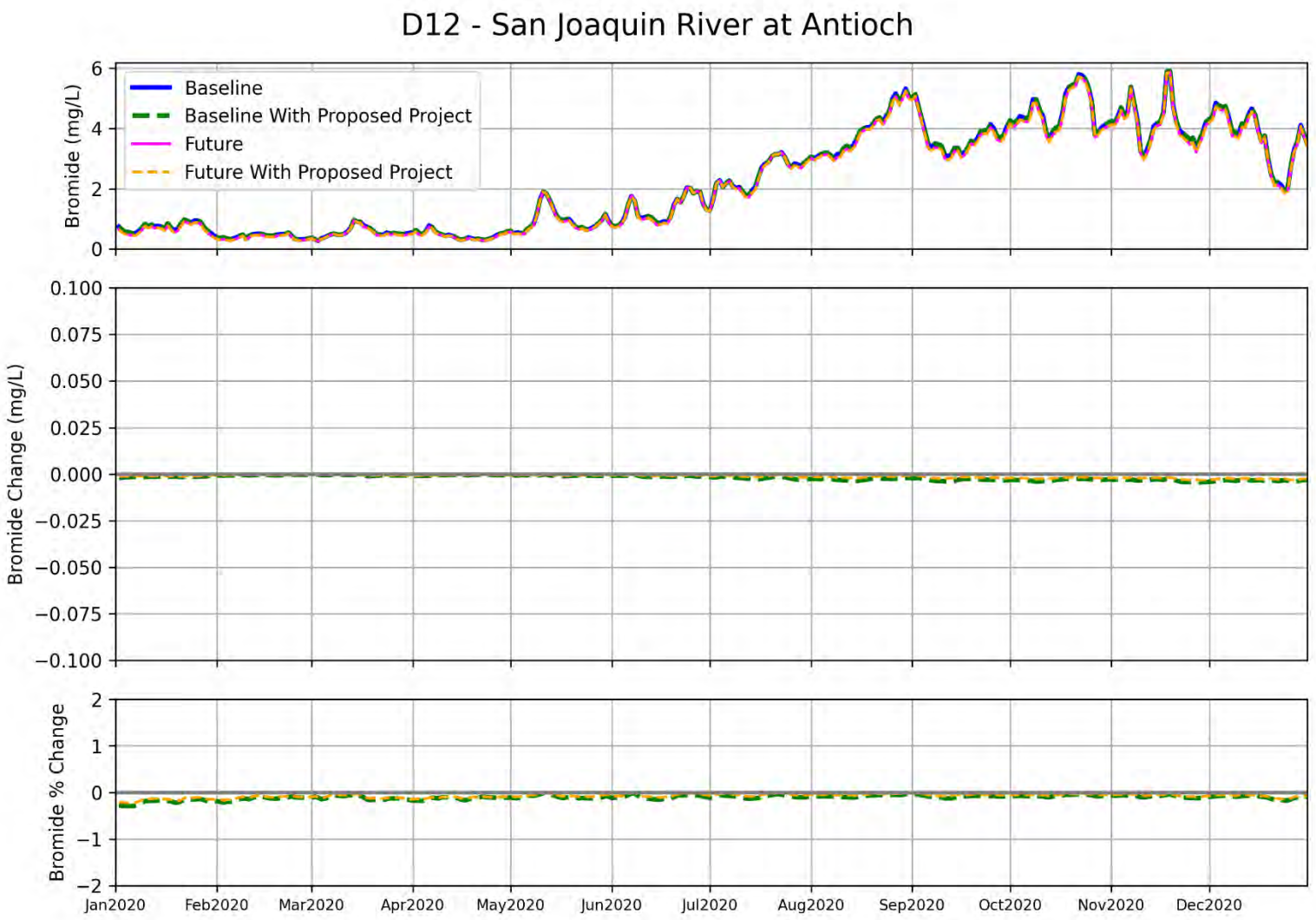

Figure 97 Daily average bromide at station D12 – San Joaquin River at Antioch for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

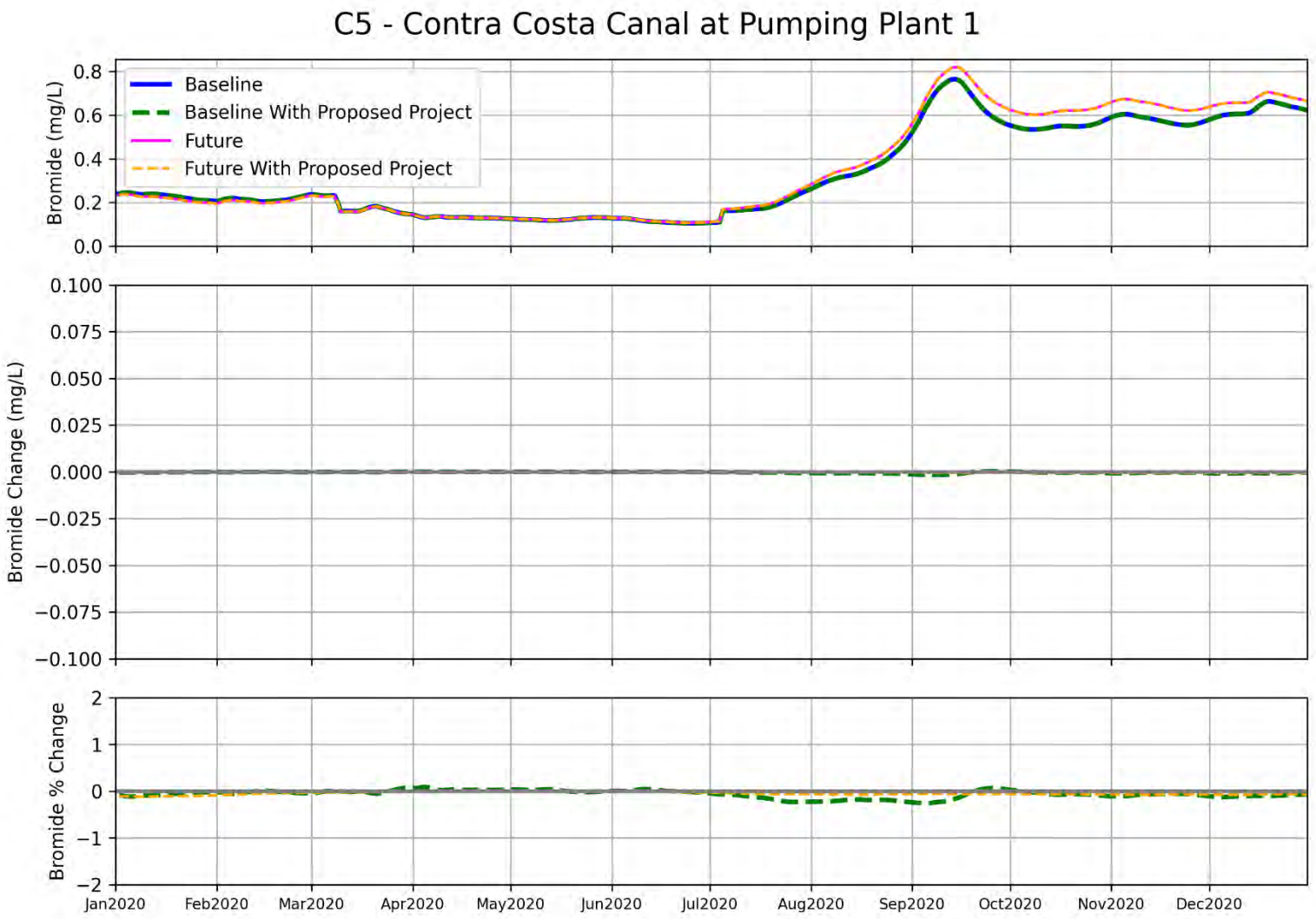

Figure 98 Daily average bromide at station C5 – Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

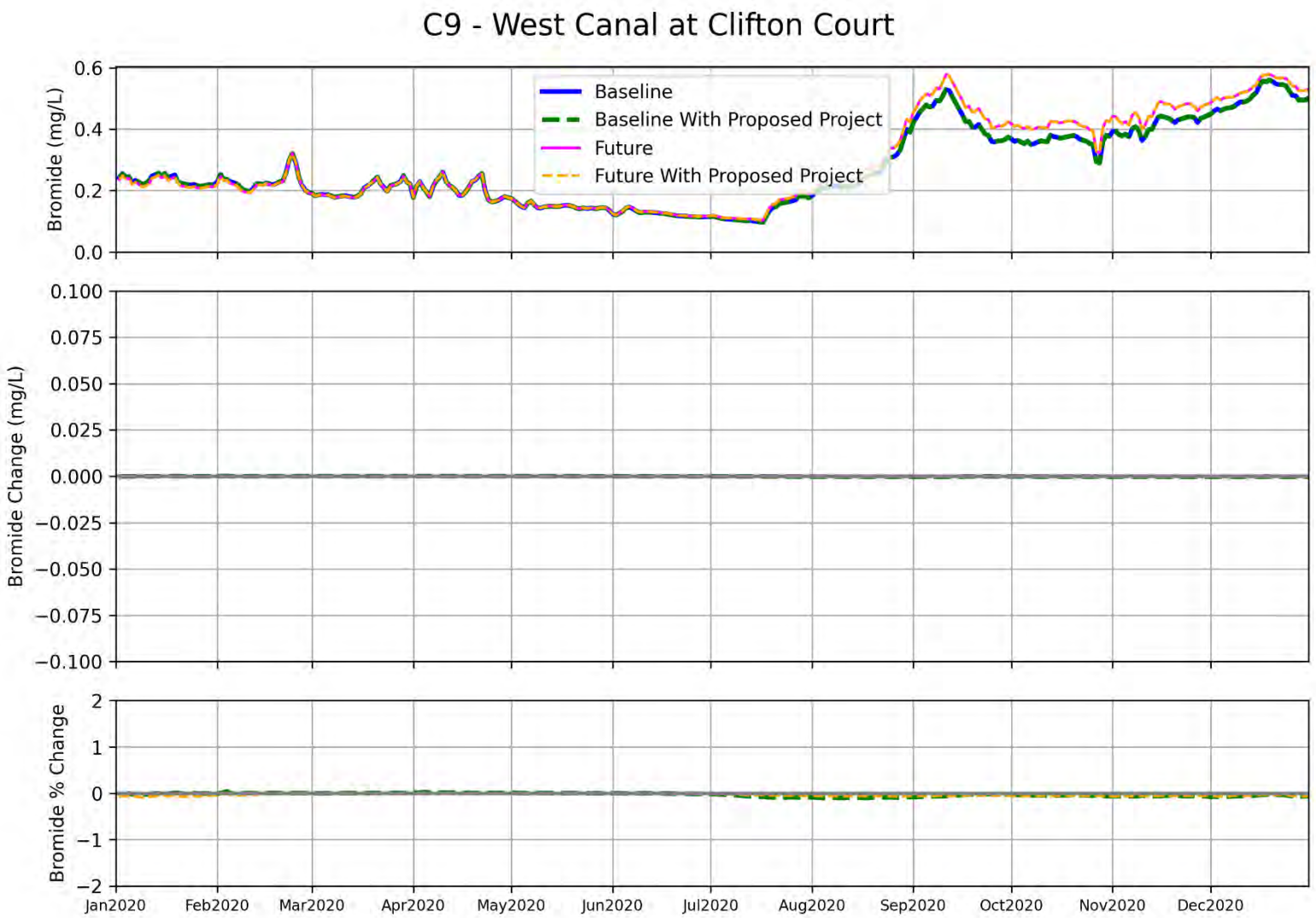

Figure 99 Daily average bromide at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

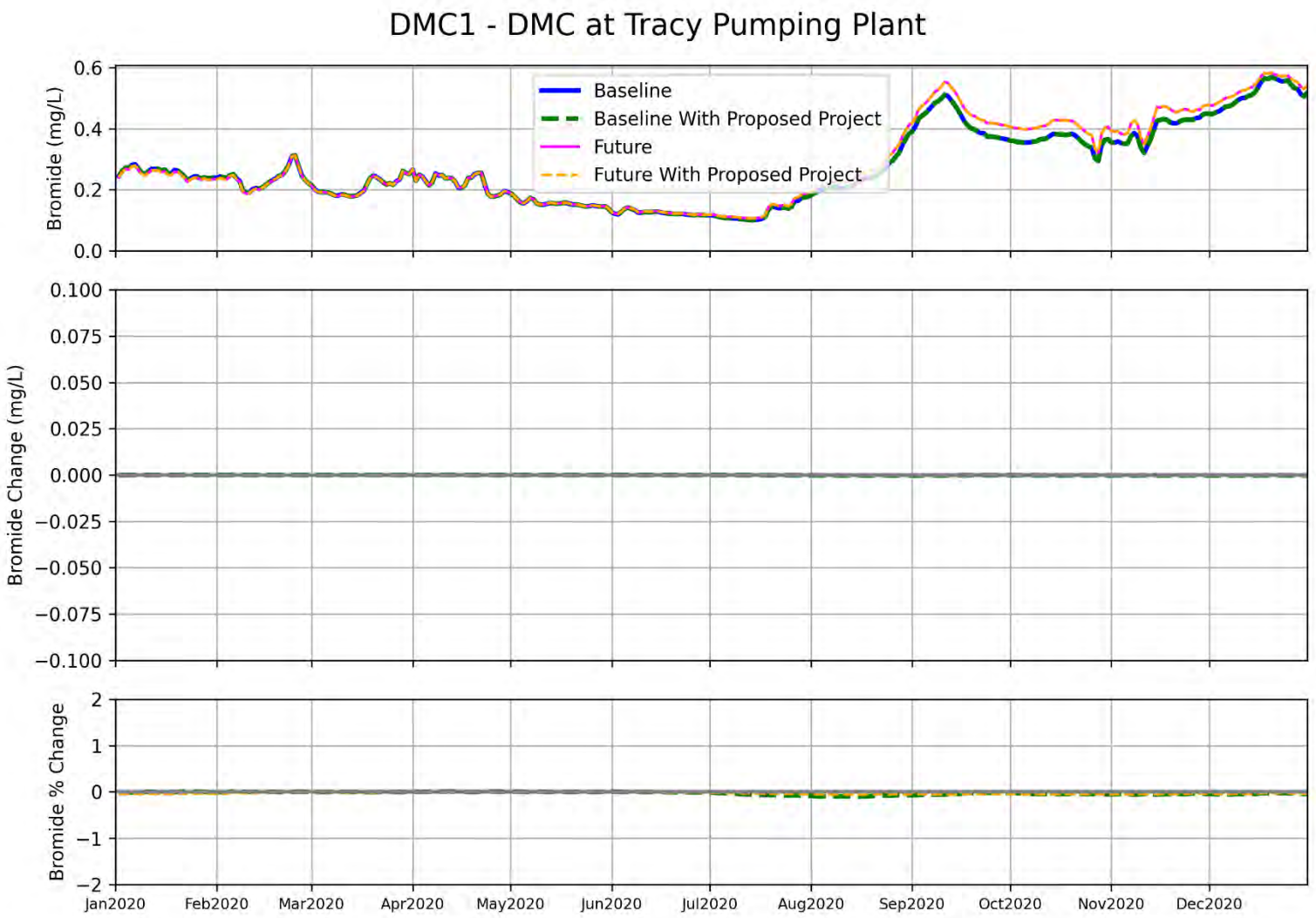

Figure 100 Daily average bromide at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

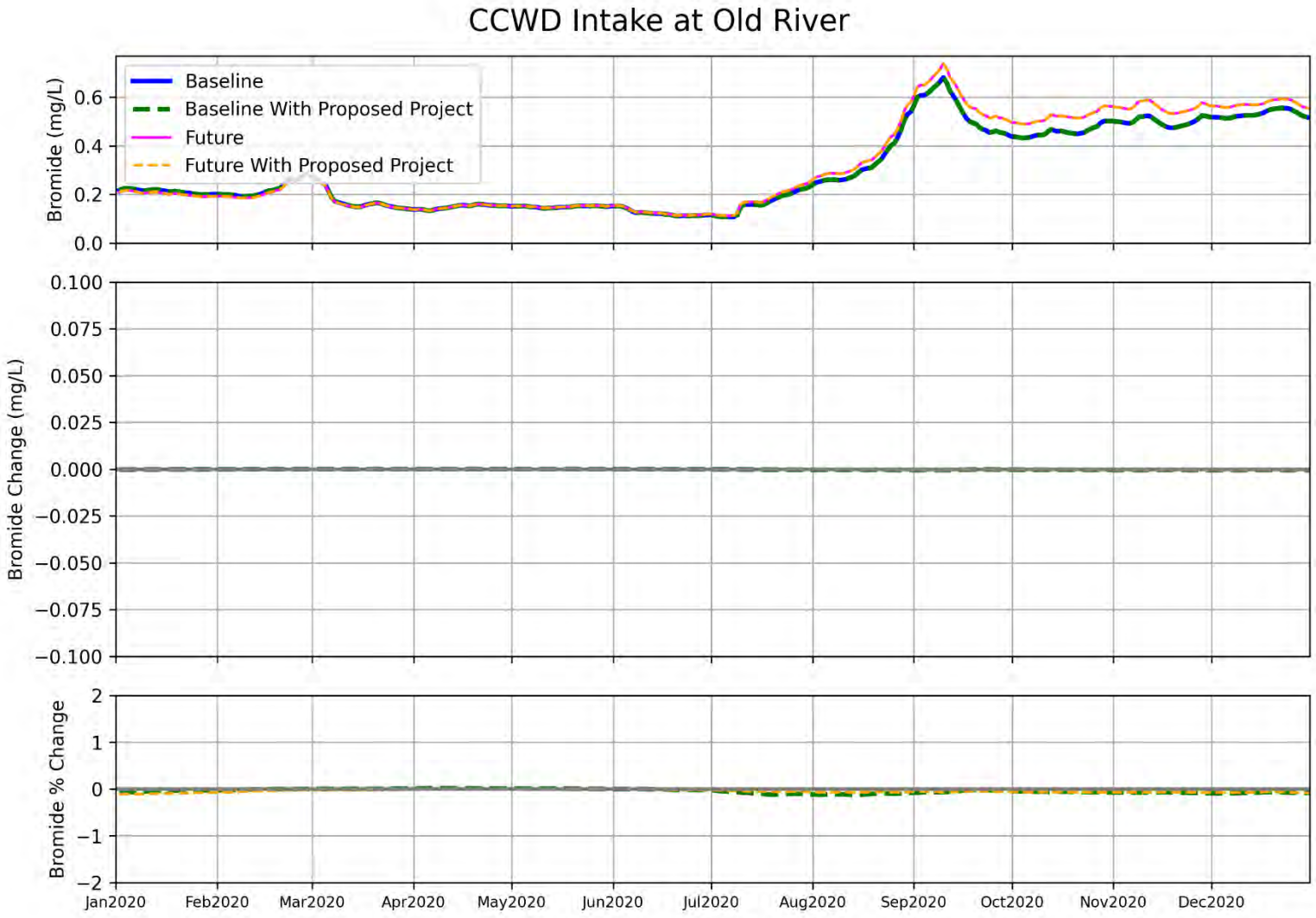

Figure 101 Daily average bromide at CCWD intake at Old River for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

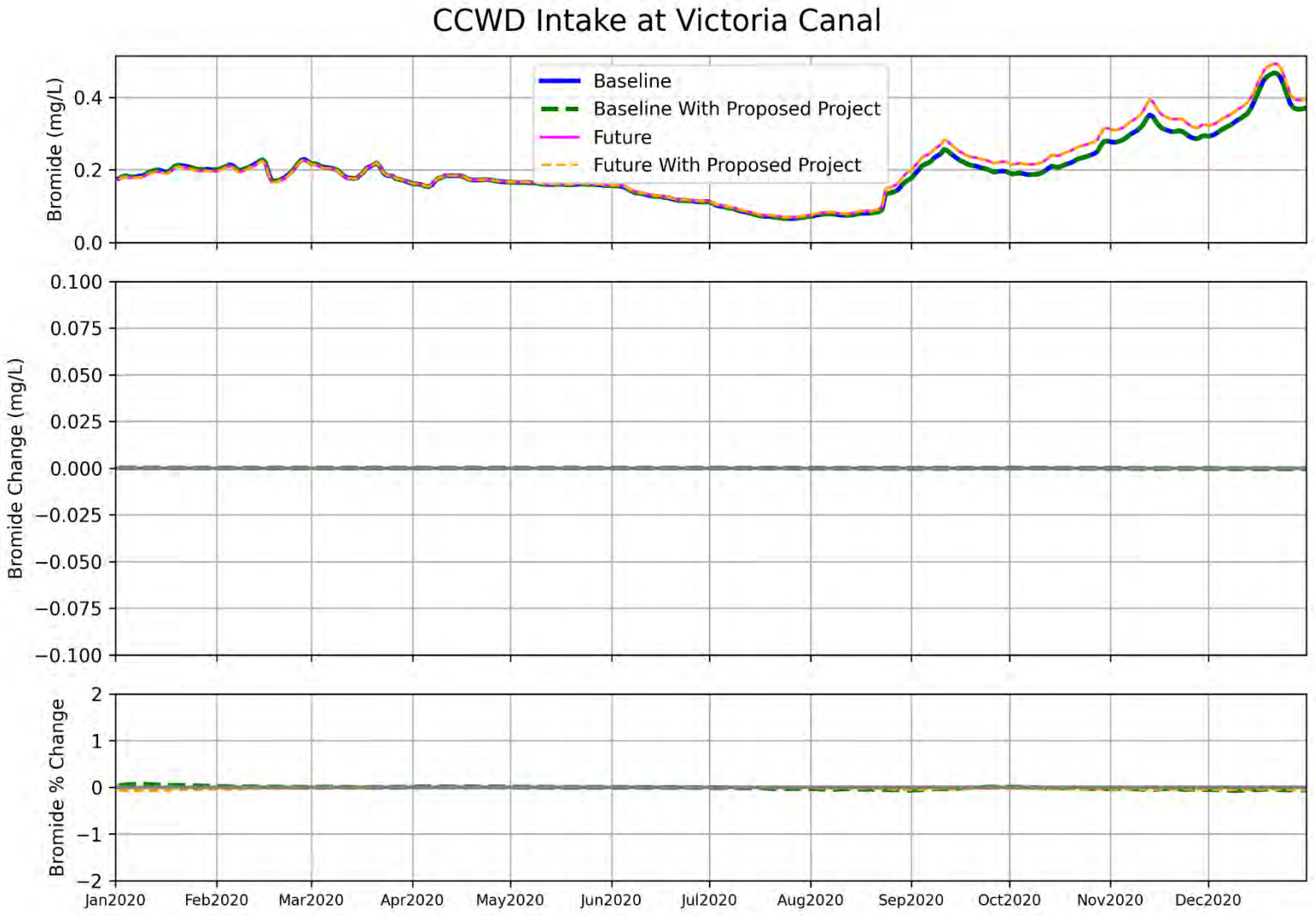

Figure 102 Daily average bromide at station CCWD intake at Victoria Canal for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

Summary and Conclusions

The RMA Bay-Delta model was applied to evaluate the proposed Project stage and water quality impacts relative to Baseline and Future conditions. The Baseline condition includes projects constructed prior to July 2024. The Baseline and Future condition networks represent the current state of the proposed Project area (no tidal action and not included in the grid). The proposed Project design includes construction of interior channels and notching a berm on the east side of the proposed Project to connect tides to the Yolo Bypass Toe Drain. For the Baseline with proposed Project and Future with proposed Project scenarios, the proposed Project is represented in the model in sufficient detail to achieve the modeling goal of assessing regional stage and water quality impacts.

Four scenarios were evaluated:

1. Baseline – existing conditions as of July 2024
2. Baseline with proposed Project – Baseline with proposed Project restoration (evaluated relative to Baseline)
3. Future – Baseline with Prospect Island, McCormack Willamson Tract Phase B, LEMBP, Cache Slough Mitigation Bank, Chipps Island, Grizzly King, Lookout Slough, North Delta Fish Conservation Bank, Peters Pocket and Zacharias Ranch
4. Future with proposed Project – Future with proposed Project restoration (evaluated relative to Future)

The evaluation periods were January 1 to December 31, 2018 and January 1 to December 31, 2020 with two-month spin-up periods. These periods cover a below normal hydrology (2018) and a dry year hydrology (2020).

Hydrodynamic model results for the four modeled scenarios were analyzed to determine potential impacts of the proposed Project on stage in the Delta. July 2018 results were processed to produce average tidal range, mean higher high water (MHHW) and mean lower low water (MLLW) stage values. Relative to the Baseline and Future conditions, the proposed Project causes a reduction in tidal range in the Toe Drain, for about 4.4 miles upstream of the proposed Project area, of approximately 0.1 to 0.3 ft. Throughout the rest of the model domain, tidal range changes are less than 0.05 ft. The proposed Project decreases MHHW in the Toe Drain, for about 5.5 miles upstream of the proposed Project area, by approximately 0.08 ft. Throughout the rest of the model domain, MHHW changes are less than 0.05 ft. The proposed Project increases MLLW in the Toe Drain, for about 4.4 miles upstream of the proposed Project

area, by approximately 0.05 ft. Throughout the rest of the model domain, MLLW changes are less than 0.05 ft.

Evaluation of peak stage near Liberty Island and Prospect Island indicate the proposed Project is unlikely to have any discernible impact on these marsh areas.

To evaluate the proposed Project impacts on water quality, modeled EC for all four scenarios was monthly averaged and compared for the select D-1641 compliance locations and municipal water intakes. The modeling results showed that the proposed Project has small impacts on regional salinity in the Delta, relative to Baseline and Future conditions. On a monthly average basis, the largest increases are 0.4%, occurring in Barker Slough during the spring of 2020 under Baseline conditions. The largest decreases of 0.3% occur at Sacramento River at Emmaton during the Winter of 2018 under Baseline conditions. Salinity increases at North Bay Aqueduct and City of Vallejo intakes are generally 0.3% or less and salinity changes at south Delta exports and CCWD water intakes are 0.1% or less and tend to be reductions.

Model results were processed to determine the potential for the proposed Project to cause non-compliance with the D-1641 water quality objectives. Seasonal EC standards apply to Agriculture, Fish and Wildlife compliance stations at the Sacramento River at Emmaton (D22), Sacramento River at Collinsville (C2), and the San Joaquin River at Jersey Point (D15) and San Joaquin River at Prisoners Point (D29) and chloride standards at the water intakes. The proposed Project did not cause any EC changes at the D-1641 stations that were large enough to impact compliance.

Modeled EC and Martinez volumetric source fraction results were post-processed to estimate chloride concentrations to assess compliance at the water intakes for this constituent. No violations of the chloride objectives occurred under any of the modeled configurations or time periods. Relative to the Baseline and Future conditions, the proposed Project had no impact on maximum mean daily chloride values upon which the D-1641 standards are based.

Evaluation of changes to X2 indicated that the proposed Project would generally decrease monthly averaged X2 by less than 0.02 km (66 ft).

Bromide concentrations were estimated from modeled EC and Martinez volumetric source fraction. Proposed Project impacts on bromide were small throughout the model domain. The largest increases occur at the NBA intake in Barker Slough during June 2018 under Baseline conditions. Changes at this location range from -0.2% to 1%. Bromide increases of up to 0.1% occur in the winter and spring of 2018 at the Contra Costa Canal at PP 1 for the Baseline condition. Otherwise, bromide is generally decreased by up to 0.2% at the south Delta water intakes.

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Appendix A: Model Boundary Conditions

2018 Model Boundary conditions

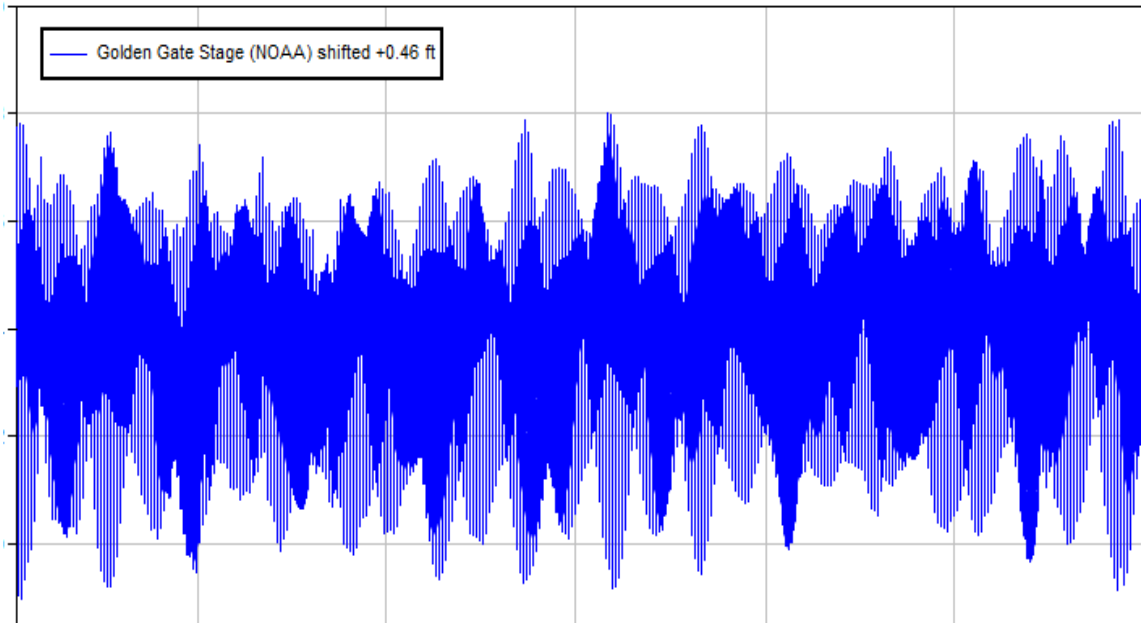

Figure 103 Golden Gate Bridge stage boundary for 2018 (data source: NOAA, shifted +0.46 ft). EC set constant at 50,000 µS/cm.

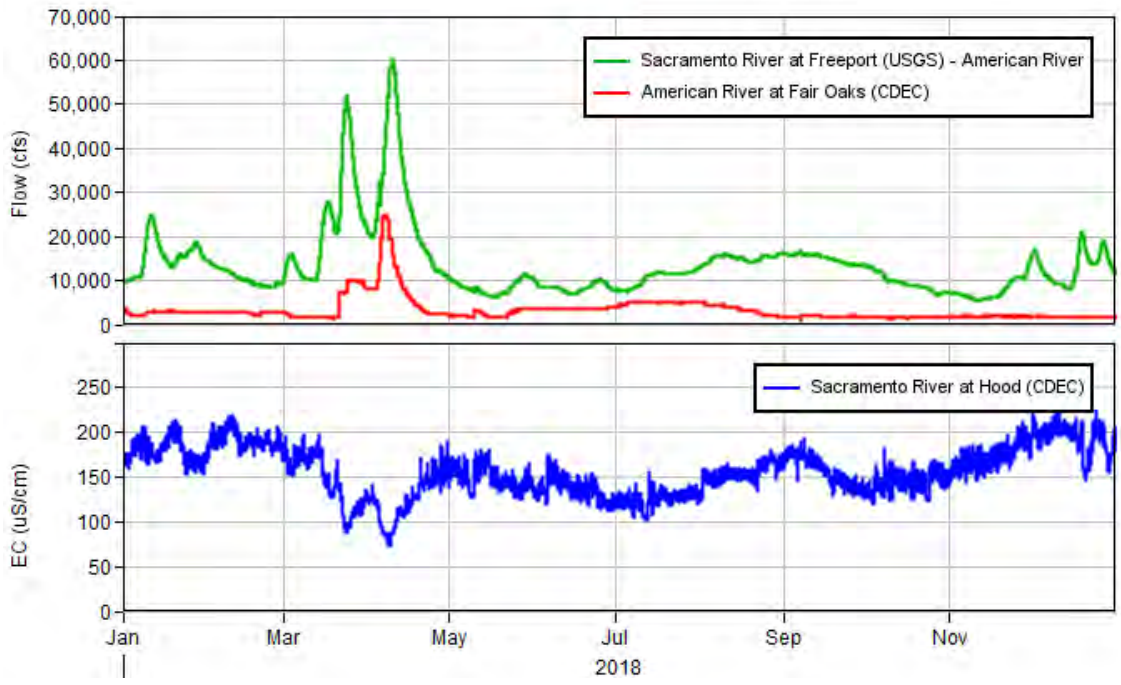

Figure 104 Flow and EC boundary conditions for the Sacramento River and American River for 2018. An internal EC boundary condition is applied in Sacramento River at Hood.

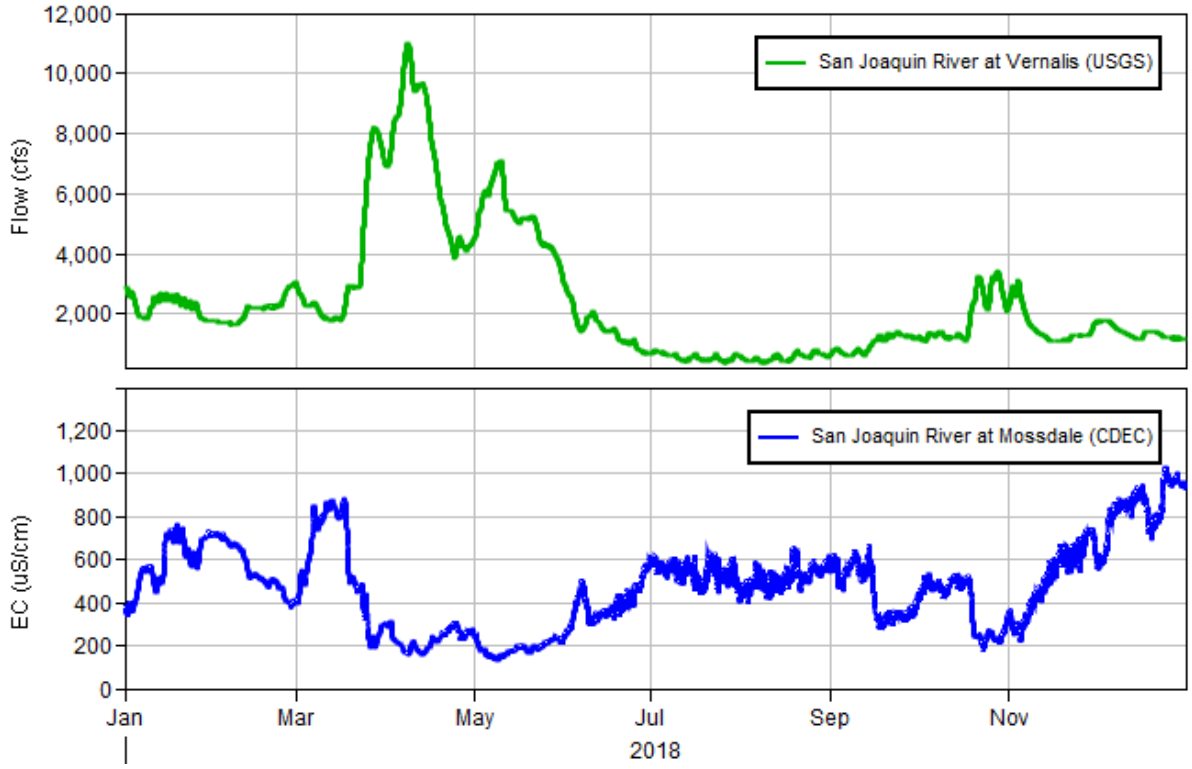

Figure 105 Flow and EC boundary conditions for the San Joaquin River for 2018. An internal EC boundary condition is applied in San Joaquin River at Mossdale.

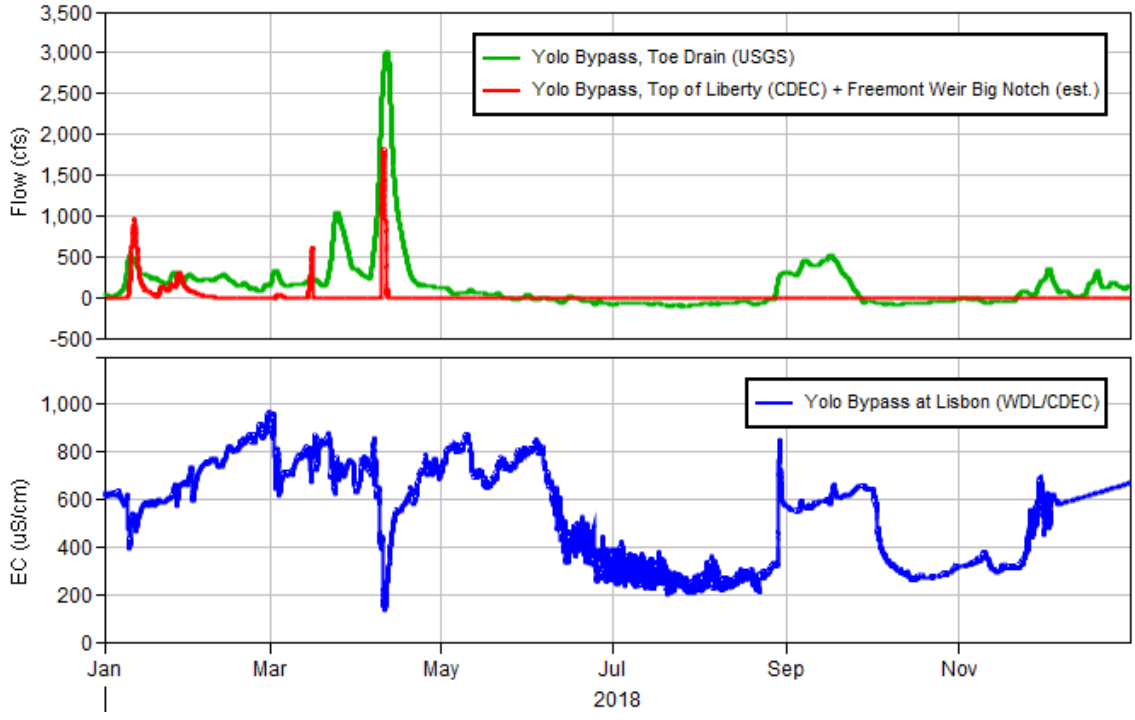

Figure 106 Flow and EC boundary conditions for the Yolo Bypass for 2018 (Big Notch flows only included in Future simulations).

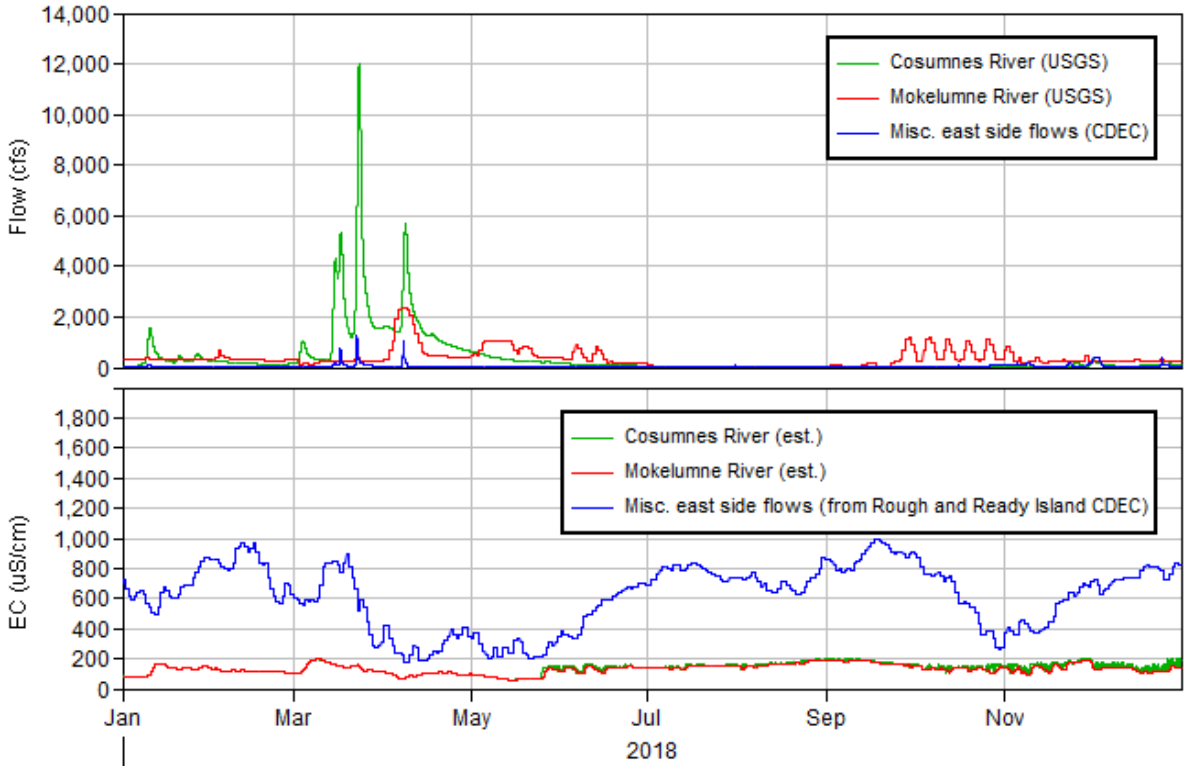

Figure 107 Flow and EC boundary conditions for east side inflows for 2018.

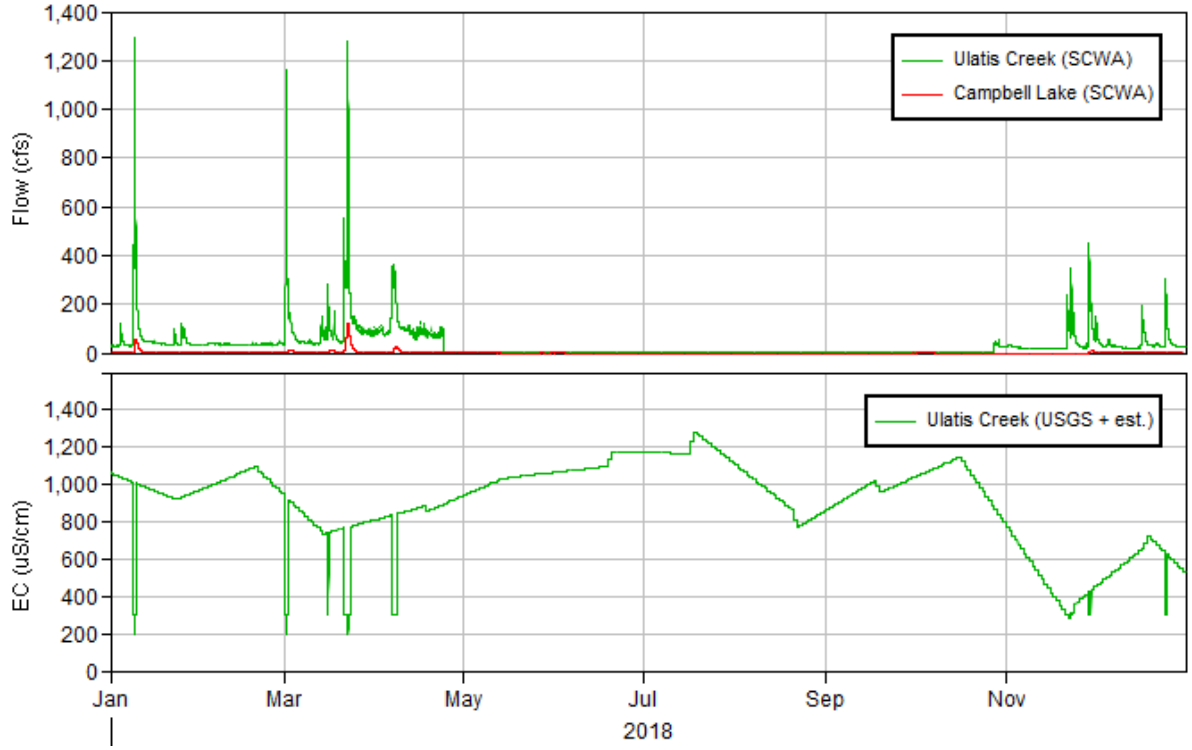

Figure 108 Flow and EC boundary conditions for Ulatis Creek and Campbell Lake for 2018 (EC set constant at 700 µS/cm for Campbell Lake).

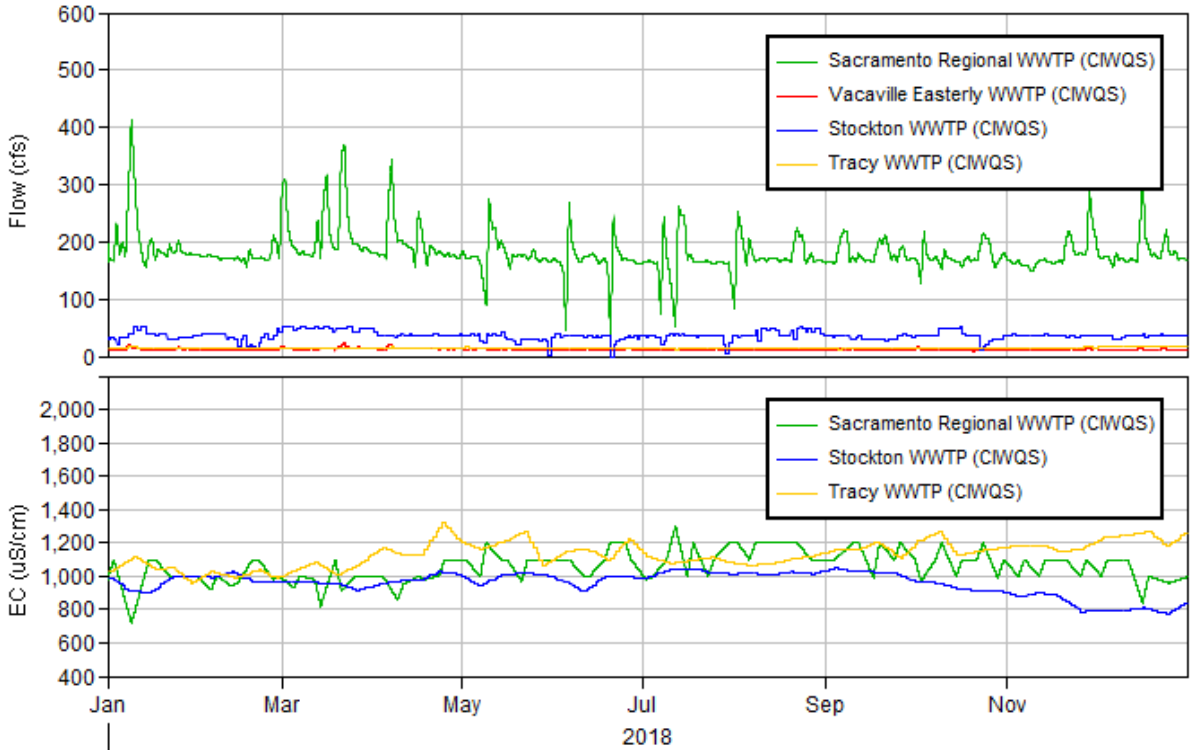

Figure 109 Flow and EC for Delta Wastewater Treatment Plants (WWTP) for 2018. Vacaville Easterly WWTP EC was set constant at 1050 µS/cm.

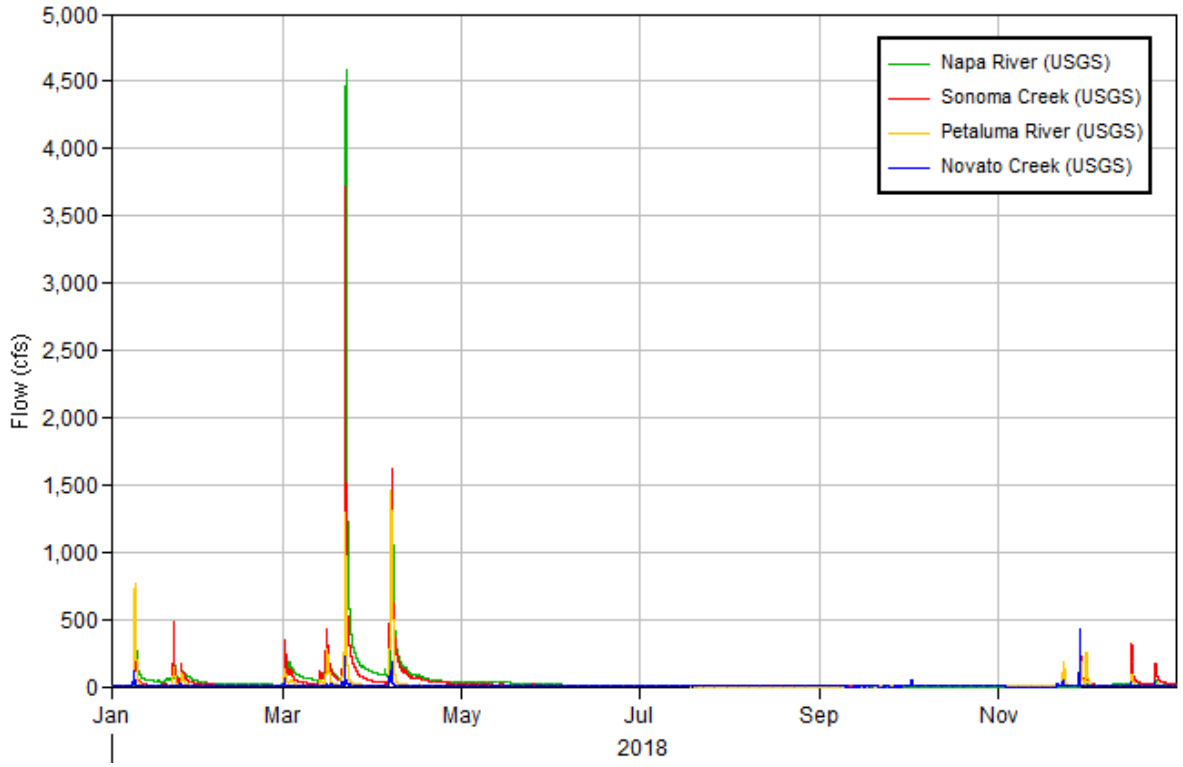

Figure 110 San Pablo Bay region inflows for 2018. EC set constant at 120 µS/cm.

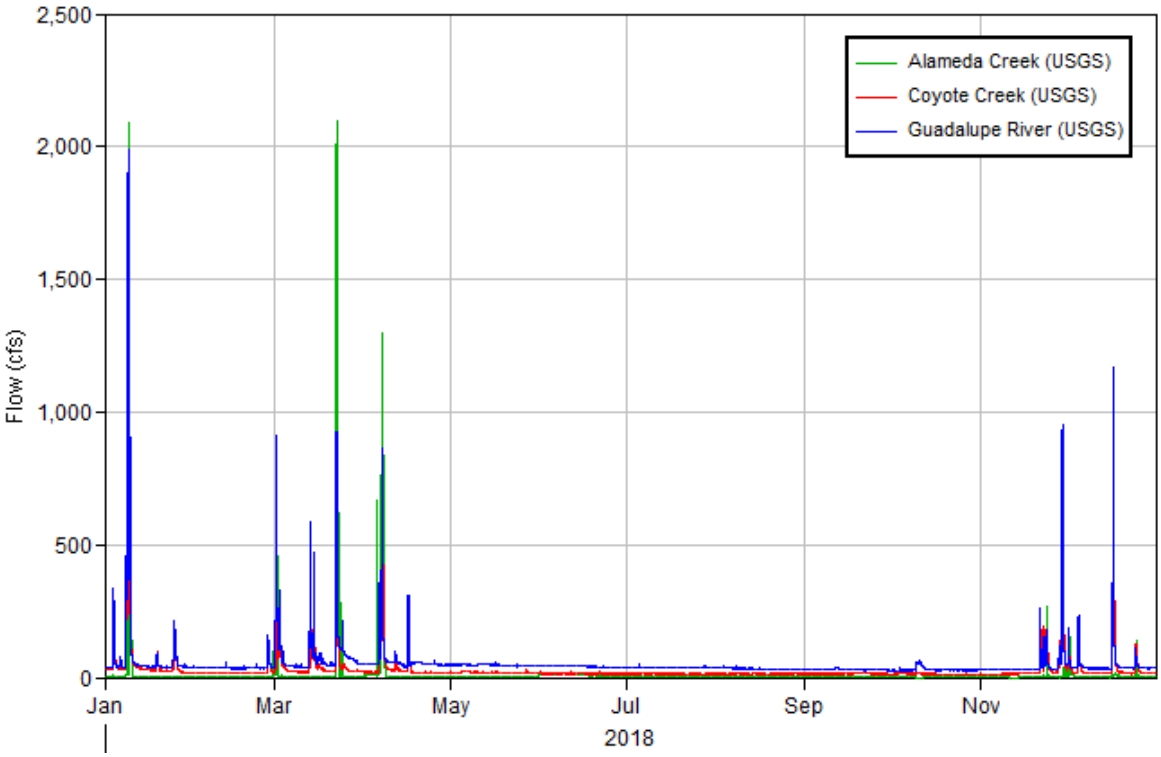

Figure 111 South Bay inflows for 2018. EC set constant at 120 µS/cm.

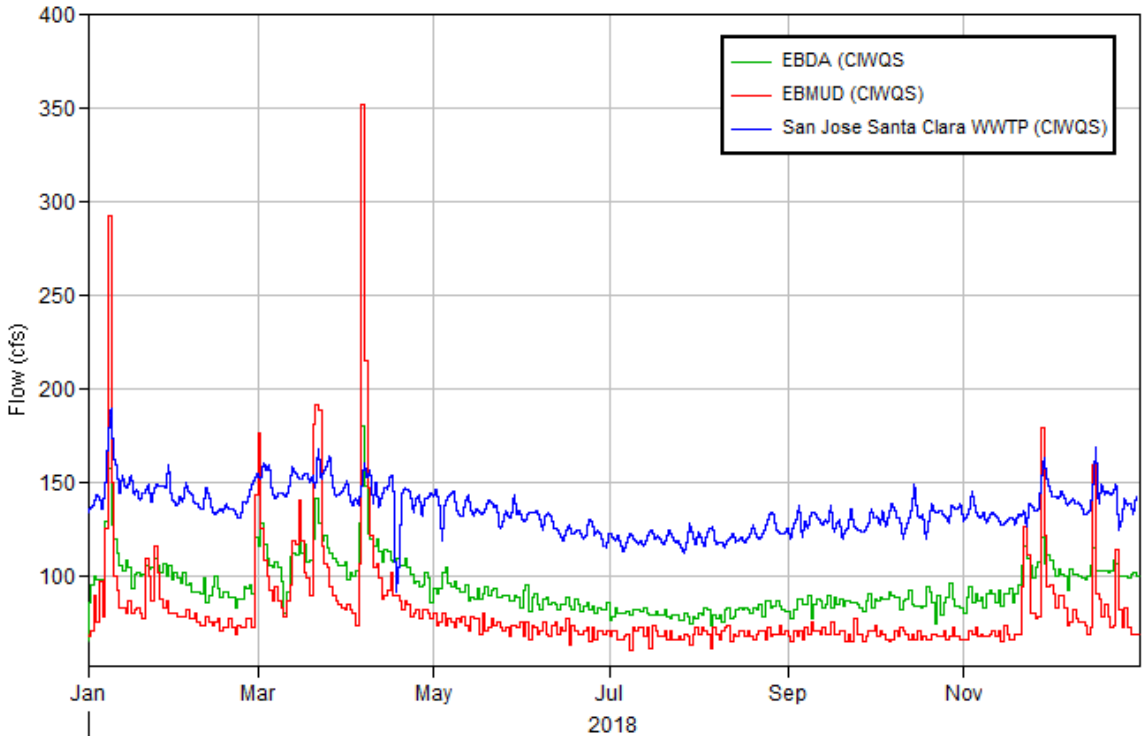

Figure 112 Wastewater Treatment Plant discharge flows in the south Bay region for 2018. EC set constant at 950 µS/cm.

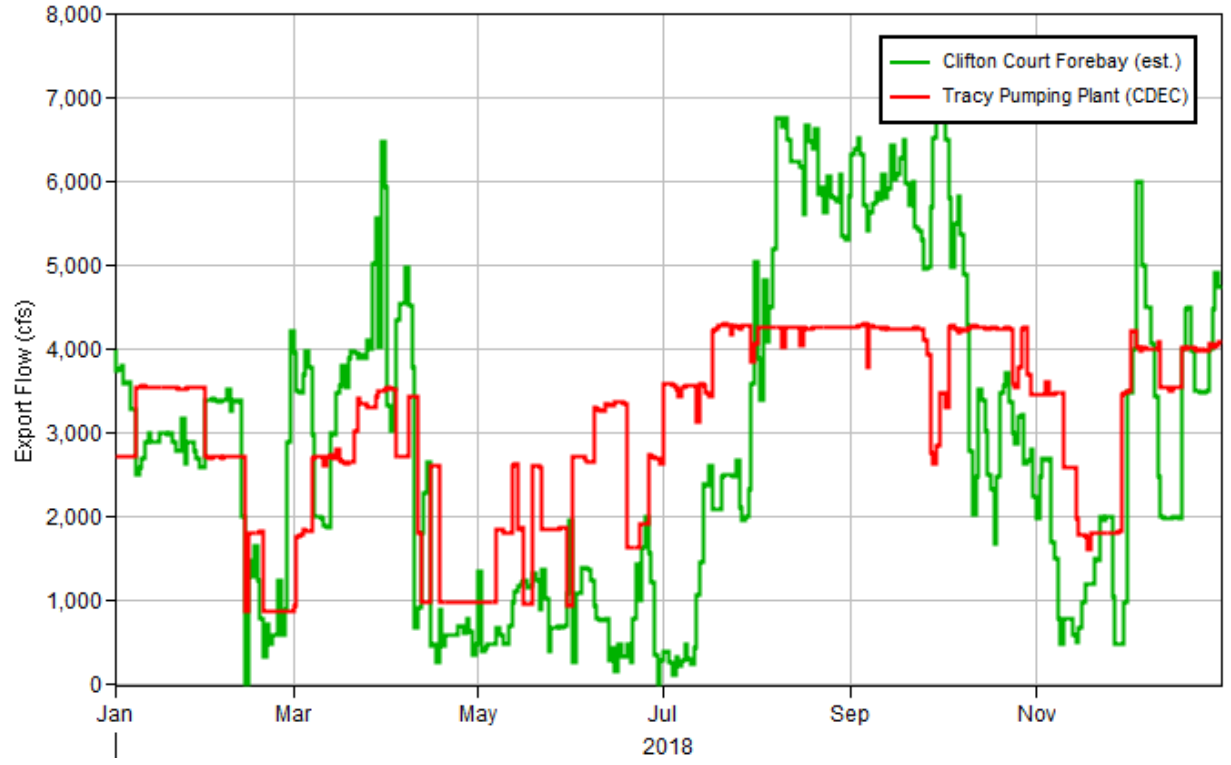

Figure 113 SWP (Clifton Court) and CVP (Tracy Pumping Plant) exports for 2018.

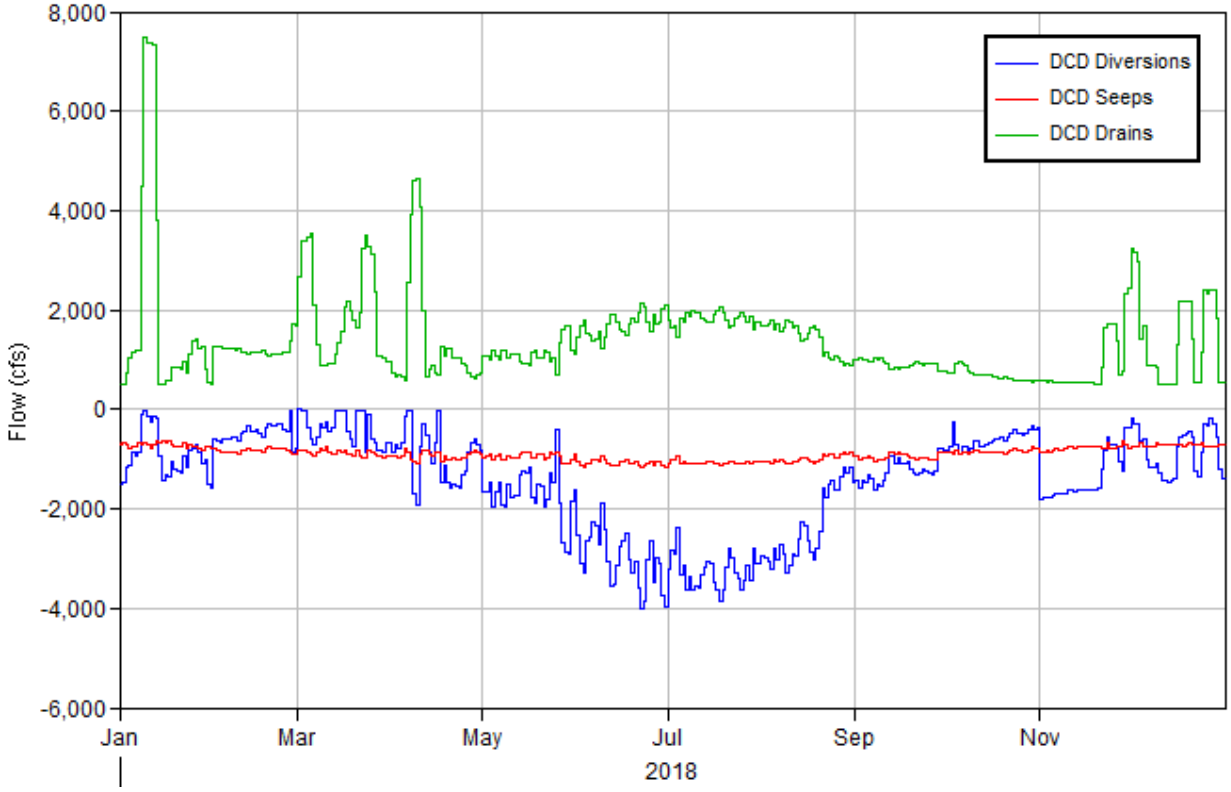

Figure 114 Sum of Delta DCD diversions, seeps and drains for 2018.

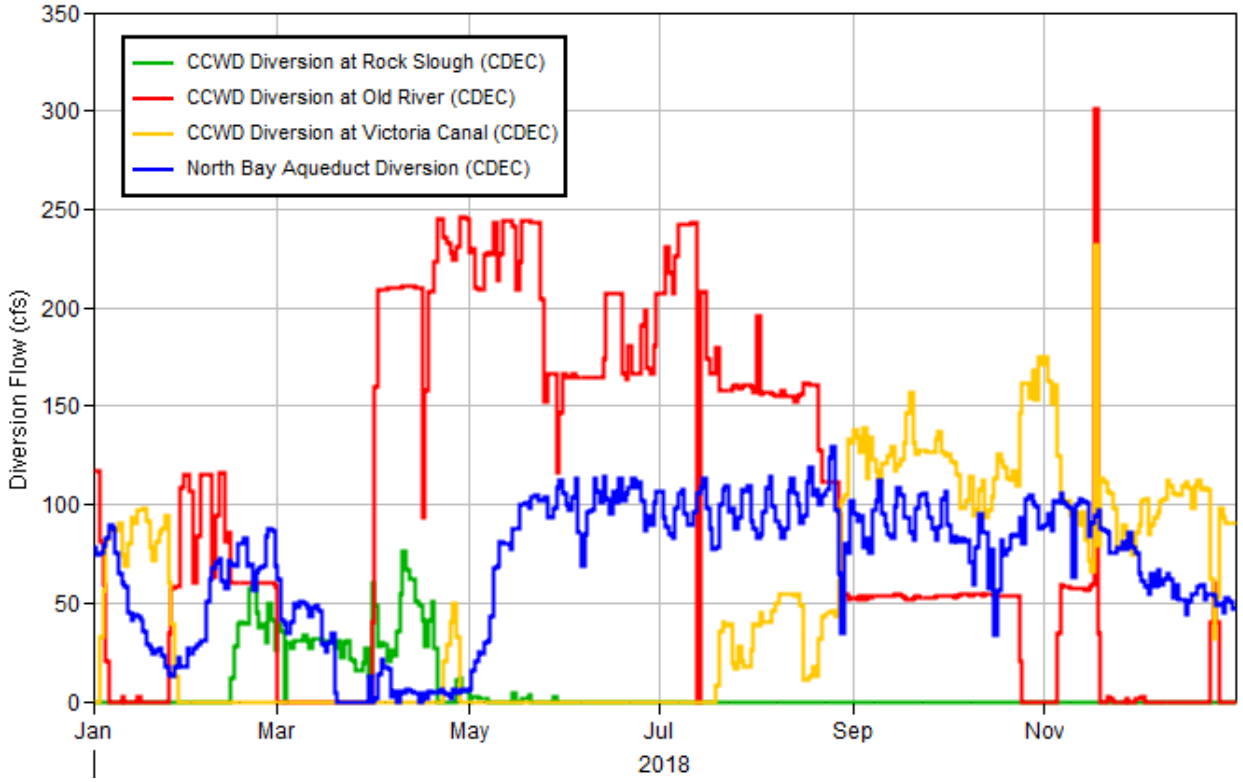

Figure 115 CCWD and North Bay Aqueduct diversions for 2018.

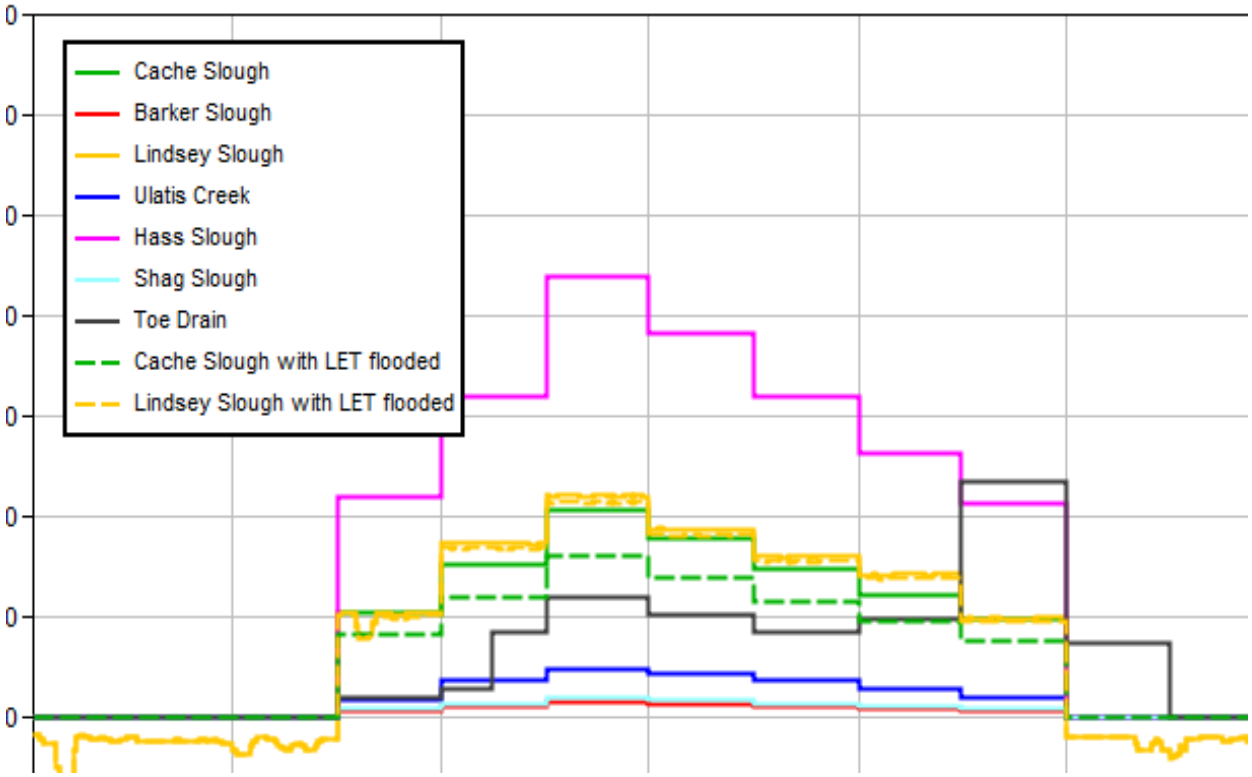

Figure 116 Agricultural diversions in the Cache Slough Complex channels for 2018.

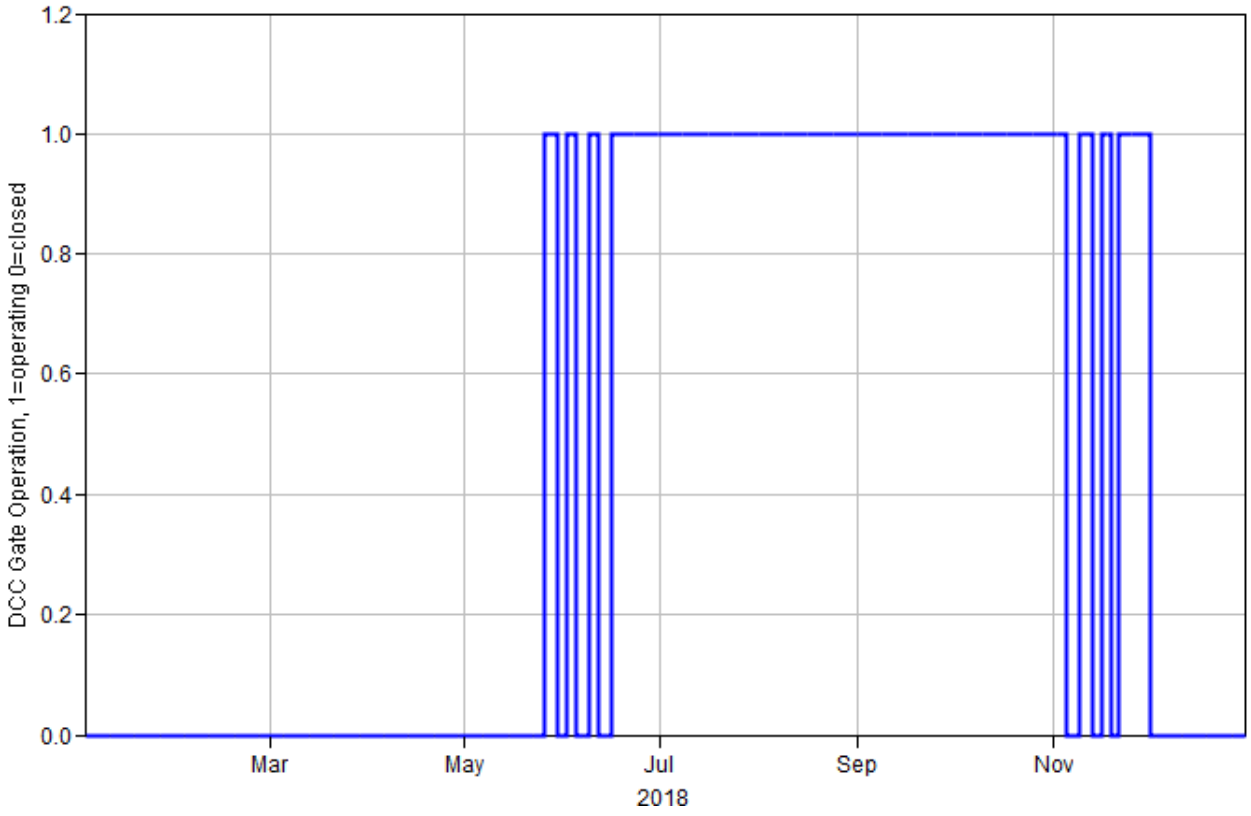

Figure 117 Delta Cross Channel operation schedule for 2018.

2020 Model Boundary conditions

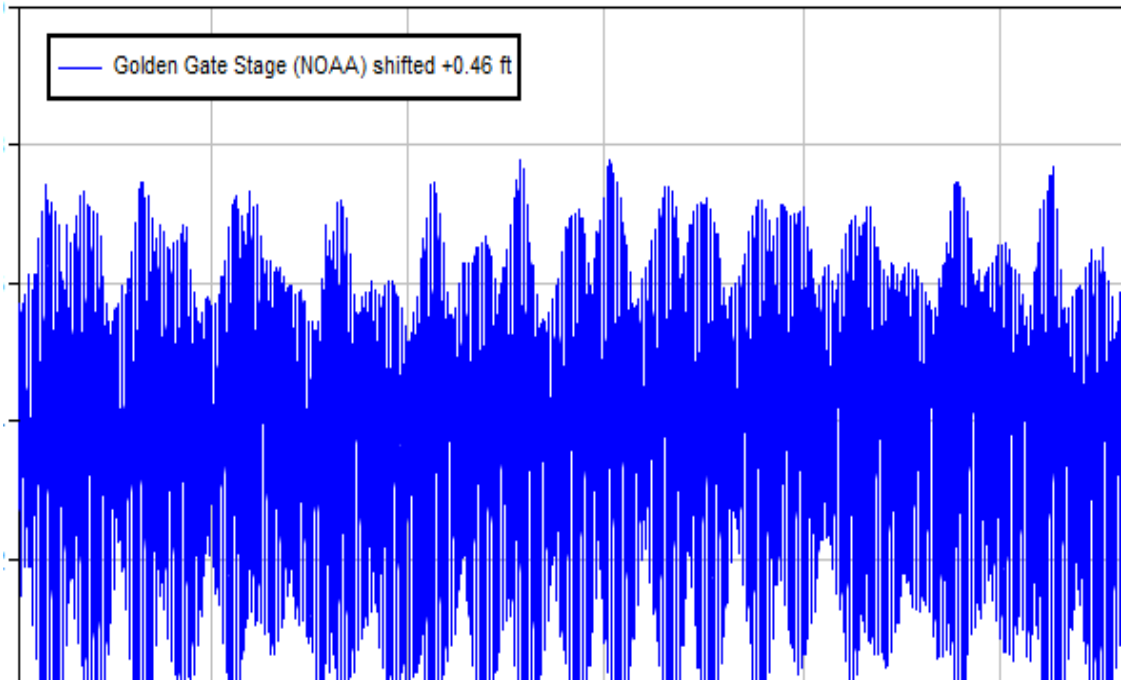

Figure 118 Golden Gate Bridge stage boundary for 2020 (data source: NOAA, shifted +0.46 ft). EC set constant at 50,000 µS/cm.

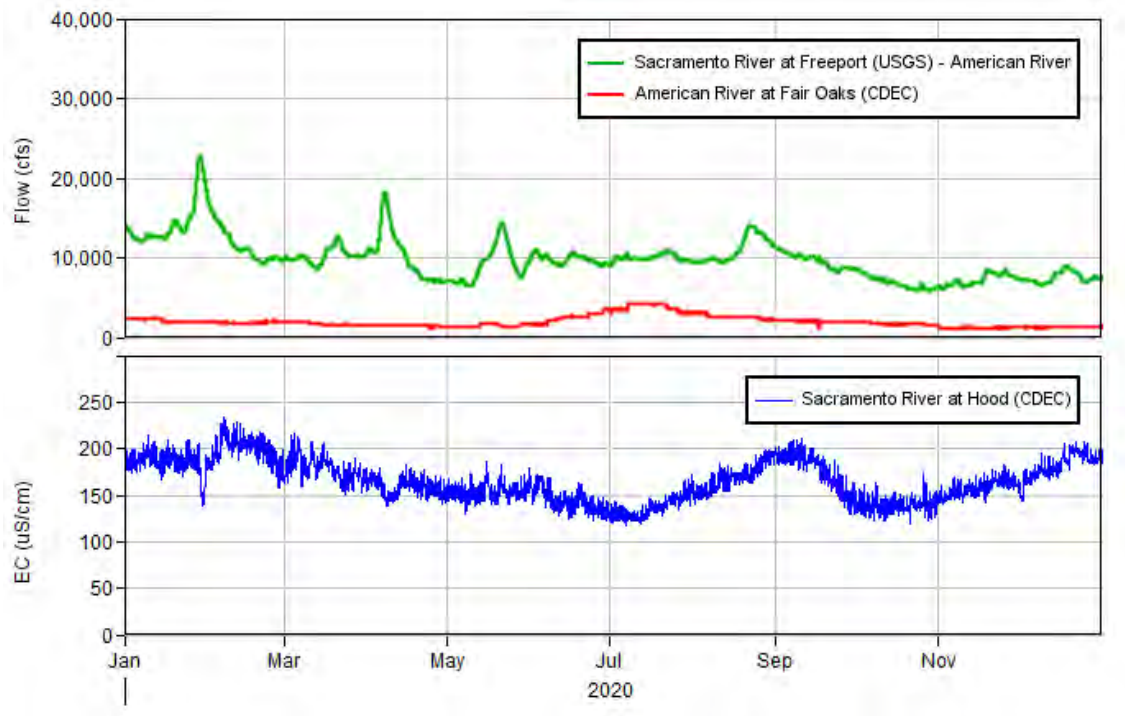

Figure 119 Flow and EC boundary conditions for the Sacramento River and American River for 2020. An internal EC boundary condition is applied in Sacramento River at Hood.

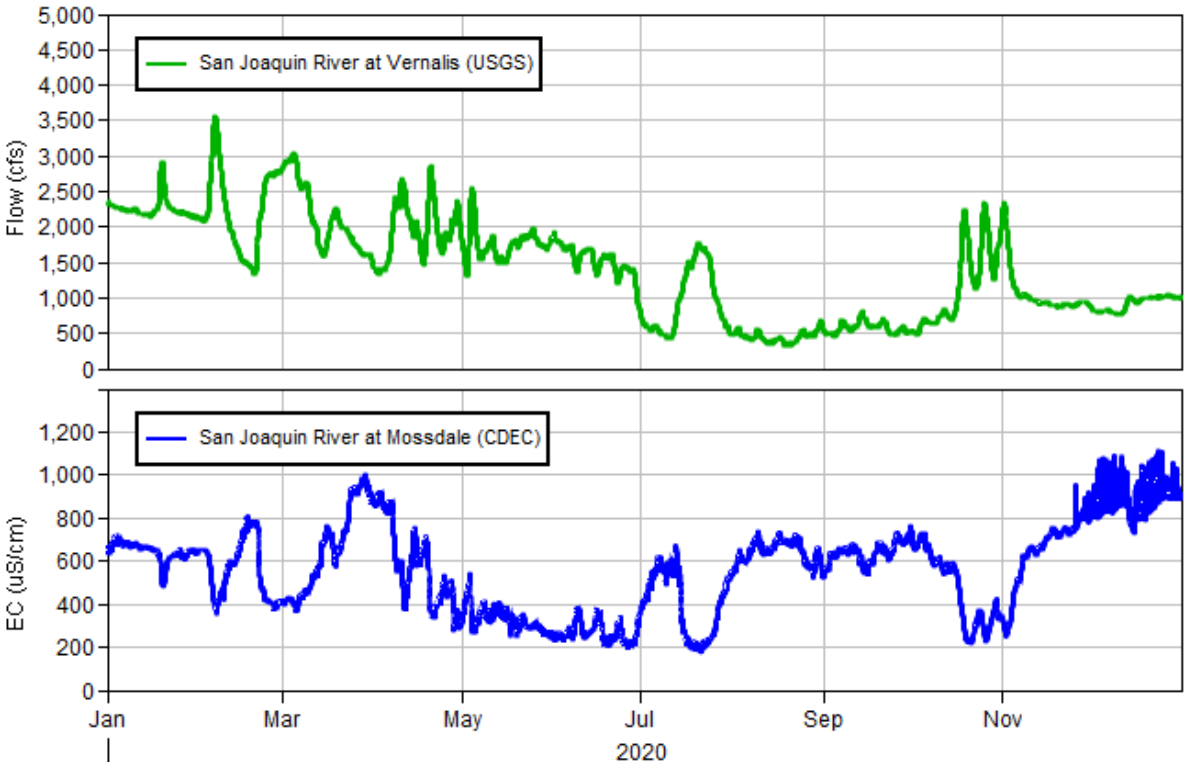

Figure 120 Flow and EC boundary conditions for the San Joaquin River for 2020. An internal EC boundary condition is applied in San Joaquin River at Mossdale.

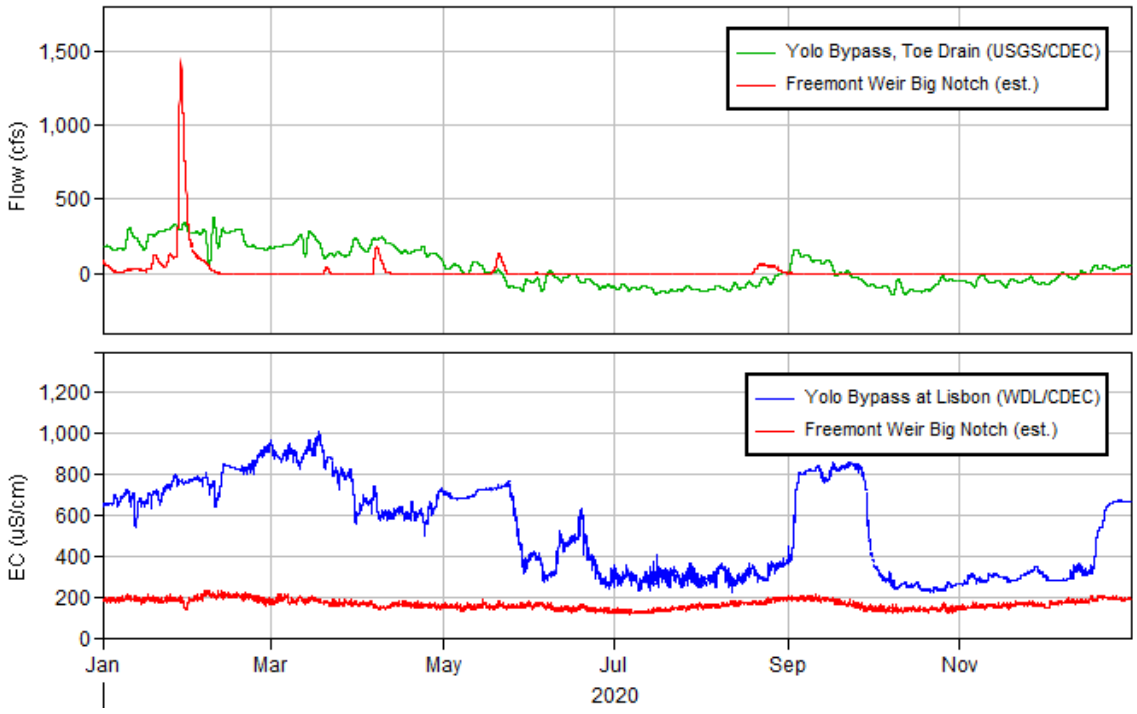

Figure 121 Flow and EC boundary conditions for the Yolo Bypass for 2020(Big Notch flows only included in Future simulations).

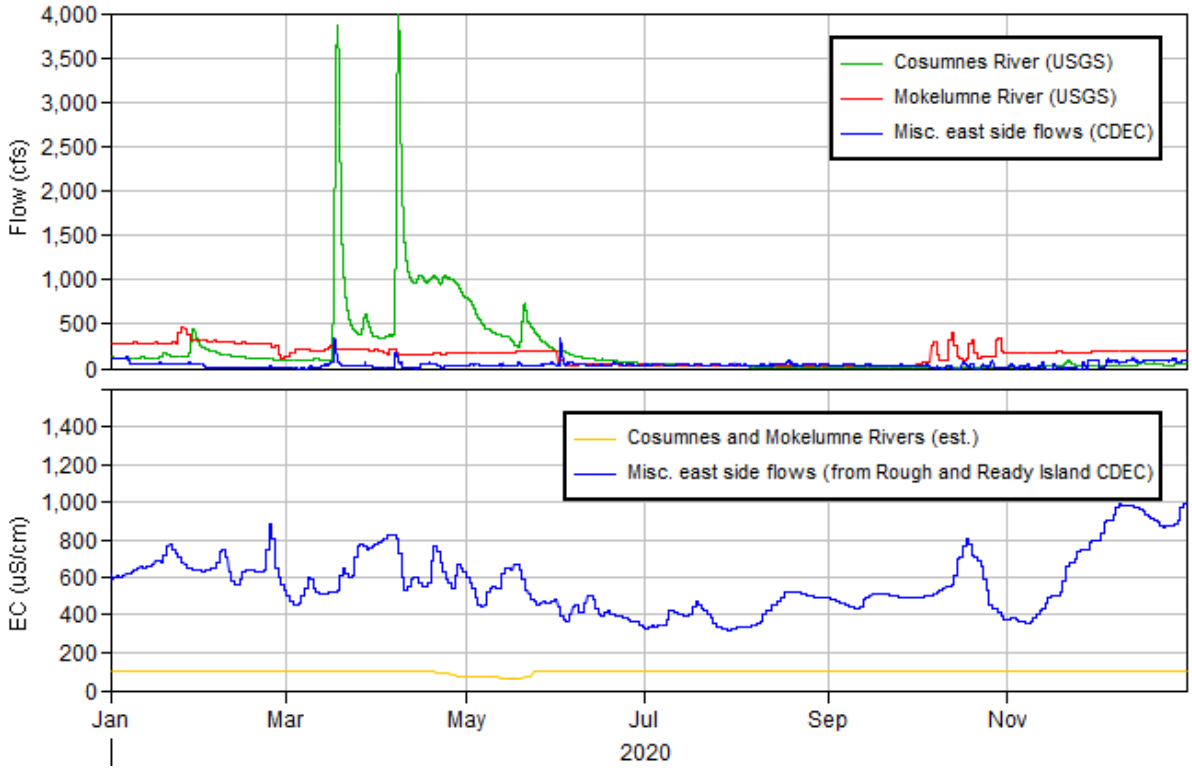

Figure 122 Flow and EC boundary conditions for east side inflows for 2020.

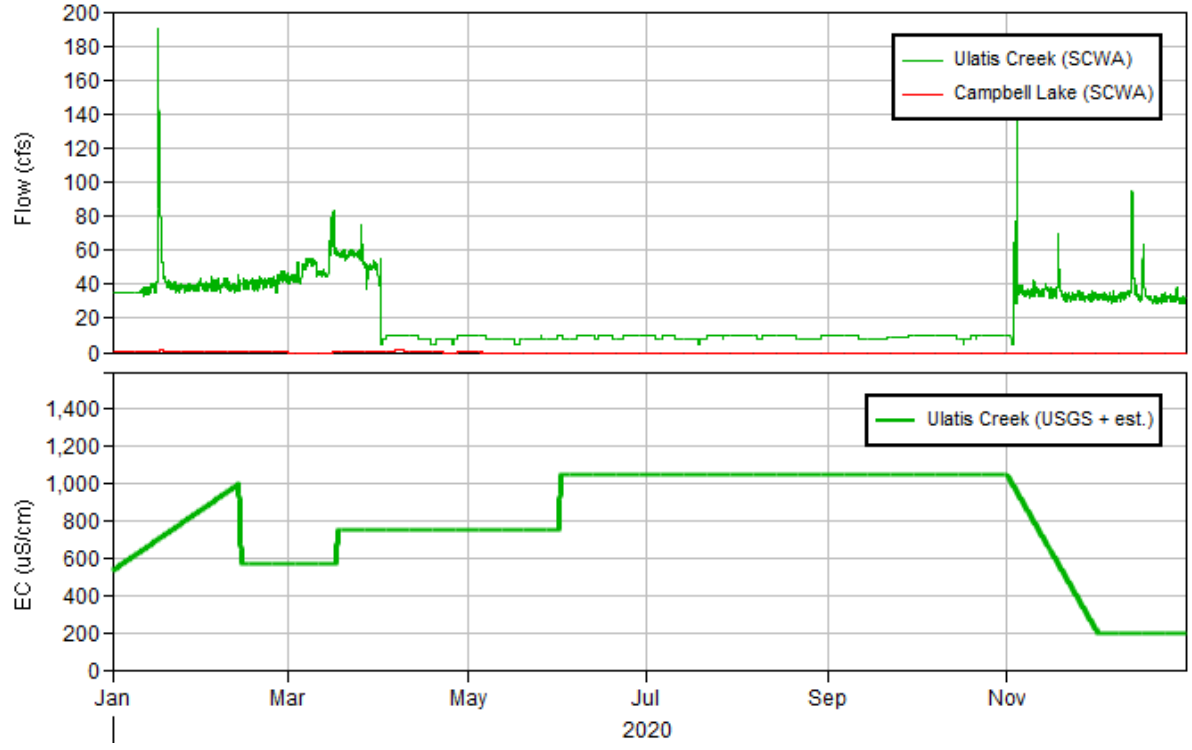

Figure 123 Flow and EC boundary conditions for Ulatis Creek and Campbell Lake for 2020 (EC set constant at 700 µS/cm for Campbell Lake).

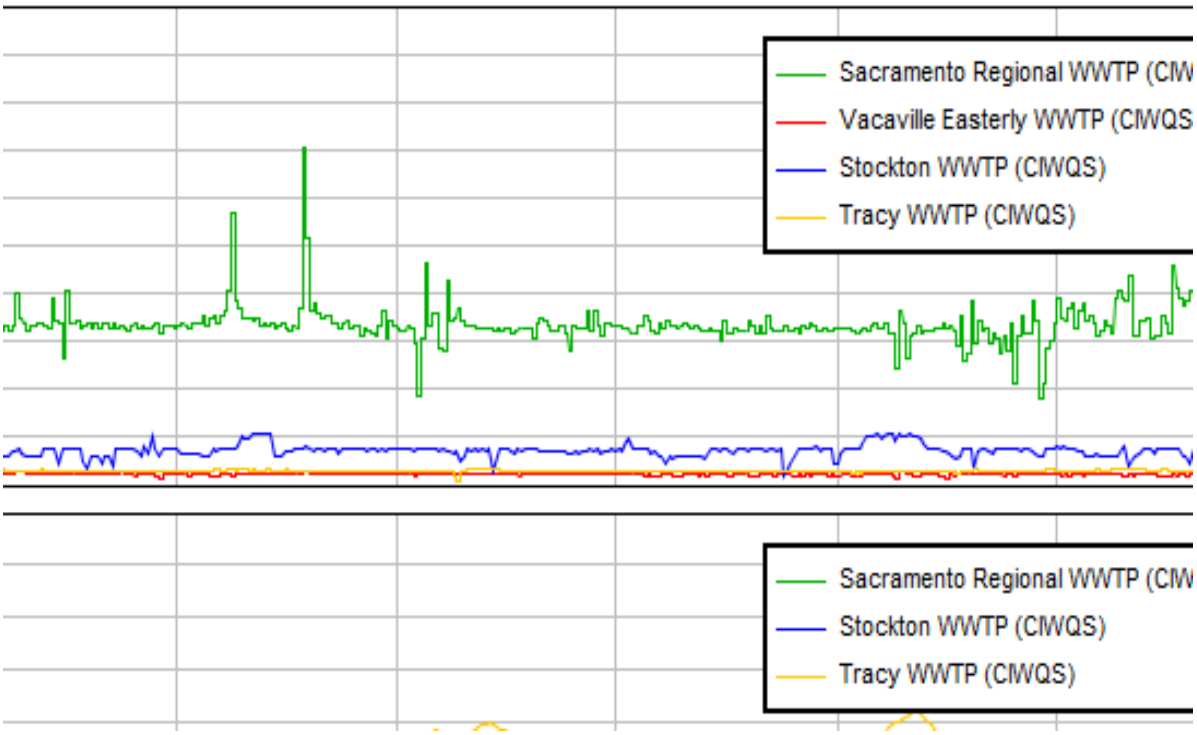

Figure 124 Flow and EC for Delta Wastewater Treatment Plants (WWTP) for 2020. Vacaville Easterly WWTP EC was set constant at 1050 µS/cm.

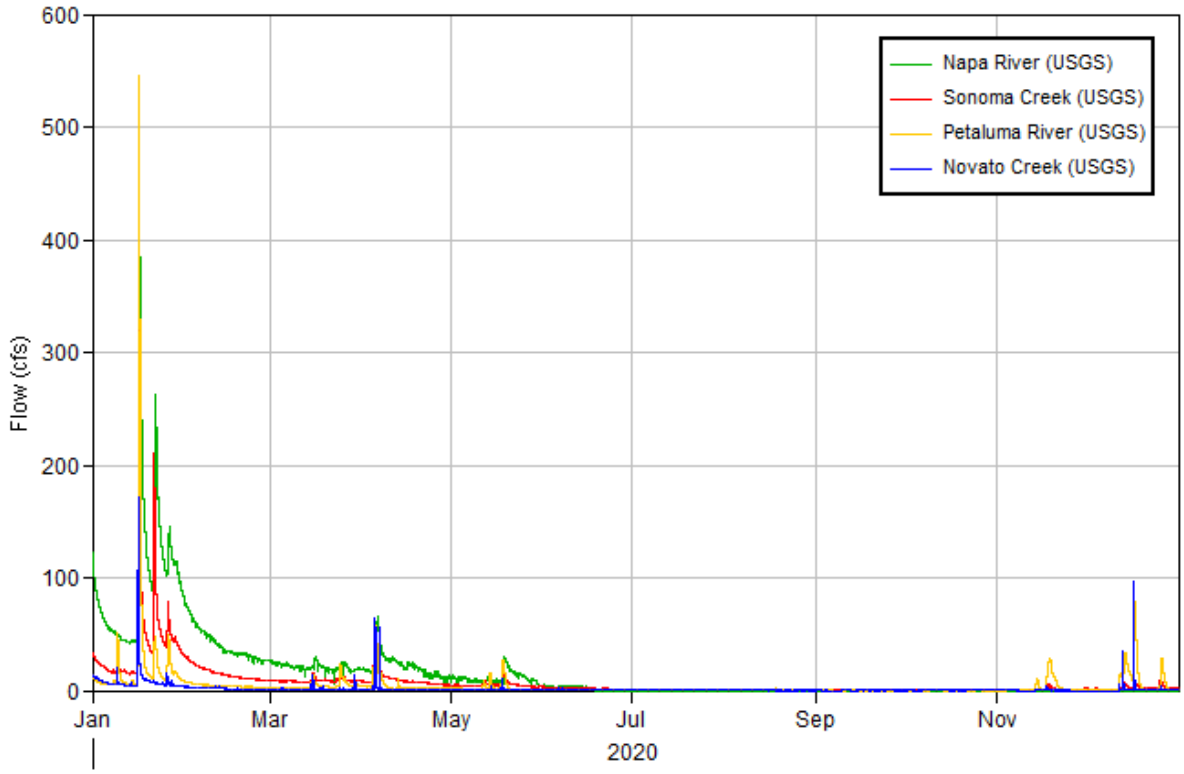

Figure 125 San Pablo Bay region inflows for 2020. EC set constant at 120 µS/cm.

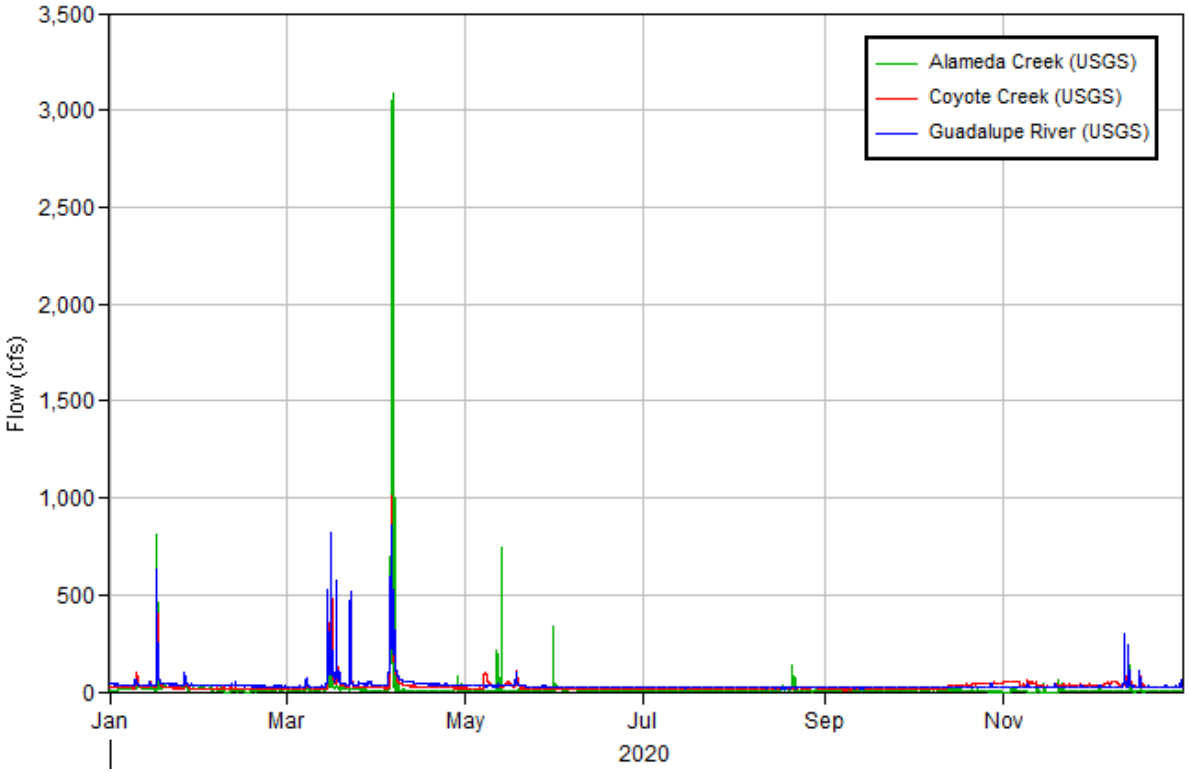

Figure 126 South Bay inflows for 2020. EC set constant at 120 µS/cm.

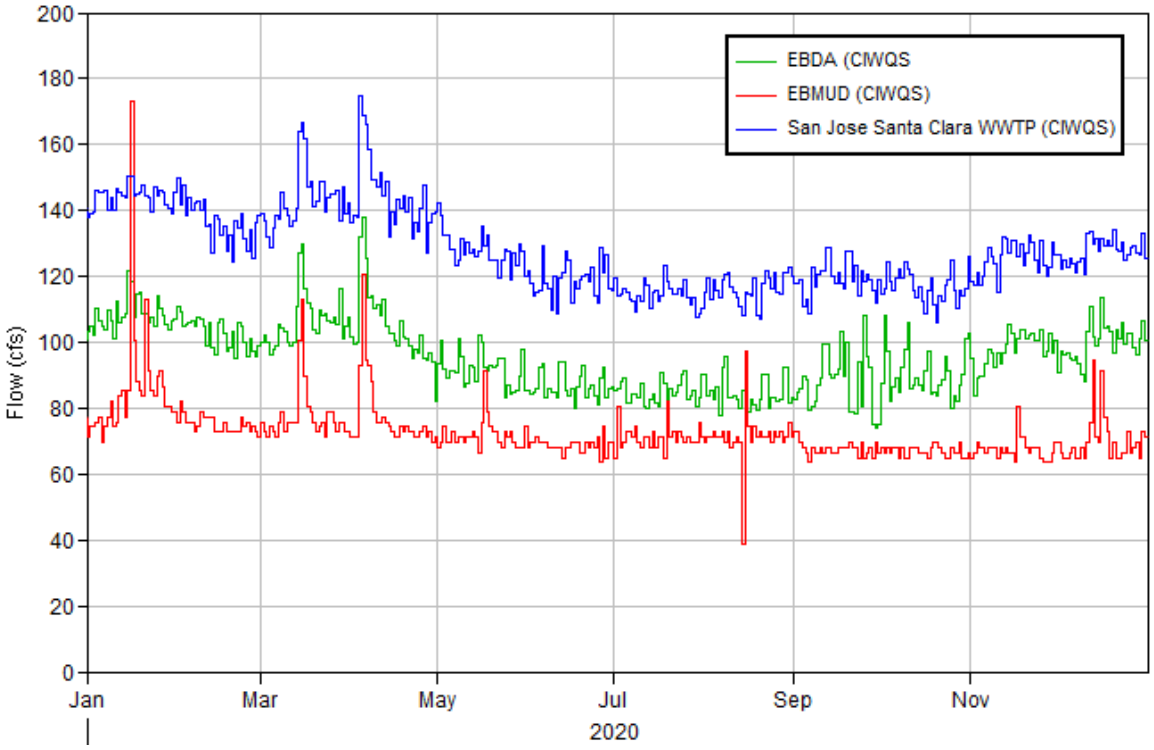

Figure 127 Wastewater Treatment Plant discharge flows in the south Bay region for 2020. EC set constant at 950 µS/cm.

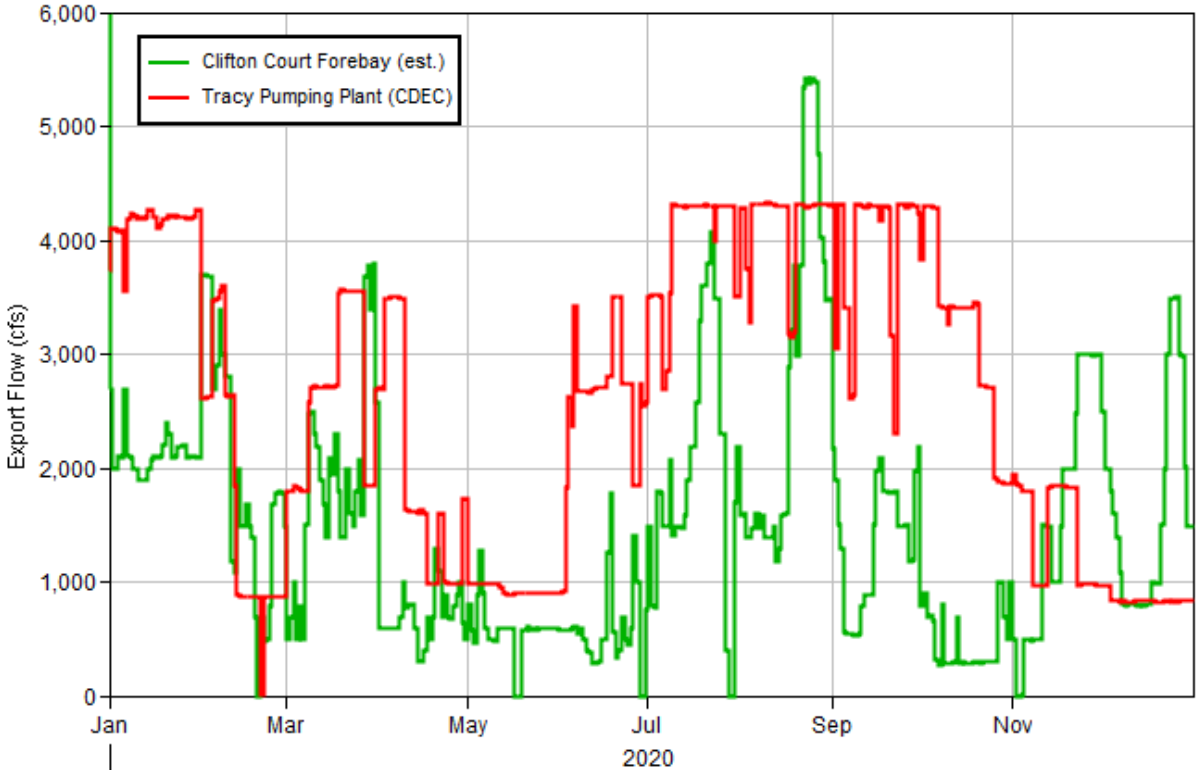

Figure 128 SWP (Clifton Court) and CVP (Tracy Pumping Plant) exports for 2020.

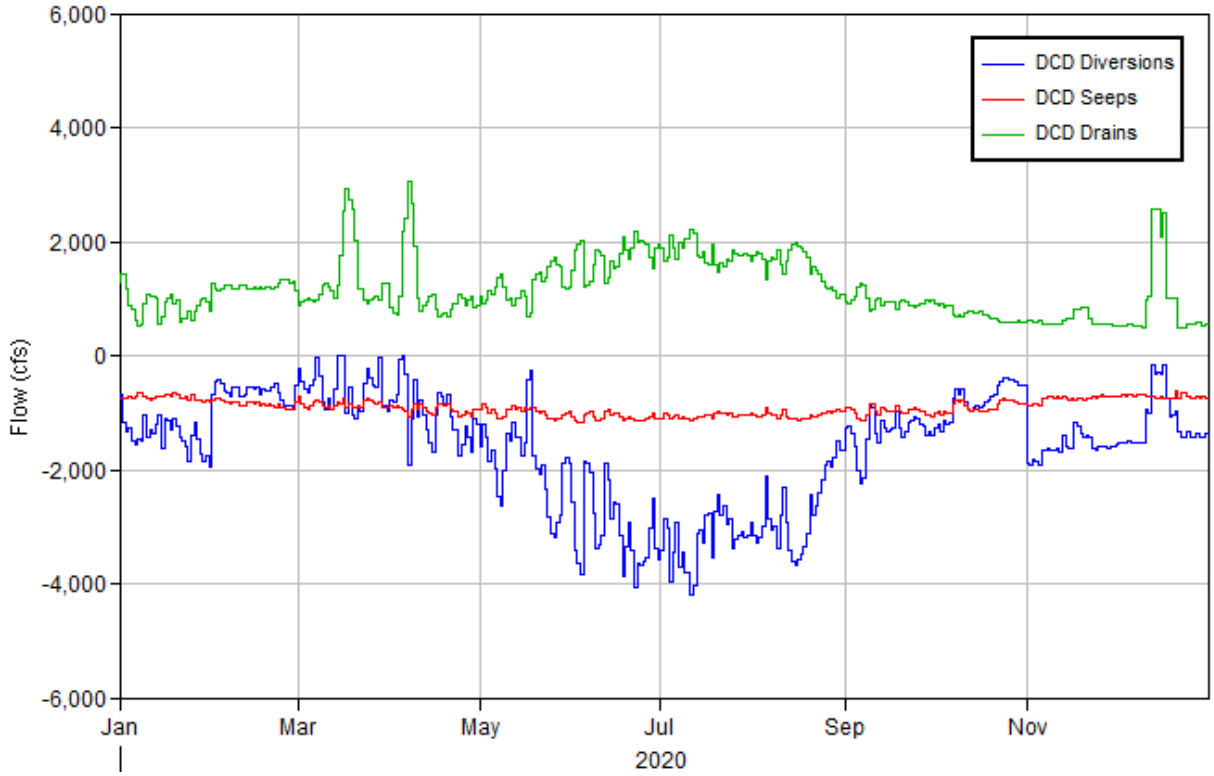

Figure 129 Sum of Delta DCD diversions, seeps and drains for 2020.

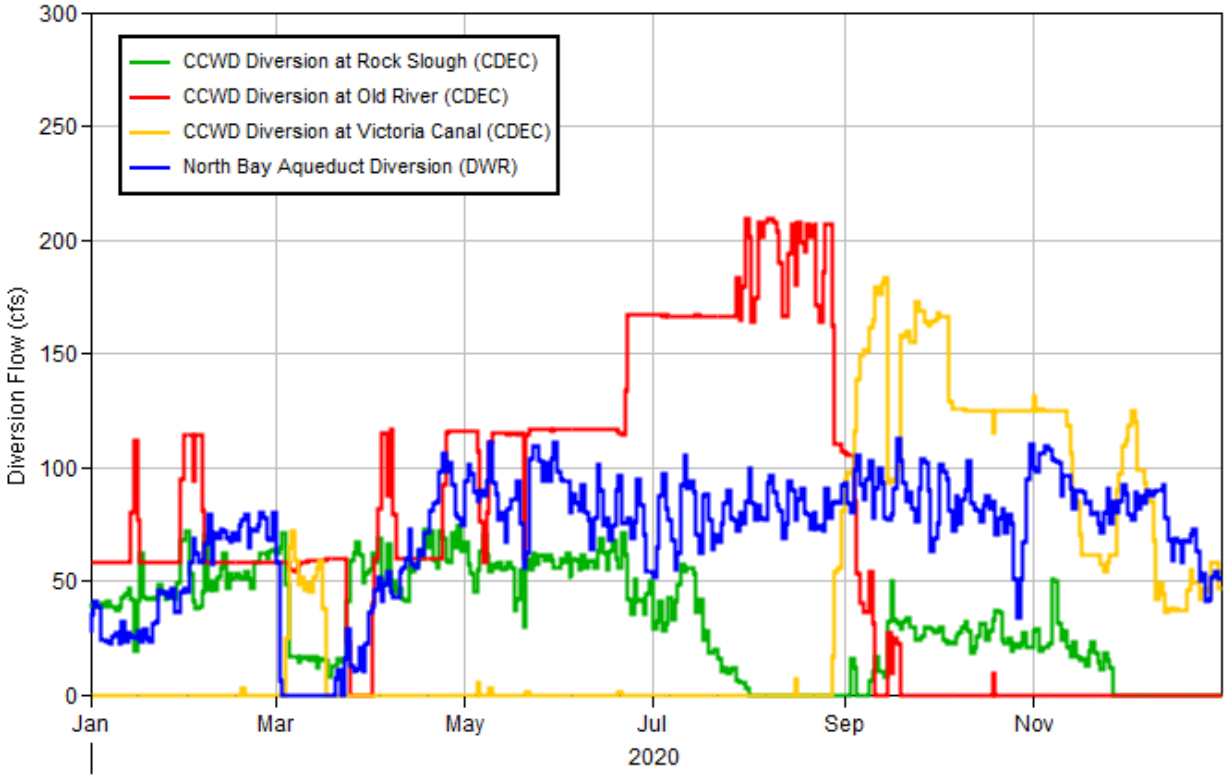

Figure 130 CCWD and North Bay Aqueduct diversions for 2020.

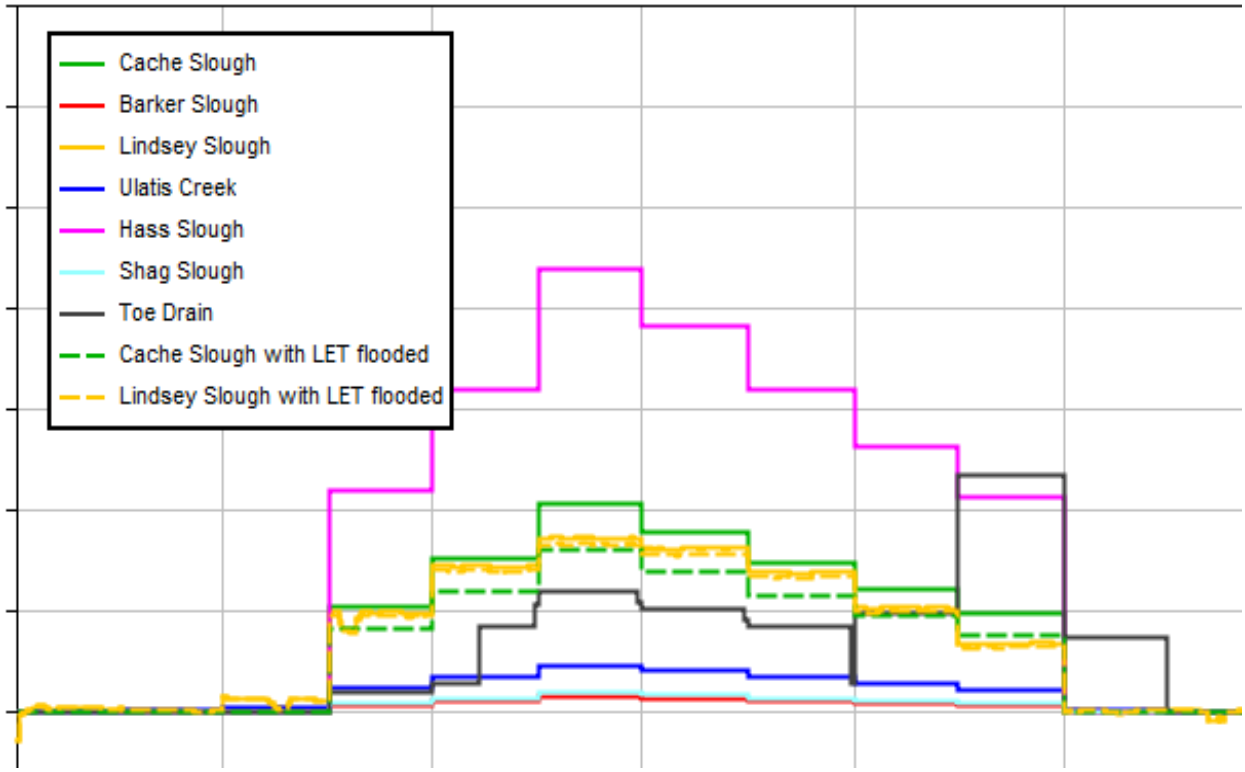

Figure 131 Agricultural diversions in the Cache Slough Complex channels for 2020.

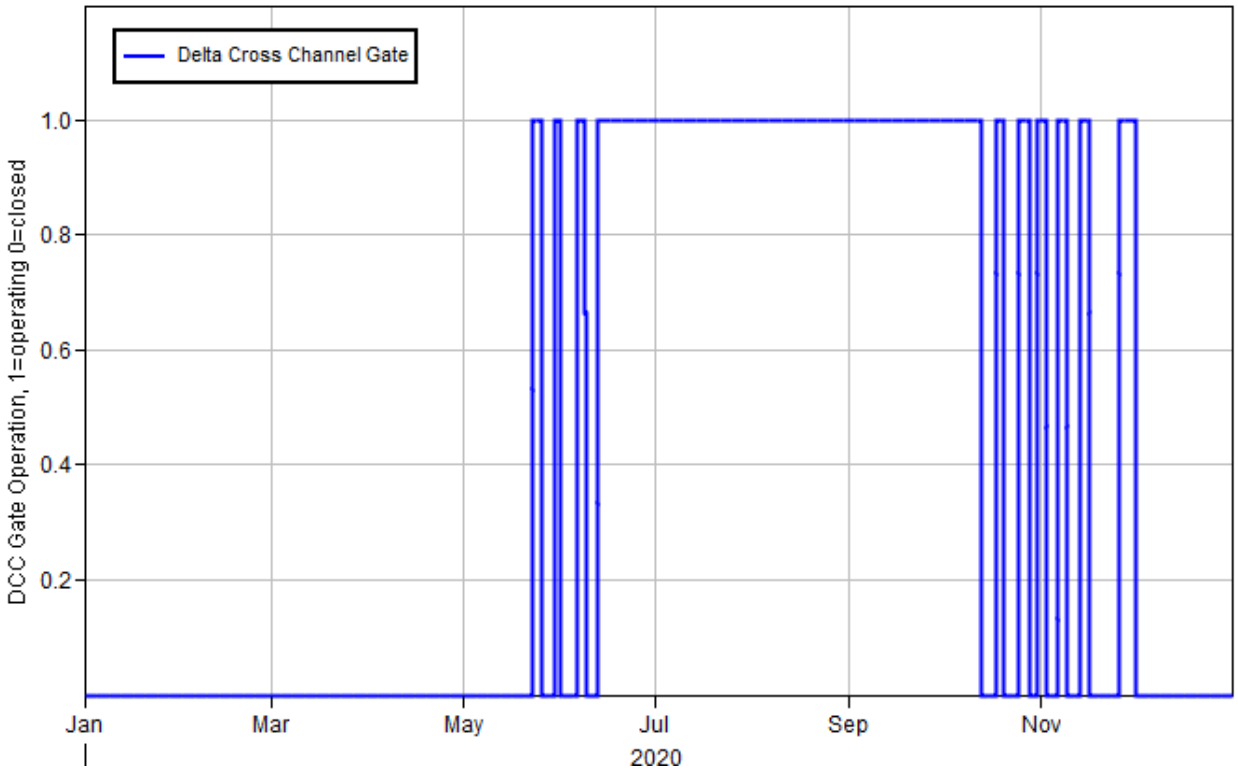

Figure 132 Delta Cross Channel operation schedule for 2020.

Appendix J

Tide's End Multibenefit Restoration Project Recreational Analysis

Tide's End Multibenefit Restoration Project

Recreation Analysis

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NOVEMBER 2025

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Attachment

A. Interview Questions and Responses

Acronyms and Other Abbreviations

Abbreviation	Definition
af/acre	acre-foot per acre
CDFW	California Department of Fish and Wildlife
Delta	Sacramento–San Joaquin Delta
DWR	California Department of Water Resources
EIP	EIP III Credit Co., LLC
ESA	Environmental Science Associates
LLC	limited liability company
proposed Project	Tide’s End Multibenefit Restoration Project
YBWA	Yolo Bypass Wildlife Area

TIDE'S END MULTIBENEFIT RESTORATION PROJECT

Recreation Analysis

1 Introduction

The California Department of Water Resources (DWR) proposes to implement the Tide's End Multibenefit Restoration Project (proposed Project), a habitat restoration project covered by the State Water Resources Control Board's (State Water Board) SRGO and Final SRGO Program EIR.

The proposed Project is being developed to restore and enhance tidal wetlands and floodplain habitats, support multibenefit land uses (including managed wetlands and floodplain agriculture), and maintain or improve flood conveyance in the Yolo Bypass. The proposed Project is located in the Sacramento Valley at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento-San Joaquin River Delta (Delta). The proposed Project area contains 2,212 acres currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. The proposed Project area consists of all or portions of the following six properties, listed from north to south: Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams.

The proposed Project was sited in this area to take advantage of existing land elevations and amplify the habitat benefits of seasonal flows through the Yolo Bypass. With the restoration and enhancement of tidal wetland and floodplain habitats, conditions would mimic the historic shallow, long-duration flood patterns of the region that support underlying ecological processes necessary for productive aquatic ecosystems. In addition, implementation of the proposed Project would complete an approximately 10-mile corridor of wetland and floodplain habitats, stretching from the southern tip of Lookout Slough to the Yolo Bypass Wildlife Area, that are managed for fish and wildlife benefits.

The proposed Project is being considered by DWR to support the HRL Program and to restore and build resiliency in the floodplain. As described in the draft HRL Scientific Basis Report (State Water Resources Control Board et al. 2023), native aquatic species have been declining in tributaries, the San Francisco Bay, and the Delta because of anthropogenic stressors such as degradation of habitat and changes in flows (State Water Resources Control Board et al. 2023: Section 2.3).

The proposed Project's goals and objectives have been developed to support the HRL Program, help meet the objectives of the Central Valley Flood Protection Plan (DWR 2022), provide

benefits for native fish and wildlife species, and maintain existing recreational and agricultural land uses that are of regional importance in the Yolo Bypass. The goals and objectives of the proposed Project are:

Goal 1: Restore tidal and floodplain habitats in the Yolo Bypass to support native fish and wildlife.

Objectives:

1. Create a tidal channel network with connectivity to adjacent floodplain habitat.
2. Reduce impediments to fish passage on and off the floodplain.
3. Enhance aquatic food web production and export.
4. Accommodate inland migration of habitats.

Goal 2: Support multibenefit land uses that are compatible with Yolo Bypass tidal and floodplain habitat objectives.

Objectives:

1. Maintain or improve infrastructure that supports existing recreation and agriculture uses.
2. Implement recreational and agricultural management practices compatible with tidal and floodplain habitats.

Goal 3: Reduce flood risk in a manner compatible with tidal and floodplain habitats.

Objectives:

1. Reduce localized flood stages.
2. Reduce flood encroachments.
3. Maintain or reduce hydraulic roughness.
4. Reduce localized wind-wave erosion.

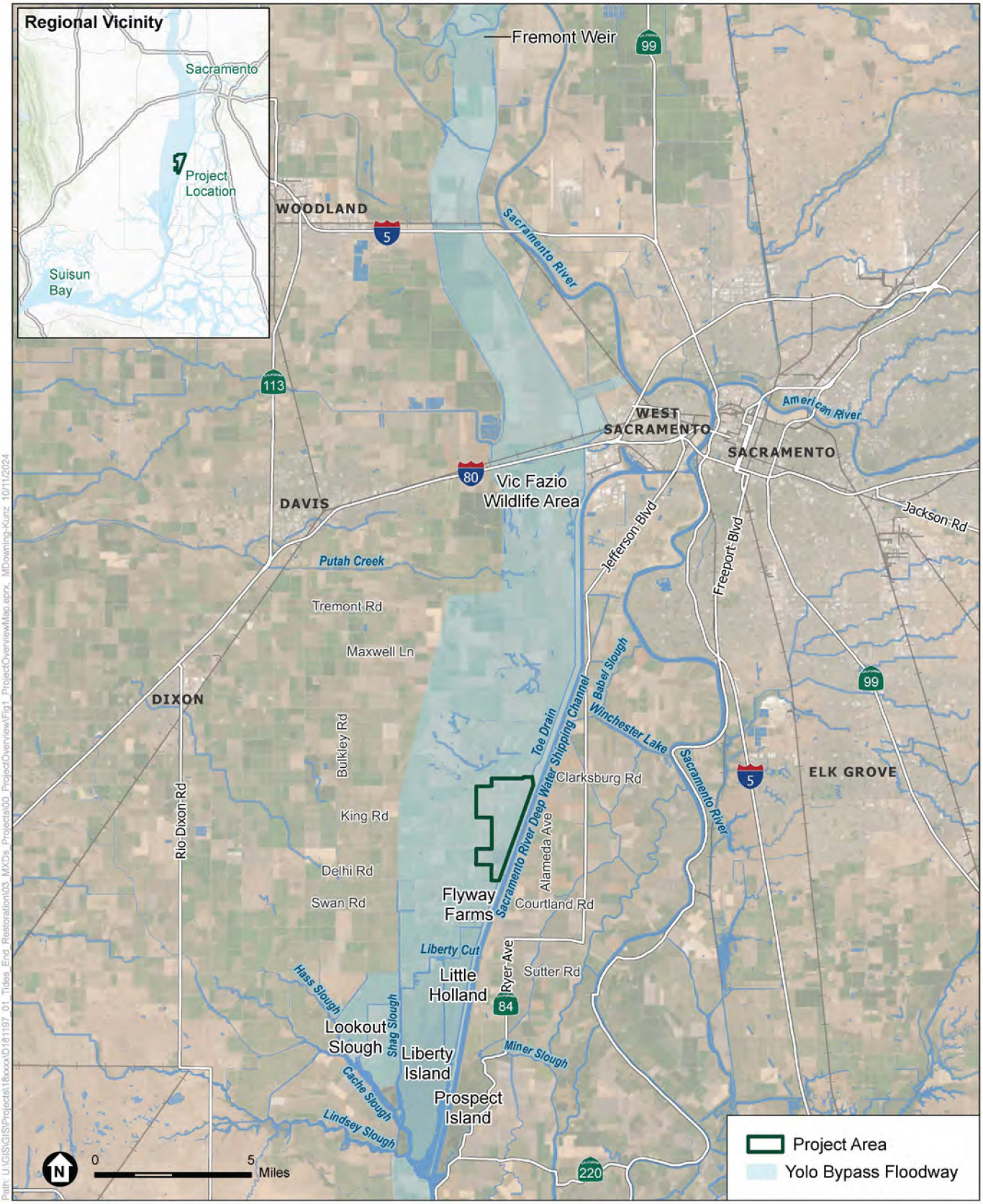
This memorandum documents existing recreational opportunities and conditions in and near the Project area, to advance Goal 2 and support an integration of local recreational uses and priorities into the proposed Project's design. The information provided in this memorandum was collected through desktop research and interviews with local non-profit organizations, private land managers, and state land managers to understand the regional recreational environment that currently exists. Interviewees included Vella, K., Phillips, P., Smith, J., Hennelly, M., and Messerli, J. from the California Waterfowl Association (CWA), Isola, C. and Yarris, G. from the Central Valley Joint Venture (CVJV), Allen J., Jackson T., and Will A., from Ducks Unlimited, Williams, L., Wickel, B., and Perrone, M. from the Yolo Bird Alliance, Diepenbrock, M. from the Yolo Basin Foundation, and Spaan, G. and Aucelluzzo, J. from the California Department of Fish and Wildlife. These interviews were conducted from June to August of 2025.

Personal interviews were also held with John Brennan and Gary Fredericksen. Mr. Brennan and Mr. Fredericksen are the current land managers of the Tide's End Properties. Mr. Brennan is part of the Deer and Tule Partnership[1] and has worked with the Tide's End property owners since

[1] The Deer and Tule Partnership manages recreational and agricultural opportunities in the proposed Project area.

January 2016. Mr. Brennan has also worked in the Delta as a partner in Tule Basin Farms, a rice growing operation near Robbins in Sutter County, with the goal of providing both agricultural and conservation opportunities in the Delta (Pacific Gas and Electric Company 2022). Mr. Brennan was interviewed in June 2024 to provide information and context related to the historic and existing recreational opportunities present in and around the proposed Project area. Mr. Fredericksen, interviewed in August 2024, partners with Mr. Brennan at the Deer and Tule Partnership and works primarily with hunters in the Proposed Project area. Mr. Fredericksen manages the duck club memberships, takes deposits, coordinates waivers, and communicates rules to the hunters. He continues to manage the hunters throughout the year.

Information from these interviews was synthesized to capture the existing recreational opportunities present in the proposed Project area and the surrounding properties of properties (**Figure 2**). For documentation of the interview questions and responses, see **Attachment A**.



Ecosystem Investment Partners

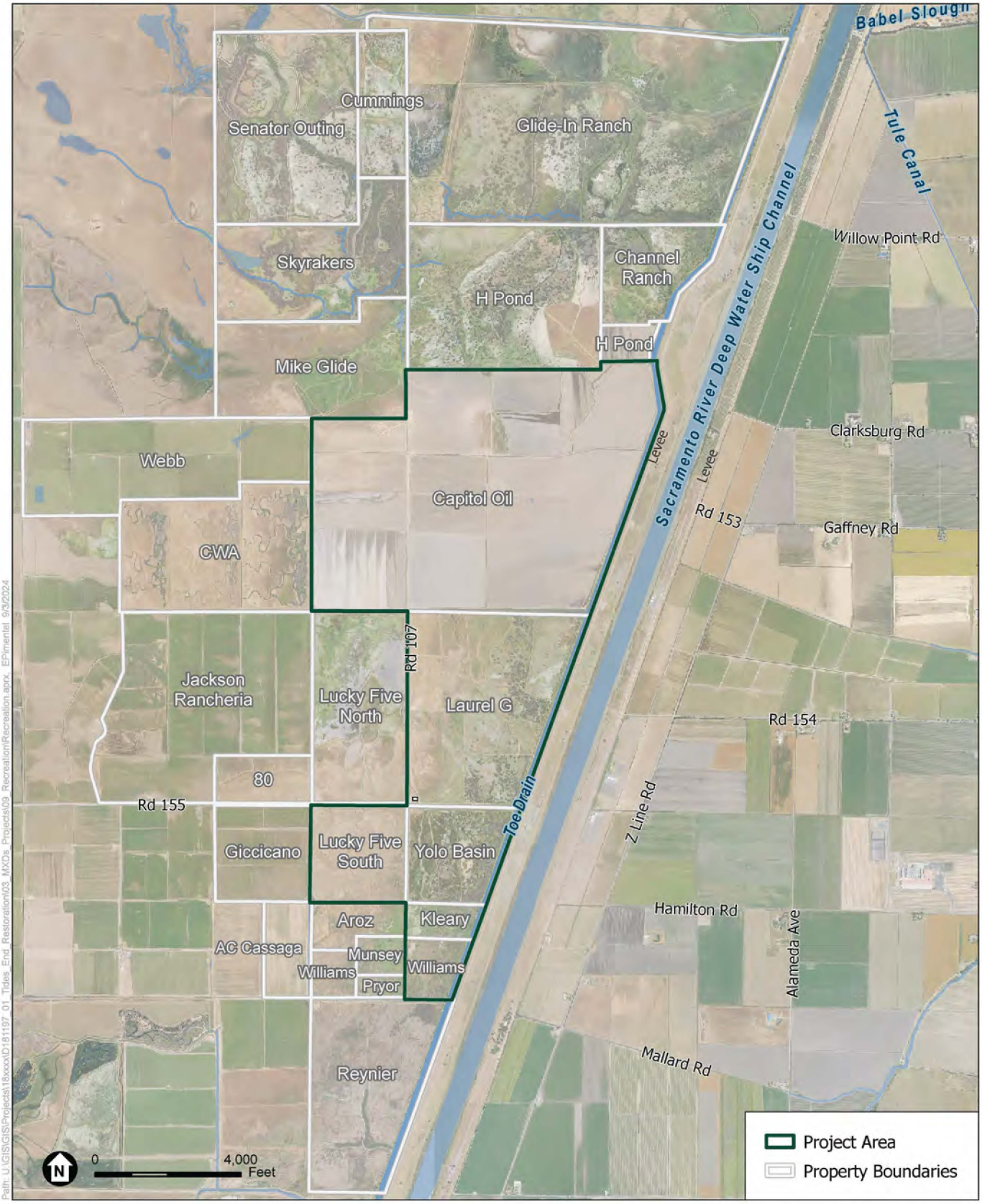
TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 1
Project Setting

Prepared by: ESA

SOURCE: NAIP, 2022; EIP, 2024; ESA, 2024



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 2
Landowners in the Vicinity of the Project

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2024

2 Existing Local Recreational Uses

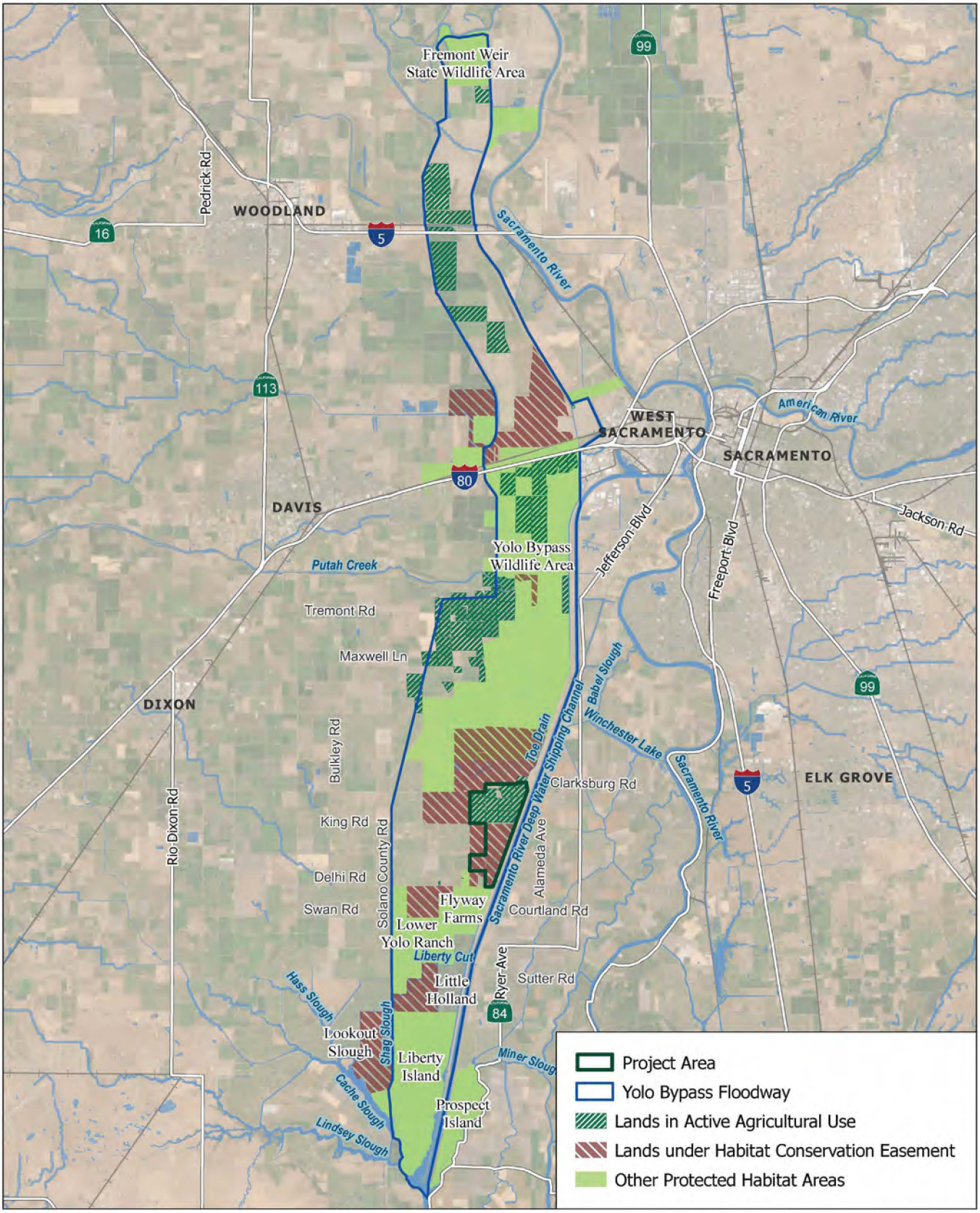
The Yolo Bypass is a defining geographic, hydrologic, social, and recreational feature for the proposed Project area and the surrounding region. The Yolo Bypass is a leveed, 59,000-acre floodplain on the west side of the lower Sacramento River that carries floodwaters from the entire Sacramento River watershed to the Delta (Environmental Science Associates 2024a). Much of the land within the Yolo Bypass is farmed; however, the area's geography and water availability (both from seasonal flood flows and from water pumped and delivered via irrigation systems) have allowed publicly and privately managed seasonal wetlands for waterfowl to become another dominant land use, particularly in the southern Yolo Bypass, where the proposed Project is located. The primary drainage channel for the Yolo Bypass, known as the Toe Drain or the Tule Canal depending on location, provides a source for water and drainage for these seasonal wetlands. **Figure 3** depicts various protected habitat areas that support waterfowl hunting as a recreational use throughout the proposed Project area's vicinity and the greater Yolo Bypass, including the Yolo Bypass Wildlife Area.[2] As can be seen, lands throughout the Yolo Bypass are commonly used to benefit waterfowl and other wildlife while supporting active agricultural production.

The proposed Project area and surrounding local region are located in the Balance of State Waterfowl Zone (California Department of Fish and Wildlife 2024a).[3] Duck hunting in the Balance of State Waterfowl Zone for the 2024–2025 season occurred from October 18 to January 28. Limits on possession include seven ducks per day, which may include seven mallards (no more than two females), one pintail, two canvasback, two redheads, and two scaup. Total possession is limited to triple the daily bag (California Department of Fish and Wildlife 2024a). Migratory bird hunters at or over the age of 16 must possess a current signed Federal Duck Stamp, along with state licenses and permits, to hunt legally (U.S. Fish and Wildlife Service 2024). A California hunting license is required for any person taking birds or mammals. Hunters must carry licenses and be prepared to show them on request. Hunters who plan to hunt migratory game birds (ducks, geese, coots, doves, band-tailed pigeons, snipes, gallinules, or black brants) must also complete a Harvest Information Program survey and a free Harvest Information Program validation must be printed on a California Hunting License before the first hunt.

Flooding generally starts in late December and lasts until late February, although peak hunting does not begin until January. Fresh flooding brings more ducks; keeping water flowing through the properties is a key aspect of maintaining duck populations to hunt on the property. Duck clubs in and around the proposed Project area generally have an operating agreement and an ownership agreement. An ownership agreement outlines the rules that control buying and selling membership. Operating agreements set the rules of managing the duck club (i.e. annual budget and allocations

[2] The figure displays lands held under easement or otherwise protected as habitat (by a variety of agencies and nonprofits) that supports waterfowl or may contribute to waterfowl food production. Data was sourced from the California Protected Areas Database. The figure also displays lands used for active agricultural production, based on crop type data from the most recent 2022 Land IQ dataset.

[3] There are five waterfowl hunting zones in California, regulated by the California Department of Fish and Wildlife. Each zone has specific rules and regulations for each hunting season.



Ecosystem Investment Partners

TIDE'S END

* Lands in active agricultural use were identified using crop types data from LandIQ. This figure is not intended to display farmlands designated by the Farmland Mapping and Monitoring Program.

Tide's End Multibenefit Restoration Project

Figure 3
Regional Lands Supporting Recreational and Multibenefit Use

Prepared by: ESA

SOURCE: NAIP, 2022; GreenInfo Network, 2024; LandIQ, 2022; EIP, 2024; ESA, 2024

for operation and maintenance activities). Private Land Management agreements with CDFW allow duck clubs to put together management and hunting plans that can allow for deer, and other game, although not all properties have land management agreements (Brennan, J., pers. comm. 2024).

A focus on managed seasonal wetlands for waterfowl hunting is exemplified in the management of the properties in the proposed Project area and its local region, as discussed below.

2.1 Yolo Bypass Wildlife Area

The Yolo Bypass Wildlife Area (YBWA), located just north of the proposed Project area, covers approximately 16,771 acres of land, 8,000 acres of which have thus far been restored to wetlands and other associated habitats. The California Department of Fish and Wildlife (CDFW) manages the YBWA to promote an increase in waterfowl and other bird populations. The YBWA is an important recreational resource for hunting, fishing, and wildlife viewing in the area (California Department of Fish and Wildlife 2008).

2.1.1 Hunting

Hunting is one of the main forms of recreation currently available within the YBWA, with approximately 8,000 hunters visiting the YBWA per year (Diepenbrock, M., pers. comm. 2025). Waterfowl and pheasant hunting are the most popular recreational hunting activities in the YBWA; however, visitors also hunt other upland game species including dove. The YBWA maintains 16 duck blinds and two fully accessible blinds for hunters with disabilities on the approximately 6,500 acres available for waterfowl hunting (California Department of Fish and Wildlife 2024b). CDFW currently allows 75 hunters to free-roam the area, plus up to 19 parties in designated blinds, on any given hunting day. Nine designated parking lots are available for use by hunters. Hunters are allowed to use shotguns and archery for hunting.

2.1.2 Fishing

Fishing is another popular recreational use of the YBWA. Favored game species present include sturgeon, carp, catfish, black bass, and striped bass (California Department of Fish and Wildlife 2008). Popular fishing locations in the YBWA include the East Toe Drain and Putah Creek near the Los Rios Check Dam.

2.1.3 Wildlife Viewing

Visitors may see a multitude of birds of prey, shorebirds, waterfowl, and other migratory birds in the YBWA. More than 200 known species having been identified within the area. Typical species include ibis, pelicans, cormorants, great blue herons, orioles, blue grosbeaks, and western kingbirds. Mammals that can be seen in the area include coyotes, raccoons, gray foxes, mule deer, beavers, minks, and river otters. The extensive water system maintained in the YBWA also harbors large numbers of fish, amphibians, and invertebrates. Public wildlife viewing is currently allowed along the existing auto tour route and along a few existing trails seven days per week from sunrise to sunset (closed on Christmas Day), as well as through scheduled tours and educational programs. The levees are also frequently used for walking and biking (Diepenbrock, M., pers.

comm. 2025). Wildlife viewing, fishing, and hiking is permitted in designated hunting areas during non-hunting seasons, Mid-February through early October (California Department of Fish and Wildlife 2008), and vehicle access is open after March (Diepenbrock, M., pers. comm. 2025).

2.1.4 Hiking Trails

The YBWA offers approximately 20 miles of designated hiking trails that provide opportunities for wildlife viewing, as well as walking, running, hiking, and the trails serve as on-foot access for recreational activities within the YBWA discussed above. These trails traverse a variety of habitats, including seasonal and permanent wetlands, riparian zones, and upland areas, supporting diverse wildlife species throughout the year. The trail system enhances public access to the natural landscape while promoting environmental education and appreciation of the region's ecological resources. Most of these trails are closed to the non-hunting public during hunting season (mid-October – mid-February); however, there are also several trails that are open year-round (CDFW 2021).

2.2 Tide's End Surrounding Properties

The Tide's End surrounding properties to the proposed Project area (as depicted on Figure 2) include: the Glide-In Ranch, Cummings, Senator Outing, Skyrakers, Mike Glide, H Pond, Channel Ranch, Webb, CWA, Jackson Rancheria, 80 acres, Lucky Five North, Giccicano, AC Al Lassaga, Gilliland, Williams, Munsey, Aroz, Pryor, and Reynier properties. These properties are not part of the proposed Project area, but they maintain similar land uses, discussed in this section. Although informal recreational uses such as fishing and wildlife viewing occur on or near these properties, waterfowl hunting has historically been the primary recreational opportunity in the surrounding properties (Brennan, J., pers. comm. 2024).

The surrounding properties has seen many shifts in attraction to waterfowl and therefore, duck hunters. Historically, rice fields were not inundated during waterfowl migration, which limited their attraction to waterfowl compared to today. Since the early 90's, the practice of burning rice fields after harvest has been phased out and shifted to flooding fields for decomposition, which has resulted in attracting waterfowl as they migrate south. This resulted in a decline of waterfowl in the southern Yolo Bypass during duck hunting season, and caused many neighboring duck clubs to sell memberships or property. Another factor in the lower population of waterfowl in the southern Yolo Bypass is that the current design of the irrigation system results in properties receiving water at different times from the Toe Drain, with some properties receiving water too late to adequately attract waterfowl in advance of the hunting season. Site access also affects hunting, and both the proposed Project area and the surrounding properties are difficult to access by road during the winter (Brennan, J., pers. comm. 2024).

2.2.1 Waterfowl Hunting

Duck hunting has significant cultural and recreational value and there is strong interest in maintaining the tradition (Allen J., Jackson T., Will A., pers. comm. 2025). Duck clubs in the proposed Project's surrounding properties are generally run as limited liability companies ("LLCs"), with memberships available for purchase, which can vary based on the ownership agreement (Fredericksen, G., pers. comm. 2024). Duck clubs can have lifetime memberships with

yearly maintenance fees, or they may operate purely on yearly membership fees (Brennan, J., pers. comm. 2024). Some surrounding properties have clubhouses for their members. All duck clubs are in charge of managing and maintaining their ponds and governing their hunting, and they are all subject to the typical rules and regulations for waterfowl hunting, as described previously. Duck hunting is also facilitated throughout the Yolo Bypass by public entities and nonprofit associations such as CWA.

CWA has an active management role in waterfowl hunting and facilitates public access to duck clubs where participants are vetted and onboarded. CWA has capacity to manage duck clubs for public access and has a partnership experience with CDFW's Share Habitat Alliance for Recreational Enhancement (SHARE) program (Vella, K., Phillips, P., Smith, J., Hennelly, M., and Messerli, J., pers. comm. 2025). The CDFW SHARE program is a lottery system that allows private landowners to lease out hunting opportunities. There is a high demand for public access to participating blinds through a lottery or point-based system, through the SHARE program that is managed by CDFW (Spaan, G. and Aucelluzzo, J., pers. comm. 2025). At Tide's End, there is one blind offered to the SHARE program, which rotates in its location and is provided voluntarily by the lessee.

2.2.2 Duck Clubs in the Tide's End Surrounding Properties

The properties/duck clubs on the northern end of the proposed Project's surrounding properties are located adjacent to the YBWA's Tule Ranch Management Unit, the southernmost management unit of the YBWA. Tule Ranch was acquired by the Wildlife Conservation Board on behalf of CDFW in 2001. As part of that acquisition, certain irrigation and road access agreements (referred to in this document as "Tule Ranch agreements") were made with properties/duck clubs located to the south, including Skyrakers, H Pond, Channel Ranch, Senator Outing, and Glide-In Ranch. Tule Ranch has 10 miles of gravel roads that provide access to these duck clubs and connect them to public-use areas of the YBWA, including hiking trails and hunting sites (California Department of Fish and Wildlife 2008). Access to the Tule Ranch irrigation system and gravel roads is discussed in more detail below.

Skyrakers Duck Club

The Skyrakers Duck Club consists of approximately 340 acres, of which 240 acres are irrigated from the Tule Ranch irrigation system. This club receives both summer and fall water; summer usage is typically 1 acre-foot per acre (af/acre) and fall water use is typically 5 af/acre. The Tule Ranch agreement with the Skyrakers Duck Club allows access to the unit's gravel roads and requires the club to pay its pro rata share of electric bills and expenses associated with pump maintenance and road access (California Department of Fish and Wildlife 2008).

Senator Outing Duck Club

The Senator Outing Duck Club consists of approximately 480 acres, of which 360 acres are irrigated from the Tule Ranch irrigation system. This club receives both summer and fall water; summer usage is typically 1 af/acre and fall water is typically 5 af/acre. The club is accessed using the Tule Ranch gravel road system (California Department of Fish and Wildlife 2008). There are 10 members of the Senator Outing Club (Brennan, J., pers. comm. 2024).

Glide-In Ranch Duck Club

The Glide-In Ranch Duck Club consists of approximately 1,160 acres, of which 340 acres are irrigated from the Tule Ranch irrigation system. This club receives only fall water; fall usage is typically 5 af/acre. As with the other duck clubs, the Tule Ranch agreement with the Glide-In Ranch Duck Club requires the duck club to pay its pro rata share of electric bills and expenses associated with pump maintenance. The property was previously a large cow ranch, and although the property still has a cattle lease, the duck club has been more recently performing seasonal wildlife habitat improvements. The Glide-In Ranch currently has between 16 and 25 members (Brennan, J., pers. comm. 2024).

H Pond Duck Club

H Pond is located just south of Glide-In Ranch and just north of the proposed Project area. This duck club does not receive water directly from the Tule Ranch irrigation system. H Pond is flooded during hunting season with water sourced from the Toe Drain and pumped through Glide-In Ranch. The Senator Outing and Skyrakers properties receive water before H Pond during the flooding season. Flooding is not permitted until October 1, so often H Pond does not receive water until after the waterfowl hunting season has started (Brennan, J., pers. comm. 2024). The Tule Ranch agreement with H Pond pertains only to road access (not irrigation) and requires that the duck club pay its pro rata share of all expenses required to maintain the roads. As of June 2024, H Pond currently has 10 members and has a membership for sale for $220,000, with a $5,000–$10,000 annual maintenance fee (Brennan, J., pers. comm. 2024).

Channel Ranch Duck Club

The Channel Ranch Duck Club consists of approximately 191 acres. Like H Pond, this duck club does not receive water directly from the Tule Ranch irrigation system; rather, water makes its way to Channel Ranch because it is at the downstream end of the drainage system of various properties (receiving its water most directly from the H Pond system. As with H Pond, the Tule Ranch agreement with Channel Ranch pertains only to road access (not irrigation) and requires that the duck club pay its pro rata share of all expenses required to maintain the roads (California Department of Fish and Wildlife 2008). The Channel Ranch property has three memberships for sale as of summer 2024 (Brennan, J., pers. comm. 2024).

Other Surrounding Properties

The Mike Glide property is managed by one family and receives pumped water from Reclamation District 2068 to the west (Brennan, J., pers. comm. 2024).

Three properties (Webb, CWA, and Jackson Rancheria) were previously part of Pope Ranch, which did not receive consistent water for irrigation, and thus was subdivided into the three separate properties. A private habitat mitigation and conservation banking firm called Wildlands purchased the Webb and CWA properties for the purpose of developing conservation banks. CWA’s lands are currently operated as a giant garter snake mitigation bank (Brennan, J., pers. comm. 2024), and they allow hunting on their parcel (Vella, K., Phillips, P., Smith, J., Hennelly, M., and Messerli, J., pers. comm. 2025). Southwest of Tide’s End is Mound Farms which also

has a waterfowl hunt program managed by CWA (Vella, K., Phillips, P., Smith, J., Hennelly, M., and Messerli, J., pers. comm. 2025).

2.3 Project Area Recreational Uses

Between the late 1960s and the early 1990s, much of the land in the proposed Project area was converted from farmland and cropland to duck hunting clubs.[4]

Constructed seasonal wetlands are currently operated by duck clubs at the Laurel G, Yolo Basin, Kleary, and Williams properties via an irrigation system comprising pumps and drainage ditches throughout the properties. A clubhouse is located in the southwest corner of the Laurel G property. The Lucky Five South property, on the other hand, is not able to pond water: the northwestern side is too high to hold water for managed seasonal wetland and is managed instead as upland bird habitat (for pheasant hunting), while the soil types and topography of the southeast side are too well-draining. The Capitol Oil property was historically farmed for rice, corn, and other general field crops and has been managed for rice production since EIP began to acquire property in the proposed Project area in 2019 (Environmental Science Associates 2024b).

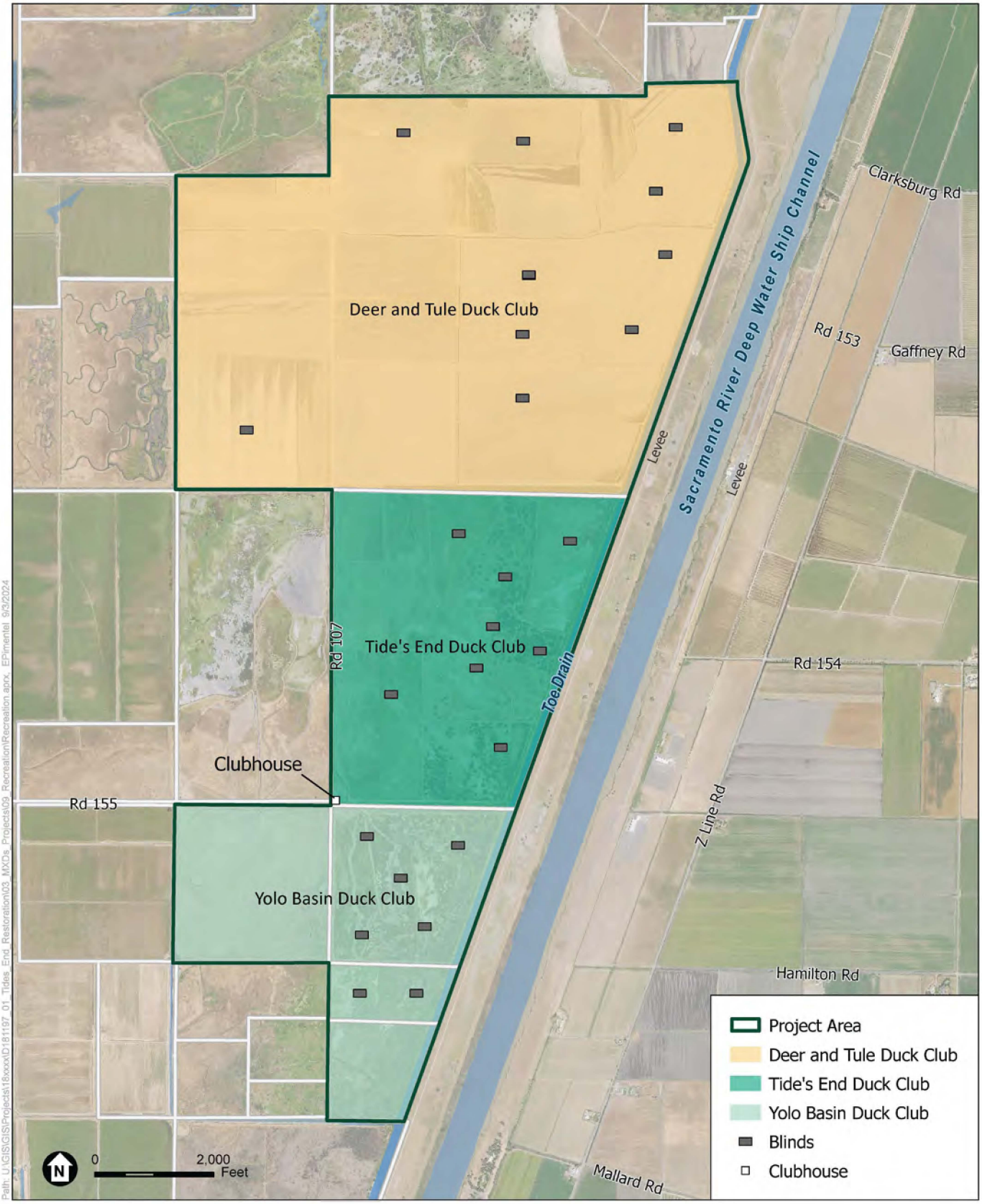
The majority of the proposed Project area is currently managed and used for waterfowl hunting, although agriculture and other hunting and other recreational uses are also present, as discussed below (Brennan, J., pers. comm. 2024).

2.3.1 Waterfowl Hunting

Duck club memberships throughout the surrounding properties allow members to access the property and its amenities, including a clubhouse, to hunt for waterfowl. Duck clubs in the proposed Project area and Project surrounding properties used to be separately owned and managed, and as the surrounding properties have transitioned, many duck clubs have come together under one management. This is the case for the proposed Project area's duck clubs, which are all managed by the Deer and Tule Partnership. There are three duck clubs on the Tide's End property: Deer and Tule (located on Capitol Oil), Tide's End (located near the clubhouse on Laurel G), and Yolo Basin (located on the Yolo Basin, Kleary, Lucky Five South, and Williams properties). **Figure 4** provides a map of the proposed Project area's duck clubs and duck blinds.

Although memberships are year-to-year, the same families rent out blinds each year, with very low turnover rates. There is a waiting list of people wanting to become members of the duck clubs. Duck club members are subject to all rules and regulations for hunting, which includes daily bag & possession limits, licensing requirements, and season limitations, discussed below (CDFW 2024a).

[4] There are three types of waterfowl easements on the proposed Project area properties. Most properties do not have proactive habitat maintenance requirements. Details on property easements and constraints are detailed in the Tide's End Land Use Constraints Report.



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 4
Duck Clubs and Associated Infrastructure

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2024

Hunters are permitted to hunt only on weekends (Saturday and Sunday) and Wednesday until the end of December, which is when the majority of ducks start to migrate. From the end of December to the end of January, when the duck hunting season ends, hunters are permitted to hunt most days, except Mondays and Fridays.

Mr. Fredericksen manages the water on the proposed Project area properties, regulating water depths in the fields and ponds. The proposed Project area uses water pumped from Cache Slough, which travels via ditches onto the fields. Flows run through the fields and back into the slough, avoiding any stagnation and keeping the water fresh. Approximately 1,700 acres of fields are currently flooded during duck hunting season (Fredericksen, G., pers. comm. 2024).

Although the proposed Project area properties host approximately 100 species of birds, only a few are hunted. Waterfowl species hunted at the properties include mallards, pintail, teal, geese, snow geese, speckle-bellied geese, and canvasbacks coming from Suisun Bay. Conditions favorable to duck hunting include fresh floodwater and feed left over from rice crops. Different species of waterfowl prefer different depths of water; a variety of water depths attracts different species of waterfowl. Overshooting and overcrowding by hunters disperses the waterfowl, which hurts the hunting and creates a safety hazard (Fredericksen, G., pers. comm. 2024).

Deer and Tule Duck Club

The Deer and Tule Duck Club is located on the Capitol Oil property and has approximately 30 members. This duck club has 10 blinds, each available for $8,000 per year, that four people at a time can use to hunt ducks. After acquiring property in the proposed Project area in 2019, EIP re-introduced rice crops on the property, which has provided additional feed for the waterfowl, improving hunting opportunities at the site. Planting occurs anywhere between mid-May to June 1. The first harvest occurs around October 18 through mid-November. Hunting cannot commence in those fields until after the harvest has finished. Deer and Tule has one blind that voluntarily participates in the CDFW SHARE program, where the location rotates from year to year. Through the program, during the hunting season CDFW manages access on Saturdays, Sundays, and Wednesdays and chaperones hunters (Brennan, J., pers. comm. 2024). CDFW also hosts two hunts, a week or two after the end of the official waterfowl hunting season—a youth hunt and a veteran hunt (Fredericksen, G., pers. comm. 2024). Participation in the SHARE program began in 2024. Hunters on site also hunt for deer and other game in addition to waterfowl.

Tide's End Duck Club

The Tide's End Duck Club has eight duck blinds on site, holding approximately three people each. The Tide's End Duck Club is located on Laurel G and has an existing clubhouse. Membership costs for Tide's End are $9,000 per year to rent a duck blind and to access the clubhouse. Members can use the clubhouse outside of duck hunting season as well. Pheasant hunting also occurs between the second week in November and December 27 (Fredericksen, G., pers. comm. 2024). The club often has social events and guests at the clubhouse. The Tide's End duck club lands are managed as seasonal wetland habitat, allowing for hunting throughout the season (Fredericksen, G., pers. comm. 2024).

Yolo Basin Duck Cub

The Yolo Basin property is located at the southern end of the proposed Project area. The Yolo Basin property currently has waterfowl habitat With seven duck blinds available (Fredericksen, G., pers. comm. 2024).

2.3.2 Other Recreational Uses in the Project Area

Other recreational opportunities in the proposed Project area include boating, fishing, crawdad hunting, dove hunting, pheasant hunting, deer hunting, and birdwatching.

Informal boat launches are available at both the Williams property and the Laurel G property. In addition, an area on the southern corner of the Williams property is used for shoreline fishing into the Toe Drain. Anglers access the Toe Drain via motorboat and fish all the way to the Lisbon Weir for fish such as striper, largemouth bass, and sturgeon. Boats are also launched from Rio Vista and Minor Slough (Vella, K., Phillips, P., Smith, J., Hennelly, M., and Messerli, J., pers. comm. 2025). Members of the duck clubs are permitted to fish the properties and often fish in Cache Slough (Brennan, J., pers. comm. 2024).

Although they are not as prevalent as waterfowl hunting, other forms of hunting occur across the proposed Project area as well. In January and until the properties are drained, for instance, one member of the duck clubs collects crawdads along the Yolo Basin and Laurel G properties. Up to 200 pounds of crawdads are collected per day. Passive traps along the Yolo Basin and Laurel G properties are set and then checked periodically (Brennan, J., pers. comm. 2024).

A few members of the various duck clubs start hunting doves around September 1, marking the first upland game season. The Capitol Oil and Laurel G properties have also been registered as a private pheasant club, so pheasants can be bought and planted on site for hunters, thus expanding the hunting season (Brennan pers. comm. 2024). Deer populations have been increasing with an increase in tidal habitat restoration projects, and the deer season starts August 15 and runs through the middle of September. Only one or two people hunt deer during deer hunting season on the properties (Brennan, J., pers. comm. 2024).

Other groups of recreationists can access the site as well. The Shorebird Program, which began after EIP took ownership of the proposed Project area, allows for certain areas to be flooded; ducks and shorebirds flock to the flooded ground, providing birdwatchers with wildlife viewing opportunities (Brennan, J., pers. comm. 2024). Wildlife and birdwatchers also observe wildlife from public roads (Vella, K., Phillips, P., Smith, J., Hennelly, M., and Messerli, J., pers. comm. 2025). EIP and local land managers have also worked with beekeepers in the area to develop a pollinator project and have produced honey on site (Fredericksen, G., pers. comm. 2024).

Kayakers use the Lookout Slough boat ramp and have been observed south of Tide’s End near the Stair Step. Hikers use public trails south of Davis accessed via Mace Boulevard, approximately 9 miles from the proposed Project area (Vella, K., Phillips, P., Smith, J., Hennelly, M., and Messerli, J., pers. comm. 2025).

3 Recreational Opportunities Considered with the Proposed Project

The proposed Project would restore tidal wetlands where existing elevations are most suitable and would create floodplain habitats where existing grades are higher. Tidal and floodplain inundation would be enhanced by improving the hydrologic connection between the proposed Project area and the Toe Drain via a series of berm openings, berm lowering, and channel construction. The entire proposed Project area would be designed to facilitate complete drainage of the area to allow volitional passage by juvenile salmonids and other native fishes accessing the proposed Project area during higher flood flow events. The combination of tidal marshes and adjacent sloped floodplain would create a landscape that would be adaptable to sea level rise and allow for upslope migration of habitats as water levels rise. Proposed Project elements would be optimized for and would function in concert with seasonal Yolo Bypass flood flows.

After construction is complete, the type, area, and quality of existing recreational use (e.g., waterfowl and upland game hunting, fishing, birdwatching, and wildlife viewing) would be returned similar to existing conditions. Further, the proposed Project would allow for public access to tidal channels accessed from the Toe Drain via small boat, kayak, or paddle board, allowing for additional recreational opportunities, such as fishing and birdwatching.

Shallow seasonal ponds (referred to as managed wetlands for waterfowl), when designed and managed appropriately, can serve the dual purpose of duck habitat and floodplain habitat, providing waterfowl hunting opportunities and enhanced food web productivity to benefit native fishes in adjacent aquatic habitats. Wetlands constructed by the Project and managed for waterfowl would provide for continued duck club operations on site. Additional irrigation improvements for improved reliability are being considered for the final Project design.

Water management regimes for duck hunting have the potential to enhance food web productivity by extending the residence time of water; food-rich water could then be exported (drained and conveyed) to downstream aquatic habitats (Philips et al. 2024; Aha et al. 2021). Agricultural fields on the Capitol Oil property would provide feed for waterfowl, providing additional habitat improvements and therefore increasing hunting opportunities.

Although the wetlands would not be managed specifically for fish rearing, water management regimes for duck hunting are compatible with juvenile salmon rearing and have the potential to enhance food web productivity (Philips et al. 2024; Aha et al. 2021). Duck clubs would have the ability to add supplemental water to inundate the managed ponds in dry years and increase the duration of naturally occurring inundation events, prolonging in-season hunting opportunities. Supplemental water and management of drainage through the outlets in the proposed Project area could be utilized to extend inundation. Additional acreage for managed wetlands would be introduced by the proposed Project, further improving the recreational opportunities discussed in this memo (Environmental Science Associates 2024a).

Both land managers and landowners are considering future recreational and educational opportunities as a future goal outside of the proposed Project. In recreational interviews, Yolo

Bird Alliance voiced support for consideration of DWR partnering with the Yolo Basin Foundation (Williams, L., Wickel, B., and Perrone, M., pers. comm. 2025), and CVJV also supports continued participation with CDFW's SHARE program and partnership with CWA.

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Attachment A

Interview Questions and Responses

interview notes

Date	June 24, 2024
Attendees	John Brennan (Deer and Tule Partnership) Stephanie Freed (Ecosystem Investment Partners) Chelsea Stewart (Ecosystem Investment Partners) Rachael Carnes (Environmental Science Associates) Emily Kline (Environmental Science Associates)
Subject	Recreational Opportunities in the Tide's End Multibenefit Restoration Project Area

- Where is the hunting occurring (which parcels)
- Who manages the current duck clubs that operate at Yolo Basin/adjacent neighbors
- Who else accesses the site (neighbors, open to public)
- Who regulates the duck hunting
- What other recreational opportunities are there
- What do the neighbors want/have we been coordinating with them already
- Going to contact Paul Phillips about regs, etc.

Discussion:

John Brennan: The neighborhood is in transition, it's on a floodplain, and farmland is marginalized. Between the late '60s and late '80s/'90s there was a push to convert farmland/cropland to duck hunting clubs. The existing clubs in the neighborhood include the Lucky 5, comprised of five people, Tom Rod Williams, who sold us two pieces, sold one to CDFW. The area is developed for duck hunting, which was better in the past than it is now. The duck season runs out at the end of January. EIP bought two-thirds of the properties.

The Glide-In Ranch hunting club is owned by the Glides. Everything north of that land is the wildlife area used to be Glide/Tule Ranch. Everything used to be Big Cow Ranch; they have a cattle lease but have been doing seasonal wildlife habitat improvements. There are 25 members at the club (25–60 members). They are most vocally opposed to the Notch Project, with two to three people showing up to public meetings. Their main concerns include what affects hunting on the property, flooding them out more often.

Hunting season is from October to January. The Big Notch is open November 1st through March. Flooding starts Christmas to approximately Groundhog Day. With high flows, the notch would allow water to come to the Bypass. Hunting is crappy until January.

H Pond has a "better reputation"; there are 10 members there. We are on good terms with them. They get their water from the refuge system. Water on top of Glide-In gets water from the Toe Drain and down on top of Glide-In, water comes from Senator and Skyrakers before H Pond. Flooding doesn't occur until October 1st. H Pond is not able to get water until the season starts. With the project, H Pond will get better water access.

Senator Outing has 10 members. Additional flooding is good for ducks, bad for duck hunting; fresh flooding brings more ducks. Hunters would be hunting from a higher elevation. Those clubs at a higher elevation will benefit most.

Skyrakers has several members.

At the Mike Glide property, however, Mike Sr. has died. The Mike Glide property gets water from 2068. We would want to talk to him about improving the water situation. One family runs the property.

The people at the Channel property think they will be heavily impacted, and they have a pump. We don't know what to do with it.

Austin Edwards was a member of H Pond and wanted to buy the channel.

Most duck clubs have an operating agreement or a real estate ownership agreement. Laurel G is a corporation. H Pond is an LLC with members. The duck clubs have pond maintenance, rules and regulations about how they self-govern. CDFW used to have licenses for duck clubs. The duck clubs are subject to all rules and regulations for hunting. The Tide's End property is signed up as a private pheasant hunting club, where they buy pheasants and plant them, and replace 120% of the pheasants the next year. This happens on Laurel G and Capitol Oil. We did this the first year that we had the property and have kept it going. There could also be a private land management agreement for big game which allows you to put together a management and hunting plan.

Individual duck hunters report duck counts, and there is a report regionally.

Memberships are $220,000 per ownership, and there are membership requirements. There could also be a $5–10K maintenance fee each year.

There are three types of easements; most of them do not have proactive habitat maintenance. They also don't have specific water and maintenance requirements.

Laurel G is an older group. The northern properties have better irrigation access and better drainage. However, physical access to all of the properties is difficult and getting water on and off the properties is generally difficult.

The complex to the north, above Capitol Oil, is all duck ponds. West of the property is all irrigated pasture.

Southwest is farmland, and west of that is a duck club. The Webb, CWA, and Jackson Rancheria properties were all Pope Ranch. Webb is a Swainson's hawk easement. CWA is a garter snake active mitigation bank and CDFW took it over last year. 2068 was used for irrigation, not the Toe Drain (for Webb, etc.). Webb and Jackson Rancheria are working with us on water.

Recreation at the Tide's End property depends on the season. In the summer, people are fishing (not necessarily on the property, maybe on the corner of Williams where there is a bench). There is some informal access for

Tide's End via boat. Access for Tide's End is via boat. Approximately 10 people from the Lucky Five and southern properties go fishing on Williams.

From the end of January until it drains, one person on the Yolo Basin collects crawdads, and can collect up to 200 pounds per day. September 1st marks the first day of dove hunting, with a limit of 10 doves a day. Deer hunting occurs from August 15th through the middle of September. There has been a change in deer population with the flooding. Only one or two people deer hunt. Irrigation for seasonal hunting in the wetlands is starting to happen now (June 26). Flooding will start October 1st with some grace period at the end of September. There is some competition or balance to flood for local ducks. The rice drains in September. On October 1st, ducks live in the early flooded areas. The season starts around the 28th.

On Capitol Oil, there are eight blinds, four people apiece. The property is not ready for waterfowl hunting by October 20th because of the rice. Rice planting occurs May 18th–June 1st. The first harvest is October 18th. The property can't be hunted on until rice is harvested, about November 15th.

Most of the hunters are men and their daughters. Half of the new, younger hunters are women; older hunters are all men. Capitol Oil has a share program and private landowners lease out hunting opportunities through Fish and Game for licensed hunters. They have participants for deer, etc.

The property will host a First Hunt Group. The Deer and Tule Partnership brings together Capitol Oil, Laurel G, Lucky 5, Yolo Basin, Kleary, Williams.

You can rent a blind in a spot for any of the hunt days (weekends and Wednesdays), which gets opened to Tuesday and Thursday later in the season. There are some guests that come onto the property and use the clubhouse.

This season they have never seen so many ducklings.

All of the properties used to be independently managed. The Williams manager is 80 years old. Laurel G is the best property in the southern area. There are informal boating launch points at Williams and on top of Laurel G.

There are some people you can contact:

- Paul from CWA
- Lee from Munsey
- Tom Minase from Lucky 5
- Dean from H Pond
- Someone from Glide-In
- Gary from Duck and Tule

There are some other potential opportunities on site. We could partner with CDFW on more projects; the properties could be a future location for the Yolo Basin Foundation for events. John Duran works for the smelt lab at UC Davis that now has to use the Dixon Yacht Club and has talked to us about a potential boat ramp. There have been scientists that count bugs, etc. for the Delta Food Web Project.

People have been doing studies on site. The Lucky 5 members and property users are all older guys that use it less and less. The Fish Food Program provides money. Laurel G is signed up. We flood the fields and drain them in a cycle. The Food Web Project does studies. Other properties such as Yolo Basin, Kleary, and Capitol Oil are interested. Could give properties some money to flood and keep maintenance.

interview notes

Date	August 1, 2024
Attendees	Gary Fredericksen (Deer and Tule Partnership) Emily Kline (Environmental Science Associates) Stephanie Freed (Ecosystem Investment Partners)
Subject	Recreational Opportunities in the Tide's End Multibenefit Restoration Project Area

Thank you for making time for the interview… we will be recording and taking notes. The purpose is to gauge the recreational opportunities on the site as it exists now.

We met with John Brennan earlier this summer to get a base understanding of what happens on site, and he recommended we speak to you, and mentioned that you and the Deer and Tule Partnership bring together Capitol Oil, Laurel G, Lucky 5, Yolo Basin, Kleary, and Williams.

Questions:

Can you tell me more about what the Deer and Tule partnership does?

How many members are associated with each duck club?

Does the membership of the duck clubs you manage hunt anywhere else?

How many (individual/unique) hunters typically use the property annually? Are they all members of the duck clubs (and which ones)?

Describe the demographic of the hunters that use each property.

Which months (during duck season) do you see use occurring?

What type of duck species are hunted on your properties? Do you maintain an inventory?

Do you have formal club rules?

What is the frequency and intensity of use (i.e., is it one group that comes once or twice per season, several groups that come out weekly, or somewhere in between)?

Do other recreationists (non-hunters) come to the site, and for what?

Do people have to be members of the duck clubs to access the site?

When are the properties generally flooded up and/or drained? What is the time frame when ducks are on the ground?

When are the ponds maintained? What does pond maintenance look like?

What are the off-season uses/conditions of the property (e.g., rice farms, fishing, family homes)? Are there any other forms of recreation that take place on the property, either on- or off-season?

Interview:

Gary is a partner with John. Duck hunting is the main land use, with farming on Capitol Oil, divided into three duck clubs: Tide's End, where the clubhouse is; Yolo Basin; and Capitol Oil (called Deer and Tule). Tide's End uses the clubhouse and has use of the clubhouse all year. There is pheasant hunting from the second week in November through December 27.

The properties have a good waterfowl hunting opening weekend because they have water. If they harvest all the crops, opening weekend is really good, and then it is slow until Christmas. It is good through January, when duck migration picks up.

Hunters also fish off the property in Cache Slough. Most bring their kids out and fish. They also bring their families and pick blackberries along the slough.

Deer and Tule regulates the memberships, takes deposits, lays out the rules, and manages the duck clubs throughout the season. Deer and Tule also manages water to be certain depths, with approximately 1,700 acres flooded.

The water is pumped out of Cache Slough and is transported through ditches through the fields and then back through to Cache Slough, keeping water moving.

Tide's End charges approximately $1,000 more to use the clubhouse throughout the year, and then rents out duck blinds for approximately $8,000. A duck blind can be used by three to four people. The Project properties do not have lifetime memberships, because they are waiting to see how the Project affects the property.

This is a habitat project that goes to DWR. Farm income could offset the cost.

Tide's End has four blinds, Yolo Basin has three blinds, and Duck and Tule has seven blinds, with three to four people in each blind.

There are other recreational opportunities on the property. The Shorebird program floods the ground up during irrigation season, attracting ducks and shorebirds and then bird-watcher groups. There is some interest by individuals to connect the Yolo Bypass to the north of the properties for a hiking or biking path of some sort.

We have the same families coming to hunt each year, with a waiting list of people wanting to get in. We don't want to overhunt by having too many people.

The standard hunting rules apply. The season runs from approximately the third weekend in October to January. From the opening weekend to Christmas, the hunters are allowed to hunt only on Saturday, Sunday, and Wednesday. Once Christmas happens, the hunters are allowed to hunt throughout the week.

For hunting, more feed is better, which we get from added rice. Overshooting hurts the hunting. The more ground you have flooded, the better. If ducks can see big bodies of water, the better. Different water depths attract different duck species.

The ducks hunted include mallards, pintail, teal, geese, snow geese, speckle-bellied geese, and canvasbacks that get blown off Suisun Bay.

The Fish Food program started when EIP purchased the properties; during the spring the fields are flooded, plankton and insects grow, and then are released for salmonids to eat. Cal Trout runs the project, and it is currently a pilot project that has been implemented for about three years.

The property has also worked with beekeepers to pollinate things (Tide's End Honey). The honey is darker given the clover present on site.

On Deer and Tule, Fish and Game has a blind for the public to hunt and use. A person from Fish and Game goes out with them for safety and to manage the blind. This will be the first year that the program runs. Fish and Game also runs a youth hunt and veteran hunt a couple of weeks after the official hunting season ends.

Appendix K

Tide's End Multibenefit Restoration Project Inventory of Existing Water Conveyance and Distribution Infrastructure Report

Tide's End Multibenefit Restoration Project

Inventory of Existing Water Conveyance and Distribution Infrastructure Report

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December 23, 2024

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1 INTRODUCTION

The Tide's End Multibenefit Restoration Project (proposed Project) would restore tidal wetland and associated floodplain habitat at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento-San Joaquin River Delta (Delta) (**Figure 1**). Implementation of the proposed Project would connect contiguous properties and complete a ten-mile landscape corridor of uninterrupted floodplain and wetland habitat in an area of the Delta critical for smelt and salmonid habitat restoration.

Ecosystem Investment Partners (EIP) owns the six properties that make up the proposed Project area, currently operated as agricultural lands and managed waterfowl habitat. Those properties are (listed from north to south): Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams. The proposed Project would restore and enhance tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) across the entire 2,212-acre proposed Project area. Proposed Project activities would further the goals and objectives of the Central Valley Flood Protection Plan and other systemwide priorities by managing floodway roughness, maintaining long-term flood capacity, and reducing potential flood encroachments in the Yolo Bypass. The proposed Project would also support sea-level-rise resiliency and climate change adaptation while supporting the framework outlined in the Healthy Rivers and Landscapes Program.[1]

This restored mix of tidal and associated floodplain habitats would contribute to conservation, flood-risk reduction, climate and drought resiliency efforts, and local and regional priorities by: creating functional fish habitat; improving connectivity to waterways for fish passage; enhancing food web productivity; ensuring capacity and limiting roughness in the Yolo Bypass to help accommodate flood flows; increasing regional capacity for sea-level-rise resiliency through inland migration of tidal habitat; increasing groundwater recharge potential; and supporting local agricultural and recreational interests.

The proposed Project was sited in this area to take advantage of existing land elevations and amplify the habitat benefits of seasonal flows. By restoring and enhancing tidal wetland and floodplain habitats within the Yolo Bypass, conditions would mimic the historic shallow, long-duration flood patterns of the region that support underlying ecological processes necessary for productive aquatic ecosystems. In addition, long-term operations following implementation of the proposed Project would integrate agricultural and recreational uses with ecologically sensitive floodplain agriculture (e.g., rice operations) and fish-friendly waterfowl management practices that also provide food web benefits for native fish species. To further contribute to the sustainability of agriculture in the region, the proposed Project would improve water delivery and drainage systems between the proposed Project area and adjacent lands.

To inform the design of the proposed Project, Davids Engineering (DE) performed a comprehensive field inventory of existing water conveyance and distribution infrastructure to create a baseline characterization of existing conditions. This report summarizes the results in narrative, graphical, and tabular form.

[1] Often referred to as the "Voluntary Agreements," this is a comprehensive, multi-year solution to restore ecosystems and strengthen water supply reliability across California, bringing together dozens of water agencies and the state and federal governments.

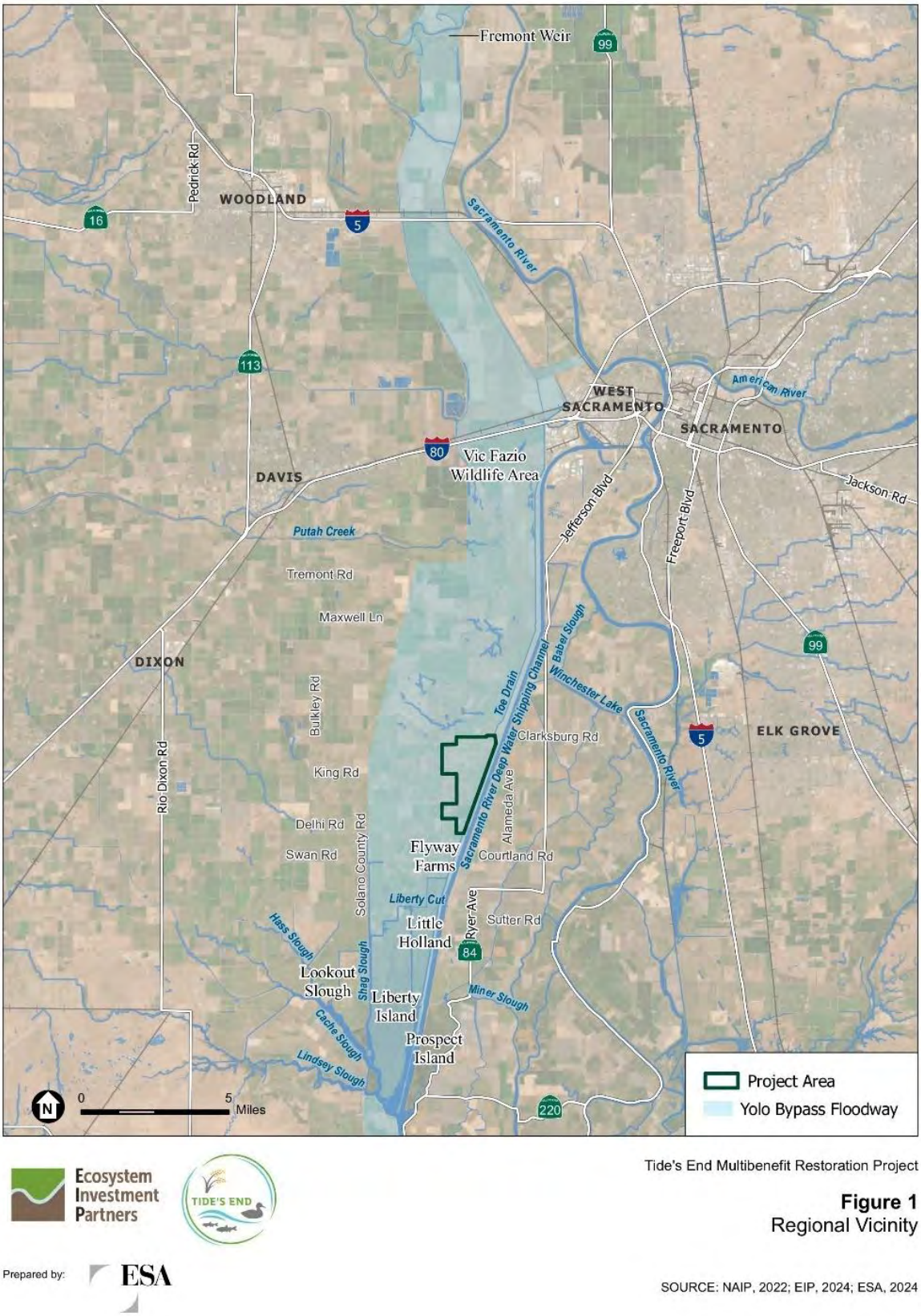

Figure 1. Tide's End Project area vicinity map. Source: ESA

2 FIELD INVENTORY APPROACH

The goal of the field inventory was to locate and document all existing water supply, conveyance, distribution, and delivery infrastructure within the proposed Project area. Supplemental topographic survey was collected for certain canals, drains, and infrastructure as decided by the Project team members. The planning and execution of the field data collection effort was informed by the following consultations with Project team members and other interested parties:

1. Internal planning meeting. Davids Engineering office, Davis. DE staff and John Brennan. (January 16, 2024)
2. Project team meeting. Environmental Science Associates (ESA) office, Sacramento. EIP, ESA, DE staff, and John Brennan. (February 2, 2024)
3. Meeting with western neighbors. Robbins Rice Company office, Woodland. DE staff, John Brennan, Garth (farmer), Dean Webb, CWA representative, John M. (February 23, 2024)
4. Field meeting. Tide's End property. (April 3, 2024)

The above defined meetings were used to develop a baseline understanding of existing features and inform the extents of the field inventory. Meeting #3 was conducted at the request of EIP and Project interested parties to inform water use and delivery operations of several properties lying west of and adjacent to the proposed Project area. These areas currently receive surface water deliveries via a canal system that bisects the Tide's End property and future proposed Project modifications will need to take these areas and infrastructure into consideration.

There are three types of open-channel water conveyance types commonly referred to in this memorandum which, for purposes of this document, are defined as follows:

- **Canal:** Open-channel water conveyance feature that supplies water to lateral canals and fields. Water flows from higher elevation to lower elevations via gravity. The water surface elevation in canals is higher than field elevations which allows gravity flow from the canal, through a turnout, and onto the field. Many canals in the proposed Project area are supplied by lift pumps which lift the water from a lower elevation supply source, discharge into the canal, and enable gravity flow within the canal.
- **Lateral:** Open-channel water conveyance that branches from a main supply canal and is typically smaller than the canal it is supplied by. Laterals typically only serve fields rather than other canal networks.
- **Drain Ditch (or Ditch):** Open channel linear water conveyance that conveys excess flow from fields, canals, or overland runoff. In the context of the proposed Project area, water flows from a field, through a spill, and into a drain ditch where it returns to the Toe Drain.

For purposes of the inventory and this document, existing water conveyance features are categorized into one of six Infrastructure Types, as generally defined below:

1. **Control Structures:** Structure designed to regulate the flow and/or level of water within the canal system. These structures are strategically placed along the canal network to manage water distribution, flow rates, and levels for agricultural purposes and managed wetlands. Control structures can include features such as gates, weirs, sluices, and valves, which are operated manually or automatically to control the movement of water.
    a. *"Check structures"* are a type of control structures in the proposed Project area and serve to elevate and regulate the water surface elevation upstream of the structure to facilitate delivery to fields or branching laterals.

b. *"Division boxes"* are a type of control structure located at a pipeline junction with multiple branches. The Division Box apportions flow to the branching pipelines utilizing mechanical valves or gates, or wooden stoplogs.

2. **Culverts:** A pipe or similar structure to allow the passage of water underneath roads, pathways, or other obstacles that intersect the canal.
3. **Headings:** The upstream end, and beginning of, a new canal or lateral. A Heading Structure is typically located at the heading to control the flow of water delivered to the lateral.
4. **Lift Pumps:** A pump designed to move (or "lift") water from a lower elevation to a higher elevation.
5. **Spills:** Structure that allows the flow of water out of a field into a drain ditch or from a canal into a drain ditch. Spill structures can be for operational purposes or emergency purposes. For the former, the structures are typically manually manipulated to relieve water from the field or canal. In the latter, the structures operate passively and automatically relieve water from the field or canal if the water level exceeds a preset or established elevation.
6. **Turnouts:** Structure used to divert water from a canal or lateral into individual fields. Turnouts typically consist of gates, valves, or similar control devices that regulate the flow of water into the field.

From April 23 – 25, 2024, a three person field team conducted a detailed inventory and assessment of the proposed Project Area and select features relevant to supplying the western neighbors. Prior to the field inventory, DE created digital data collection forms to consistently capture and organize data for each infrastructure type. Handheld tablets were used to input the collected data into the forms and document feature attributes. Important attributes were expected to vary by infrastructure type and site, but attributes collected for all infrastructure types included the following:

- **Global Positioning System (GPS) coordinates:** Latitude and Longitude. Tablet GPS receiver with approximate accuracy within 5 meters.
- **Photos:** Photo documentation of each infrastructure feature. Provide digitally in **Appendix A**.
- **Condition:** Visual assessment of the condition of the feature. Ranking scale:
    - Good – Feature is in proper working order and not requiring near-term replacement.
    - Poor – Feature functions, but was damaged, performance was poor, or appeared to be nearing the end of its useful life.
    - Needs Replacement – Feature is not in proper working order and requires replacement to function as intended.
- **Field Notes:** General description of the item and/or relevant notes based on observations of the field team.

In addition to the common attributes listed above, the following attributes were collected where applicable and depending on the Infrastructure Type:

- **Pipe material:** Polyvinyl Chloride (PVC), concrete, corrugated metal pipe (CMP), steel, or corrugated high-density polyethylene (HDPE). As observed.
- **Pipe diameter:** Inside and outside diameter of pipe. Estimated from field-measured circumference.
- **Pipe length:** Total length of pipe from inlet to discharge. Measured.
- **Pump type:** Vertical turbine, end-suction centrifugal, or portable. As observed.
- **Pump horsepower:** The listed power output of the pump drive unit. Per equipment placards or signage.

- **Pump intake and discharge pipe diameters:** Inside diameter of the pipe at the inlet and discharge sides of the pump. Estimated from field-measured circumference.
- **Canal gate condition, manufacturer, and size:** The presence of and observed condition of the mechanical device used to control flow (i.e., canal gate), the manufacturer, and size (both diameter of the gate and frame width).
- **Headwall presence and condition:** The presence of and observed condition of a structure (i.e., "headwall") on the upstream side of a through-embankment pipe or lateral canal.
- **Canal bank:** Defines which bank (left or right looking downstream) of the canal the feature is located on.

A comprehensive summary of attributes collected for each Infrastructure Type is provided in **Table 1**.

Table 1. Information collected with electronic forms for each Infrastructure Type.

Infrastructure Type	Attributes Collected
Control Structure	GPS location, pictures, condition, notes
Culvert	GPS location, pictures, condition, notes, pipe material, and pipe diameter & length
Heading	GPS location, pictures, condition, notes
Lift Pump	GPS location, pictures, condition, notes, pump type & horsepower, intake & discharge pipe circumference & diameter
Spill	GPS location, pictures, condition, notes, pipe material & diameter, presence of headwall & canal gate, canal gate size & manufacturer if canal gate is present
Turnout	GPS location, pictures, condition, notes, pipe material & diameter, presence of headwall & canal gate, canal gate size & manufacturer if canal gate is present, and bank on canal (left or right)

Collected field data was reviewed and edited as necessary for quality control purposes. The data was then transformed into GIS format and mapped. Shapefiles were created for each infrastructure item category as well as canals and drains. Shapefiles are included in digital form in **Appendix B**.

DE developed a naming convention for each infrastructure feature (and canals and drains) for purposes of effective data management, consistency, and presentation purposes. The naming convention generally follows the format below with certain infrastructure types utilizing an abbreviated version where applicable.

[property name or canal]_[type]_[sequential number]_[canal bank]

Property names (**Figure 2**) are based on ownership, existing names, or names commonly used by landowners and land managers.

Turnouts used the following naming convention:

1. An acronym based on the canal in which the turnout is located (i.e., Highline Canal = HC)
2. The bank on which the turnout is located on the canal (i.e., left (L) or right (R))
3. A sequential counter from upstream to downstream (i.e., the second turnout = 02)

For example, the second turnout on the left bank of the Highline Canal is named HC_L_02.

Spills and culverts were named based on the property in which they are situated with a sequential counter that begins with the northmost spill or culvert and counts upwards to the south.

In addition to inventorying existing features, DE utilized Realtime Kinematic (RTK) GPS survey equipment to collect spot ground-surface and water-surface elevations. Three cross sections (beginning, middle, and end) were collected in each the Highline Canal and the Main Drain. The survey data will assist in validating the Light Detection and Ranging (LiDAR) data that is being used for preliminary Project design and to inform design and evaluation of existing and proposed conveyance infrastructure.

A pair of Emlid Reach RS3 Global Navigation Satellite System (GNSS) receivers were used to collect the topographic data. Data was collected using the North American Vertical Datum of 1988 (NAVD 88) and the North American Datum of 1983 (NAD83) Zone 2. The topographic survey was tied to a National Geodetic Survey (NGS) monument located near the intersection of Road 155 and Road 107 with the following details:

- Designation - Andrew
- PID - AE9864
- NAVD 88 Orthometric Height - 12.1 feet
- Northing - 1,902,861.60 survey feet
- Easting - 6,665,277.16 survey feet

The survey data are included as **Appendix C** in comma-separated values (CSV) format.

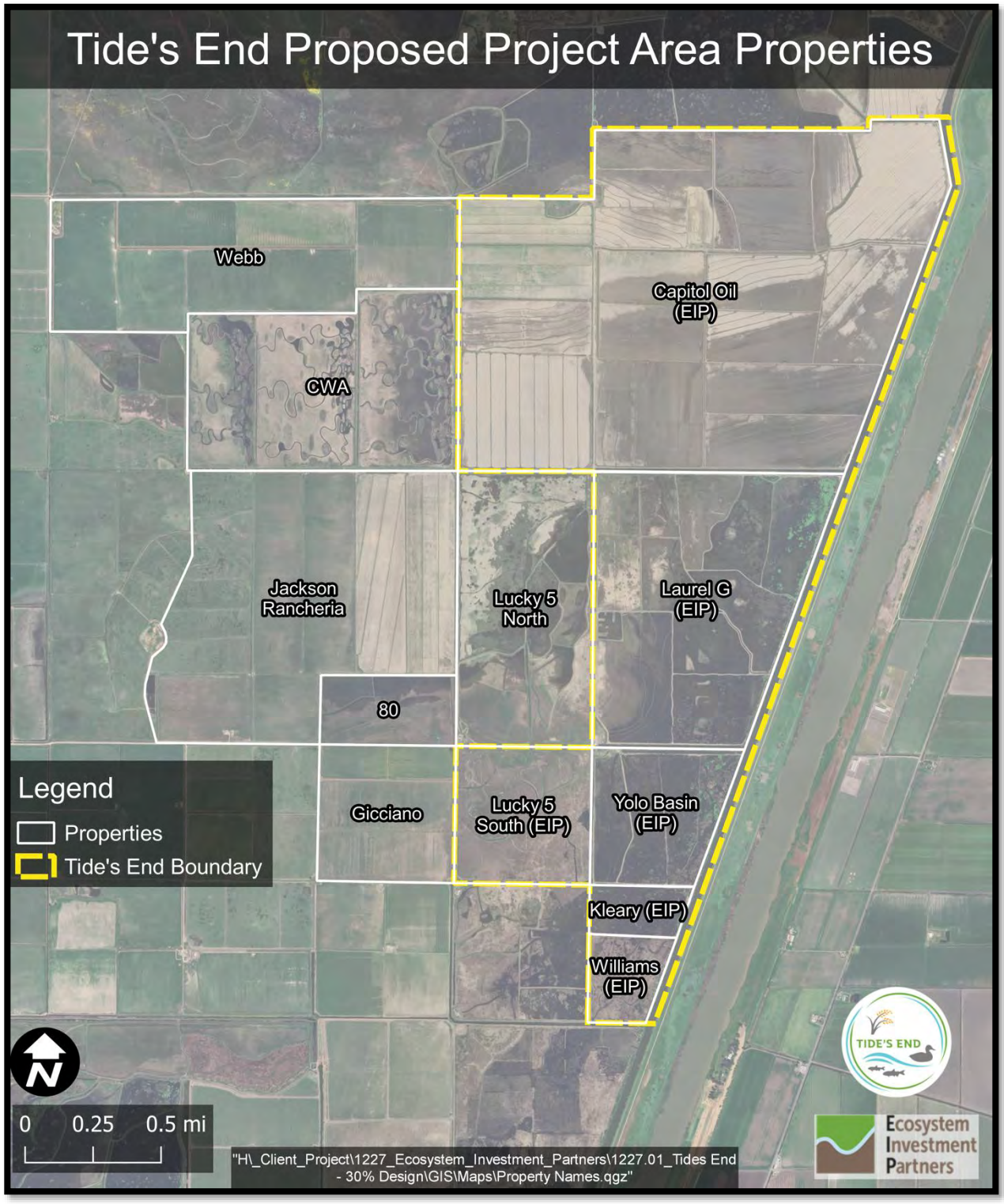

Figure 2. Tide's End proposed Project area properties and those directly abutting the proposed Project boundary or receiving water via infrastructure within the proposed Project boundary.

3 SUMMARY OF FIELD INVENTORY

A total of 161 individual infrastructure features were inventoried (**Table 2**). Spills were the predominate feature at 34% (55) of the total, and Control Structures were least common at only 3% (5). 144 of the 161 (89%) features inventoried were within the proposed Project Area with the remainder on the adjacent properties. All the inventoried Culverts and Spills inventoried were within the proposed Project Area. Conversely, only 40% (6) of the total lift pumps were within the proposed Project Area and the remaining were located on adjacent properties.

Table 2. Quantities of infrastructure features by Infrastructure Type.

Infrastructure Type	Total Inventoried	Percent of Total Inventoried	Within Proposed Project Area	Percent of Total Inventoried
Control Structures	5	3%	4	80%
Culverts	36	22%	36	100%
Headings	9	6%	8	89%
Lift Pumps	15	9%	6	40%
Spills	55	34%	55	100%
Turnouts	41	25%	35	92%
Total	**161**		**144**	

The existing conveyance system (canals or drains) was extensively mapped as part of this work and all conveyances received a unique name (**Figure 3**). Existing features were inventoried and cataloged according to the conveyance (canal or ditch) they were part of. The distribution of features within the proposed Project Area and neighboring properties is shown in geospatial format (**Figures 4 - 11**) and discussed further in subsequent sections.

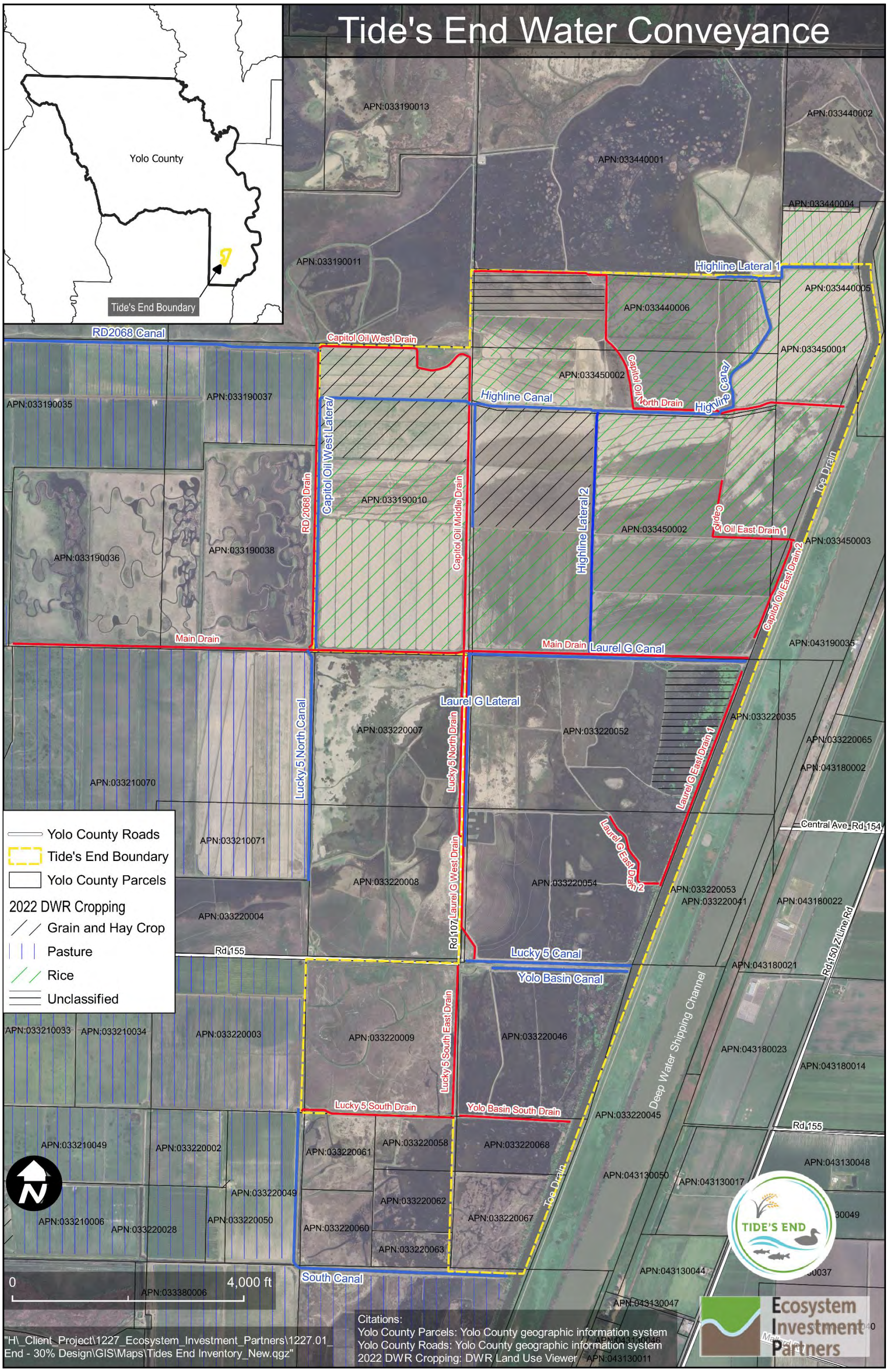

Figure 3. Map of water conveyances within and adjacent to the proposed Project area and the assigned names.

3.1 Overview of Existing Water Supply and Drainage

In addition to a comprehensive inventory of existing features, this effort resulted in a refined understanding of water operations and conveyance. This section provides a general overview by conveyance feature (Canal or Drain), starting with Water Supply conveyances (Section 3.1.1) and then Drainage conveyances (Section 3.1.2). Primary features inventoried in the field and identifiable on the enclosed maps are indicated as such using **bold** text when first introduced.

3.1.1 Water Supply

3.1.1.1 Highline Canal/Highline Pump

The **Highline Pump** contains one 75 horsepower electrically driven vertical turbine lift pump that lifts water directly out of the Toe Drain and discharges into the **Highline Canal** (**Figure 4**). The pump runs at a single speed and is triggered on and off as dictated by a float valve positioned in the Highline Canal. Supplying approximately 722 acres, the Highline Canal is the largest canal in the Capitol Oil property and services eight turnouts along its approximately 2.1-mile-long length. The canal is earthen, generally trapezoidal in shape, and has a top width of 45 feet at the upstream end and tapers to a 35-foot top width at the downstream end. There are two small canal branches (laterals) off the Highline Canal – **Highline Lateral 1 and Highline Lateral 2** – that service an additional six turnouts. The Highline Canal can drain to the Capitol Oil North Drain Network via a spill structure (ID #14) or to the Main Drain via a spill structure located at the terminus of Highline Lateral 2 (ID #25).

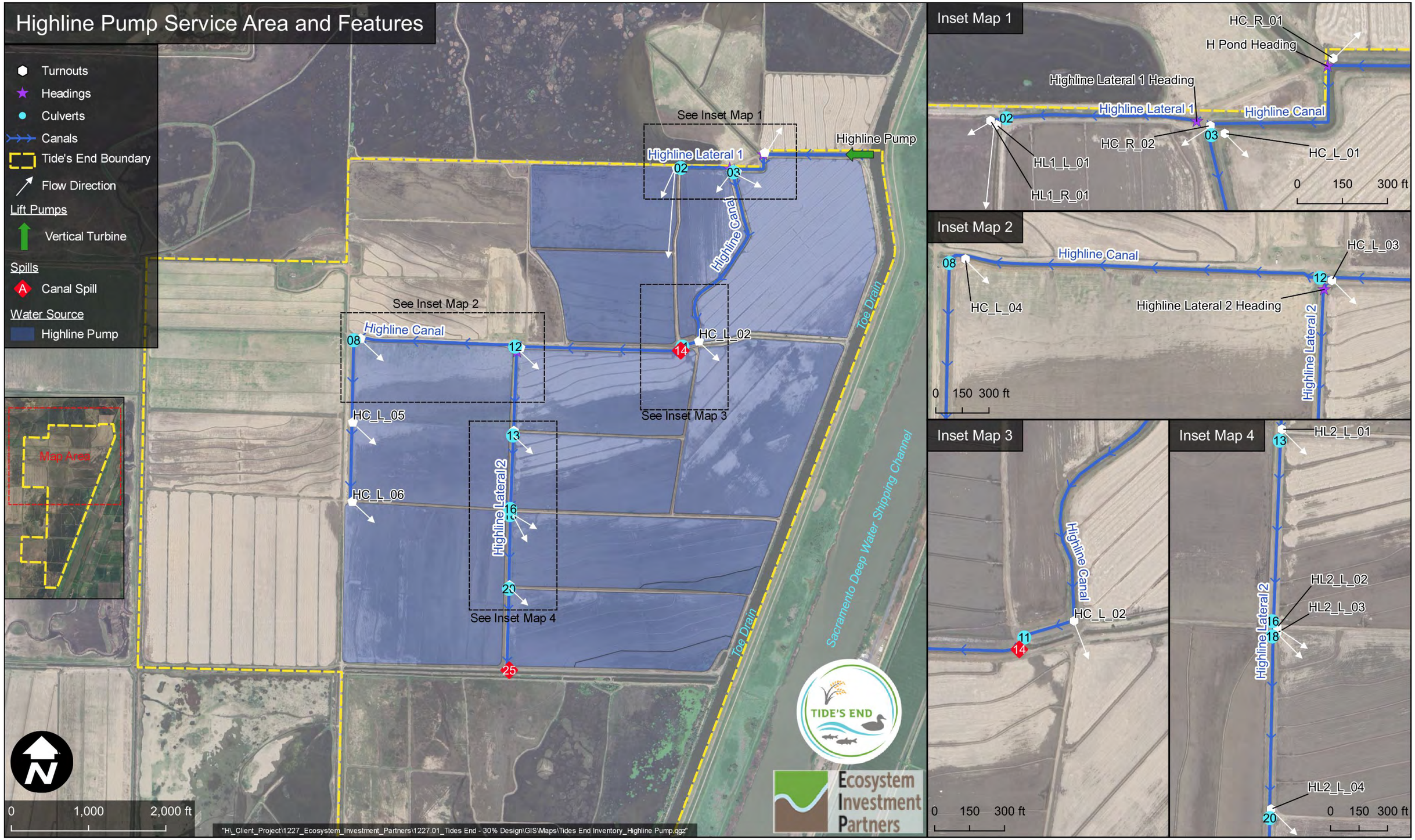

Figure 4. Highline Pump service area and features.

3.1.1.2 Main Drain

The **Main Drain** is situated along the southern boundary of the Capitol Oil Property and the northern boundary of the Laurel G property (**Figure 5**). The Main Drain is hydraulically connected to the Toe Drain by means of a tidal gate ("**Main Drain Heading")** which allows the channel to fill as the tide rises and retains water as the tide recedes. The slope of the Main Drain and the function of the Heading structure enables bidirectional flow – westward flows from the Toe Drain to supply approximately 1,253 acres (**Table 3**) and eastward flow of drain water (see discussion of Drainage in subsequent section). In a supply capacity, the Main Drain conveys water westward approximately 2.4 miles to the Tide's End property and to lands owned by the California Waterfowl Association (CWA) and Jackson Rancheria. Situated at the westerly edge of the proposed Project, the electrically driven vertical turbine **Capitol Oil West Pump** (40 horsepower) lifts water from the Main Drain and discharges into the **Capitol Oil West Lateral** which is 1.3-miles long, serves five turnouts and approximately 385 acres within the proposed Project boundary. The Main Drain also provides water supply to four lift pumps that supply the CWA and Jackson Rancheria properties. These lands and associated lift pumps are outside the proposed Project boundary but were inventoried to provide a comprehensive summary.

Table 3. Properties and associated acreage supplied by the Main Drain.

Property	Delivery Location/Source from the Main Drain	Acreage
Capitol Oil (EIP)	Capitol Oil West Pump	385
CWA	CWA Pump	368
Jackson Rancheria	Jackson Rancheria Pumps 1-3	500
	Total Supplied by Main Drain:	**1,253**

Anecdotal information from landowners and water operators suggests that the Main Drain is capacity limited relative to demand at certain times of the year. The relatively flat hydraulic gradient, channel gradient, channel geometry, and growth of aquatic vegetation in the channel all play a factor in limiting capacity. To generate additional supply capacity, water operators have periodically installed a trailer-mounted portable diesel pump to lift water from the Toe Drain into the Main Drain to supplement the tidally influenced flow through the Main Drain Heading.

3.1.1.3 RD2068 Canal

Reclamation District 2068 **(RD 2068**) is a delta water purveyor that diverts water from the Sacramento River Delta via water rights and infrastructure distinct and separate from the proposed Project. The Webb Property – which abuts the proposed Project on the northwest – receives water delivery service from RD 2068 via the **RD2068 Canal** which is situated on the northern boundary of the Webb Property and terminates at the northeast corner of the Webb Property at the **End RD2068 Check** (Figure 5). The Webb Property lifts water from the RD 2068 Canal via the **Webb Pump** to supply approximately 410 acres of irrigated pasture.

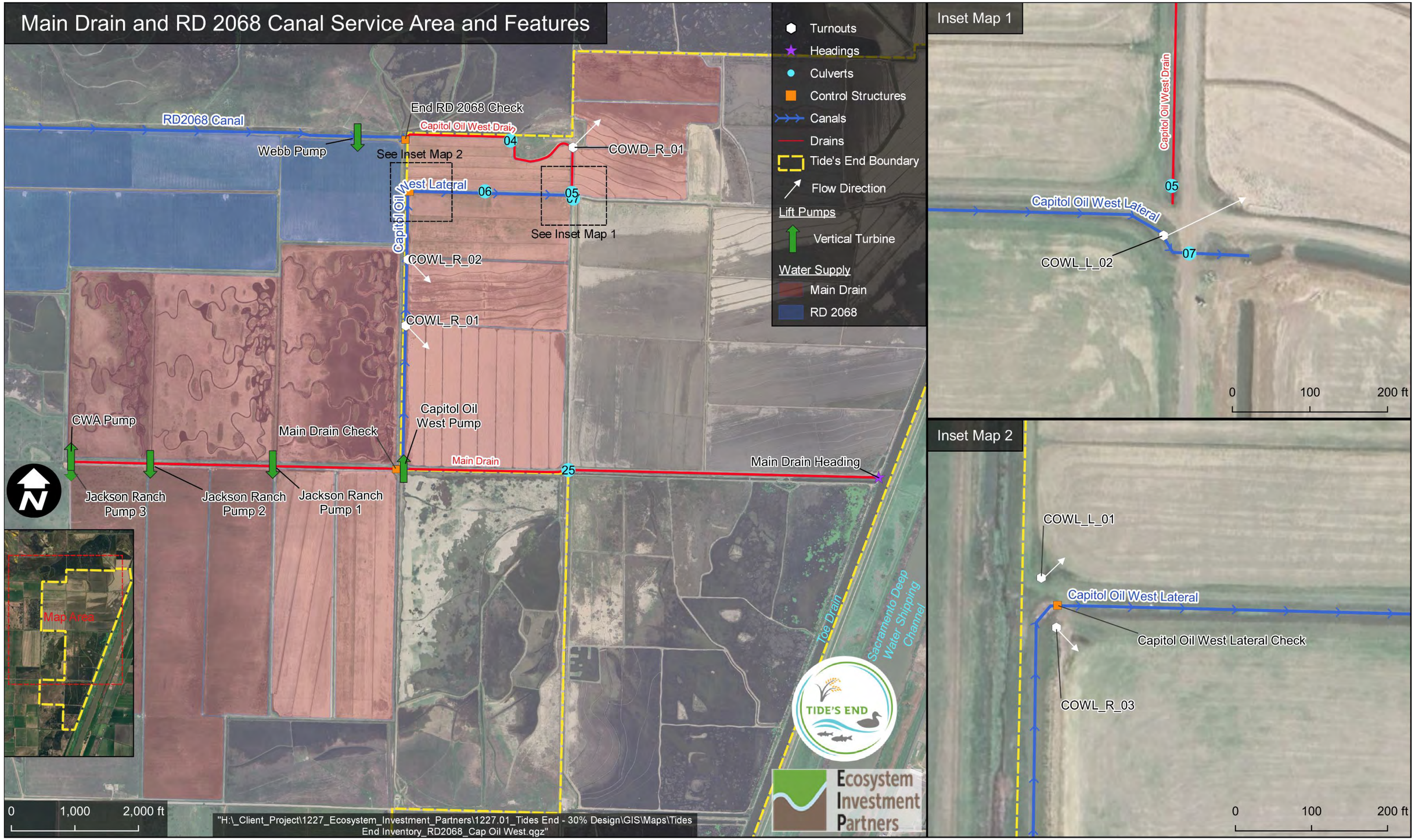

Figure 5. Main Drain and RD2068 Canal service area and features.

3.1.1.4 Laurel G Canal

The **Laurel G Canal** is comprised of two distinct segments and services seven turnouts and 444 total acres (**Figure 6**). The first segment is connected to the Toe Drain by a tidal gate (**"Laurel G Canal Heading"**) and fills as the tide rises and retains water in the channel as the tide recedes. This segment acts as a sump for two electrically driven vertical turbine lift pumps, the **Laurel G North Pump** (25 horsepower) and **Laurel G South Pump** (15 horsepower), that lift water into the second segment of the Laurel G Canal which flows westward approximately 0.6 mile, directly services four turnouts and the power take-off (PTO) driven **Laurel G West Pump.** The Laurel G West Pump services the **Laurel G Lateral** which is 0.6 mile long and services three turnouts.

The first and second segments of the Laurel G Canal are parallel to the Main Drain and an operational spill structure (ID #26) in the second segment (in the right embankment, adjacent to the Laurel G North Pump) provides passive spill of excess supply to the Main Drain, or can be manually operated to provide supplemental flow from the Laurel G Canal to the Main Drain.

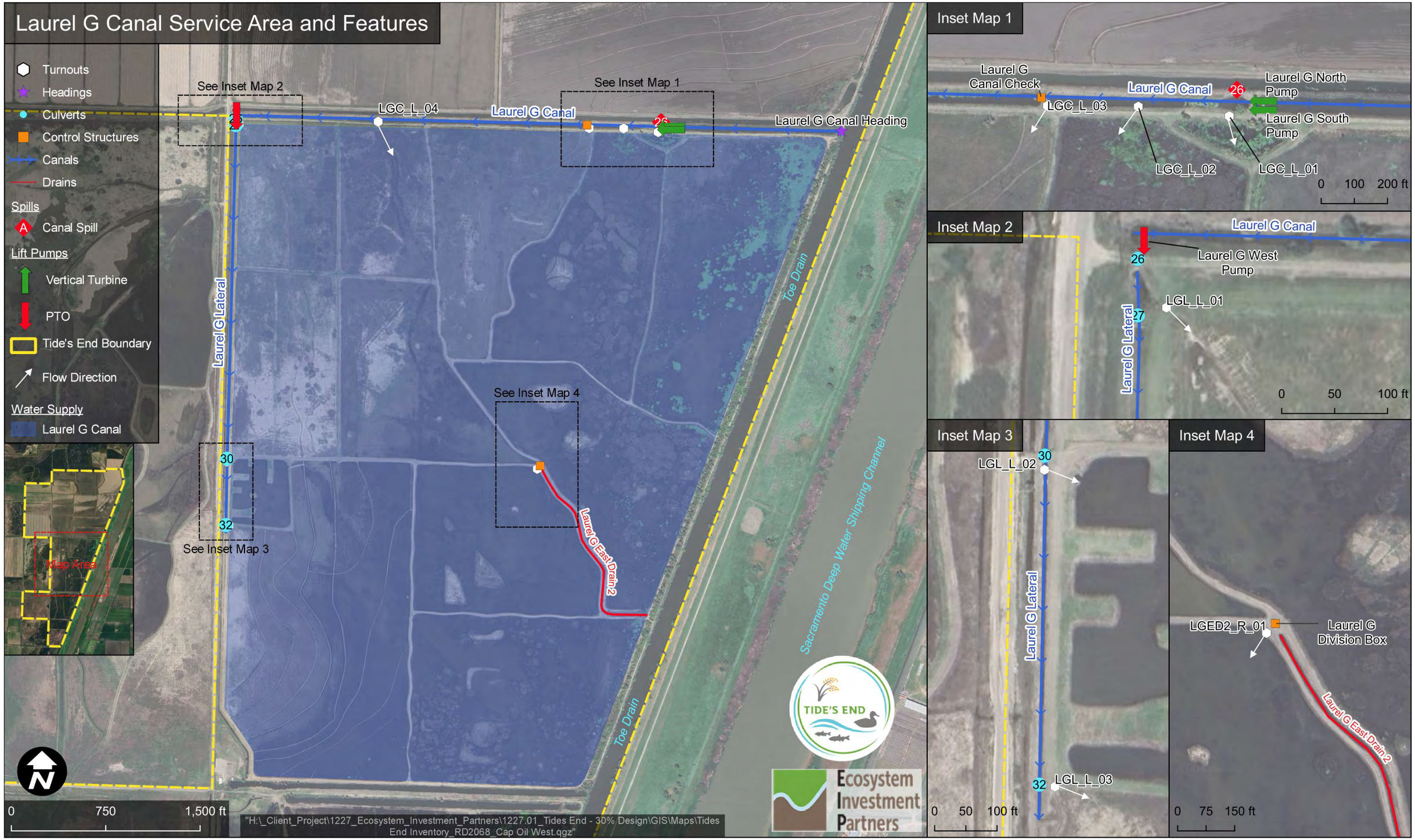

Figure 6. Laural G Canal service area and features.

3.1.1.5 Lucky 5 Canal

The **Lucky 5 Canal** is hydraulically connected to the Toe Drain by means of a tide gate ("**Lucky 5 Canal Heading"**) that allows water into the channel as the tide rises and retains water as the tide recedes (**Figure 7**). The Lucky 5 Canal flows westward approximately 0.5 mile to where the 50-horsepower, electrically driven, vertical turbine **Lucky 5 Pump** is located. The Lucky 5 Pump supplies a buried 18 inch-diameter pipeline that conveys flow approximately 1,300 feet west to an earthen discharge basin ("**Lucky 5 Pump Discharge**") just North of Road 155 on the 304-acre **Lucky 5 North property**. The discharge basin has a series of turnouts that enable water to be delivered to the north onto the Lucky 5 North property or south to the **Lucky 5 South property** (150 acres) by means of a buried culvert beneath Road 155 (ID # 33). The Lucky 5 North property is not part of the proposed Project while the Lucky 5 South property is within the proposed Project boundary. The **Lucky 5 North Canal** is situated along the western boundary of the Lucky 5 North property, is hydraulically connected to the Main Drain, and has two turnouts that can supply the Lucky 5 North property. It is unknown whether the Lucky 5 North Canal is used for water supply, or if only the Lucky 5 Pump is used.

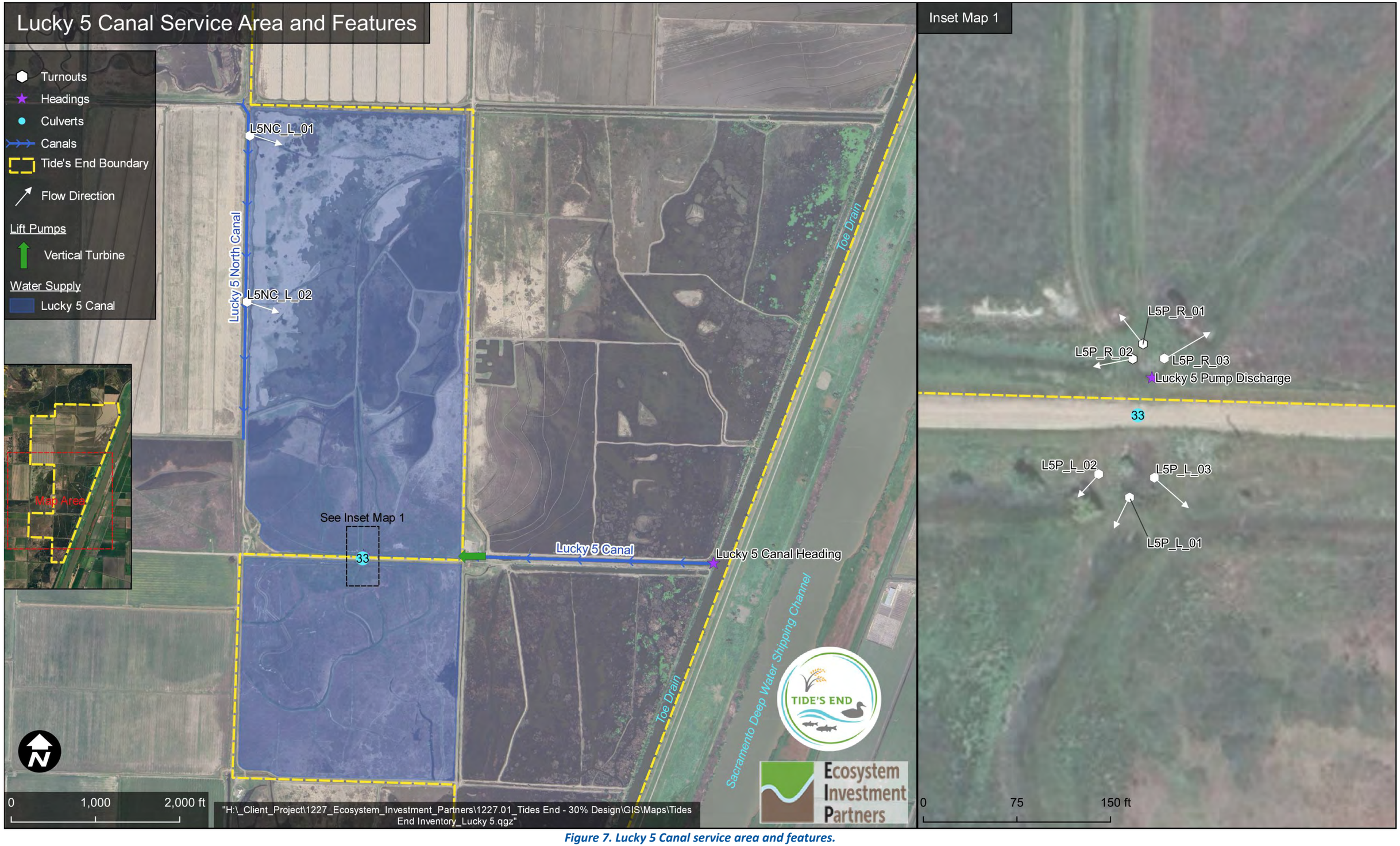

Figure 7. Lucky 5 Canal service area and features.

3.1.1.6 Yolo Basin Canal

The **Yolo Basin Canal** is hydraulically connected to the Toe Drain by a buried culvert (“**Yolo Basin Heading”**) that was not visible during the field inventory but confirmed to exist through discussion with land managers (**Figure 8**). It is unknown whether this heading contains a one-way or adjustable gate. The Yolo Basin Canal flows west approximately 0.4 mile to where the 30-horsepower, electrically driven, vertical turbine **Yolo Basin Pump** is located. The Yolo Basin Pump lifts water into an approximately 80-foot-long buried pipeline system that includes three alfalfa valve outlets that discharge water to the 140-acre **Yolo Basin property** and the 38-acre **Kleary Property**. The alfalfa valve supplying the Kleary Property discharges to a small canal that begins in the Yolo Basin property and flows south along its western boundary approximately 0.5 mile to the northwest corner of the Kleary property and through Culvert #36.

Figure 8. Yolo Basin Canal service area and features.

3.1.1.7 South Canal

The **South Canal** is hydraulically connected to the Toe Drain via a pair of flashboard weir structures (**"South Canal Heading")** and flows west approximately 0.7 mile then north approximately 0.5 mile where it terminates at the **South 1, South 2, and South 3 Pumps** (**Figure 9**). All pumps are electrically driven, vertical turbine pumps and 10, 15, and 25 horsepower in size, respectively. The pump stations are plumbed to a network of canals and pipelines that supply several properties to the west of and outside the proposed Project Area. Based on the site survey, it appeared the 50-acre Williams property indirectly receives water from the South Pumps via pass-through drainage from adjacent properties through Field Spills #52, 53, and 54 (see **Figure 11**).

3.1.2 Drainage

The subsequent sections explain the drainage network in the proposed Project Area where **Figure 10** shows the drainage features north of the Main Drain and **Figure 11** shows south of the Main Drain.

3.1.2.1 Capitol Oil North Drain Network

The **Capitol Oil North Drain** is an earthen ditch network that provides drainage from west to east including drainage of lands north of the proposed Project area and within the proposed Project area. The Drain intersects the Highline Canal and passes subsurface below the canal (see Spill ID #13) before continuing east to the Toe Drain where it discharges to the Toe Drain through a culvert with a tidal gate. The Drain network contains three culverts and eight inflowing spill structures from fields or adjacent lands.

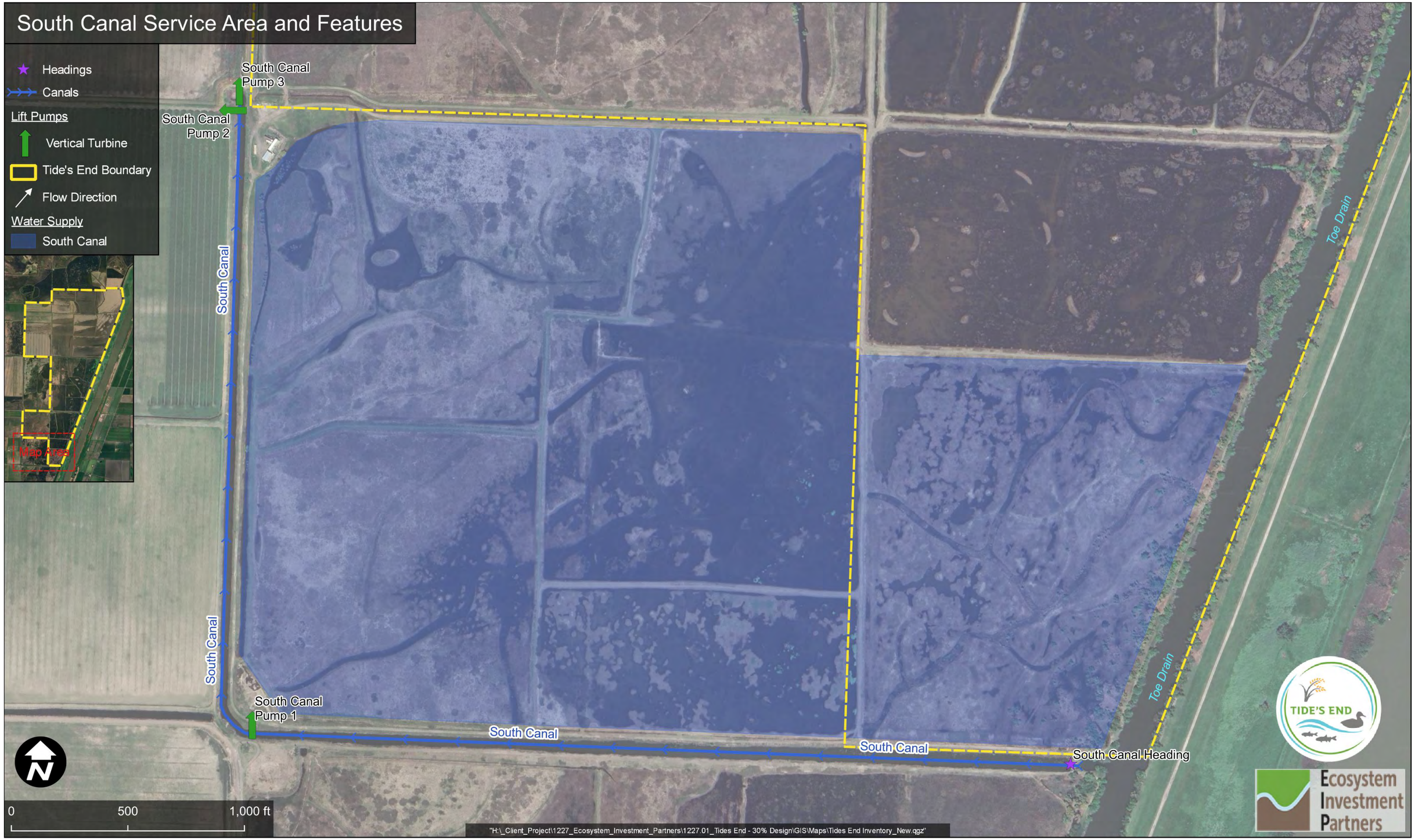

Figure 9. South Canal service area and features.

3.1.2.2 Capitol Oil East Drain Network

The **Capitol Oil East Drain Network** is comprised of two segments and provides drainage from west to east, discharging to the Toe Drain just upstream of the Main Drain Heading. This Drain network primarily provides drainage of existing agricultural fields located on the eastern portion of the Capitol Oil property and supplied via the Highline Canal. The Drain network contains three inflowing spill structures from fields or adjacent lands and contains six culverts along its length. **Capitol Oil East Drain 2** can drain both north-to-south and south-to-north. South-to-north flows enter **Capitol Oil East Drain 1** via a culvert and then to the Toe Drain via Spill #20 (**Figure 10** below). North-to-south drainage flows to an existing earthen depression north of the Main Drain Heading. The earthen depression is hydraulically connected to the Toe Drain and believed to have been a pumping sump at one time but has since been abandoned.

3.1.2.3 Main Drain Network

The **Main Drain Network** is comprised of the Main Drain and all independent drain channels discharging to it including the **RD2068 Drain**, the **Capitol Oil Middle Drain**, the **Capital Oil West Drain**, and the **Lucky 5 North Drain**. The Main Drain is situated along the southern boundary of the Capitol Oil Property and the northern boundary of the Laurel G property. The Main Drain is hydraulically connected to the Toe Drain by means of a tidal gate which allows bi-directional flow of water. The slope of the Main Drain and the function of the Heading structure supports this bidirectional flow function – westward flows from the Toe Drain to provide water supply during the irrigation season and eastward flow of drain water during the winter.

The RD2068 Drain is an earthen ditch flowing from north to south and beginning at the terminus of the **RD2068 Canal**. The Drain discharges excess flows from the RD2068 Canal or runoff from adjacent lands to the Main Drain. Neighboring landowners can also use the RD2068 Drain to recirculate tailwater or runoff to the Main Drain where it can be extracted via existing lift pumps for supply. A control structure, the **Main Drain Check** (see previous Figure 5), in the Main Drain near the western proposed Project boundary facilitates this recirculation.

The Capitol Oil Midde Drain parallels County Road 107 north of the Main Drain and provides roadside drainage as well as drainage from the agricultural fields served by the Capitol Oil West Lateral. This earthen ditch receives incoming drain flow via five spill structures and two culverts are positioned along its length. The Drain discharges to the Main Drain near the Main Drain's intersection with County Road 107.

The Capitol Oil West Drain provides both drainage and supply functionality. Drainage from the adjacent land enters the drain and discharges into the Highline Canal. One spill structure enables spill from the adjacent land and there are two culverts along the Drain's length. One turnout provides delivery of water to an agricultural field (see Figure 5 above). Water for delivery is diverted to the Drain via the Capitol Oil West Lateral.

The **Lucky 5 North Drain** (**Figure 11**) provides roadside drainage along County Road 107 and the eastern edge of the Lucky 5 North property. This drainage flows from south to north and discharges to the Main Drain near its intersection with County Road 107.

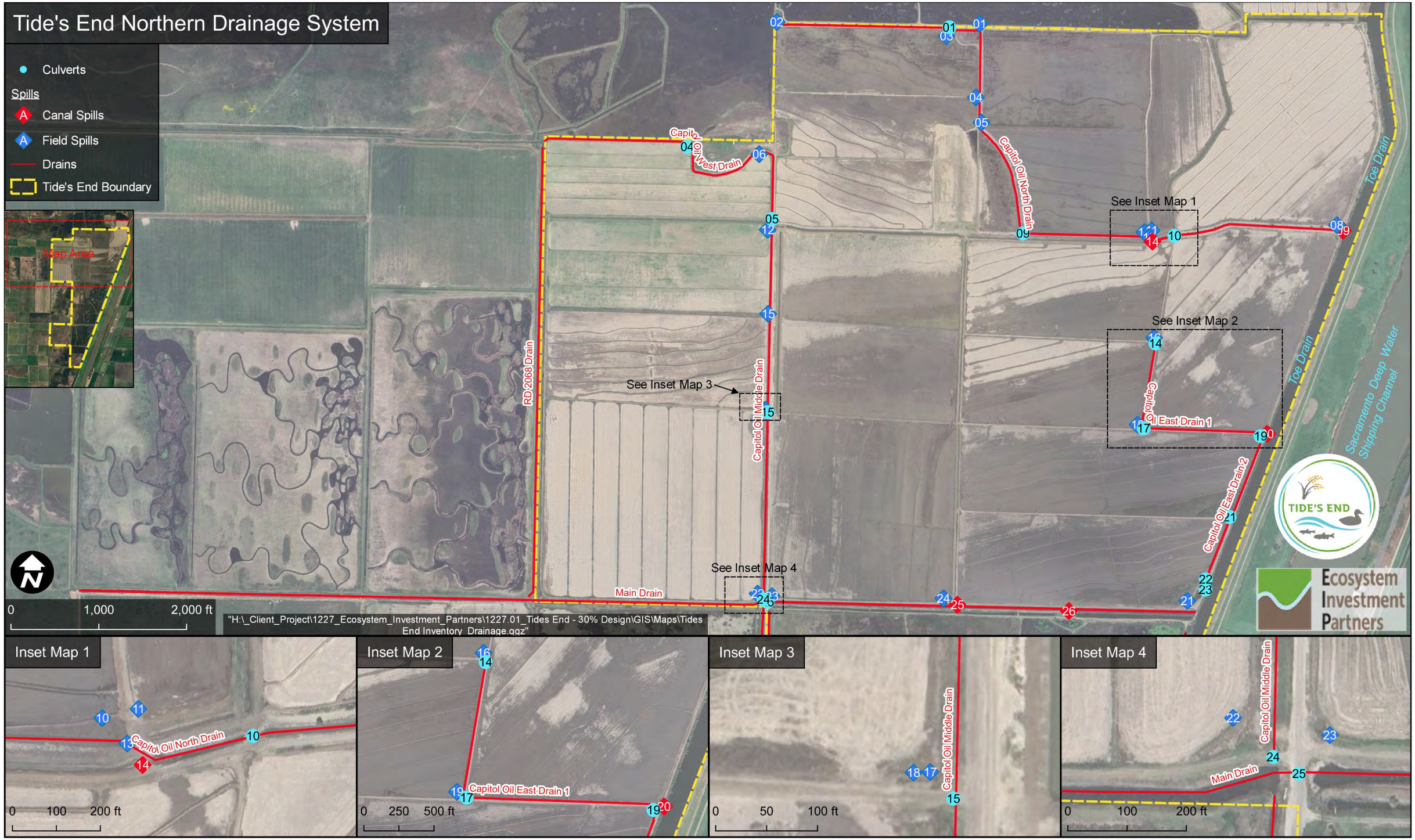

Figure 10. Tide's End northern drainage system.

3.1.2.4 Laurel G East Drain Network

The **Laurel G East Drain Network** provides drainage of the Laurel G property to the Toe Drain. Several spill structures enable lands to be drained to the Drain network and a Division Box near the center of the property enables the on-property distribution canal network to be drained or partially diverted to the Toe Drain.

3.1.2.5 Laurel G West Drain

The **Laurel G West Drain** provides roadside drainage along County Road 107 and the western edge of the Laurel G property. This drain discharges to the Lucky 5 Canal near the Lucky 5 Pump.

3.1.2.6 Lucky 5 South Drain Network

The **Lucky 5 South East Drain** flows from north to south beginning at Culvert #34 that passes excess water from Lucky 5 North, under County Road 107, to the Drain. The Lucky 5 South East drain flows south to the **Lucky 5 South Drain** that flows from east to west where it discharges into the South Canal through Spill #47.

3.1.2.7 Yolo Basin South Drain Network

The **Yolo Basin South Drain Network** provides drainage from the Yolo Basin property via several spill structures and also from upgradient lands to the west. The Drain discharges to the Toe Drain.

Figure 11. Tide's End southern drainage system.

A summary of inventoried features by property and conveyance is provided as **Table 4**.

Table 4. Summary of inventoried features by Infrastructure Type, Property, and Conveyance feature. Capitol Oil, Laurel G, Yolo Basin, Lucky 5 South, Kleary, and Williams are all within the Tide's End Boundary and are owned by EIP. CWA = California Waterfowl Association

Property Name	Water Conveyance	Control Structures	Culverts	Headings	Lift Pumps	Spills	Turnouts
Capitol Oil (EIP)	Highline Canal	---	4	1	1	1	8
	Highline Lateral 1	---	1	1	---	---	2
	Highline Lateral 2	---	4	1	---	1	4
	Capitol Oil West Lateral	1	2	---	---	3	5
	Capitol Oil North Drain	---	3	---	---	10	---
	Capitol Oil West Drain	---	2	---	---	1	1
	Capitol Oil Middle Drain	---	2	---	---	5	
	Capitol Oil East Drain 1	---	3	---	---	3	---
	Capitol Oil East Drain 2	---	3	---	---	1	---
	Main Drain	1	1	1	---	---	---
Laurel G (EIP)	Laurel G Canal	1	1	1	3	1	4
	Laurel G Lateral	---	3	---	---	---	3
	Laurel G West Drain	---	1	---	---	1	---
	Laurel G East Drain 1	1	2	---	---	3	---
	Laurel G East Drain 2	---	---	---	---	5	1
	Inter Field Connections*	---	---	---	---	9	---
Yolo Basin (EIP)	Yolo Basin Canal	---		1	1	---	1
	Yolo Basin Pump	---	---	---	---	---	3
	Yolo Basin South Drain	---	---	---	---	4	---
Lucky 5 South (EIP)	Lucky 5 Canal	---		1		1	---
	Lucky 5 Pump	---	1	1	1		6
	Lucky 5 South Drain	---		---	---	2	---
	Lucky 5 South East Drain	---	2	---	---	---	---
Kleary (EIP)	Inter Field Connections*	---	1	---	---	---	---
Williams (EIP)	Inter Field Connections*	---	---	---	---	4	---
Webb	RD 2068 Canal	1	---	---	1	---	---
CWA	Main Drain	---	---	---	1	---	---
Jackson Rancheria	Main Drain	---	---	---	3	---	---
Lucky 5 North	Lucky 5 North Canal	---	---	---	---	---	2
	Lucky 5 North Drain	---	---	---	---	---	---
Toe Drain	Toe Drain	---	---	---	---	---	1
Other**	South Canal	---	---	1	4	---	---
	Totals:	**5**	**36**	**9**	**15**	**55**	**41**

Some infrastructure features do not interact directly with a canal or drain but connect one field to another.
****Several properties to the southwest of the Tide's End property and supplied by the South Canal.***

3.2 Typical Infrastructure Features

This section provides a brief discussion of the typical features identified, organized by Infrastructure Type. The purpose of this section is to provide the reader with visuals of the common infrastructure features in the proposed Project area, organized by infrastructure type. See **Appendix A** for photos of all infrastructure features inventoried.

3.2.1 Control Structures

As previously defined, Control Structures vary in their function but generally have the objective of controlling either the flow of water or the upstream water level. In the field, Control Structures that control the upstream water level are often called “Check Structures.” **Figure 12** depicts the RD 2068 Check Structure which allows the operator to install wooden boards into slots in the sidewall of the structure to raise or “check” the water upstream of the structure. Once the water level rises above the top of the boards, it will spill over and continue downstream.

Figure 12. Example of a typical Control Structure. Photo taken looking downstream.

Other Control Structures are intended to manage the flow rate being conveyed in a certain direction. **Figure 13** is the Laurel G Division Box which allows the flow of water either into or out of all four sides of the concrete box. Two of the orifices are controlled by canal gates and the other two orifices are spills from adjacent fields that flow into the box and out either of the screw gates depending on which is open.

Figure 13. Example flow division or water control box.

Figure 14 is the Main Drain Check which consists of two flow paths: a combination slide/flap gate and a weir board structure. The combination gate will swing open as the tide rises and allow water to flow downstream and as the tide recedes the gate swings closed and retains the water in the channel. The gate can also be lifted to drain the channel if desired. The weir board structure only allows water to flow over the top of the boards if the water level is high enough to do so. This is an example of a Control Structure that provides both water level and flow control.

Figure 14. Main Drain Check Structure. Looking east towards the Toe Drain. The Capitol Oil West lift pump is visible in the background.

3.2.2 Culverts

Figure 15 is an example of a typical culvert. This culvert has a concrete headwall on the upstream side that can be seen in the top right corner of the image. An embankment road runs over the top of the culvert allowing vehicular and pedestrian passage across the culvert. Common culvert pipe materials in the proposed Project area include concrete, corrugated metal pipe (CMP), and high-density polyethylene (HDPE).

Figure 15. Example of a typical culvert looking at the discharge end.

3.2.3 Headings

Figure 16 is the Main Drain Heading at the Toe Drain. This picture is looking west along the Main Drain from its intersection with the Toe Drain. Headings that interact with the Toe Drain often include culverts, weirs, and tidal flap gates that allow water to flow through and into the canal as the tide rises, then close as the tide recedes, retaining the water in the canal.

Figure 16. Example of a tidal flap gate Heading.

Figure 17 is the Highline Lateral 1 Heading. This is a canal gate that can be opened or closed to control the amount of water passing through the buried pipeline and into Highline Lateral 1.

Figure 17. Example of a canal or lateral Heading.

3.2.4 Lift Pumps

Figure 18 is the Yolo Basin Pump. This is an example of a vertical turbine pump powered by an electric motor with local line power. The motor spins a vertical shaft that is connected to impellers below the water line that lift the water into the discharge pipe on image left. The majority (14) of the 15 lift pumps in the proposed Project area are vertical turbine pumps.

Figure 18. Example of a vertical turbine lift pump.

Figure 19 is Laurel G West Pump which is a power take-off (PTO) pump. A PTO pump is similar in operation to the vertical turbine pump except that the power source is an engine connected to the pump via a driveshaft. Typically, a farm tractor or portable combustion engine (diesel or natural gas) is used to power a PTO pump.

Figure 19. Example of a power take-off pump.

3.2.5 Spills

Figure 20 is a polyethylene flashboard riser that is common throughout the proposed Project area and is used to allow water to flow out of a field into a drain canal. Wooden weir boards are placed in slots on the riser to control the water level in the field.

Figure 20. Example of polyethylene flashboard riser with weir boards stocked adjacent.

Figure 21 is a typical precast weir box with similar functionality to the polyethylene riser above. Water can free flow through the rectangular section of the structure, or wooden weir boards can be placed in the sidewall slots to control the water level in the field. Levels that exceed the height of the weir boards spill over to the drain ditch. This structure is often referred to as a “rice box”.

Figure 21. Precast concrete rice box.

3.2.6 Turnouts

Turnouts typically consist of gates, valves, or similar control devices that regulate the flow of water into the field. (see **Figure 22** for an example).

Figure 22. Example of a typical turnout.

Figure 23 is one of three alfalfa valve risers that are connected to the Yolo Basin Pump pipeline. The cap on the top of the PVC pipe can be opened or closed to control the amount of water delivered.

Figure 23. Example of an alfalfa valve riser delivery.

3.3 Data Collection Summary Tables

A total of 161 infrastructure features were inventoried and the attributes for each are summarized in **Tables 5 through 10** below.

Table 5. Summary of all Control Structures inventoried with collected attributes shown where applicable.

Latitude	Longitude	Name	Condition	Field Notes
38.3937021	-121.6296716	Laurel G Division Box	good	2 fields spill into this concrete control box. 2 gates in structure. 1 gate is a turnout, other gate supplies drain ditch.
38.4011218	-121.6285359	Laurel G Canal Check	poor	Undershot gate and pipeline. Precast weir box on inlet. Precast box wall is broken.
38.4132369	-121.6474596	Capitol Oil West Lateral Check	good	Inlet with precast weir box. And gate with 25.25" wide square gate. 36" HDPE Culvert
38.4014309	-121.6480846	Main Drain Check	good	Combination slide gate and flap gate with weir board check adjacent. Two 48" HDPE Culverts.
38.4154452	-121.6477349	End RD 2068 Check	good	Cast in place concrete check structure with 74" wide weir board crest. End of RD2068, spills into drain

Table 6. Summary of all Headings inventoried with collected attributes shown where applicable.

Latitude	Longitude	Name	Condition	Field Notes
38.4127935	-121.630775	Highline Lateral 2 Heading	poor	22.5" ID. 27" OD. 40.5' length
38.386231	-121.628717	Yolo Basin heading	unknown	Unable to see culvert. There is a culvert that is below the water line per personal communications with J Brennen
38.4198046	-121.6199073	H Pond Heading	good	30" ID. 35.7" OD. 30" Waterman Gate. HDPE Pipe
38.4192949	-121.6212232	Highline Lateral 1 Heading	good	22" ID. 26" OD. 24" Waterman Gate. Concrete metal reinforced pipe
38.3865864	-121.6282038	Lucky 5 Canal Heading	good	N/C
38.4012571	-121.6214321	Main Drain Heading	poor	Tidal gate is broken
38.4010845	-121.6214786	Laurel G Canal Heading	good	Inlet to Laurel G Canal. On Toe Drain side, precast twin track with trash rack. On canal side, twin track precast box with tidal gate.
38.3866319	-121.642696	Lucky 5 Pump Discharge	good	19.75” discharge pipe
38.3717893	-121.6355281	South Canal Heading	good	Unable to reach pipe, estimated at 30 or 36 inch diameter

N/C = not collected. N/C means there was nothing relevant to report.

Table 7. Summary of all Culverts inventoried with collected attributes shown where applicable.

Latitude	Longitude	Name	Condition	Diameter, in	Length, ft	Pipe Material	Field Notes
38.4193562	-121.6315849	culvert_01	good	24	38	HDPE	Drain ditch culvert
38.4192898	-121.623597	culvert_02	good	24	34	HDPE	Precast weir box inlet
38.4191879	-121.6211962	culvert_03	good	48	35.5	concrete	Twin Track precast box inlet. 60" HDPE stub with transition to concrete then metal at very end. 90% of pipe is concrete, only start and end are different material
38.4155774	-121.6418195	culvert_04	good	24	30	concrete	N/C
38.4132886	-121.6385108	culvert_05	good	42	80	HDPE	Drain ditch spill into the Highline Canal
38.4132857	-121.6433114	culvert_06	good	36	40	HDPE	N/C
38.4130705	-121.6384484	culvert_07	good	38	38	steel	Lateral spill into Highline Canal
38.4130271	-121.6382158	culvert_08	good	48	50	HDPE	Precast weir box inlet
38.4130156	-121.6286285	culvert_09	poor	36	30	steel	Pipe end damaged
38.4130068	-121.6226088	culvert_10	good	36	40	CMP	N/C
38.4129586	-121.6233937	culvert_11	good	48	60	HDPE	N/C
38.4128669	-121.6308817	culvert_12	good	48	4.525	HDPE	N/C
38.4098071	-121.6309808	culvert_13	good	24	25	HDPE	Precast weir box inlet
38.4096495	-121.6232152	culvert_14	good	24	31	HDPE	N/C
38.4072473	-121.6386596	culvert_15	poor	24	18	steel	N/C
38.4070776	-121.6310611	culvert_16	good	30	40	HDPE	N/C
38.4069694	-121.6237678	culvert_17	poor	18	40	concrete	Damaged pipe
38.4069467	-121.6310413	culvert_18	replace	30	21	CMP	Precast weir box inlet
38.4068934	-121.6189876	culvert_19	poor	24	40	HDPE	N/C
38.4043407	-121.6310968	culvert_20	good	24	50	HDPE	Precast weir box inlet
38.4042332	-121.6201553	culvert_21	good	24	40	HDPE	N/C
38.4022315	-121.6211284	culvert_22	good	24	40	HDPE	Spills into pond
38.4020235	-121.6211051	culvert_23	poor	24	40	HDPE	Downstream end discharging to toe drain it appears the bank has eroded and the pipe has broken off

Latitude	Longitude	Name	Condition	Diameter, in	Length, ft	Pipe Material	Field Notes
38.4014826	-121.6386757	culvert_24	poor	22	40	concrete	N/C
38.4013433	-121.6384991	culvert_25	poor	N/C	N/C	N/C	Culvert pipe cannot be seen or feel pipe. Completely submerged and deep
38.4011783	-121.6383171	culvert_26	good	24	18	CMP	Dual culvert, same size
38.4010108	-121.6382872	culvert_27	poor	24	25	steel	Steel weir box that is damaged and appears no longer can be used as check structure so it is functionally a culvert. Adjacent is 24" CMP with gate, appears abandoned.
38.4006228	-121.6219187	culvert_28	good	30	20	HDPE	Road culvert. Looks to also serve as spill into drain ditch
38.394405	-121.6247734	culvert_29	good	30	20	HDPE	Drain Ditch culvert
38.3937597	-121.6382863	culvert_30	poor	24	20	CMP	Dual CMP 24" culvert pipe
38.393757	-121.638432	culvert_31	poor	36	25	CMP	N/C
38.3922986	-121.6383615	culvert_32	poor	21	13	PVC	Damage to pipe
38.3866574	-121.6427907	culvert_33	poor	21	55	concrete	Gate could be replaced
38.3865636	-121.6387604	culvert_34	good	14	48	concrete	A Lot of sediment in pipe. Drain ditch culvert
38.3852017	-121.6386682	culvert_35	good	15	20	HDPE	Drain ditch culvert
38.3792083	-121.6385891	culvert_36	good	18	20	HDPE	N/C

Note: N/C = not collected. N/C means the attribute could not be collected in the field, or in the case of the "notes" column, there was nothing relevant to report.

Table 8. Summary of all Pumps inventoried with collected attributes shown where applicable.

Latitude	Longitude	Name	Condition	Pump Type	Horsepower	Intake Diameter, in	Discharge Diameter, in	Field Notes
38.401322	-121.647536	Capital Oil East Pump	good	Vertical Turbine	40	20.05	20.05	Lifts water into canal that goes north
38.419862	-121.615481	Highline Pump	good	Vertical Turbine	75	20.21	20.21	Spot for secondary lift pump. Appears to be a PVC stilling well with pump switch that kicks on when water level in canal has dropped. Stilling well has a lot of soil inside.
38.401351	-121.654705	Jackson Ranch 1 Pump	good	Vertical Turbine	No pump nameplate	14.13	15.28	Pipe going north is not connected. Currently water can only go south. This is the end of the canal as there is no culvert that allows water to flow by gravity to the west. This pump can lift water to the canal on the west side of it.
38.401272	-121.661428	Jackson Ranch 2 Pump	good	Vertical Turbine	25	14.01	15.28	Pumps water into ditch to the south
38.401326	-121.665787	Jackson Ranch 3 Pump	good	Vertical Turbine	30	2	2	2 pumps at this site (CWA Pump). Inlet and outlet pipe sizes were estimated.
38.401136	-121.626253	Laurel G North Pump	good	Vertical Turbine	25	14.05	16.07	N/C
38.401041	-121.626227	Laurel G South Pump	good	Vertical Turbine	15	14.05	22.44	N/C
38.401163	-121.638253	Laurel G West Pump	good	Power Take-off	No power source present	2	2	Pump is in the canal but requires external power source
38.386679	-121.638207	Lucky 5 Pump	good	Vertical Turbine	50	16.07	16.07	Lucky 5 pump. Seametrics flow meter installed
38.372082	-121.647779	South Canal Pump 1	poor	Vertical Turbine	10	16.03	16.04	Pump intake and discharge diameter may be incorrect
38.379298	-121.648231	South Canal Pump 2	good	Vertical Turbine	15	12.77	12.77	Pumps water to the west into system of pipe and risers
38.379523	-121.648136	South Canal Pump 3	good	Vertical Turbine	25	16.67	16.67	Pumps water to the north
38.415505	-121.650358	Webb Pump	good	Vertical Turbine	10	12.1	12.1	This pump supplies a system of pipe and risers

Latitude	Longitude	Name	Condition	Pump Type	Horsepower	Intake Diameter, in	Discharge Diameter, in	Field Notes
38.386437	-121.636618	Yolo Basin Pump	good	Vertical Turbine	30	16.07	16.07	Yolo Basin Pump
38.401326	-121.665787	CWA Pump	good	Vertical Turbine	30	2	2	2 pumps at this site (Jackson Ranch 3 Pump). Inlet and outlet pipes estimated at 2' and 1' diameter

Note: N/C = not collected. N/C means the attribute could not be collected in the field, or in the case of the "notes" column, there was nothing relevant to report.

Table 9. Summary of all Spills inventoried with collected attributes shown where applicable.

Latitude	Longitude	Name	Condition	Canal Gate	Gate Diameter, in	Frame Width, in	Gate Manufacturer	Headwall	Pipe Diameter, in	Pipe Material	Field Notes
38.4194805	-121.6304235	spill_01	good	yes	30	N/C	N/C	yes	30	HDPE	Field drain. 30" gate and HDPE pipe
38.419427	-121.6384966	spill_02	good	no	N/A	N/A	N/A	no	25	CMP	15" CMP
38.4192598	-121.631633	spill_03	good	no	N/A	N/A	N/A	yes	20	steel	Approx: 20" ID steel pipe. Field spill into drain ditch. Steel weir box.
38.4171811	-121.6305241	spill_04	poor	no	N/A	N/A	N/A	no	24	steel	24" steel pipe. Steel weir box damaged
38.4164027	-121.630291	spill_05	needs_replacement	no	N/A	N/A	N/A	no	varies	varies	Dissimilar pipe materials. U/S is concrete (21" ID, 24" OD) and D/S is CMP.
38.415398	-121.6391598	spill_06	needs_replacement	no	N/A	N/A	N/A	no	12	PVC	Rice box damaged
38.4152555	-121.6384406	spill_07	good	yes	24	29.25	Waterman	no	24	PVC	C10 gate installed improperly for good seal
38.4133294	-121.616165	spill_08	good	no	N/A	N/A	N/A	yes	N/C	N/C	Metal Weir box. Pipe type and size enable to be determined.
38.4133074	-121.6159987	spill_09	good	yes	N/C	N/C	N/C	no	36	HDPE	36" ID HDPE inlet. 42.1" OD. Flap gate on Toe Drain side of pipe.
38.4131443	-121.6237609	spill_10	good	no	N/A	N/A	N/A	no	N/A	N/A	Field spill into drain ditch
38.4131314	-121.6234531	spill_11	good	no	N/A	N/A	N/A	yes	14	PVC	Field spill into drain ditch. 14" ID PVC. Plastic headwall.
38.4130295	-121.6386082	spill_12	good	no	N/A	N/A	N/A	no	11	PVC	Field spill into lateral
38.4129611	-121.6235036	spill_13	good	no	N/A	N/A	N/A	no	24	HDPE	24" HDPE pipe - assumed. 58' pipe length - estimated
38.4128804	-121.6234043	spill_14	good	no	N/A	N/A	N/A	yes	36	HDPE	36" ID HDPE. 30' LONG PIPE. Spill from Highline Canal into drain ditch
38.4103221	-121.6386328	spill_15	good	no	N/A	N/A	N/A	no	33	N/A	This is a rice check box
38.4097845	-121.6232752	spill_16	poor	no	N/A	N/A	N/A	no	N/A	N/A	Rice box walls falling over. Rice check box width 32"
38.4073253	-121.6386727	spill_17	good	no	N/A	N/A	N/A	no	33	N/A	This is a rice check box
38.407323	-121.63873	spill_18	good	no	N/A	N/A	N/A	no	18	HDPE	N/C
38.4070641	-121.6238776	spill_19	good	no	N/A	N/A	N/A	no	N/A	N/A	33.5" wide rice check box
38.4068944	-121.6188561	spill_20	good	yes	N/C	N/C	N/C	no	24	steel	24" steel pipe. Flap gate on Toe Drain side of pipe.
38.4015974	-121.6217798	spill_21	good	no	N/A	N/A	N/A	yes	24	HDPE	24" HDPE and precast twin track weir
38.4015912	-121.6388631	spill_22	poor	no	N/A	N/A	N/A	no	N/A	N/A	Water appears to be undercutting rice check box. 32.5” wide box
38.401449	-121.6383831	spill_23	good	no	N/A	N/A	N/A	no	N/C	N/C	Potentially spill at location. No drain pipe found. Could not see or feel pipe.
38.4014261	-121.631424	spill_24	needs_replacement	no	N/A	N/A	N/A	no	22	Concrete	Damaged pipe
38.4014231	-121.6310143	spill_25	good	yes	24	0	0	no	24	concrete	End of lateral, spills into Main Drain. 24" gate and pipe.
38.4012142	-121.6264806	spill_26	poor	no	N/A	N/A	N/A	no	18	HDPE	18" HDPE pipe
38.4006897	-121.6262477	spill_27	poor	no	N/A	N/A	N/A	yes	24	HDPE	Downstream box damaged. Spill from small pond into adjacent field
38.3977242	-121.6327931	spill_28	good	no	N/A	N/A	N/A	yes	24	steel	Field spill into adjacent field
38.3964588	-121.6324552	spill_29	needs_replacement	no	N/A	N/A	N/A	no	18	HDPE	Inlet structure nd pipe are not connected. Water flowing around back into pipe through broken connection
38.3962188	-121.6239802	spill_30	poor	no	N/A	N/A	N/A	no	N/A	N/A	Natural spill from field to drain ditch
38.3959194	-121.6313137	spill_31	good	no	N/A	N/A	N/A	yes	24	HDPE	Field spill into adjacent field
38.395194	-121.6274081	spill_32	good	no	N/A	N/A	N/A	yes	18	HDPE	Field spill into adjacent field
38.3945815	-121.6248093	spill_33	poor	no	N/A	N/A	N/A	no	15	HDPE	Field spill into drain ditch

Latitude	Longitude	Name	Condition	Canal Gate	Gate Diameter, in	Frame Width, in	Gate Manufacturer	Headwall	Pipe Diameter, in	Pipe Material	Field Notes
38.3945452	-121.6250136	spill_34	good	no	N/A	N/A	N/A	yes	24	HDPE	Field spill into adjacent field
38.3937937	-121.636233	spill_35	good	no	N/A	N/A	N/A	no	18	CMP	Field spills into adjacent field
38.3937768	-121.6297422	spill_36	good	no	N/A	N/A	N/A	yes	24	HDPE	Field spill into concrete box
38.3937608	-121.6295727	spill_37	good	no	N/A	N/A	N/A	yes	24	HDPE	Field spill into concrete box
38.3904813	-121.628087	spill_38	poor	no	N/A	N/A	N/A	yes	24	CMP	Damaged precast weir box. Field drains to adjacent field
38.3904688	-121.6265876	spill_39	poor	no	N/A	N/A	N/A	no	30	HDPE	Damaged pipe
38.3904312	-121.626816	spill_40	good	no	N/A	N/A	N/A	yes	18	HDPE	N/C
38.3903607	-121.6331853	spill_41	good	no	N/A	N/A	N/A	no	15	CMP	Spill from one field to adjacent
38.390354	-121.6264466	spill_42	good	yes	30	N/C	Waterman	no	30	CMP	Both sides have tidal gate
38.3869724	-121.6331705	spill_43	poor	no	N/A	N/A	N/A	no	N/C	N/C	Pipe is underwater. Metal weir box is almost full of sediment. Field appears to spill into adjacent field
38.3867642	-121.6376457	spill_44	poor	no	N/A	N/A	N/A	no	N/C	N/C	Pipe completely submerged, unable to visually inspect. Spills into Lucky 5 Canal
38.3865039	-121.6282376	spill_45	good	no	N/A	N/A	N/A	yes	N/C	N/C	Downstream discharge not visible. Too much vegetation
38.3794497	-121.6479396	spill_46	good	no	N/A	N/A	N/A	no	12	HDPE	Inlet and outlet are dissimilar pipe size and material. U/S is 12" HDPE; D/S is CMP, Size not obtainable
38.3793472	-121.6395933	spill_47	good	no	N/A	N/A	N/A	yes	18	HDPE	N/C
38.3749329	-121.6387472	spill_48	good	no	N/A	N/A	N/A	yes	24	HDPE	N/C
38.3722088	-121.6387252	spill_49	good	no	N/A	N/A	N/A	yes	18	HDPE	N/C
38.372151	-121.6387455	spill_50	good	no	N/A	N/A	N/A	yes	18	HDPE	N/C
38.3720396	-121.6349945	spill_51	good	yes	15	18.875	Waterman	no	15	N/C	No tide gate and Waterman gate is currently open. Tide is going out so water is spilling. At higher tide water could go into field.
38.3861736	-121.6286763	spill_52	good	no	N/A	N/A	N/A	yes	18	HDPE	Connects two fields on southern end
38.3794603	-121.636979	spill_53	good	no	N/A	N/A	N/A	no	18	HDPE	N/C
38.3793156	-121.6341242	spill_54	good	no	N/A	N/A	N/A	no	24	HDPE	N/C
38.3791106	-121.6316395	spill_55	good	no	N/A	N/A	N/A	no	36	CMP	Drain ditch spill into Toe Drain

Note: N/A = not applicable. N/A means the attribute is not relevant. N/C = not collected. N/C means the attribute could not be collected in the field, or in the case of the "notes" column, there was nothing relevant to report. HDPE = High Density Polyethylene. CMP = Corrugated Metal Pipe.

Table 10. Summary of all Turnouts inventoried with collected attributes shown where applicable.

Latitude	Longitude	Name	Condition	Canal	Bank	Canal Gate	Gate Diameter, in	Frame Width, in	Gate Manufacturer	Headwall	Inner Pipe Diameter, in	Outer Pipe Diameter, in	Pipe Material	Field Notes
38.4152555	-121.6384406	COWD_R_01	good	Capitol Oil West Dr	right	yes	24	29.25	Waterman	yes	24	25	PVC	C10 gate installed improperly for good seal
38.4133273	-121.6475346	COWL_L_01	good	Capital Oil West Lat	left	yes	12	16	Waterman	no	12	12.75	PVC	Typical turnout
38.4131376	-121.6385649	COWL_L_02	good	Capitol Oil East Lat	left	yes	24	30	Waterman	no	24	25.5	PVC	Typical turnout
38.4074416	-121.6475252	COWL_R_01	poor	Capitol Oil West Lat	right	yes	24	30	Waterman	yes	24	27.9	HDPE	Typical turnout. Gate handle broken
38.4102939	-121.6474735	COWL_R_02	poor	Capitol Oil West Lat	right	yes	24	30	Waterman	no	24	27.9	HDPE	Typical turnout. Discharge pipe damaged
38.4131488	-121.6474611	COWL_R_03	poor	Capitol Oil West Lat	right	yes	24	30	Waterman	no	24	27.9	HDPE	Typical turnout. Discharge pipe damaged
38.4191795	-121.6210242	HC_L_01	good	Highline Canal	left	no	N/A	N/A	N/A	no	15	17.5	HDPE	HDPE weir inlet. Old turnout with gate buried next to this turnout that appears abandoned
38.4131299	-121.6225979	HC_L_02	good	Highline Canal	left	yes	24	30	Waterman	no	24	27.9	HDPE	Typical Turnout
38.4128163	-121.6306915	HC_L_03	poor	Highline Canal	left	yes	24	29.25	Waterman	no	24	25	PVC	Typical Turnout. Discharge end PVC damaged
38.4130154	-121.6378795	HC_L_04	good	Highline Canal	left	yes	24	30	Waterman	no	24	25	CMP	Typical Turnout
38.4100435	-121.6381663	HC_L_05	good	Highline Canal	left	yes	24	30	Waterman	no	23	25	PVC	Typical Turnout
38.4072303	-121.6381292	HC_L_06	good	Highline Canal	left	yes	24	30	Waterman	no	24	25	CMP	Typical Turnout
38.4198873	-121.6198272	HC_R_01	poor	Highline Canal	right	no	N/A	N/A	N/A	no	15	17.5	HDPE	HDPE weir inlet. Abandoned turnout 6' d/s.
38.4192351	-121.621195	HC_R_02	good	Highline Canal	right	yes	12	16	Waterman	no	12	12.5	PVC	Typical Turnout
38.4192452	-121.6236896	HL1_L_01	good	Highline Lateral 1	left	no	N/A	N/A	N/A	yes	18	20	steel	Steel weir box inlet. U/S and D/S underwater, pipe material and size assumed to best judgement. Turnout feeds ditch which runs several hundred feet before discharging into field.
38.419249	-121.6237021	HL1_R_01	good	Highline Lateral 1	right	yes	18	23	Waterman	no	18	18.7	PVC	Typical turnout. Pipe material and size assumed with best judgement. Used gate width to determine gate size
38.4098261	-121.6309117	HL2_L_01	good	Highline Lateral 2	left	yes	18	23	Waterman	no	18	18.7	PVC	Typical turnout
38.4070133	-121.6309701	HL2_L_02	poor	Highline Lateral 2	left	yes	18	21.75	Waterman	no	18	18.7	PVC	Typical turnout. Appears to have sediment in pipeline. Might be abandoned
38.4069639	-121.6309576	HL2_L_03	good	Highline Lateral 2	left	no	N/A	N/A	N/A	no	18	21.5	HDPE	HDPE weir box inlet.
38.404381	-121.6309789	HL2_L_04	good	Highline Lateral 2	left	no	N/A	N/A	N/A	no	18	21.5	HDPE	HDPE weir box inlet. There is turnout immediately adjacent that appears to be abandoned. 18" gate and PVC. No discharge found, presumed buried.
38.4002194	-121.647709	L5NC_L_01	good	Lucky 5 North Canal	left	yes	18	23.75	Waterman	yes	18	N/C	other	Appears to be abandoned
38.3948203	-121.6477003	L5NC_L_02	good	Lucky 5 North Canal	left	yes	18	23.75	Waterman	yes	N/C	N/C	N/C	Typical turnout. Wheel is removed from gate stem and gate is in closed position. 18" Waterman gate. Unable to inspect pipe.
38.386466	-121.642737	L5P_L_01	good	Lucky 5 Pump	left	no	N/A	N/A	N/A	yes	18	21.5	HDPE	Comes from pond across the road with one inlet and two turnouts
38.3864188	-121.6428401	L5P_L_02	good	Lucky 5 Pump	left	no	N/A	N/A	N/A	yes	18	21.5	HDPE	West turnout. Precast inlet.
38.386413	-121.6426844	L5P_L_03	good	Lucky 5 Pump	left	no	N/A	N/A	N/A	yes	18	21.5	HDPE	East turnout. Precast inlet.
38.3867365	-121.642723	L5P_R_01	good	Lucky 5 Pump	right	no	N/A	N/A	N/A	yes	18	21.5	HDPE	North turnout. Precast inlet.
38.3867102	-121.6427002	L5P_R_02	good	Lucky 5 Pump	right	no	N/A	N/A	N/A	yes	18	21.5	HDPE	West turnout. Precast inlet.
38.3867182	-121.6426617	L5P_R_03	good	Lucky 5 Pump	right	no	N/A	N/A	N/A	yes	18	21.5	HDPE	East turnout. Precast inlet.

Latitude	Longitude	Name	Condition	Canal	Bank	Canal Gate	Gate Diameter, in	Frame Width, in	Gate Manufacturer	Headwall	Inner Pipe Diameter, in	Outer Pipe Diameter, in	Pipe Material	Field Notes
38.4009946	-121.6265564	LGC_L_01	good	Laurel G Canal	left	yes	24	29	Waterman	yes	24	26	N/C	Typical turnout. Pipe material and size unable to be visually inspected
38.4010608	-121.6275146	LGC_L_02	good	Laurel G Canal	left	yes	24	29	Waterman	yes	24	26	N/C	Typical turnout. Pipe material and size unable to be visually inspected
38.401054	-121.6284723	LGC_L_03	good	Laurel G Canal	left	yes	24	29	Waterman	yes	24	26	N/C	Typical turnout. Pipe material and size unable to be visually inspected
38.4011163	-121.6343254	LGC_L_04	poor	Laurel G Canal	left	yes	18	N/C	unknown	no	18	18.5	CMP	Typical turnout with unknown gate manufacturer. Might be abandoned
38.393669	-121.629695	LGED2_R_01	good	Laurel G East Dr 2	right	yes	24	29	Waterman	yes	24	27.9	HDPE	There are two drains into sump, one turnout out, and one drain out of sump
38.4010105	-121.6381772	LGL_L_01	good	Laurel G Lateral	left	no	N/A	N/A	N/A	yes	24	24.5	steel	Steel weir Box inlet
38.3936649	-121.6383572	LGL_L_02	good	Laurel G Lateral	left	no	N/A	N/A	N/A	no	24	27.9	HDPE	Only an HDPE pipe with no flow control ability
38.392276	-121.638268	LGL_L_03	good	Laurel G Lateral	left	no	N/A	N/A	N/A	no	N/A	N/A	N/A	No structure or pipe here. This is the end of a canal and turns into field
38.3787184	-121.6318183	TD_R_01	needs replacement	Toe Drain	right	yes	N/C	N/C	Waterman	no	N/C	N/C	CMP	Water appears to be entering downstream side and spilling to Toe Drain due to damaged pipe at headgate. Water exiting from behind gate. Pipe diameter unable to be determined.
38.3861736	-121.6286763	YBC_L_01	good	Yolo Basin Canal	left	yes	N/C	N/C	Waterman	no	N/C	N/C	N/C	N/C
38.386455	-121.637247	YBP_L_01	good	Yolo Basin Pump	left	no	N/A	N/A	N/A	no	18	18.5	PVC	Yolo Basin pump is nearby and pumps directly into this pipeline. 18" alfalfa riser valve. Connected to 2 other alfalfa valve deliveries.
38.3863254	-121.6368918	YBP_L_02	good	Yolo Basin Pump	left	no	N/A	N/A	N/A	no	18	18.7	PVC	Yolo Basin pump is nearby and pumps directly into this pipeline. 18" alfalfa riser valve. Connected to 2 other alfalfa valve deliveries.
38.3864329	-121.6372487	YBP_L_03	good	Yolo Basin Pump	left	no	N/A	N/A	N/A	no	18	18.5	PVC	Yolo Basin Pump is nearby and pumps directly into this ditch. Feeds ditch which appears to lead to Kleary field. 18" alfalfa riser valve. Connected to 2 other alfalfa valve deliveries.

Note: Cells containing a single zero (0) represent entries not collected in the field due to inability to collect the information. N/C = not collected. N/C means the attribute could not be collected in the field, or in the case of the "notes" column, there was nothing relevant to report. HDPE = High Density Polyethylene. CMP = Corrugated Metal Pipe. PVC = Polyvinyl Chloride

AUGUST 21, 2024

VIA EMAIL: TIDESENDMBP@WATER.CA.GOV
DEPARTMENT OF WATER RESOURCES
DIVISION OF MULTIBENEFIT INITIATIVES
ATTENTION: JUDAH GROSSMAN
P.O. BOX 942836
SACRAMENTO, CA 94236-0001

Dear Ms. Grossman:

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE TIDE'S END MULTIBENEFIT RESTORATION PROJECT SUPPLEMENTAL ENVIRONMENTAL REPORT, SCH# 2024070944

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Notice of Preparation for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report (Project).

The Division monitors and maps farmland conversion on a statewide basis, provides technical assistance regarding the Williamson Act, and administers various agricultural land conservation programs. Public Resources Code, section 614, subdivision (b) authorizes the Department to provide soil conservation advisory services to local governments, including review of CEQA documents.

Protection of the state's agricultural land resources is part of the Department's mission and central to many of its programs. The CEQA process gives the Department an opportunity to acknowledge the value of the resource, identify areas of Department interest, and offer information on how to assess potential impacts or mitigation opportunities.

The Department respects local decision-making by informing the CEQA process, and is not taking a position or providing legal or policy interpretation.

We offer the following comments for consideration with respect to the Project's potential impacts on agricultural land and resources within the Department's purview.

PROJECT ATTRIBUTES

The proposed project would restore tidal marsh and associated floodplain habitat while preserving and enhancing existing land uses. Located at the fluvial-tidal interface at the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex, the proposed project would connect a ten-mile stretch of uninterrupted floodplain and

conservation easements."]; *see also King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814.)

Mitigation through agricultural conservation easements can take at least two forms: the outright purchase of easements or the donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural easements. The conversion of agricultural land may be viewed as an impact of at least regional significance. Hence, the search for replacement lands may not need to be limited strictly to lands within the project's surrounding area. A helpful source for regional and statewide agricultural mitigation banks is the California Council of Land Trusts. They provide helpful insight into farmland mitigation policies and implementation strategies, including a guidebook with model policies and a model local ordinance. The guidebook can be found at:

California Council of Land Trusts

Of course, the use of conservation easements is only one form of mitigation, and the Department urges consideration of any other feasible measures necessary to mitigate project impacts.

Thank you for giving us the opportunity to comment on the Notice of Preparation for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report. Please provide the Department with notices of any future hearing dates as well as any staff reports pertaining to this project. If you have any questions regarding our comments, please contact Farl Grundy, Associate Environmental Planner via email at Farl.Grundy@conservation.ca.gov.

Sincerely,

Monique Wilber

Monique Wilber

Conservation Program Support Supervisor

DELTA PROTECTION COMMISSION

Diane Burgis, Chair (Contra Costa County Board of Supervisors)
2101 Stone Blvd., Suite 200, West Sacramento, CA 95691
(916) 375-4800 | delta.ca.gov

August 13, 2024

Judah Grossman
Division of Multibenefit Initiatives
Department of Water Resources
PO Box 942836
Sacramento, CA 94236-0001

Dear Mr. Grossman:

We are providing combined comments on the notice of preparation (NOP) for the Tide's End Multibenefit Restoration Project Supplemental Environmental Impact Report. This project would convert approximately 2,212 acres of agricultural land in the Delta Primary Zone.

The Delta Protection Commission (Commission) is a state agency charged with ensuring orderly and balanced conservation and development of Delta land resources and improved flood protection in the Primary Zone. The Commission performs planning work to further the State's basic goals for the Delta consistent with the Delta Protection Act (California Public Resources Code Section 29700 et seq.). The Commission is thus commenting as a state agency concerned with the best environmental outcomes for the Delta, consistent with state policy as defined in the Delta Protection Act.

The Notice of Preparation Mischaracterizes the Relationship to the SRGO EIR; a Subsequent Environmental Impact Report Is Required

The notice of preparation (NOP) indicates that the project is tiered from the State Water Resources Control Board (SWRCB) programmatic environmental impact report (PEIR) for the *Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge*

Delta Stewardship Council
A CALIFORNIA STATE AGENCY

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Sacramento, CA 95814

916.445.5511
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Jessica R. Pearson

August 23, 2024

Judah Grossman
Department of Water Resources
Division of Multibenefit Initiatives
P.O. Box 942836
Sacramento, CA 94236-0001

Delivered via email: tidesendmbp@water.ca.gov

RE: Comments on Notice of Preparation of an Environmental Impact Report for the Tide's End Multibenefit Restoration Project, SCH# 2024070944

Dear Judah Grossman:

Thank you for the opportunity to review and comment on the Tide's End Multibenefit Restoration Project (Tide's End project) Notice of Preparation (NOP) of an Environmental Impact Report (EIR). The Delta Stewardship Council (Council) recognizes the objective of the Tide's End project is to restore tidal marsh and associated floodplain habitat while also preserving and enhancing existing land uses as part of a voluntary agreement to support the Healthy Rivers and Landscapes Program.

The Council is an independent state agency established by the Sacramento-San Joaquin Delta Reform Act of 2009. (Wat. Code, § 85000 et seq., Delta Reform Act)

3. Suggestions for Project Alternatives.

The NOP describes the Project as a "project supporting the principles and framework outlined in the Voluntary Agreements" and explains that it "furthers the goals and objectives of the CVFPP's Conservation Strategy by increasing the quantity, quality, and connectivity of aquatic, wetland, and riparian habitat in the flood system through the integration of ecological principles with flood risk reduction projects and activities." Yolo County questions the need to convert wetland habitat to tidal marsh habitat. Breaching berms and introducing tidal marsh results in an increased roughness within the flood protection system and neither HRL nor the CVFPP's Conservation Strategy require tidal marsh habitat. Therefore, Yolo County recommends including a Project alternative focused on maximizing agricultural land uses within the Project boundary rather than emphasizing tidal marsh habitat restoration. Maintaining and increasing agricultural production in the Project area will provide various benefits, including:

- Equal habitat value in terms of quality as it could support juvenile salmon as well as migratory waterfowl and shorebirds;
- Provide a net benefit to flood conveyance and drainage;
- Increased rice cultivation, such as the wild rice mentioned in the NOP, would be highly compatible with floodway operations and will result in a true net benefit in the flood System by reducing future tule marsh growth; and
- Reduced project implementation costs and the addition of revenue streams for future maintenance and operations.

Such an alternative will support the County's agricultural economy and help offset the loss of agricultural activity on other properties affected by existing and future habitat conversion projects that take agricultural land permanently out of production. This project presents an opportunity to set a positive precedent for future HRL projects contemplated in the County. Finally, the County encourages DWR to investigate an alternative to state ownership that maintains the parcels on the County tax roll as well as long term land management leases with a local entity or business.

The County appreciates the opportunity to comment on the NOP and looks forward to further engagement and coordination with DWR and EIP regarding the Project.

Sincerely,

Philip J. Pogledich
County Counsel

cc: Glen Williams, Ecosystem Investment Partners
Alex Tengolics, Director of Strategic Operations
Sabrina Snyder, Senior Management Analyst

Tide's End Multibenefit Restoration Project

Preliminary Biological Resources Report

PREPARED FOR
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LEAD AGENCY
California Department of Water Resources
Division of Multibenefit Initiatives
P.O. Box 942836
Sacramento, CA 94236-0001
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tidesendmbp@water.ca.gov

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SEPTEMBER 2024

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Yolo County, California

Appendix A - Soils Report March2023

March 29, 2023

Tide's End Multibenefit Restoration Project

Botanical Survey Results

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October 2023

Tide's End Multibenefit Restoration Project

Land Use Constraints Report

PREPARED FOR
EIP III Credit Co., LLC
2330 Marinship Way, Suite 120
Sausalito, CA 94965
Contact: Stephanie Freed
stephanie@ecosystempartners.com

LEAD AGENCY
California Department of Water Resources
Division of Multibenefit Initiatives
P.O. Box 942836 Sacramento, CA 94236-0001
Contact: Judah Grossman
tidesendmbp@water.ca.gov

PREPARED BY
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
Contact: Maureen Downing-Kunz
mdowning-kunz@esassoc.com

November 2024

EXHIBIT 1
Plants Approved for Introduction onto U. S. Fish and Wildlife Service Conservation Easement Lands in the Sacramento Valley

The following list contains most of the plants considered desirable for waterfowl and other wildlife on U.S. Fish and Wildlife Service Conservation Easements in the Sacramento Valley. This list is not intended to be all inclusive, and other species may be desirable under some circumstances. Plants not on this list may not be introduced on the Easement Land without written permission from the U. S. Fish and Wildlife Service.

Common Name	Scientific Name
Aquatic-floating and submergent plants:	
Dwarf Spikerush	*Eleocharis parvula*
Duckweed	*Lemna minor*
Sago Pondweed	*Potamogeton pectinatus*
Horned Pondweed	*Zannichellia palustris*
Aquatic-emergent plants:	
Santa Barbara Sedge	*Carex barbarae*
Clustered Field Sedge	*Carex praegracilis*
Tall Cyperus (umbrella sedge, nut sedge)	*Cyperus eragrostis*
Burhead	*Echinodorous berteroi*
Pale Spikerush	*Eleocharis palustris*
Engelmann's Spikerush	*Eleocharis obtusa*
Hardstem Bulrush (tule)	*Scirpus acutus*
Alkali Bulrush	*Scirpus robustus*
Tuberous Bulrush	*Scirpus tuberosus*
River Bulrush	*Scirpus fluviatilis*
Wapato, Duck Potato	*Sagittaria latifolia*
Long-lobed Arrowhead	*Sagittaria longiloba*
Montevideo Arrowhead	*Sagittaria montevidensis*
Broadleaf Cattail	*Typha latifolia*
Narrowleaf Cattail	*Typha angustifolia*
Moist-soil Plants:	
Valley Redstem (red berry)	*Ammania coccinia*
Fathen	*Atriplex patula*
Prickle Grass	*Crypsis niliaca*
Bermuda Grass	*Cynodon dactylon*
Watergrass	*Echinochloa crusgalli*
Swamp Timothy	*Heleochloa schoenoides*
Sprangletop	*Leptochloa fascicularis*
Joint Grass	*Paspalum distichum*

001322 JAN 10 08

Tide's End Multibenefit Restoration Project

Phase I Environmental Site Assessment - Update

PREPARED FOR
EIP III Credit Co., LLC
2330 Marinship Way, Suite 120
Sausalito, CA 94965
Contact: Stephanie Freed
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November 2024

Abandoned farming equipment and the foundation of a former building were observed along the northwest border of the parcel at the location shown in Figure 1-2. One open storage trailer was observed, along with abandoned farming equipment and supplies. No chemicals, stained floors or soil, pooled liquids, unusual odors, or stressed vegetation were observed.

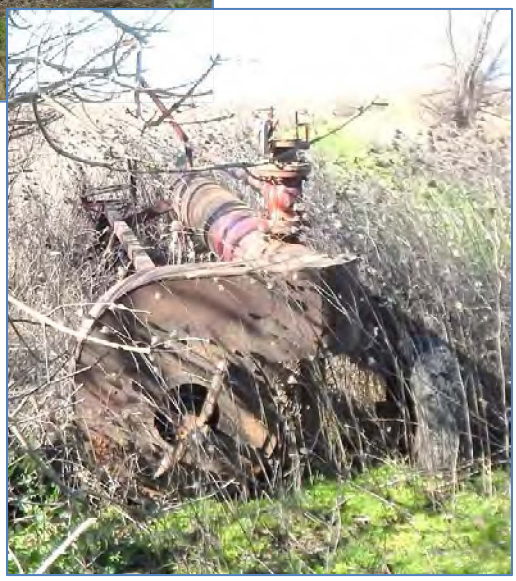
The photographs below show the irrigation pump at the western end of the Capitol Oil parcel, which is typical of the several irrigation pumps on the five properties. Some of the pumps have a 5-gallon bucket of irrigation pump oil next to the pump. None of the irrigation pumps had stains on the equipment or surrounding soil. Also note the transformer on the power pole near the irrigation pump. The transformer has a blue “no PCBs” sticker, indicating that the transformers in the area do not contain transformer oil with PCBs.

The northwest corner of the Yolo Basin parcel, adjacent to the Laurel G parcel, has the dilapidated remains of a former restaurant, including one rusted stove, a bathtub, an outdoor toilet, and other debris, as shown in the photographs below. The foundation is present and brick support columns remain standing; the rest of the structure and its contents are scattered around the area. No chemical containers, stained foundation or soil, unusual odors, or stressed vegetation was observed. The presence of the outhouse indicates that a septic tank and leach field may be present, unless the sanitary waste was routed to the septic system on the Laurel G parcel to the north.

Kleary Parcel

The Kleary parcel is currently undeveloped grassland and wetlands, as shown in the photographs below. Much of the parcel was underwater on February 23, 2021. A number of low levees and sloughs with bulkhead gates crisscross the property. As discussed previously, this property was farmed in 1953, 1957, and 1968. Several pieces of abandoned farming equipment were observed scattered around the parcel. No natural gas wells are known to have been present within this parcel.

One locked storage trailer with several nearby pieces of abandoned farm equipment are located along the east side of the Kleary parcel along the Toe Drain, as shown in the photographs below. No chemical containers, stained soil, stressed vegetation, or unusual odors were noted; the storage locker was locked; and the inside of the container was not observed.



The photograph below shows a typical bulkhead or tidal gate that controls the flow of water. Flow is controlled by adding or removing wooden boards.

Williams Parcel

The Williams parcel is currently undeveloped grasslands and wetlands, as shown in the photographs below. A number of low levees and sloughs with bulkhead gates crisscross the parcel. As discussed previously, this property was farmed in 1953, 1957, and 1968. Several pieces of abandoned farming equipment were observed scattered around the area. No natural gas wells are known to have been present within this parcel.

SECTION 8.0
Report Authors and Qualifications

8.1 Report Authors and Signatures

This section includes qualification statements of the environmental professionals responsible for conducting the Phase I assessment and preparing this report.

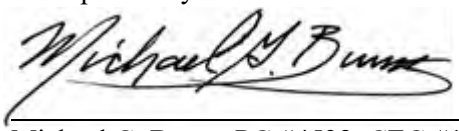
Mr. Michael Burns, PG, CEG, CHG, of ESA conducted the data review for the subject property, conducted the site reconnaissance, and prepared the Phase I environmental site assessment report. Mr. Burns has over 30 years of experience in environmental site investigations, characterizations, and assessments, including Phase I environmental site assessments.

The work conducted and report written by Mr. Burns were reviewed by Mr. Luke Evans. Mr. Evans has over 20 years of experience in environmental site investigations, characterizations, and assessments, including Phase I environmental site assessments.

Mr. Burns declares that, to the best of his professional knowledge and belief, he meets the definition of "Environmental Professional" as defined in 40 CFR 312.10. Mr. Evans declares that, to the best of his professional knowledge and belief, he meets the definition of "Environmental Professional" as defined in 40 CFR 312.10.

Mr. Burns has the specific qualifications based on education, training, and experience to assess parcels of the nature, history, and setting of these parcels. With the assistance of Mr. Evans, he has developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

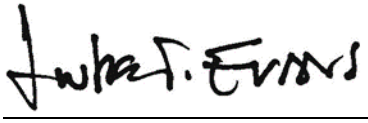
Principal Analyst/Reviewer:



November 2024

Michael G. Burns, PG #4532, CEG #1846, CHG #280

Senior Reviewer:



November 2024

Luke Evans, Program Manager

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

June 4, 2024

Bernard Sentianin
EnviroApplications, Inc.
bsentianin@enviroapplications.com

Public Records Request Number: 1-060324-02
Location(s): Lucky Five
46503 County Road 155, Dixon, California

Dear Requestor:

On June 3, 2024, the Department of Toxic Substances Control (DTSC) received your email of June 3, 2024, requesting records under the Public Records Act. After a thorough review of our files, no site records were found pertaining to the sites/facilities referenced above.

A large number of our records are available on EnviroStor, an online database that provides non-confidential, public access to DTSCs data management system. It tracks our cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. EnviroStor is available 24/7, 365 days a year. The data reflects the latest updates as they are entered in the system. Access it from your computer or smartphone, the local library – anywhere Internet access is available. Just go to www.envirostor.dtsc.ca.gov. You'll find a step-by-step tour of EnviroStor under the "How to Use EnviroStor" menu on the website.

ECOSYS Lucky 5 South

46503 County Road 155

Dixon, CA 95620

Inquiry Number: 7669950.8

June 03, 2024

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.3
June 03, 2024

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.3

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Enviroapplications Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 0171-48F8-B474

PO # 80.ECOSYL5.24

Project ECOSYS Lucky 5 South

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 0171-48F8-B474

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.4
June 03, 2024

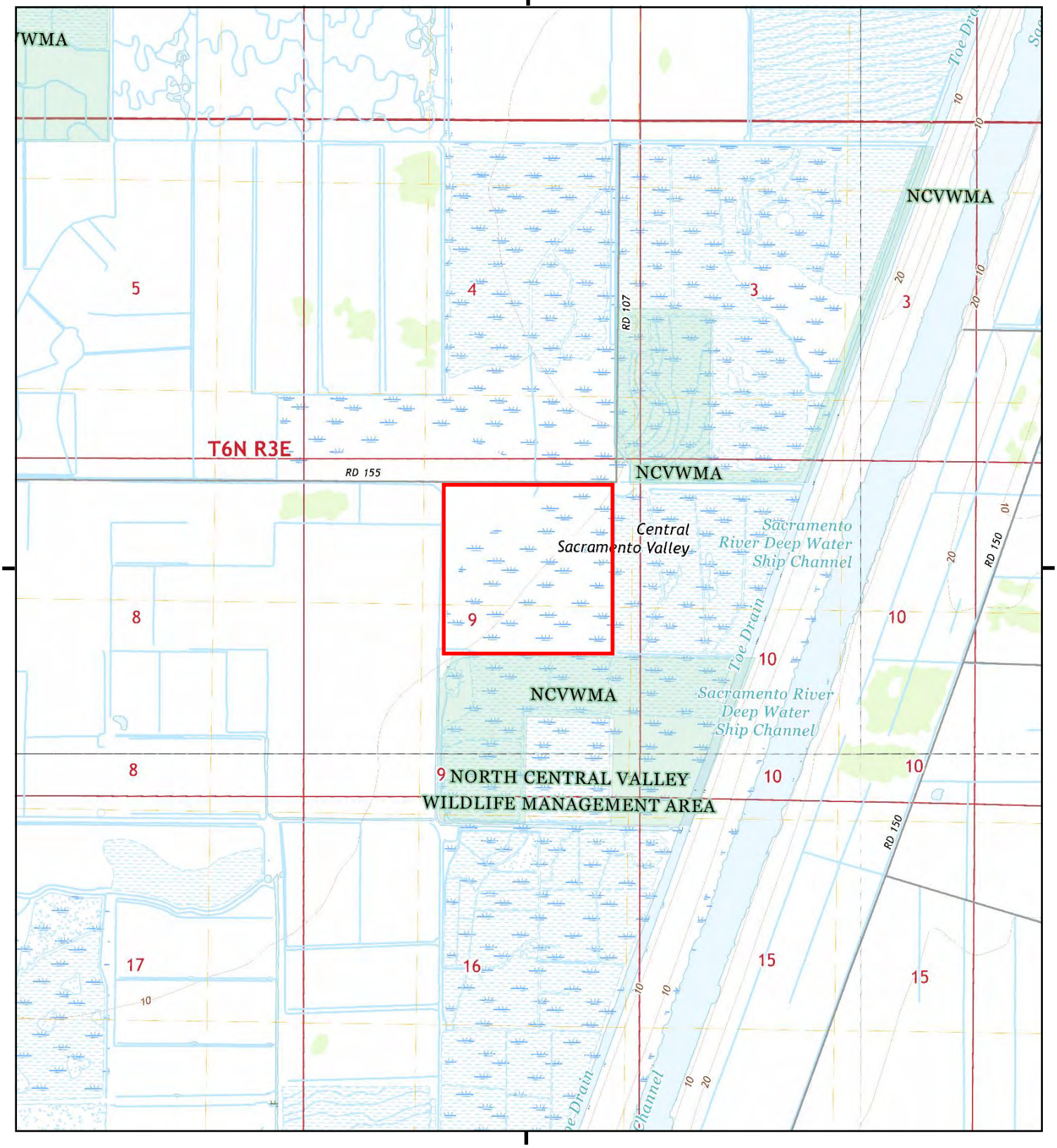
EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Historical Topo Map

2022



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

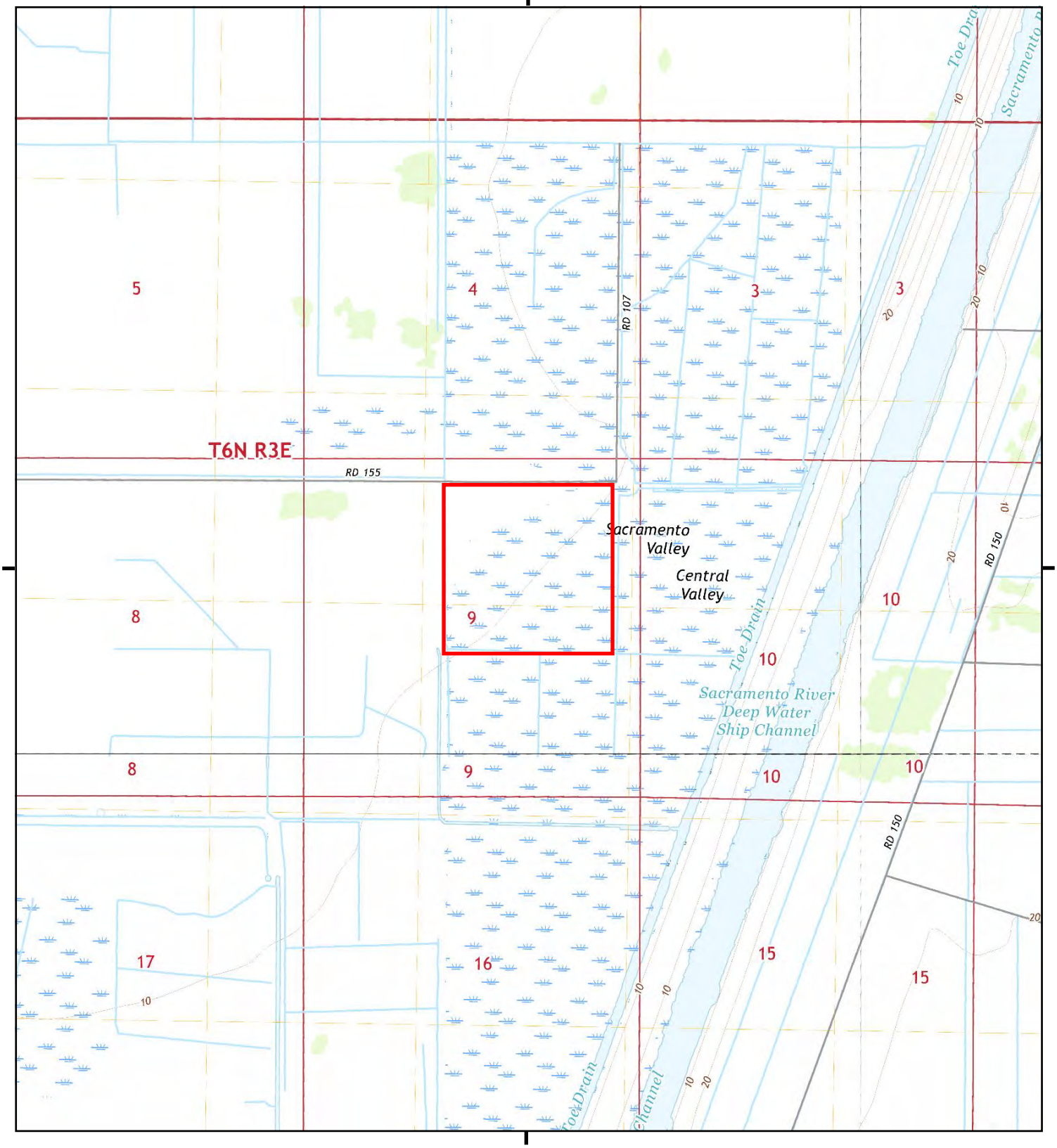
TP, Saxon, 2022, 7.5-minute
NE, Clarksburg, 2022, 7.5-minute
SE, Courtland, 2022, 7.5-minute
SW, Liberty Island, 2022, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2018



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SW S SE

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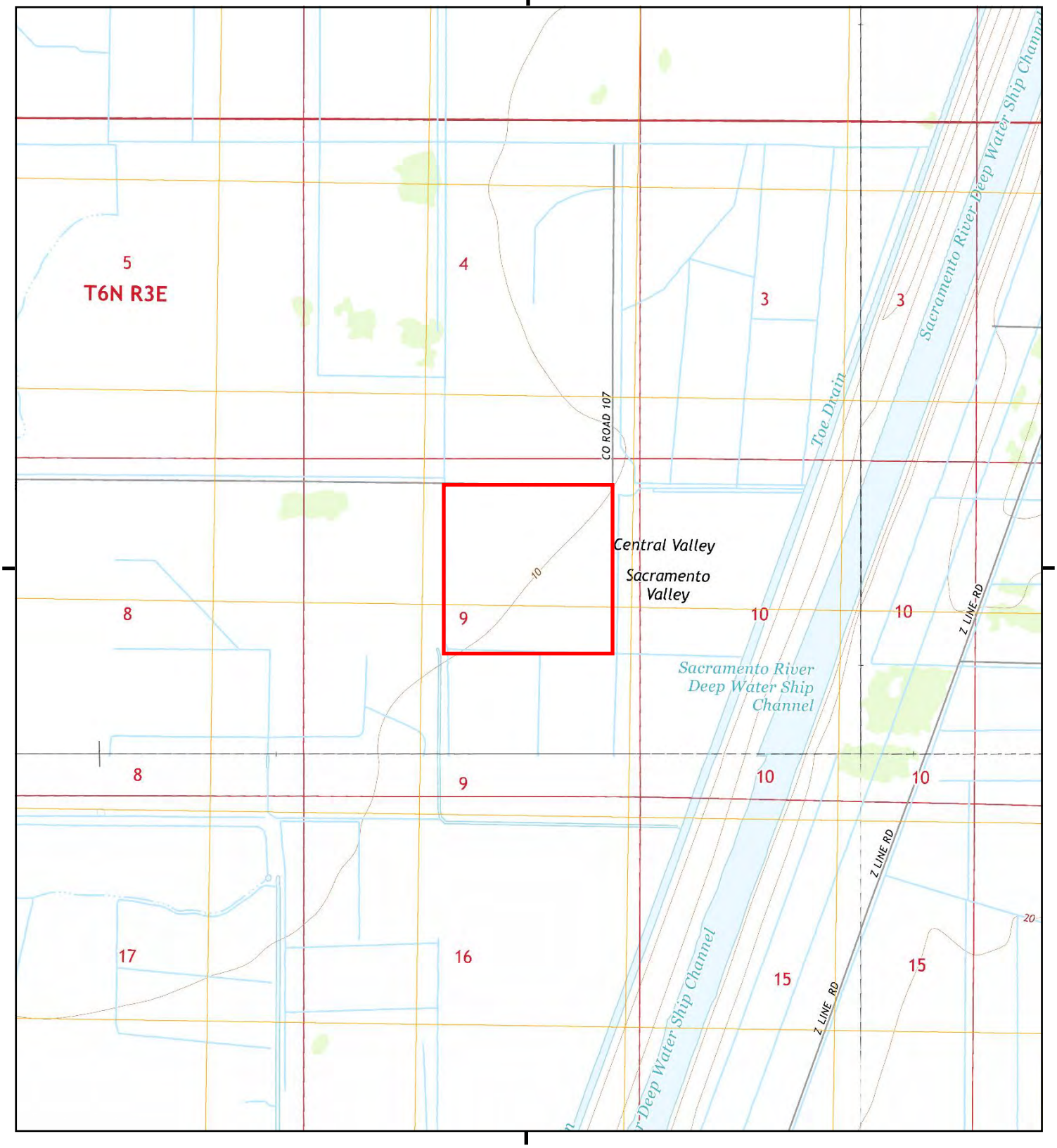
NE, Clarksburg, 2018, 7.5-minute
SE, Courtland, 2018, 7.5-minute
SW, Liberty Island, 2018, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2015



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SW S SE

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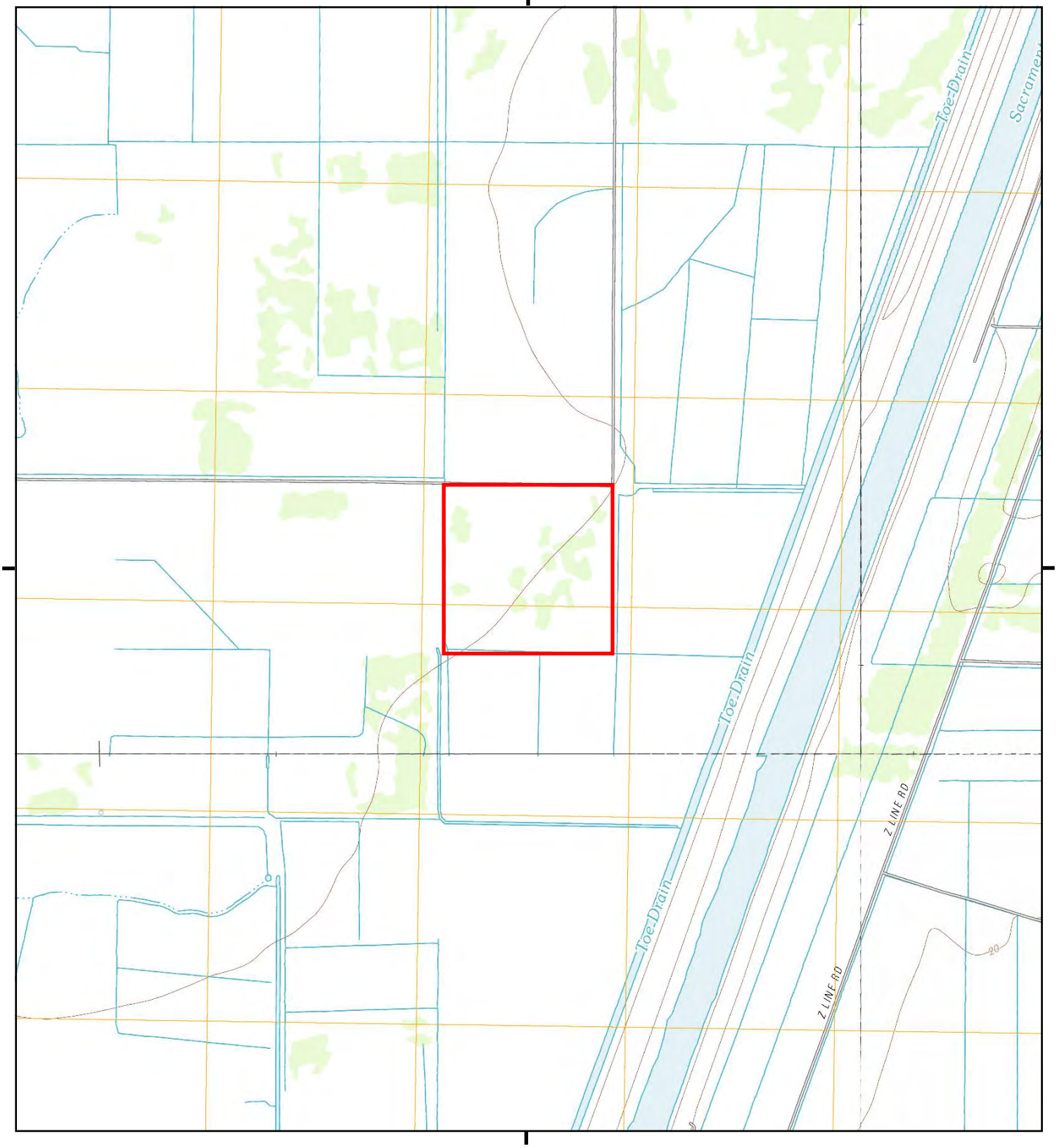
NE, Clarksburg, 2015, 7.5-minute
SE, Courtland, 2015, 7.5-minute
SW, Liberty Island, 2015, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

2012



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W E
SW S SE

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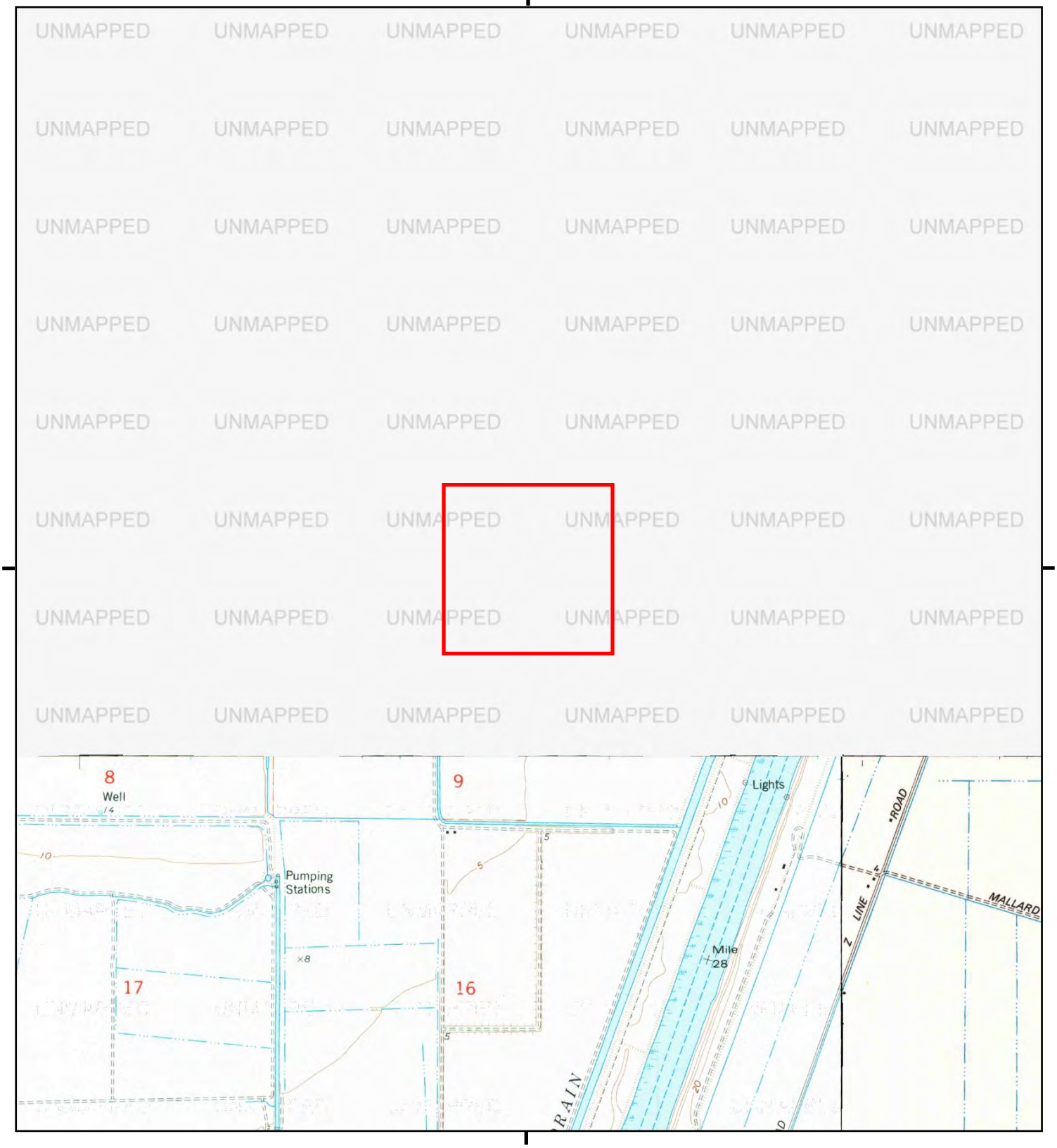
NE, Clarksburg, 2012, 7.5-minute
SE, Courtland, 2012, 7.5-minute
SW, Liberty Island, 2012, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



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SW S SE

SE, Courtland, 1993, 7.5-minute
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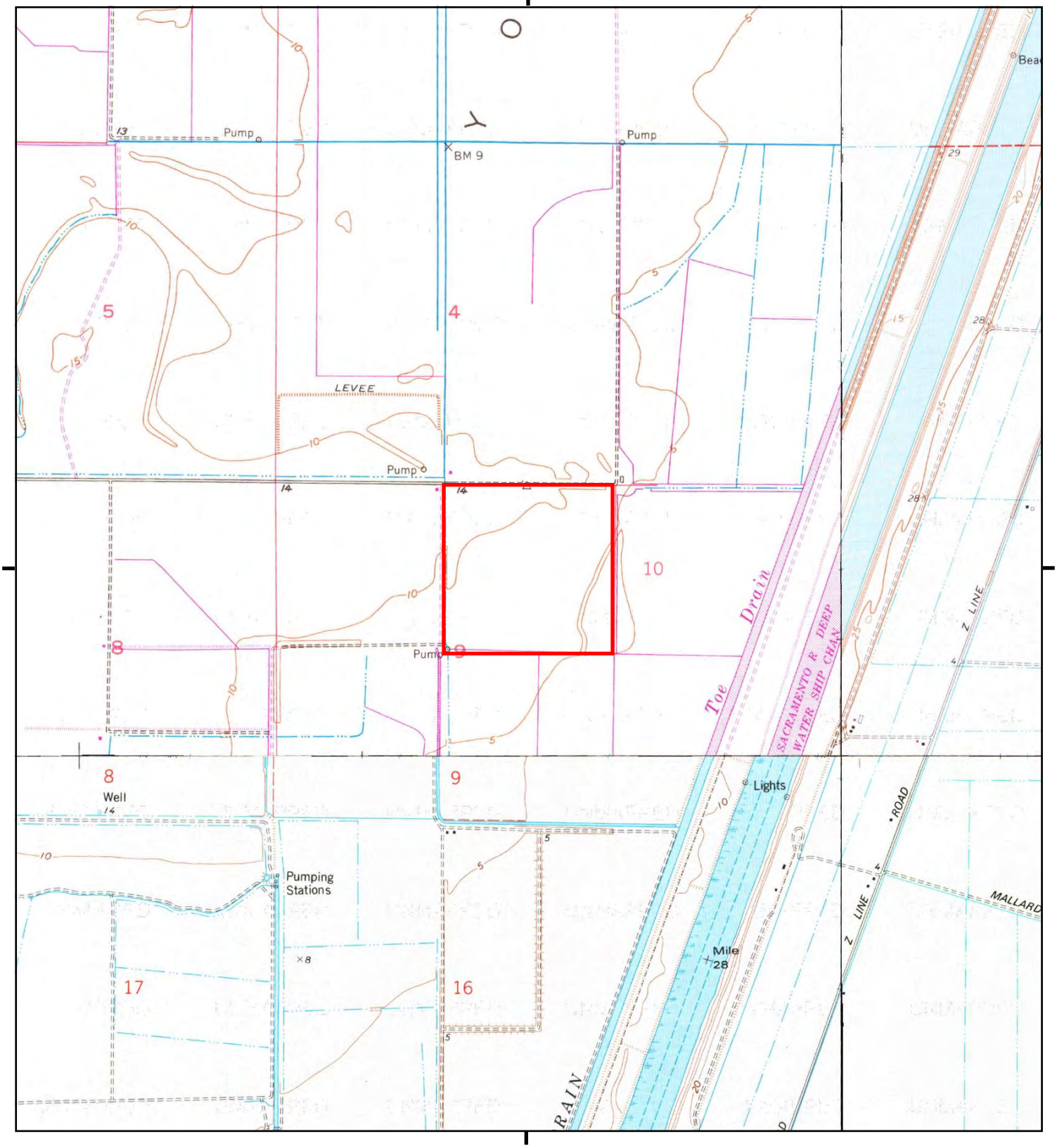
SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



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SW S SE

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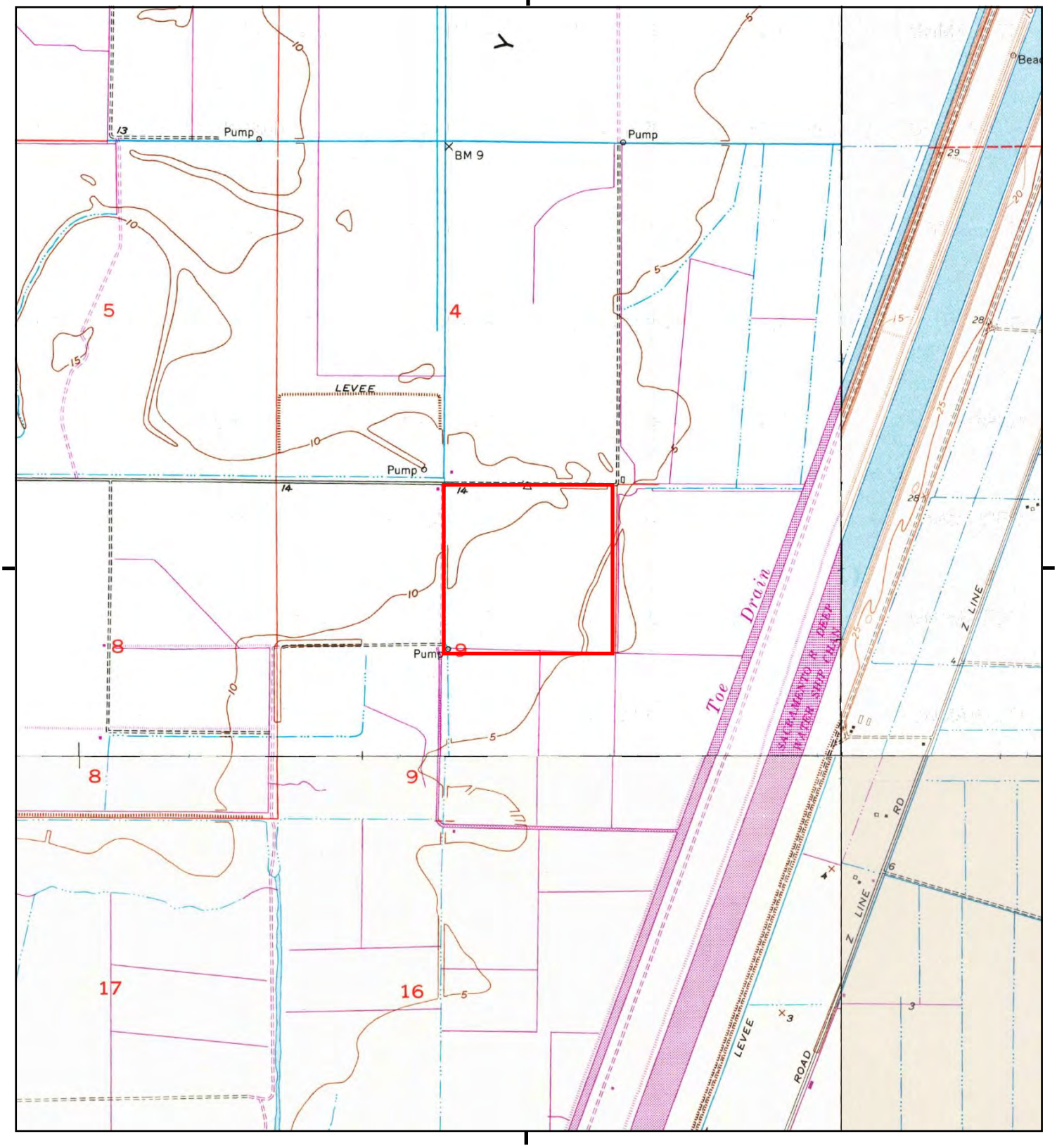
NE, Clarksburg, 1975, 7.5-minute
SE, Courtland, 1978, 7.5-minute
SW, Liberty Island, 1978, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

1967, 1968



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SW S SE

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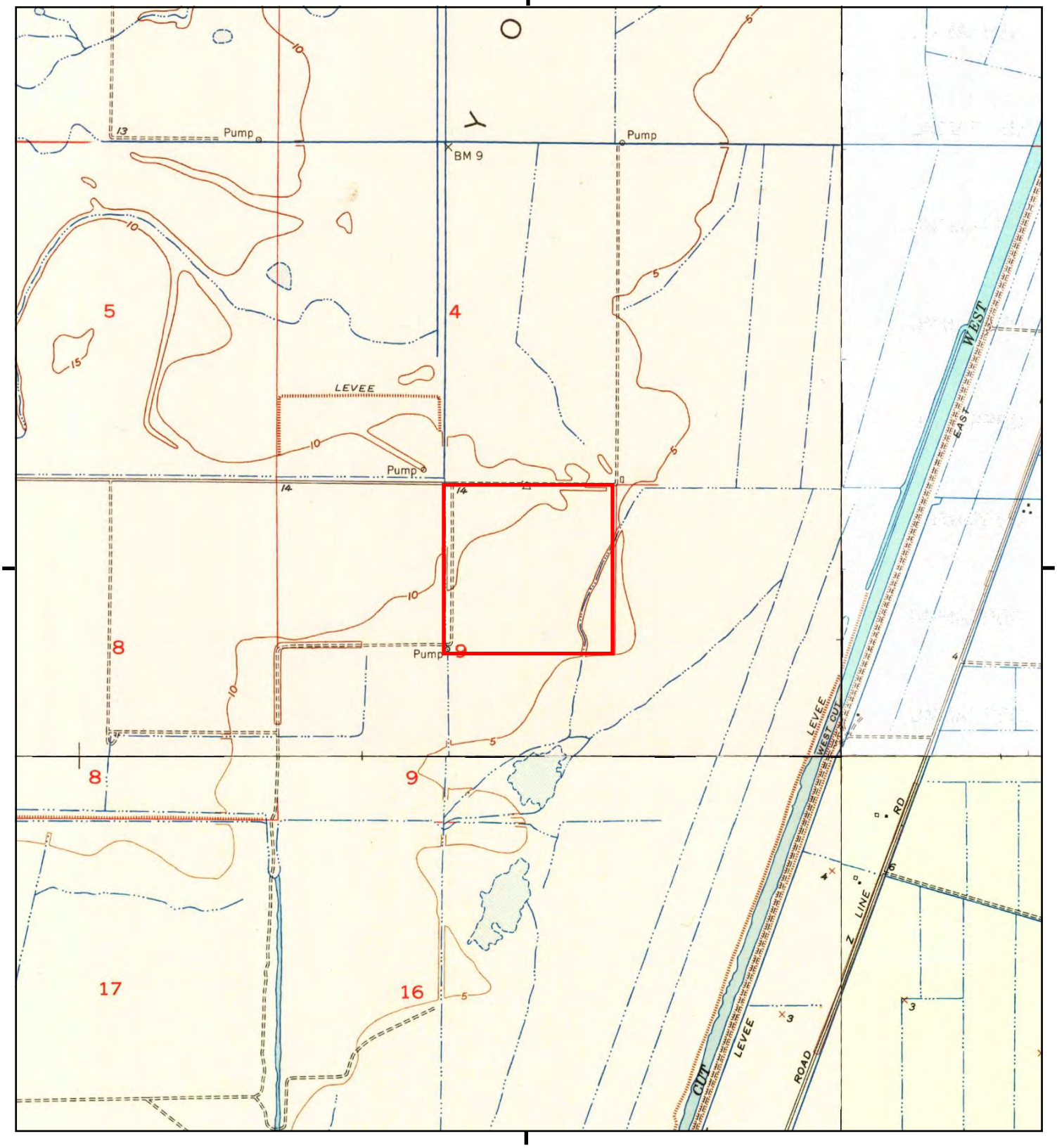
NE, Clarksburg, 1967, 7.5-minute
SE, Courtland, 1968, 7.5-minute
SW, Liberty Island, 1968, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



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SW S SE

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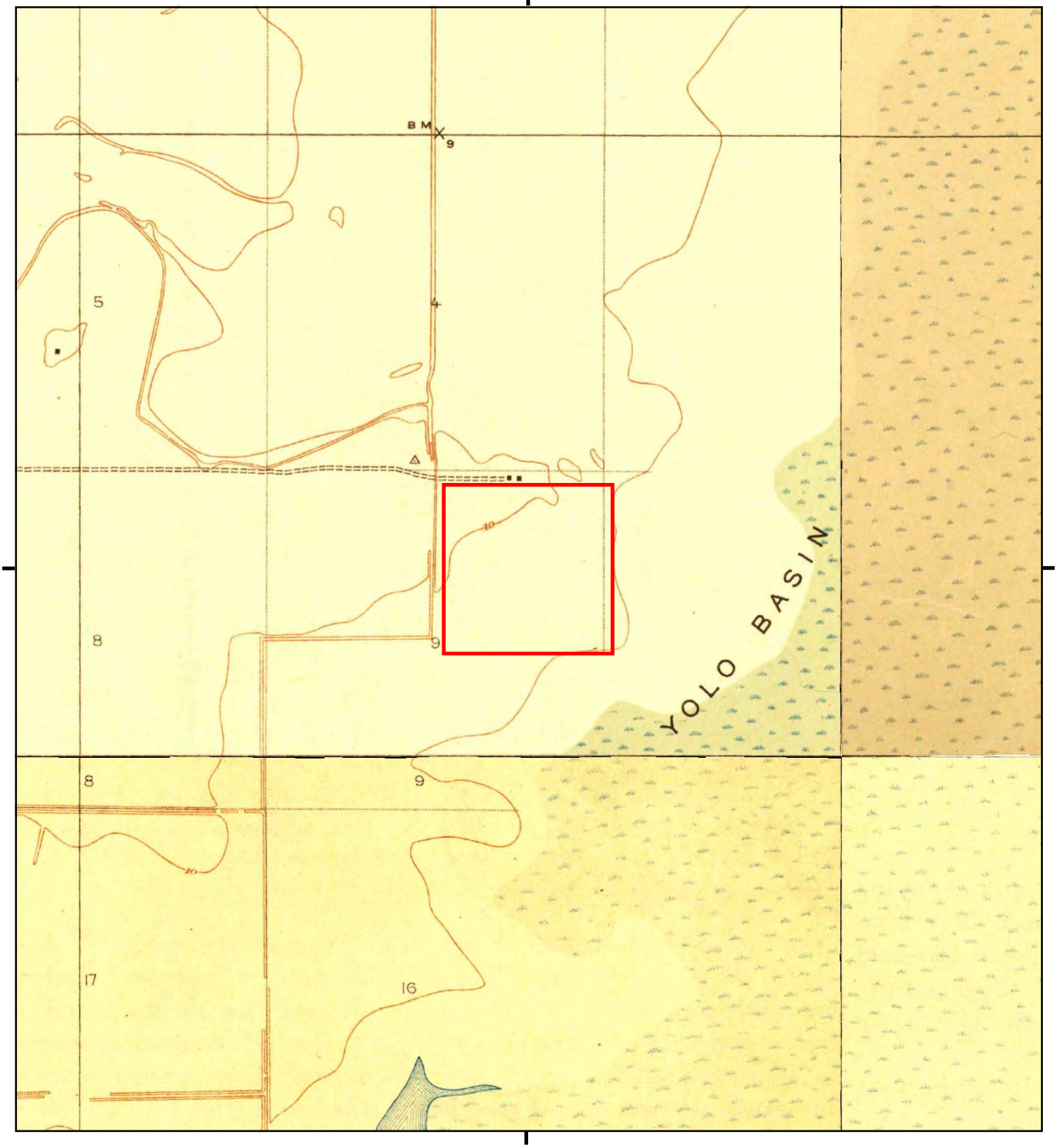
NE, Clarksburg, 1952, 7.5-minute
SE, Courtland, 1952, 7.5-minute
SW, Liberty Island, 1952, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

Historical Topo Map

1916



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SW S SE

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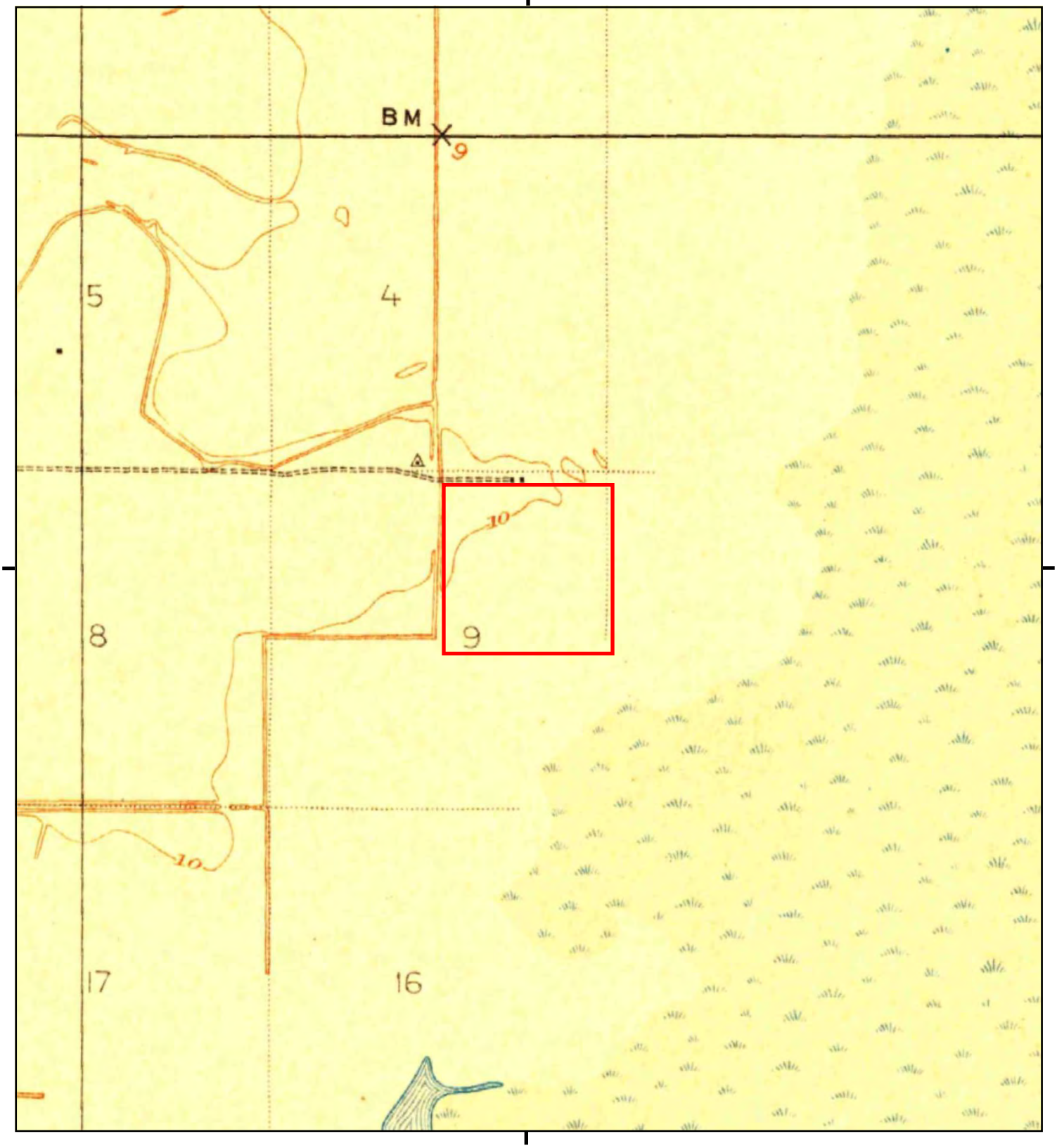
NE, Babel Slough, 1916, 7.5-minute
SE, Vorden, 1916, 7.5-minute
SW, Cache Slough, 1916, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Courtland, 1908, 15-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

N

1.0 INTRODUCTION

1.1 Subject Property Name and Location

Property Name (Subject Property):	Port District Parcel
Subject Property APNs, Addresses (and/or Other Physical Location Description):	APN 033-220-009 46503 County Road 155, Dixon, CA 95620

1.2 Contact Information

Client (User):	Ecosystem Investment Partners and EIP California, LLC
Subject Property Owners (According to Preliminary Title Insurance Report [PTIRs], See Attachment 2):	Lucky Five Farm
ASTM Key Site Manager:	Adam Davis (EIP)
Date Project Authorized:	May 30, 2024

1.3 Objective

This Phase I ESA has been completed in accordance with the practices identified in the ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM Designation E1527-21 and pursuant to the terms set forth in the Authorization For Environmental Investigation And Contracting Services (AEICS) between the *EAI* and Ecosystem Investment Partners dated May 30, 2024.

1.4 Scope Of Work, Significant Assumptions, Terms and Conditions, Reliance

The scope of work, significant assumptions, and terms and conditions applicable to this Phase I ESA are identified in the following documents:
AEICS For *EAI* Project 80.ECOSYL5.24.
ASTM E1527-21 and ASTM E2600-15.
Certifications are presented in Section 2 of this report.
This report was prepared for the exclusive use of the following:
Ecosystem Investment Partners and EIP California, LLC.

2.0 SCOPE AND DECLARATIONS

2.1 Introduction

EAI has completed a Phase I ESA of the subject property. This Phase I ESA Report was prepared for Ecosystem Investment Partners for real estate environmental due diligence purposes. Photographs of the subject and surrounding properties are provided in Attachment 1. The regional and community locations of the subject property are depicted on Figure 1 (Site Location Map). Figure 2 is a Site Plan based on a recent aerial photograph showing the subject property and adjacent property uses. Historical maps showing the subject property in its physiographic setting are included in Attachment 6.

2.2 Scope

The objective of this ESA was to perform all appropriate inquiry (AAI) into the past ownership and uses of the subject property consistent with good commercial or customary practice as outlined by the ASTM in Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E1527-21. The purpose of this ESA work was to identify, to the extent feasible, adverse environmental conditions (including ASTM recognized environmental conditions; RECs) of the subject property that potentially have and/or may cause an adverse environmental impact to the subject property. The effective date of this ESA is approximately the same as its date of issue based on when specific ESA components were completed. In accordance with ASTM E1527-21 Section 4.6, its continued viability extends to approximately 180 days after its effective date. The viability of this ESA can be extended beyond 180 days, up to one (1) year, if the specific ESA components specified in ASTM E1527-21 Section 4.0 are updated.

2.3 Declarations

Bernard A. Sentianin and Craig A. Smithof *EAI* declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in Title 40 Code of Federal Regulations (CFR) Part 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in Title 40 CFR Part 312.

The term recognized environmental condition (REC) is defined by ASTM Standard E 1527-21 as:

"… (1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.

The term does not include *de minimis* conditions, which generally do not present a material risk to human health or the environment and would not likely be subject to enforcement action if brought to the attention of governmental agencies. An example of such a *de minimis* condition

3.0 USER-PROVIDED INFORMATION

Prior to initiating a reconnaissance visit to the subject property, *EAI* reviewed information relevant to performance of this Phase I ESA received from the Client/ASTM User, Ecosystem Investment Partners, for the subject property.

3.1 Information

1) Past Uses	Undeveloped land/Agricultural (rice)
2) Current Conditions	Undeveloped land/pasture
Reason Why the User Wants to Have this Phase I ESA Performed:	Phase I ESA Report prepared as a requirement of Ecosystems Investment Partners for environmental due diligence purposes.

3.2 User-Provided Documents

The following documents were provided by Ecosystems Investment Partners to *EAI* and are summarized as follows:

PTIR, Placer Title Co., dated May 12, 2022	The Preliminary Title Insurance Report (PTIR) provides current ownership information, property tax and title history for the parcel, but contains no information regarding the environmental condition of the subject property parcel (Attachment 2).
Tides End Plat Map (undated)	Graphic illustration of the property location with assessors parcel numbers depicted.

4.0 SUBJECT PROPERTY AND AREA RECONNAISSANCE

The reconnaissance visit to the subject property was conducted by *EAI* on June 10, 2024. *EAI* was unaccompanied during the reconnaissance visit.

4.1 Site Reconnaissance Methodology

EAI utilized the following methodology to observe the subject property:
Walked the reasonably accessible areas of the subject property and boundaries.
Observed adjacent property areas from public thoroughfares.

4.2 General Description

Subject Property and Area Description:	The subject property is currently undeveloped and located in area of mixed farmland/pasture. According to information obtained, the subject property consists of a single parcel (approximately 160 acres) on the south side of County Road 155, approximately 0.6 miles west of the Sacramento River Deep Water Channel. The surrounding properties are either undeveloped or used for pasture.
Structures, Roads, Other Improvements:	There are no structures on the subject property. A single unpaved road on the west side of the property extends south from County Road 155 to an offsite hunting clubhouse.
Subject Property Size:	~64 acres
Estimated % of Property Covered by Buildings/Pavement:	0% (based on reconnaissance visit).
Observed Current Subject Property Use/Operations:	There appear to be no active operations being conducted at the subject property.
Observed Evidence of Past Subject Property Use(s):	None observed.
Sewage Disposal Method (and age):	None observed.
Emergency Generator	None observed or reported to be present.

Potable Water Source:	No private water supply wells were noted on site
Electric Utility:	Pacific Gas & Electric (PG&E) services the subject property area.
Natural Gas Utility:	PG&E services the subject property area.

4.3 Hazardous Substances and Petroleum Products

EAI made the following visual observations during the subject property reconnaissance visit and identified the following information about hazardous substances at the subject property during the interview/records review portions of the ESA:

Observation	Description
Hazardous Substances and Petroleum Products:	None observed.
Drums (≥ 5 gallons):	None observed.
Strong, Pungent, or Noxious Odors:	None observed.
Pools of Liquid:	None observed.
Unidentified Substance Containers:	None observed.
PCB-Containing Equipment:	None observed.
Other Observed Evidence of Hazardous Substances or Petroleum Products:	None.

4.4 Interior Observations

There are no structures present on the subject property, so no interior observations were made.

4.5 Exterior Observations

EAI made the following observations during the reconnaissance of exterior areas of the subject property and/or identified the following information during the interview or records review portions of the assessment:

Observation	Description
On-site Pits, Ponds, or Lagoons:	None observed.

Stained Soil or Pavement:	None observed.
Stressed Vegetation:	None observed.
Waste Streams and Waste Collection Areas:	None observed.
Solid Waste Disposal:	None observed.
Potential Areas of Fill Placement:	None observed or reported to exist.
Wastewater:	No potential sources observed.
Storm water:	Storm water appears to primarily soak into the subject property surface while excess flows southeastward to Prospect Slough. The subject property is not listed on the National Pollutant Discharge and Elimination System (NPDES) database in the EDR Report (Attachment 3). No indication of a discharge that would require a NPDES permit was observed.
Wells:	Private water supply wells were not observed on site.
Septic Systems:	None observed or reported to exist.
Electromagnetic Radiation Source:	None observed.
Other Exterior Observations:	Several unlined drainage channels were observed on the property. An empty steel drum and an approximately 8-foot section of drain pipe were observed in the central portion of the property.

4.6 Underground Storage Tanks/Structures

Existing USTs:	None observed.
Former USTs:	No evidence observed.
Other Underground Structures:	None observed.

4.7 Aboveground Storage Tanks

Existing ASTs:	None observed.
Former ASTs:	No evidence observed.

4.8 Adjoining Properties

4.8.1 Current Uses of Adjoining Properties

As viewed from the subject property and/or from public rights-of-way, *EAI* made the following observations about use and activities on adjoining properties:

North:	County Road 155, followed by a duck hunting clubhouse and undeveloped land.
East:	Undeveloped land.
South:	A hunting clubhouse and undeveloped land.
West:	Undeveloped land.

4.8.2 Observed Evidence of Past Uses of Adjoining Properties

Observations of adjoining properties providing indications of past use and activities, if any, are described as follows:

North:	None observed.
South:	None observed.
East:	None observed.
West:	None observed.

4.8.3 Pits, Ponds or Lagoons on Adjoining Properties

As viewed from the subject property and/or from public right-of-ways, *EAI* made the following observations about the presence of pits, ponds and lagoons on adjoining properties:

North:	None observed.
South:	None observed.
East:	None observed.
West:	None observed.

4.9 Observed Physical Setting

Topography of the Subject Property and Surrounding Area:	The topography of thesubject property and surrounding area is generally flat to gently sloping downward to the southeast toward Prospect Slought and the Sacramento River Deep Water Channel.

4.10 Summary of Findings From Subject Property Reconnaissance

There were no observed potential adverse environmental conditions and no evidence of an ASTM REC or HREC of the subject property based on the reconnaissance visit.

5.0 PHYSICAL SETTING

Topography:	The subject property has an approximate, average surface elevation of 1 to 2 feet above mean sea level (AMSL). Area topography slopes is generally flat to gently sloping downward to the south.
Soil/Bedrock Data:	Soil in the vicinity of the site is identified by the United States Department of Agriculture - Soil Conservation Service as Capay soils and overwash, 0 percent, frequently flooded (USDA, 2024). Capay soils consist of silts and clays that form on basin floors and are poorly drained with rapid runoff. The subject property is located in the Sacramento Valley which comprises the northern half of the Great Valley Geomorphic Province (Norris and Webb, 1990). It is bound by the Coast Ranges to the west, the Sierra Nevada Mountains to the east, the Klamath and Cascade Mountains north, and the San Joaquin Valley to the south. The Great Valley is an asymmetrical synclinal trough overlain with a thick sequence (over 20,000 feet) of sedimentary deposits. These deposits range in age from early Cretaceous to early Quaternary and represent deep to shallow-water marine and nonmarine depositional environments. Recent alluvial soil, derived primarily from the erosion granitic terraces in the Sierra Nevada Mountains, fills the basin
Estimated Depth to Groundwater:	Depth to groundwater in the area of the subject property is estimated at approximately 3 to 7 feet below ground surface (bgs) based on State Well Number 07N03E30Q002M. The subject property is located in a semi-inundated area and the depth to groundwater can vary depending on seasonal rainfall and tidal influence.
Estimated Direction of Gradient:	Groundwater movement is assumed to be south toward the Sacramento River Delta, except where impacted by localized pumping.
Known Regional Groundwater Impairment:	None.

Sources of this information:

- California Department of Conservation, Division of Mines and Geology (CDMG), 2002 California Geological Survey, California Geomorphic Provinces Note 36, Electronic Copy, Revised December 2002.

6.0 ENVIRONMENTAL RECORDS REVIEW

6.1 Federal, State and Tribal Environmental Records

A government agency database search report was obtained from Environmental Data Resources, Inc. (EDR), a third-party environmental database search firm. A complete copy of the database search report, including the date the report was prepared, the date the information was last updated, and the definition of databases searched, is provided in Attachment 3.

EAI evaluated the properties listed within the EDR Report on the basis of their potential to environmentally impact the subject property. As part of this process, inferences have been made regarding the likely groundwater movement direction (south). The following table summarizes the listings:

Agency List/Database	Search Radius	Number of Listed Sites	ASTM REC?
Federal NPL Sites	1.0 mile	0	No.
Federal Delisted NPL Sites	1.0 mile	0	No.
Federal CERCLIS List	0.5 mile	0	No.
Federal CERCLIS NFRAP List	0.5 mile	0	No.
Federal RCRA CORRACTS Facilities	1.0 mile	0	No.
Federal RCRA Non-CORRACTS TSDF	0.5 mile	0	No.
Federal RCRA SQG Generators	0.25 mile	0	No.
Federal RCRA CESQG/LQG Generators	0.25 mile	0 (LQG) 0 (CESQ)	No.
Federal RCRA Non-Gen/NLR	0.25 mile	0	No.
Federal ERNS	Subject Property	Not Listed	No.
State and Tribal - Equivalent NPL (a.k.a. RESPONSE)	1.0 mile	0	No.
State and Tribal - Equivalent CERCLIS (a.k.a. ENVIROSTOR)	1.0 mile	0	No.
State and Tribal Solid Waste Facilities (a.k.a. SWF/LF); Toxic Pits (TP)	0.5 mile	0	No.
State and Tribal Registered Storage Tank Sites (a.k.a. UST & AST)	0.25 mile	0	No.
State and Tribal Leaking Storage Tank Sites (a.k.a. SLIC & LUST)	0.5 mile	0 LUST 0 SLIC	No.

6.5 Local Environmental Health Department

Agency Name, Contact Information	Finding
Yolo County Environmental Health Division (EHD): Public Access Viewer	A review of Yolo County's online database indicated no records associated with the subject property.

6.6 Fire Department

Agency Name, Contact Information	Finding
California Department of Forestry and Fire Protection (Cal Fire): Calfire PRA Records Center Calfire@govqa.us	Cal Fire's indicated they have no records associated with the subject property (Attachment 5).

6.7 Building Department

Agency Name, Contact Information	Finding
Yolo County Building Division (YCBD): Public Access Viewer	A review of Yolo County's online database indicated no records associated with the subject property (Attachment 5).

6.8 State Environmental Departments

Agency Name, Contact Information	Finding
DTSC (Cal/EPA): Receptionist - pubreqact@dtsc.ca.gov	A review of DTSC's EnviroStor and HWTS online databases indicated no records associated with the subject property (Attachment 5).

CVRWQCB (Cal/EPA): Receptionist – r5s-pra@waterboards.ca.gov	A review of State Water Resources Control Board's GeoTracker online database indicated no records associated with the subject property (Attachment 5).

6.9 Air District

Agency Name, Contact Information	Finding
Yolo Solano Air Quality Management District: (YSAQMD): Karin Bloesch (530) 757-3539, pra@ysaqmd.gov	According to YSAQMD, there are no permitted facilities on the subject property (Attachment 5).

6.10 Industrial Wastewater Agency

The subject property is vacant land with no manufacturing, or other types of processes, that produce industrial wastewater.

6.11 Discussion and Summary of Findings from Environmental Records Review

The subject property and adjacent properties are not listed in the EDR Report. No regulatory records were found at Yolo County, Cal Fire, DTSC, CVRWQCB, or YSAQMD.

contamination in a given location. These maps, which were periodically updated from the late 19th Century into the 1980s (when they were replaced with high definition aerial and satellite photography-based maps), often provide valuable insights into historical property uses. *EAI* contracted with EDR to provide copies of historical Sanborn® fire insurance maps covering the subject and immediately adjacent properties.

There is no historical fire insurance industry (Sanborn) map coverage for the subject property area according to EDR. A copy of their no maps found notification is included in Attachment 6.

7.5 Historical Topographic Maps

EAI reviewed U.S. Geological Survey (USGS) maps of the subject property and surrounding area provided by EDR. The following table summarizes the USGS map review results:

Year(s)	Scale(s)	Observations
1908, 1916, 1952, 1967, 1968, 1973, 1975, 1980, 2012 2015,	1:24,000	The subject property and surrounding area are undeveloped, rural land. The West Cut channel is visible approximately 0.6 miles to the east. By 1973 the West Cut channel has been widened and renamed the Sacramento Deep Water Channel.
2018. 2022	1:24,000	The subject property does not contain any individual features or buildings. Properties in the site vicinity, particularly to the north, east, and south, are designated as Freshwater Emergent Wetland.

There are no indicators of potential ASTM RECs depicted on the maps. Copies of the topographic maps are included in Attachment 6.

7.6 Other Historical Sources

No other historical sources were found during this ESA.

7.7 Summary of Findings from Historical Records Review

The historical records reviewed indicate that the subject property was historically undeveloped land in a rural area. The subject property was utilized for agriculture from the 1960's through the 1980's. The surrounding area was developed as farmland/pasture, with the West Cut channel/Sacramento Deep Water Channel constructed to the east in circa 1937 and enlarged in the 1970's. No historical records or information reviewed indicated a potential ASTM HREC or REC of the subject property.

8.0 INTERVIEWS

8.1 Findings From Interview With Property Owner Representatives

- The property owner declined to respond to the owner questionnaire.

9.0 SUMMARY OF HISTORICAL SUBJECT AND ADJOINING PROPERTY USES

The following summary of the historical uses of the subject property and adjoining properties was compiled from the referenced materials and interviews detailed in Sections 5.0, 6.0, and 7.0.

9.1 Subject Property Use

Year	Summary of Subject Property Use
Circa 1937 to 1953	Undeveloped land.
Circa 1966 to 1984	Agricultural (rice).
Circa 1993 to 2023 (present)	Undeveloped land.

9.2 Surrounding Property Use

Direction	Summary of Historical Adjoining Property Use
North:	Originally undeveloped land. Periodically used for pasture or agriculture (rice)
East:	Originally undeveloped land. Periodically used for pasture or agriculture.
South:	Originally undeveloped land. Periodically used for pasture or agriculture.
West:	Originally undeveloped land. Periodically used for pasture or agriculture.

10.0 OTHER AND NON-ASTM ENVIRONMENTAL CONSIDERATIONS

10.1 Lead-Based Paint

There are no structures and no known concerns regarding lead-based paint (LBP) associated with the subject property.

10.2 Asbestos

There are no structures and no known concerns regarding asbestos-containing materials (ACMs) associated with the subject property.

10.3 Flood Zones

EAI reviewed the Federal Emergency Management Agency (FEMA) flood insurance rate maps information for the subject property presented in the EDR Report. They indicate the subject property is located in a regulatory floodway. A copy of the EDR Report is included as Attachment 3 of this report. The information is summarized on the following table:

FLOOD INSURANCE RATE MAPS	
Map Source & Name:	EDR Report – FEMA Panel 06113C0720G FIRM Flood Data.
Subject Property Within 100-Year Flood Plain:	No
Subject Property Within 500-Year Flood Plain:	No

10.4 Wetlands

Wetlands cannot be definitively identified through visual observation alone. Defensible wetland delineations require taxonomic classification of subject site vegetation, an investigation into the surface and subsurface hydrology of the subject property, and identification of hydric soils. This level of delineation is outside of the scope or work for this assessment. However, *EAI* reviewed US Fish and Wildlife Service National Wetland Inventory (NWI) maps and USDA Soil Survey reports included in the EDR Report. The subject property is mapped as Freshwater Emergent Wetlands (NWI, 2024).

10.5 Indoor Air Quality

EAI did not identify any volatile organic compound (VOC) release sites located hydrogeologically up-gradient, or immediately cross-gradient, of the subject property that could act as a source of contamination to soil gas underlying the subject property.

Based on the data contained in the EDR Report (Attachment 3), the potential for subsurface contaminant vapor having reached the subject property boundaries, defined by ASTM Standard E2600-15 as a Vapor Encroachment Condition (VEC), is low.

10.6 Radon

Radon is a colorless, tasteless radioactive gas with a U.S. Environmental Protection Agency (EPA) specified action level of 4.0 picocuries per liter (pCi/L) of air. Radon gas has a very short half-life of 3.8 days. The health risk potential of radon is associated with its rate of accumulation within confined areas, particularly confined areas near to the ground, where vapors can readily transfer to indoor air from the ground through foundation cracks or other pathways. Large, adequately ventilated rooms generally present limited risk for radon exposure. According to the EPA, the radon concentrations in buildings and homes depend on many factors, including soil types, temperature, barometric pressure, and building construction.

EAI reviewed the California Department of Health Services (CDHS) Radon Database for California (last updated in February 2017) and found that in zip code area 95620 where the subject property is located, five tests were taken as part of the survey. None of the test results reported detectable concentrations of radon.

Subject property Location:	**State**	**County & Zip Codes**
	California	Yolo 95620
EPA Radon Zones (with Average Measured Indoor Radon Concentrations)		
Zone 1 – High (> 4.0 pCi/L)	Zone 2 - Moderate (2 to 4 pCi/L)	Zone 3 – Low (< 2 pCi/L)
No.	No.	Yes.
Normally-occupied sub grade areas (i.e., basements, etc.)?		
No (None Exist).		

Information regarding the presence of radon at the subject property relies on regional data and does not represent site-specific data. Based on the Federal EPA Radon Zone rating and CDHS survey results, radon is not expected to represent an environmental impact risk at the subject property and no further consideration appears to be warranted.

10.7 Dry-Cleaning Operations

No dry-cleaning operations were reported or observed to be at or near the subject property. The EDR Report and historical review did not indicate a potential for past dry-cleaning shops operating solvent-based equipment on the subject property or in the vicinity.

10.8 Pesticides & Other Agricultural Chemicals

The historical research for this ESA indicates that the area surrounding the subject property was agricultural land from at least as early as 1937. Irrigated agricultural land use may result in the upper one to two feet of soil being impacted by pesticides in excess of regulatory screening levels. Should residential development be contemplated at some point in the future, near-surface soil sampling and testing should be conducted to screen for agricultural chemical residue.

10.9 Mold

There are no structures and no known concerns regarding mold associated with the subject property.

11.0 OPINION AND CONCLUSIONS

EAI has performed a Phase I ESA in conformance with the Scope of Work (SOW) required by Title 40 CFR Part 312 (All Appropriate Inquiry; AAI) and ASTM E1527-21, of the property located 46503 County Road 155 in unincorporated Yolo County, CA 95620. Any exceptions to, or deviations from the SOW are described in this report, where applicable.

The subject property consists of a quarter section of undeveloped land (approximately 160 acres) on the south side of County Road 155, approximately 0.6 miles west of the Sacramento Deep Water Channel. Based on a review of historical data, the property has been undeveloped since at least 1937, with periods of agricultural use starting in the late 1960's through the early 1980's.

The subject property has not come to the attention of the Local (Yolo County EHS), State (Cal/EPA), or Federal (US EPA Region 9) environmental regulatory agencies in association with on-site hazardous materials storage and/or use or any known hazardous waste generation. No known manufacturing operations were found to have ever been located on the subject property.

No release sites that qualify as a potential adverse environmental contaminant impact source condition to the subject property were identified in the Environmental Data Resources, Inc. (EDR) government database search report (EDR Report) obtained and reviewed during performance of this ESA.

No evidence of an ASTM recognized environmental condition (REC), controlled REC (CREC), or historical REC (HREC) of the subject property was found. See the definitions of these ASTM terms in Attachment 4.

No additional environmental assessment work is recommended at this time.

12.0 LIMITATIONS

The conclusions and recommendations contained in this report/assessment are based upon professional opinions with regard to the subject matter. These opinions were prepared in accordance with generally accepted environmental consulting and engineering standards and practices applicable to this location and existing at this time. The use of this report is subject to the following limitations:

1. The data and findings presented in this report are valid as of the dates when the investigations were performed. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration at the Subject Property, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in the report.
2. The data reported and the findings, observations, and conclusions expressed in the report are limited by the Scope of Work, budget, site access and schedule, as defined in EnviroApplications' Proposal for the work.
3. This report is based, in part, on unverified information supplied to EnviroApplications by third-party sources, such as regulatory agencies, prior owners or operators of the property, analytical laboratories, subcontractors, etc. Whereas efforts may have been made to substantiate this third-party information, EnviroApplications cannot guarantee the completeness or accuracy of this information.
4. The findings, observations, and conclusions expressed by EnviroApplications in this report are not, and should not be, considered an opinion concerning the compliance of any past or present owner or operator of the Subject Property with any Federal, state or local law or regulation.
5. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon conditions in existence at the time of investigation.
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7. This report is intended for the use of EnviroApplications' Client, Ecosystem Investment Partners; any other use must be approved by EnviroApplications and the Client in writing. If any such unauthorized use occurs, it shall be at the user's sole risk without liability to EnviroApplications.

Placer Title Co., Montana Title and Escrow, National Closing Solutions, National Closing Solutions of Alabama, National Closing Solutions of Maryland, North Idaho Title Insurance, Placer Title Insurance Agency of Utah, Premier Reverse Closings, Premier Title Agency, Texas National Title, Washington Title and Escrow, Western Auxiliary Corp., Wyoming Title and Escrow

NOTICE AT COLLECTION AND PRIVACY POLICY
updated July 1, 2020

We respect your personal information and are committed to protecting it. We are disclosing how Mother Lode Holding Company and its subsidiaries listed above (together referred to as "we," "us," or "our") collect, use, and share your personal information. Sections 1 and 2 constitute our Notice at Collection, Sections 1 – 9 are our Privacy Policy, and Sections 10 – 11 are additional sections of our Privacy Policy that apply only to California residents.

1. Personal Information We Collect

We may collect and over the last 12 months have collected personal information in the following categories: (A) Identity information such as name, postal address, email address, date of birth, social security number, driver's license, passport, signature, physical characteristics or description, telephone number, or other similar information; (B) Financial information (such as bank account information) and insurance information; (C) Records of services or products requested or purchased; (D) Biometric information (thumbprints obtained by notaries); (E) Internet or other electronic network activity information, such as online identifiers, Internet Protocol address, and information relating to interaction with our Internet websites and mobile applications; (F) Audio (voice messages), electronic, or similar information; (G) Professional or employment-related information; (H) Education information; (I) Characteristics of protected classifications such as marital status; (J) Geolocation information (with consent when using our mobile applications); and (K) information relating to pandemics, including medical, health, and travel information.

2. Purposes

We collect the above information, and have collected it in the last 12 months, for the following purposes: Our operational purposes, including providing escrow and title services, fulfilling a transaction, verifying customer information, and providing and improving customer service (categories A-J); Detecting, protecting against, and reporting malicious, deceptive, fraudulent, or illegal activity (A-I); Providing and improving Websites, and debugging to find and repair errors (A, C E, F, J); Auditing and complying with legal and other similar requirements (A-I); and to reduce the risk of spreading infectious diseases and to protect our employees and guests (K).

3. Sources, Sharing

The sources from which the information is and was collected include: the consumer or their authorized representative (A-J); government entities, service providers, financial institutions, our affiliates, real estate settlement service providers, real estate brokers and agents (A-D, F-I); and our internet websites and mobile applications (A-C, E-J). The categories of third parties with whom we share and have shared personal information include: a consumer's authorized representative (A-I); government entities, service providers and consultants, financial institutions, our affiliates, real estate settlement service providers, real estate brokers and agents, abstractors (A-I); notaries public (K); and data analytics and internet service providers (E, F, J). We may also disclose your information as part of a business transaction, such as a merger, sale, reorganization or acquisition (A-J).

4. Cookies and similar technologies

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

June 4, 2024

Bernard Sentianin
EnviroApplications, Inc.
bsentianin@enviroapplications.com

Public Records Request Number: 1-060324-02
Location(s): Lucky Five
46503 County Road 155, Dixon, California

Dear Requestor:

On June 3, 2024, the Department of Toxic Substances Control (DTSC) received your email of June 3, 2024, requesting records under the Public Records Act. After a thorough review of our files, no site records were found pertaining to the sites/facilities referenced above.

A large number of our records are available on EnviroStor, an online database that provides non-confidential, public access to DTSCs data management system. It tracks our cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. EnviroStor is available 24/7, 365 days a year. The data reflects the latest updates as they are entered in the system. Access it from your computer or smartphone, the local library – anywhere Internet access is available. Just go to www.envirostor.dtsc.ca.gov. You'll find a step-by-step tour of EnviroStor under the "How to Use EnviroStor" menu on the website.

ECOSYS Lucky 5 South

46503 County Road 155

Dixon, CA 95620

Inquiry Number: 7669950.8

June 03, 2024

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.3
June 03, 2024

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

06/03/24

Site Name:

ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620
EDR Inquiry # 7669950.3

Client Name:

Enviroapplications Inc.
2831 Camino Del Rio South
San Diego, CA 92108
Contact: Bernard Sentianin

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Enviroapplications Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 0171-48F8-B474

PO # 80.ECOSYL5.24

Project ECOSYS Lucky 5 South

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 0171-48F8-B474

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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ECOSYS Lucky 5 South
46503 County Road 155
Dixon, CA 95620

Inquiry Number: 7669950.4
June 03, 2024

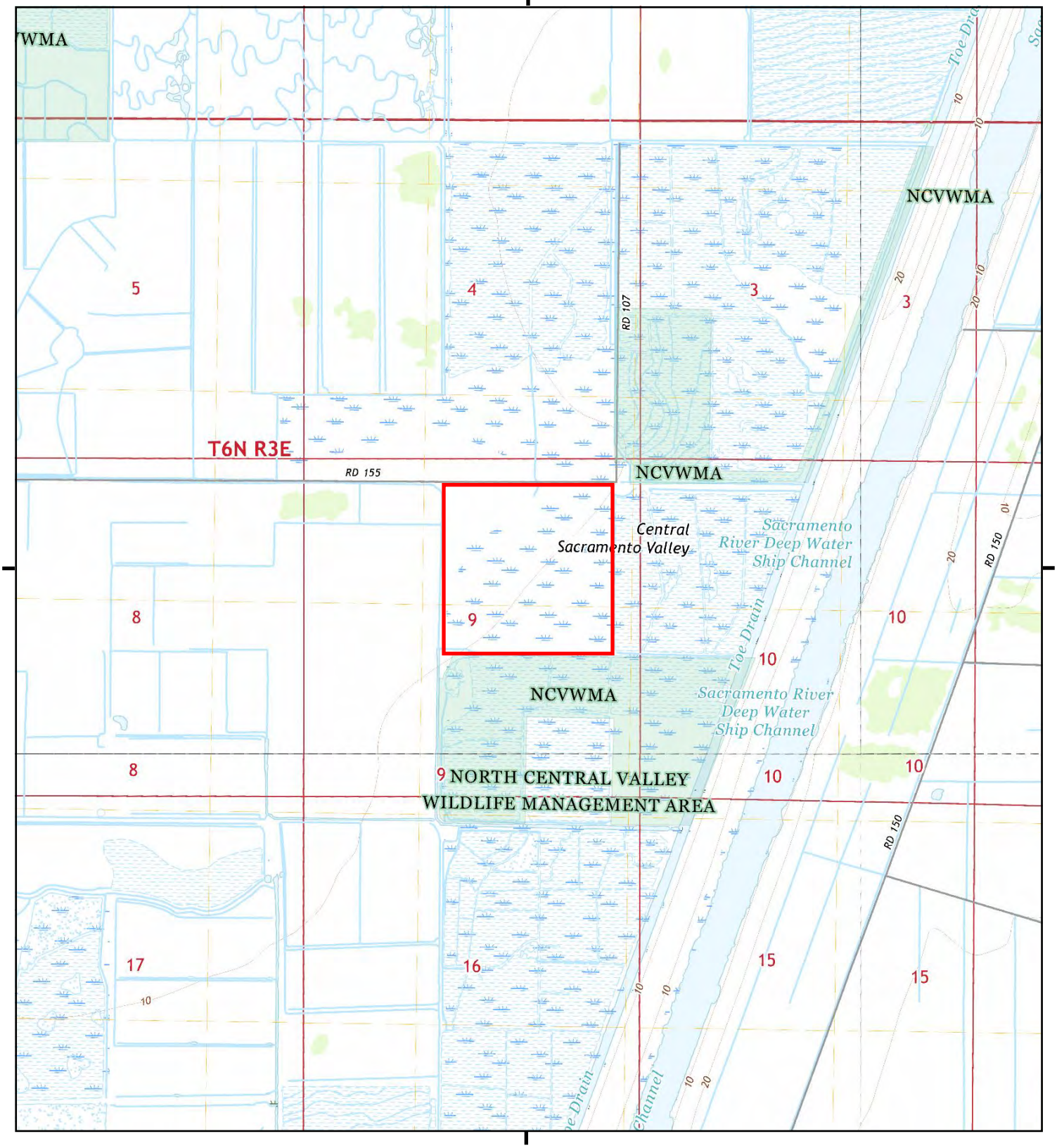
EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Historical Topo Map

2022



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W E
SW S SE

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NE, Clarksburg, 2022, 7.5-minute
SE, Courtland, 2022, 7.5-minute
SW, Liberty Island, 2022, 7.5-minute

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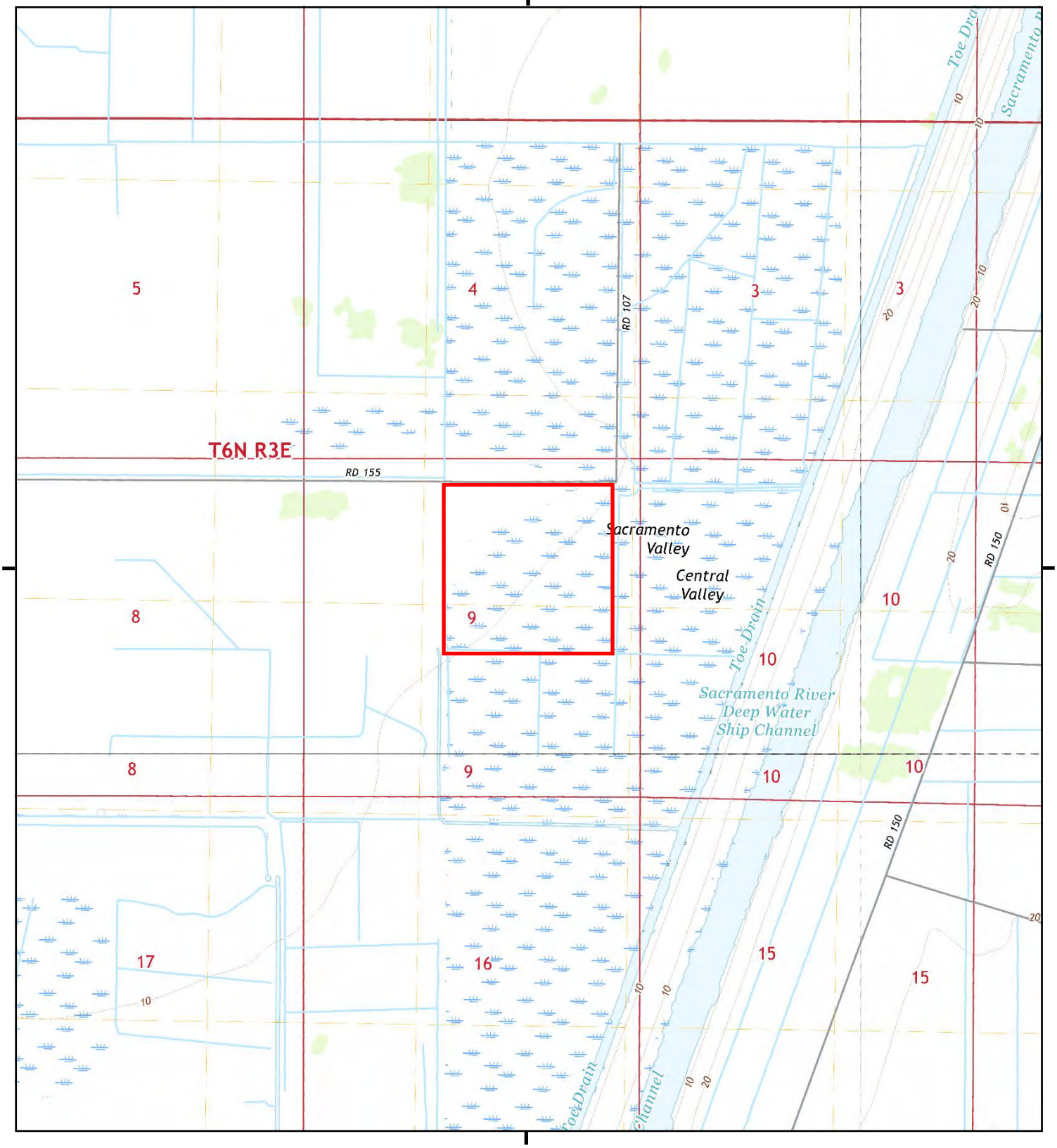
Historical Topo Map

2018



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SW S SE

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NE, Clarksburg, 2018, 7.5-minute
SE, Courtland, 2018, 7.5-minute
SW, Liberty Island, 2018, 7.5-minute

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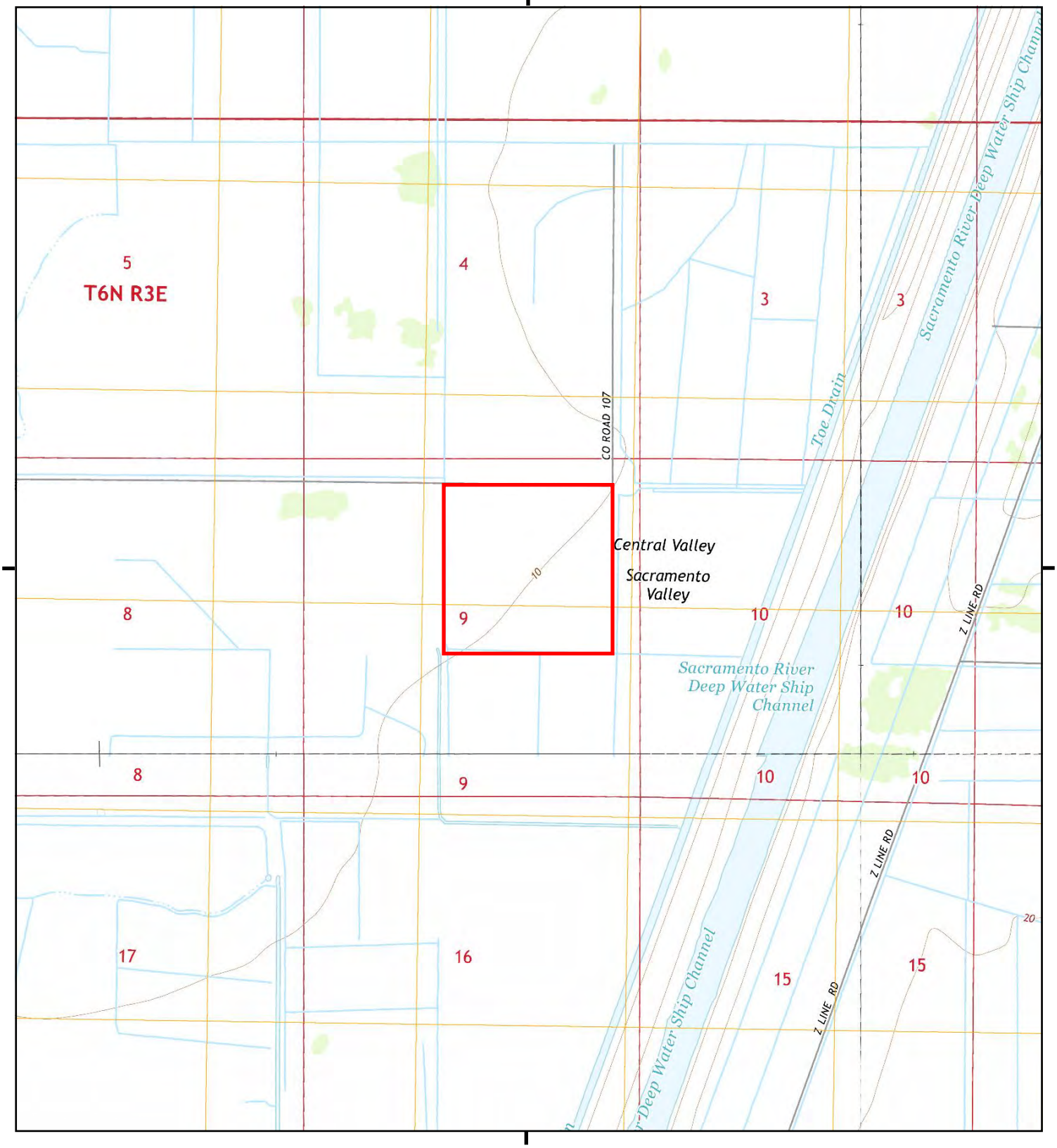
Historical Topo Map

2015



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SE, Courtland, 2015, 7.5-minute
SW, Liberty Island, 2015, 7.5-minute

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Dixon, CA 95620
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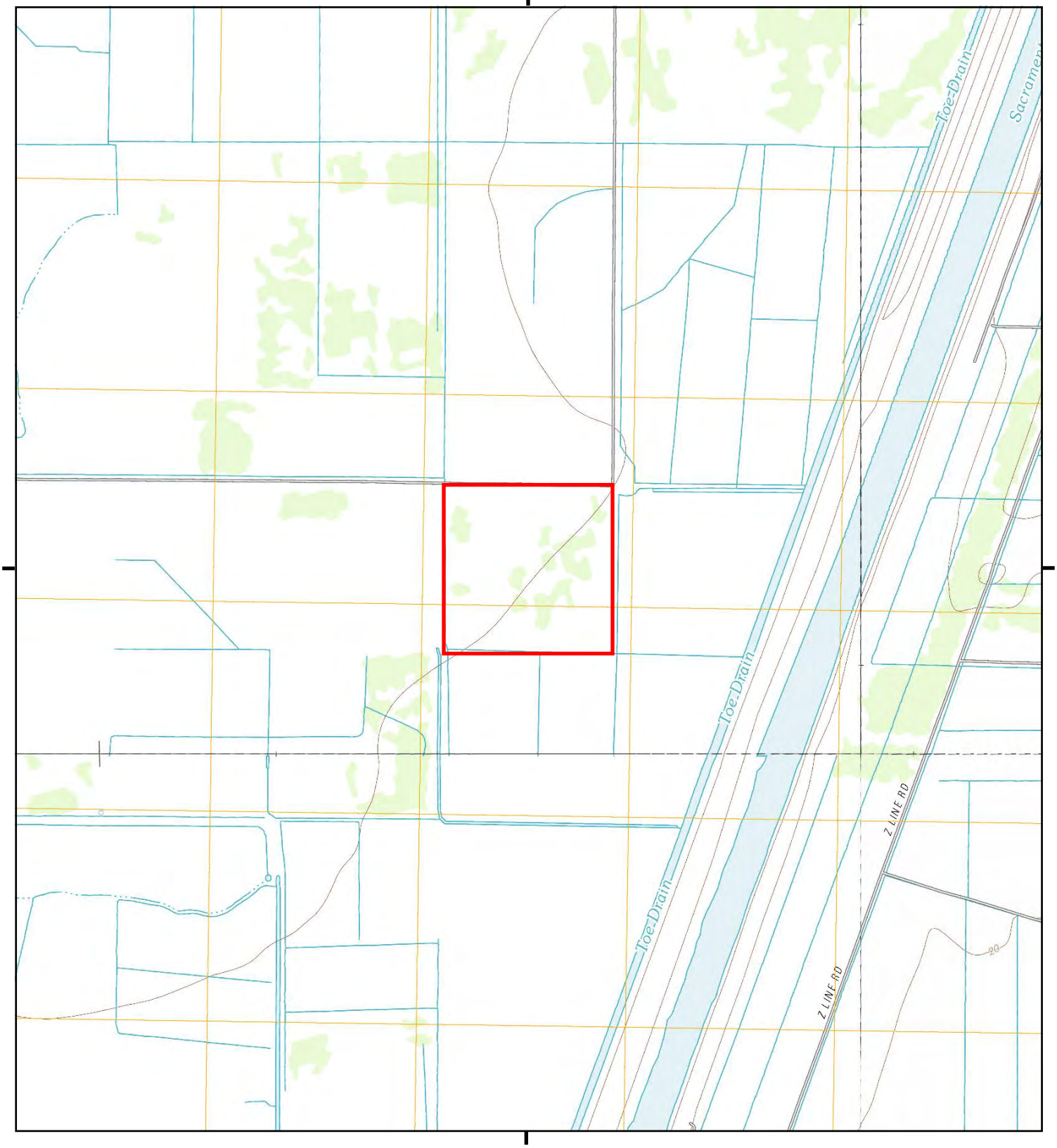
Historical Topo Map

2012



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SW S SE

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SE, Courtland, 2012, 7.5-minute
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SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
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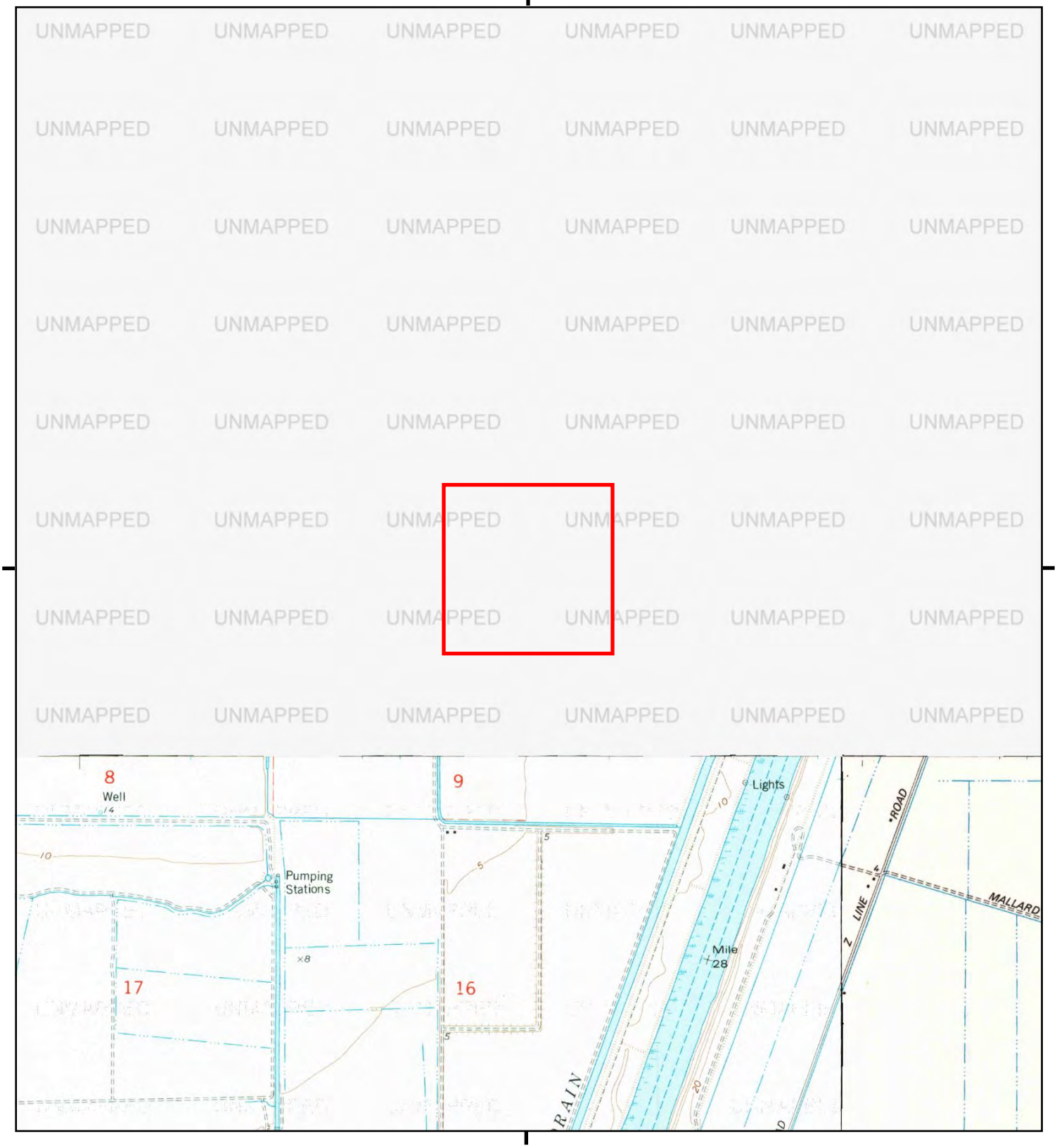
N



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W E
SW S SE

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SW, Liberty Island, 1993, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
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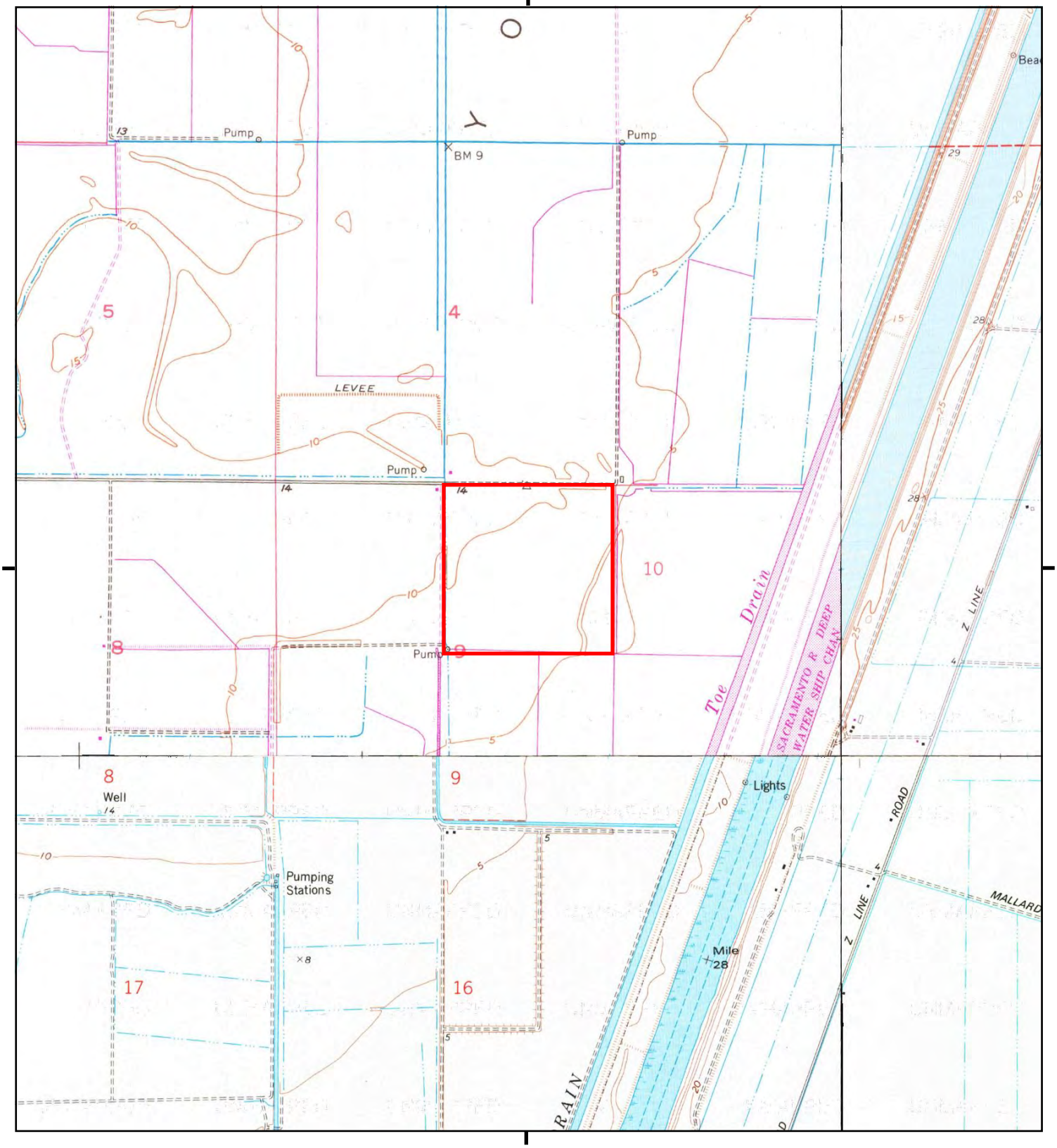

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SW, Liberty Island, 1978, 7.5-minute

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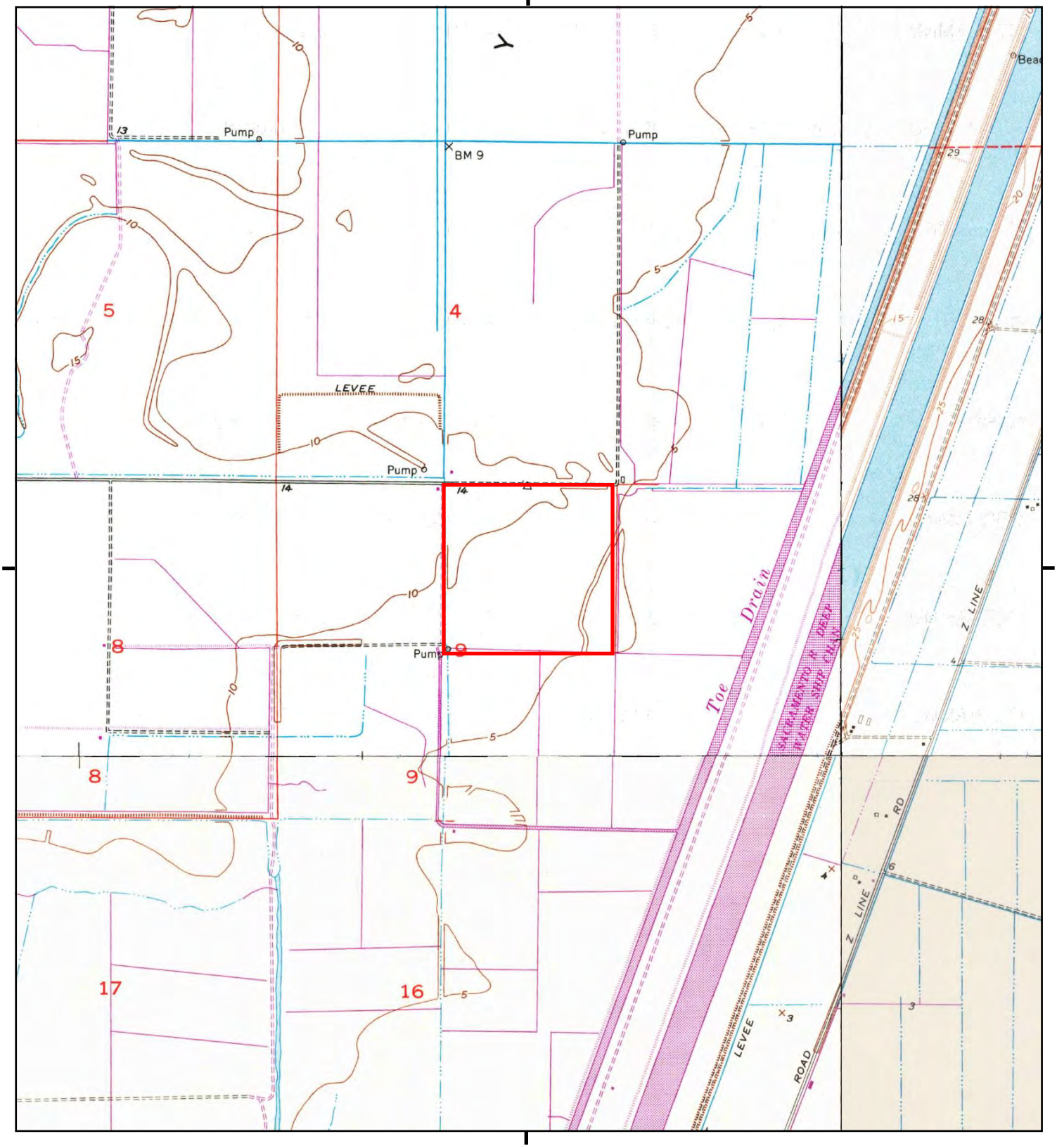
Historical Topo Map

1967, 1968



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SW S SE

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SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
CLIENT: Enviroapplications Inc.

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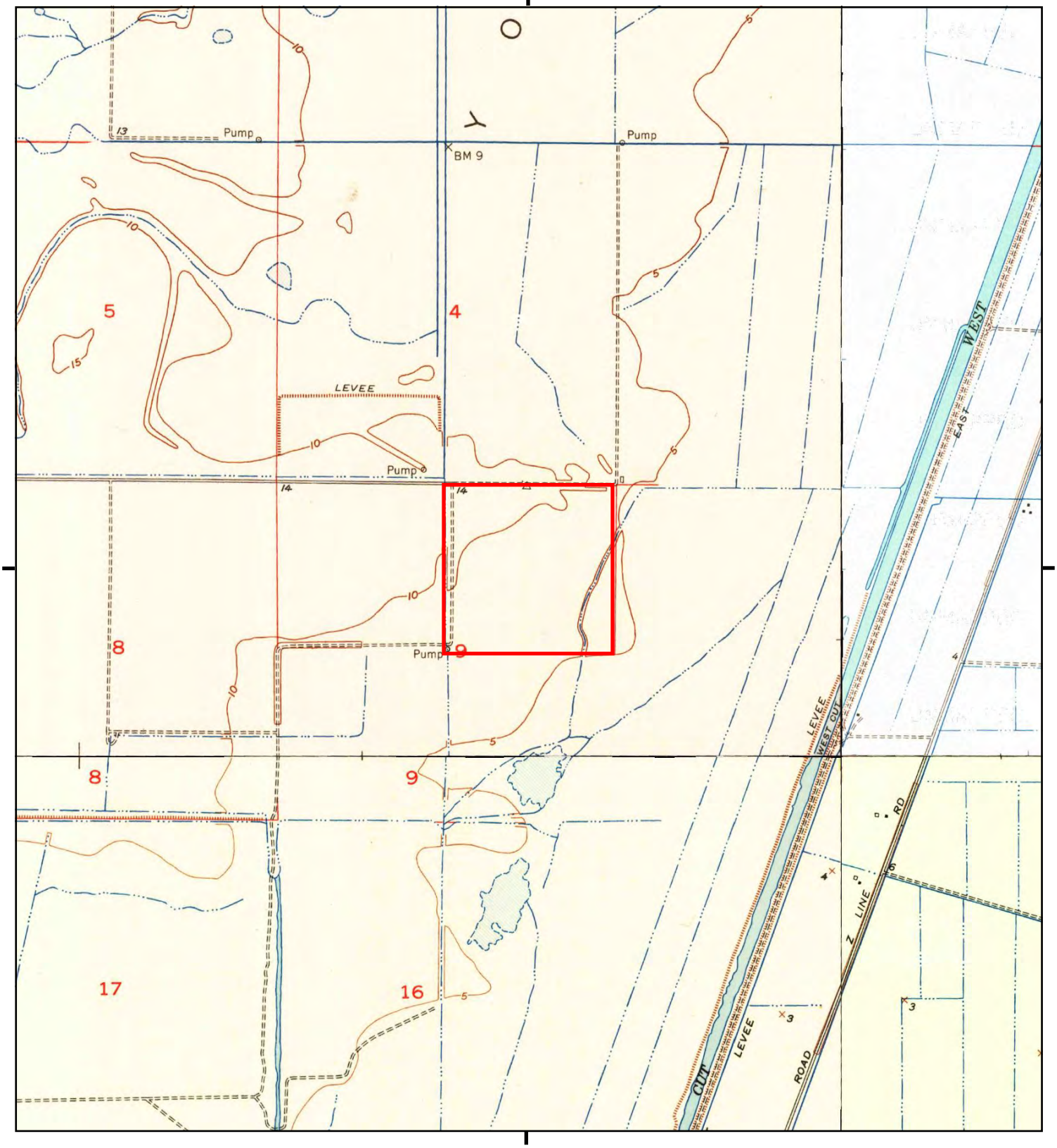

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SW, Liberty Island, 1952, 7.5-minute

SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
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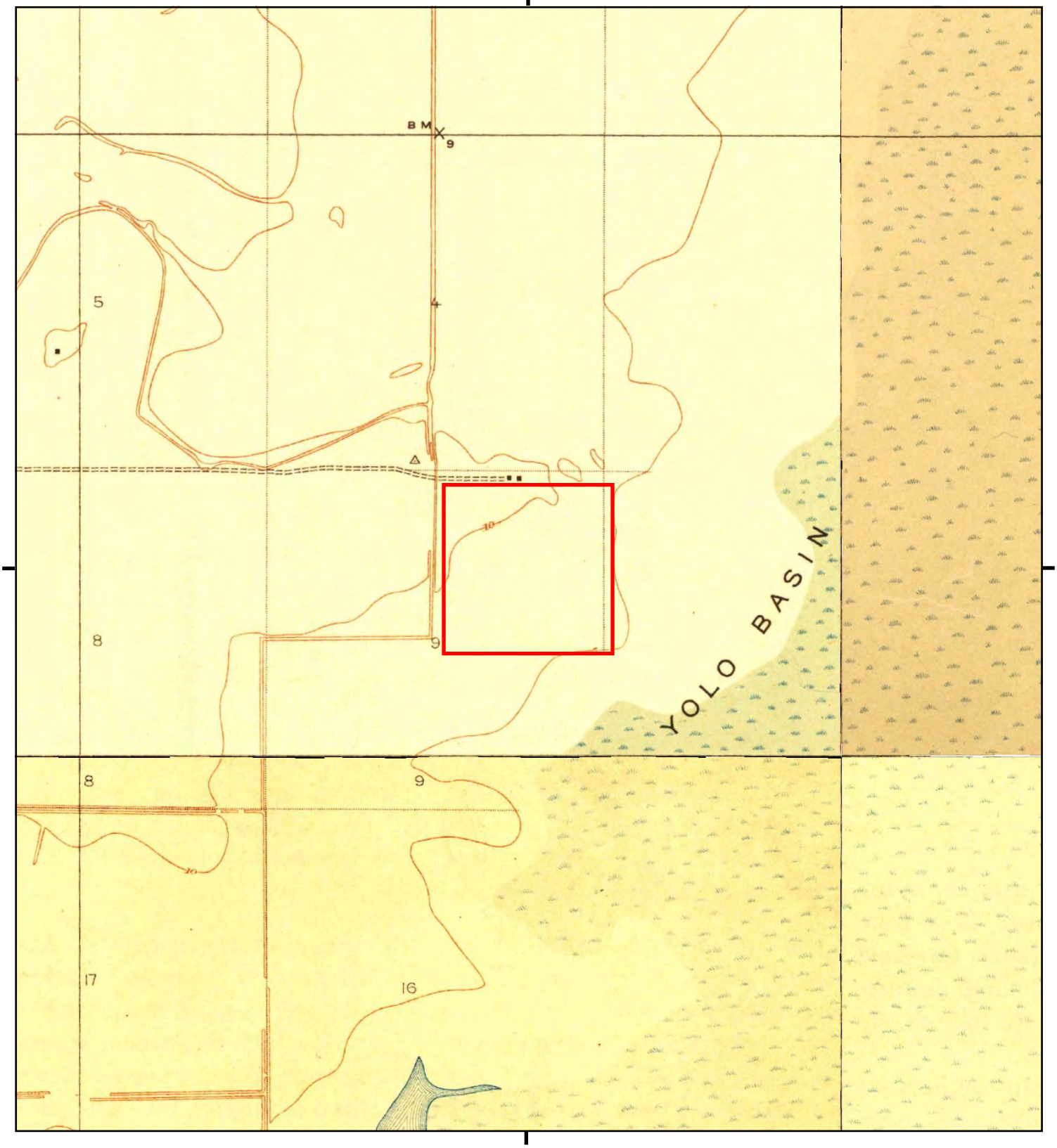
Historical Topo Map

1916



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SW S SE

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NE, Babel Slough, 1916, 7.5-minute
SE, Vorden, 1916, 7.5-minute
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SITE NAME: ECOSYS Lucky 5 South
ADDRESS: 46503 County Road 155
Dixon, CA 95620
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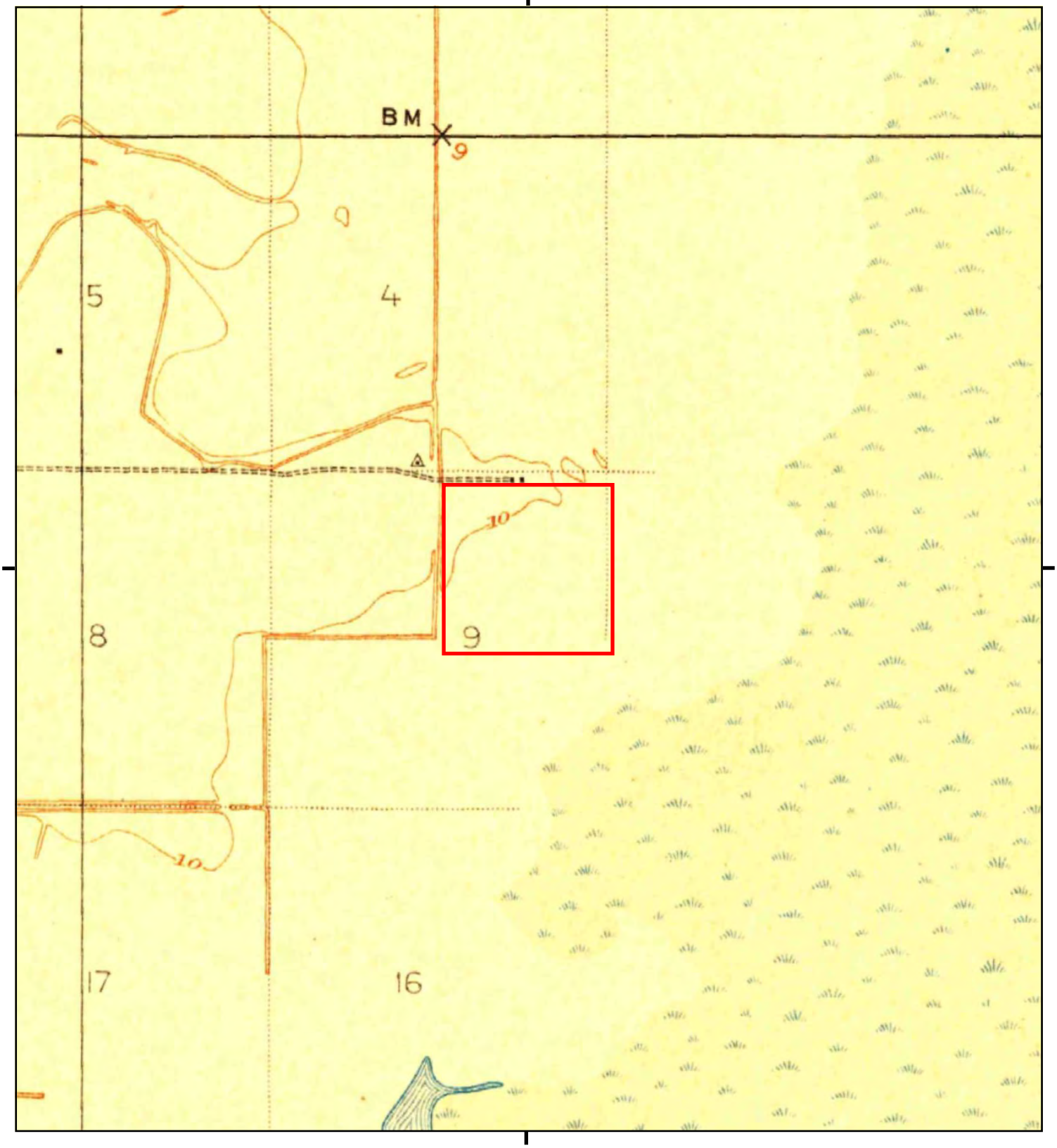

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W E
SW S SE

TP, Courtland, 1908, 15-minute

SITE NAME: ECOSYS Lucky 5 South
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Dixon, CA 95620
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N

Tide's End Multibenefit Restoration Project

Phase II Soil Sampling Investigation

PREPARED FOR
EIP III Credit Co., LLC
2330 Marinship Way, Suite 120
Sausalito, CA 94965
Contact: Stephanie Freed
stephanie@ecosystempartners.com

LEAD AGENCY
California Department of Water Resources
Division of Multibenefit Initiatives
P.O. Box 942836 Sacramento, CA 94236-0001
Contact: Judah Grossman
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PREPARED BY
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
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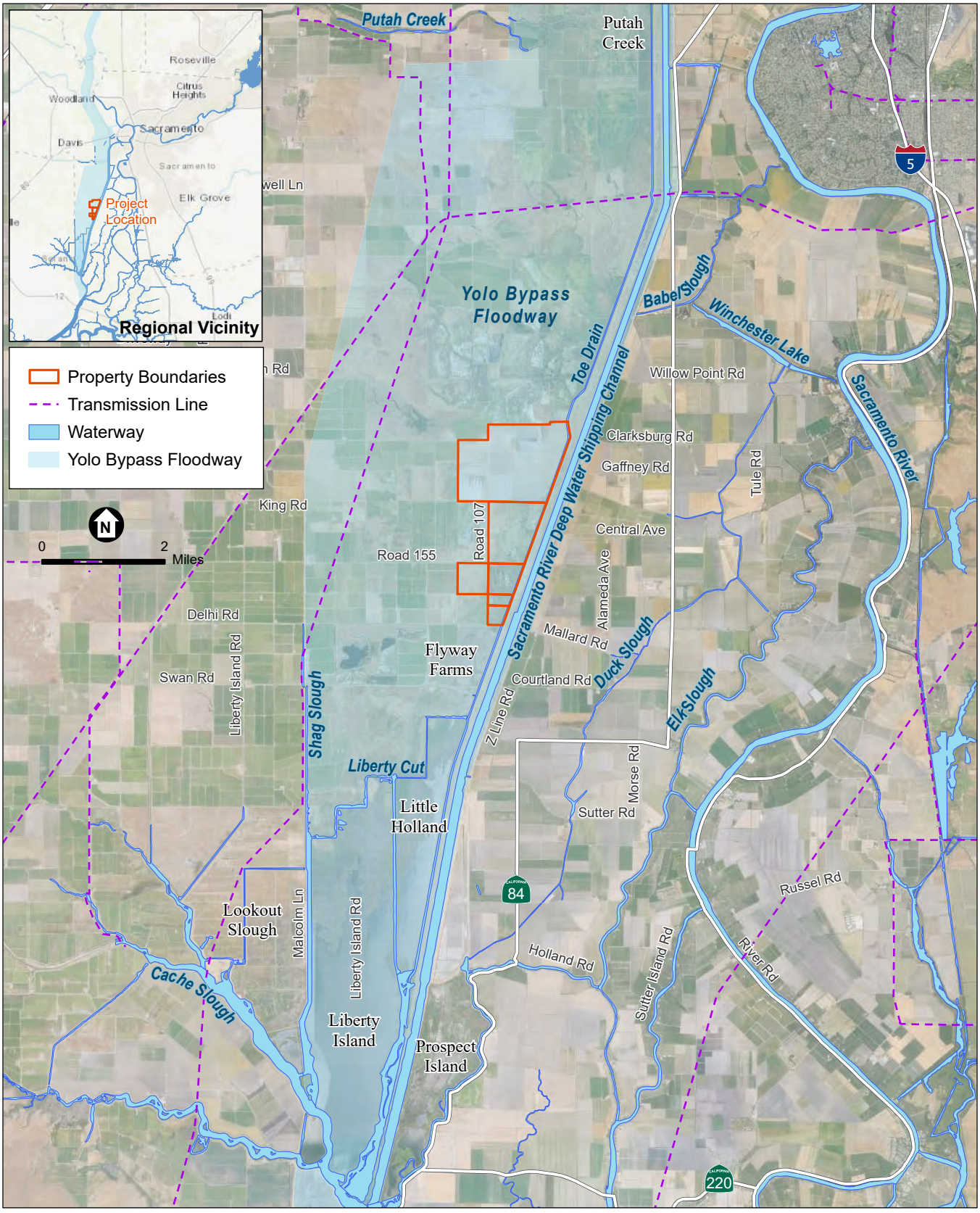
AUGUST 2025

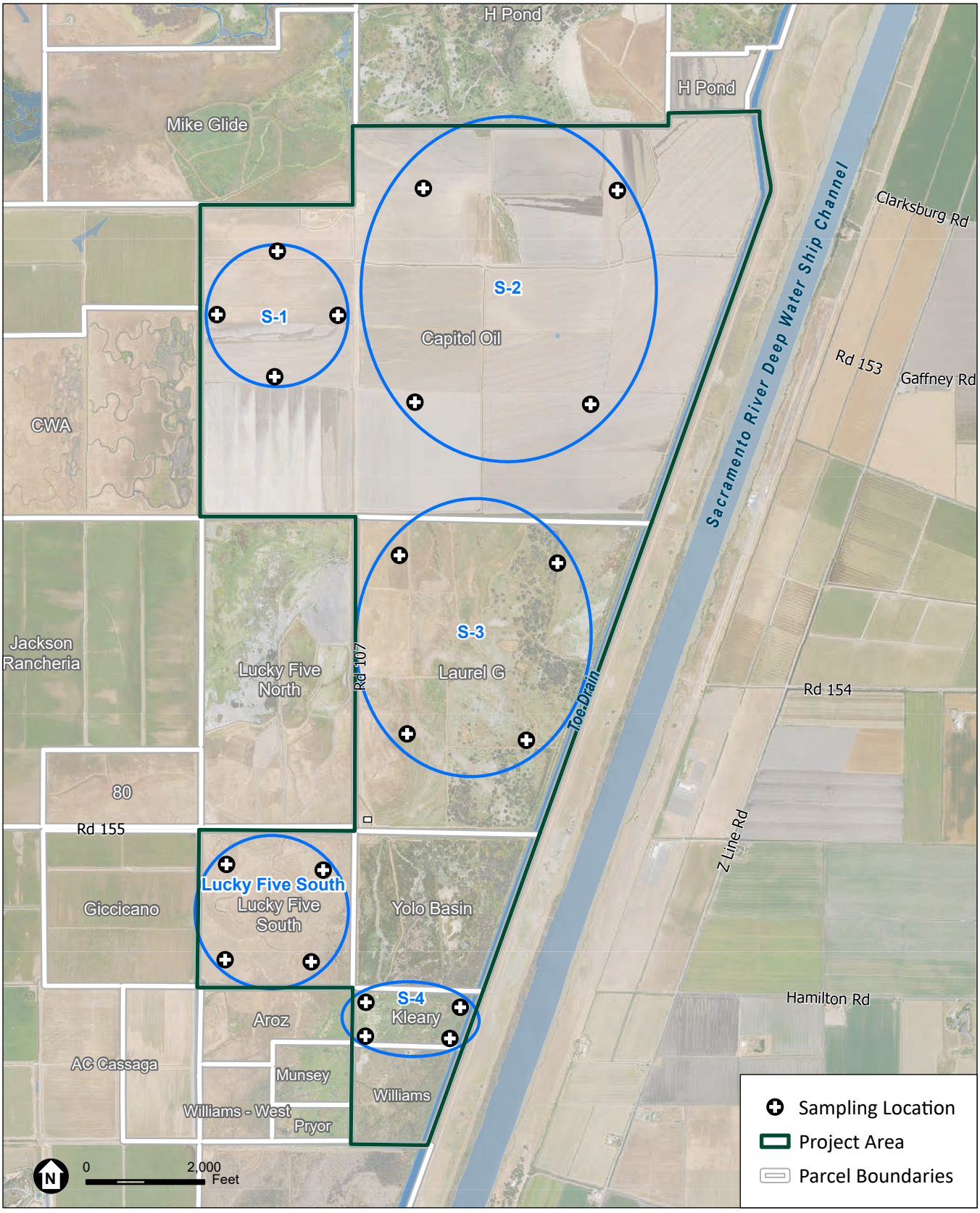


Tide's End Multibenefit Restoration Project

Figure 1
Regional Setting

Prepared by: ESA

SOURCE: NAIP, 2022; DWR, 2005



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 2
Composite Sample Locations

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2025

channel.[13] This tidal exchange is expected to maintain aerobic conditions within the tidal wetland areas of the site. Soils at the Project site were observed to be clayey and include organic materials, which would promote the retention of metals. Consequently, the proposed Project would maintain conditions that would be less susceptible to the dissolution of metals from soil into water.

Finally, note that the proposed Project does not include the import or export of onsite soil. Onsite soil will remain onsite and be excavated or graded to rearrange the drainage patterns within the proposed Project site.

Michael Burns, P.G.
Principal Geologist

[13] ESA. *Tide's End Multibenefit Restoration Project Ecohydrology and Hydraulics Modeling Analysis Report (30%).* Report Prepared for EIP III Credit Co., LLC. January 2025.

Tide's End Multibenefit Restoration Project

CEQA Hydraulic Impacts Assessment

PREPARED FOR
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Contact: Stephanie Freed
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LEAD AGENCY
California Department of Water Resources
Division of Multibenefit Initiatives
P.O. Box 942836
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PREPARED BY
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AUGUST 2025

ESA

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Suite 200
Sacramento, CA 95816
916.564.4500 phone
916.564.4501 fax

esassoc.com

memorandum

date	March 20, 2025
to	Veronica Pearson and Stephanie Freed, EIP III Credit Co., LLC (EIP)
cc	
from	John Pritchard, PE, CFM, Kelley Sterle, PhD, and Maureen Downing-Kunz, PhD
subject	Tide's End Multibenefit Restoration Project - Sea-Level Rise and Inland Climate Change Boundary Conditions for Modeling

The California Department of Water Resources (DWR) proposes to implement the Tide's End Multibenefit Restoration Project (proposed Project), which would restore 2,212 acres of tidal wetland and associated floodplain habitat at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento-San Joaquin River Delta (Delta) (**Figure 1**). As the climate warms, hydrologic conditions within the lower Yolo Bypass are expected to become more extreme over time, particularly during large flood events. In addition to increased tailwater conditions resulting from sea level rise (SLR), the frequency and intensity of extreme flood events in the Yolo Bypass is expected to increase because of inland climate change (ICC). As the atmosphere continues to warm, changes in the timing and volume of precipitation and snowmelt runoff are expected to shift, with peak flows arriving earlier in the season with a greater volume over a shorter time period (Delta Stewardship Council 2018). Combined, these forces are anticipated to result in greater peak flows and flood stages over time.

Purpose

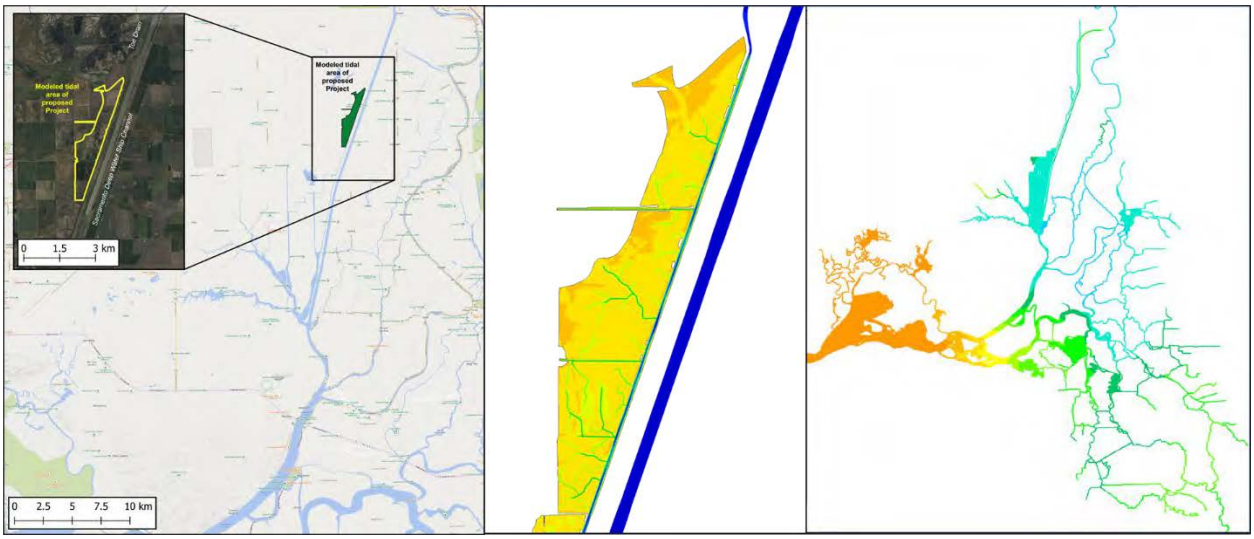
This technical memorandum has been prepared to document assumptions related to SLR and ICC as they pertain to defining boundary conditions for hydraulic modeling of the proposed Project effects and serves as a technical Appendix to the proposed Project's CEQA Hydraulic Impacts Assessment. Subsequent sections of this document identify sources of data used to define SLR and ICC boundary conditions, and how they have been modified and adapted to support the hydraulic impact assessment.

Background

DWR's *Climate Action Plan Phase 2: Climate Change Analysis Guidance* (CAPII) (DWR 2018) requires that information and analysis of climate change be completed and documented for projects going through the CEQA process. Depending on the level of risk of the project to climate change (low, medium, high), CAPII provides guidance to quantitatively or qualitatively evaluate a project's vulnerability to climate change. For this project, DWR has determined the proposed Project to be "low/medium consequence," which requires the CAPII Climate Change Screening Analysis Form as well as supplemental analysis of the project effects under climate change.

RESOURCE MANAGEMENT ASSOCIATES
WATER RESOURCES ENGINEERING

Tide's End Multibenefit Restoration Proposed Project Modeling Evaluation of Stage and Water Quality Impacts



TECHNICAL MEMORANDUM

January 2026

Prepared For:
Ecosystem Investment Partners
2330 Marinship Way, Suite 120
Sausalito CA, 94965
Contact: Stephanie Freed
415-990-6694

Prepared By:
Resource Management Associates
1756 Picasso Avenue, Suite G
Davis, CA 95618
Contact: Stacie Carter, P.E.
530-460-3525

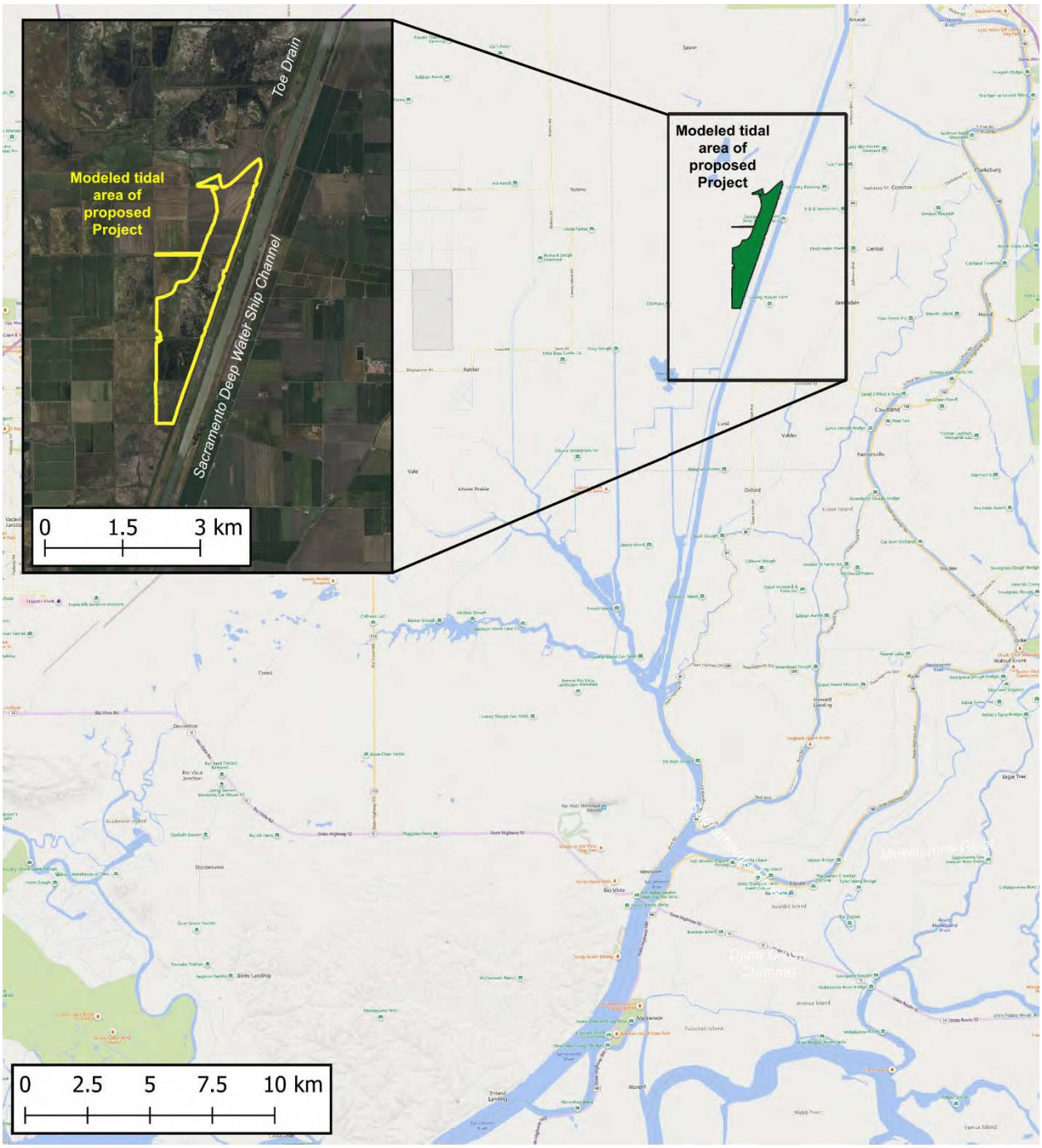


Figure 1 Location of the modeled tidal area of the proposed Project area in the northern Delta.

Methods

The model evaluation was conducted using the RMA Bay-Delta model for flow and water quality. The model utilizes the finite element method to simulate 2-D depth averaged and 1-D cross-sectionally averaged flow and water quality for a 7.5-minute computational time step. All

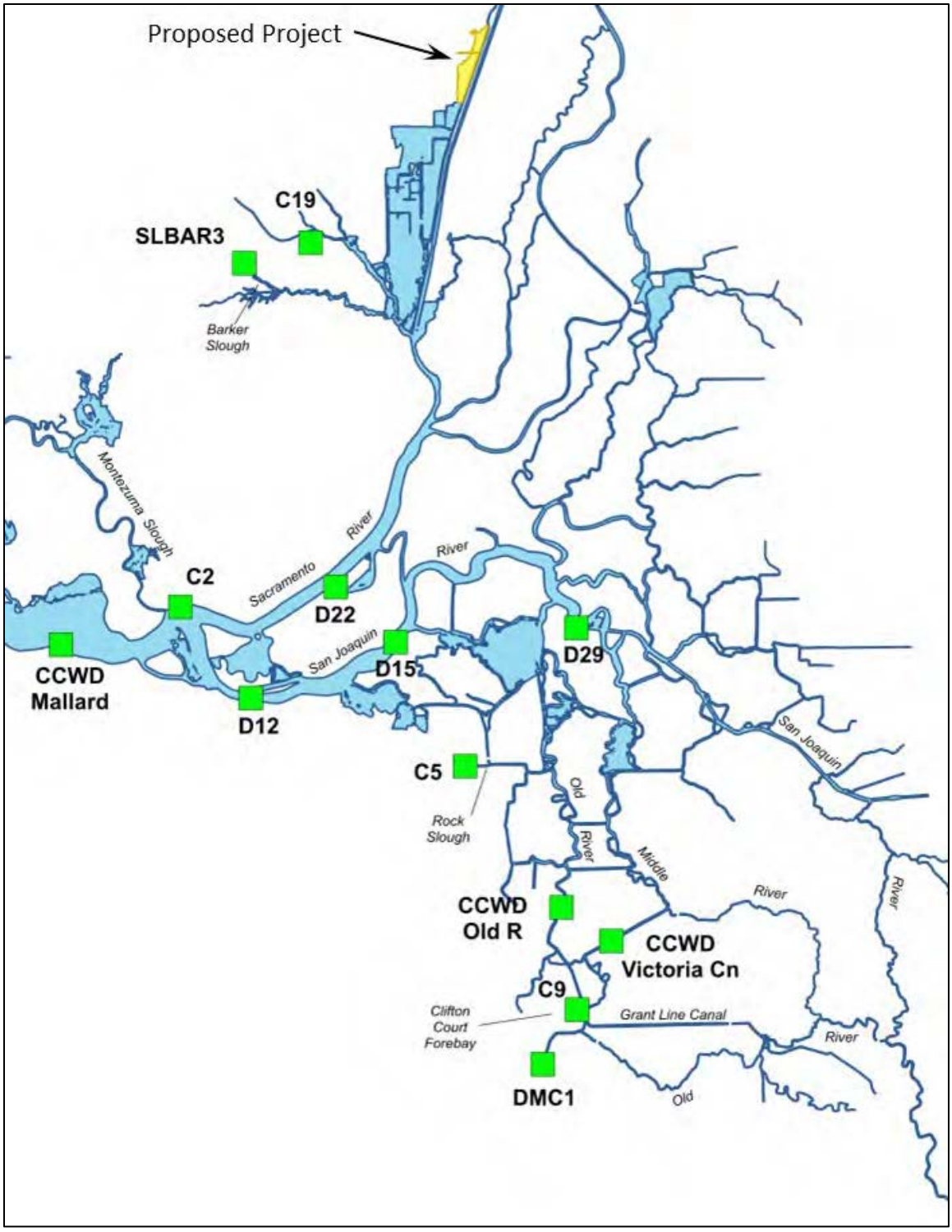


Figure 2 D-1641 compliance locations used for the model evaluation of the proposed Project salinity impacts.

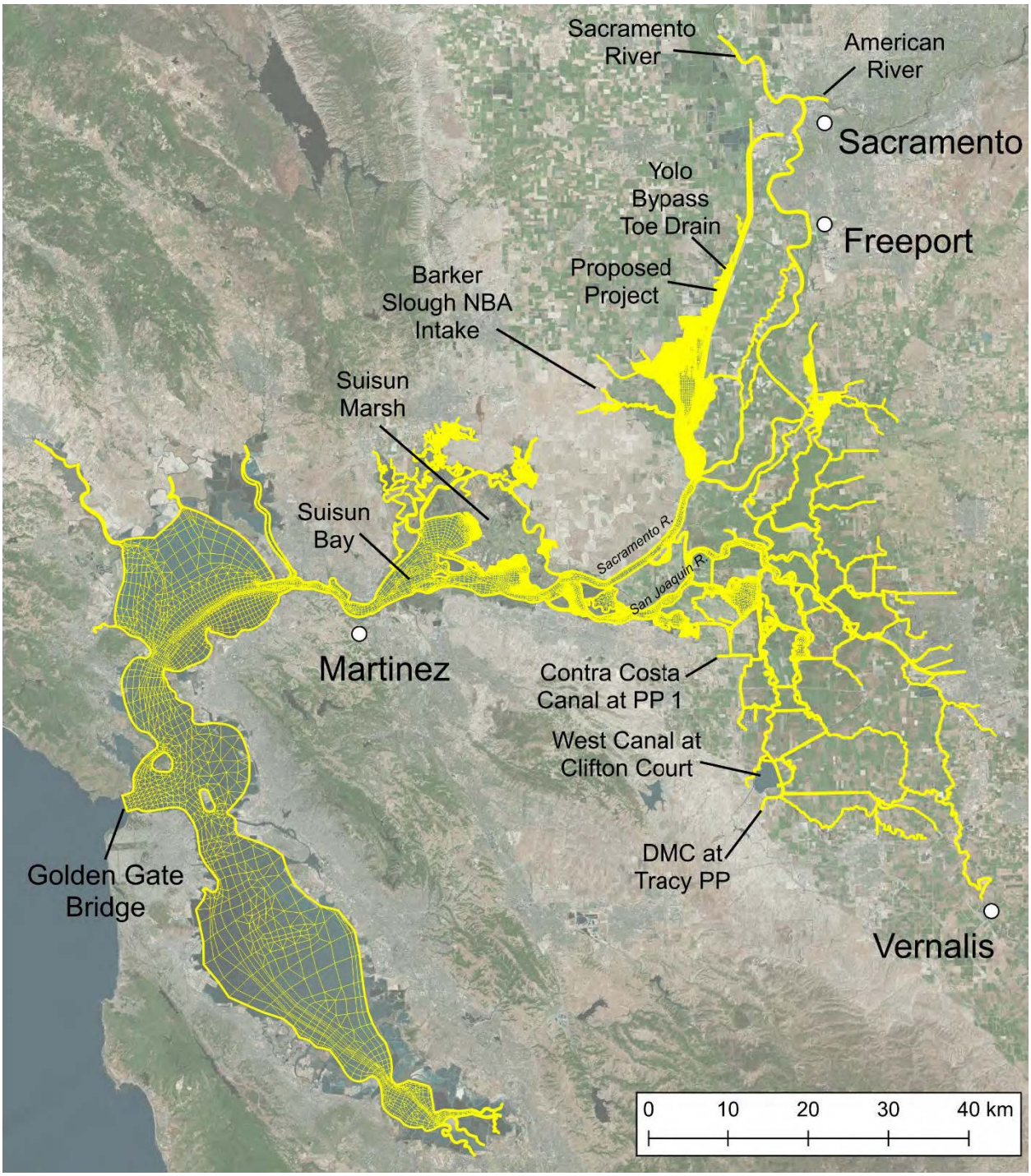


Figure 3 Extents of the RMA Bay-Delta model for the proposed Project analysis (Future with proposed Project).

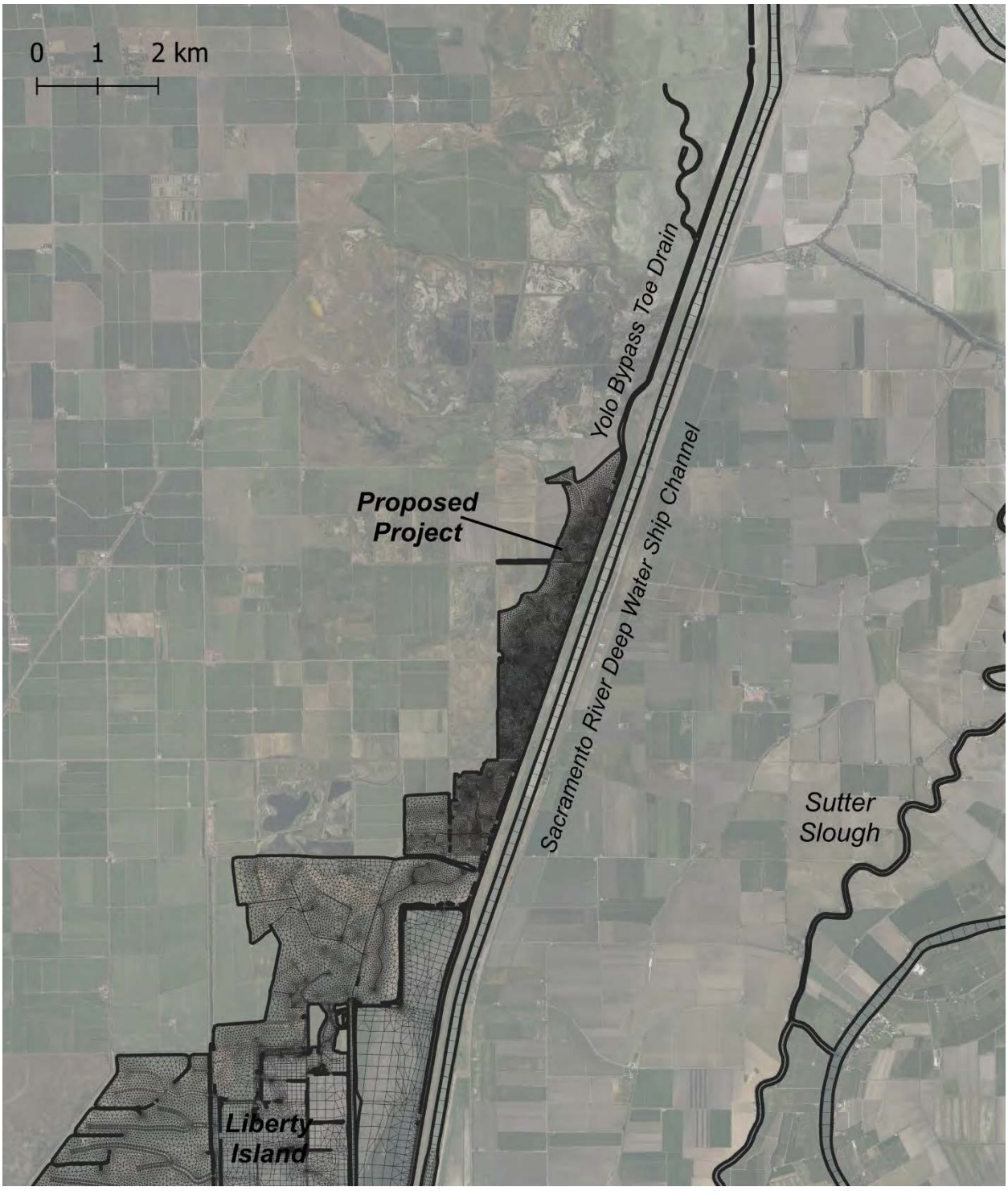


Figure 4 Detail view of the proposed Project model configuration.

1. Cache Slough Mitigation Bank
2. Chipps Island
3. Grizzly King
4. Little Egbert Multi-Benefit Project
5. Lookout Slough tidal restoration
6. McCormack Williamson Phase B Habitat Restoration
7. North Delta Fish Conservation Bank
8. Peters Pocket
9. Prospect Island restoration
10. Zacharias Ranch

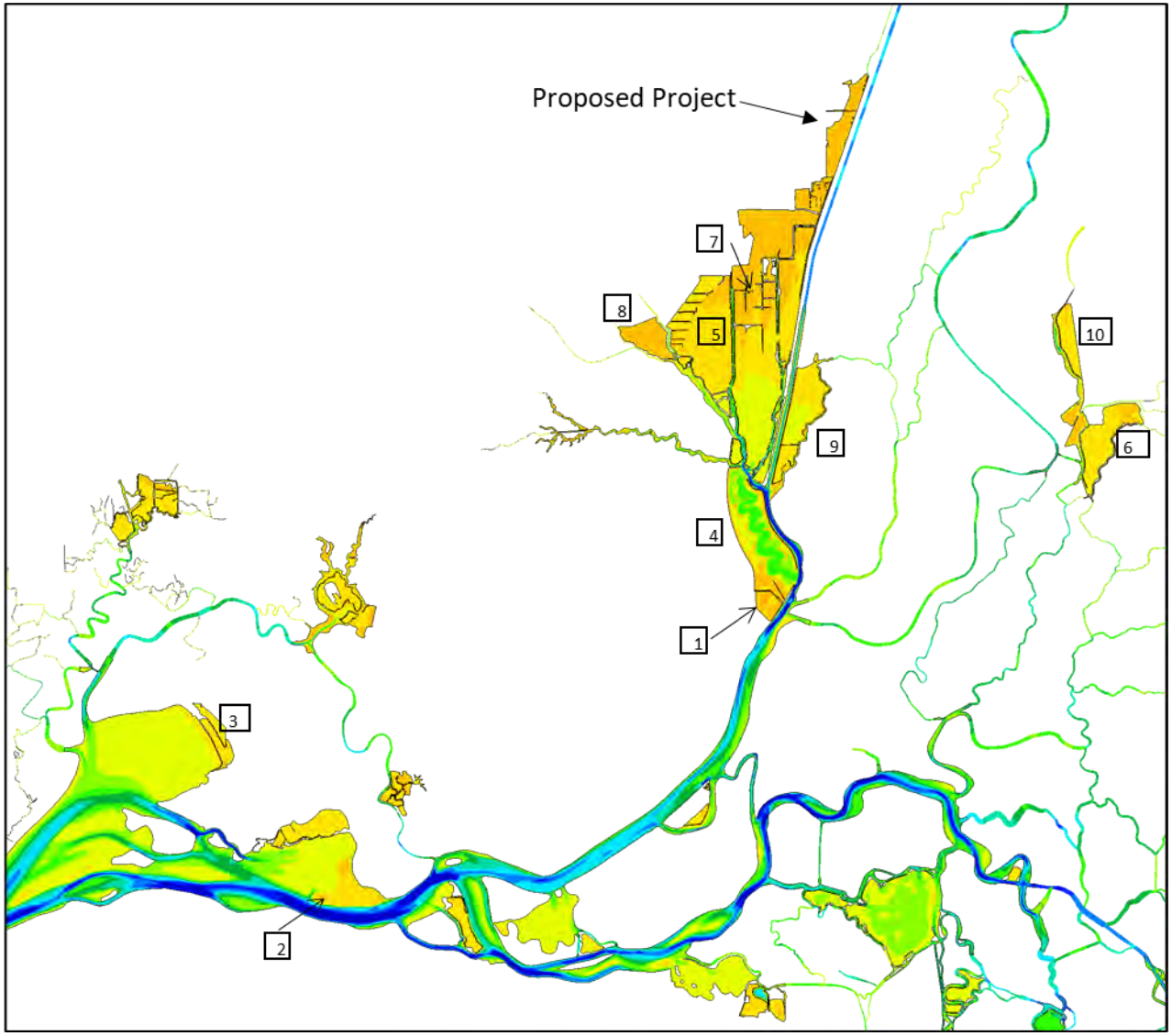


Figure 5 Tidal restoration projects included in Future model grids.

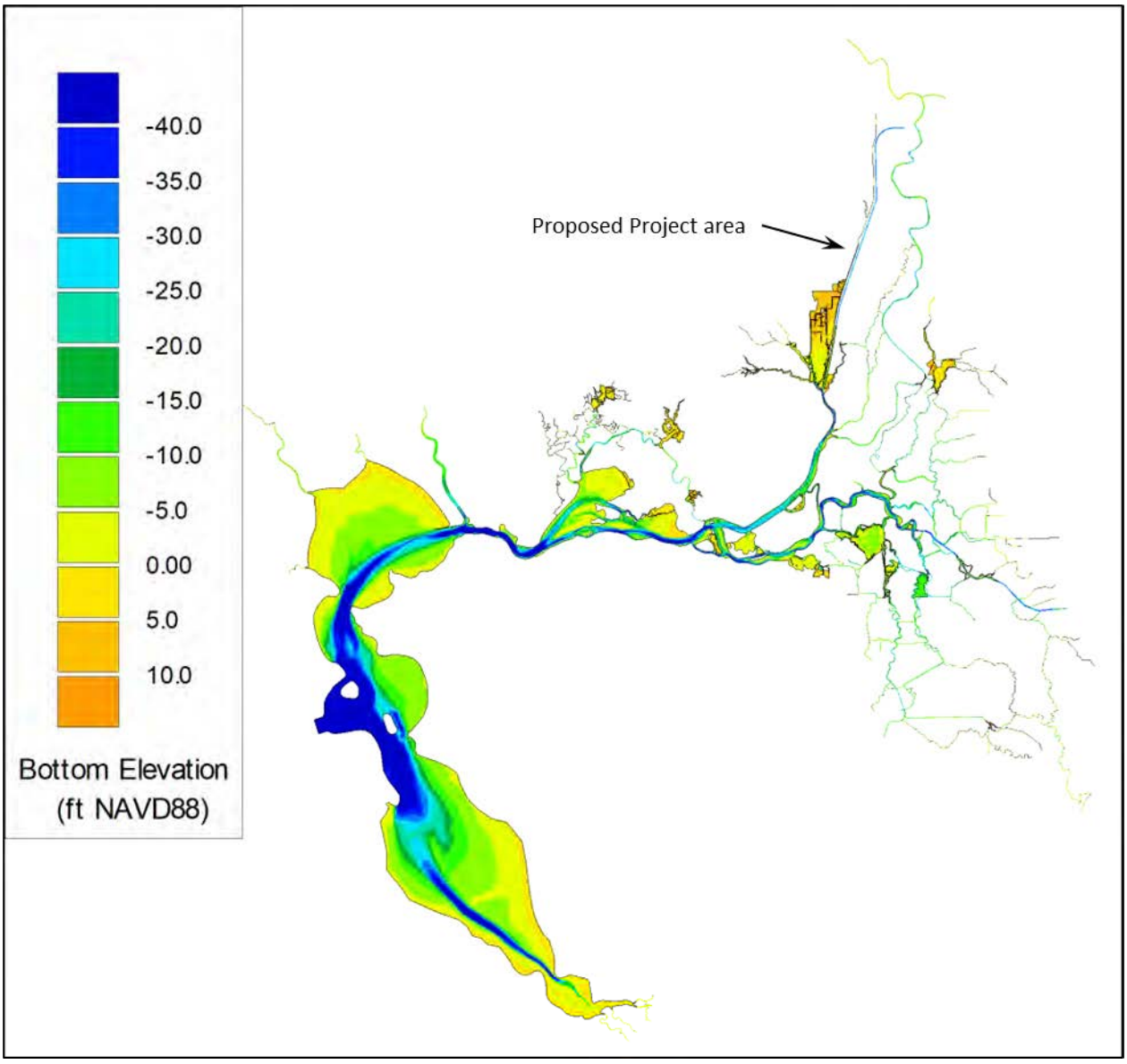


Figure 6 RMA Bay-Delta Baseline model bathymetry.

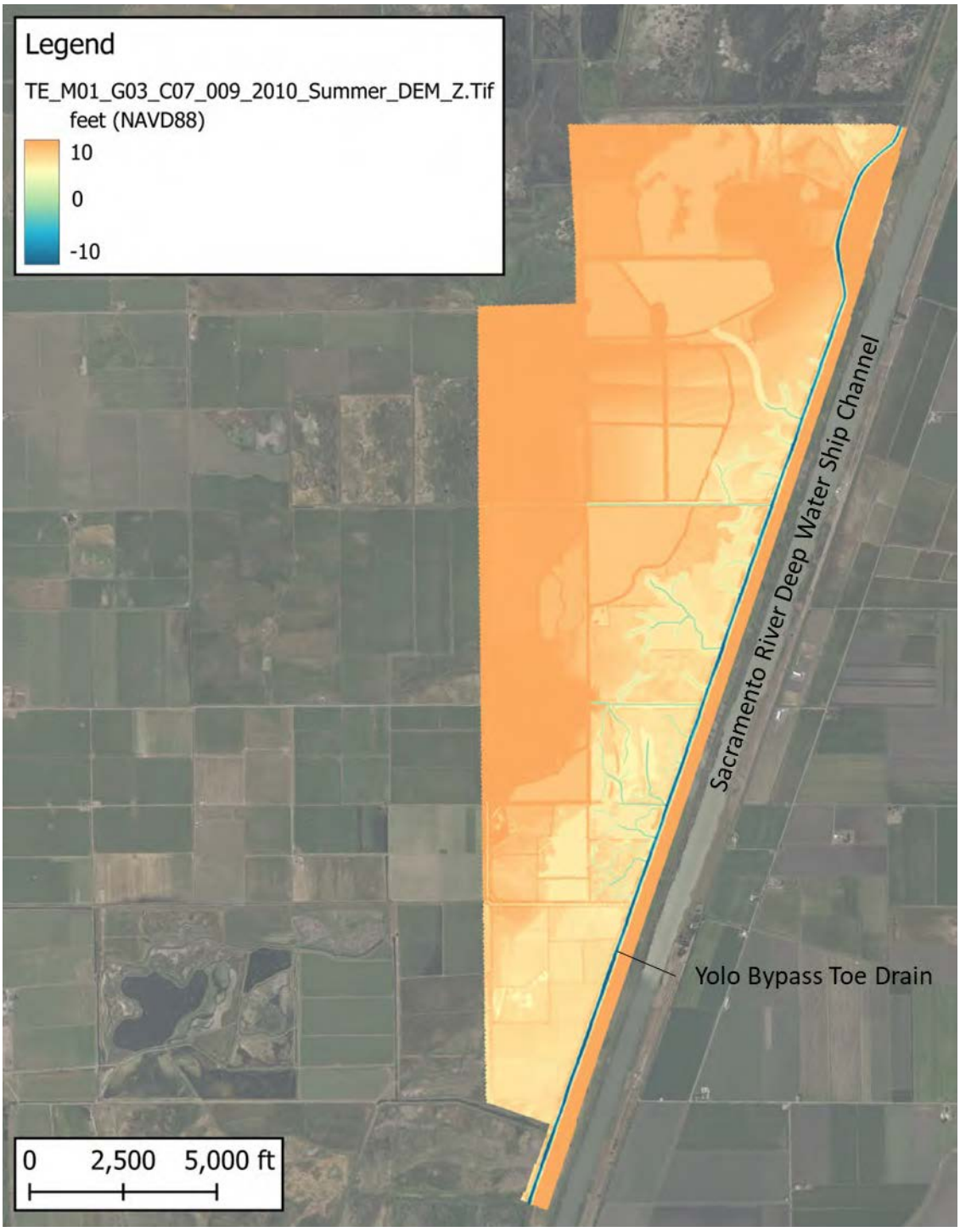


Figure 7 Topography representing proposed Project restoration design.

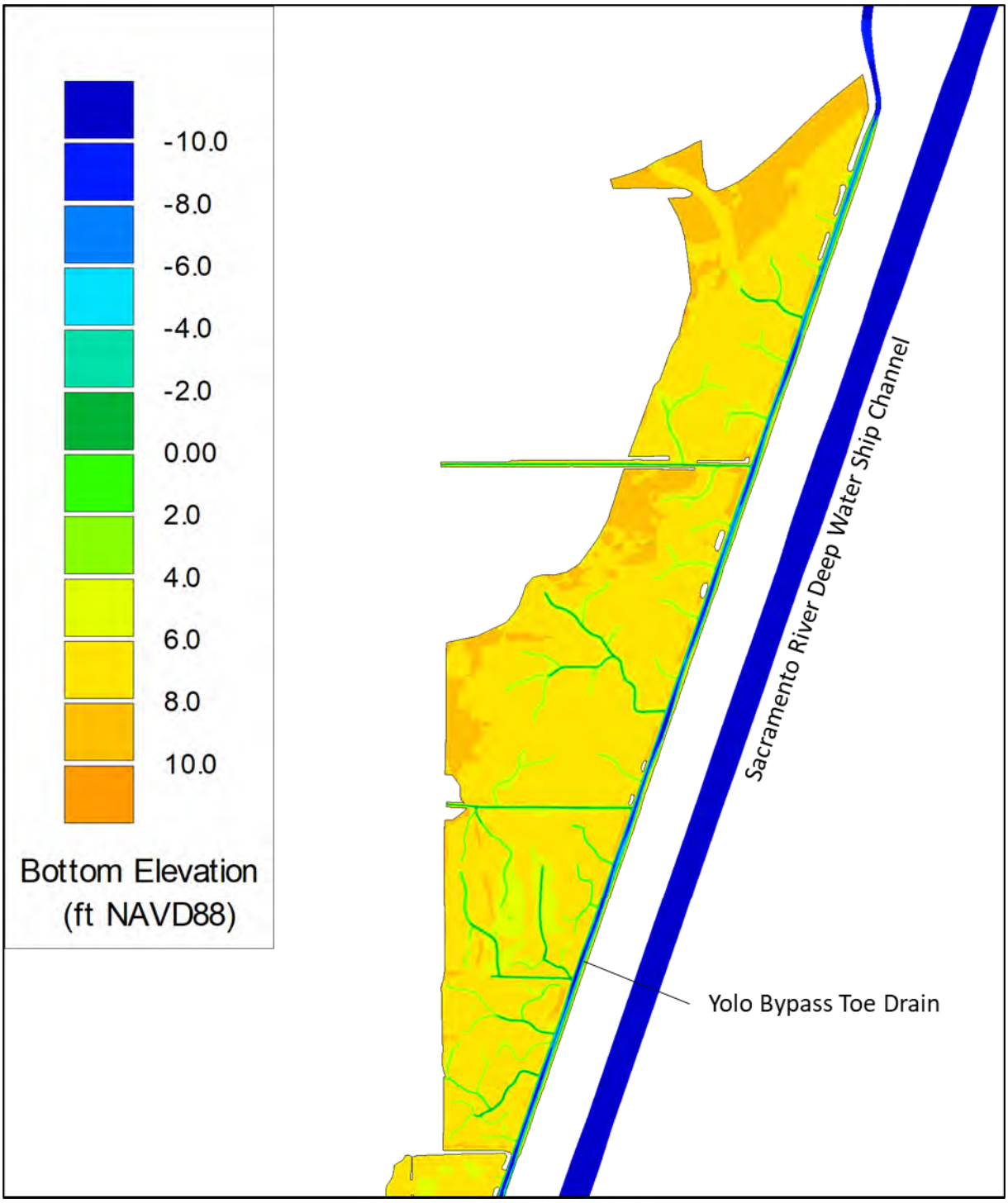


Figure 8 Proposed Project restoration model bathymetry (only areas inundated under the modeled low flow conditions included in model grid)

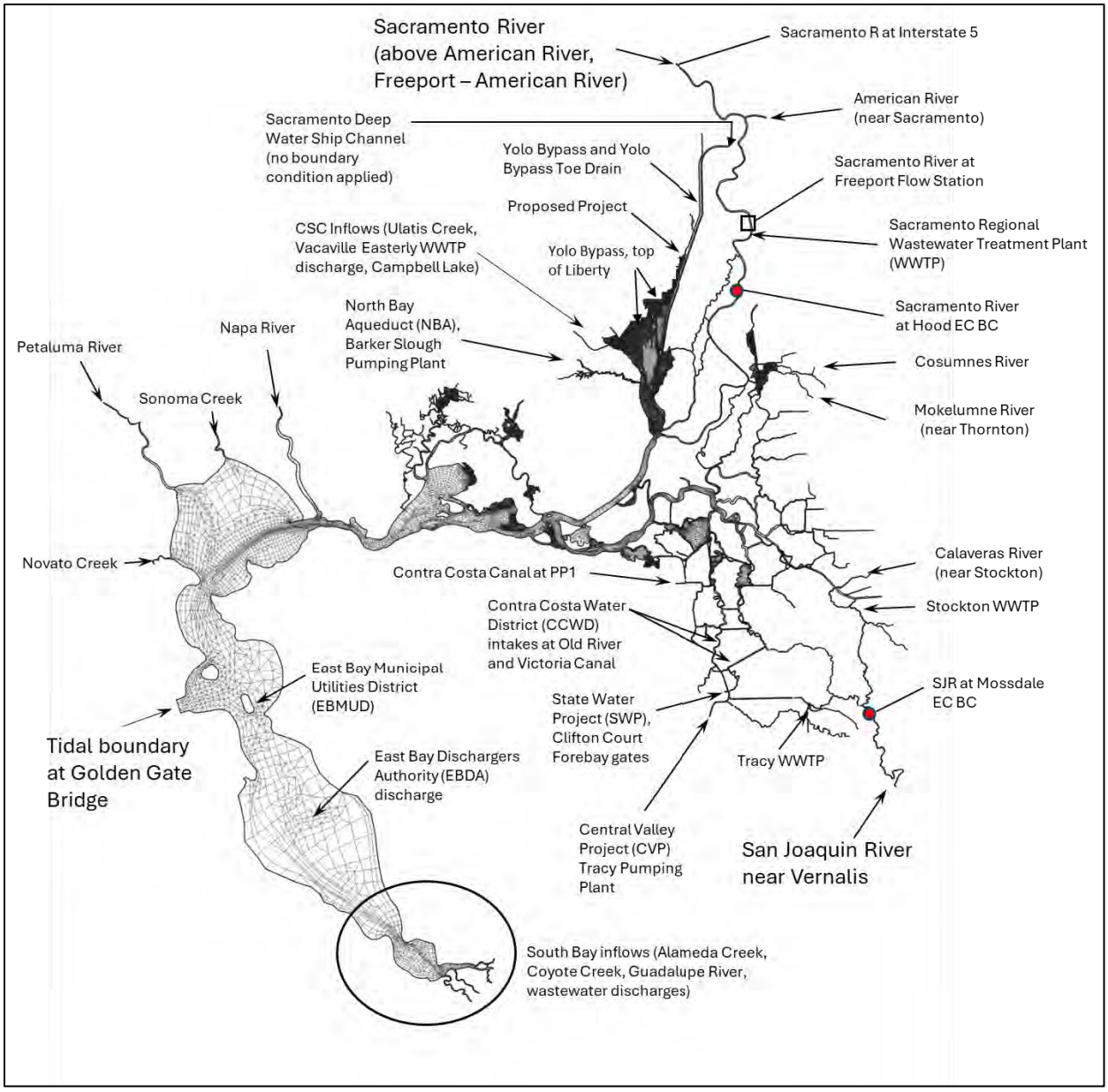


Figure 9 Model boundary condition locations. Internal EC boundary conditions are set for the Sacramento River at Hood and for the San Joaquin River at Mossdale.

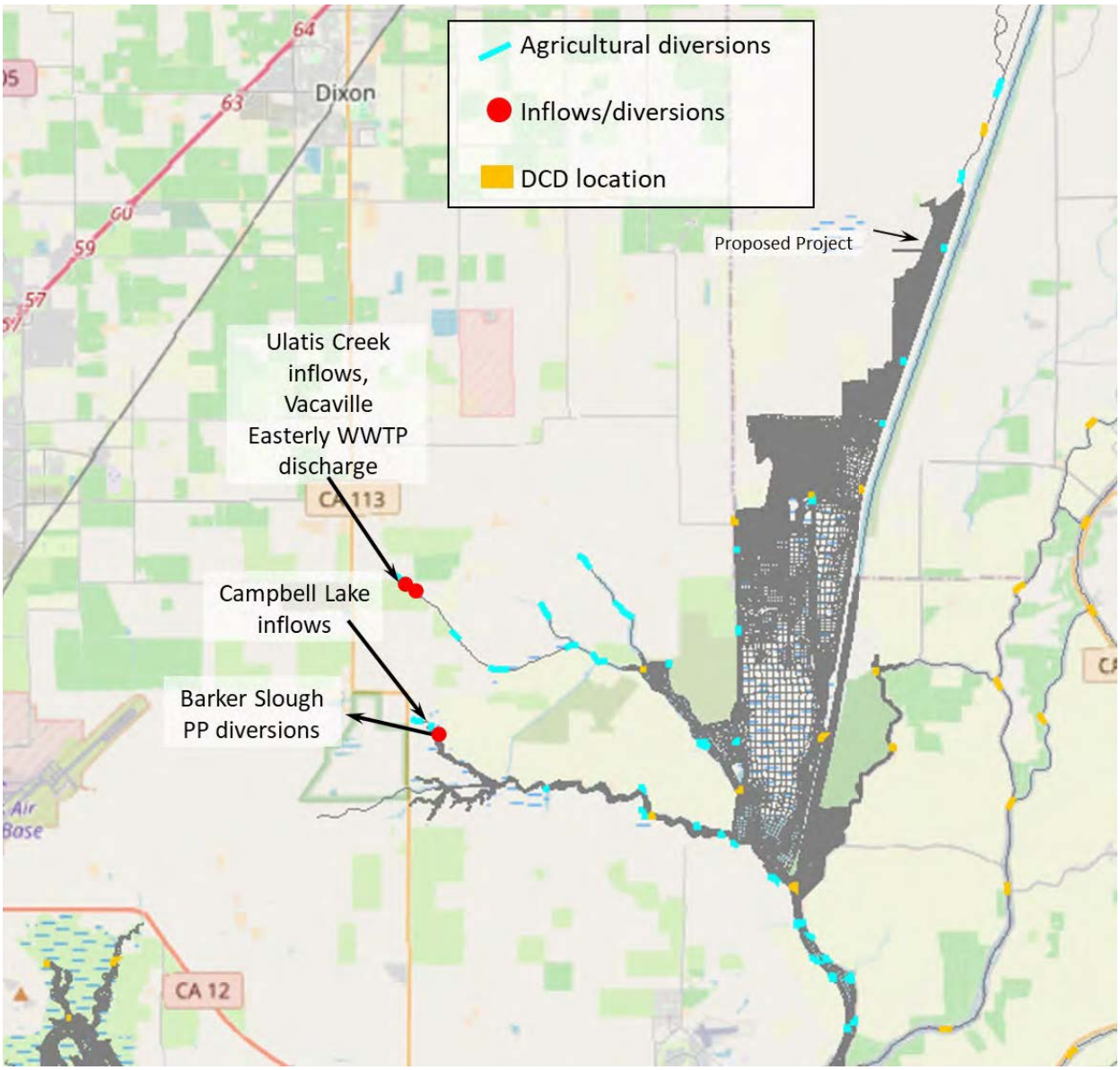


Figure 10 Cache Slough Complex model boundary condition locations

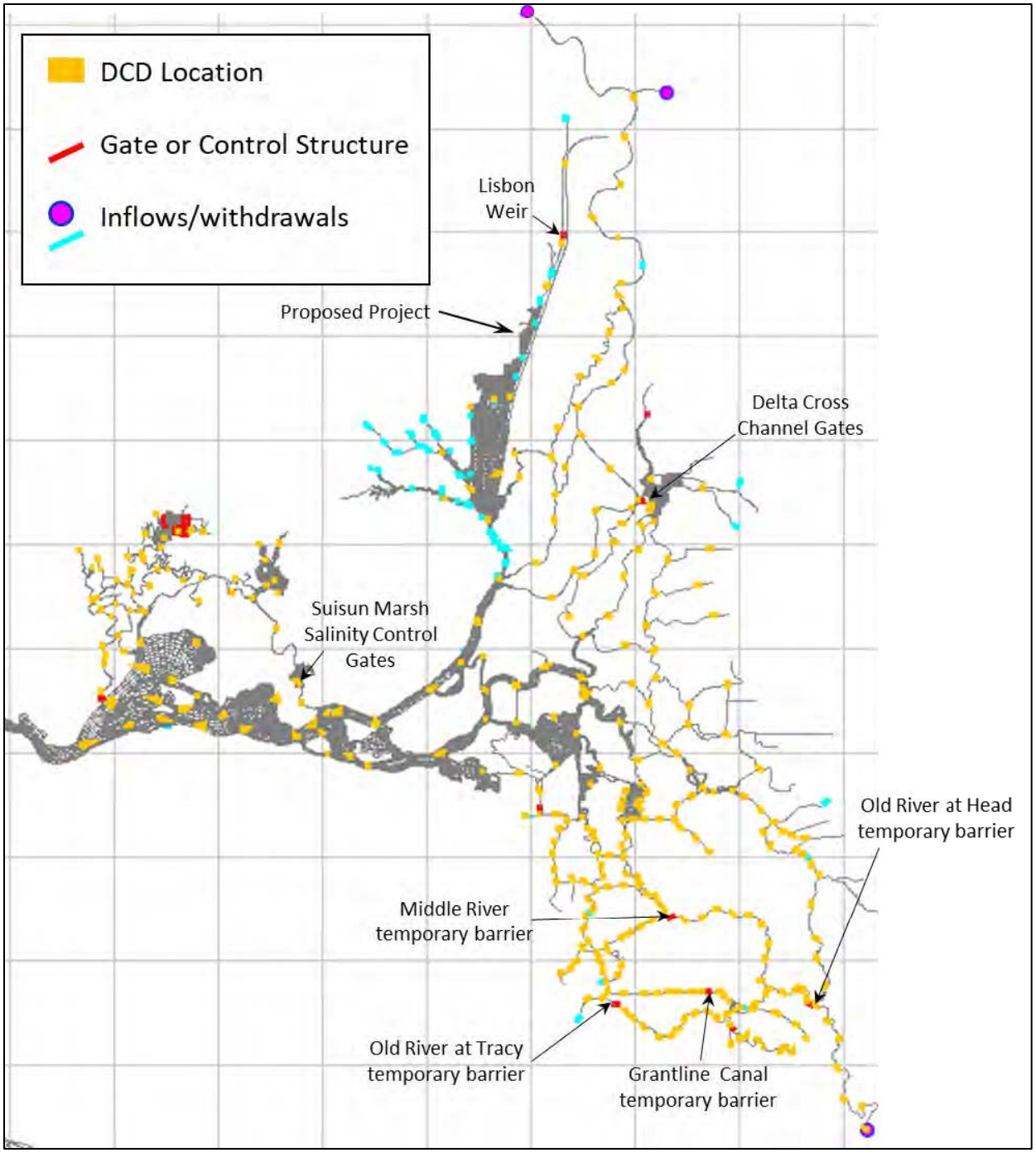


Figure 11 Location of DCD diversions and returns, and the major Delta control structures. DCD diversions in the Cache Slough Complex are replaced with estimated ag diversion flows provided by Solano County Water Agency.

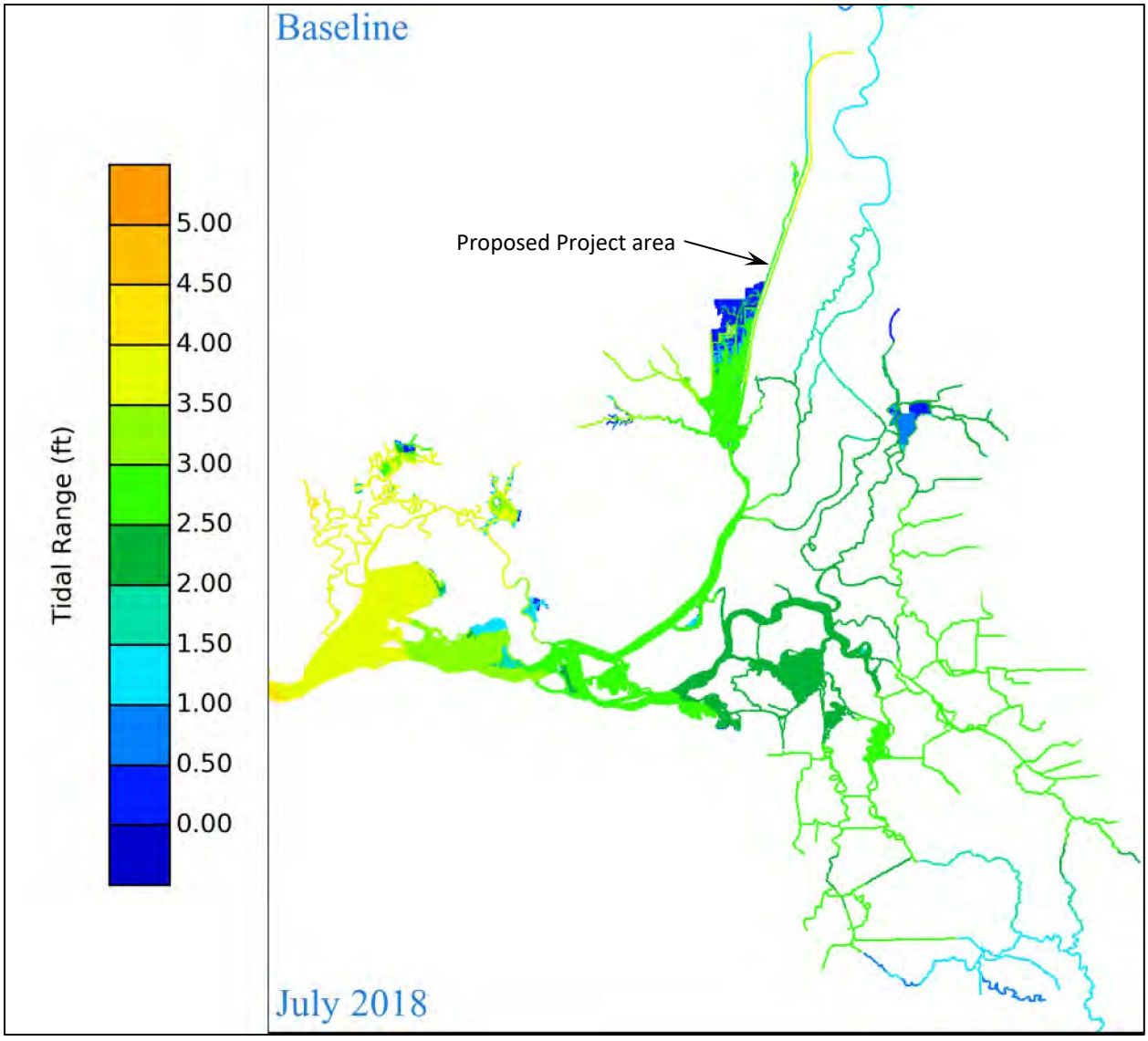


Figure 14 July 2018 average tidal range for the Baseline scenario

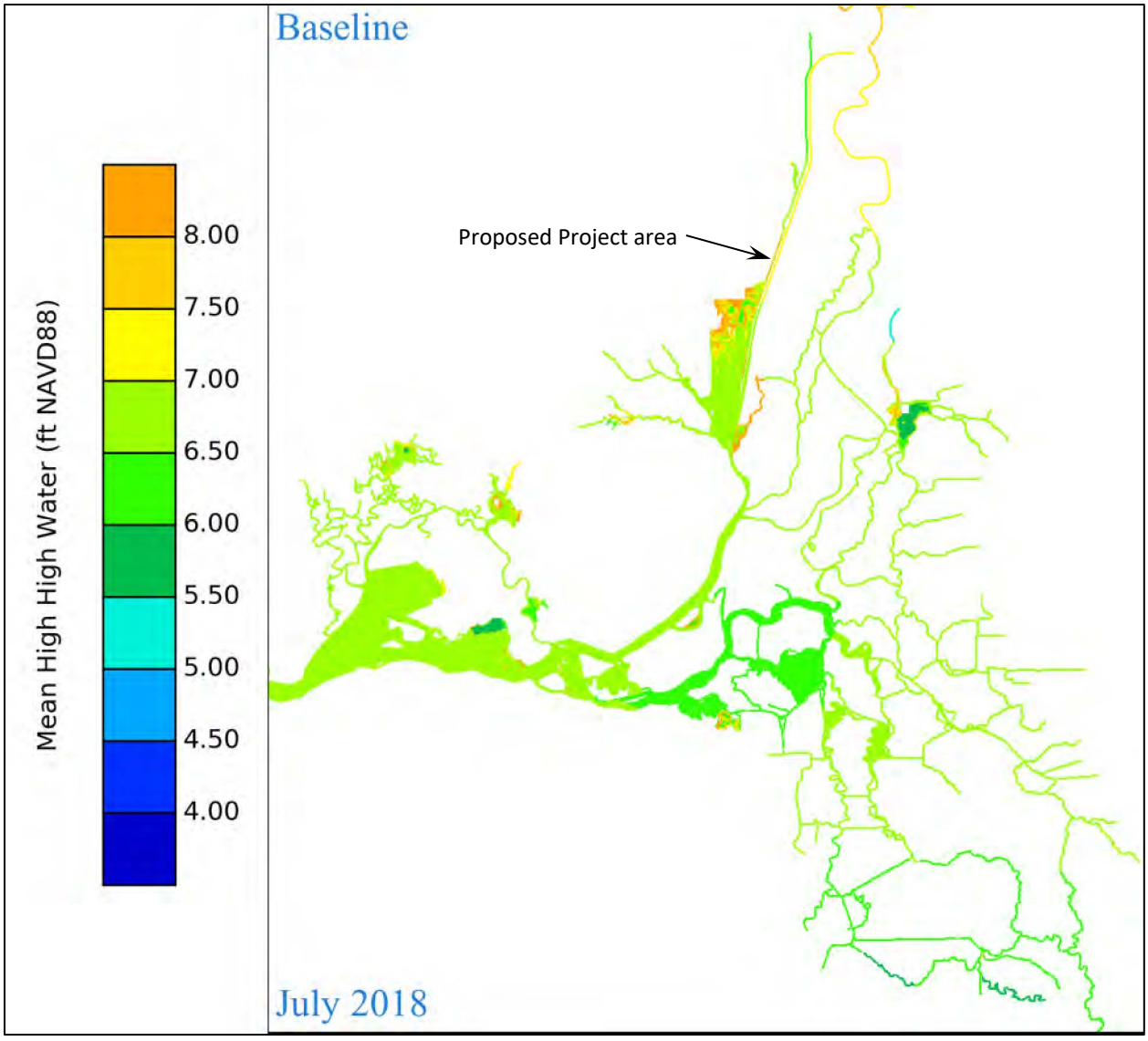


Figure 15 July 2018 average MHHW for the Baseline scenario

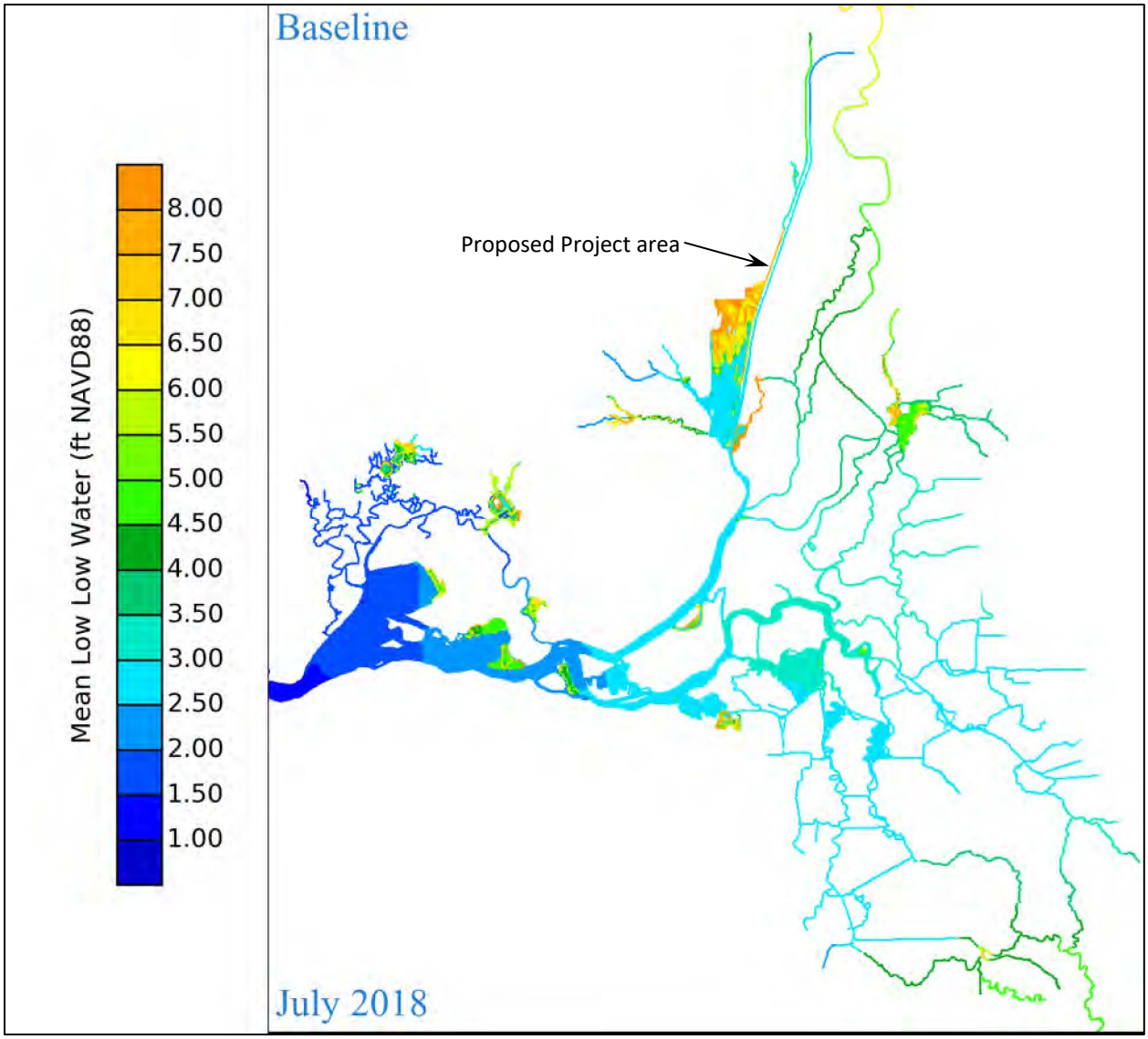


Figure 16 July 2018 average MLLW for the Baseline scenario

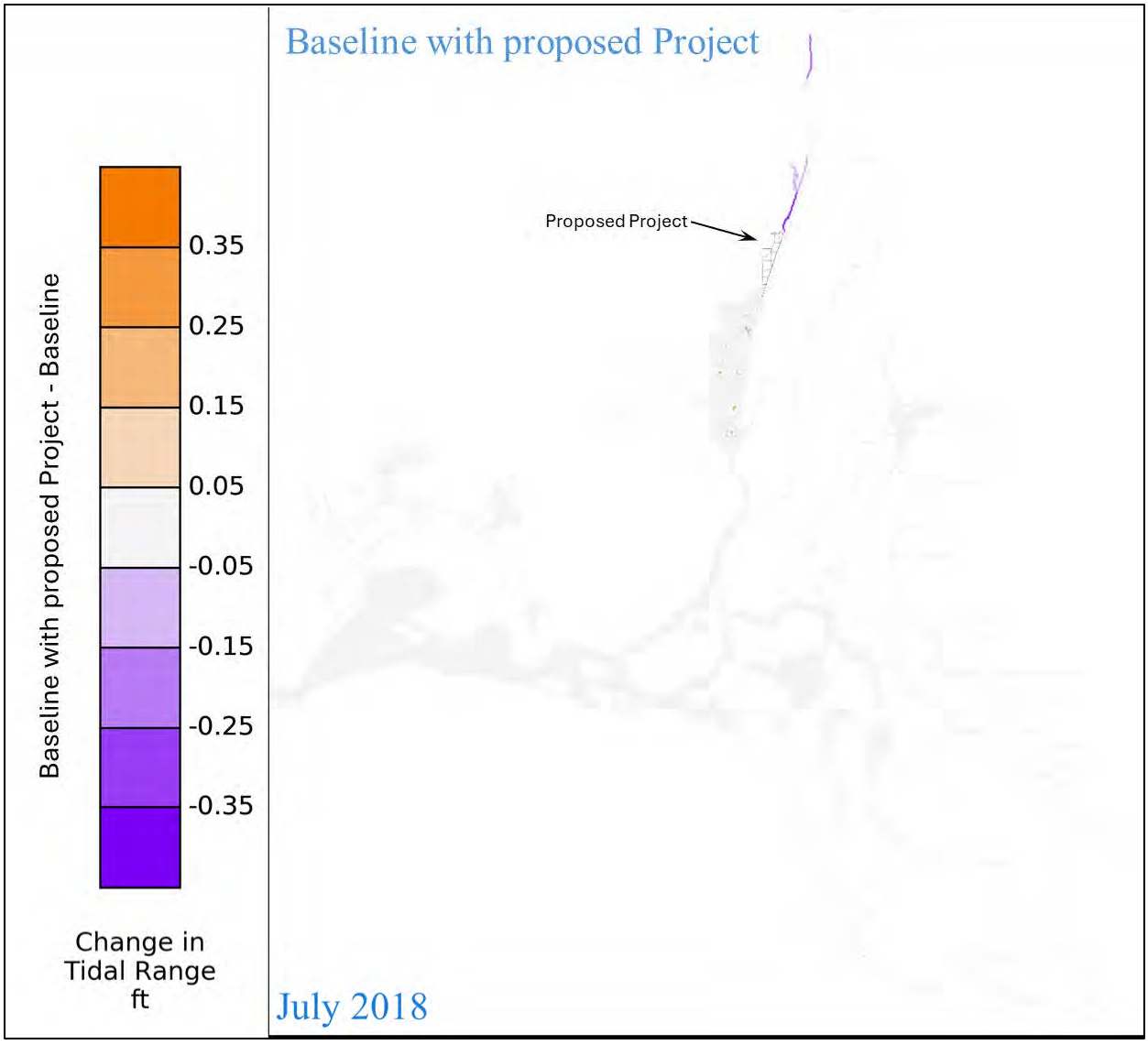


Figure 17 July 2018 Baseline with proposed Project average tidal range change from Baseline.

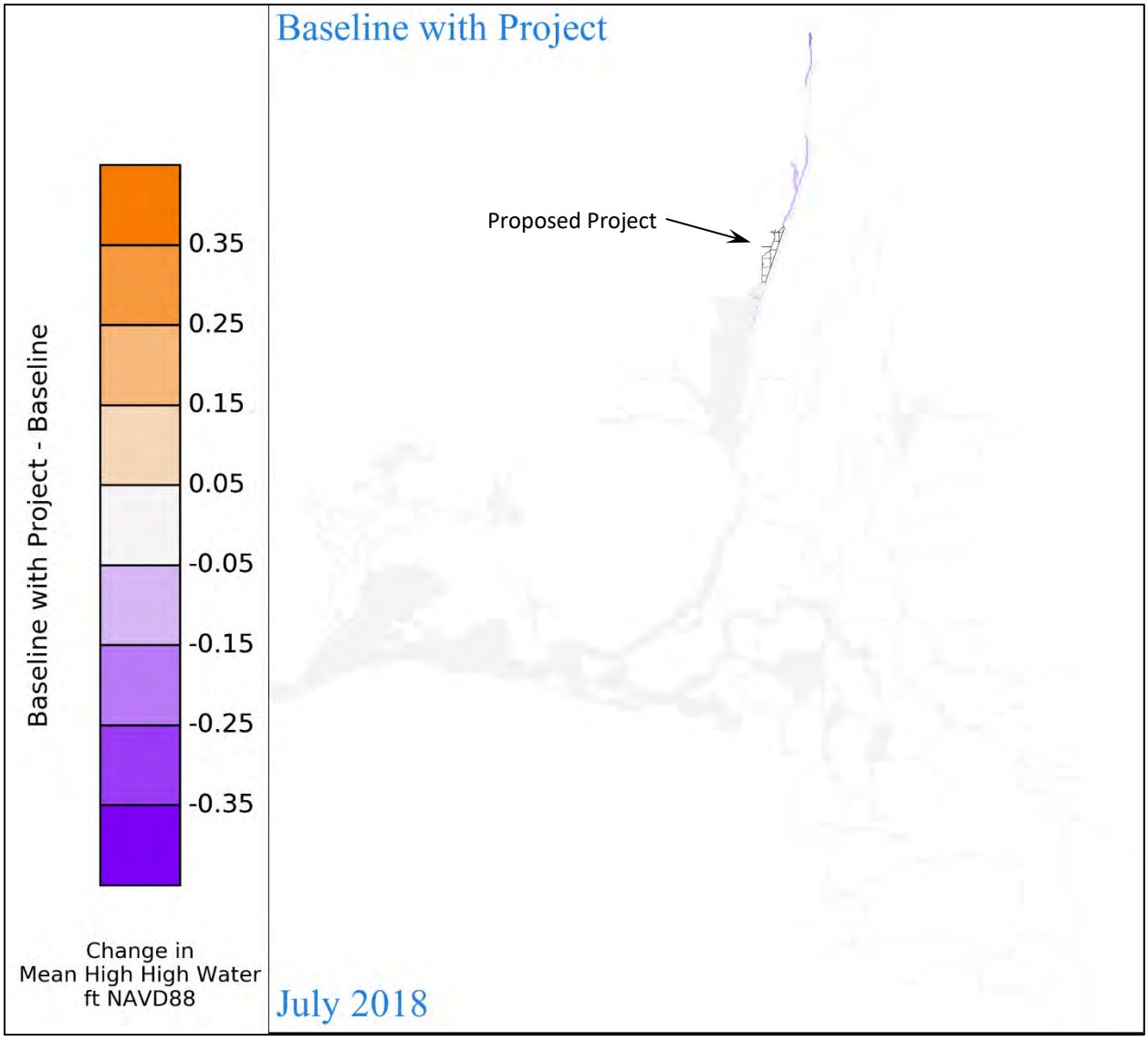


Figure 18 July 2018 Baseline with proposed Project average MHHW change from Baseline.

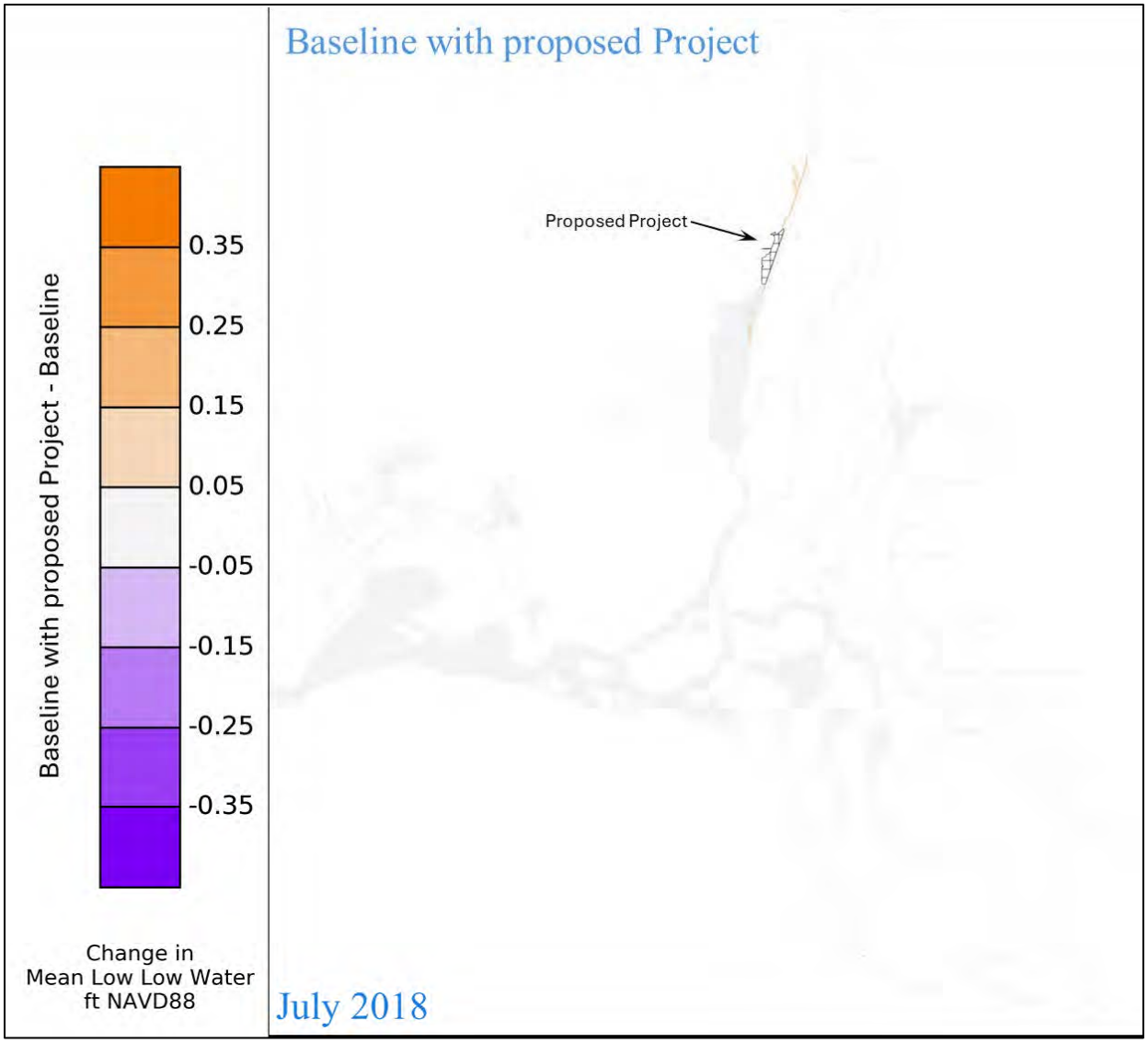


Figure 19 July 2018 Baseline with proposed Project average MLLW change from Baseline

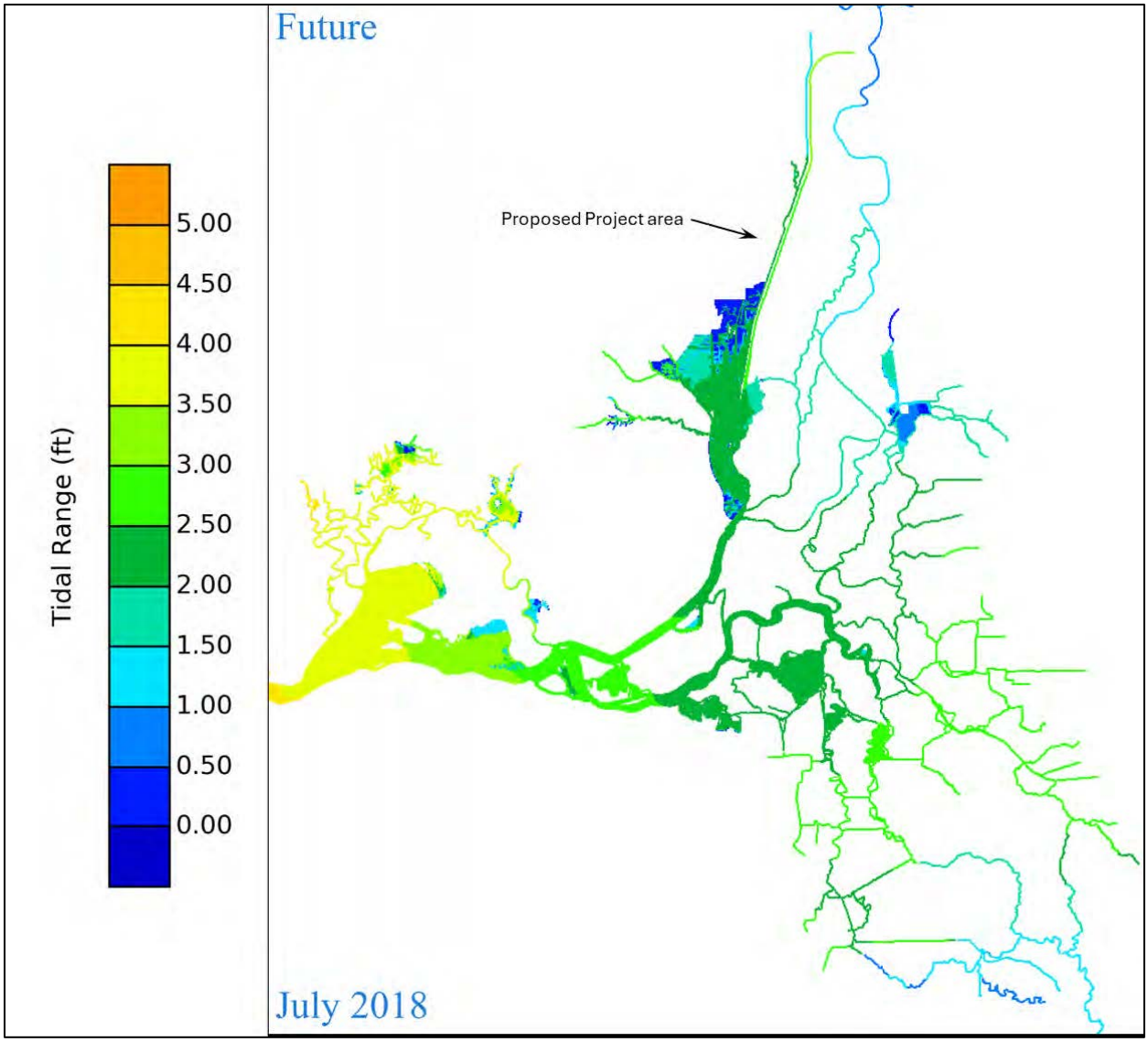


Figure 20 July 2018 average tidal range for the Future scenario

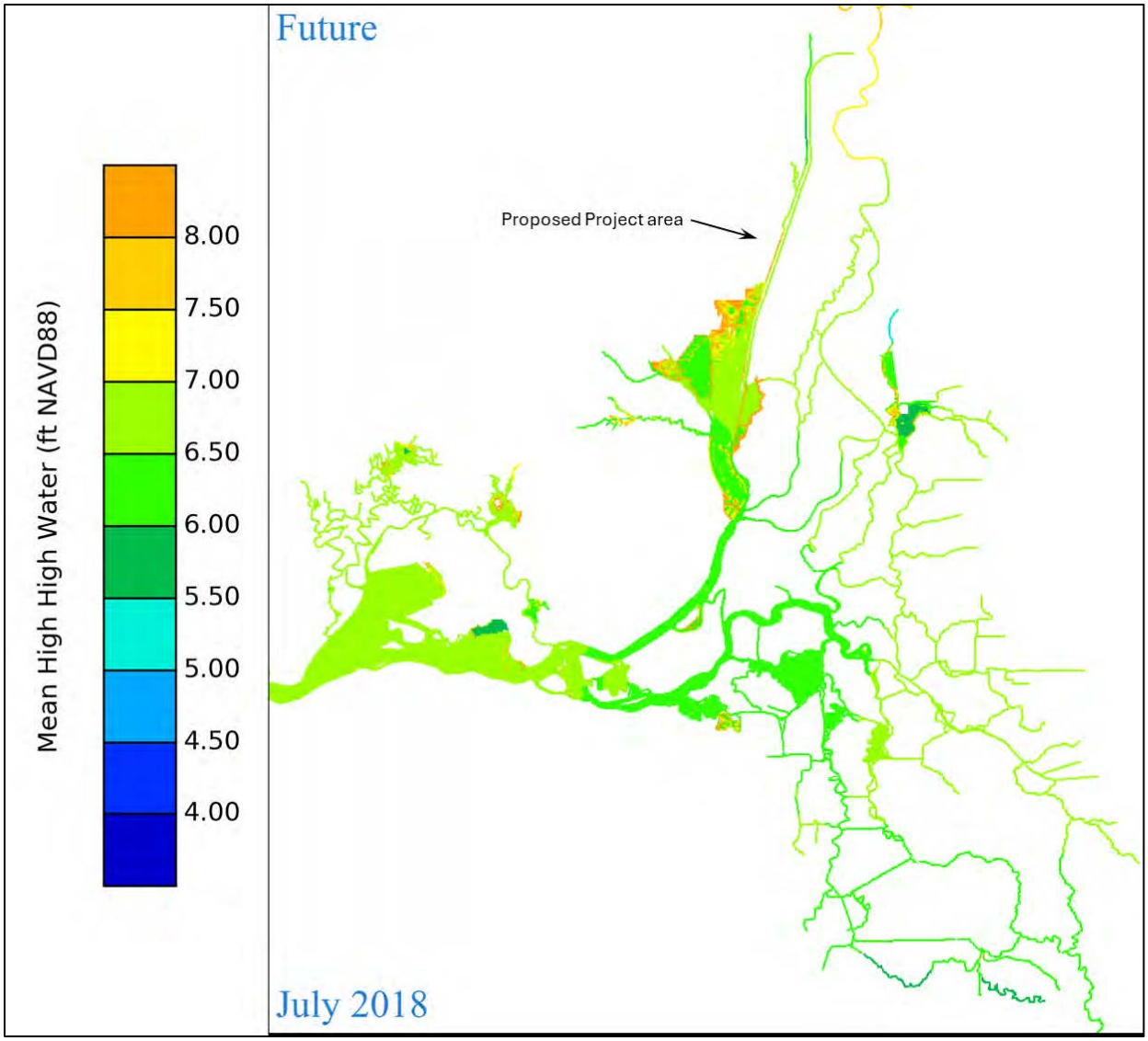


Figure 21 July 2018 average MHHW for the Future scenario

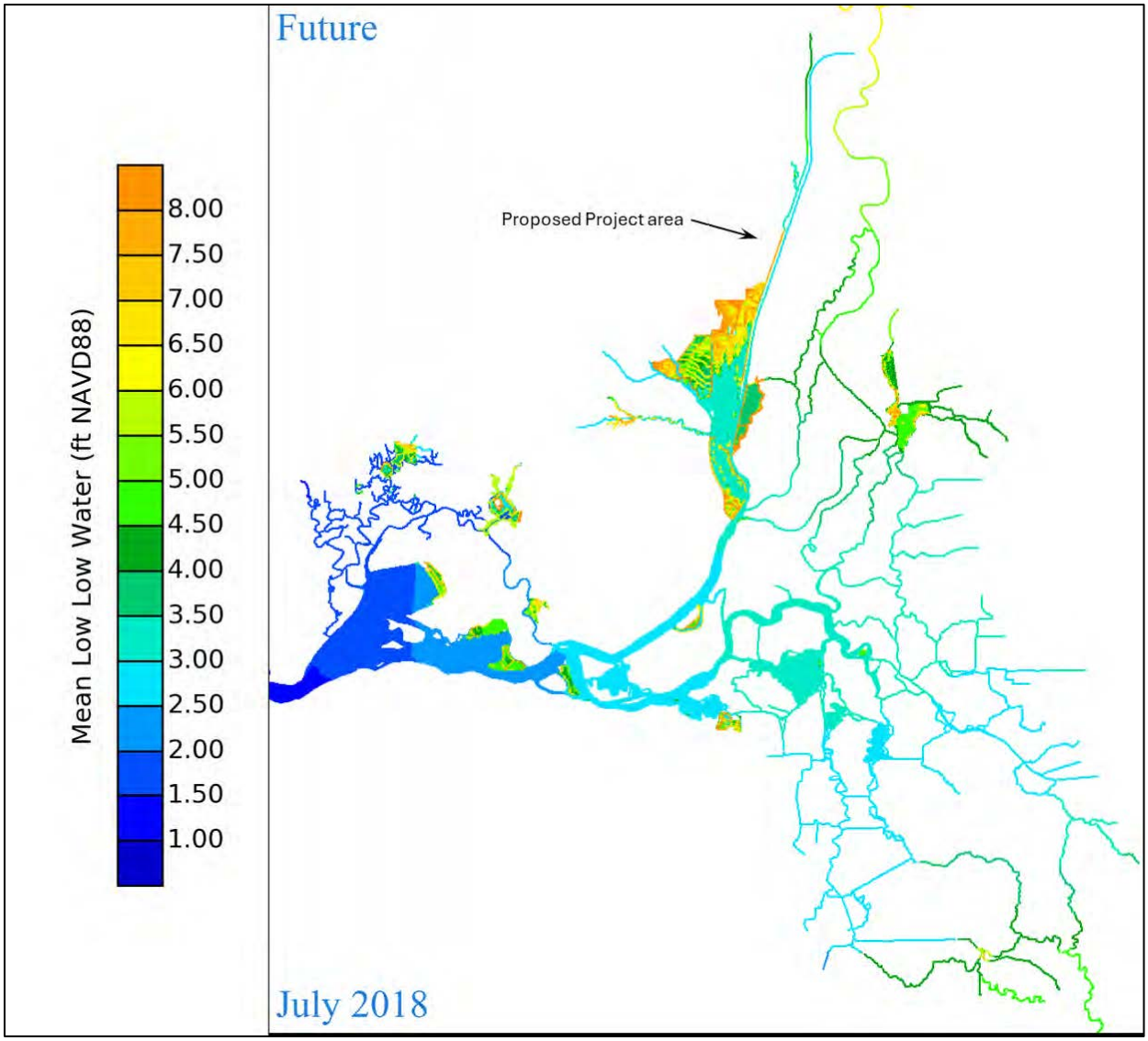


Figure 22 July 2018 average MLLW for the Future scenario

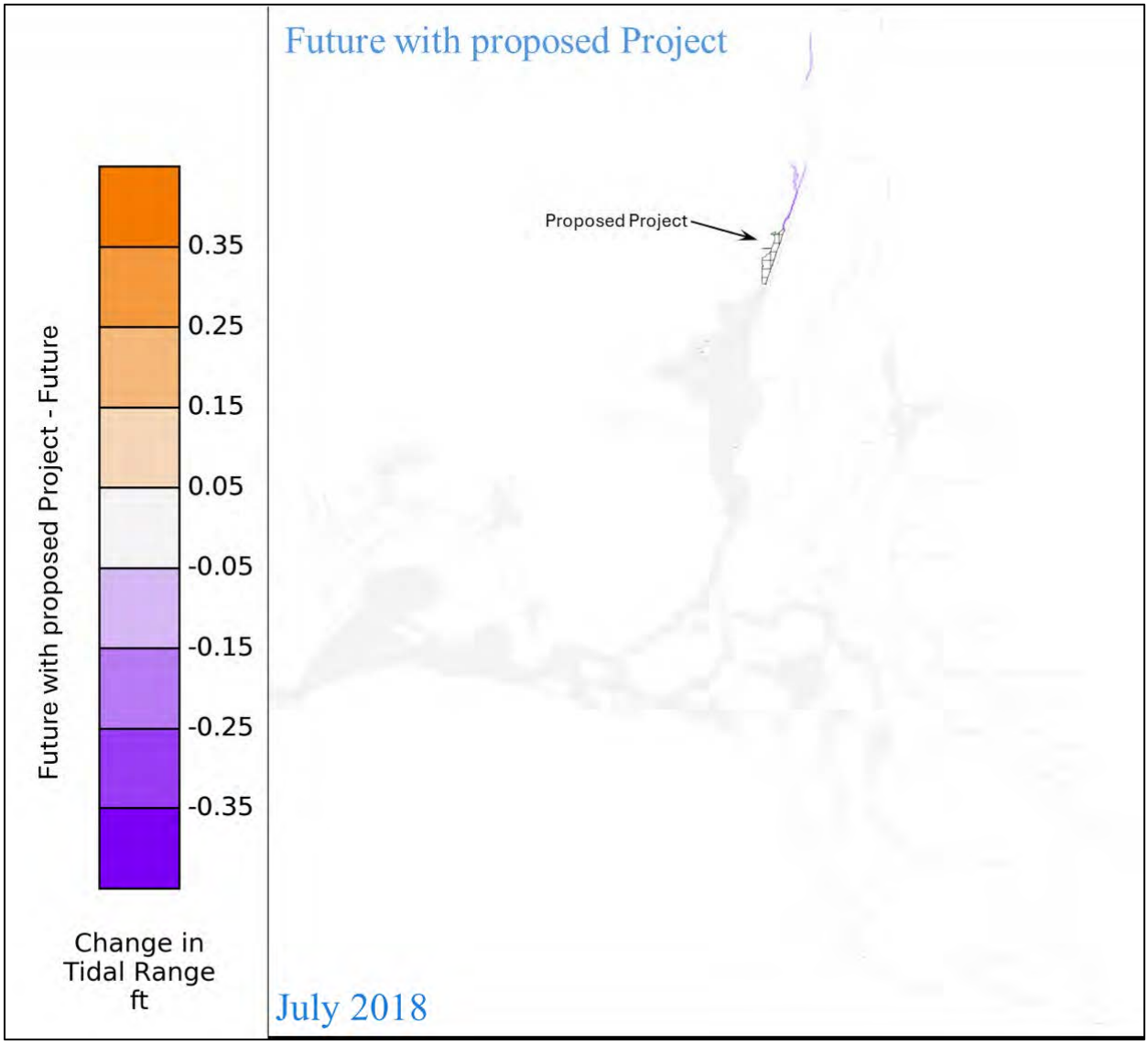


Figure 23 July 2018 Future with proposed Project average tidal range change from Future.

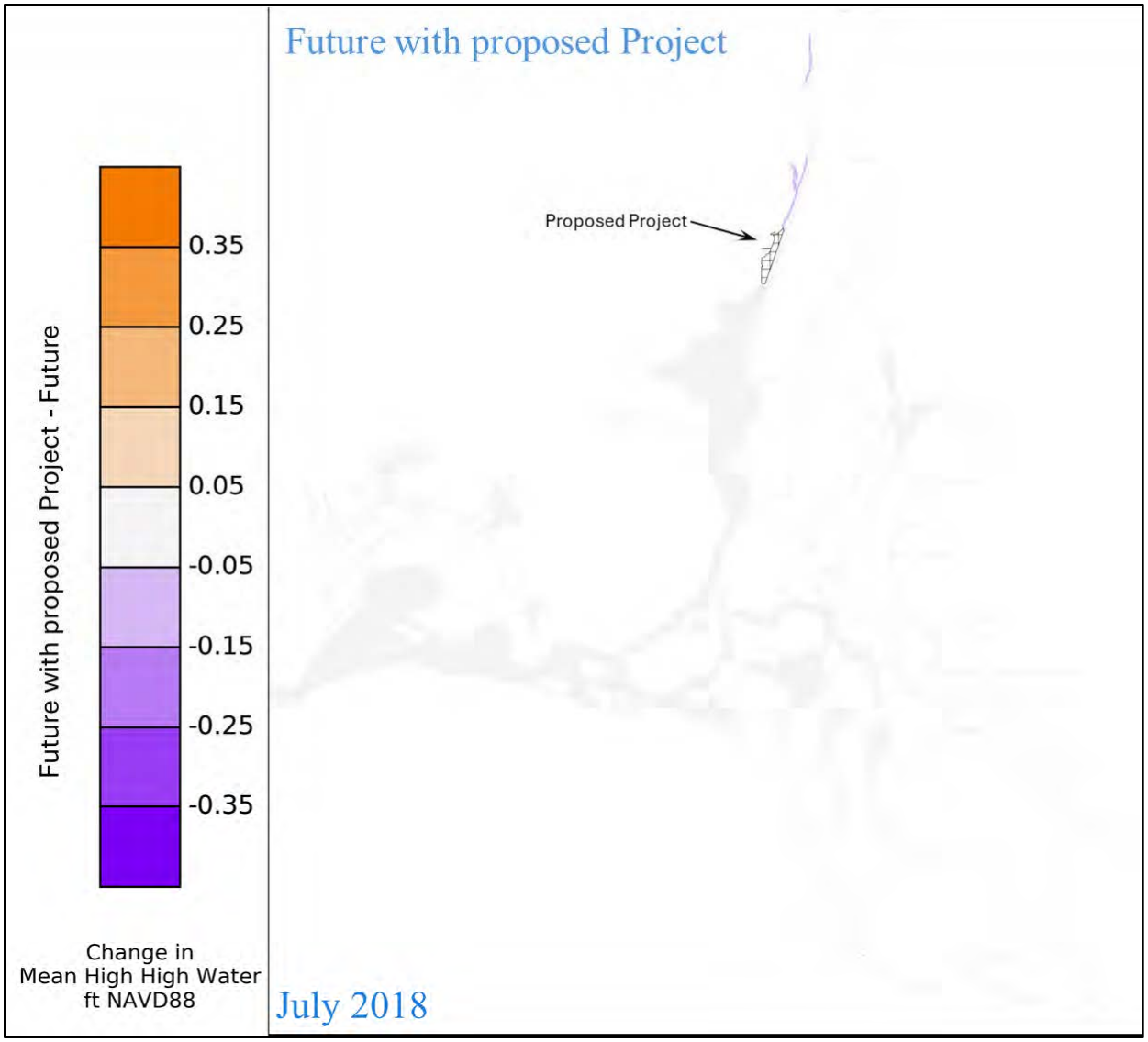


Figure 24 July 2018 Future with proposed Project average MHHW change from Future.

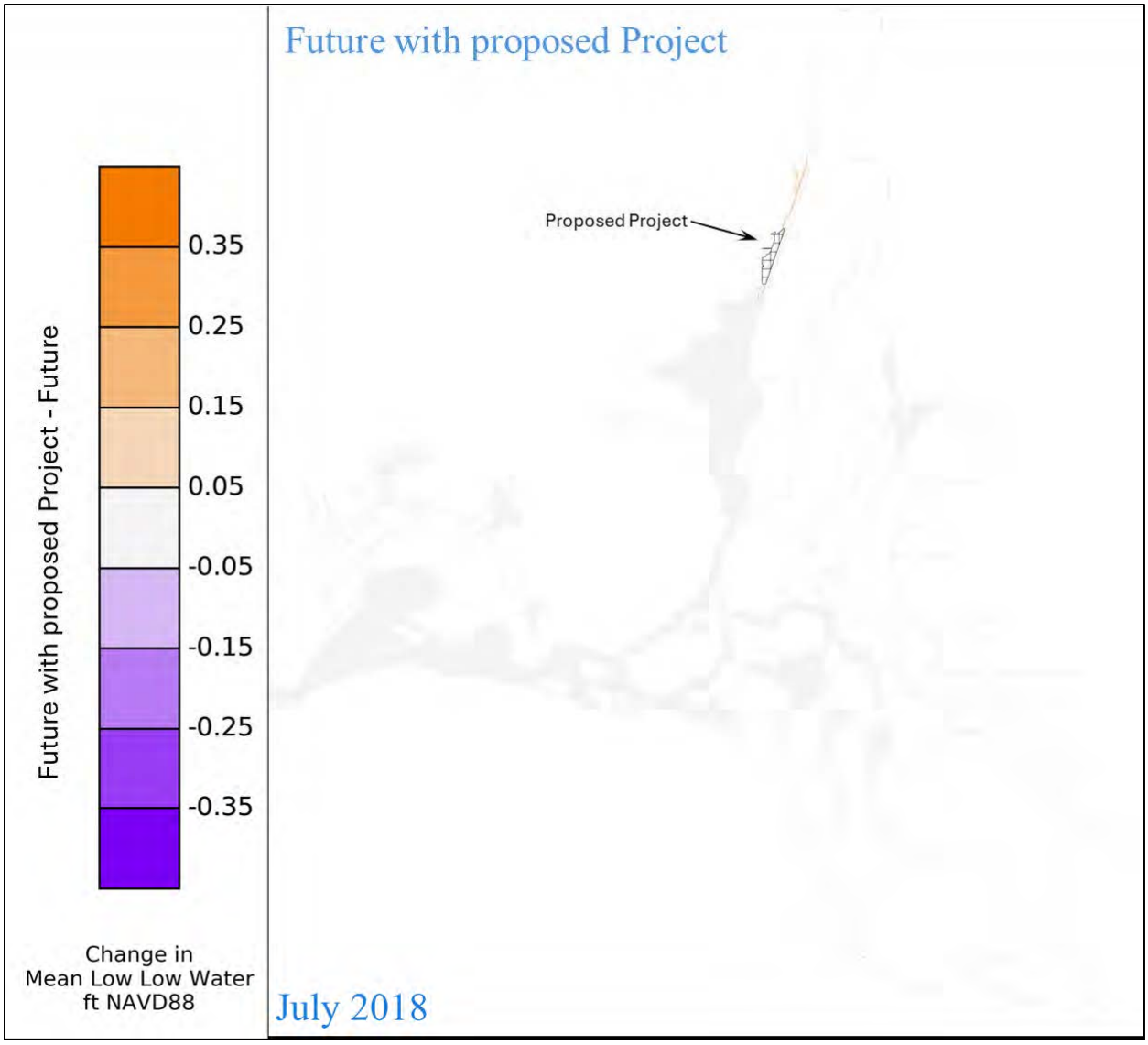


Figure 25 July 2018 Future with proposed Project average MLLW change from Future

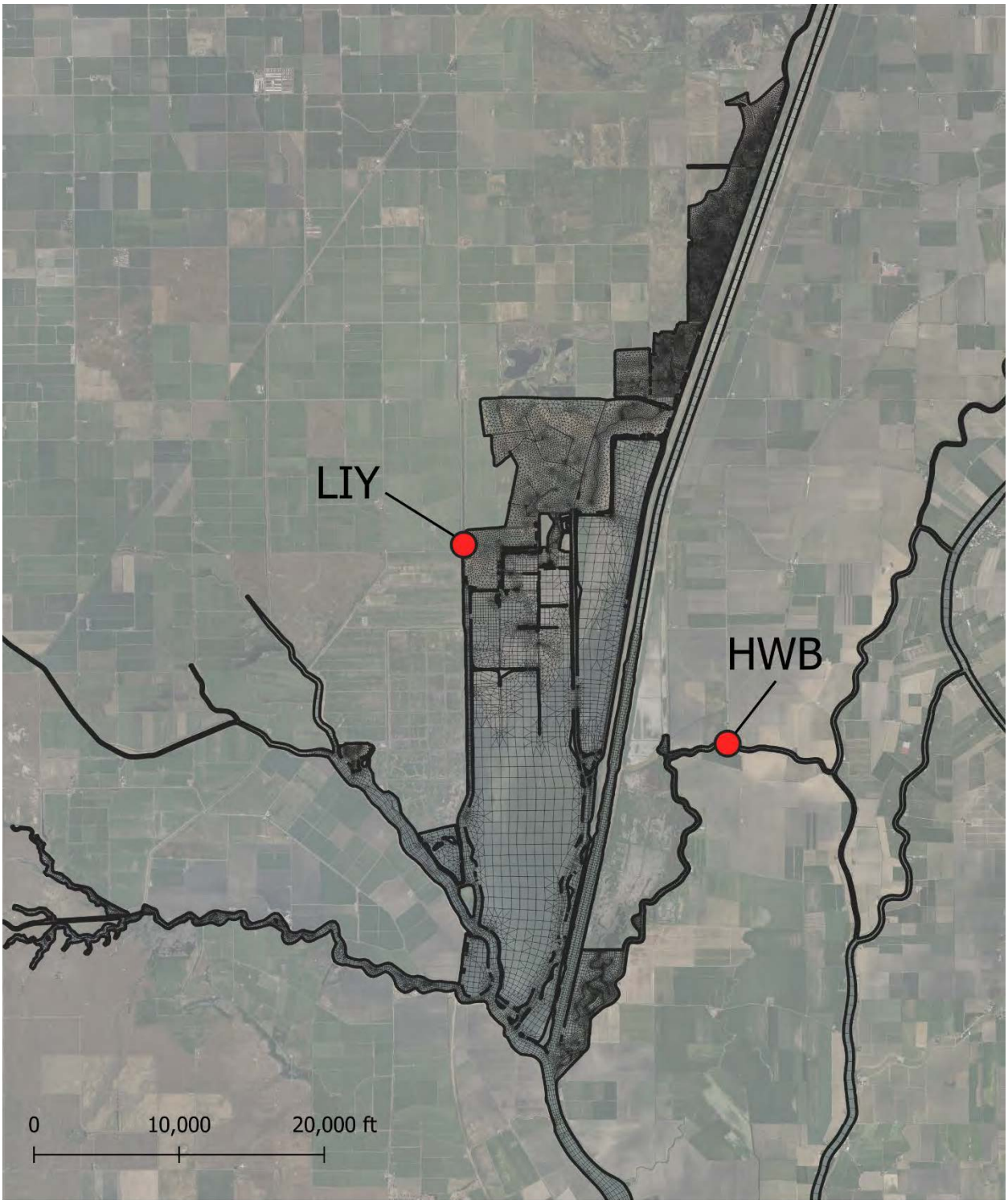


Figure 26 Stage output locations

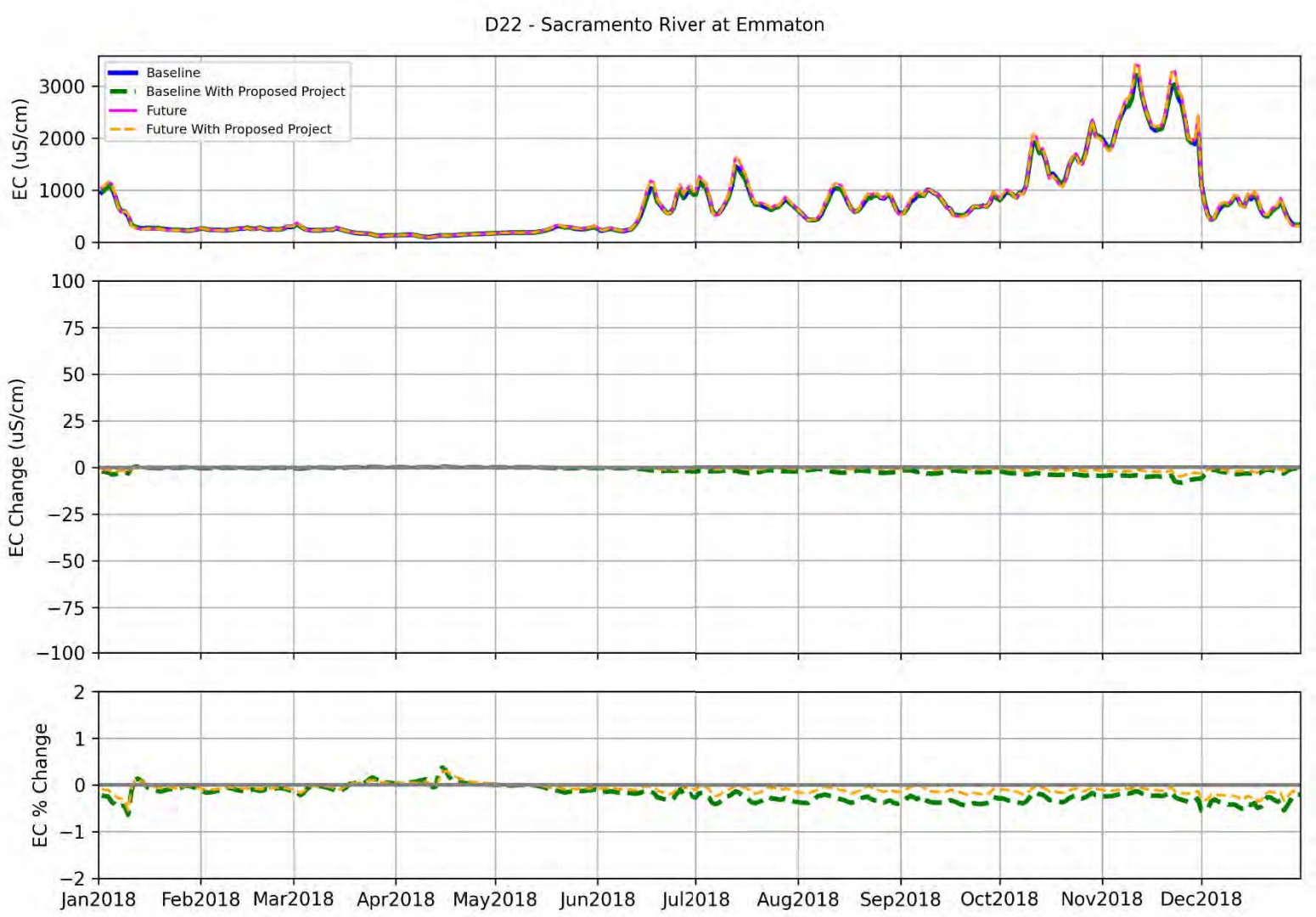


Figure 27 Daily average EC at station D22 – Sacramento River at Emmaton for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

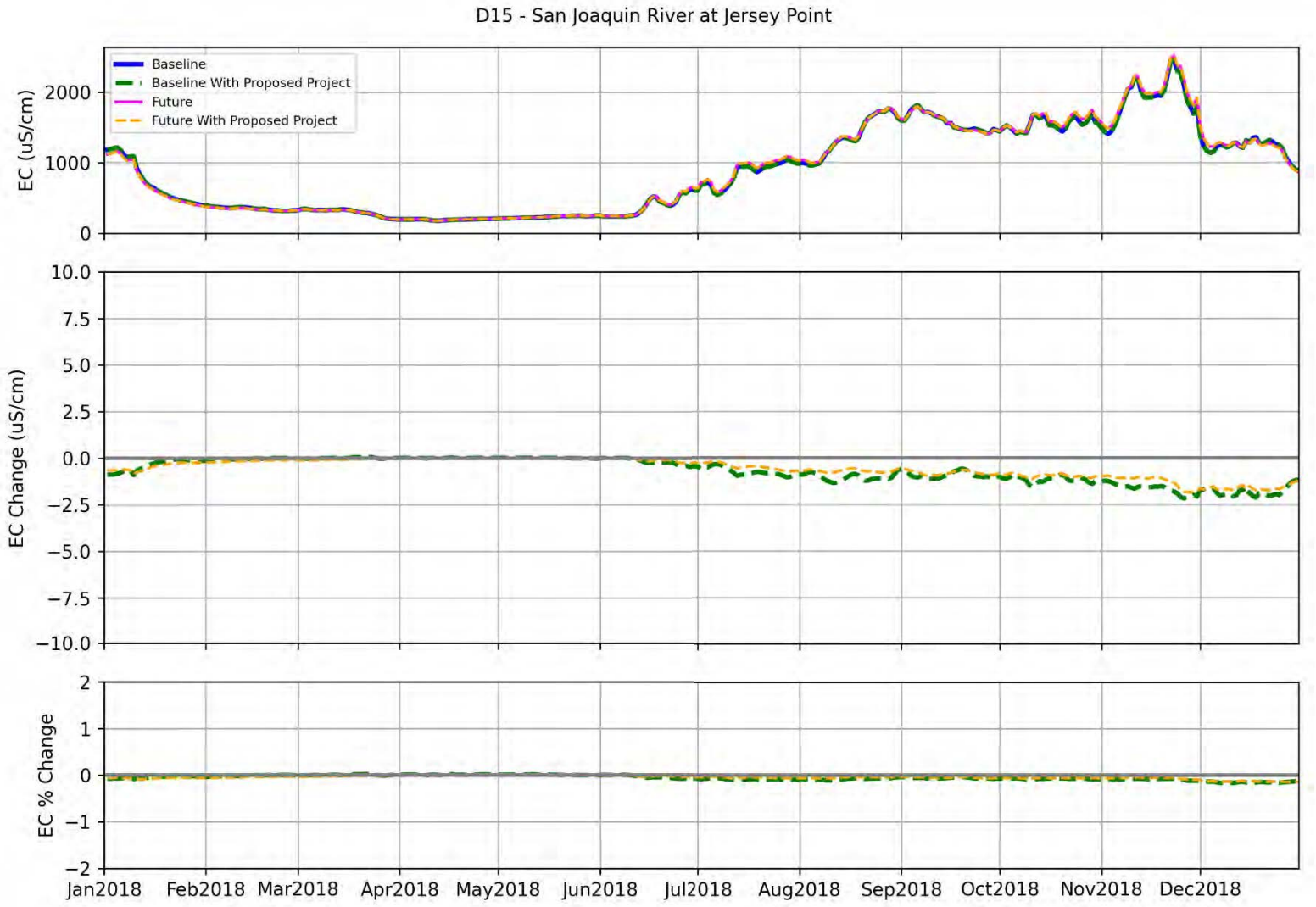


Figure 28 Daily average EC at station D15 - San Joaquin River at Jersey Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

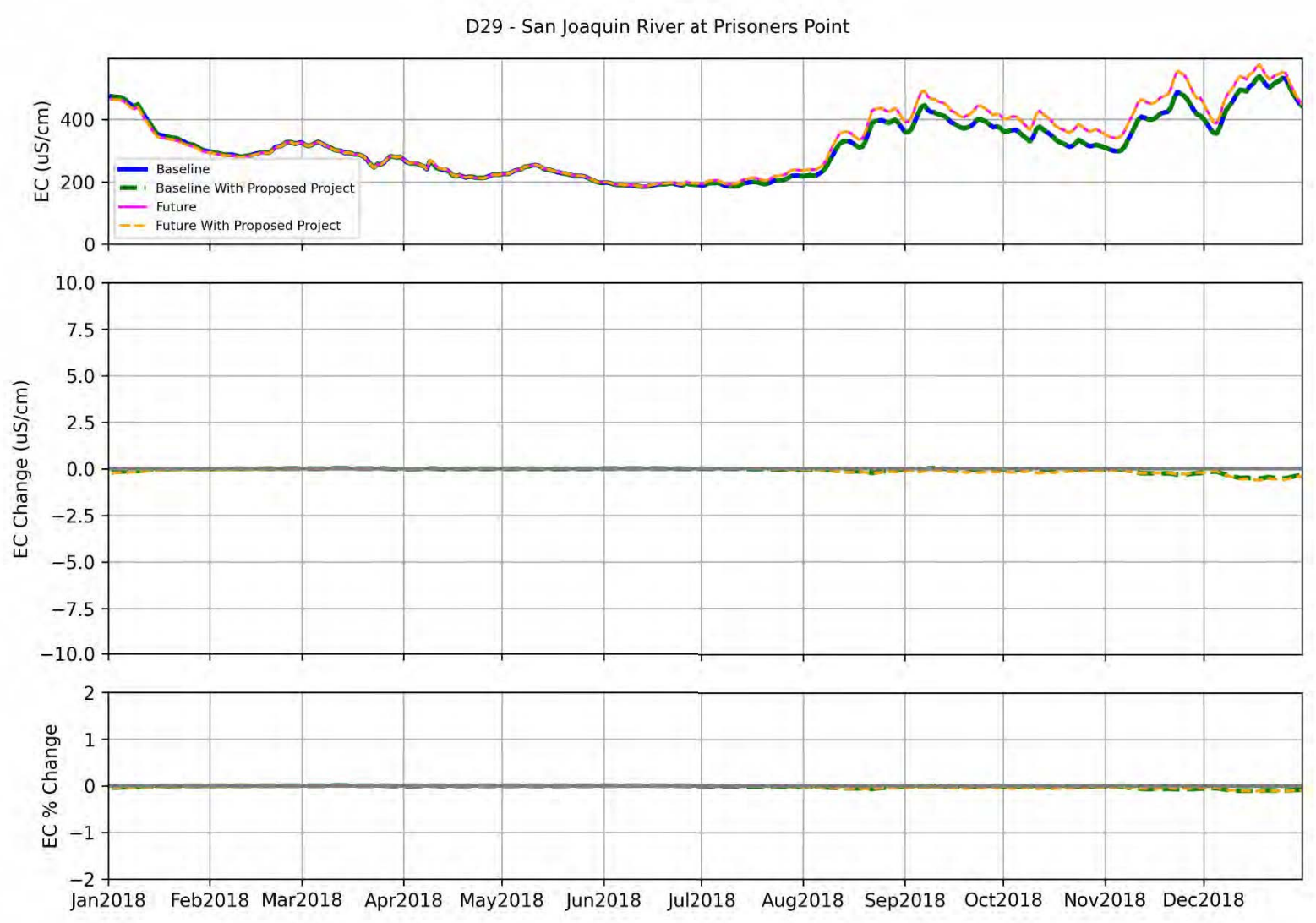


Figure 29 Daily average EC at station D29 - San Joaquin River at Prisoners Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

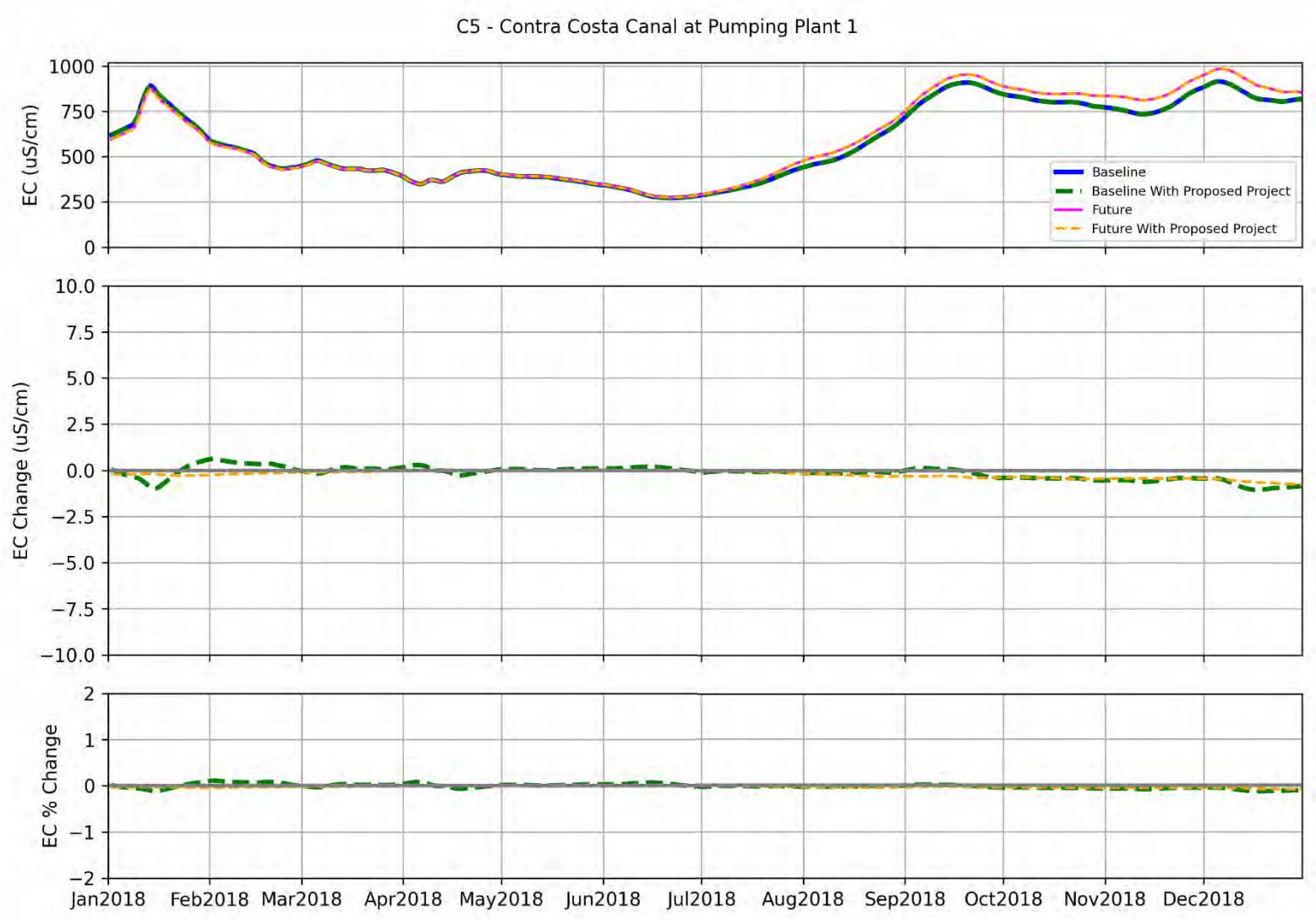


Figure 30 Daily average EC at station C5 - Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

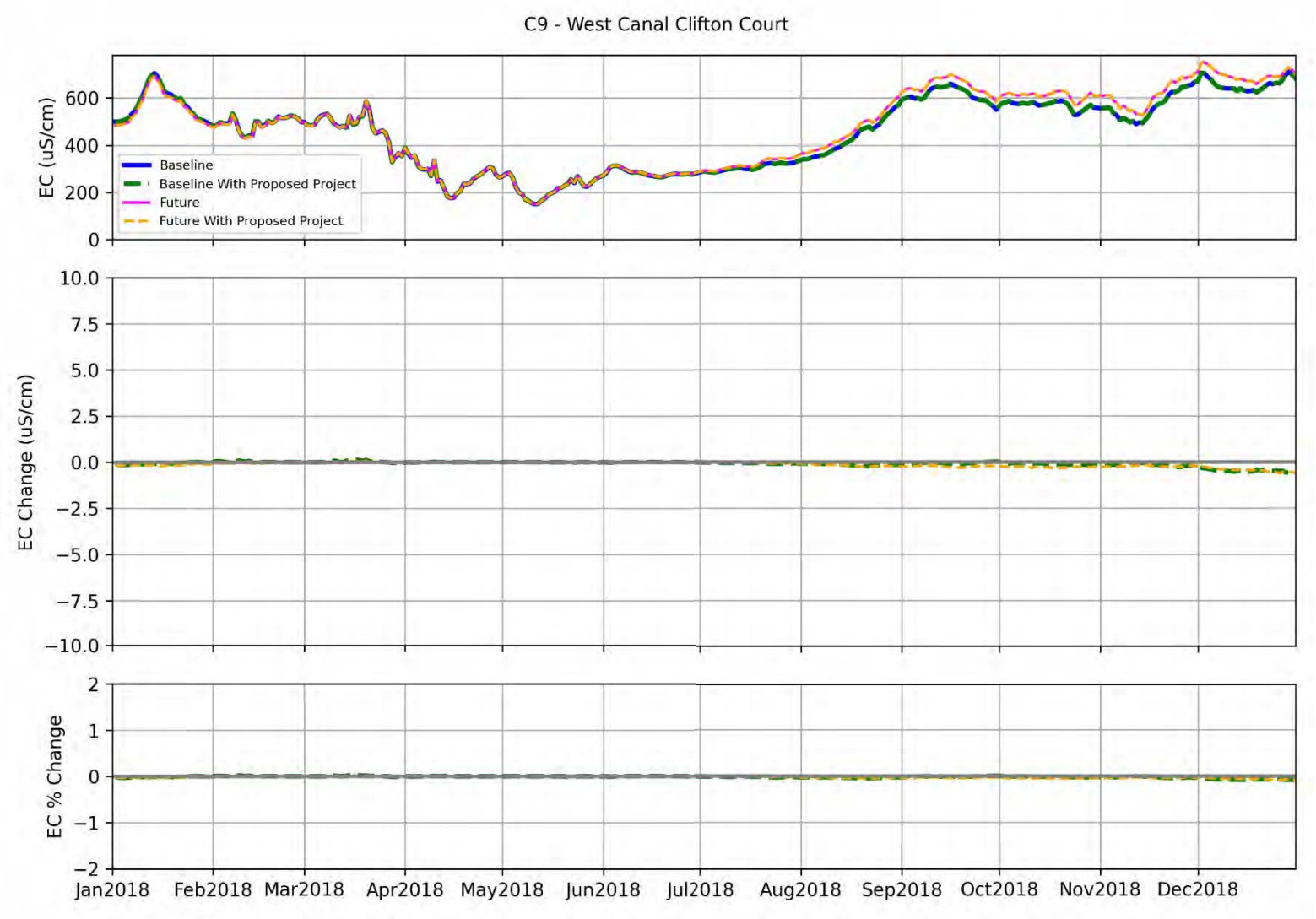


Figure 31 Daily average EC at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

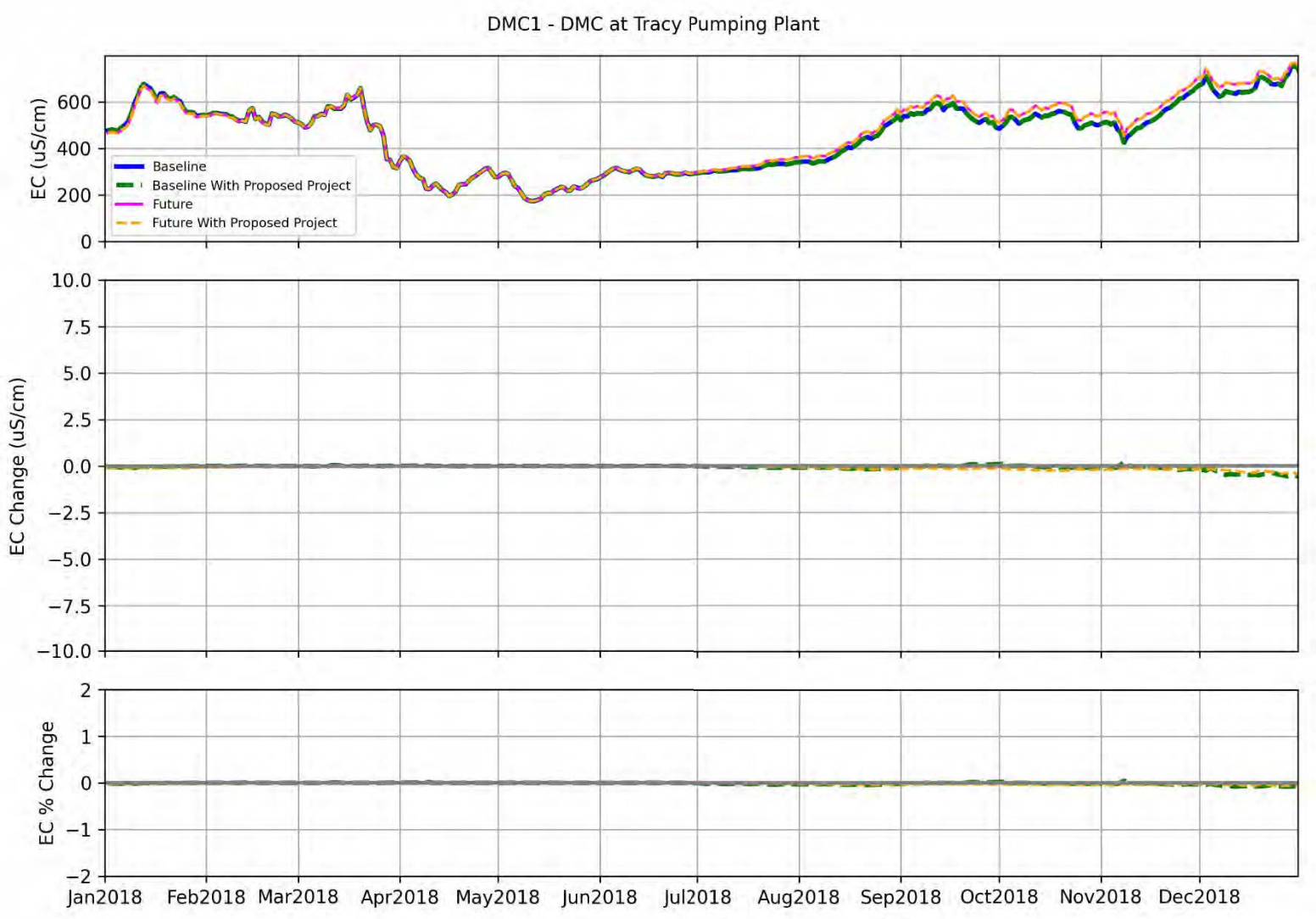


Figure 32 Daily average EC at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

Figure 33 Daily average EC at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

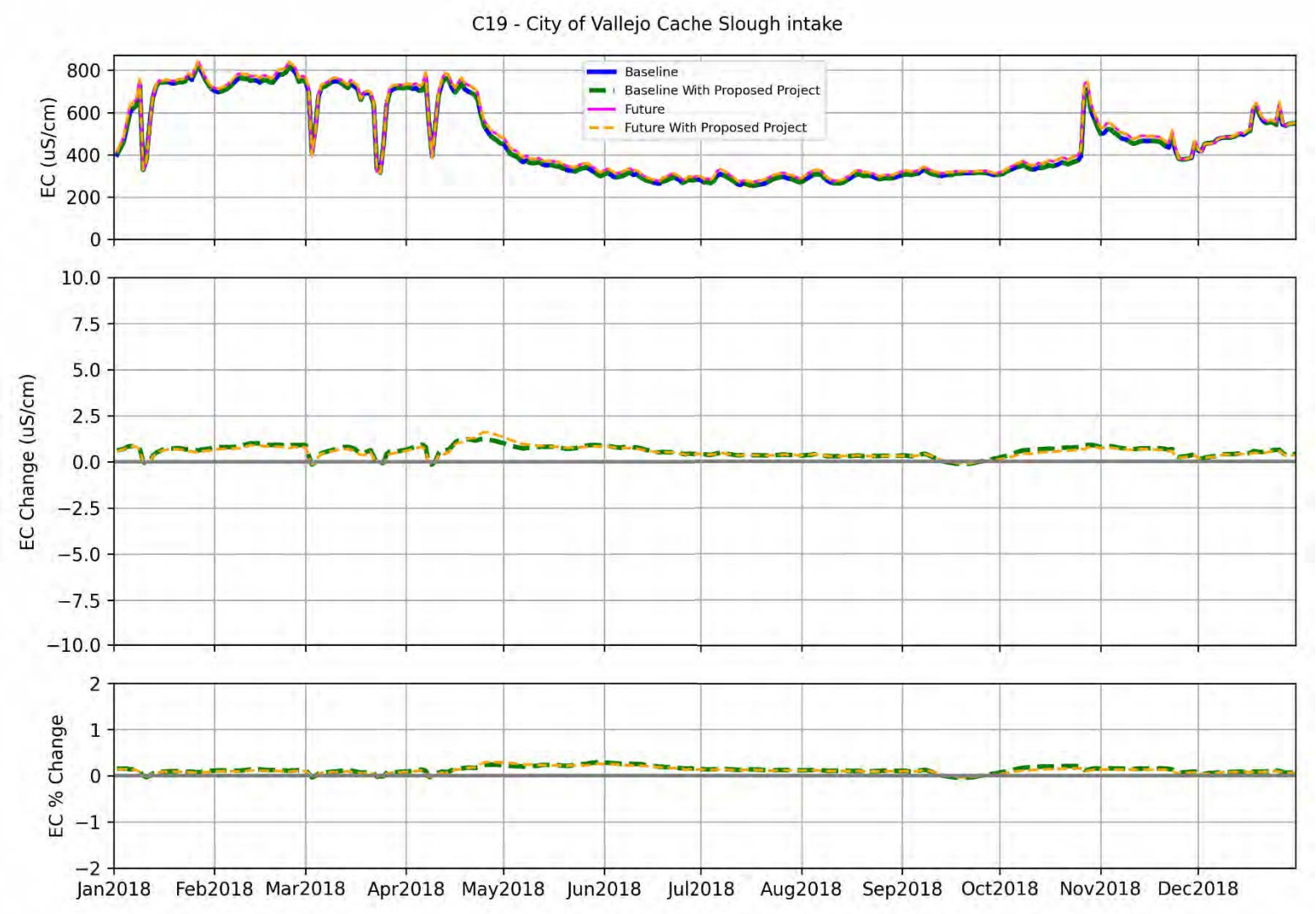


Figure 34 Daily average EC at station C19 – City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

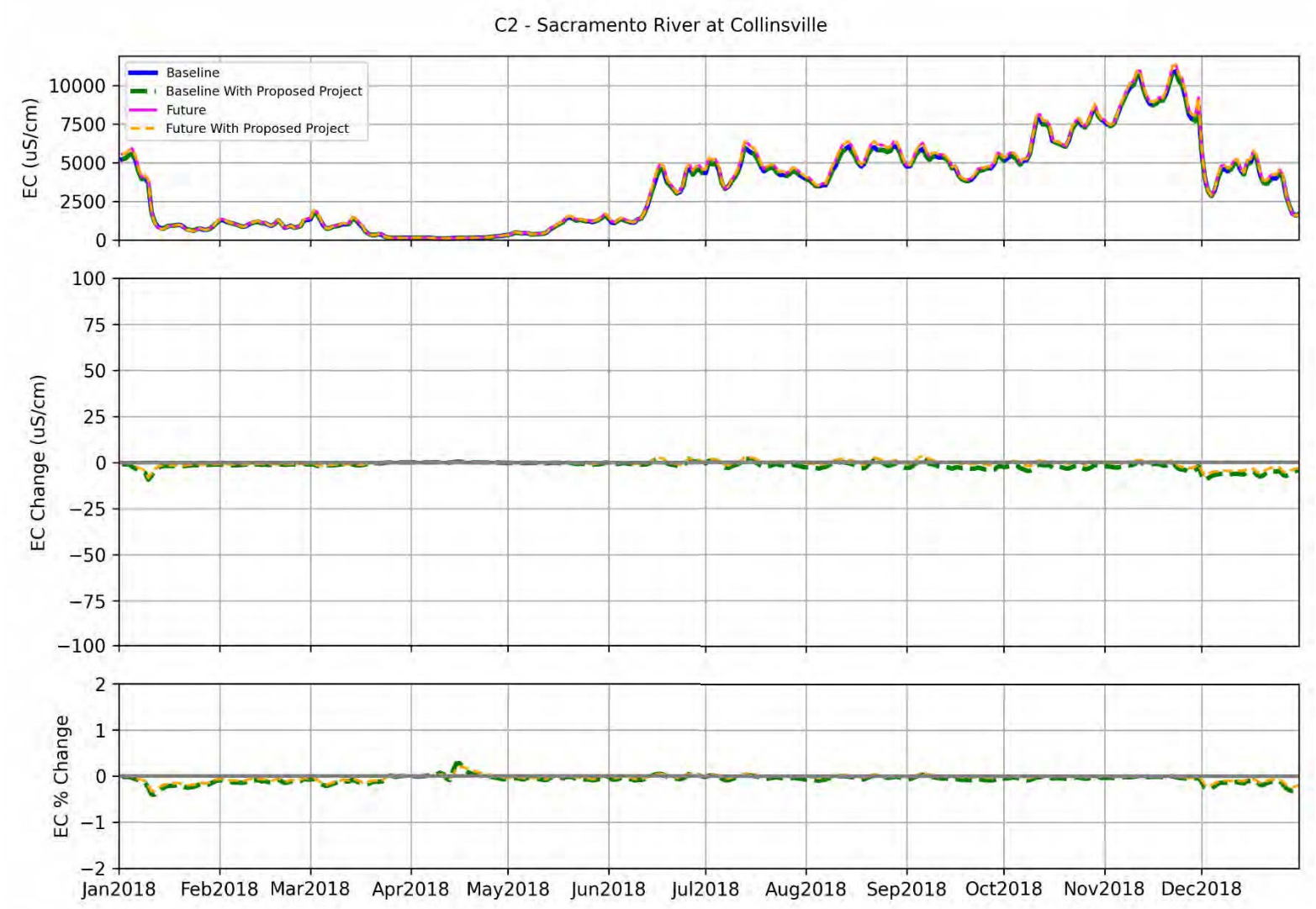


Figure 35 Daily average EC at station C2 – Sacramento River at Collinsville for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

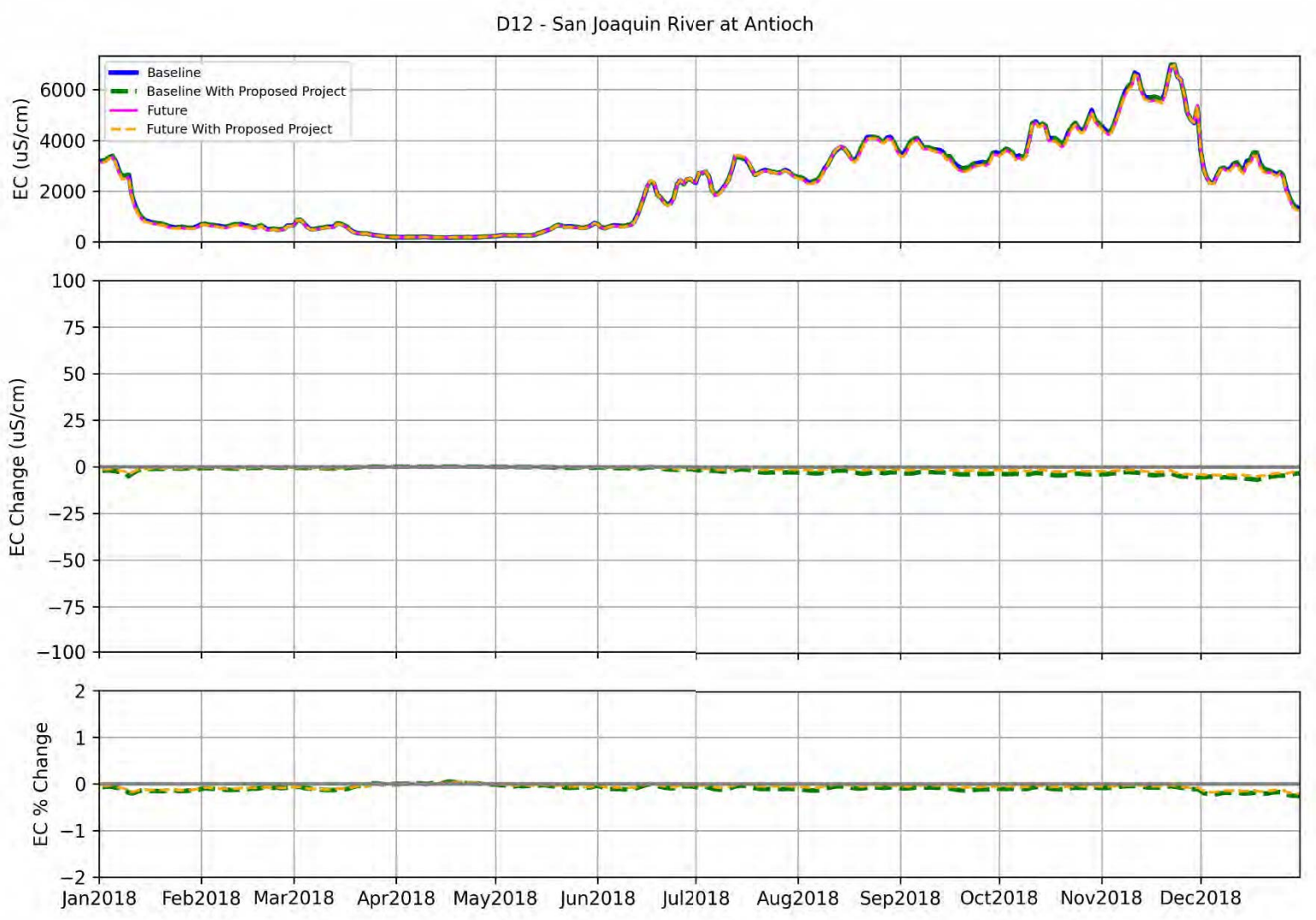


Figure 36 Daily average EC at station D12 – San Joaquin River at Antioch intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

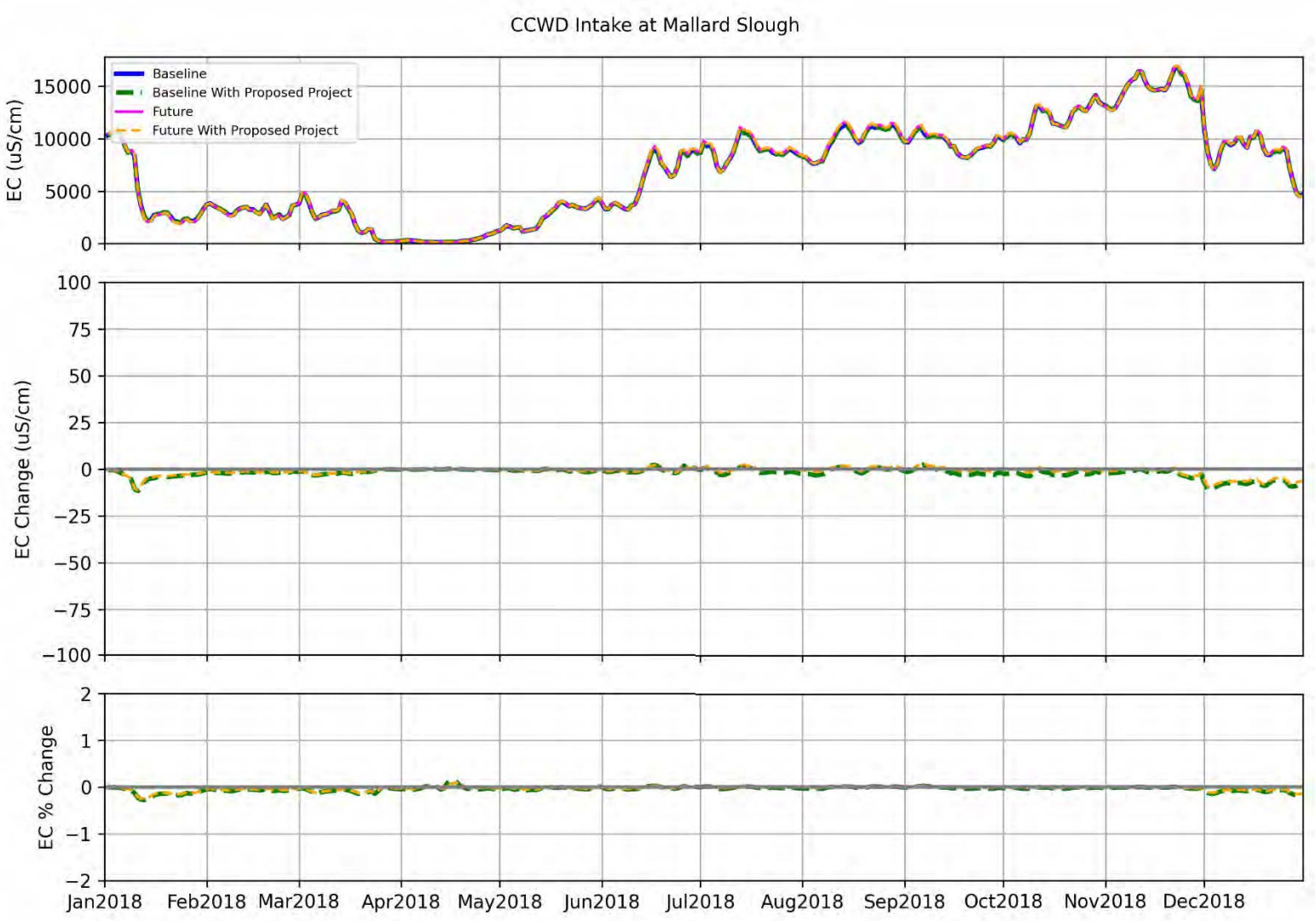


Figure 37 Daily average EC at station for CCWD intake at Mallard Slough for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

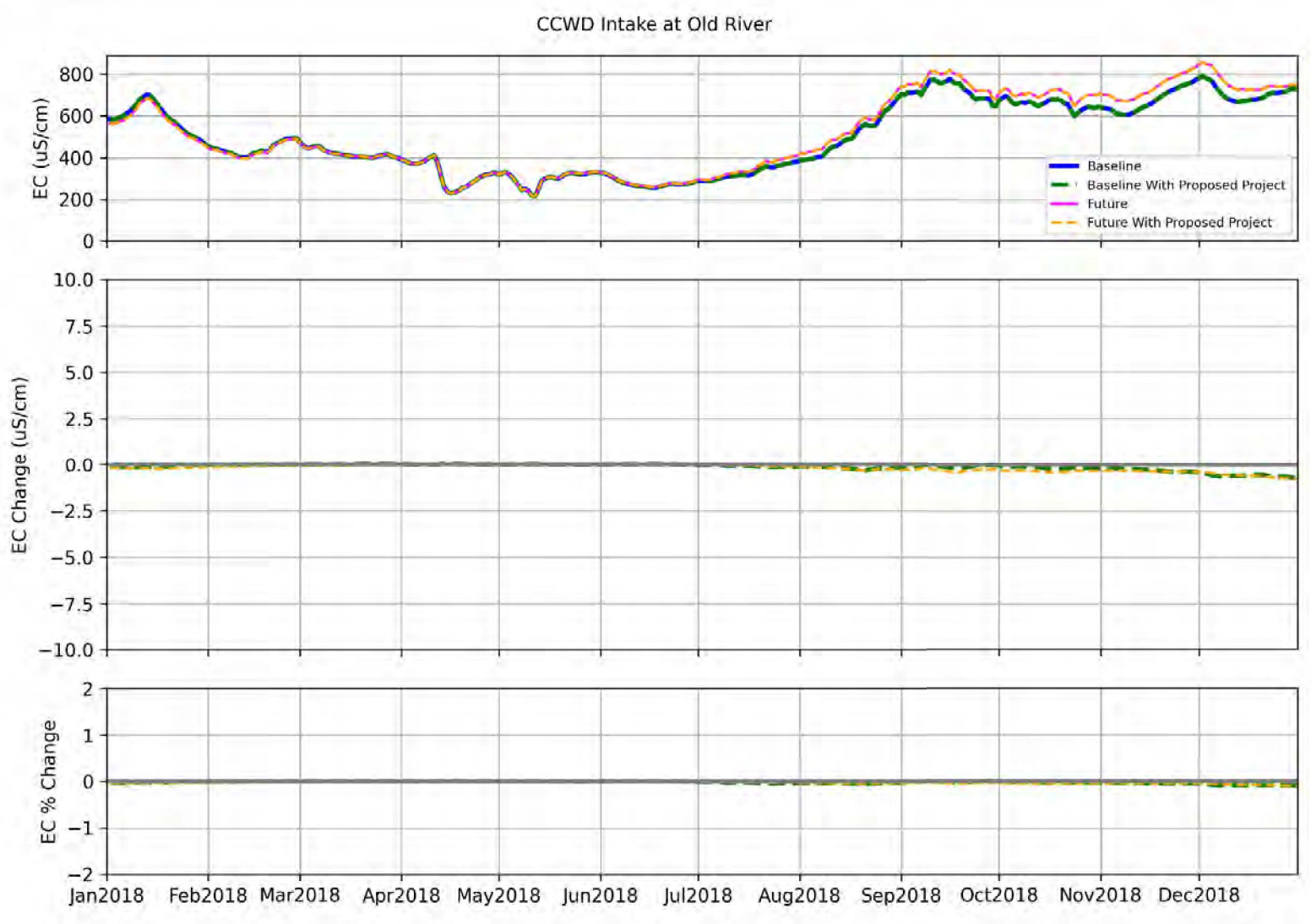


Figure 38 Daily average EC at CCWD intake at Old River for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

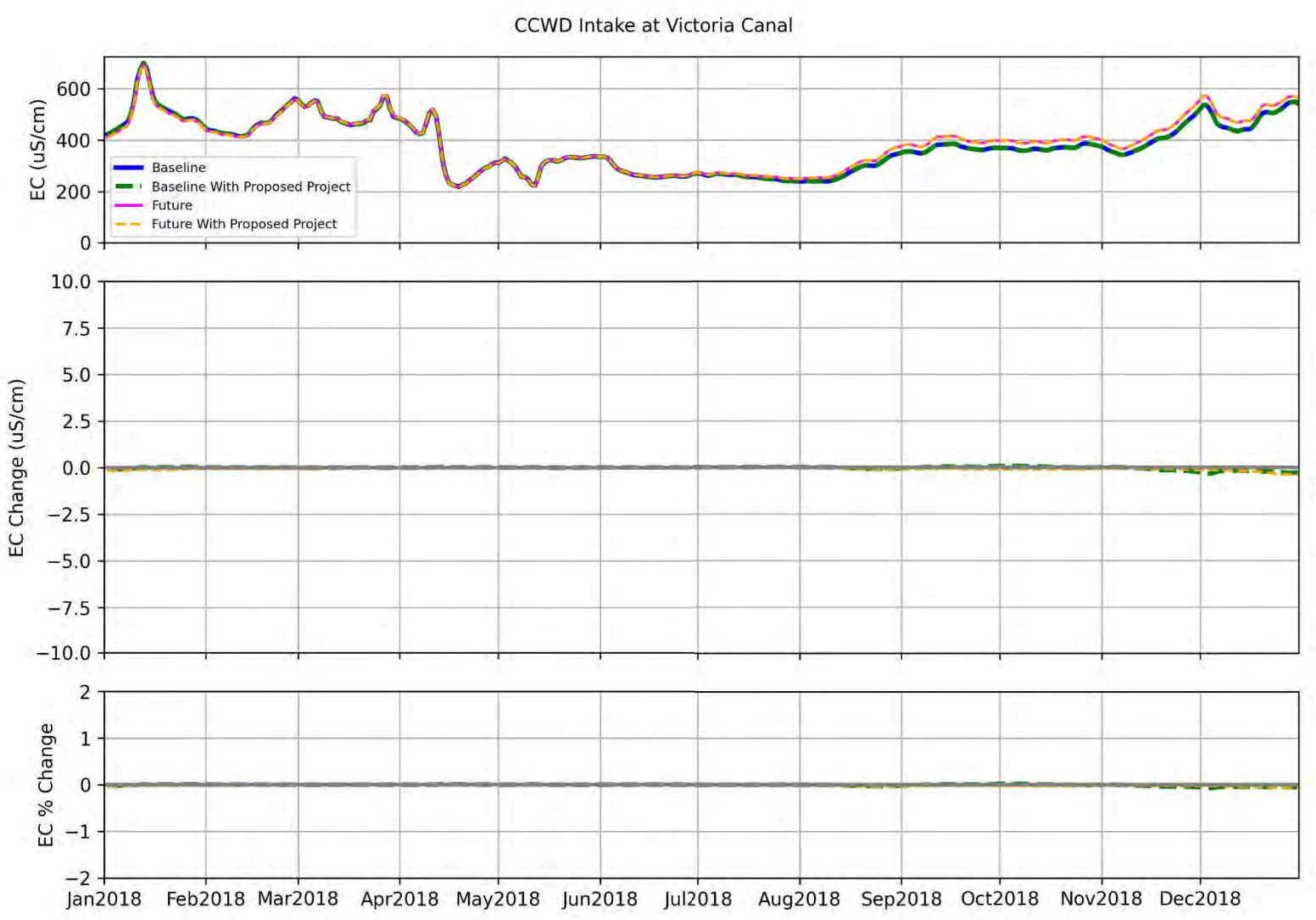


Figure 39 Daily average EC at CCWD intake at Victoria Canal for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2018 simulation period.

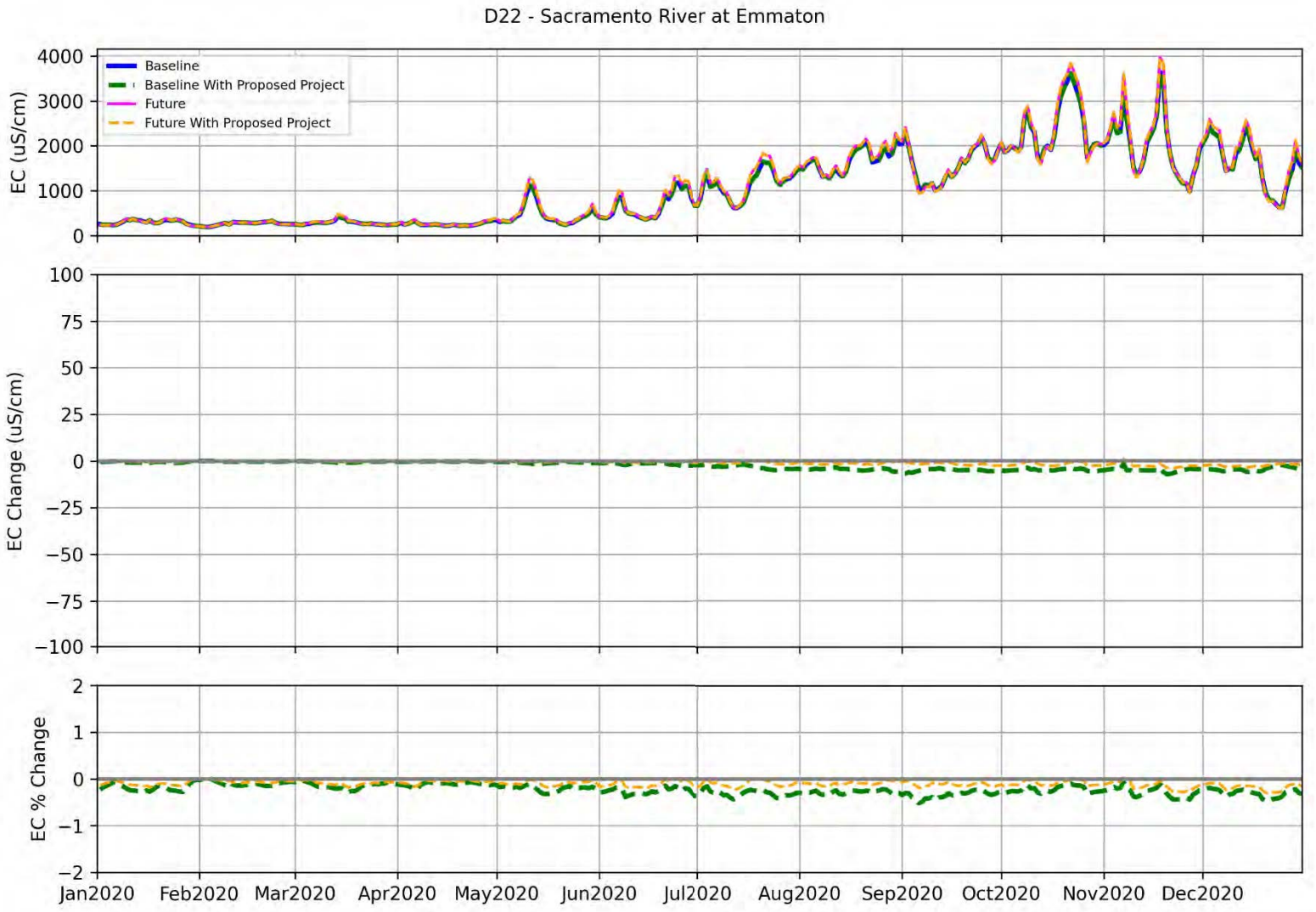


Figure 40 Daily average EC at station D22 – Sacramento River at Emmaton for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

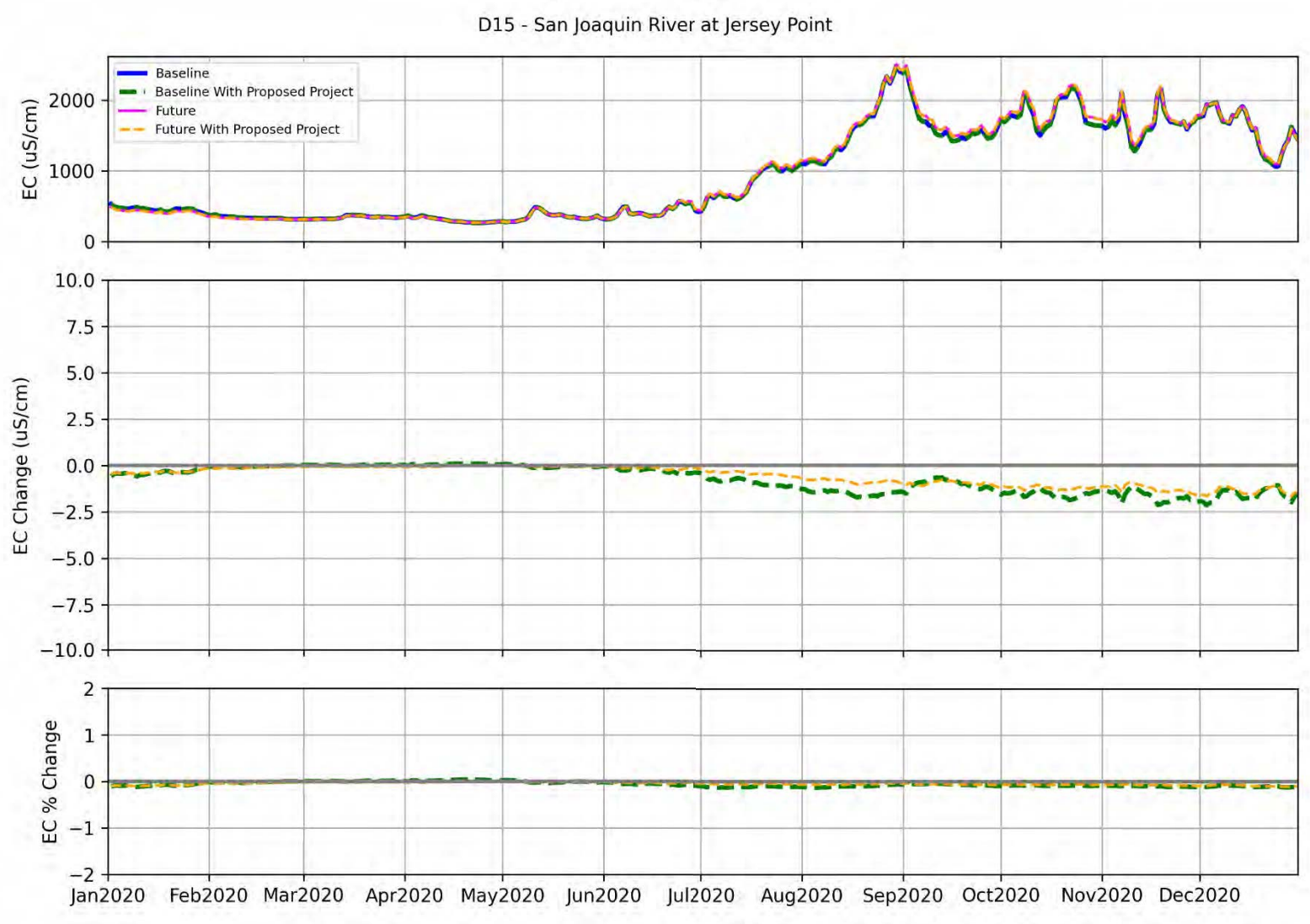


Figure 41 Daily average EC at station D15 - San Joaquin River at Jersey Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

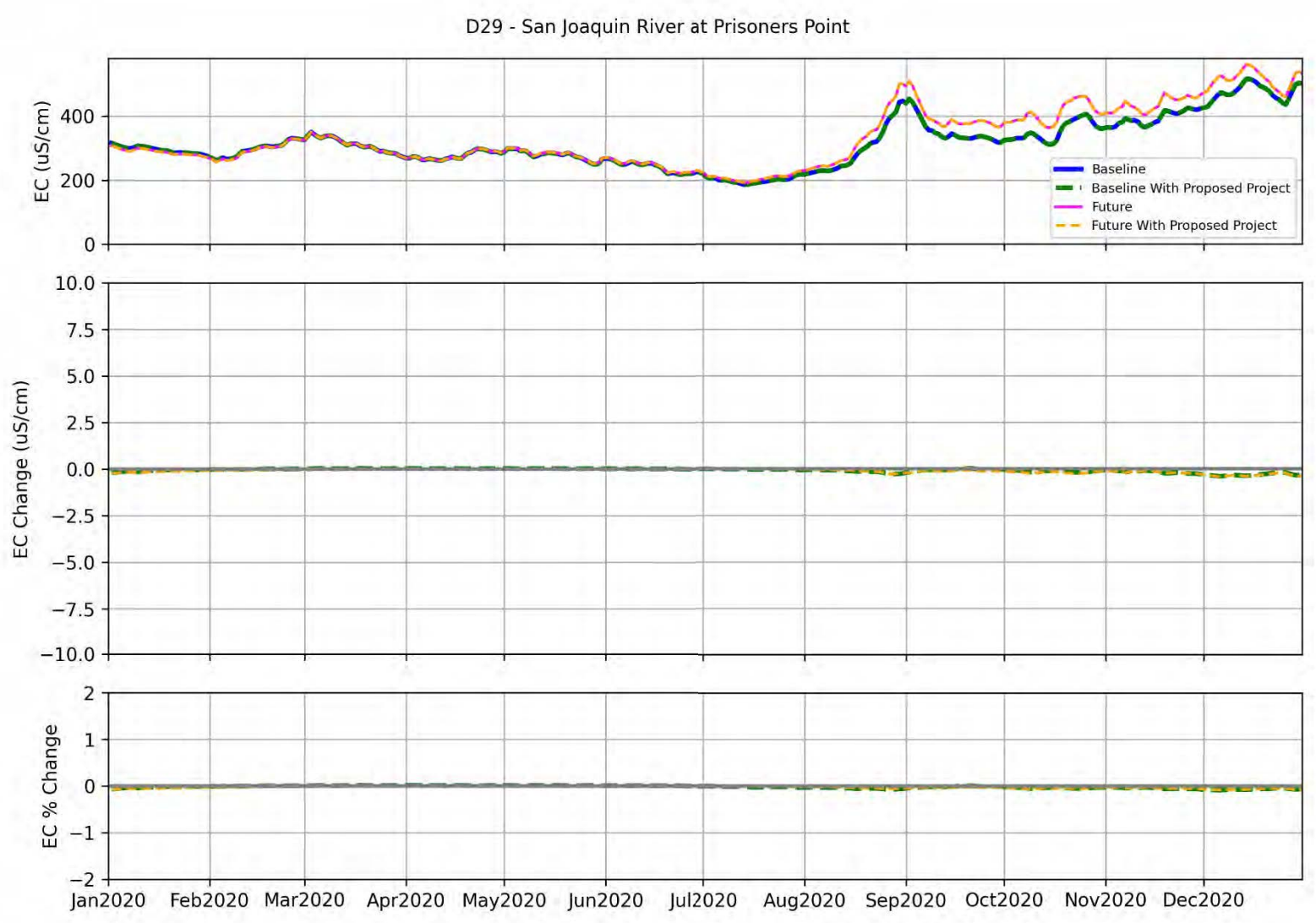


Figure 42 Daily average EC at station D29 - San Joaquin River at Prisoners Point for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

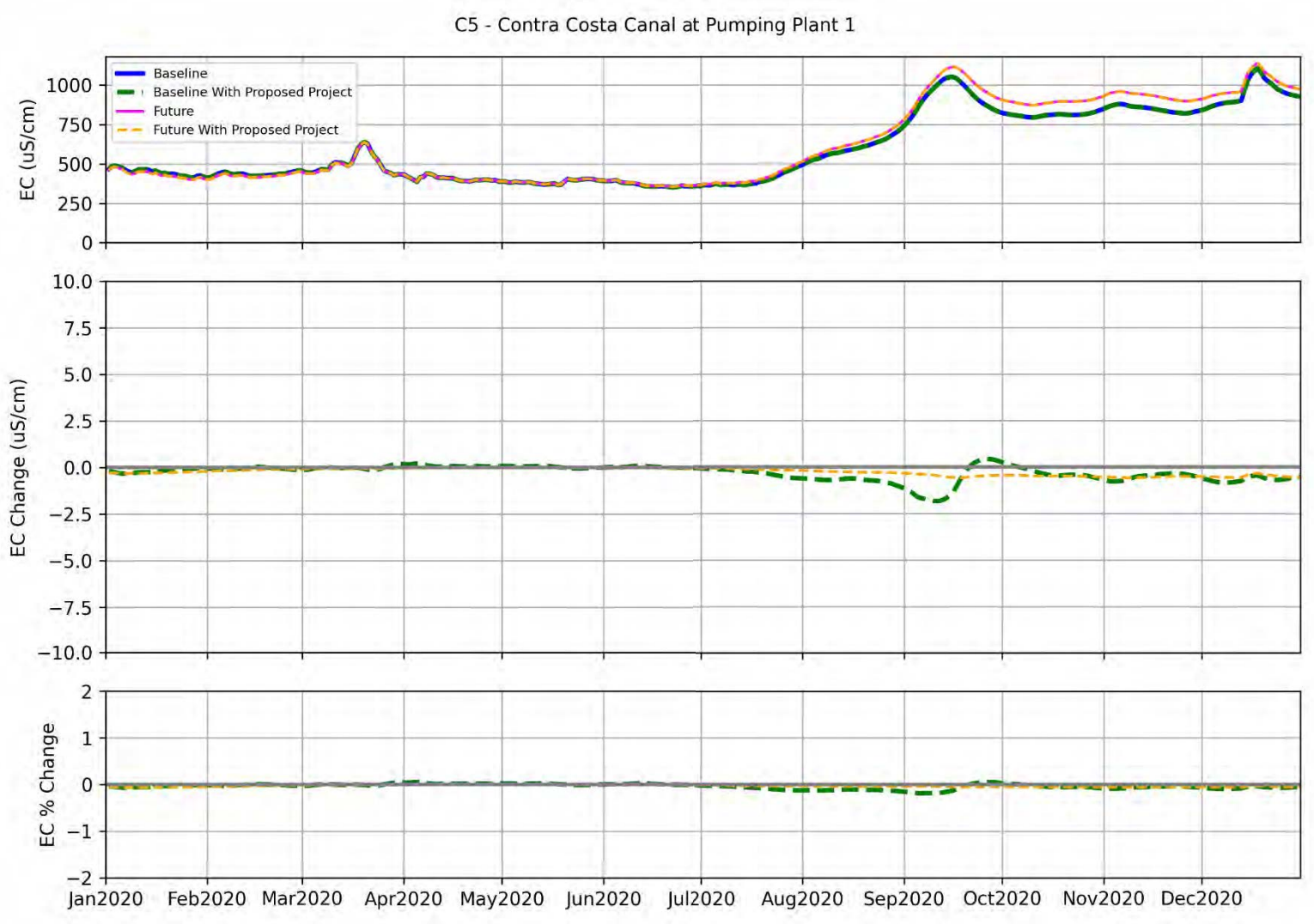


Figure 43 Daily average EC at station C5 - Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

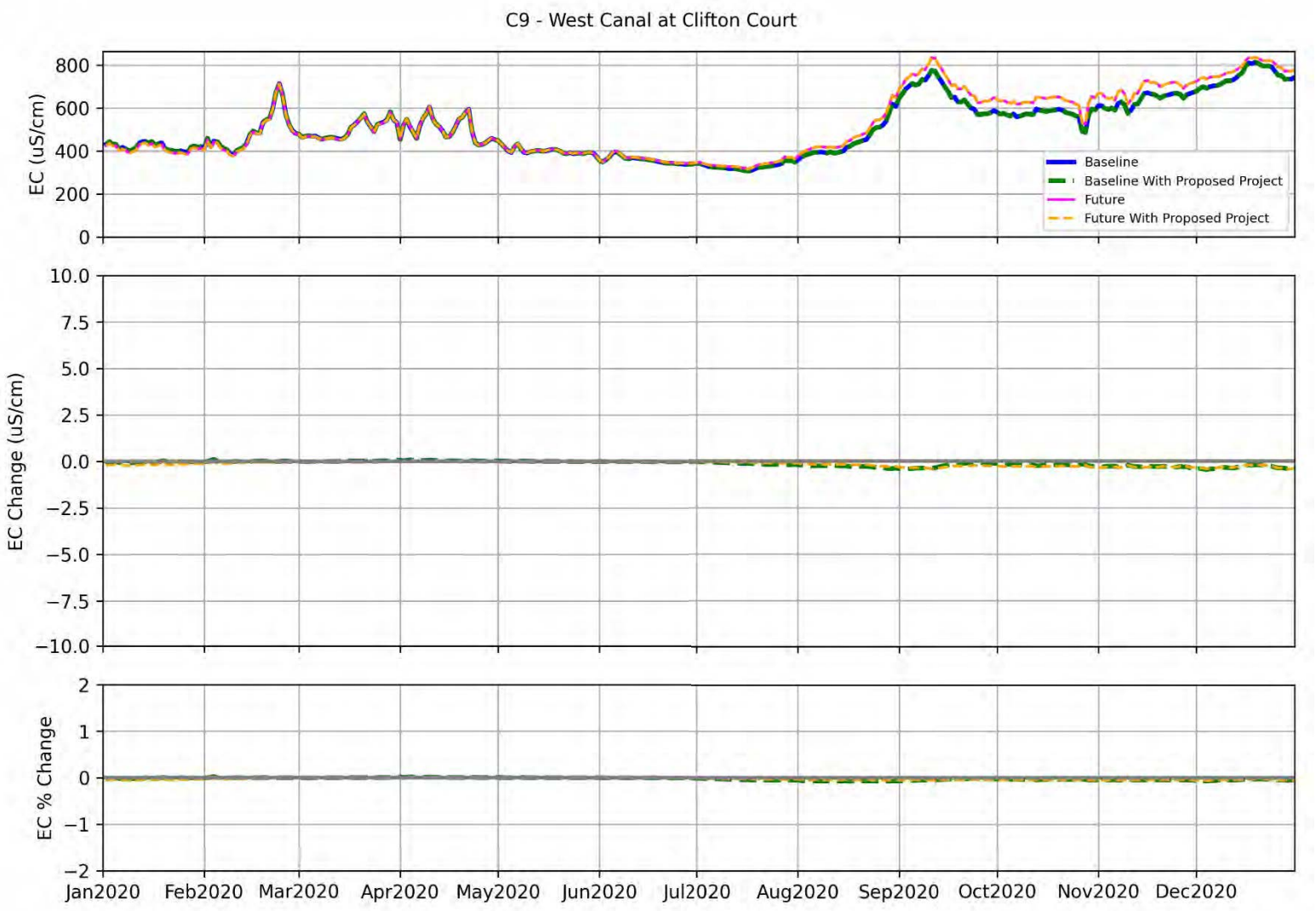


Figure 44 Daily average EC at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

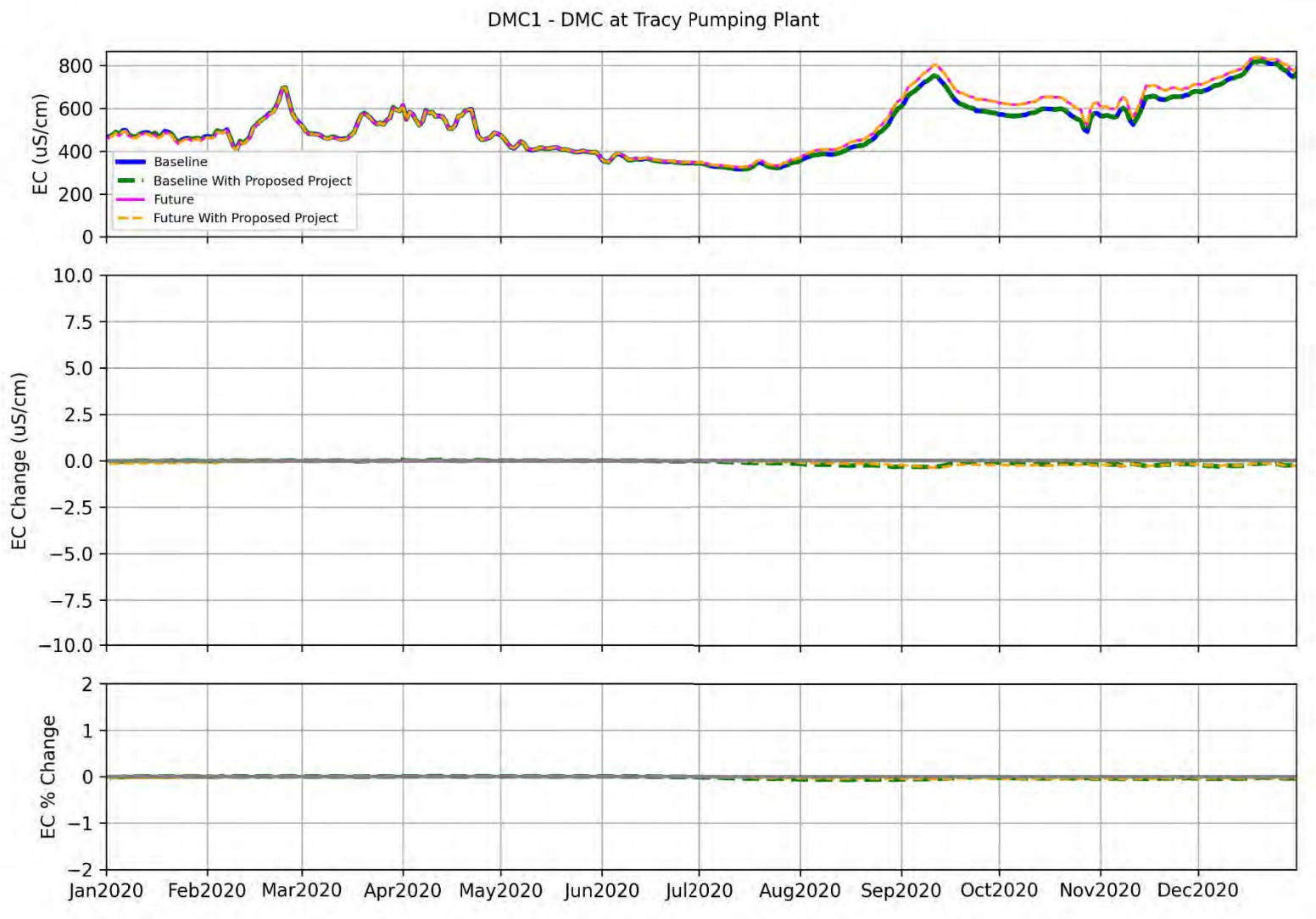


Figure 45 Daily average EC at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

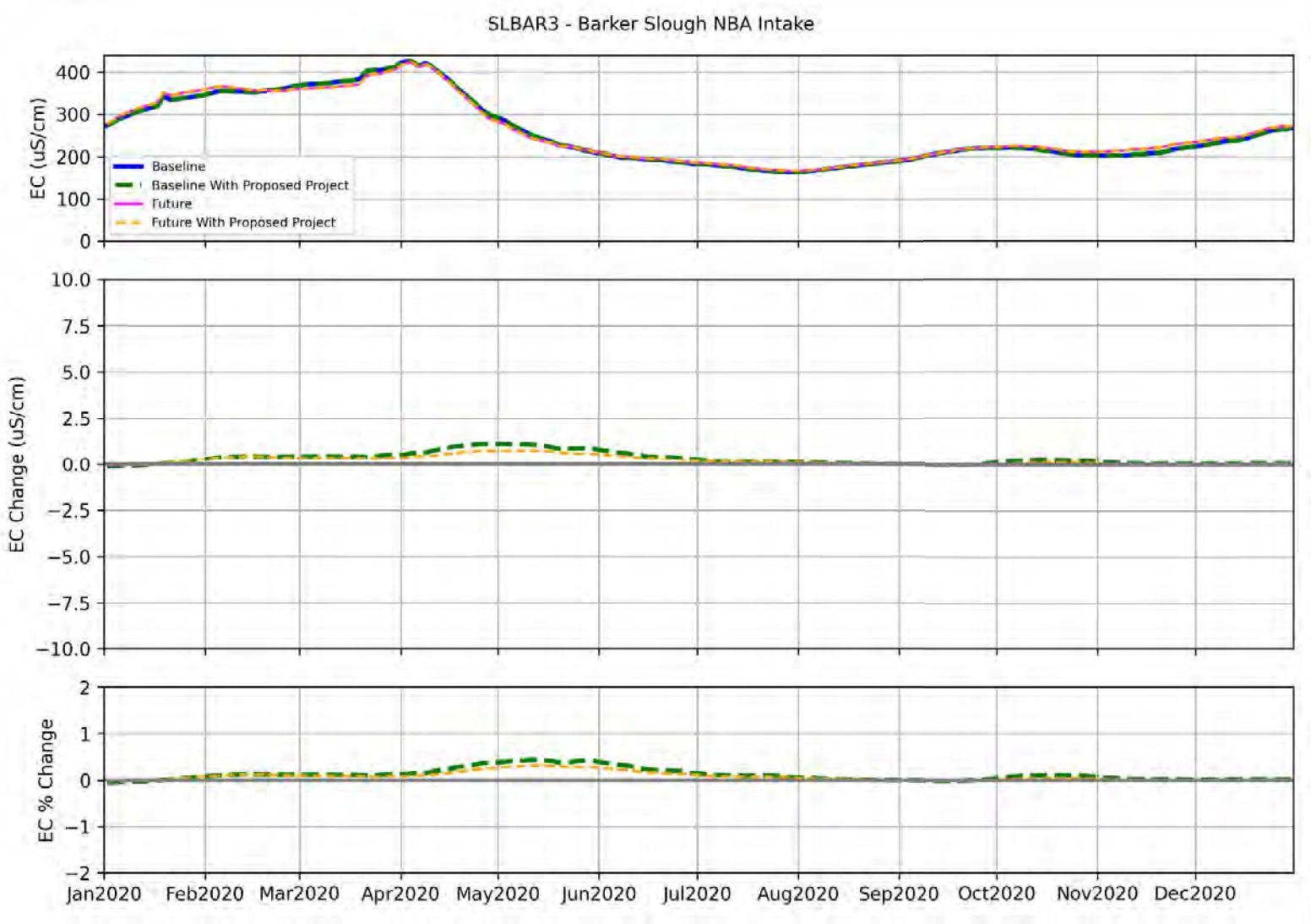


Figure 46 Daily average EC at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

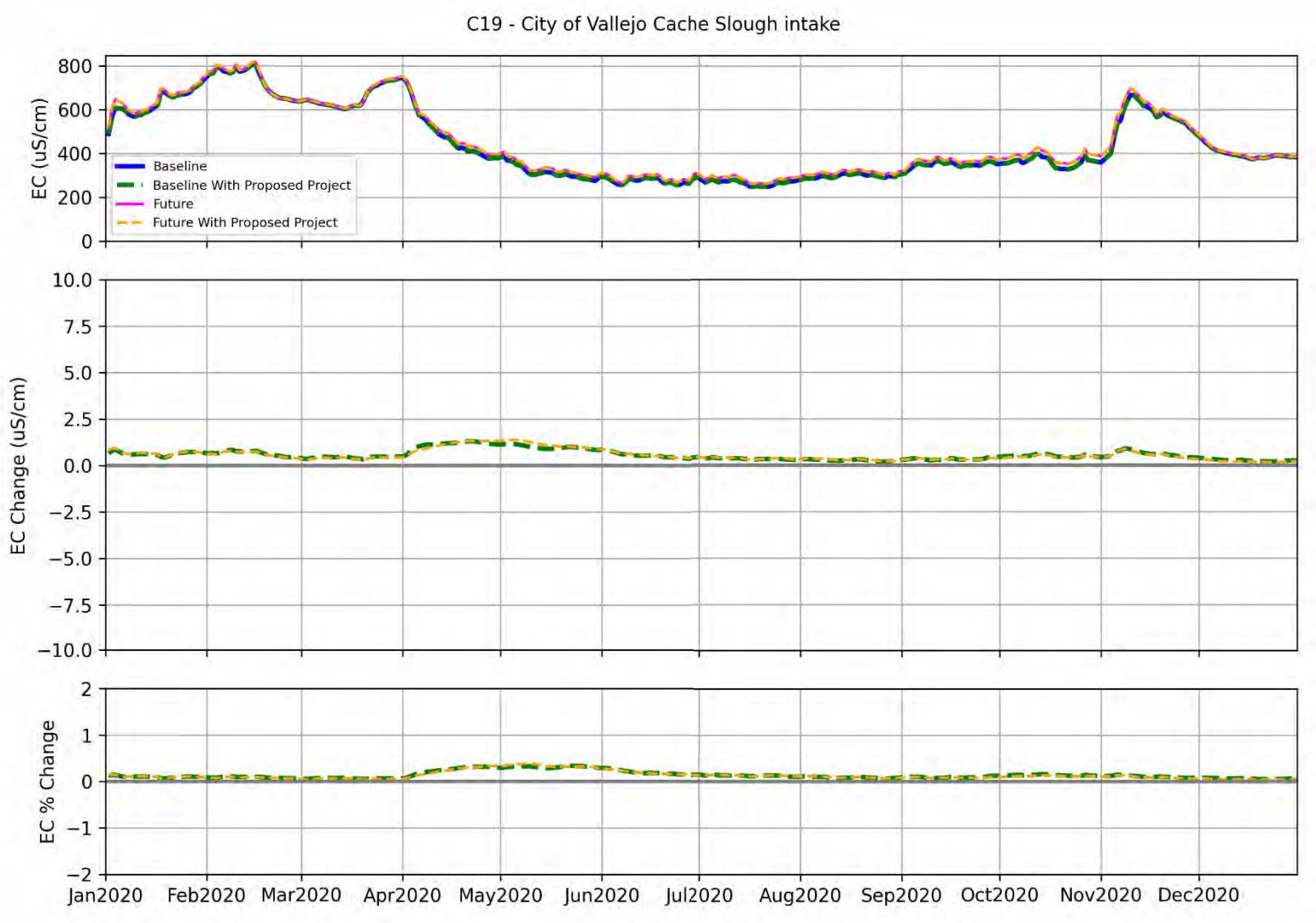


Figure 47 Daily average EC at station C19 –City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

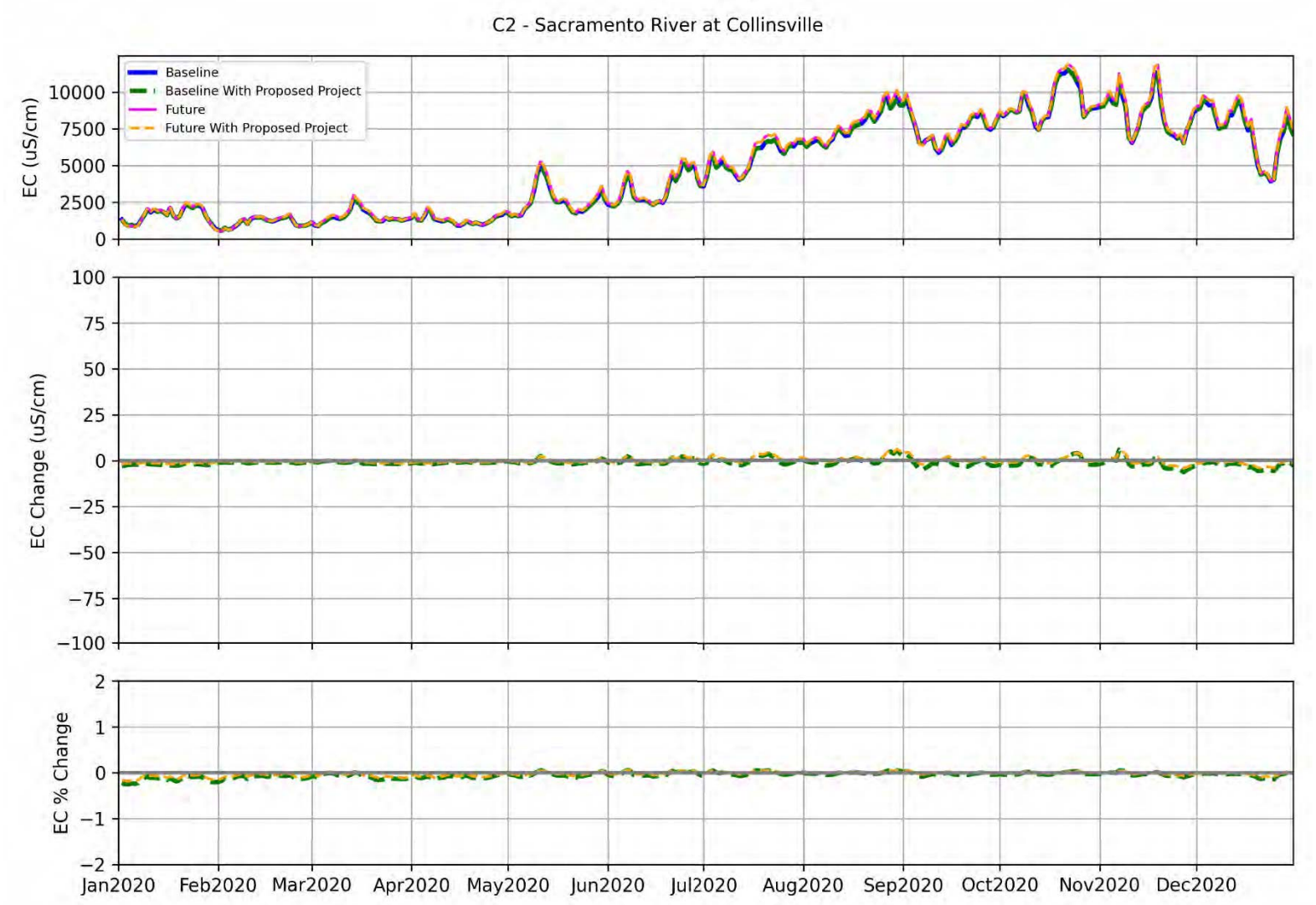


Figure 48 Daily average EC at station C2 – Sacramento River at Collinsville for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

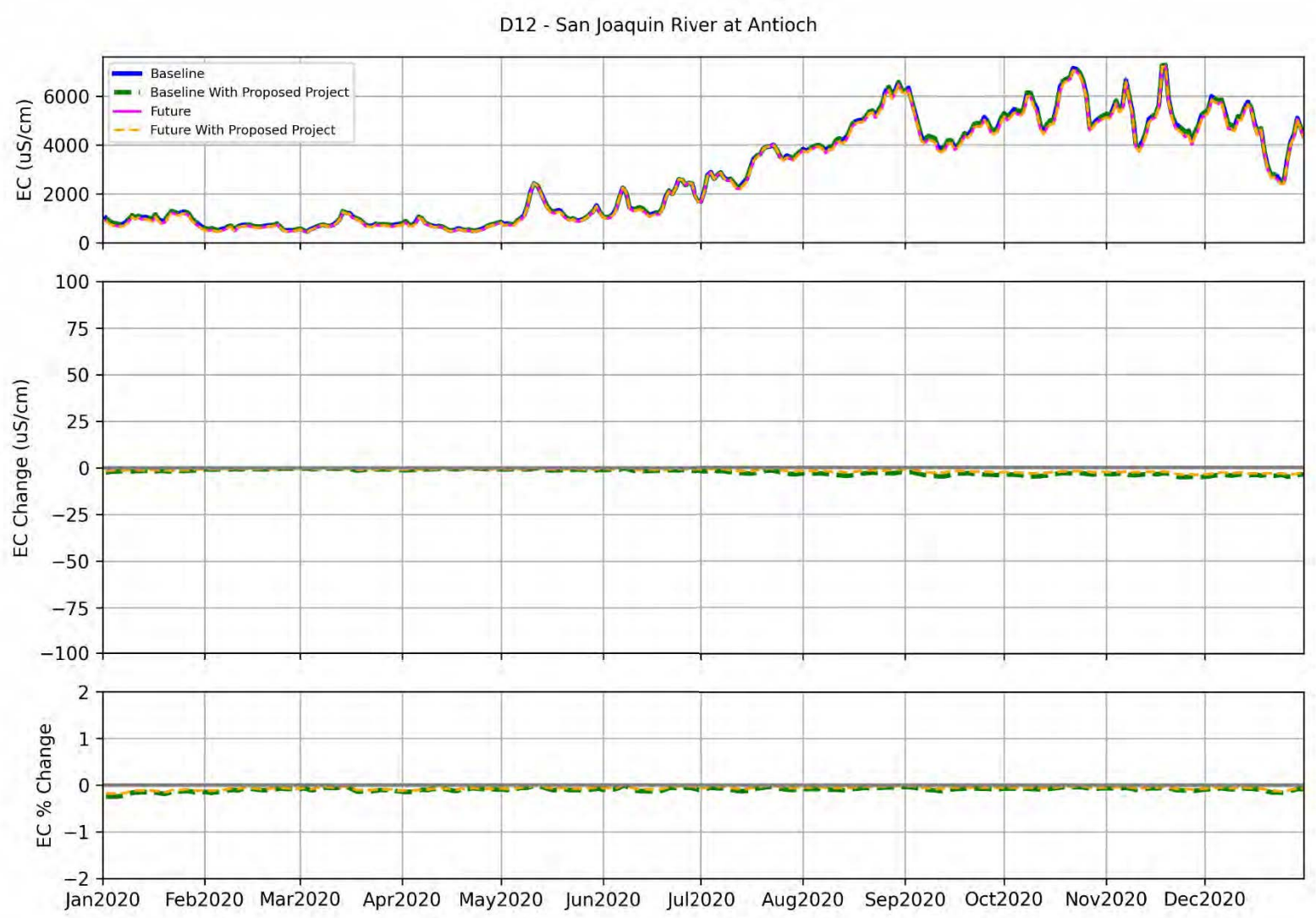


Figure 49 Daily average EC at station D12 – San Joaquin River at Antioch intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

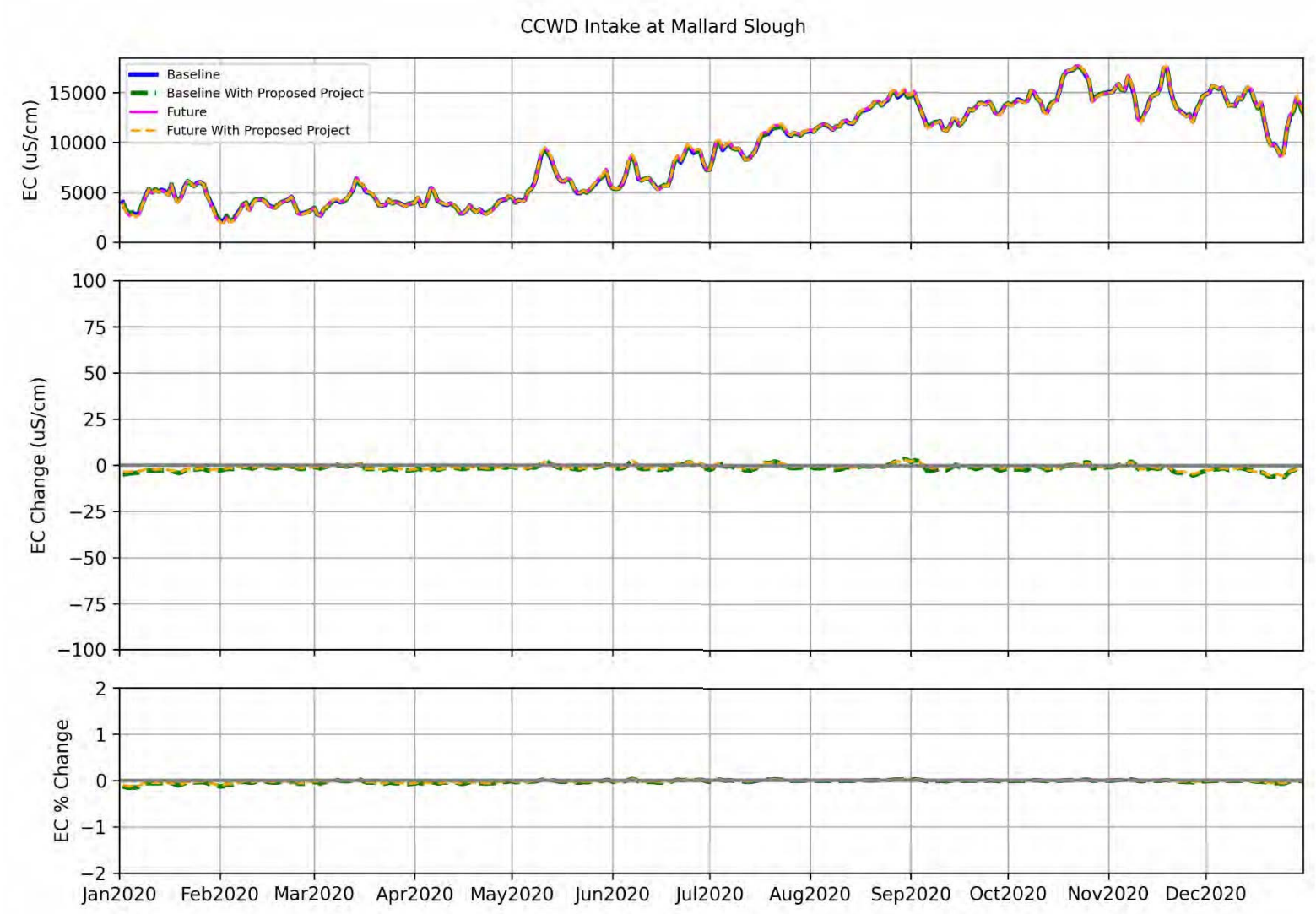


Figure 50 Daily average EC at station for CCWD – Mallard Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

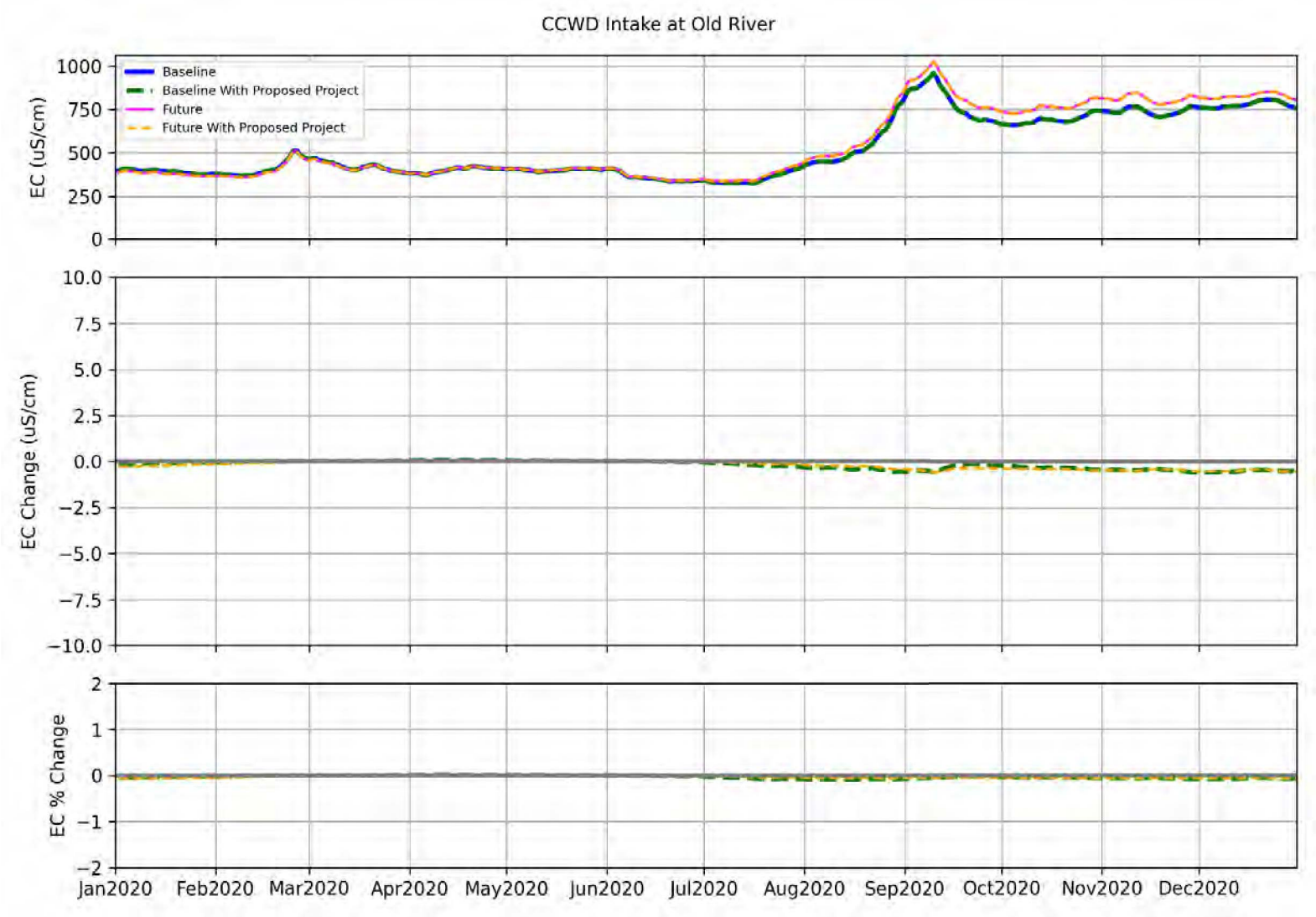


Figure 51 Daily average EC at CCWD – Old River intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

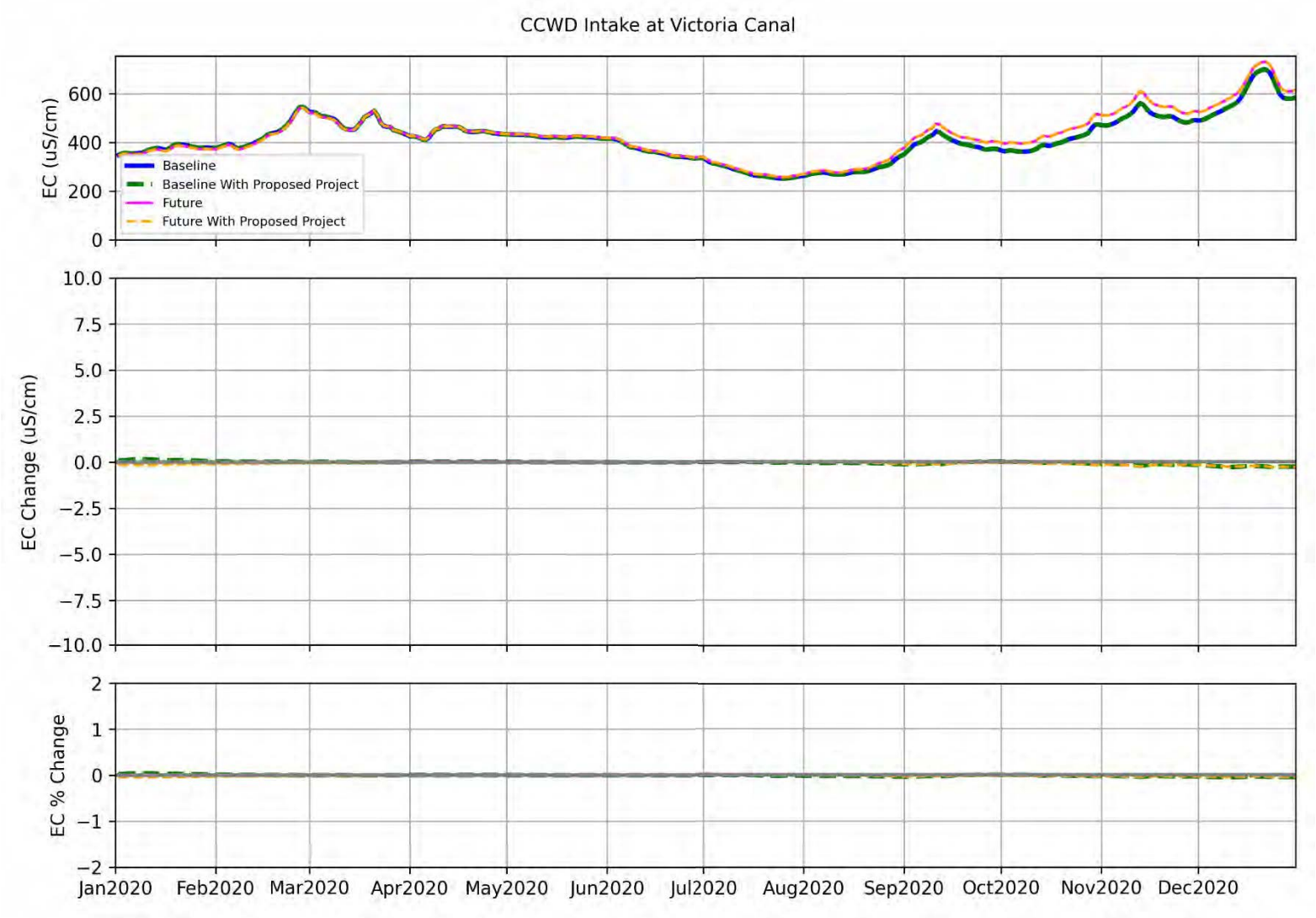


Figure 52 Daily average EC at CCWD – Victoria Canal intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) EC change with the proposed Project for the 2020 simulation period.

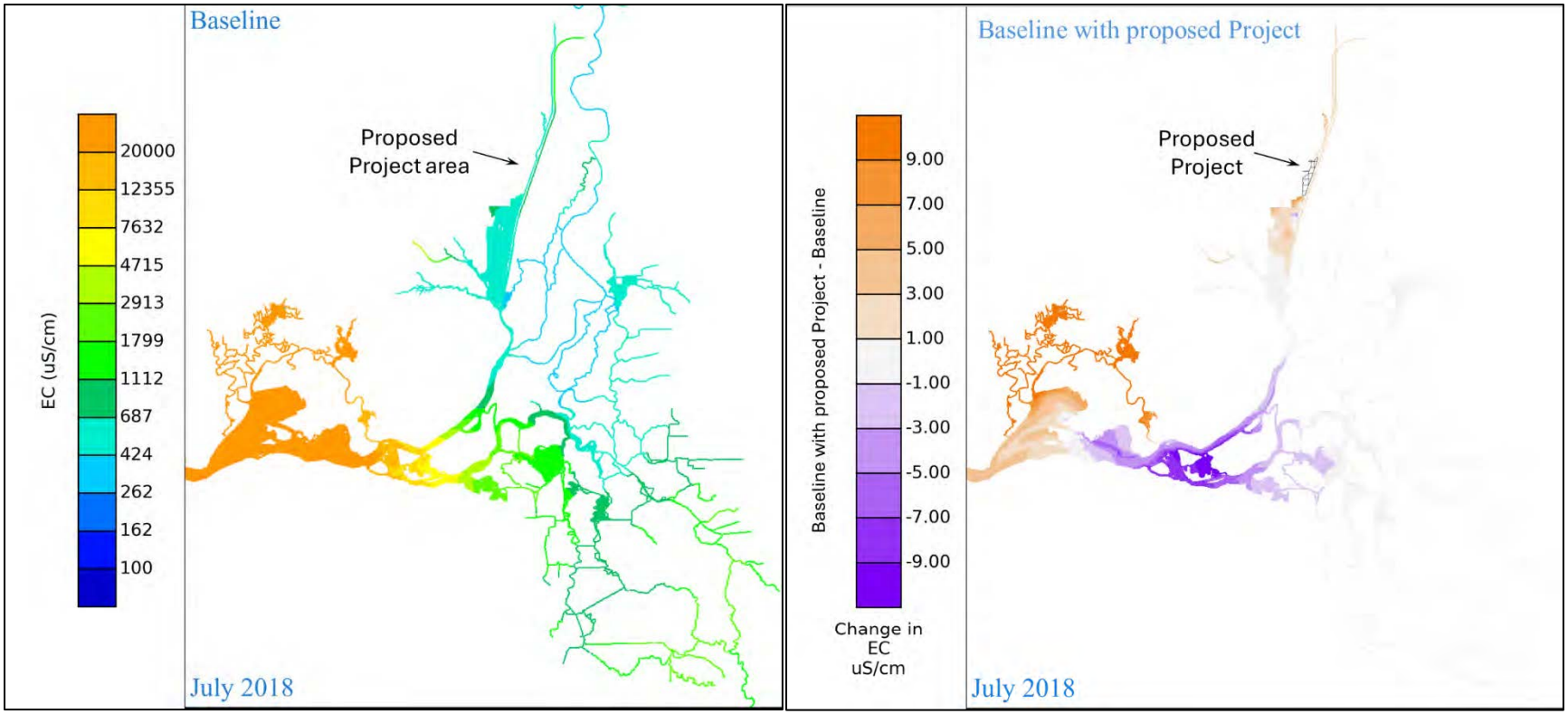


Figure 53 July 2018 (left) average Baseline condition EC and (right) Baseline with proposed Project change from Baseline condition average EC.

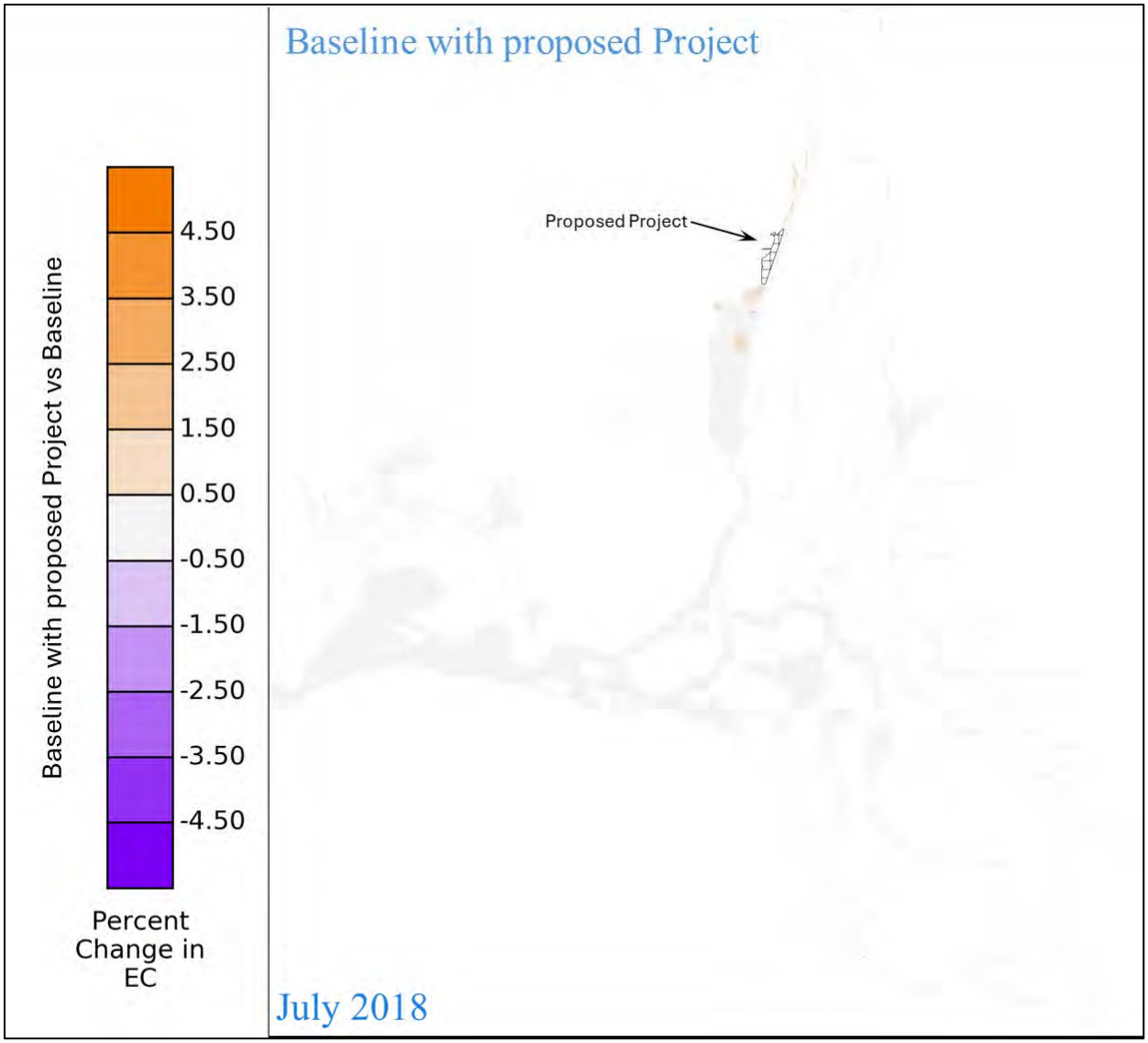


Figure 54 Baseline with proposed Project average percent change from Baseline EC for July 2018.

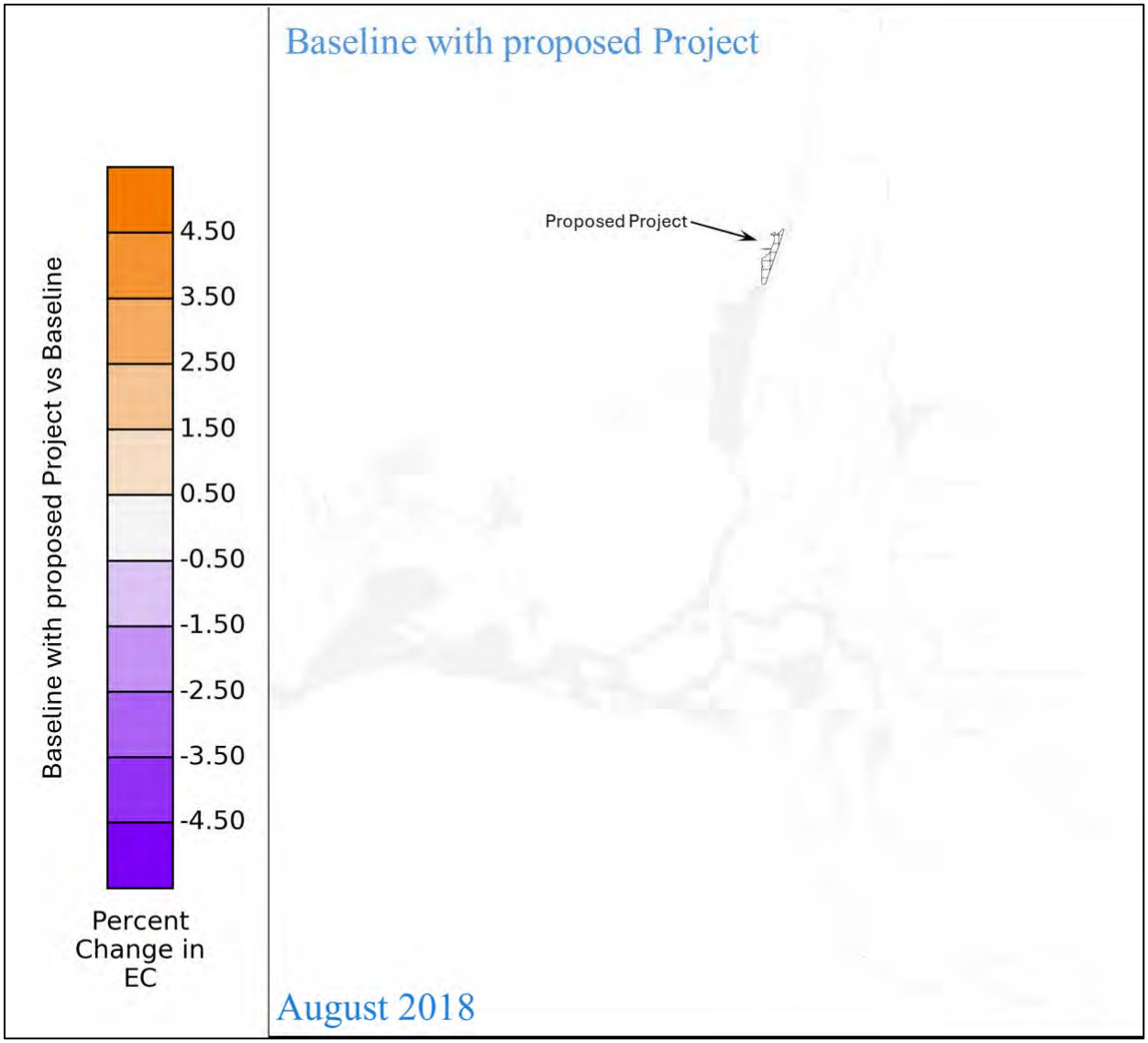


Figure 55 Baseline with proposed Project average percent change from Baseline EC for August 2018.

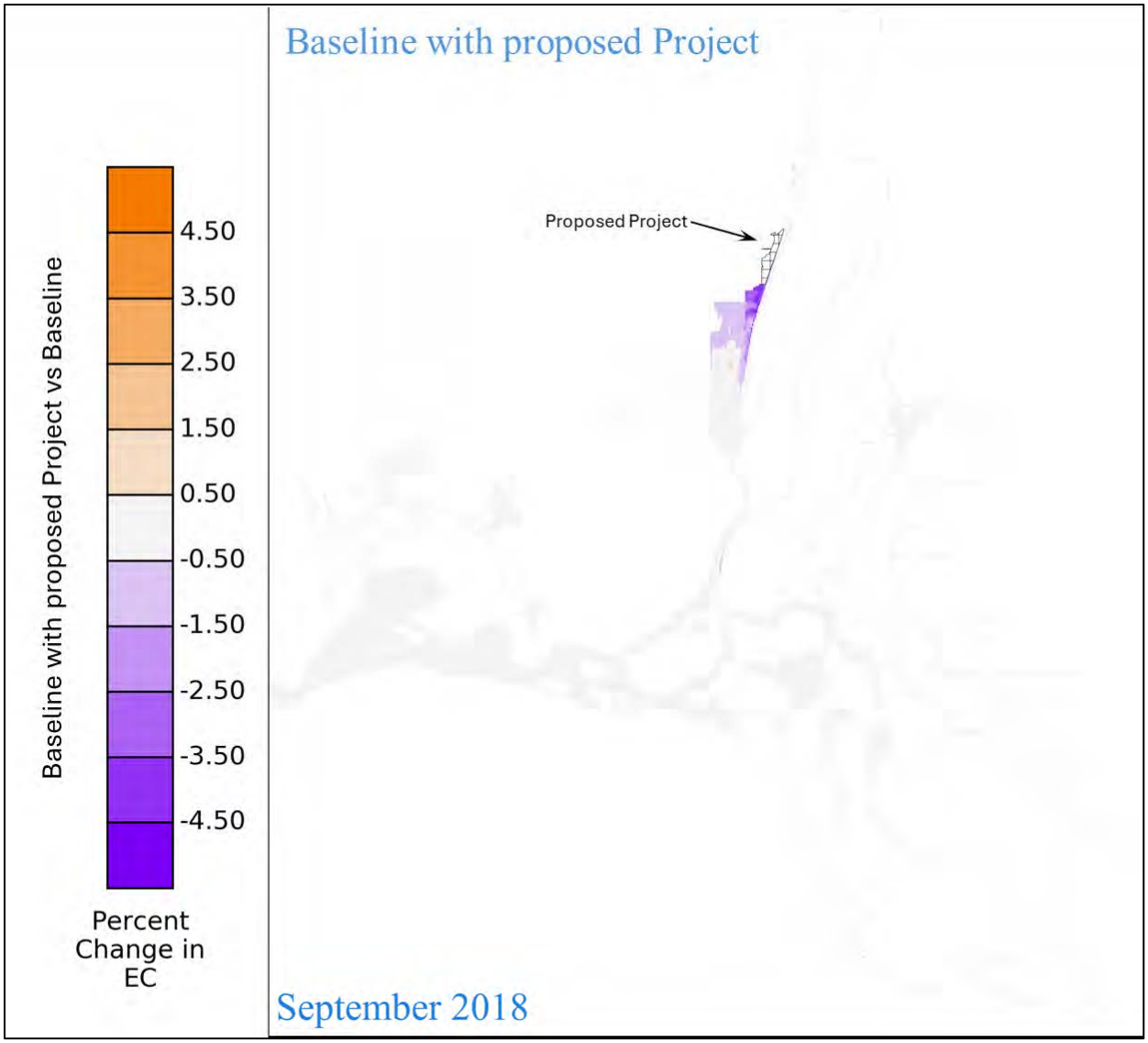


Figure 56 Baseline with proposed Project average percent change from Baseline EC for September 2018.

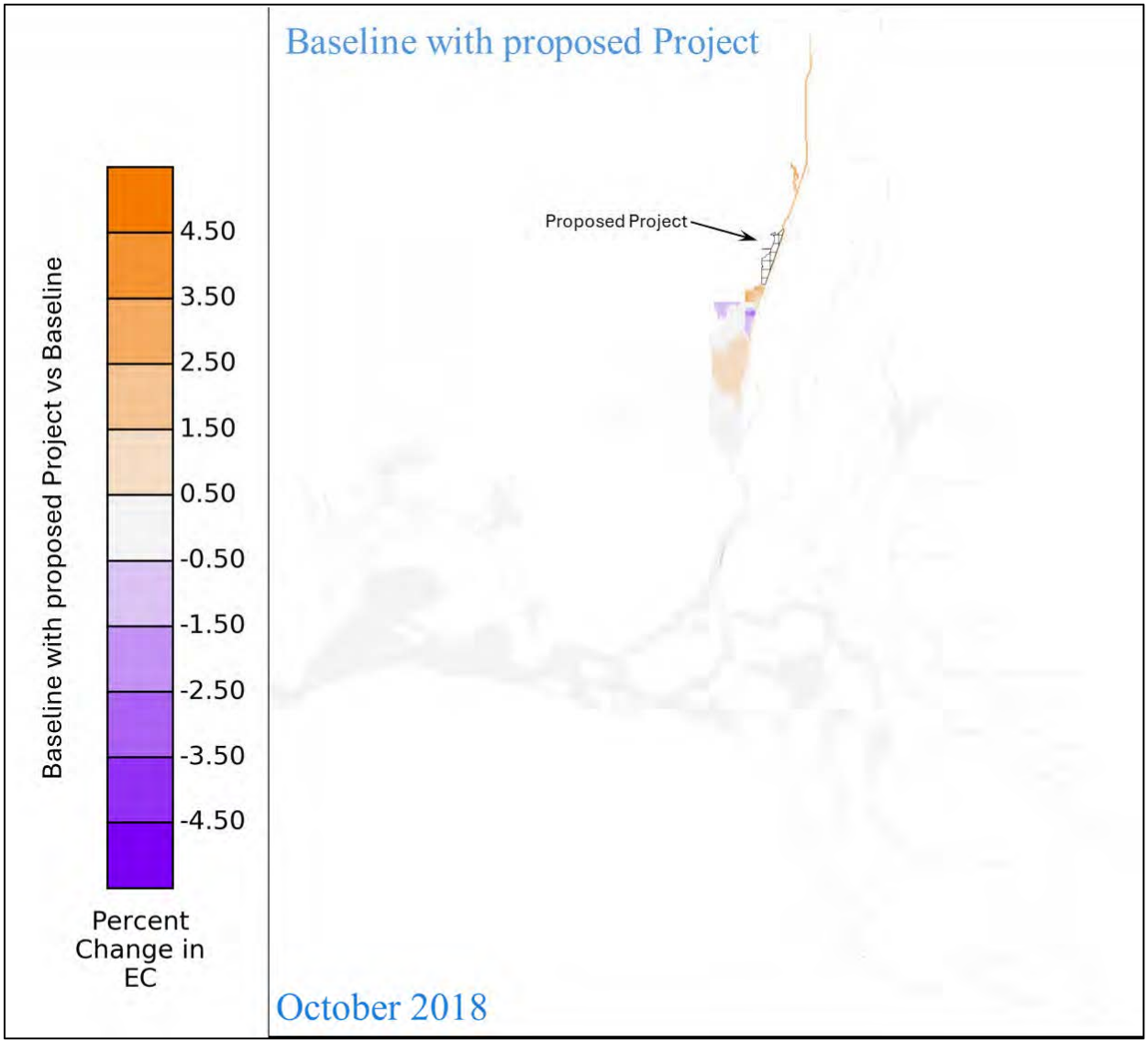


Figure 57 Baseline with proposed Project average percent change from Baseline EC for October 2018.

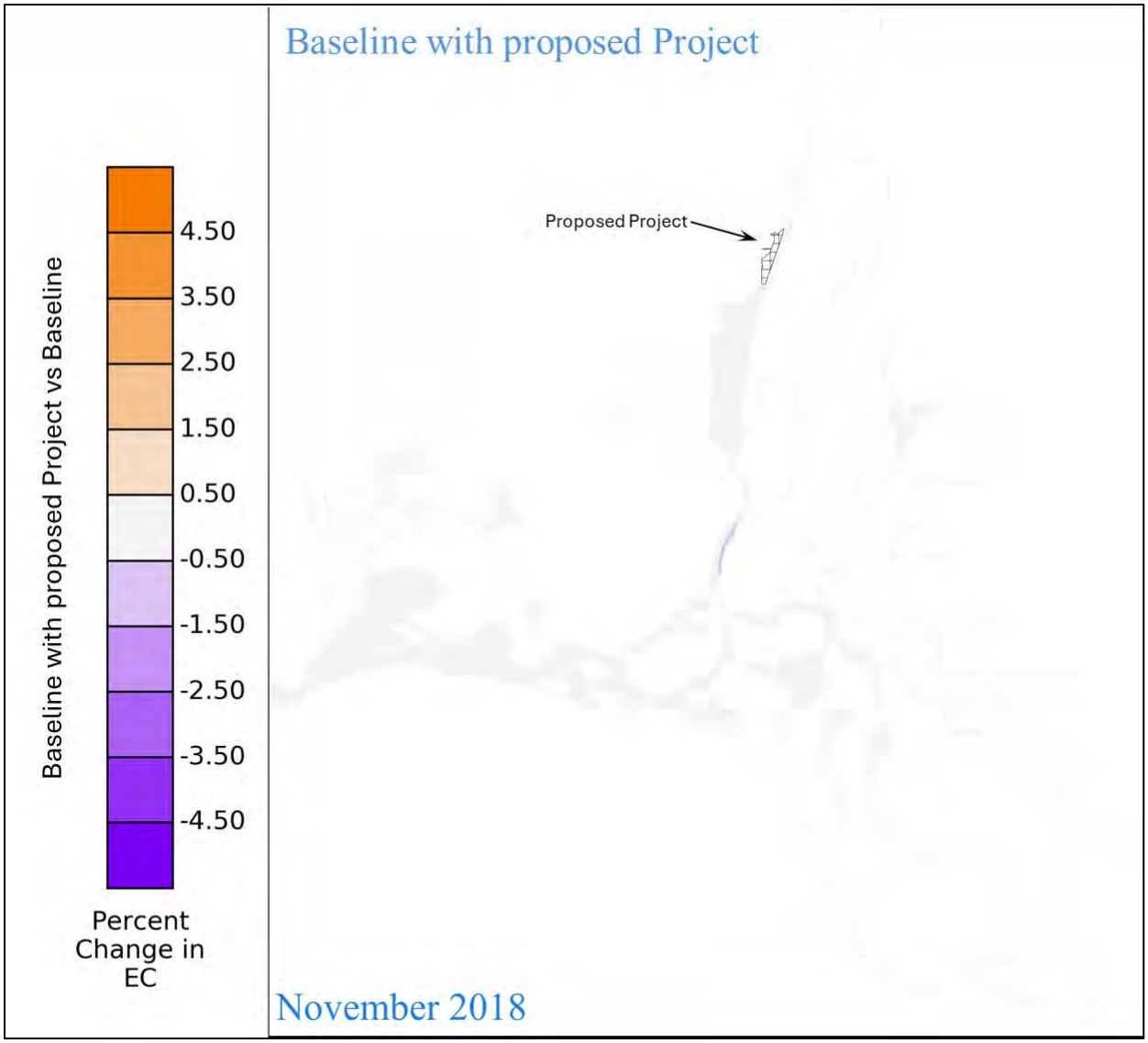


Figure 58 Baseline with proposed Project average percent change from Baseline EC for November 2018.

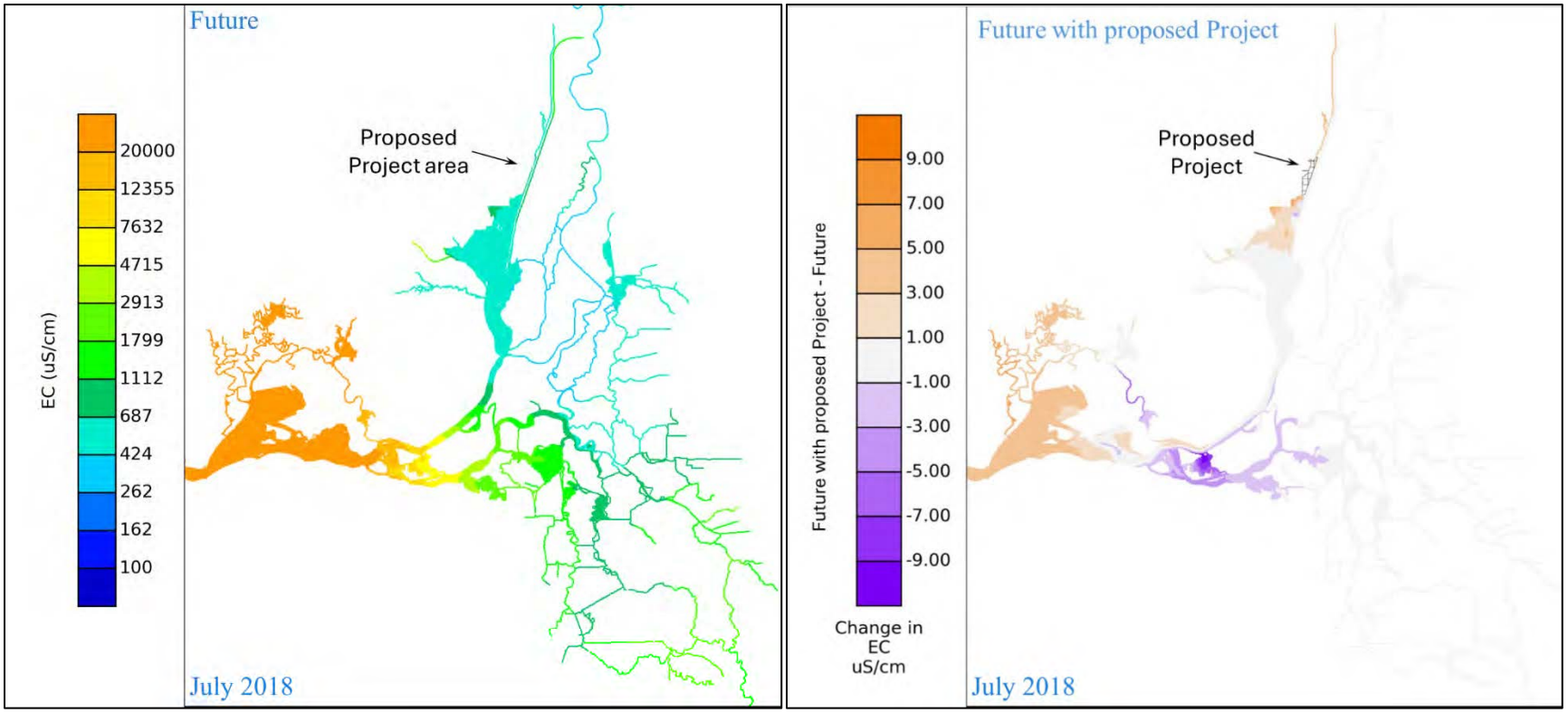


Figure 59 July 2018 (left) average Future condition EC and (right) Future with proposed Project change from Future condition average EC.

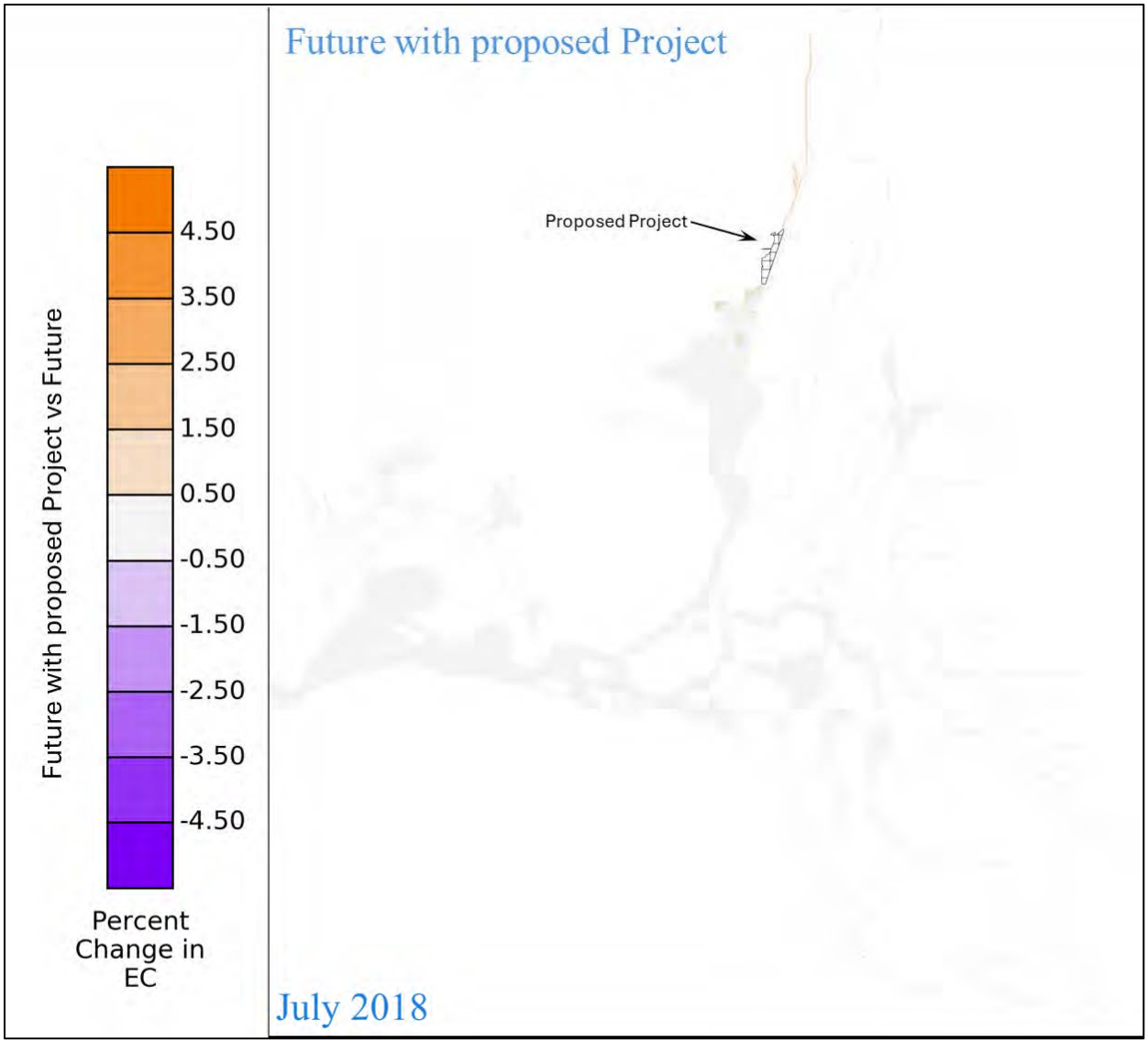


Figure 60 Future with proposed Project average percent change from Future EC for July 2018.

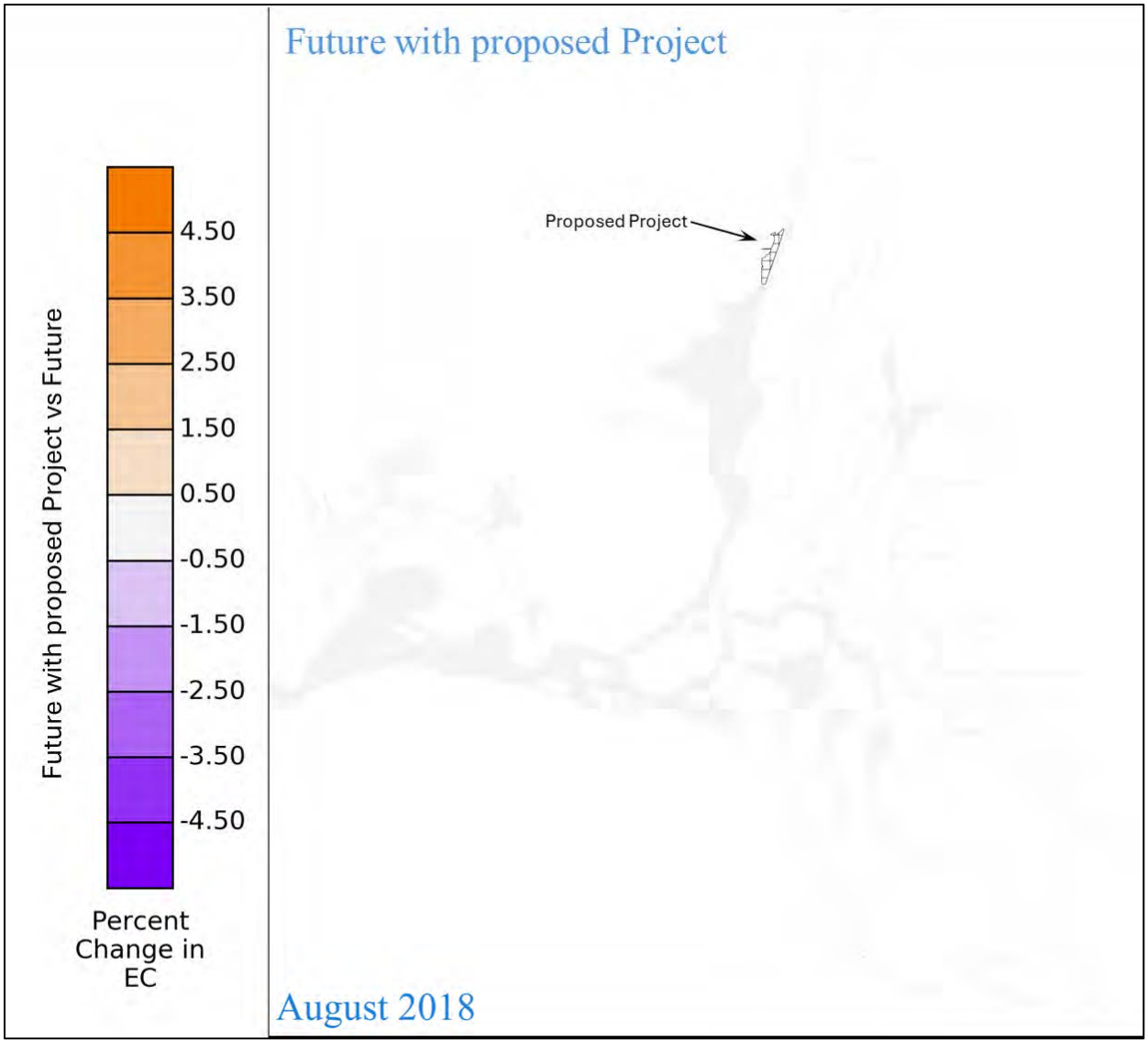


Figure 61 Future with proposed Project average percent change from Future EC for August 2018.

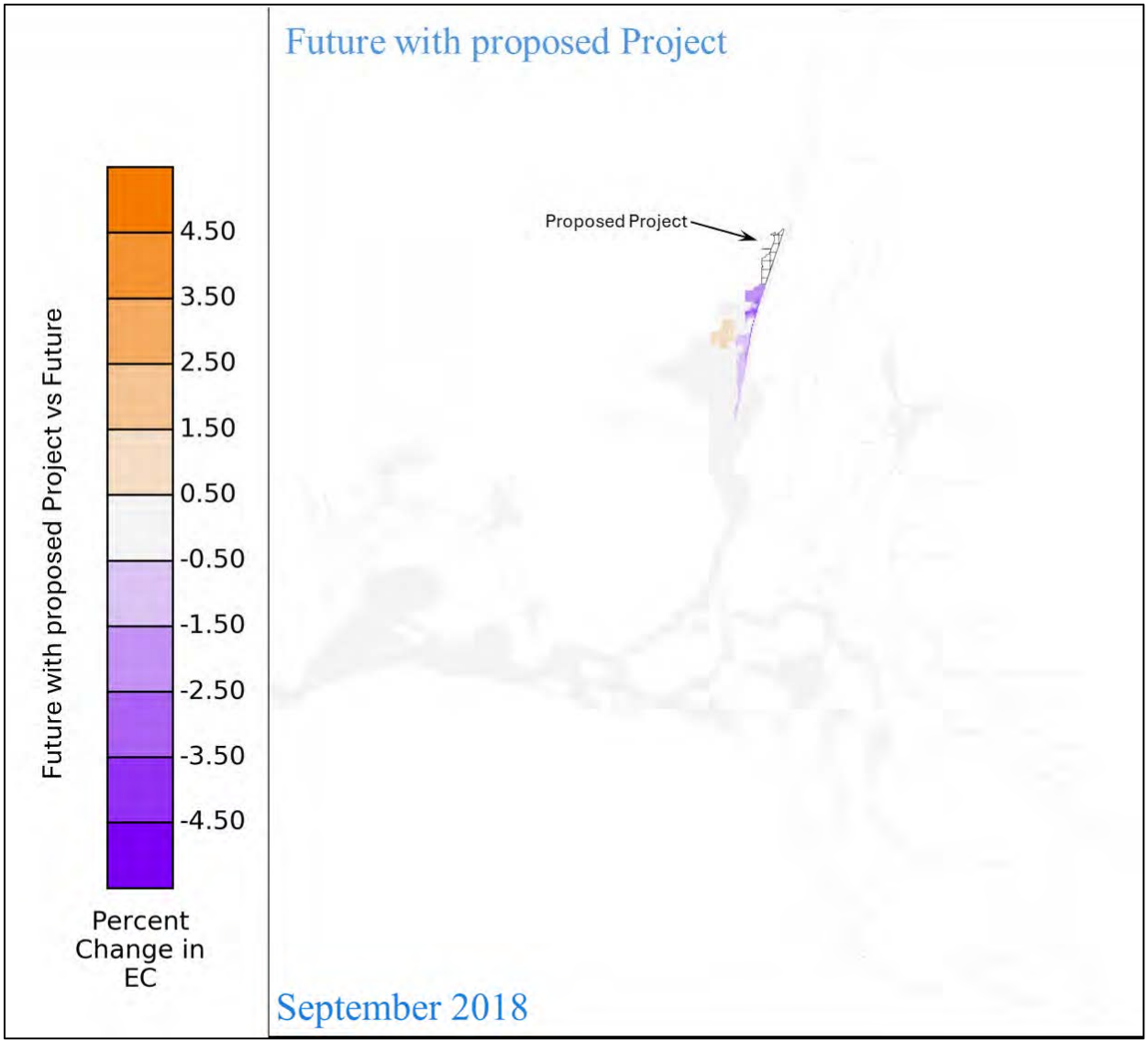


Figure 62 Future with proposed Project average percent change from Future EC for September 2018.

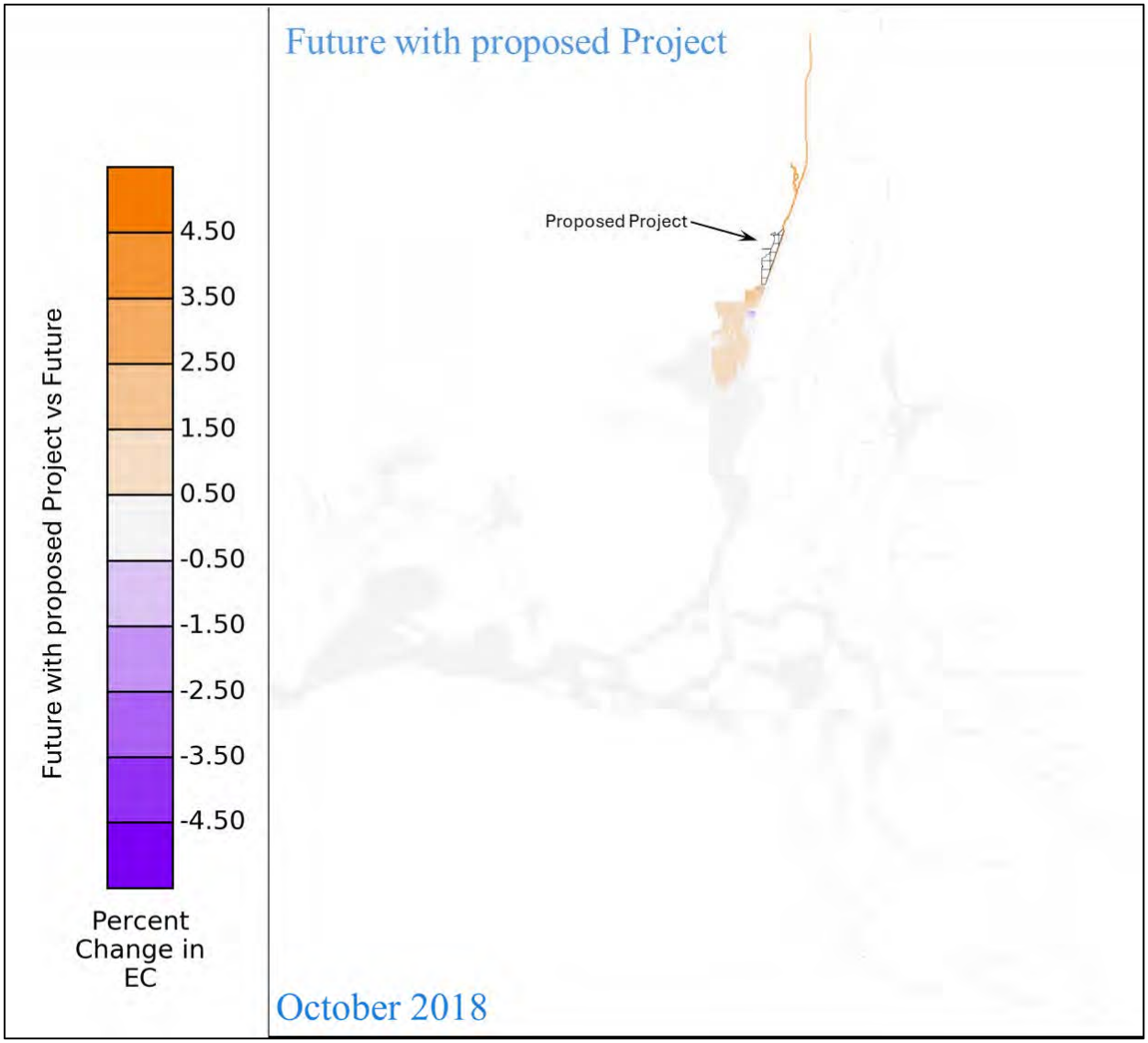


Figure 63 Future with proposed Project average percent change from Future EC for October 2018.

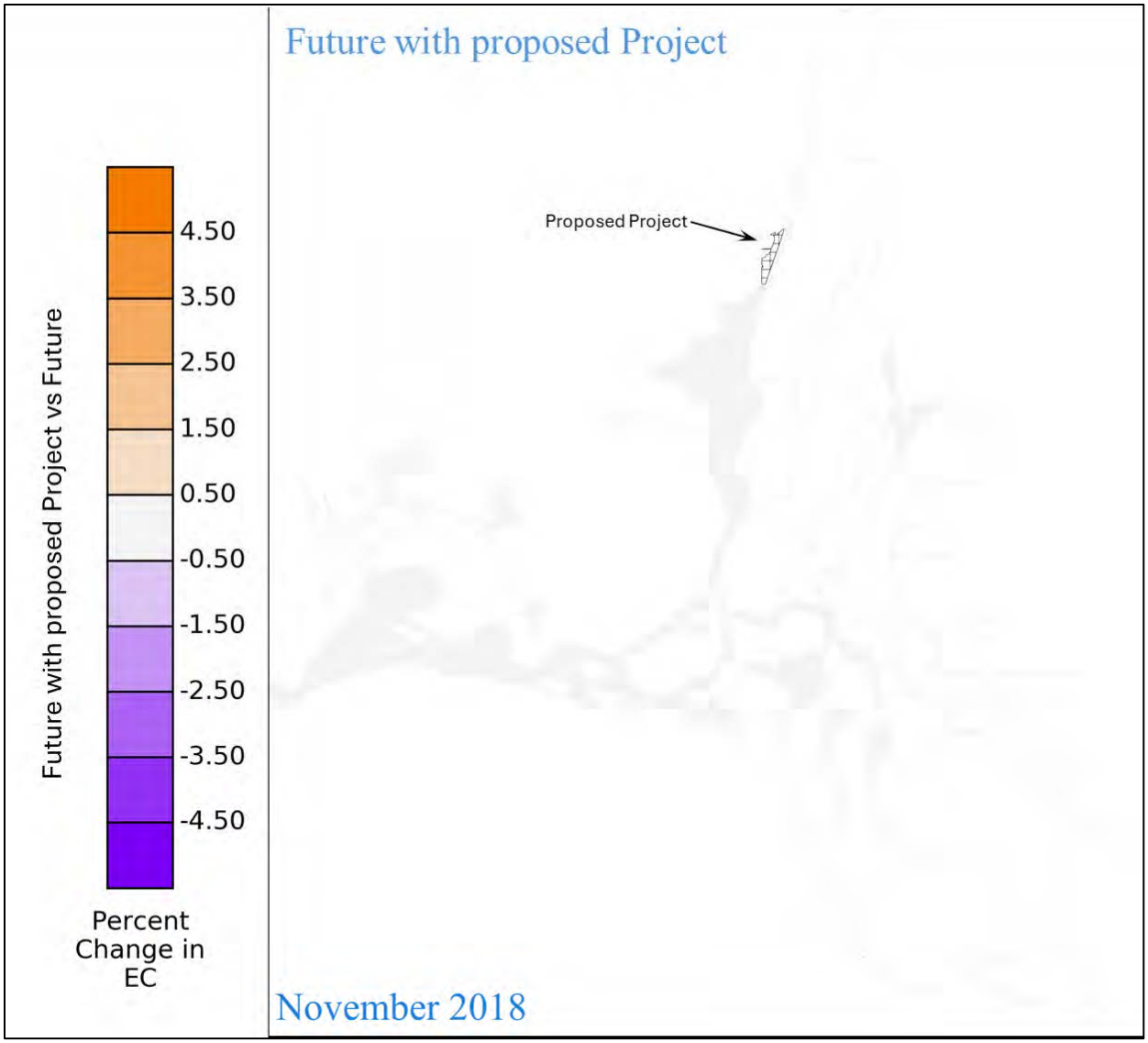


Figure 64 Future with proposed Project average percent change from Future EC for November 2018.

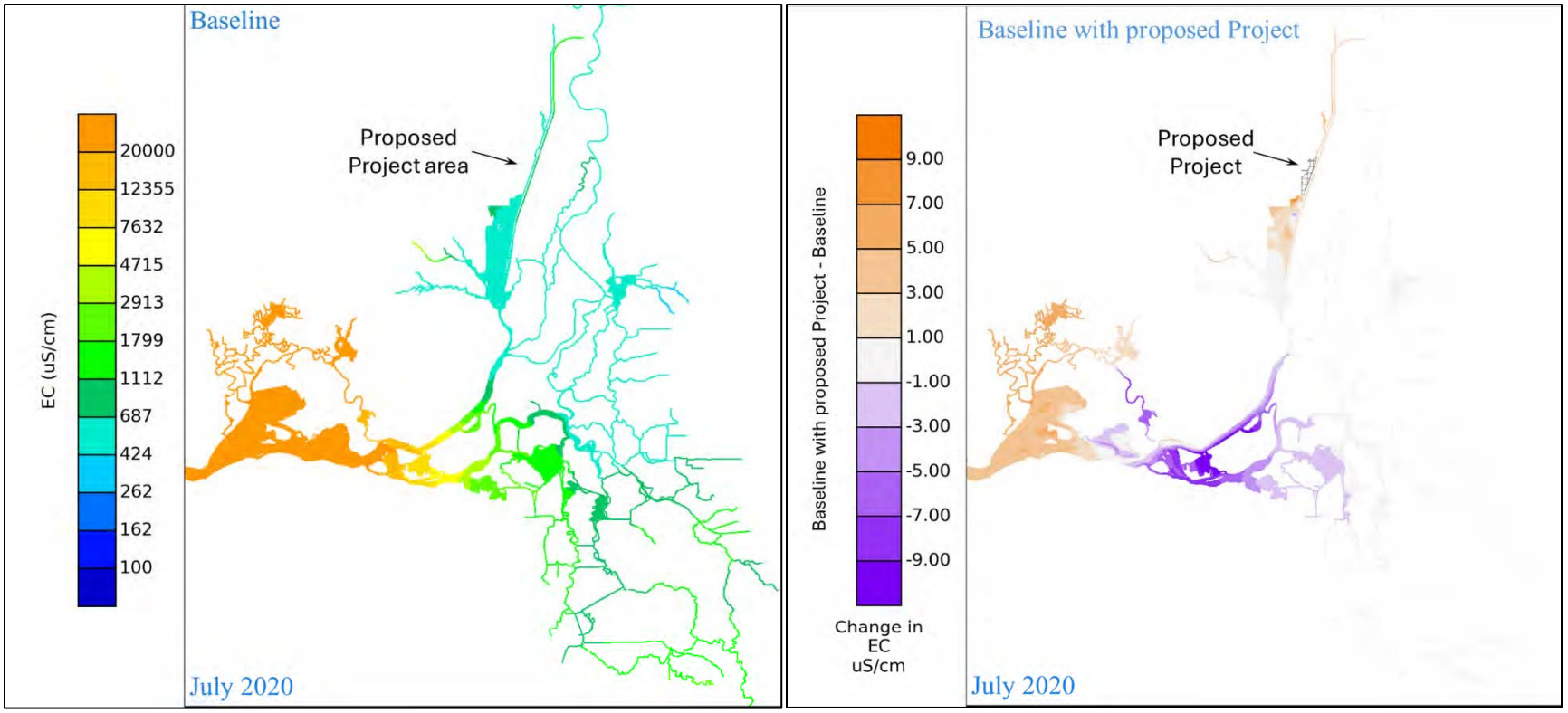


Figure 65 July 2020 (left) average Baseline condition EC and (right) Baseline with proposed Project change from Baseline condition average EC.

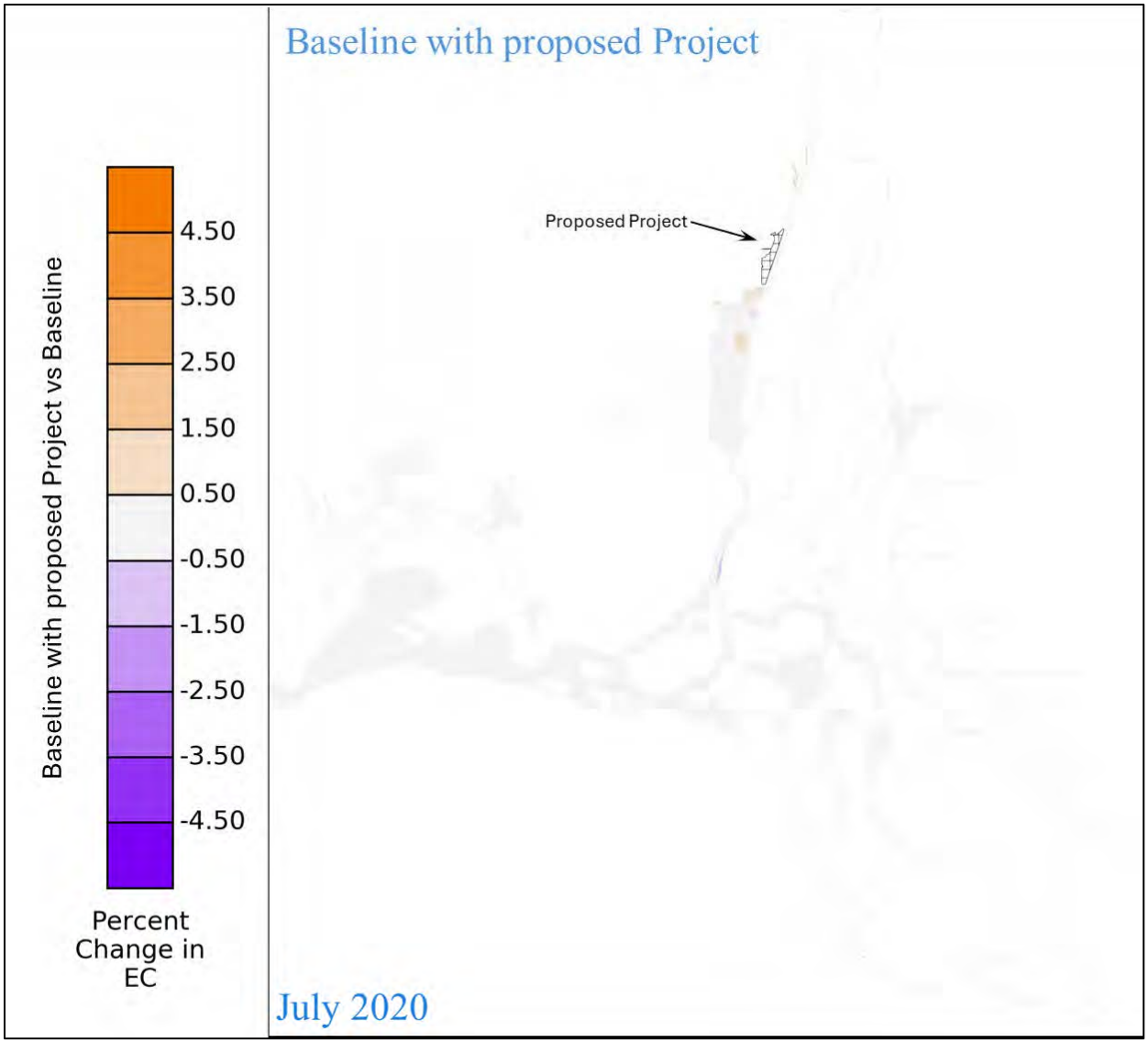


Figure 66 Baseline with proposed Project average percent change from Baseline EC for July 2020.

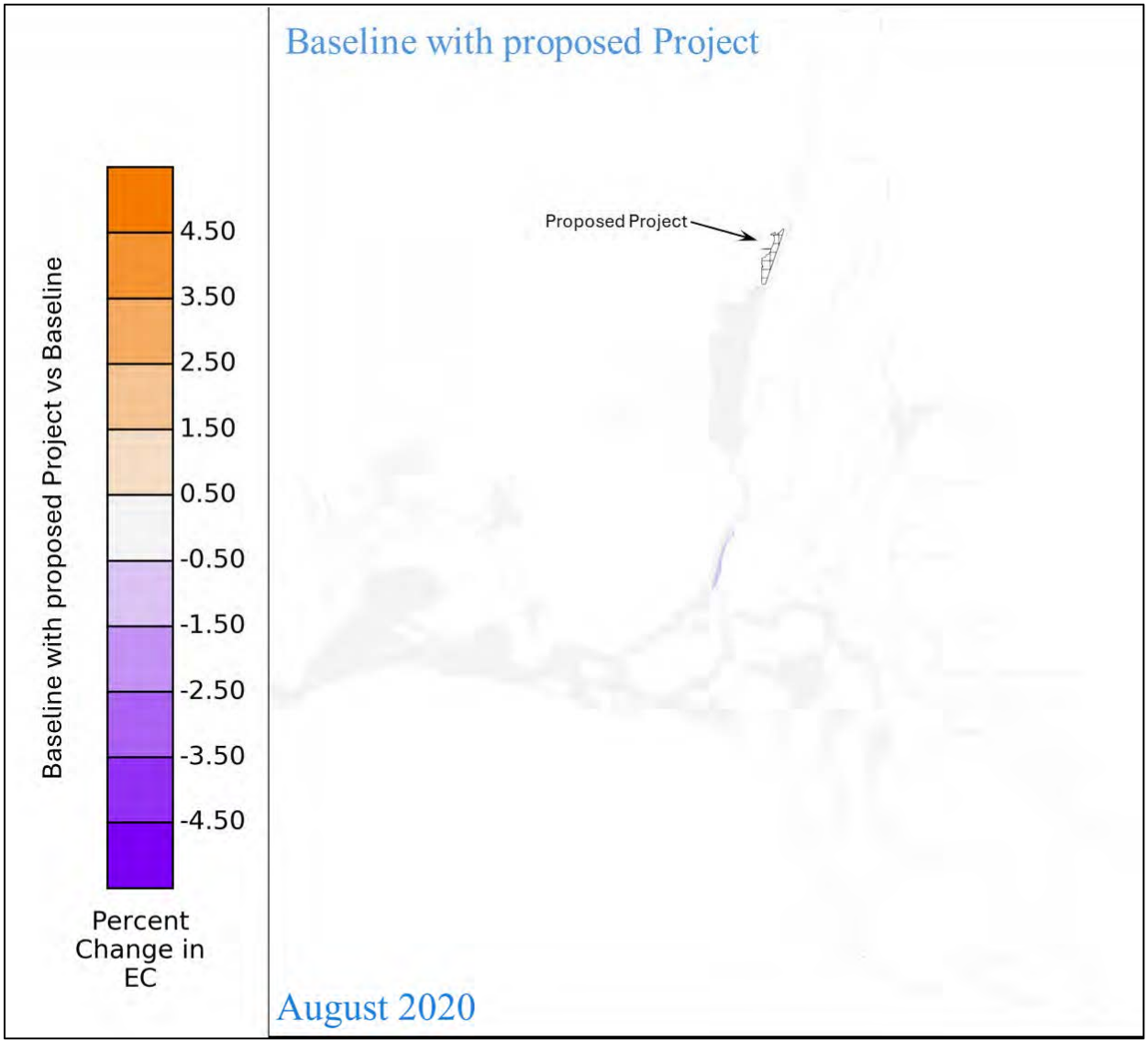


Figure 67 Baseline with proposed Project average percent change from Baseline EC for August 2020.

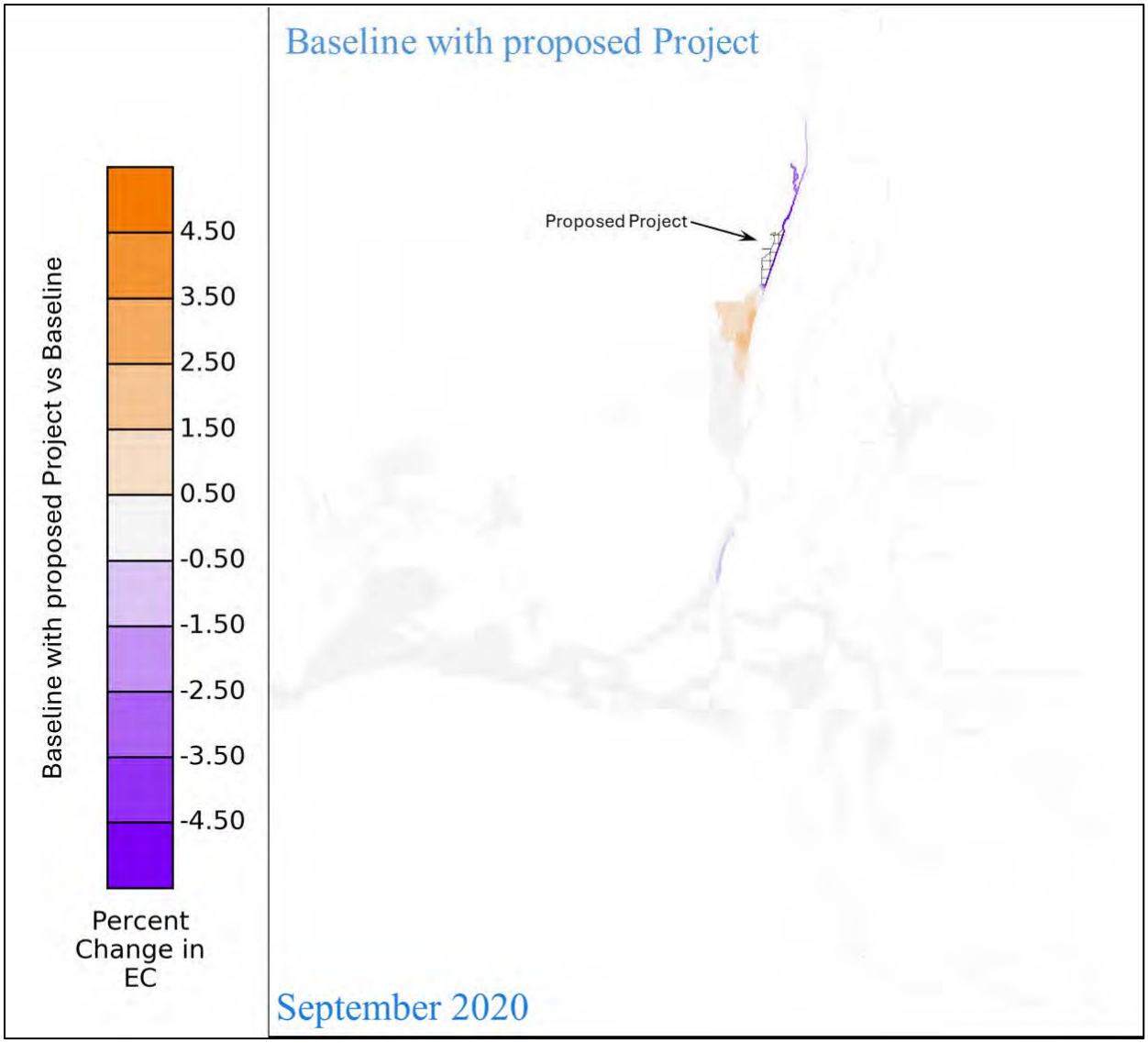


Figure 68 Baseline with proposed Project average percent change from Baseline EC for September 2020.

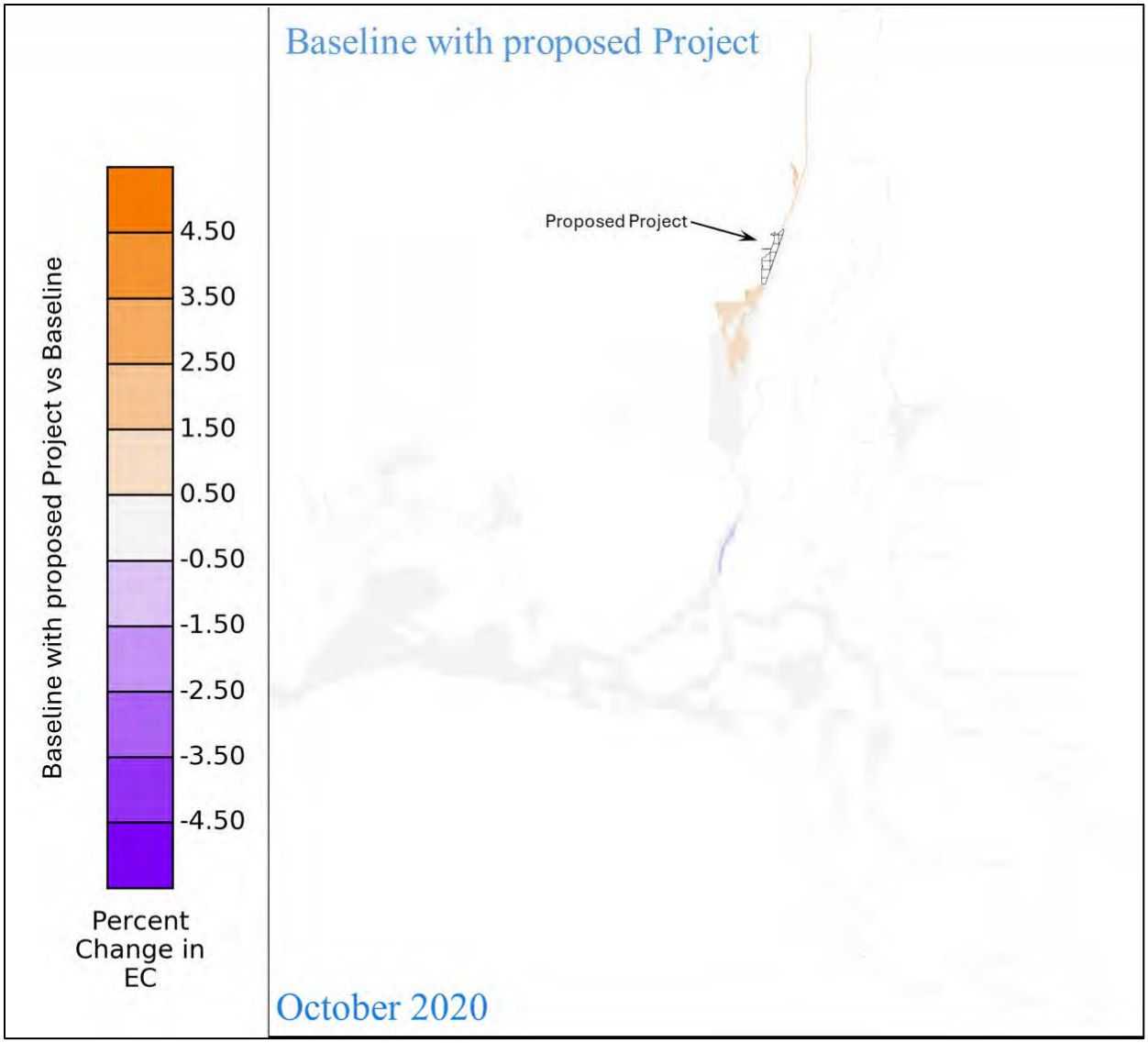


Figure 69 Baseline with proposed Project average percent change from Baseline EC for October 2020.

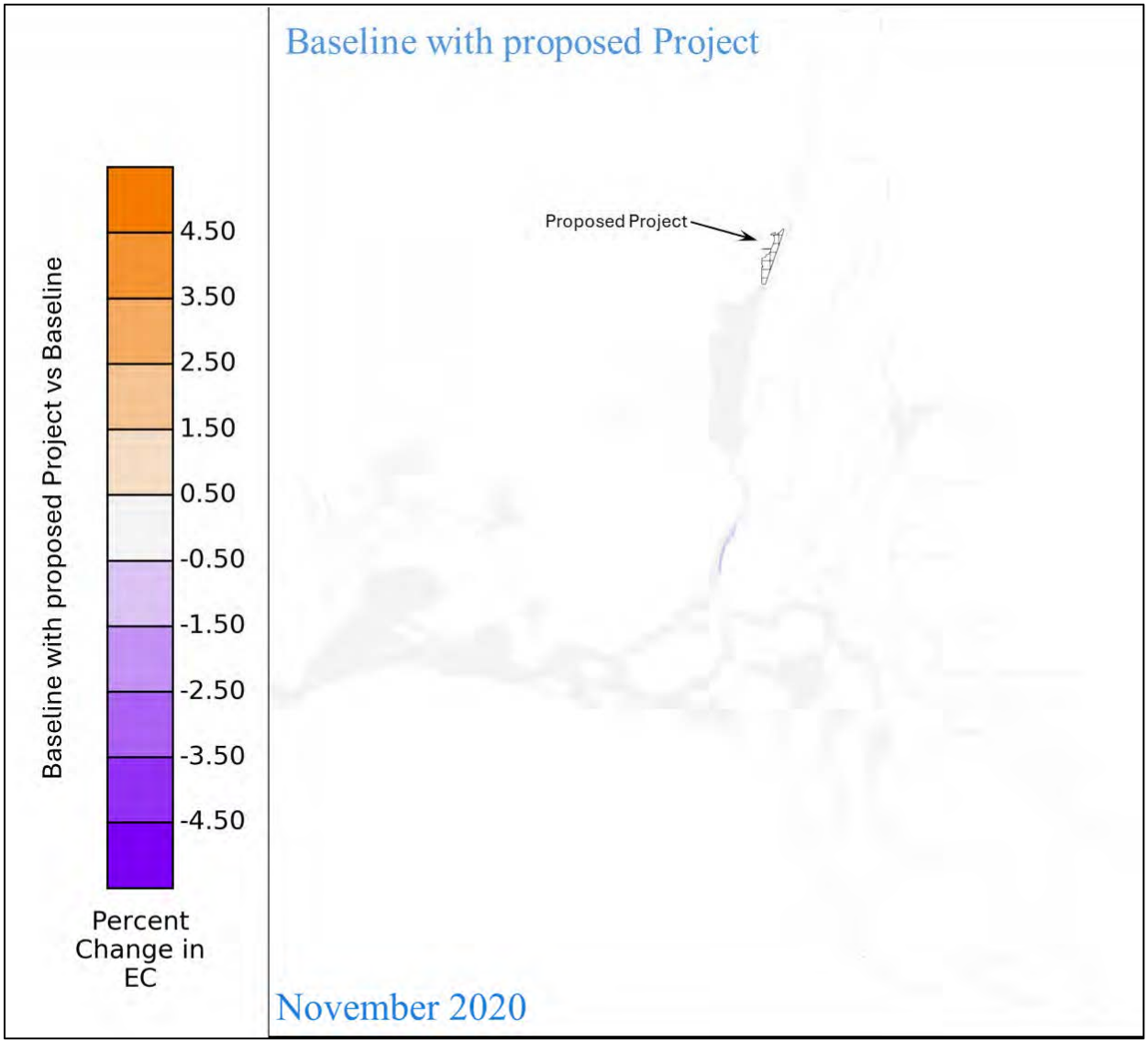


Figure 70 Baseline with proposed Project average percent change from Baseline EC for November 2020.

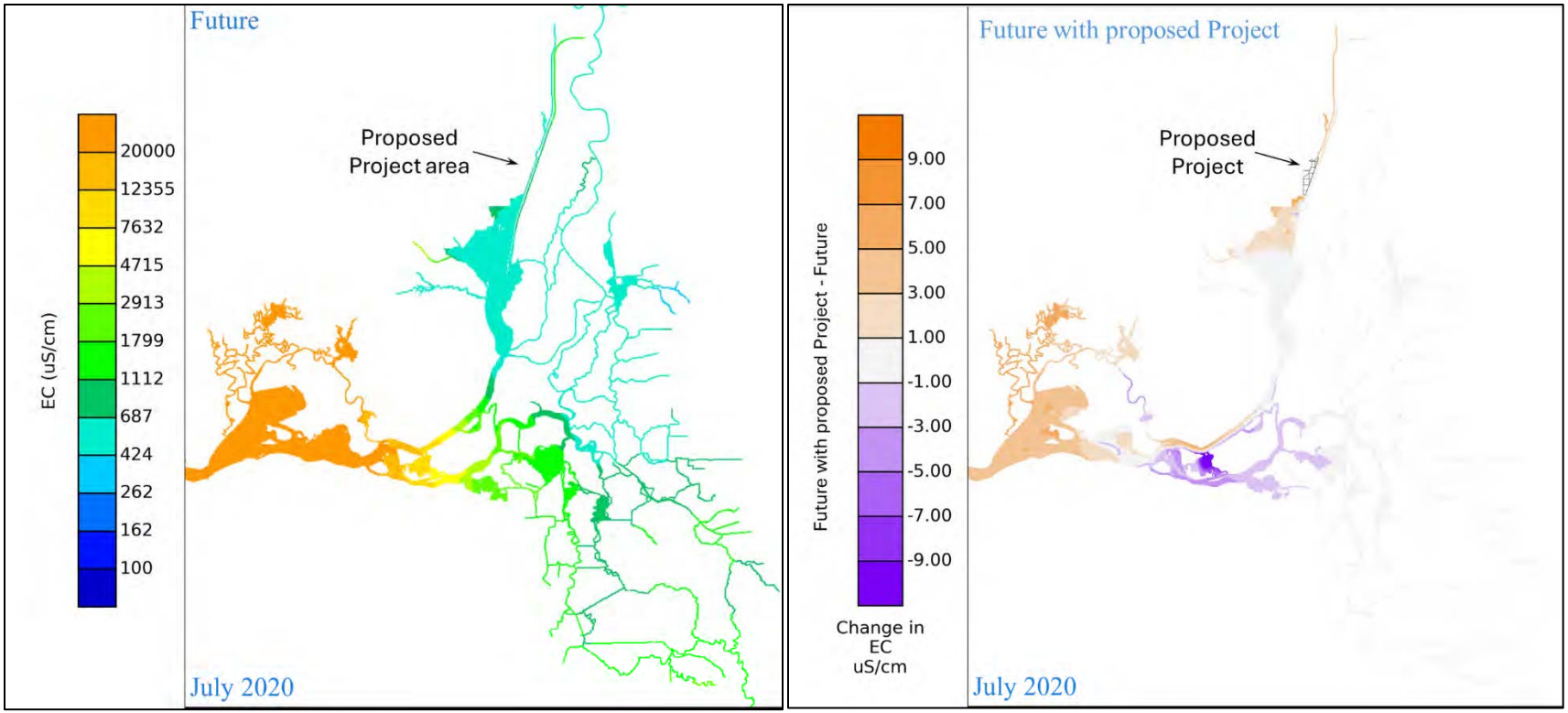


Figure 71 June 2020 (left) average Future condition EC and (right) Future with proposed Project change from Baseline condition average EC.

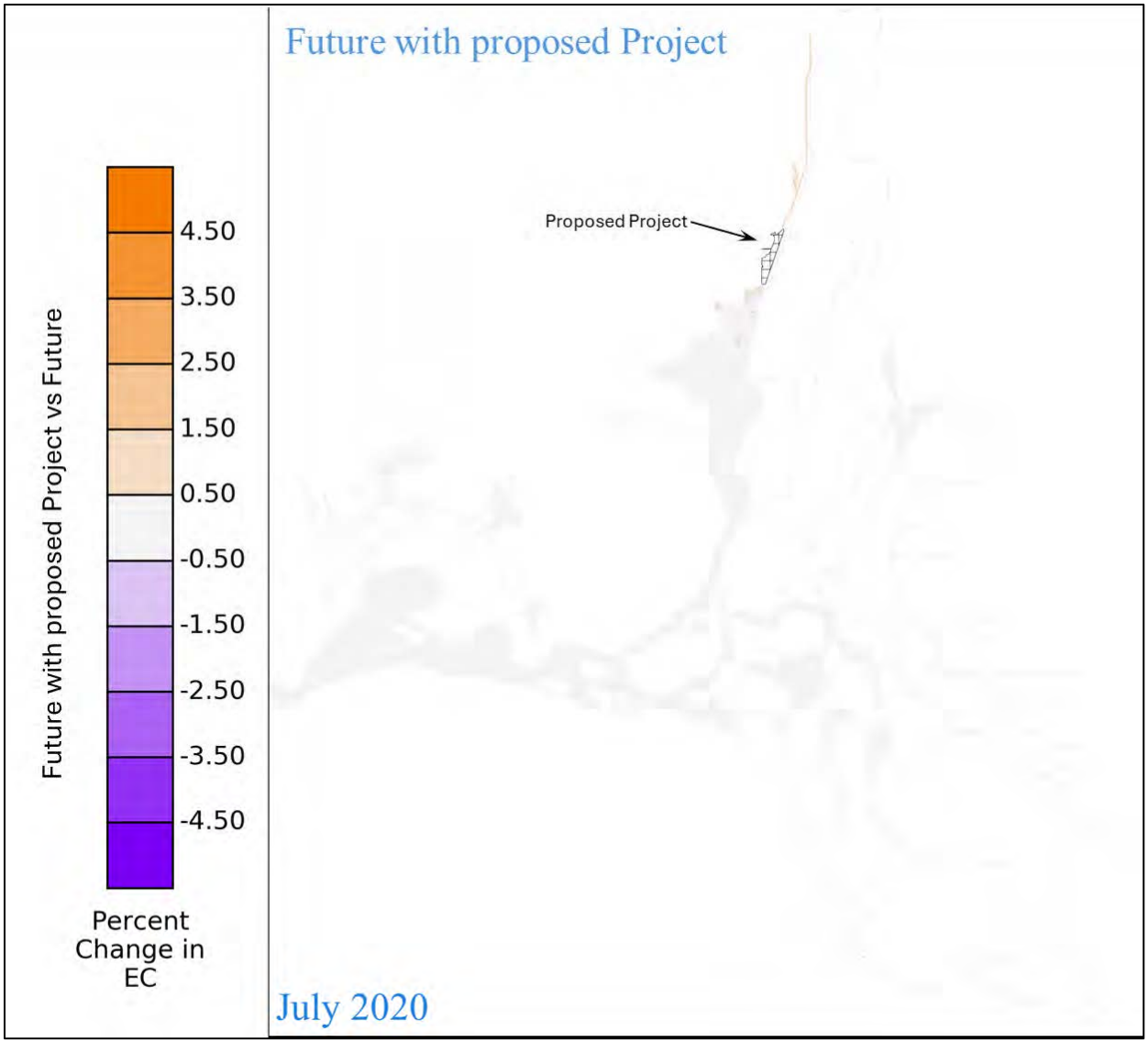


Figure 72 Future with proposed Project average percent change from Future EC for July 2020.

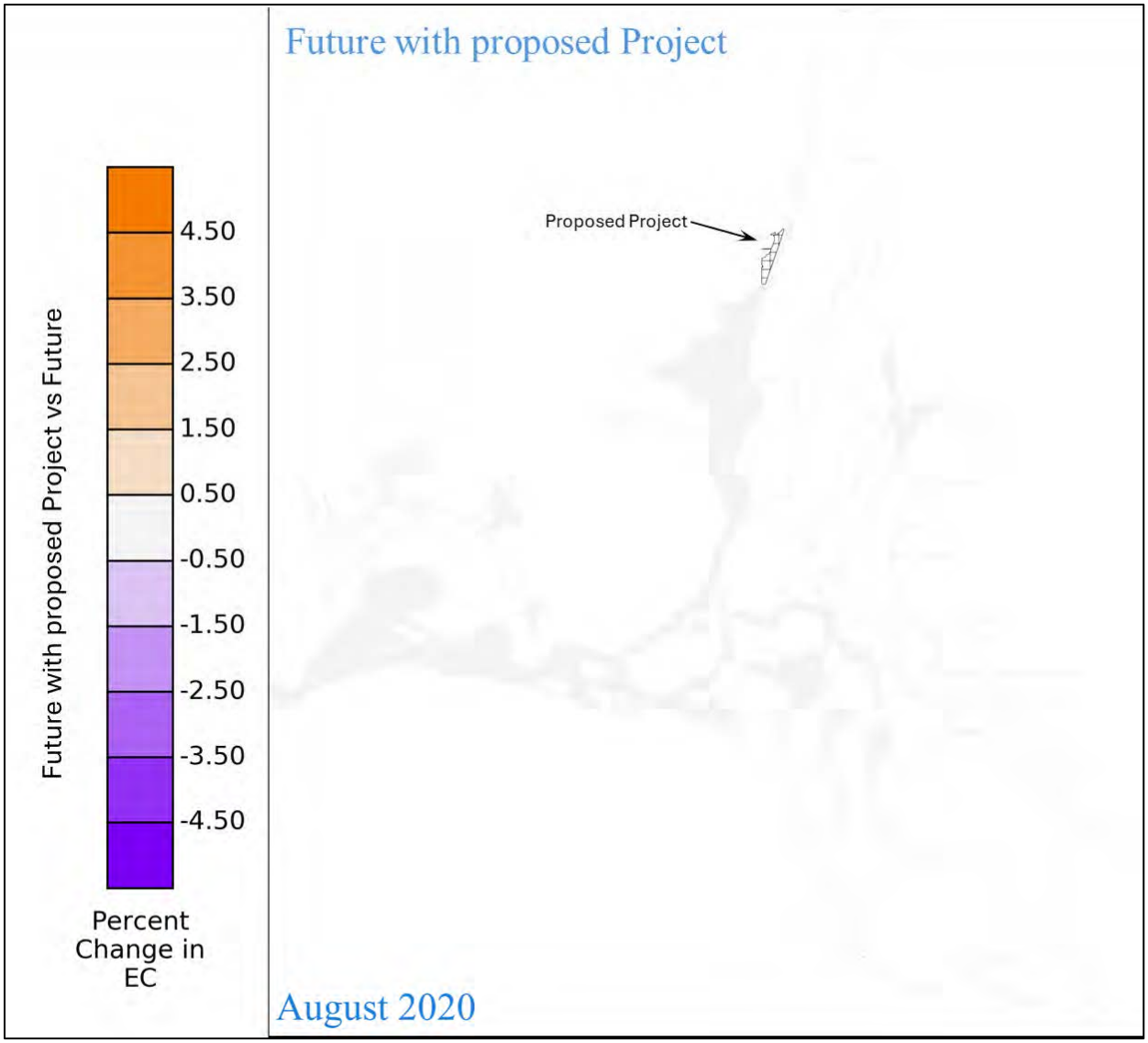


Figure 73 Future with proposed Project average percent change from Future EC for August 2020.

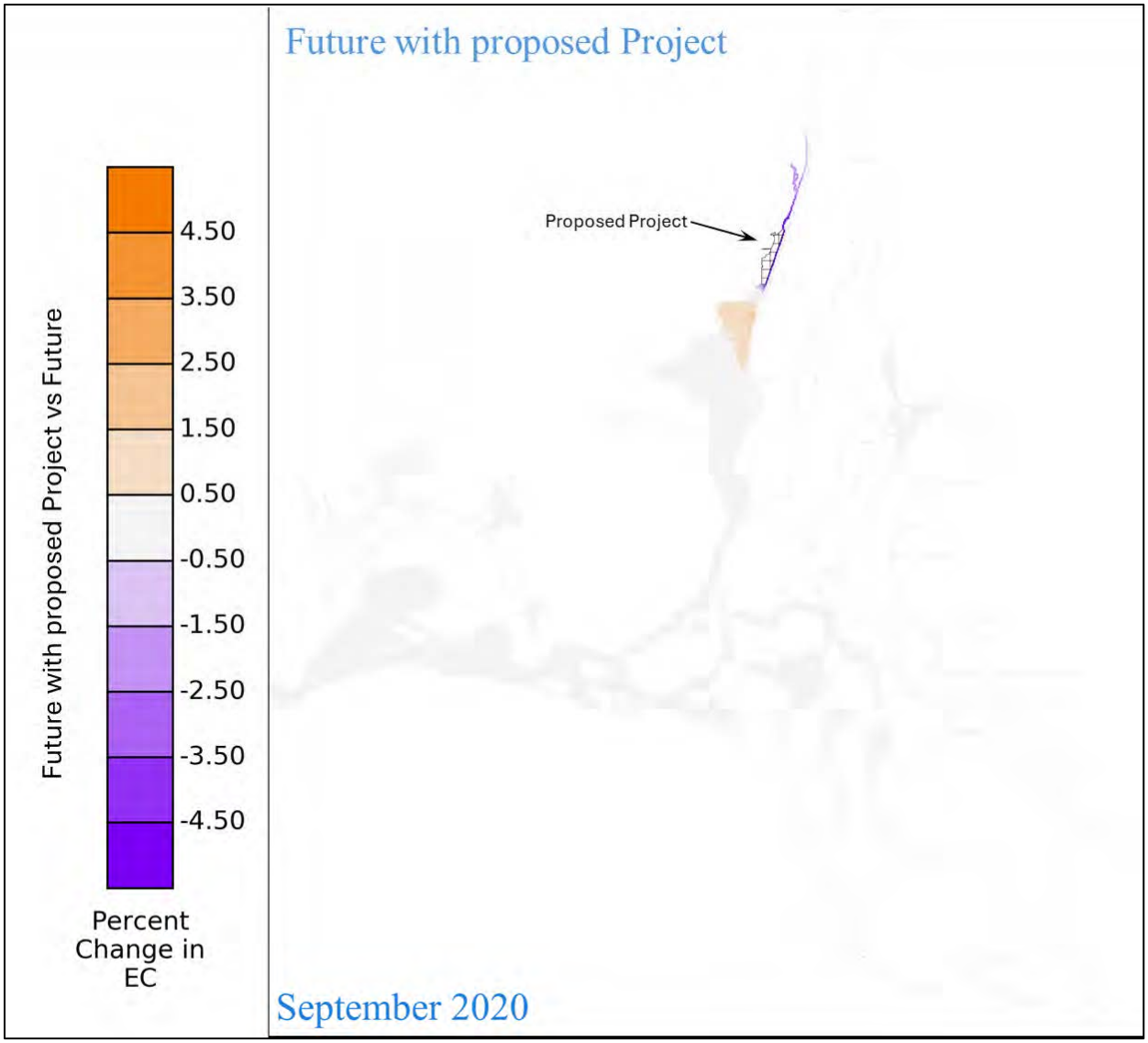


Figure 74 Future with proposed Project average percent change from Future EC for September 2020.

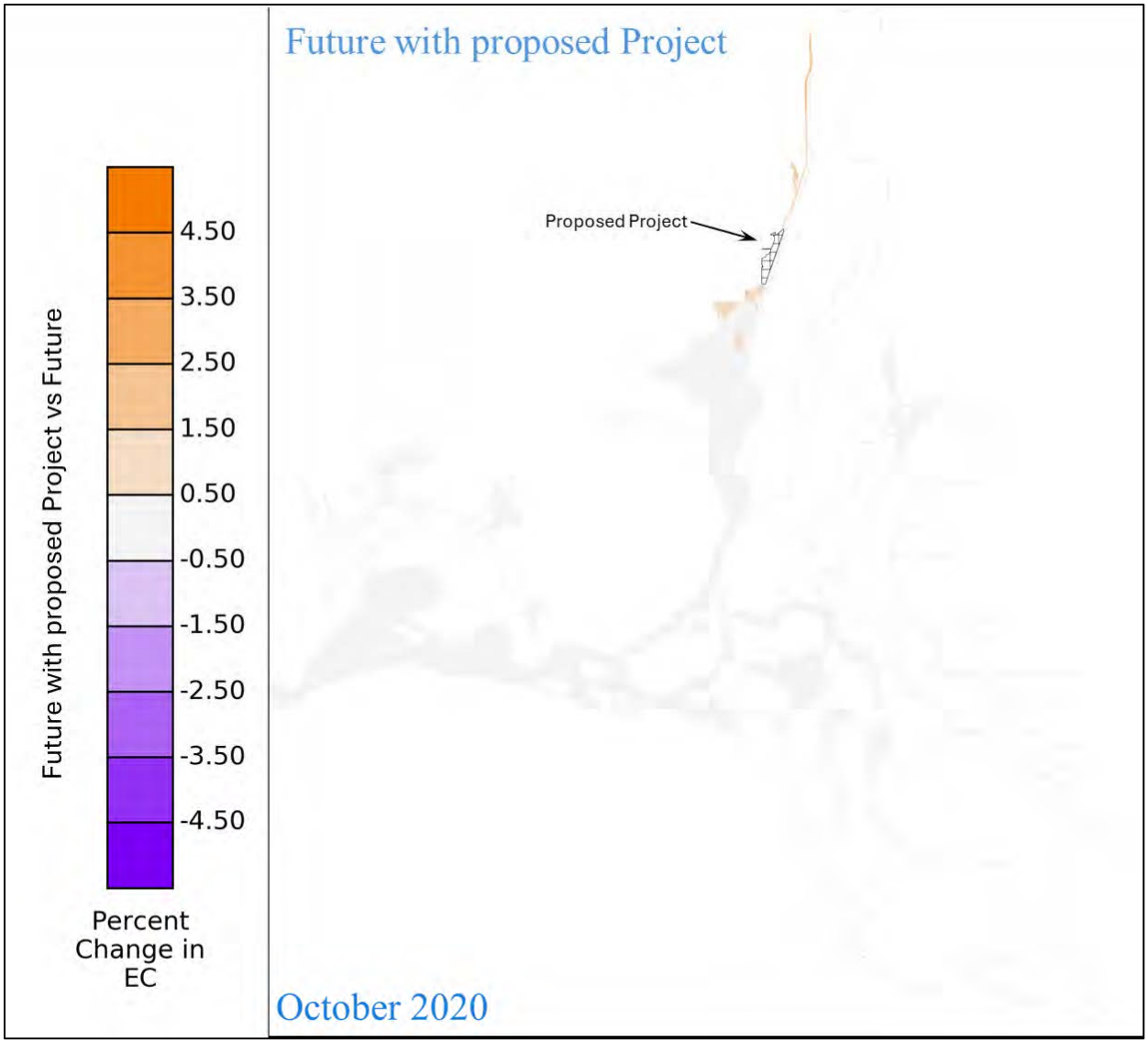


Figure 75 Future with proposed Project average percent change from Future EC for October 2020.

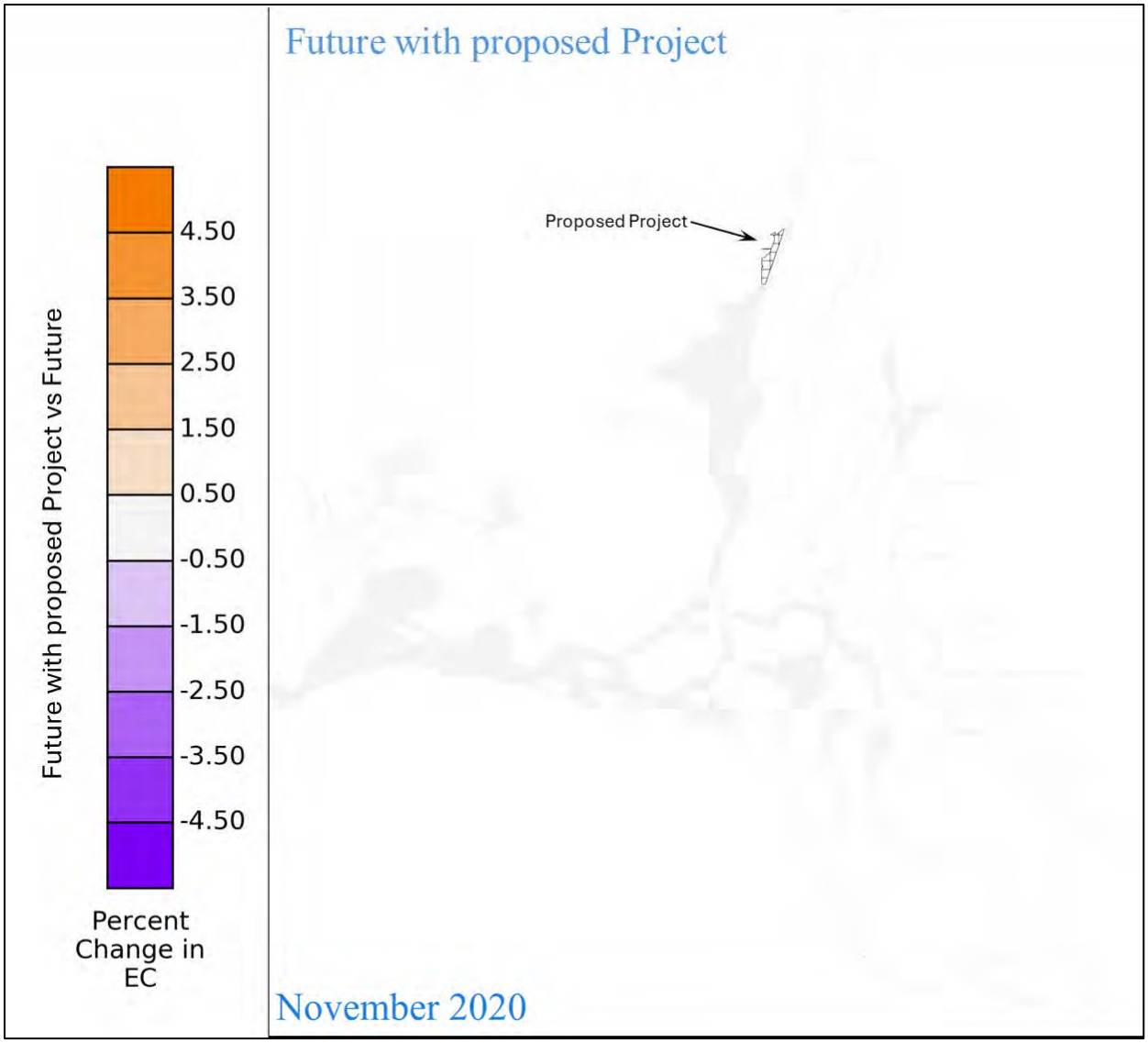


Figure 76 Future with proposed Project average percent change from Future EC for November 2020.

Table 6 D-1641 Station Salinity Water Quality Objects – Fish and Wildlife and Agriculture. Standards are presented in mmhos/cm (1 mmho/cm = 1000 µS/cm).

Station	Water Year Type[1]	Fish and Wildlife		Agriculture			
		Value[2]	Time Period	Value[2]	Time Period	Value[2]	Time Period
D22 - Sacramento at Emmaton	Wet	not applicable		0.45	Apr 1 – Aug 15		
	Above Normal			0.45	Apr 1 – Jun 30	0.63	Jul 1 - Aug 15
	Below Normal			0.45	Apr 1 – Jun 19	1.14	Jun 20 - Aug 15
	Dry			0.45	Apr 1 – Jul 14	1.67	Jul 15 - Aug 15
	Critical			2.78	Apr 1 – Aug 15	not applicable	
D15 - San Joaquin at Jersey Point	Wet	0.44	Apr 1 – May 31	0.45	Apr 1 – Aug 15	not applicable	
	Above Normal	0.44	Apr 1 – May 31	0.45	Apr 1 – Aug 15	not applicable	
	Below Normal	0.44	Apr 1 – May 31	0.45	Apr 1 – Jun 19	0.74	Jun 20 - Aug 15
	Dry	0.44	Apr 1 – May 31	0.45	Apr 1 – Jun 14	1.35	Jun 15 - Aug 15
	Critical	not applicable		2.2	Apr 1 – Aug 15	not applicable	
D29 - San Joaquin at Prisoners Point	Wet, Above Normal, Below Normal, Dry	0.44	Apr 1 – May 31	not applicable			
C2 - Collinsville[3]	not applicable	19.0	Oct	not applicable			
		15.5	Nov-Dec				
		12.5	Jan				
		8.0	Feb-Mar				
		11.0	Apr-May				

[1] Sacramento Valley Water Year Hydrologic Classification
[2] Maximum 14-day running average of mean daily EC (mmhos/cm)
[3] Maximum monthly average of both daily high tide EC values (mmhos/cm)

Table 7 D-1641 water quality objectives for water intakes.

Compliance Location	Station Number	Criteria Description	Water Year type	Value
Contra Costa Canal at Pumping Plant 1 or San Joaquin River at Antioch	C5 or D12	Maximum mean daily Chloride of 150 mg/L for required number of days	Wet Abv Norm. Blw Norm. Dry Critical	# of days*[12] each calendar year ≤ 150 mg/L Cl 240 190 175 165 155
Contra Costa Canal at Pumping Plant 1 -and- West Canal at Clifton Court -and- DMC at Tracy PP -and- Barker Slough NBA intake -and- City of Vallejo Cache Slough intake	C5 C9 DMC1 SLBAR3 C19	Maximum mean daily Chloride	All	250 mg/L

[12] # of days must be met in intervals not less than two weeks

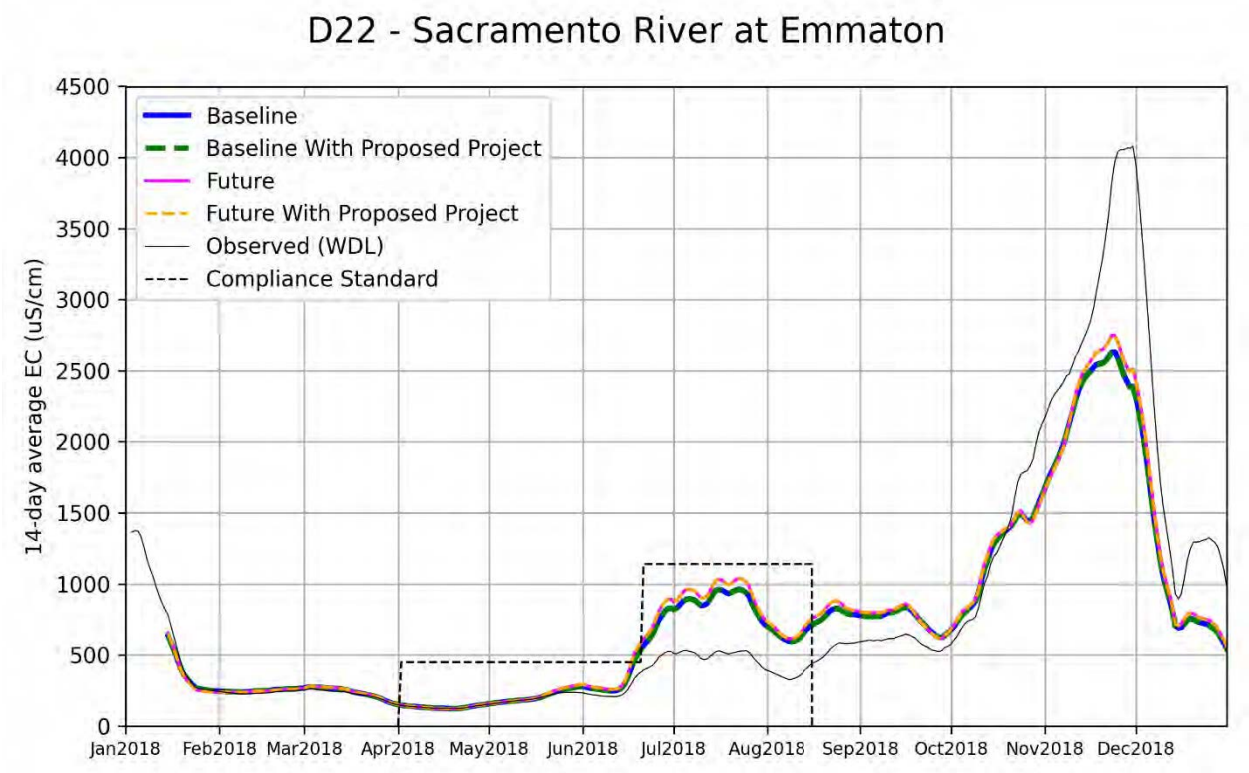


Figure 77 14-Day running average EC for the Sacramento River at Emmaton (D22). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Sacramento River at Emmaton EC for the 2018 simulation period.

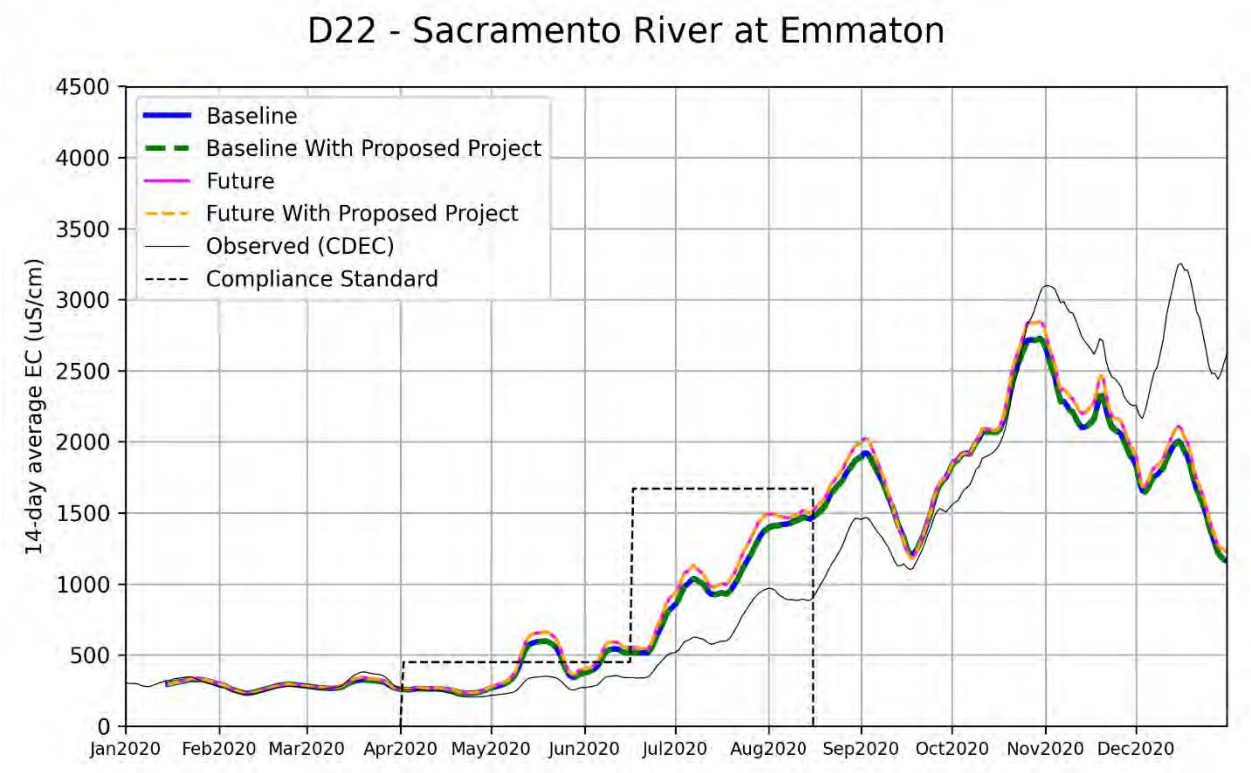


Figure 78 14-Day running average EC for the Sacramento River at Emmaton (D22). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Sacramento River at Emmaton EC for the 2020 simulation period.

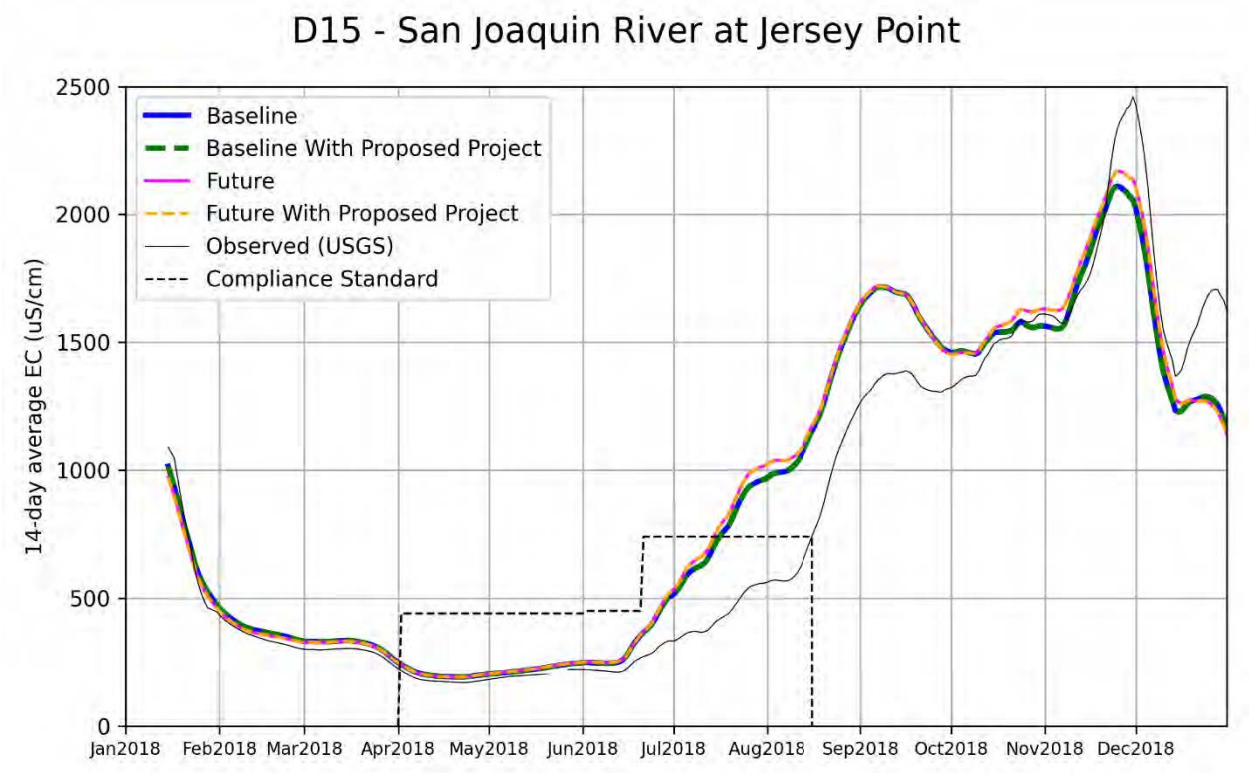


Figure 79 14-Day running average EC for the San Joaquin River at Jersey Point (D15). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Jersey Point EC for the 2018 simulation period.

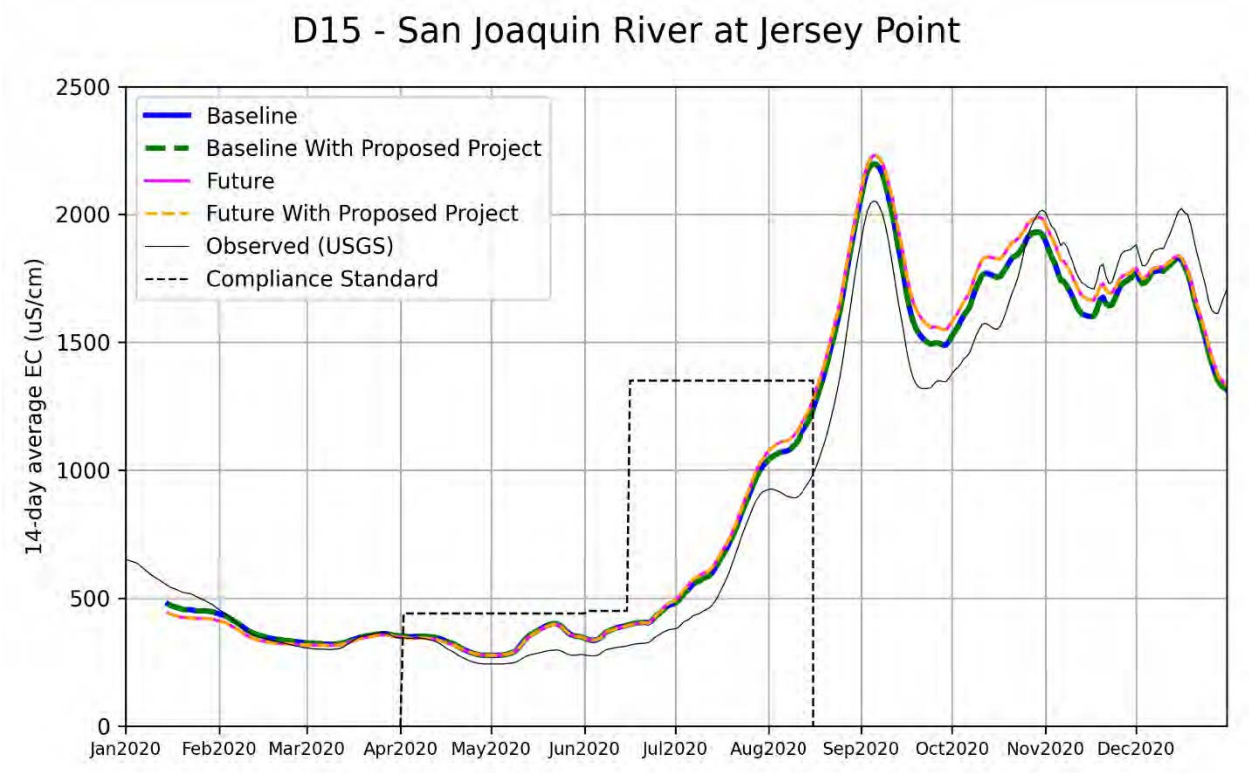


Figure 80 14-Day running average EC for the San Joaquin River at Jersey Point (D15). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Jersey Point EC for the 2020 simulation period.

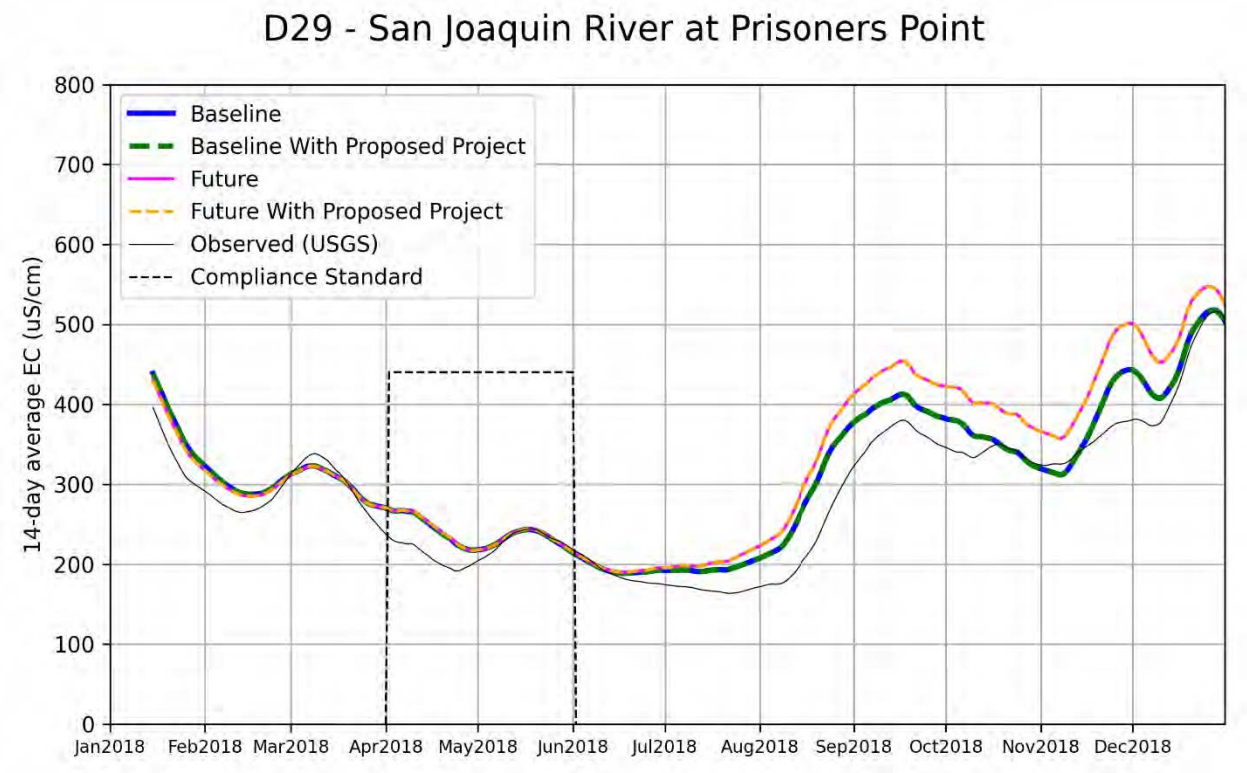


Figure 81 14-Day running average EC for the San Joaquin River at Prisoners Point (D29). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Prisoners Point EC for the 2018 simulation period.

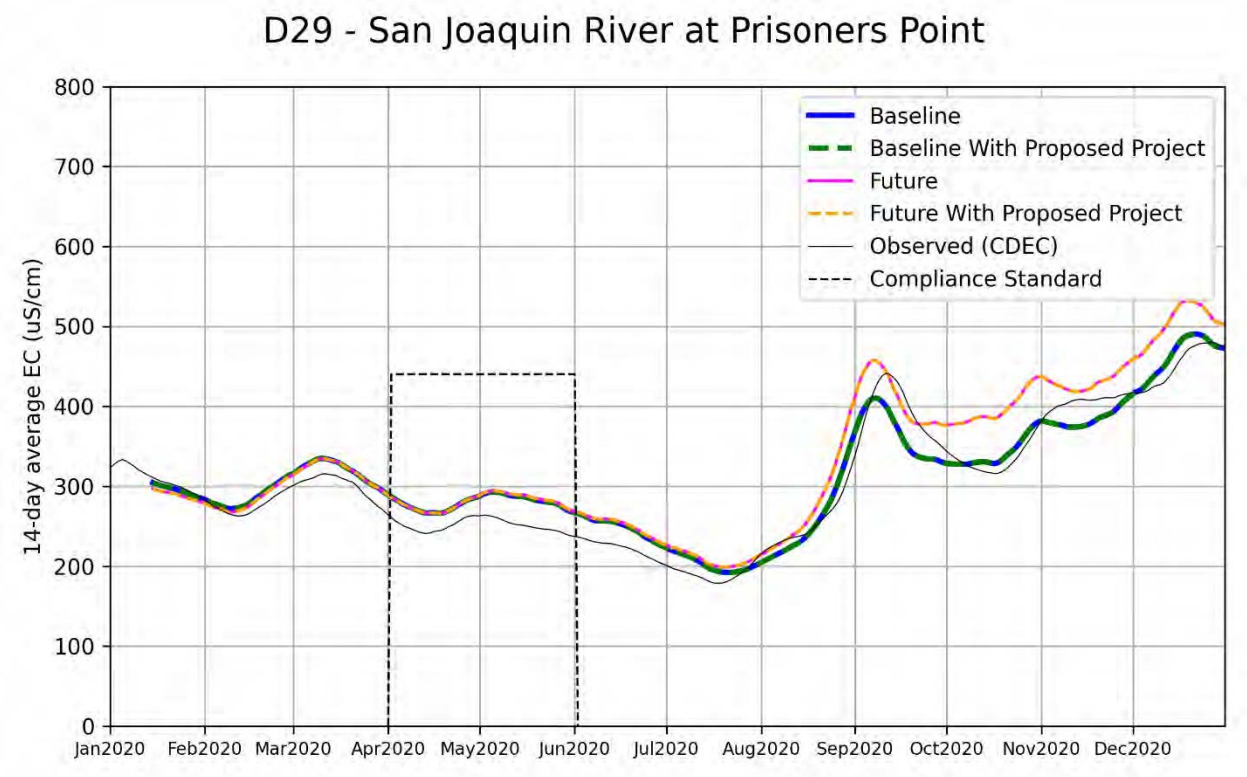


Figure 82 14-Day running average EC for the San Joaquin River at Prisoners Point (D29). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed San Joaquin River at Prisoners Point EC for the 2020 simulation period.

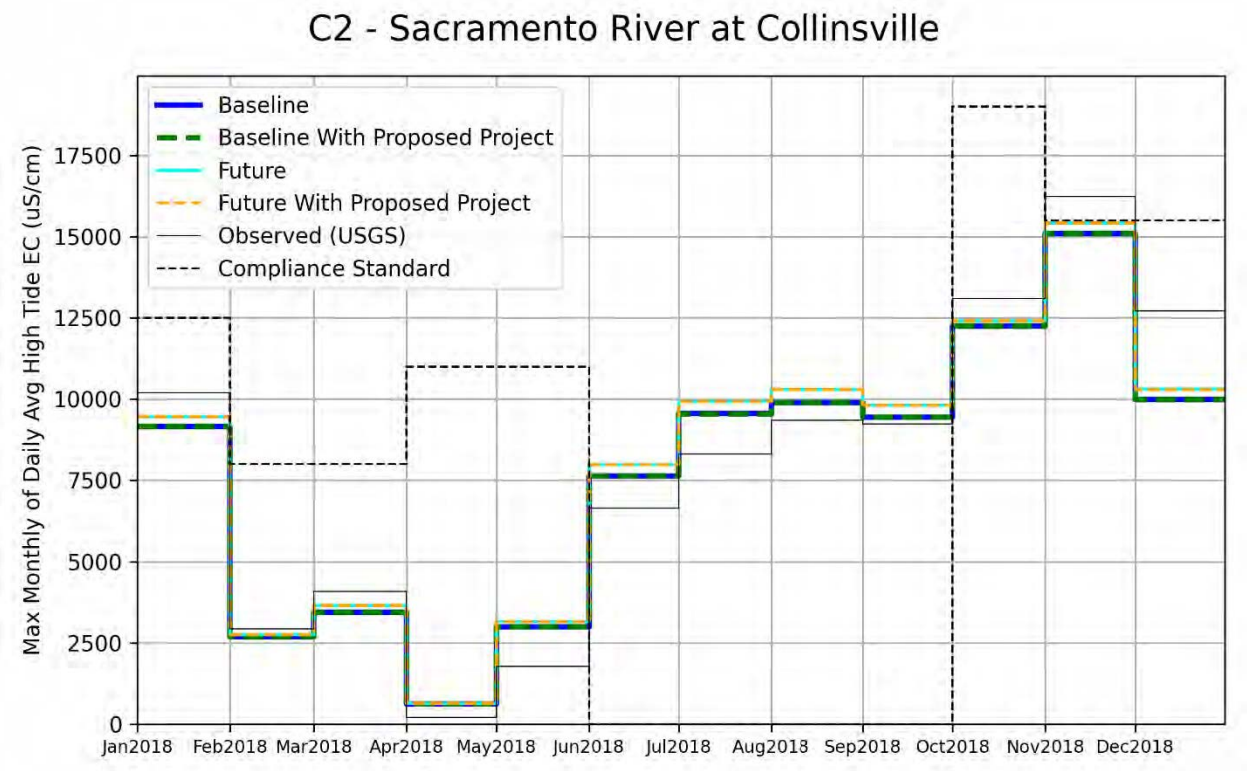


Figure 83 Max monthly of daily average of high tide EC for the Sacramento River at Collinsville (C2). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Collinsville EC for the 2018 simulation period.

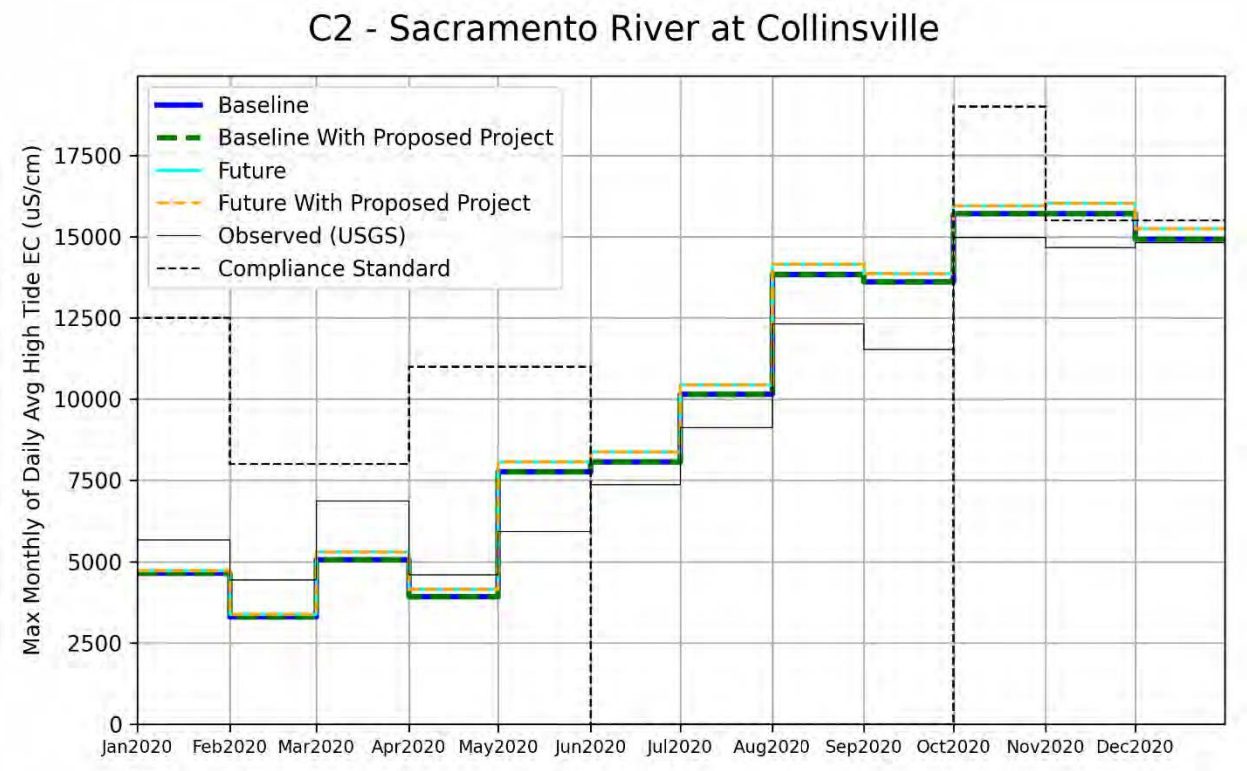


Figure 84 Max monthly of daily average of high tide EC for the Sacramento River at Collinsville (C2). Baseline, Baseline with proposed Project, Future, and Future with proposed Project computed results are plotted with the D-1641 standard and observed Collinsville EC for the 2020 simulation period.

X2

X2 is defined as the distance in kilometers from the Golden Gate Bridge where the average bottom salinity in the water is 2 parts per thousand[13]. Baseline, Baseline with proposed Project, Future and Future with proposed Project tidal average X2 distances are plotted with monthly averaged differences in Figure 85 for 2018 and in Figure 86 for 2020. The proposed Project results in monthly average decreases in X2 of less than 0.02 km (66 ft). Lower X2 values correlate with less salinity intrusion into the Delta, and reduction in X2 is a water quality improvement, although the small X2 reduction resulting from the proposed Project is not likely to be an important improvement.

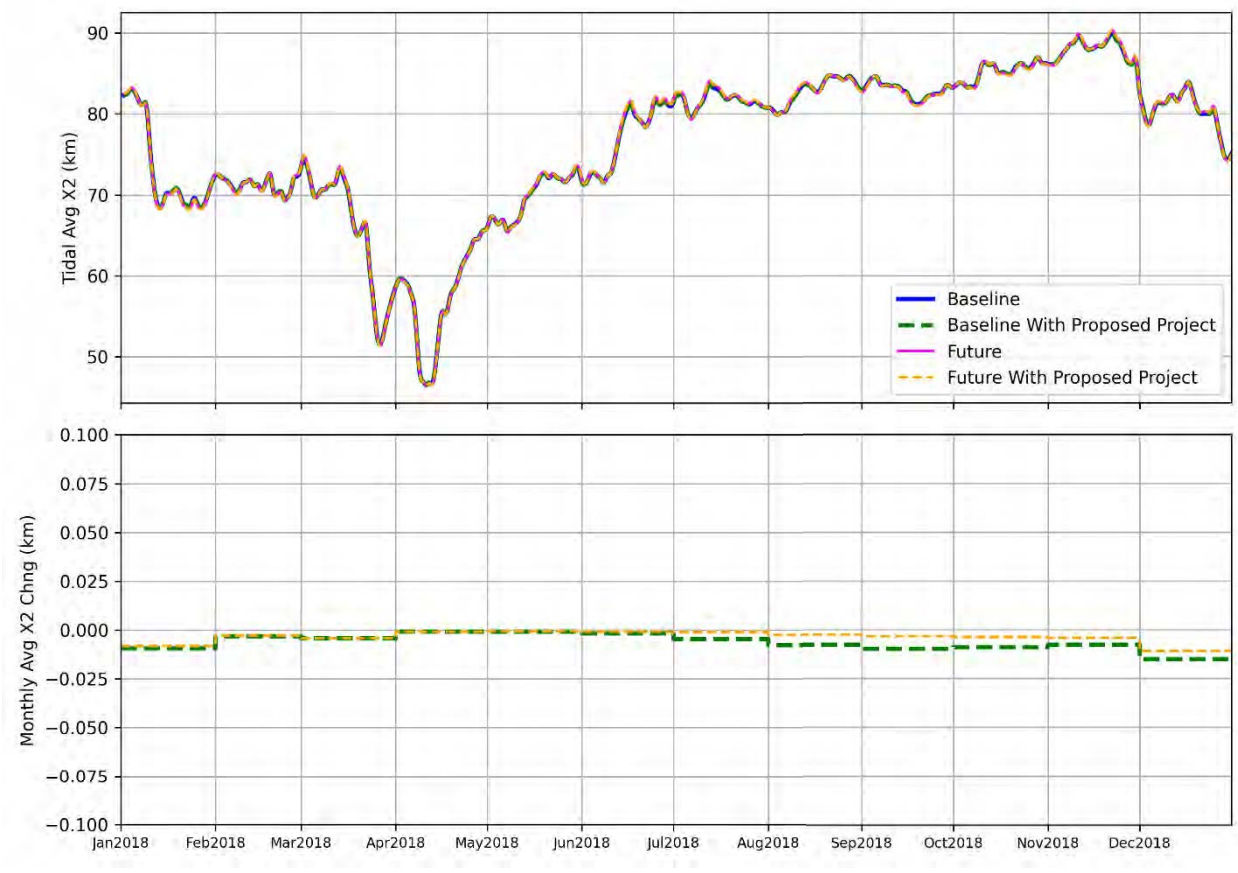


Figure 85 Baseline, Baseline with proposed Project, Future and Future with proposed Project daily average X2 location (top) and monthly average change from Baseline and Future X2 location (bottom) for the 2018 simulation period.

[13] While X2 standards refer to bottom salinity, the model computes depth-averaged salinity and this is used to calculated X2

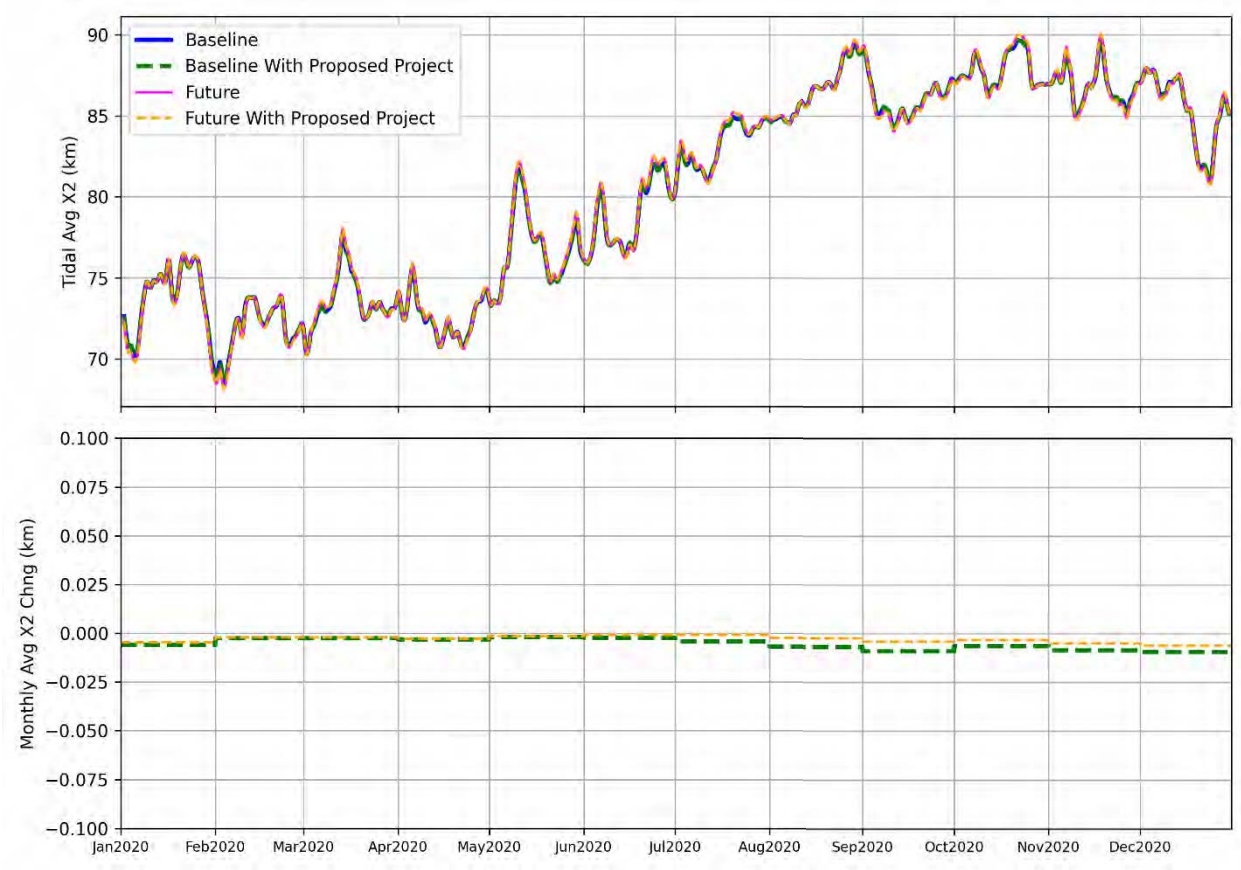


Figure 86 Baseline, Baseline with proposed Project, Future and Future with proposed Project daily average X2 location (top) and monthly average change from Baseline and Future X2 location (bottom) for the 2020 simulation period.

Evaluation of Bromide Impacts at Drinking Water intakes

Bromide values are monthly averaged and summarized in tabular format in Table 10 for 2018 Baseline Conditions, Table 11 for 2018 Future conditions, Table 12 for 2020 Baseline conditions and in Table 13 for 2020 Future conditions. Tabular results are provided with sufficient detail to provide the reader with information about small changes. While this level of precision is available from the water quality (EC) model, the model's accuracy is likely only one to two significant digits with further uncertainty in the EC to bromide conversions. Although there is uncertainty in the results, as reflected by the effective significant digits, the model is considered sufficient for assessing potential impacts, particularly for the direction of change and small % change. Additionally, the USBR (2015) equations are considered sufficient for converting EC to bromide for assessing potential impacts when EC change is primarily due to changes in seawater fraction.

The general observations for proposed Project bromide impacts, relative to Baseline and Future conditions for the 2018 and 2020 simulation period are:

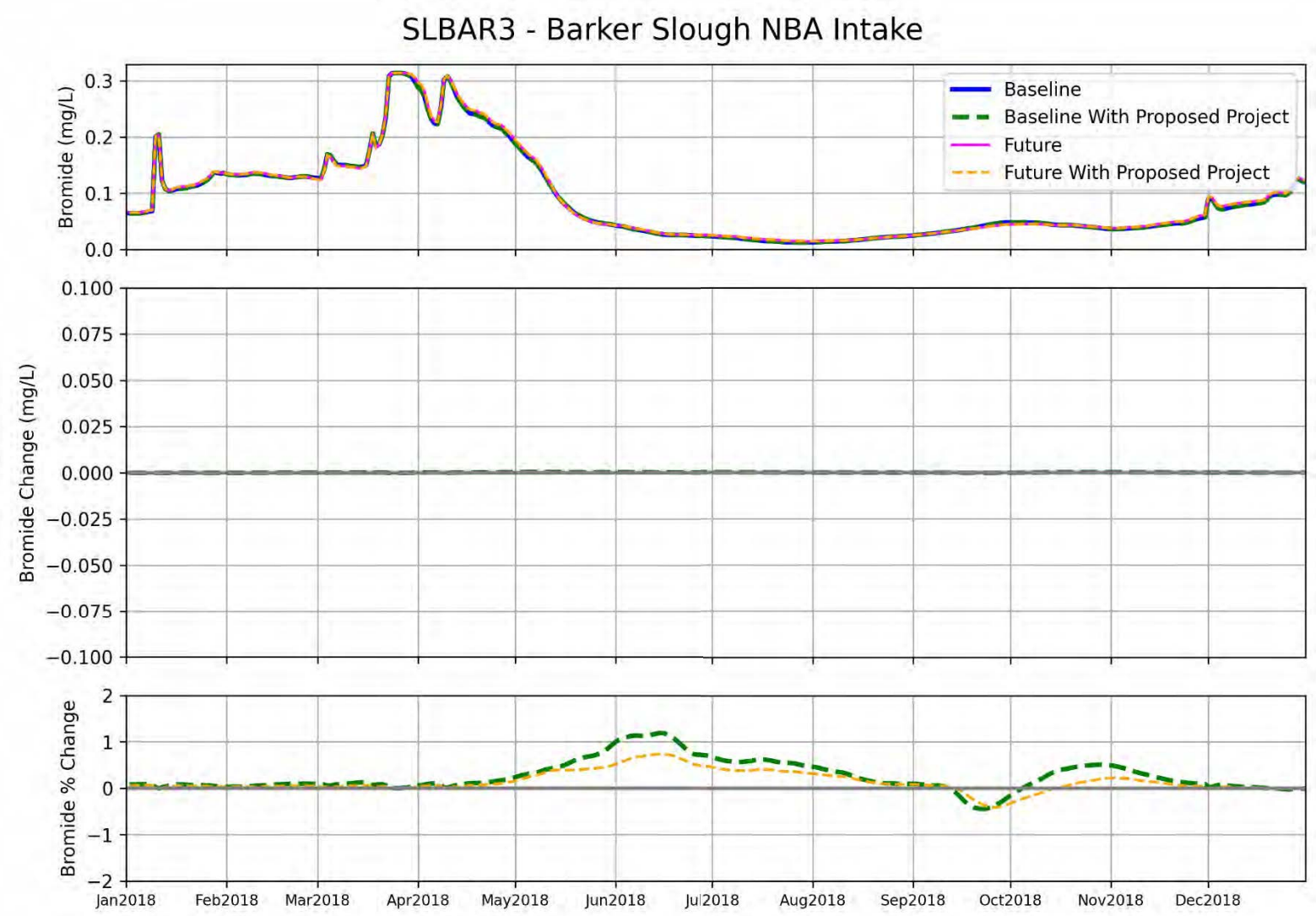


Figure 87 Daily average bromide at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

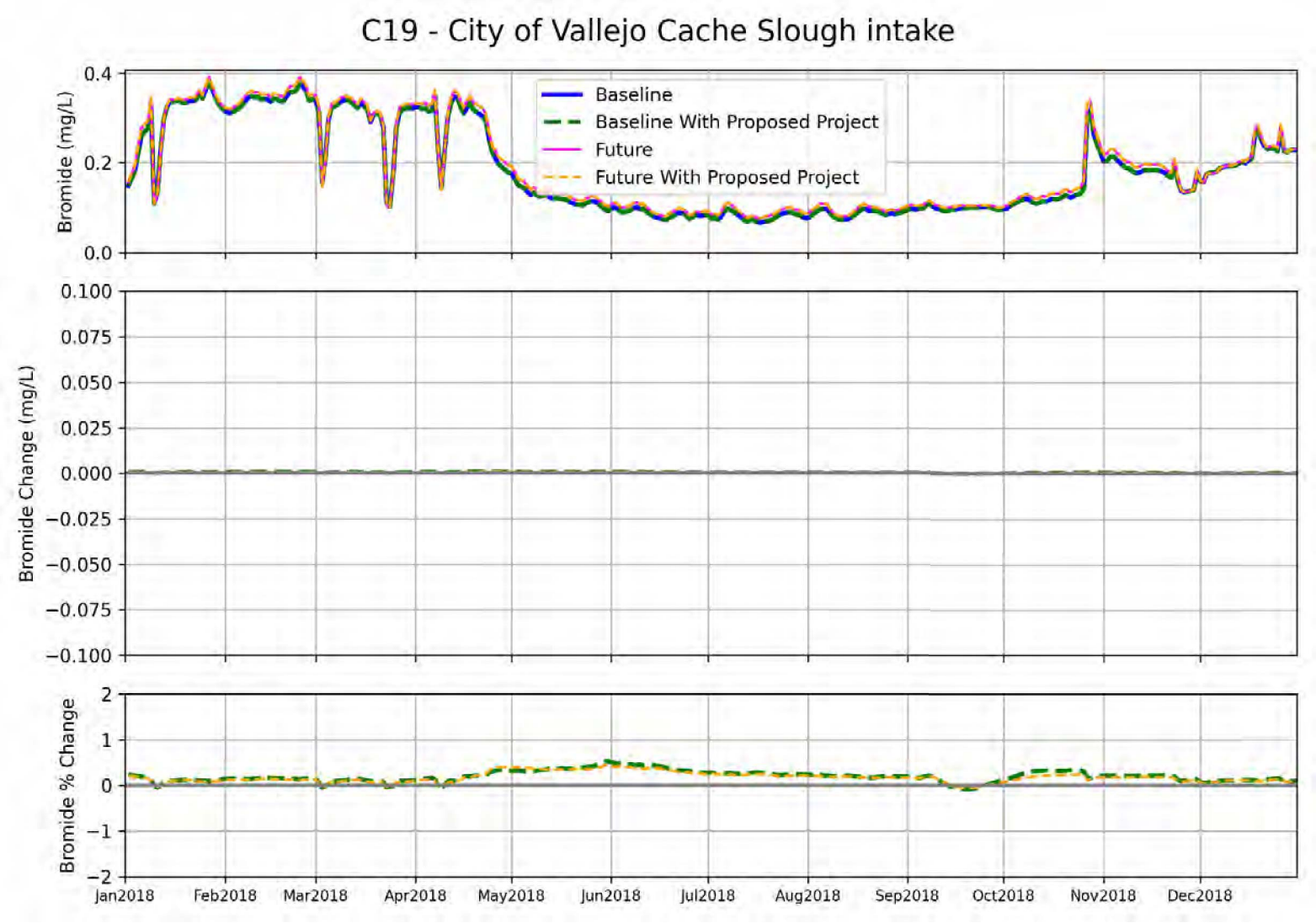


Figure 88 Daily average bromide at station C19 – City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

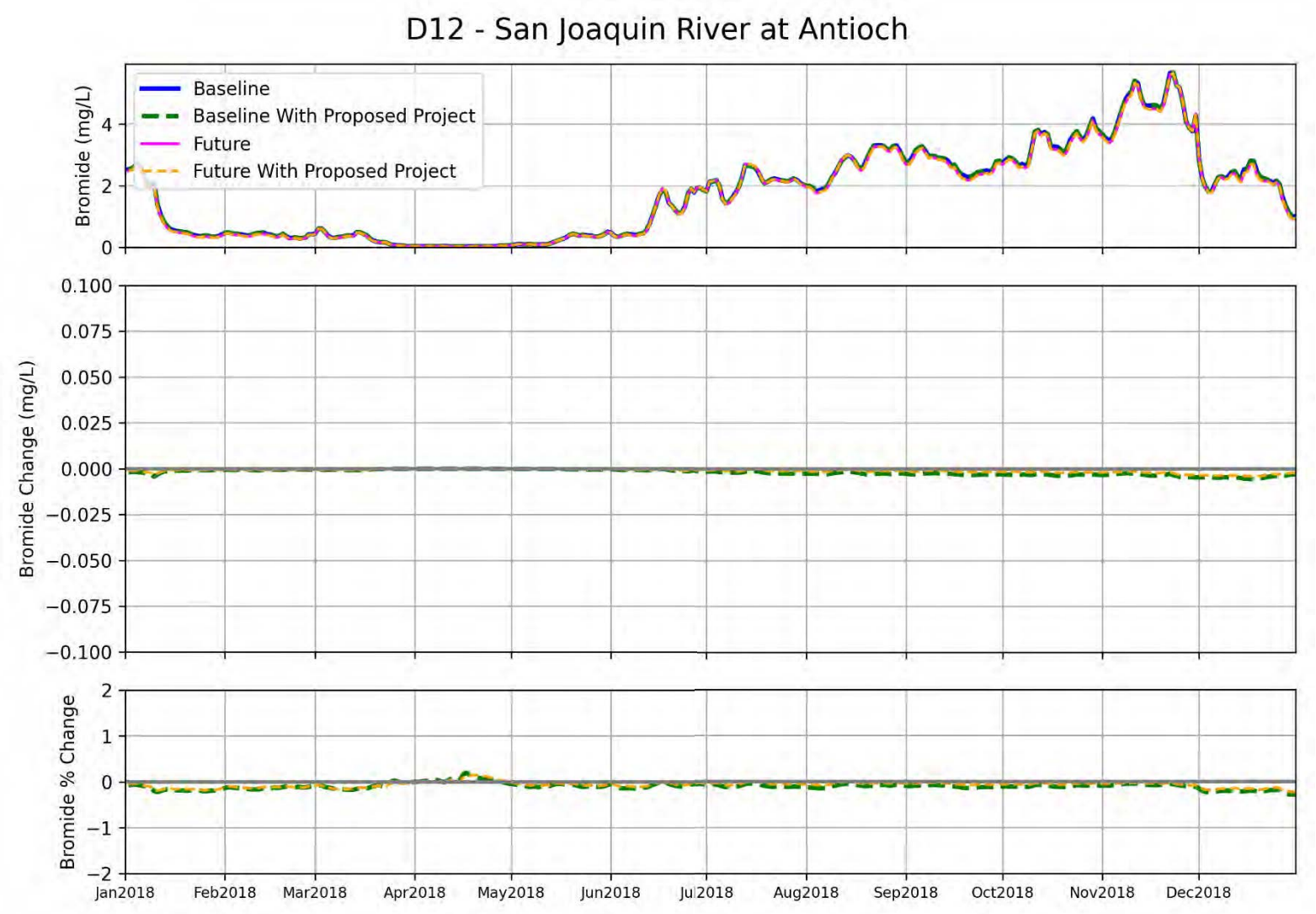


Figure 89 Daily average bromide at station D12 – San Joaquin River at Antioch for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

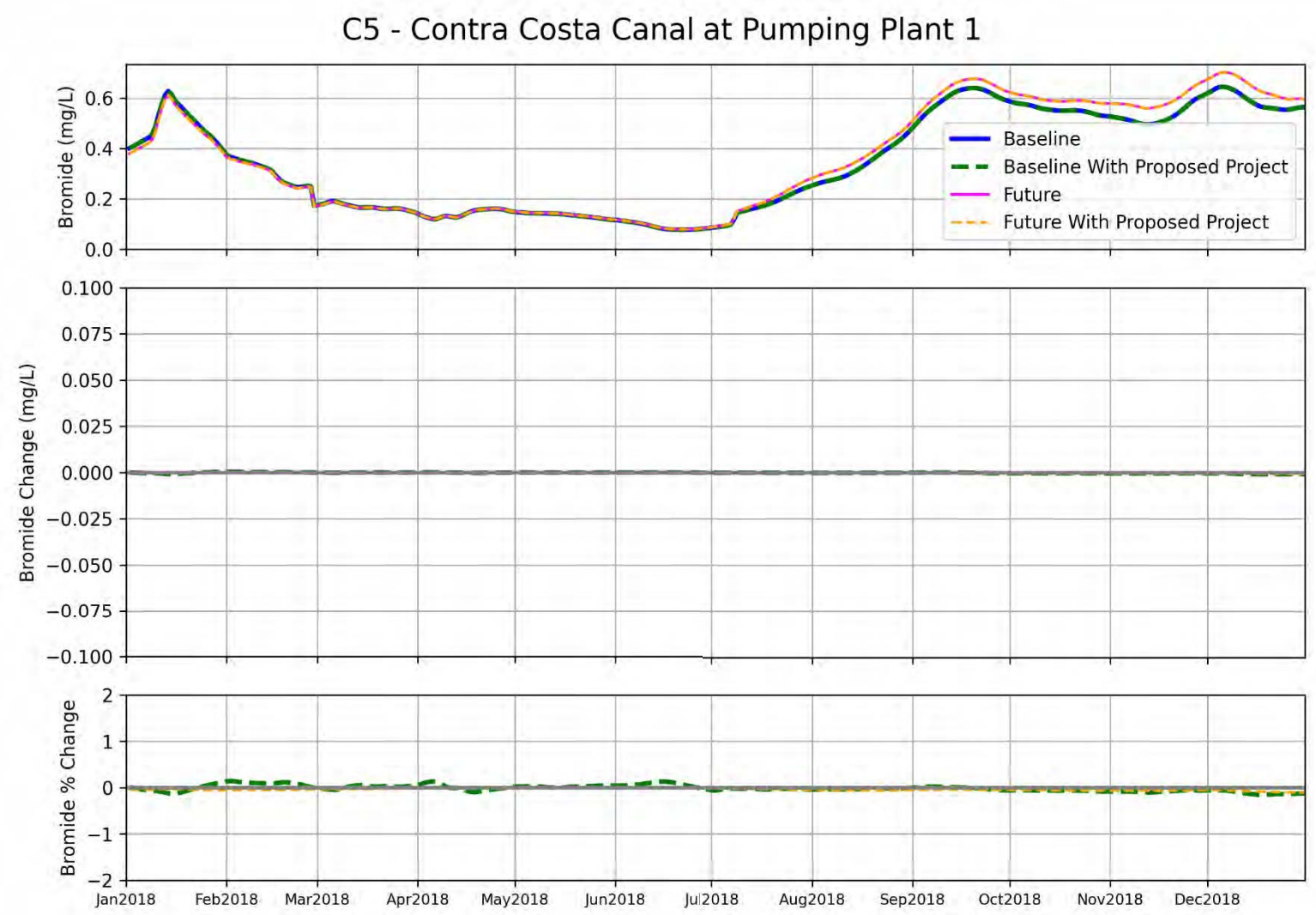


Figure 90 Daily average bromide at station C5 – Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

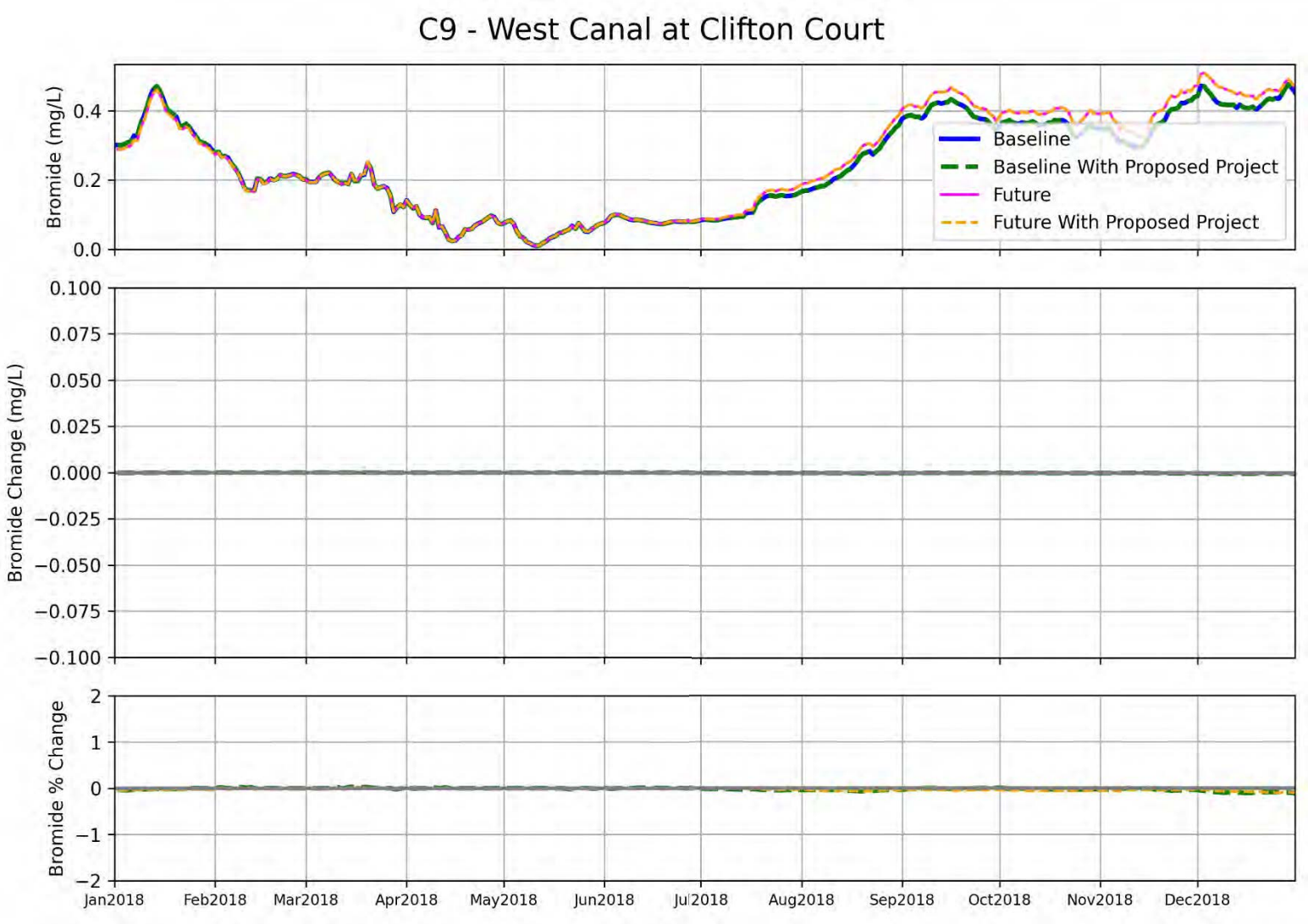


Figure 91 Daily average bromide at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

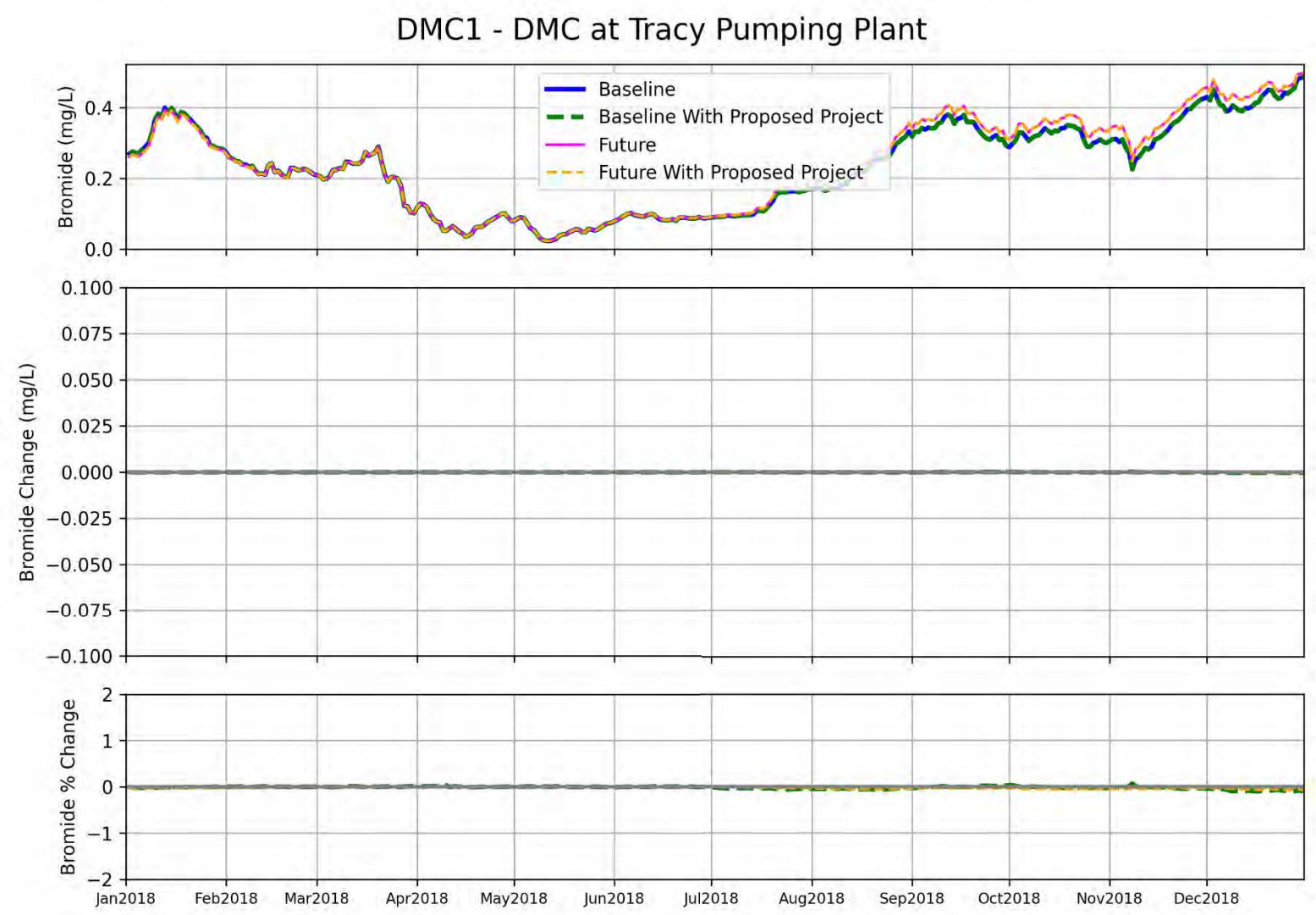


Figure 92 Daily average bromide at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

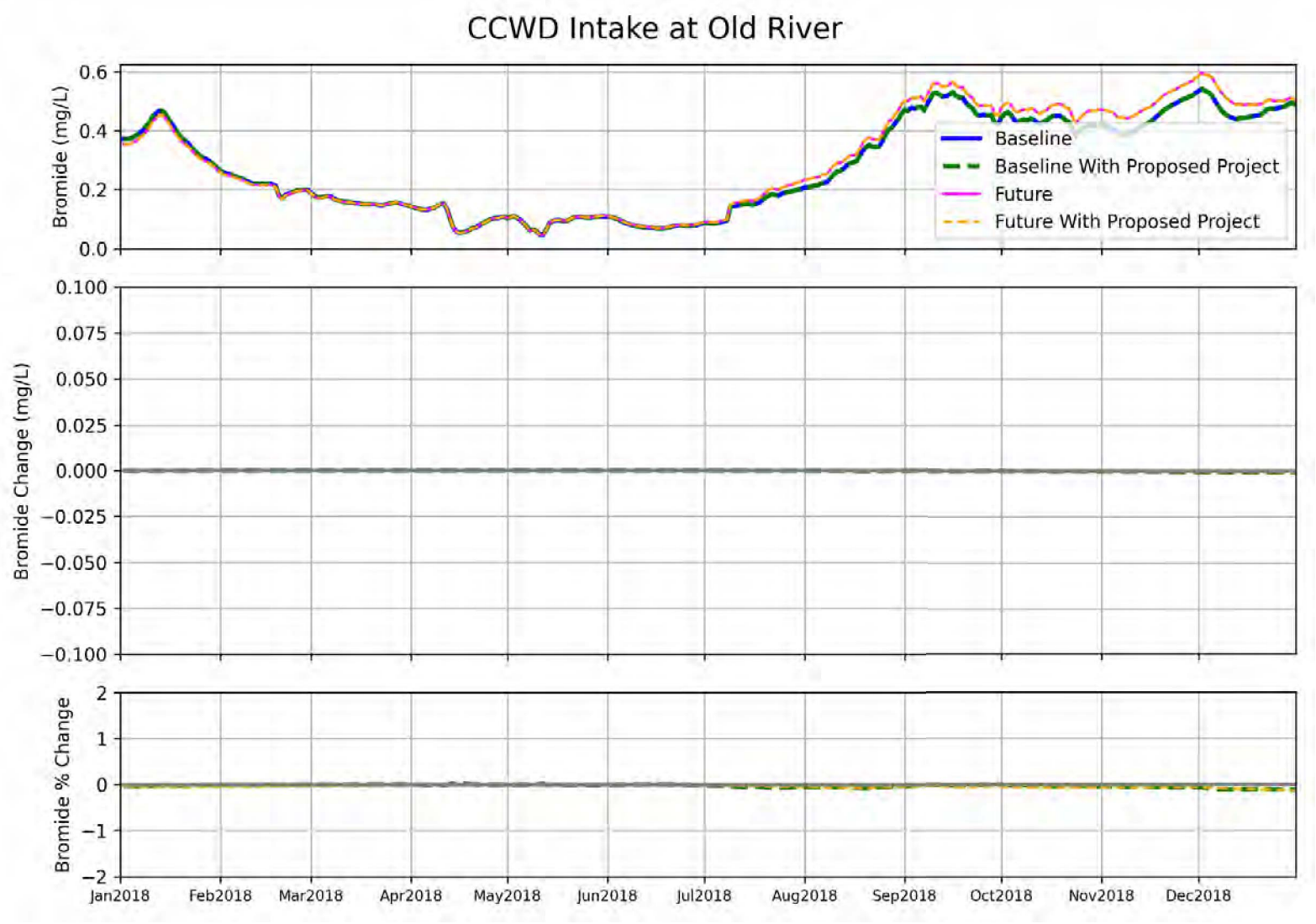


Figure 93 Daily average bromide at CCWD intake at Old River for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

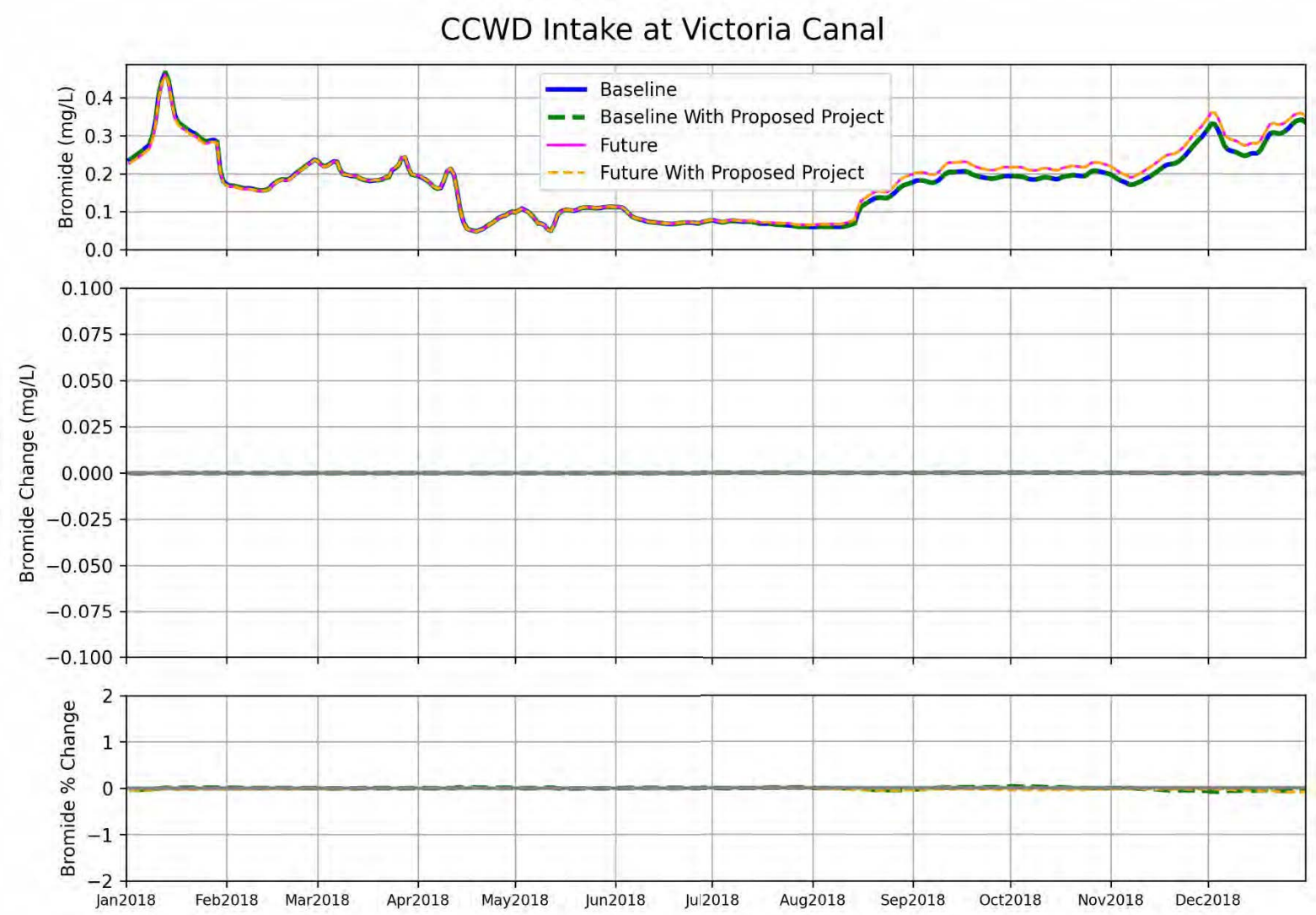


Figure 94 Daily average bromide at station CCWD intake at Victoria Canal for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2018 simulation period.

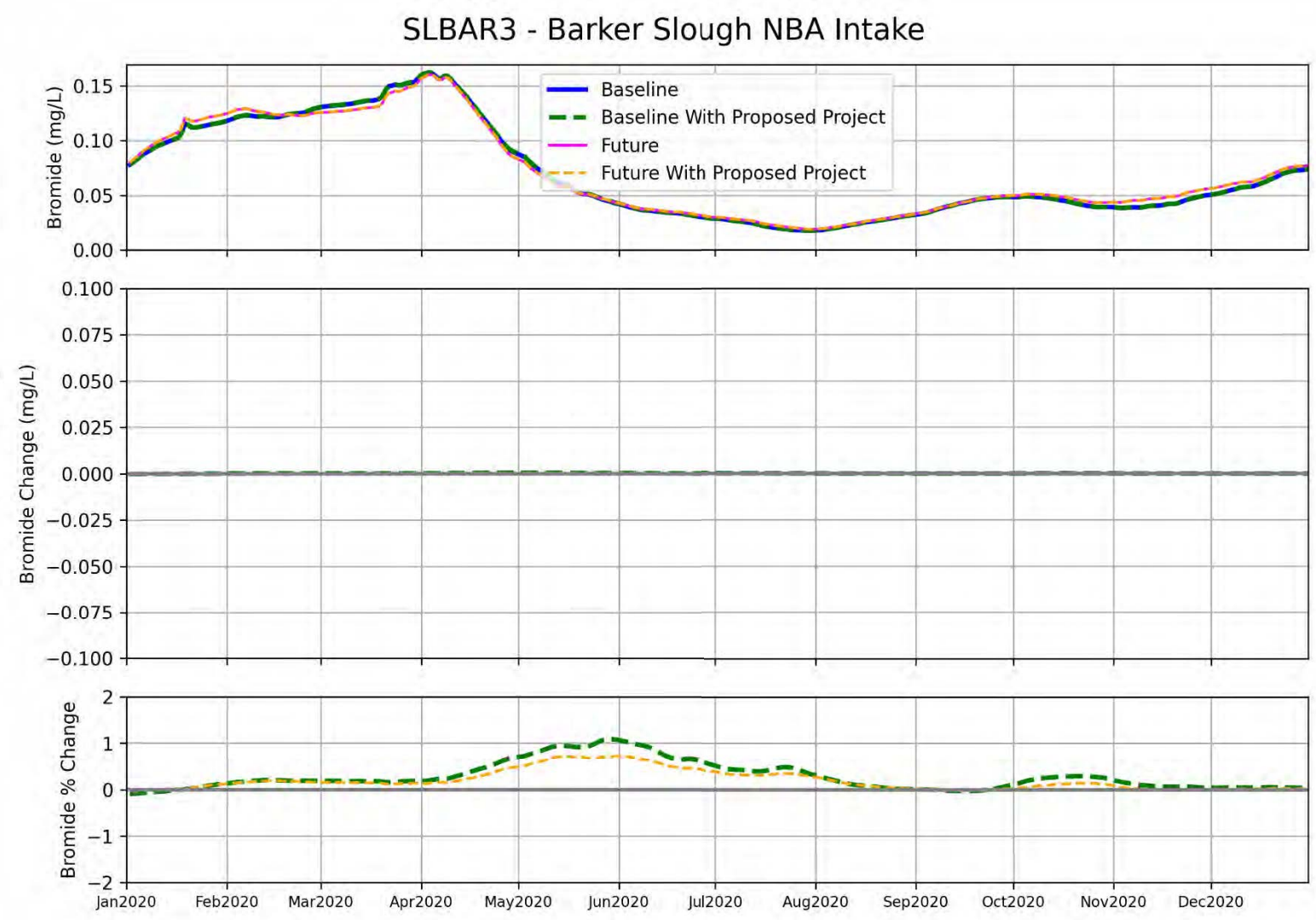


Figure 95 Daily average bromide at station SLBAR3 – Barker Slough NBA intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

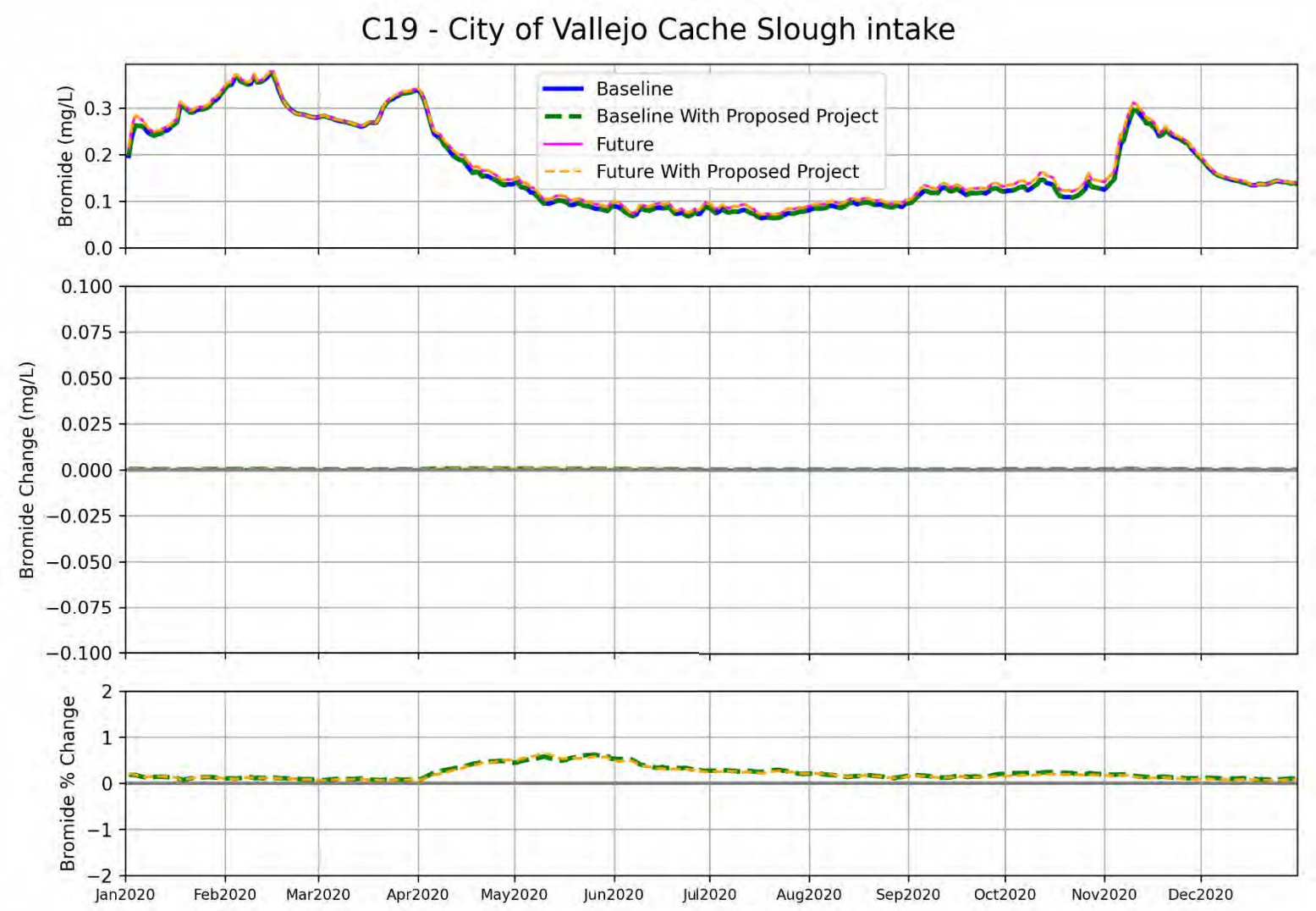


Figure 96 Daily average bromide at station C19 – City of Vallejo Cache Slough intake for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

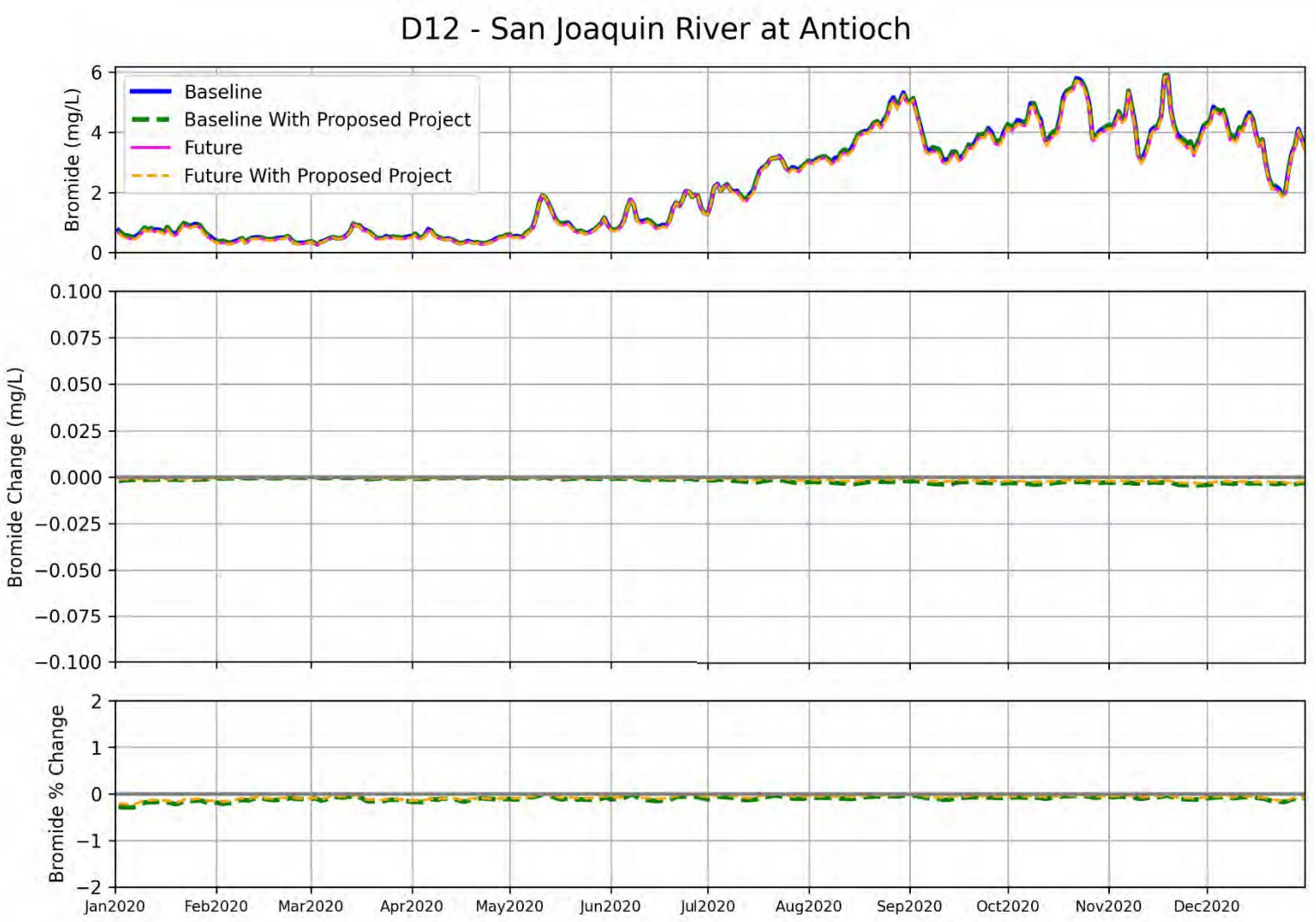


Figure 97 Daily average bromide at station D12 – San Joaquin River at Antioch for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

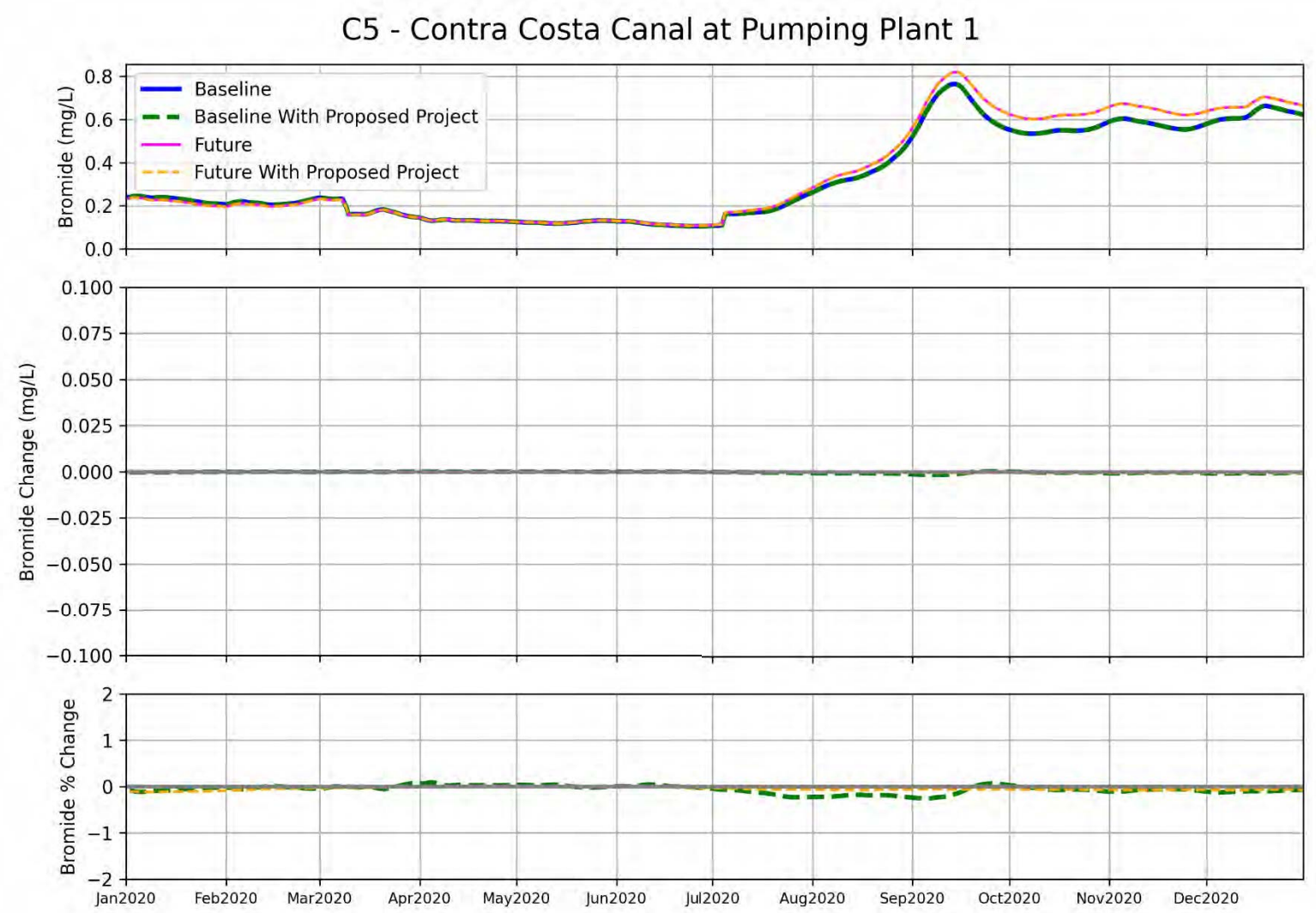


Figure 98 Daily average bromide at station C5 – Contra Costa Canal at Pumping Plant 1 for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

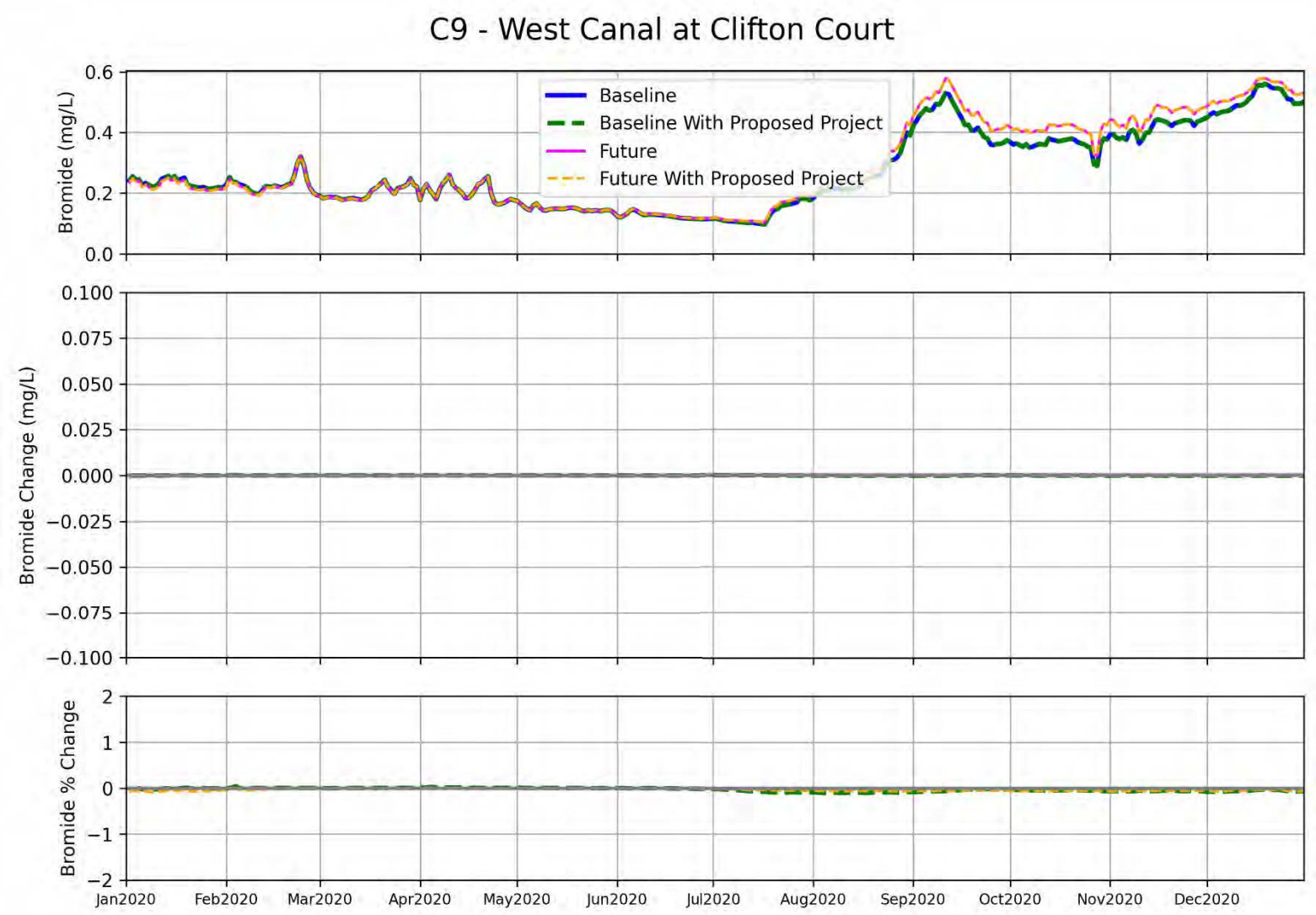


Figure 99 Daily average bromide at station C9 – West Canal at Clifton Court for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

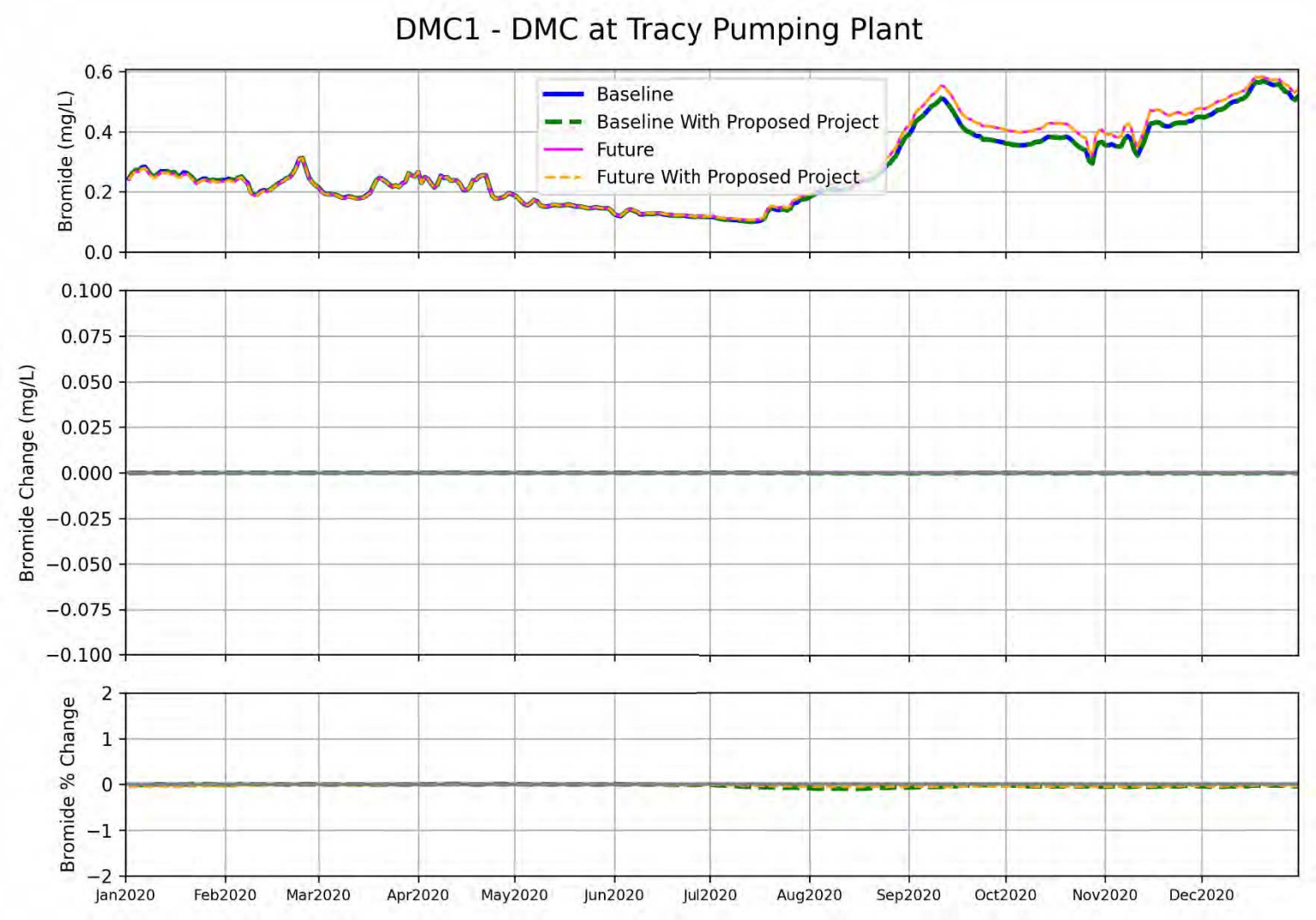


Figure 100 Daily average bromide at station DMC1 – DMC at Tracy Pumping Plant for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

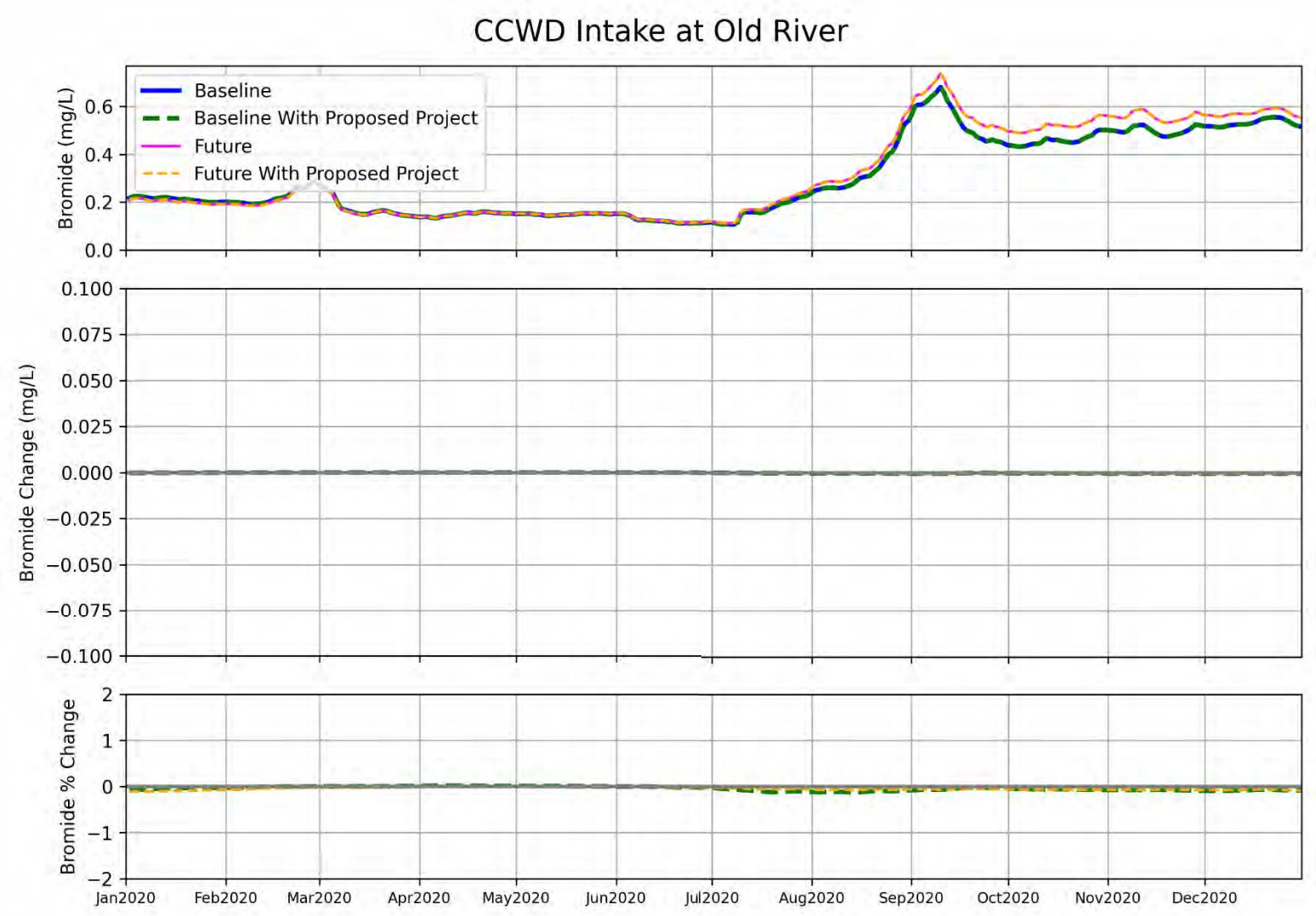


Figure 101 Daily average bromide at CCWD intake at Old River for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

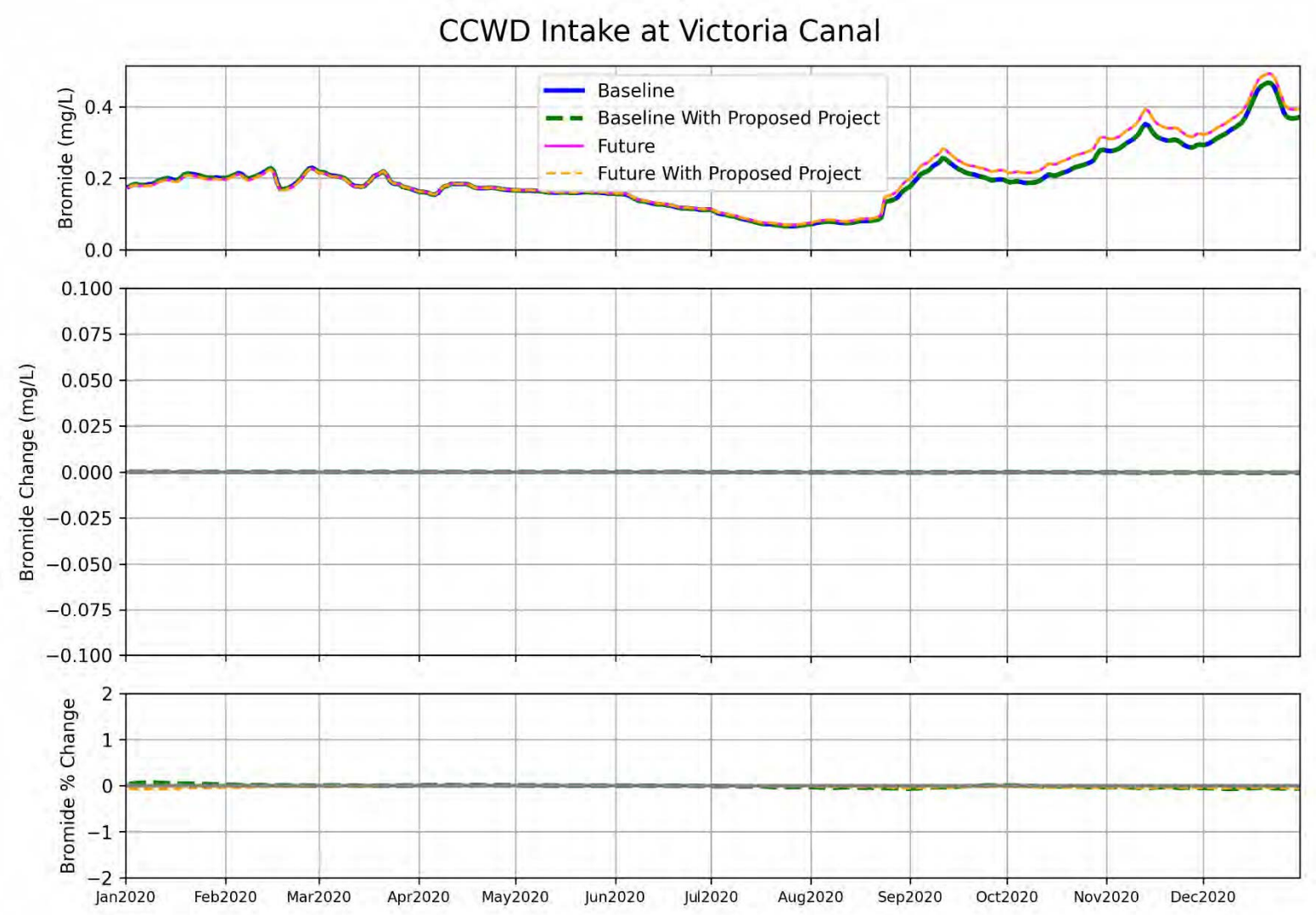


Figure 102 Daily average bromide at station CCWD intake at Victoria Canal for Baseline, Baseline with proposed Project, Future, and Future with proposed Project, plotted with daily average absolute and relative (%) bromide change with the proposed Project for the 2020 simulation period.

Appendix A: Model Boundary Conditions

2018 Model Boundary conditions

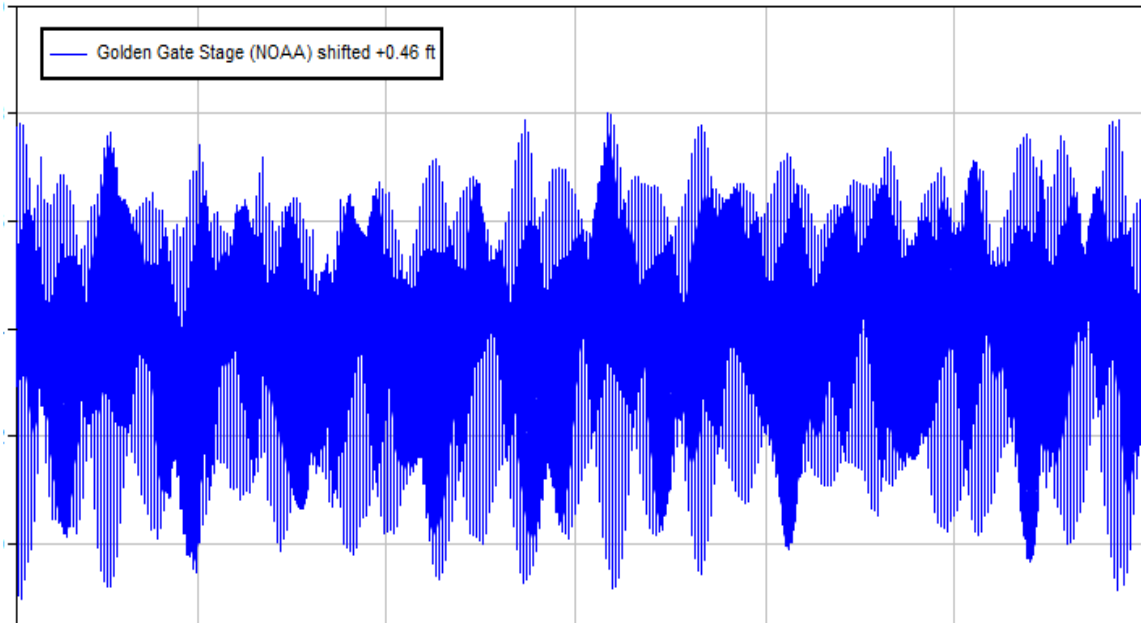


Figure 103 Golden Gate Bridge stage boundary for 2018 (data source: NOAA, shifted +0.46 ft). EC set constant at 50,000 µS/cm.

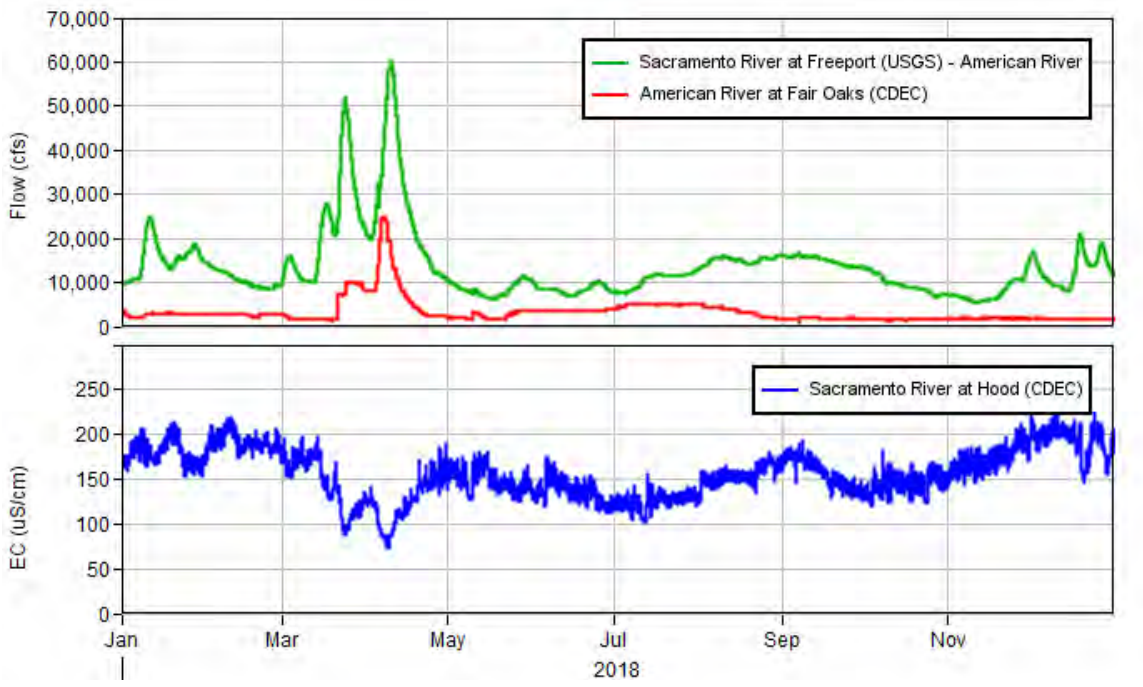


Figure 104 Flow and EC boundary conditions for the Sacramento River and American River for 2018. An internal EC boundary condition is applied in Sacramento River at Hood.

2020 Model Boundary conditions

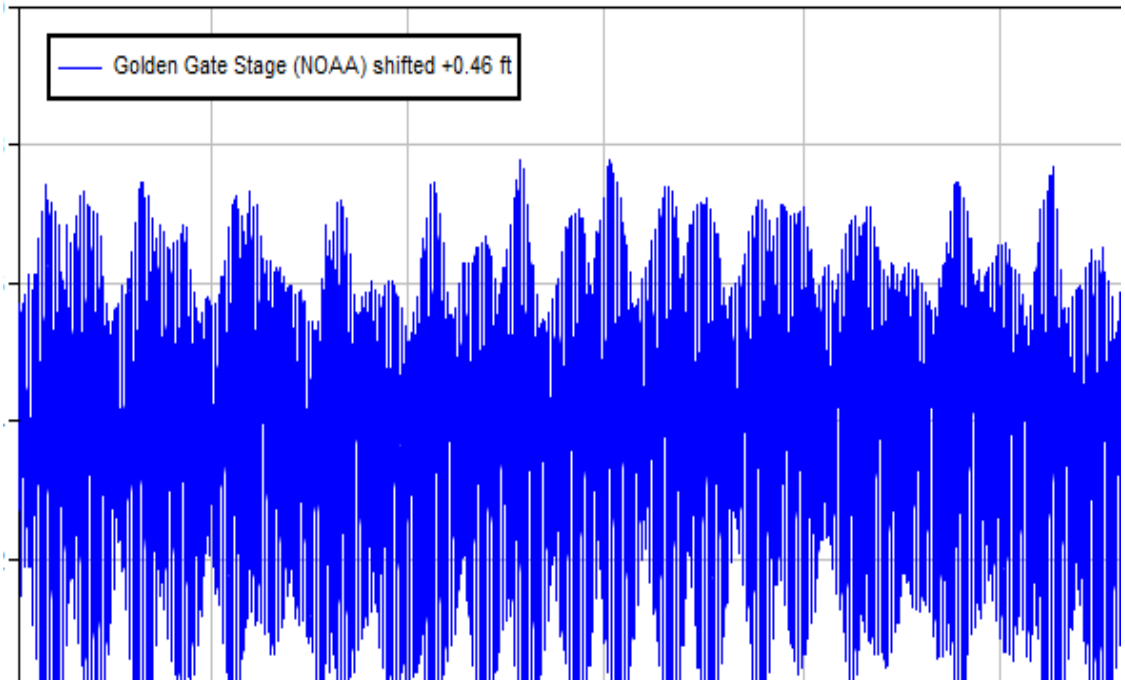


Figure 118 Golden Gate Bridge stage boundary for 2020 (data source: NOAA, shifted +0.46 ft). EC set constant at 50,000 µS/cm.

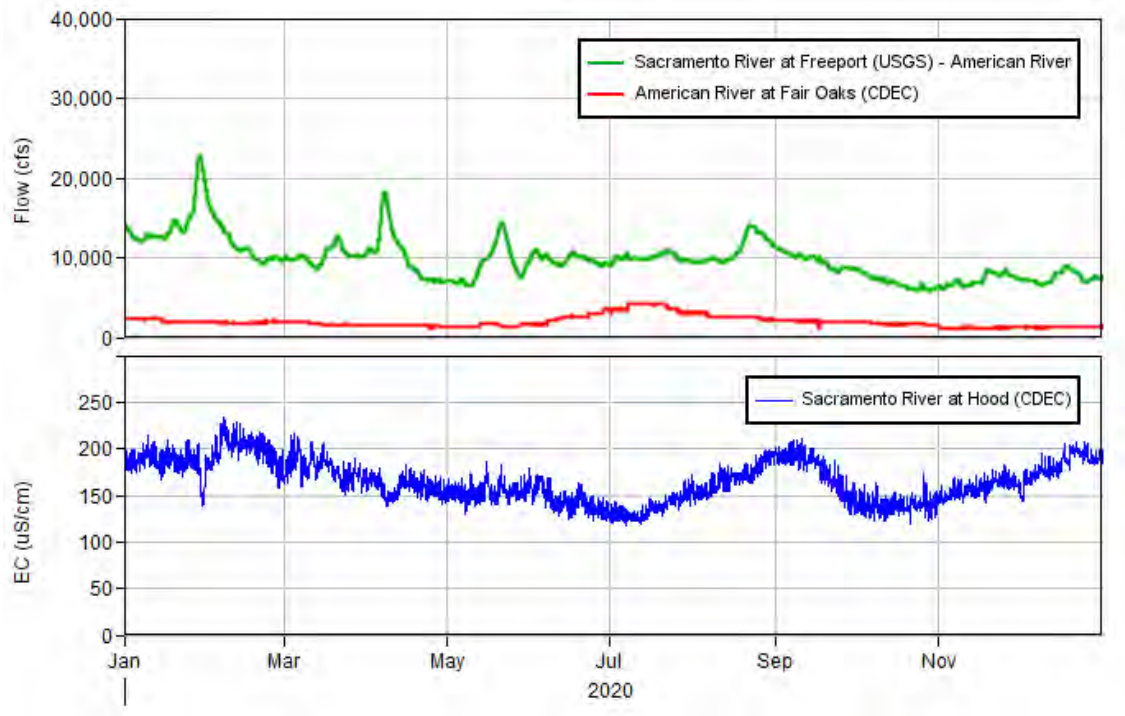


Figure 119 Flow and EC boundary conditions for the Sacramento River and American River for 2020. An internal EC boundary condition is applied in Sacramento River at Hood.

Tide's End Multibenefit Restoration Project

Recreation Analysis

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NOVEMBER 2025

interview notes

Date	June 24, 2024
Attendees	John Brennan (Deer and Tule Partnership) Stephanie Freed (Ecosystem Investment Partners) Chelsea Stewart (Ecosystem Investment Partners) Rachael Carnes (Environmental Science Associates) Emily Kline (Environmental Science Associates)
Subject	Recreational Opportunities in the Tide's End Multibenefit Restoration Project Area

- Where is the hunting occurring (which parcels)
- Who manages the current duck clubs that operate at Yolo Basin/adjacent neighbors
- Who else accesses the site (neighbors, open to public)
- Who regulates the duck hunting
- What other recreational opportunities are there
- What do the neighbors want/have we been coordinating with them already
- Going to contact Paul Phillips about regs, etc.

Discussion:

John Brennan: The neighborhood is in transition, it's on a floodplain, and farmland is marginalized. Between the late '60s and late '80s/'90s there was a push to convert farmland/cropland to duck hunting clubs. The existing clubs in the neighborhood include the Lucky 5, comprised of five people, Tom Rod Williams, who sold us two pieces, sold one to CDFW. The area is developed for duck hunting, which was better in the past than it is now. The duck season runs out at the end of January. EIP bought two-thirds of the properties.

The Glide-In Ranch hunting club is owned by the Glides. Everything north of that land is the wildlife area used to be Glide/Tule Ranch. Everything used to be Big Cow Ranch; they have a cattle lease but have been doing seasonal wildlife habitat improvements. There are 25 members at the club (25–60 members). They are most vocally opposed to the Notch Project, with two to three people showing up to public meetings. Their main concerns include what affects hunting on the property, flooding them out more often.

Hunting season is from October to January. The Big Notch is open November 1st through March. Flooding starts Christmas to approximately Groundhog Day. With high flows, the notch would allow water to come to the Bypass. Hunting is crappy until January.

interview notes

Date	August 1, 2024
Attendees	Gary Fredericksen (Deer and Tule Partnership) Emily Kline (Environmental Science Associates) Stephanie Freed (Ecosystem Investment Partners)
Subject	Recreational Opportunities in the Tide's End Multibenefit Restoration Project Area

Thank you for making time for the interview… we will be recording and taking notes. The purpose is to gauge the recreational opportunities on the site as it exists now.

We met with John Brennan earlier this summer to get a base understanding of what happens on site, and he recommended we speak to you, and mentioned that you and the Deer and Tule Partnership bring together Capitol Oil, Laurel G, Lucky 5, Yolo Basin, Kleary, and Williams.

Questions:

Can you tell me more about what the Deer and Tule partnership does?

How many members are associated with each duck club?

Does the membership of the duck clubs you manage hunt anywhere else?

How many (individual/unique) hunters typically use the property annually? Are they all members of the duck clubs (and which ones)?

Describe the demographic of the hunters that use each property.

Which months (during duck season) do you see use occurring?

What type of duck species are hunted on your properties? Do you maintain an inventory?

Do you have formal club rules?

What is the frequency and intensity of use (i.e., is it one group that comes once or twice per season, several groups that come out weekly, or somewhere in between)?

Do other recreationists (non-hunters) come to the site, and for what?

Tide's End Multibenefit Restoration Project

Inventory of Existing Water Conveyance and Distribution Infrastructure Report

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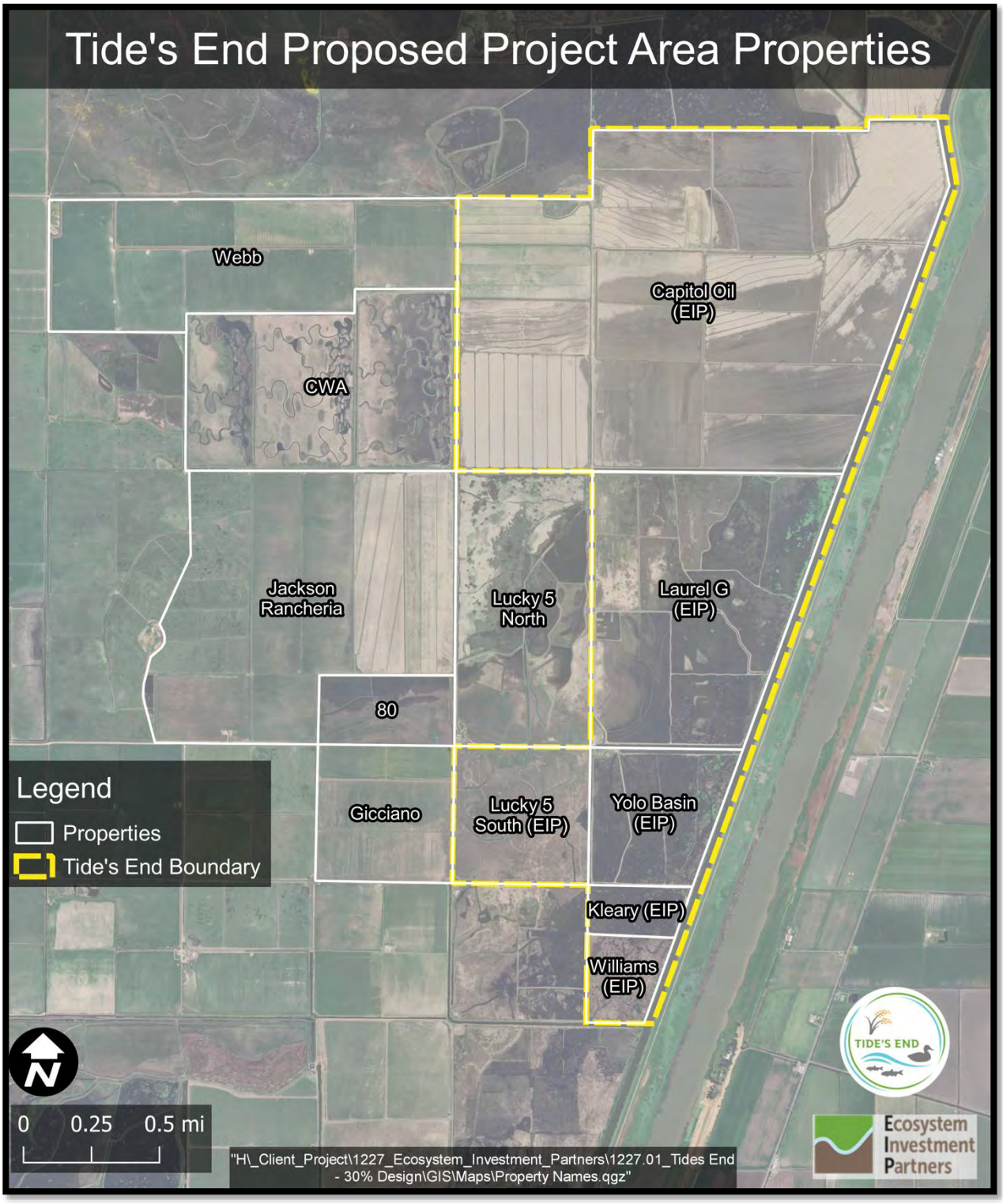

Figure 2. Tide's End proposed Project area properties and those directly abutting the proposed Project boundary or receiving water via infrastructure within the proposed Project boundary.

3.2 Typical Infrastructure Features

This section provides a brief discussion of the typical features identified, organized by Infrastructure Type. The purpose of this section is to provide the reader with visuals of the common infrastructure features in the proposed Project area, organized by infrastructure type. See **Appendix A** for photos of all infrastructure features inventoried.

3.2.1 Control Structures

As previously defined, Control Structures vary in their function but generally have the objective of controlling either the flow of water or the upstream water level. In the field, Control Structures that control the upstream water level are often called "Check Structures." **Figure 12** depicts the RD 2068 Check Structure which allows the operator to install wooden boards into slots in the sidewall of the structure to raise or "check" the water upstream of the structure. Once the water level rises above the top of the boards, it will spill over and continue downstream.

Figure 12. Example of a typical Control Structure. Photo taken looking downstream.

Other Control Structures are intended to manage the flow rate being conveyed in a certain direction. **Figure 13** is the Laurel G Division Box which allows the flow of water either into or out of all four sides of the concrete box. Two of the orifices are controlled by canal gates and the other two orifices are spills from adjacent fields that flow into the box and out either of the screw gates depending on which is open.

Figure 13. Example flow division or water control box.

Figure 14 is the Main Drain Check which consists of two flow paths: a combination slide/flap gate and a weir board structure. The combination gate will swing open as the tide rises and allow water to flow downstream and as the tide recedes the gate swings closed and retains the water in the channel. The gate can also be lifted to drain the channel if desired. The weir board structure only allows water to flow over the top of the boards if the water level is high enough to do so. This is an example of a Control Structure that provides both water level and flow control.

Figure 14. Main Drain Check Structure. Looking east towards the Toe Drain. The Capitol Oil West lift pump is visible in the background.

3.2.2 Culverts

Figure 15 is an example of a typical culvert. This culvert has a concrete headwall on the upstream side that can be seen in the top right corner of the image. An embankment road runs over the top of the culvert allowing vehicular and pedestrian passage across the culvert. Common culvert pipe materials in the proposed Project area include concrete, corrugated metal pipe (CMP), and high-density polyethylene (HDPE).

Figure 15. Example of a typical culvert looking at the discharge end.

3.2.3 Headings

Figure 16 is the Main Drain Heading at the Toe Drain. This picture is looking west along the Main Drain from its intersection with the Toe Drain. Headings that interact with the Toe Drain often include culverts, weirs, and tidal flap gates that allow water to flow through and into the canal as the tide rises, then close as the tide recedes, retaining the water in the canal.

Figure 16. Example of a tidal flap gate Heading.

Figure 17 is the Highline Lateral 1 Heading. This is a canal gate that can be opened or closed to control the amount of water passing through the buried pipeline and into Highline Lateral 1.

Figure 17. Example of a canal or lateral Heading.

3.2.4 Lift Pumps

Figure 18 is the Yolo Basin Pump. This is an example of a vertical turbine pump powered by an electric motor with local line power. The motor spins a vertical shaft that is connected to impellers below the water line that lift the water into the discharge pipe on image left. The majority (14) of the 15 lift pumps in the proposed Project area are vertical turbine pumps.

Figure 18. Example of a vertical turbine lift pump.

Figure 19 is Laurel G West Pump which is a power take-off (PTO) pump. A PTO pump is similar in operation to the vertical turbine pump except that the power source is an engine connected to the pump via a driveshaft. Typically, a farm tractor or portable combustion engine (diesel or natural gas) is used to power a PTO pump.

Figure 19. Example of a power take-off pump.

3.2.5 Spills

Figure 20 is a polyethylene flashboard riser that is common throughout the proposed Project area and is used to allow water to flow out of a field into a drain canal. Wooden weir boards are placed in slots on the riser to control the water level in the field.

Figure 20. Example of polyethylene flashboard riser with weir boards stocked adjacent.

Figure 21 is a typical precast weir box with similar functionality to the polyethylene riser above. Water can free flow through the rectangular section of the structure, or wooden weir boards can be placed in the sidewall slots to control the water level in the field. Levels that exceed the height of the weir boards spill over to the drain ditch. This structure is often referred to as a “rice box”.

Figure 21. Precast concrete rice box.

3.2.6 Turnouts

Turnouts typically consist of gates, valves, or similar control devices that regulate the flow of water into the field. (see **Figure 22** for an example).

Figure 22. Example of a typical turnout.

Figure 23 is one of three alfalfa valve risers that are connected to the Yolo Basin Pump pipeline. The cap on the top of the PVC pipe can be opened or closed to control the amount of water delivered.

Figure 23. Example of an alfalfa valve riser delivery.