Final

Initial Study/Mitigated Negative Declaration

Northwest Levee Improvements and Stone Road Seepage Reduction Project

Prepared for:

Bethel Island Municipal Improvement District

October 2018

Prepared by:

GEI Consultants

Consulting Engineers and Scientists

Final

Initial Study/Proposed Mitigated Negative Declaration

Northwest Levee Improvements and Stone Road Seepage Reduction Project

Prepared for:

Bethel Island Municipal Improvement District
3085 Stone Road
Bethel Island, CA 94511

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October 3, 2018

GEI Project No. 1325970 Task 4.2

MITIGATED NEGATIVE DECLARATION

Project:	Bethel Island Northwest Levee Improvements and Stone Road Seepage Reduction Project
Lead Agency:	Bethel Island Municipal Improvement District

PROJECT DESCRIPTION

Bethel Island is located in the western Sacramento-San Joaquin Delta in Contra Costa County. Bethel Island Municipal Improvement District (BIMID) is the entity responsible for repair, maintenance, and improvements to the levees protecting Bethel Island from flooding. BIMID proposes to implement improvements along the waterside and landside of the Taylor Slough levee on the northwest side of the island west of Bethel Island Road and north of Canal Road between levee stations 0+00 and 130+00, (Site 1), and seepage reduction improvements along the landside of the Sand Mound Slough levee on the south side of the island along Windsweep Road and Stone Road between levee stations 340+00 and 450+00 (Site 2).

The following improvements are proposed:

Site 1

- Approximately 13,000 linear feet (LF) of levee improvements, where needed, to meet Bulletin 192-82 criteria, including raising and widening the levee crest, waterside slope armoring, landside slope flattening, and installation of an all-weather road on the levee crown between stations 0+00 and 130+00.

- Creation of approximately 4,500 LF of 10-foot-wide berm on the waterside slope, from station 40+00 to 75+00 and 104+00 to 114+00, which would be planted to provide about 1 acre of emergent aquatic vegetation (EAV) habitat.

- Creation of approximately 3,500 LF or 1.2 acres of freshwater marsh, riparian forest, and scrub shrub habitat on the landside of the levee between stations 40+00 and 75+00.

- Some geotechnical remediation that could include one or a combination of measures such as installation of a clay cutoff wall at the landside levee toe, installation of a drainage blanket on the landside levee slope, or placement of sheet piles along the landside of the levee to address seepage in this reach of the levee system.

Site 2

A geotechnical study is currently underway to better understand the cause of seepage in this reach of the levee; however, one or a combination of the following measures may be implemented to minimize or alleviate the seepage issue in this area.

- Construction of new open ditches or widen existing ditches to facilitate conveyance of seepage water to the drainage pumping station.

- Installation of new residential subsurface drainage systems or enhancement of existing systems at selected locations and where needed to facilitate redirection of seepage flows to the Bethel Island drainage system.

- Placement of additional culverts crossing the roads to increase capacity to convey seepage flows across Windsweep and Stone roads.

- Installation of up to 10 monitoring wells, where needed, to monitor groundwater level and measure the seepage rate through and under the levee.

FINDINGS

An Initial Study (IS) has been prepared to assess the project's potential effects on the environment and the significance of those effects. Based on the IS, it has been determined that the proposed project would not have any significant adverse effects on the physical environment after implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project would have no impacts on land use and planning, mineral resources, population and housing, public services and recreation.

2. The proposed project would have less-than-significant impacts on aesthetics, agriculture and forestry resources, greenhouse gas emissions, tribal cultural resources, and utilities and service systems.

3. The proposed project would have potentially significant impacts on air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and transportation / traffic but mitigation measures are proposed to avoid or reduce these effects to less-than-significant levels.

Following are the mitigation measures that would be implemented by BIMID to avoid or minimize environmental impacts. Implementation of these mitigation measures would reduce the environmental impacts of the proposed project to a less-than-significant level.

Mitigation Measure AQ-1: Use California Air Resources Board Tier 3-Certified Construction Equipment.

During construction activities, all rubber-tired dozers, graders, scrapers, excavators, and tractors shall be California Air Resources Board (CARB) Tier 3-Certified or better.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure AQ-2: Implement Basic Construction Mitigation Measures from Bay Area Air Quality Management District's (BAAQMD) 2017 CEQA Air Quality Guidelines.

BIMID shall ensure that the Bay Area Air Quality Management District's (BAAQMD) basic construction mitigation measures from Table 8-1 of the BAAQMD 2017 CEQA Air Quality Guidelines are included in the construction documents. These basic construction mitigation measures include:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

- Use equipment and vehicles that are compliant with Air Resource Board (ARB) requirements and emissions standards for on road and off-road fleets and engines.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-1: Monitor Construction and Provide Worker Environmental Awareness Training.

A qualified biologist(s) shall monitor construction activities that could potentially cause significant impacts to sensitive biological resources. In addition, BIMID shall retain a qualified biologist to conduct mandatory contractor/worker awareness training for construction personnel. The awareness training would be provided to all construction personnel to brief them on the identified location of sensitive biological resources, including how to identify species (visual and auditory) most likely to be present, the need to avoid impacts to biological resources (e.g., plants, wildlife, and jurisdictional waters), and the penalties for not complying with biological mitigation requirements. All construction personnel will also receive training on relevant special-status species. If new construction personnel are added to the Project, the contractor shall ensure that they receive the mandatory training before starting work.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-2: Conduct Focused Surveys for Special-Status Plants and Provide Compensatory Mitigation.

Prior to any waterside levee work, and, as appropriate, inland in-water work, focused surveys shall be conducted to determine if special-status plants occur within the project footprint and/or

temporary construction zone. Surveys shall be conducted in accordance with CDFW (2009) *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities*. These guidelines require rare plant surveys to be conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Surveys shall be scheduled to coincide with known blooming periods, and/or during periods of physiological development that are necessary to identify the plant species of concern.

If no state or federally listed of CNPS List 1 or CNPS List 2 plant species are found in or adjacent to (within 100 feet) proposed construction areas, no further mitigation is required. If any state- or federally-listed or CNPS List 1 or CNPS List 2 plant species are found in or adjacent to (within 100 feet) proposed impact areas during the surveys, these plant species shall be avoided to the greatest extent possible. Any special-status plant species that are identified adjacent to the Project site, but not proposed to be disturbed by the Project, shall be protected by barrier fencing to ensure that construction activities and material stockpiles do not impact any special-status plant species. These avoidance areas shall be identified on Project plans.

If Project-related impacts would result in the loss of greater than 10 percent of occupied habitat for a special-status plant species, compensatory mitigation shall be required for all impacts that exceed the 10 percent threshold. For example, if 18 percent of occupied habitat would be impacted, compensatory mitigation shall only be required for the 8 percent that exceeds the 10 percent threshold. Compensatory mitigation for permanent impacts to special-status plant species shall include the preservation of occupied habitat at a 1:1 ratio (i.e., 1 acre preserved for each acre impacted). Compensation for temporary impacts shall include the preservation of occupied habitat at a 0.5:1 ratio. Preservation areas may include undisturbed areas of the site that would be preserved and managed in perpetuity, off-site mitigation lands, or a combination of both. The preserved habitat shall be of equal or greater habitat quality to the areas impacted in terms of soil features, extent of disturbance, and vegetation structure, and contain extant populations of the same or greater size as the area impacted.

A report of special-status plants observed during focused surveys, as well as avoidance, minimization, and mitigation measures to be implemented, shall be prepared, and submitted to BIMID, CDFW, and USFWS (as appropriate) ~~no later than 30 days prior to implementing waterside levee construction and in-water work~~.

Timing: Before waterside levee construction and inland in-water work.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-3: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Avoidance and Minimization Measures.

A preconstruction survey for western pond turtle shall be conducted by a qualified biologist within 24 hours prior to the onset of construction activities. The survey area shall include a 100-foot buffer of the area to be affected. If a western pond turtle is found within the survey area, a qualified biologist, under consultation with the CDFW, shall move the individual 500 feet downstream to suitable habitat. If a turtle nest is found within the survey area, construction activities should not take place within 100 feet buffer of the nest until the egg have hatched and young have emerged and moved out of the Project area. The 100-foot buffer would be marked with stakes and flagging.

In the event a turtle is found during construction activities, construction activities shall stop within 100 feet of the turtle until the turtle leaves the immediate construction area on its own or a qualified biologist, under consultation with the CDFW, relocates the turtle to a suitable aquatic site 500 feet away and downstream from Project activities.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-4: Conduct Surveys for Giant Garter Snake and Implement Avoidance and Minimization Measures.

A survey shall be conducted by a qualified biologist for the giant garter snake within the Project area 24 hours prior to the onset of levee improvements and any time activities are halted for more than two weeks thereafter.

During Project development, the work area shall be reduced to the smallest footprint feasible in sensitive habitat areas.

Work shall coincide with the giant garter snake's active season (May 1– October 1).

If work in the flowing portion of the affected water body is unavoidable, a qualified biologist shall survey the Project area for the giant garter snake every morning prior to construction activities that occur in the flowing portion of the water body.

Prior to initiation of construction activities within jurisdictional features, construction best management practices (BMP) shall be employed on-site to prevent degradation to on-site and off-site waters of the United States. Methods shall include the use of appropriate measures to intercept and capture sediment prior to entering jurisdictional features, as well as erosion control measures along the perimeter of all work areas to prevent the displacement of fill material. BMPs may include installing erosion and sedimentation controls (e.g., silt fences, staked straw bales/wattles, silt/sediment basins and traps, geofabric, trench plugs, terraces, water bars, and/or soil stabilizers), re-seeding and mulching to revegetate disturbed areas, specifying that staging areas for refueling and servicing equipment will be located away from sensitive habitats and waterways, and developing a spill prevention and response plan. All BMPs shall be in place prior to initiation of any construction activities and shall remain until construction activities are completed. All erosion control methods shall be maintained until all on-site soils are stabilized.

All exposed/disturbed areas and access points left barren of vegetation as a result of construction activities shall be restored using locally native grass seeds, locally native grass plugs, and/or a mix of quick-growing sterile non- native grass with locally native grass seeds. Seeded areas shall be covered with broadcast straw.

Tightly woven erosion control matting (mesh size less than 0.25 inch) or similar material shall be used for erosion control and other purposes at the Project site to ensure that giant garter snakes do not become trapped or entangled by the erosion control material. The edge of the material shall be buried in the ground to prevent giant garter snakes from crawling underneath the material. The use of plastic, monofilament, jute, or similar erosion control netting with mesh sizes larger than 0.25 inch that could entangle snakes at the Project site shall be prohibited.

During all phases of construction, snake exclusionary fencing shall be installed near the temporary construction zone boundary. The exclusionary fencing shall be maintained by the construction contractor during all phases of construction. Any breaches in the fencing shall be fixed within a 24-hour period.

If a giant garter snake is encountered in the Project work area, all construction activities shall cease until appropriate corrective measures have been completed and the snake moves out of the construction area on its own. Any giant garter snake observed shall be immediately reported to the USFWS and the CDFW.

Vehicles driven on or near the levees in the Project area shall maintain a 15 mile per hour speed limit, and drivers shall be informed to watch for snakes and avoid running them over.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-5: Adhere to In-water Work Windows.

In-water work activities will take place between August 1 and November 30, designated by CDFW and USFWS as a period when, special-status fish species, including Delta smelt, Central Valley steelhead, winter-run Chinook salmon and spring-run Chinook salmon, are least vulnerable to impacts from in-channel activities (USFWS 2004).

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-6: Conduct Pre-Construction Surveys for Burrowing Owl and Implement Avoidance and Minimization Measures.

For any clearing and construction activities that occur during the nesting period for burrowing owls (February 1–August 31), BIMID shall retain a qualified biologist to conduct preconstruction surveys in accordance with the CDFW (2012) Staff Report on Burrowing Owl Mitigation. Surveys shall be conducted within 14 days prior to ground-breaking activities and shall be repeated if Project activities are suspended or delayed for more than 14 days during nesting season.

If no burrowing owls are detected, no further mitigation is required. If active burrowing owl nest sites are detected, BIMID shall implement the avoidance, minimization, and mitigation methodologies outlined in the CDFW's Staff Report on Burrowing Owl Mitigation prior to initiating Project-related activities that may impact burrowing owls.

Timing: Prior to ground-breaking activities.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-7: Compensate for Loss of Swainson's Hawk Foraging Habitat.

Prior to any construction activities, BIMID shall obtain Swainson's hawk foraging habitat mitigation at a ratio of 1 acre for each 1 acre of suitable foraging habitat converted. "Suitable foraging habitat" consists of row crops, forage crops, pasture, grasslands, or fallow fields that would be affected by construction activities. BIMID shall mitigate for loss of Swainson's hawk foraging habitat through (1) payment of an in-lieu fee for off-site preservation of foraging habitat to a resource agency or a third-party organization acceptable to a resource agency, or (2) acquisition of an irrevocable instrument (e.g., deed restriction or easement) for preservation of foraging habitat on a property that provides habitat of equal or greater quality.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-8: Conduct Preconstruction Surveys for Active Raptor and Migratory Bird Nests and Implement Avoidance and Minimization Measures.

For any clearing and/or construction activities that occur during the nesting season (February 15–August 15), surveys to identify active raptor and migratory bird nests, including ground-nesting birds, shall be conducted by a qualified biologist within 14 days of construction initiation.

If active migratory bird nest sites are identified within 200 feet of Project activities, BIMID shall impose an exclusionary buffer for all active nest sites prior to commencement of any Project construction activities to avoid construction- or access-related disturbances to migratory bird nesting activities. An exclusionary buffer constitutes an area where Project-related activities (i.e., vegetation removal, earth moving, construction, Project staging) would not occur and would be imposed within 100 feet of any active nest sites until the nest is deemed inactive by a qualified biologist. Activities permitted within and the size (i.e., 100 feet) of the exclusionary buffer may be adjusted through consultation with the CDFW.

If active raptor nests are identified within 1,320 feet of Project activities, a 1,320-foot initial temporary nest disturbance buffer shall be established. If project-related activities within the temporary raptor nest disturbance buffer are determined to be necessary during the nesting season, an on-site biologist/monitor experienced with raptor behavior shall be retained by the BIMID to monitor the nest, and BIMID shall consult with the CDFW to determine the best course of action necessary to avoid nest abandonment or take of individuals. Work may only be allowed to proceed within the temporary nest disturbance buffer if raptors are not exhibiting agitated behavior such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, and only with the agreement of the CDFW. Based on the behavior observed, the buffer may be reduced if the birds are tolerant of construction activities. The designated on-site biologist/monitor shall be on-site daily while construction-related activities are taking place within the above quarter-mile buffer and shall have the authority to stop work if raptors are exhibiting agitated behavior.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-9: Compensate for Loss of Riparian Habitats and Sensitive Habitat Communities.

For every acre of riparian habitat and sensitive habitat communities permanently affected by the proposed Project, BIMID shall replace the affected acreage at a minimum 2:1 ratio, or another approved ratio as determined by CDFW. Mitigation would be achieved through on-site creation or enhancement. Mitigation as required in regulatory permits issued through the CDFW may be applied to satisfy this measure.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure BIO-10: Compensate for Loss of Federally Protected Wetlands and Waters.

For every acre of federally protected waters permanently affected by the proposed Project, BIMID shall replace the affected acreage at a minimum 2:1 ratio, or another approved ratio as determined by the USACE. Mitigation would be achieved through on-site creation or enhancement. Mitigation as required in regulatory permits issued through the USACE or the Central Valley Regional Water Quality Control Board may be applied to satisfy this measure.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure CUL-1: Avoid Potential Effects on Undiscovered Unique Archaeological Resources.

To avoid potential effects on unique archaeological resources during project-related ground-disturbing activities BIMID and its construction contractor(s) will implement the following measures:

- Before the start of construction activities, construction personnel involved with earthmoving activities (including the site superintendent) shall be informed of the possibility of encountering archaeological resources, the appearance, and types of archaeological resources likely to be seen during construction activities, and proper notification procedures should archaeological resources be encountered. This worker training shall be prepared and presented by an experienced field archaeologist.

- If cultural resources are discovered during project-related ground-disturbing activities, then all construction activities that may damage the discovery will stop within 100 feet of the discovery and BIMID will be immediately notified. BIMID will hire a qualified archaeologist to determine if the discovery is a unique archaeological resource per CEQA. If necessary, the qualified archaeologist will develop a testing plan to determine if the discovery meets significance criteria for a unique archaeological resource; any testing plan will not be implemented until review by BIMID.

- If the discovery is determined not to be a unique archaeological resource, then construction in the area of the discovery may continue.

- If the discovery is determined to meet significance criteria, then the qualified archaeologist will develop and implement a treatment plan in consultation with BIMID to mitigate any significant impacts to the discovery; preservation in place is the preferred mitigation measure. Work in the area of the discovery will not continue until treatment is completed.

  Timing: During construction.

  Responsibility: Bethel Island Municipal Improvement District.

Mitigation Measure CUL-2: Avoid Potential Effects on Undiscovered Unique Paleontological Resources.

To minimize the potential for destruction of or damage to potentially unique, scientifically important paleontological resources during earthmoving activities, BIMID will implement the measures described below.

- Before the start of construction activities, construction personnel involved with earthmoving activities (including the site superintendent) shall be informed of the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction activities, and proper notification procedures should fossils be encountered. This worker training may either be prepared and presented by an experienced field archaeologist at the same time as construction worker education on cultural resources or prepared and presented separately by a qualified paleontologist.

- If paleontological resources are discovered during earthmoving activities, the construction crew shall notify BIMID and shall immediately cease work within 50 feet of the discovery. BIMID shall retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines for impact mitigation (Society of Vertebrate Paleontology 2010). The recovery plan may include, but is not limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by BIMID to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

  Timing: Before and during construction.

  Responsibility: Bethel Island Municipal Improvement District.

Mitigation Measure CUL-3: Avoid Potential Effects on Undiscovered Burials.

To avoid potential disturbance to buried human remains during earthmoving activities, BIMID will implement the measures described below.

- In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, all ground-disturbing work in the area of the burial and a

100-foot radius shall halt and the Contra Costa County Coroner shall be notified immediately. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The NAHC shall designate a Most Likely Descendant for the human remains. After the coroner's findings have been made, an archaeologist meeting the Secretary of the Interior's Professional Standards for Archaeologists and the NAHC-designated Most Likely Descendant (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities of the Contra Costa Coroner for acting upon notification of a discovery of Native American human remains are identified in PRC Section 5097.9.

- Native American human remains, associated grave goods, and items associated with Native American human remains that are subject to California PRC Section 5097.98 will not be subjected to scientific analysis, handling, testing, or field or laboratory analysis without written consent from the MLD. If human remains are present, treatment shall conform to the requirements of State law under California Health and Safety Code Section 7050.5 and PRC Section 5097.87, unless the discovery occurs on Federal land. BIMID agrees to comply with other related State laws, including PRC Section 5097.9.

  Timing: During construction.

  Responsibility: Bethel Island Municipal Improvement District.

Mitigation Measure GEO-1: Prepare and Implement a Storm Water Pollution Prevention Plan or a Storm Water Management Plan and Associated Best Management Practices.

- BIMID shall prepare and implement the appropriate Stormwater Pollution Prevention Plan (SWPPP) or Stormwater Management Plan (SWMP) to prevent and control pollution and to minimize and control runoff and erosion. The SWPPP or SWMP shall identify the activities that may cause pollutant discharge (including sediment) during storms or strong wind events and the Best Management Practices (BMPs) that will be employed to control pollutant discharge. Construction techniques that will be identified and implemented to reduce the potential for runoff may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. In addition, the SWPPP or SWMP shall include an erosion control plan and BMPs that specify the erosion and sedimentation control measures to be implemented, which may include silt fences, staked straw bales/wattles, silt/sediment basins and traps, geofabric, trench plugs, terraces, water bars, soil stabilizers and re-seeding and mulching to revegetate disturbed areas. The SWPPP shall also include dust control practices to prevent wind erosion, sediment tracking, and dust generation by construction equipment. No construction-related disturbance of surfaces shall occur between November 15 and April 1.

- The SWPPP or SWMP shall also include a spill prevention, control, and countermeasure plan, and applicable hazardous materials business plans, and shall identify the types of materials used for equipment operation (including fuel and hydraulic fluids), and measures to prevent and

materials available to clean up hazardous material and waste spills. The SWPPP or SWMP shall also identify emergency procedures for responding to spills.

- The BMPs presented in either document shall be clearly identified and maintained in good working condition throughout the construction process. BMPs shall be applied to meet the maximum extent practicable and best conventional technology/best available technology requirements and to address compliance with water quality standards. The construction contractor shall retain a copy of the approved SWPPP or SWMP on the construction site and modify it as necessary to suit specific site conditions through amendments approved by the Central Valley RWQCB, if necessary.

- Construction and postconstruction monitoring shall be conducted to ensure that all erosion-control efforts are performing as designed.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District.

Mitigation Measure HAZ-1: Prepare and Implement a Construction Traffic Control Plan.

Before the start of project-related construction activities, BIMID shall prepare and implement a plan to manage expected construction-related traffic to the extent feasible, and to avoid and minimize potential traffic congestion during project-related construction. The construction traffic control plan shall outline the phasing of activities and the use of specific routes to and from the work site locations to minimize the daily volume of traffic on individual roadways.

The items listed below will be included, as terms of the construction contracts.

- Provide a site-specific access plan specifying the roadways on which construction workers are allowed travel to access the work sites.

- Prohibit construction workers from accessing work sites from any locations other than those specified in the plan.

- Provide 72-hour advance notification if access to driveways or private roads would be affected. Limit effects on driveway and private roadway access to working hours and provide uninterrupted access to driveways and private roads during non-work hours. If necessary, use steel plates, temporary backfill, or another accepted measure to provide access.

- Provide clearly marked bicycle detours to address bicycle route closures or if bicyclist safety would be otherwise compromised.

- Queue trucks only in areas and at times allowed by the appropriate jurisdiction.

- Post warnings about the potential presence of slow-moving vehicles.

- Use traffic control personnel when appropriate.

- Maintain access points for emergency vehicles.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure HAZ-2: Return Affected Roadways to Pre-Project Conditions.

BIMID and/or its construction contractor(s) shall assess the condition of haul routes involving County roadways before the start of and after the completion of construction by taking photographs and recording images. Documented project-related potholes, fractures, or other damage to roadways used during construction shall be repaired at BIMID's expense.

Timing: Before and after construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure HYD-1: Implement Water Quality Protection Measures During Waterside Levee Construction Activities

- BIMID will conduct waterside grading and planting to support EAV habitat establishment and riprap placement or enhancement during low tide, when feasible, to minimize impacts to water quality during waterside construction.

- BIMID will apply the best management practices to contain suspended sediments including the use of a continuous length of floating silt curtain. The construction contractor will be advised to monitor the equipment for and fix them if and when needed.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District.

Mitigation Measures NOI-1: Implement Measures to Reduce Construction-Related Noise Effects during Construction.

BIMID shall require the construction contractor to implement the following measures to reduce impacts related to noise generation during construction activities within 100 feet of noise sensitive receptors:

- The construction contractor shall maintain construction equipment to manufacturers' recommended specifications and ensure that all internal combustion engine-driven equipment are equipped with mufflers that are in good condition and appropriate for the equipment.

- The construction contractor shall locate stationary noise-generating equipment as far as feasible from sensitive receptors when sensitive receptors adjoin or are near a construction disturbance area. In addition, the Project contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the Project Site.

- The construction contractor shall prohibit unnecessary idling of internal combustion engines.

- An on-site complaint and enforcement manager shall be available to respond to and track complaints. The manager will be responsible for responding to any complaints regarding construction noise and or dust and for coordinating with the adjacent land uses. The manager will determine the cause of any complaints and coordinate with the construction team to implement effective measures (considered technically and economically feasible) warranted for correcting the problem. Such measures could include but would not be limited to relocating stationary equipment, the use of sound blankets, the placement of temporary sound barriers around construction staging areas and/or continued coordination with the complainant regarding timing and duration of noise. The telephone number of the coordinator shall be posted at the construction site and provided to neighbors in a notification letter. The manager will be trained to use a sound level meter and should be available during all construction hours to respond to complaints.

  Timing: During construction.

  Responsibility: Bethel Island Municipal Improvement District.

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ADOPTION OF INITIAL STUDY/MITIGATED NEGATIVE DECLARATION AND APPROVAL OF INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Certification by Those Responsible for Preparation of This Document. The Bethel Island Municipal Improvement District is responsible for the preparation of this Mitigated Negative Declaration and the incorporated Initial Study. I believe this document meets the requirements of the California Environmental Quality Act and provides an accurate description of the proposed project, and that the lead agency has the means and commitment to implement the project design measures that will ensure the project does not have any significant, adverse effects on the physical environment. I recommend approval of this document.

_____ _____

Reginal Espinoza, District Manager Date
Bethel Island Municipal Improvement District

*(*To be signed upon completion of the public review process and preparation of a final project approval package, including responses to comment, if any, on the environmental document and any necessary modifications to project design measures.)*

Approval of the Project by the Lead Agency: To meet Section 21082.1 of the California Environmental Quality Act, Bethel Island Municipal Improvement District has independently reviewed and analyzed the Initial Study and mitigated negative declaration for the proposed project and finds that the Initial Study and Mitigated Negative Declaration reflect the independent judgment of the Bethel Island Municipal Improvement District. The lead agency finds that the project design features will be implemented as stated in the Mitigated Negative Declaration.

I hereby attest that the Board of Directors of the Bethel Island Municipal Improvement District has approved this proposed project:

_____ _____

Bruce Smith, President, Board of Directors Date
Bethel Island Municipal Improvement District

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INITIAL STUDY

Project Information

1. Project title:	Northwest Levee Improvements and Stone Road Seepage Reduction Project
2. Lead agency name and address:	Bethel Island Municipal Improvement District 3085 Stone Road, P.O. Box 244 Bethel Island, CA 94511
3. Contact person and phone number:	Regina Espinoza, District Manager, 925.684.2210
4. Project location:	Bethel Island is located in the Sacramento-San Joaquin Delta (Delta), Contra Costa County, within the Wetlands Land Grant on the Jersey Island, California, U.S. Geological Survey 7.5-minute series topographic quadrangle.
5. Project sponsor's name and address:	Bethel Island Municipal Improvement District 3085 Stone Road P.O. Box 244 Bethel Island, CA 94511
6. General plan designation:	Single Family Residential High-Density, Commercial Recreation, Agricultural Lands
7. Zoning:	A-2 [General Agricultural District], A-3 [Heavy Agricultural District], and F-1 [Water Recreational], with a Flood Hazard Combining District Overlay
8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)	See attached Initial Study
9. Surrounding land uses and setting: Briefly describe the project's surroundings:	Land uses surrounding the project sites include agricultural lands, a marina, developed areas with single-family residences, levees, and, open water and riparian habitat. See attached Initial Study for additional information.
10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)	Bay Area Air Quality Management District, California Department of Fish and Wildlife, Central Valley Regional Water Quality Control Board, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Services, Contra Costa County
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and	The Torres Martinez Desert Cahuilla Indians has submitted a request for consultation on all projects within the lead agencies jurisdiction. A letter formally inviting the tribe to consult was issued by the lead agency on June 18, 2018.

conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

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Abbreviations and Acronyms

AB	Assembly Bill
BAAQMD	Bay Area Air Quality Management District's
Basin Plan	San Joaquin River Basin
BDCP	Bay-Delta Conservation Plan
BIMID	Bethel Island Municipal Improvement District
BMP	best management practices
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CHP	California Highway Patrol
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon monoxide
CO_2e	carbon dioxide equivalents
CRHR	California Register of Historical Resources
CVRWQCB	Central Valley Regional Water Quality Control Board
CWC	California Water Code
CY	cubic yards
Delta	Sacramento-San Joaquin Delta
DTSC	Department of Toxic Substances Control.
DWR	Department of Water Resources
EAV	emergent aquatic vegetation
EIR	Environmental Impact Report
ESA	Endangered Species Act
FM	freshwater marsh
IS	Initial Study
IS/MND	Initial Study/Mitigated Negative Declaration
lbs/day	pounds per day
LF	linear feet
MHW	mean high water
MLD	Most Likely Descendant
mph	miles per hour

MSL	mean sea level
NAHC	Native American Heritage Commission
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NRHP	National Register of Historic Places
PM	particulate matter
proposed project	Northwest Levee Improvements and Stone Road Seepage Reduction Project
quad	quadrangles
RWQCB	Regional Water Quality Control Board
SWMP	Stormwater Management Plan
T	ton
TAC	toxic air contaminant,
TMDLs	Total Maximum Daily Loads
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Chapter 1. Introduction

The Bethel Island Municipal Improvement District (BIMID) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) in compliance with the California Environmental Quality Act (CEQA) to address the potentially significant environmental impacts of the proposed Northwest Levee Improvements and Stone Road Seepage Reduction Project (proposed project) in Contra Costa County, California. BIMID is the lead agency under CEQA.

This document includes:

- An IS (Initial Study) to satisfy CEQA requirements.
- The Final MND to satisfy CEQA requirements.

This document was circulated as an IS/proposed MND for public review and comment for a 30-day period beginning on July 27, 2018 and ending on August 25, 2018. The IS/proposed MND was made available on BIMID's Web site, https://bimid.com/ and at its office located at 3085 Stone Road, Bethel Island, CA 94511. In accordance with CEQA Guidelines Section 15072, a Notice of Intent to Adopt the MND was also published on July 27, 2018, in the East County Times, a newspaper of general circulation in the area.

Four letters commenting on the IS/MND were received during the public review period:

- Charlene L Wardlow, Northern District Deputy, California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, Northern District – Sacramento
- Cy R. Oggins, Chief, California State Lands Commission, Division of Environmental Planning and Management
- Stephanie Tadlock, Senior Environmental Scientist, Central Valley Regional Water Quality Control Board
- Jeff Henderson, Deputy Executive Officer, Delta Stewardship Council

Based on these comment letters, revisions have been made to this Initial Study which are staff-initiated for clarification purposes only and do not affect the adequacy of the environmental analysis contained in this Initial Study. Text changes are shown in strike through and double underline format. Pursuant to CEQA Guidelines Section 15073.5, new information has been added to provide updated information and clarification where no new or additional impacts are identified. No recirculation of the IS/MND is required.

1.1 Purpose of the Initial Study

This document is an IS/MND prepared in accordance with CEQA (California Public Resources Code, Section 21000 et seq.) and the State CEQA Guidelines (Title 14, Section 15000 et seq. of the California Code of Regulations [CCR]). The purpose of this IS is to (1) determine whether proposed project

implementation would result in potentially significant or significant impacts on the physical environment; and (2) incorporate mitigation measures into the proposed project design, as necessary, to eliminate the proposed project's potentially significant or significant project impacts or reduce them to a less-than-significant level. An MND is prepared if the IS identified potentially significant impacts, but: (1) Revisions in the proposed project plans or proposals mitigate the impacts to a point where clearly no significant impacts would occur; and (2) there is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a potentially significant or significant impact on the physical environment.

An IS presents environmental analysis and substantial evidence in support of its conclusions regarding the significance of environmental impacts. Substantial evidence may include expert opinion based on facts, technical studies, or reasonable assumptions based on facts. An IS is neither intended nor required to include the level of detail provided in an Environmental Impact Report (EIR).

CEQA requires that all State and local government agencies consider the potentially significant and significant environmental impacts of projects they propose to carry out or over which they have discretionary authority, before implementing or approving those projects. The public agency that has the principal responsibility for carrying out or approving a proposed project is the lead agency for CEQA compliance (State CEQA Guidelines, CCR Section 15367). BIMID has principal responsibility for carrying out the proposed project and is therefore the CEQA lead agency for this IS/MND.

If there is substantial evidence (such as the findings of an IS) that a proposed project, either individually or cumulatively, may have a significant or potentially significant impact on the physical environment, the lead agency must prepare an EIR (State CEQA Guidelines, CCR Section 15064[a]). If the IS concludes that impacts would be less than significant, or that mitigation measures committed to by the applicant (BIMID) would clearly reduce impacts to a less-than-significant level, a Negative Declaration or MND can be prepared.

BIMID has prepared this IS to evaluate the potential environmental impacts of the proposed project and has incorporated mitigation measures to reduce or eliminate any potentially significant project-related impacts. Therefore, an MND has been prepared for this project.

This project is funded through the California Department of Water Resources (DWR) Delta Levees Program. The objective of the DWR Delta Levees Program is to protect discrete and identifiable public benefits; however, some of the activities addressed in this IS/MND may not fall into the category of public benefit. DWR funding will only be used to support activities that provide public benefits; however, all potential activities related to the proposed project are discussed in this document for the purpose of meeting and complying with CEQA requirements.

1.2 Summary of Findings

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the proposed project. Based on the issues evaluated in that chapter, it was determined that:

The proposed project would result in no impacts on the following issue areas:

- Land Use and Planning
- Mineral Resources
- Population and Housing

- Public Services
- Recreation

The proposed project would result in less-than-significant impacts on the following issue areas:

- Aesthetics
- Agriculture and Forestry Resources
- Greenhouse Gas Emissions
- Tribal Cultural Resources
- Utilities and Service Systems

The proposed project would result in less-than-significant impacts *after* mitigation implementation on the following issue areas:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation/Traffic

1.3 Document Organization

This document is divided into the following sections:

MND. The MND, which precedes the presentation of the IS analysis in this document, briefly summarizes the proposed project, summarizes the environmental conclusions, and identifies mitigation measures that would be implemented in conjunction with the proposed project.

Chapter 1, "Introduction." This chapter describes the purpose of the IS/MND, summarizes findings, and describes the organization of this IS/MND.

Chapter 2, "Project Description." This chapter describes the project location and background, project need and objectives, project characteristics, construction activities, project operations, and discretionary actions and approvals that may be required.

Chapter 3, "Environmental Checklist." This chapter presents an analysis of environmental issues identified in the CEQA environmental checklist and determines whether project implementation would result in a beneficial impact, no impact, less-than-significant impact, less-than-significant impact with mitigation incorporated, potentially significant impact, or significant impact on the physical environment in each issue area. Should any impacts be determined to be potentially significant or significant, an EIR would be required. For this proposed project; however, mitigation measures have been incorporated as needed to reduce all potentially significant and significant impacts to a less-than-significant level.

Chapter 4, "References Cited." This chapter lists the references used in preparation of this IS/MND.

Chapter 5, "Report Preparers." This chapter identifies report preparers who contributed to the preparation of this document.

Chapter 2. Project Description

This chapter describes the proposed Northwest Levee Improvement and Stone Road Seepage Reduction Project (proposed project). The project location and background are described along with project objectives, project construction activities, project operations, and discretionary actions and approvals that may be required.

2.1 Project Location

Bethel Island is located in the Sacramento-San Joaquin Delta (Delta) in Contra Costa County and within the Wetlands Land Grant on the Jersey Island, California, U.S. Geological Survey 7.5-minute series topographic quadrangle (**Figure 2-1**). The island is bordered by Jersey Island to the west, Hotchkiss Tract to the south, Holland Tract to the southeast, Franks Tract to the northeast, and Little Franks Tract to the north.

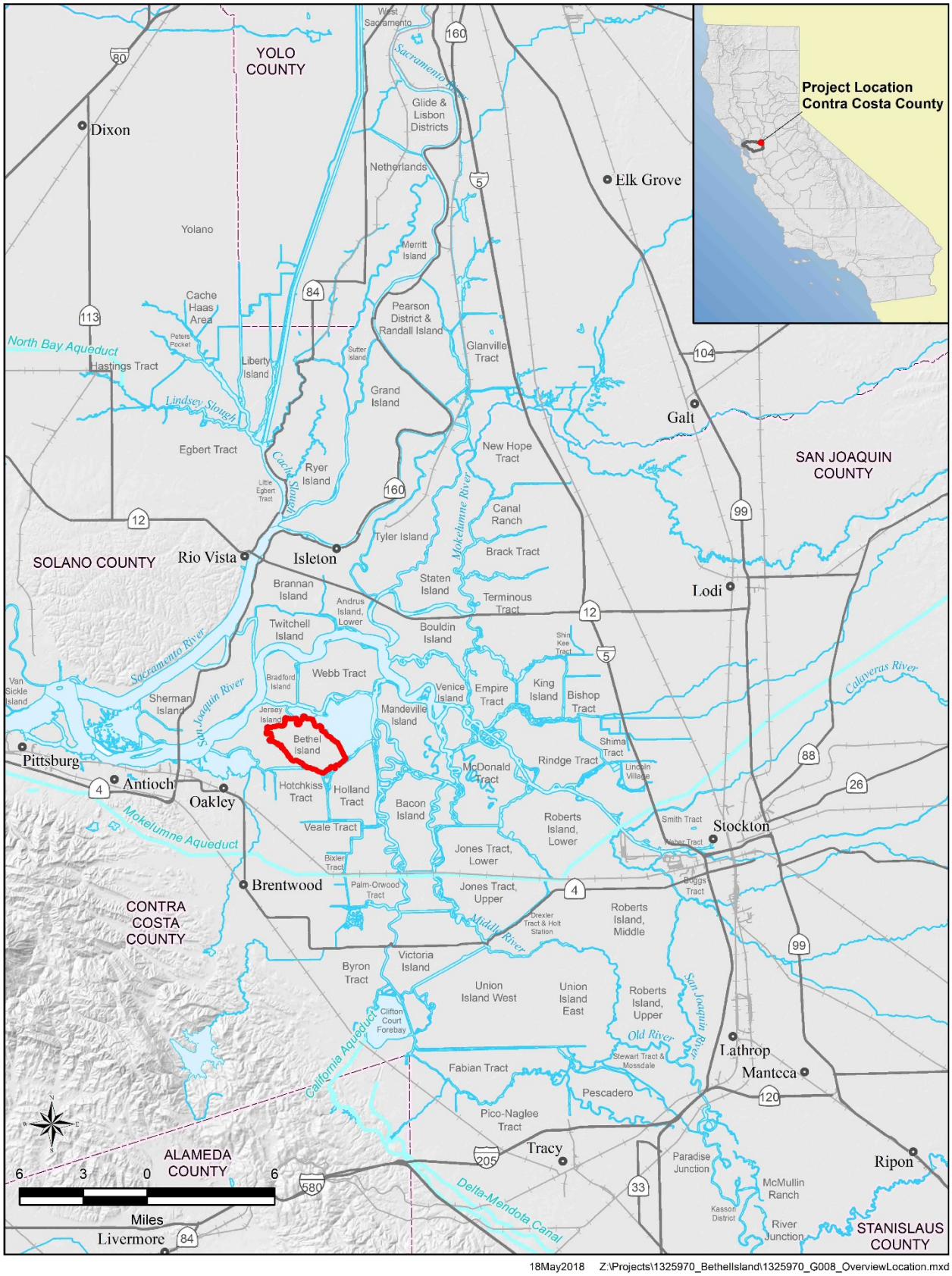
Bethel Island Municipal Improvement District (BIMID) is the levee maintaining agency responsible for maintenance, repair, and improvement of the levees protecting the life and properties and public and private assets on Bethel Island. The proposed project includes two sites on the island where improvements are proposed (**Figure 2-2**); Site 1 is along the Taylor Slough levee on the northwest side of the island between BIMID levee stations 0+00 and 130+00, west of Bethel Island Road and north of Canal Road, and Site 2 is between BIMID Sand Mound Slough levee stations 340+00 and 450+00 on the south side of the island along Windsweep Road and Stone Road. Site 1 is adjacent to agricultural lands that are predominantly undeveloped, with the exception of a marina and the unpaved levee access road, Sunset Drive. The west end of Site 2 is along Stone Road adjacent to the Delta Cove development and the east end is along Windsweep Road. This site is a developed area with single-family residences and associated docks and boathouses located adjacent to the levee.

Borrow material to construct the levee improvements at Site 1 would be obtained from the existing 106-acre site owned by BIMID (APN 029-040-011), which is located east of Bethel Island Road and north of the Bethel Island Golf Course (*see* **Figure 2-2**). A mitigation area consisting of open water and riparian habitat has been established on a portion of this parcel (about 7 acres) to compensate for losses of riparian, fisheries, and wildlife habitat associated with past projects on Bethel Island. Excavation of borrow material would not affect the existing mitigation area on this parcel.

2.2 Project Background and Need

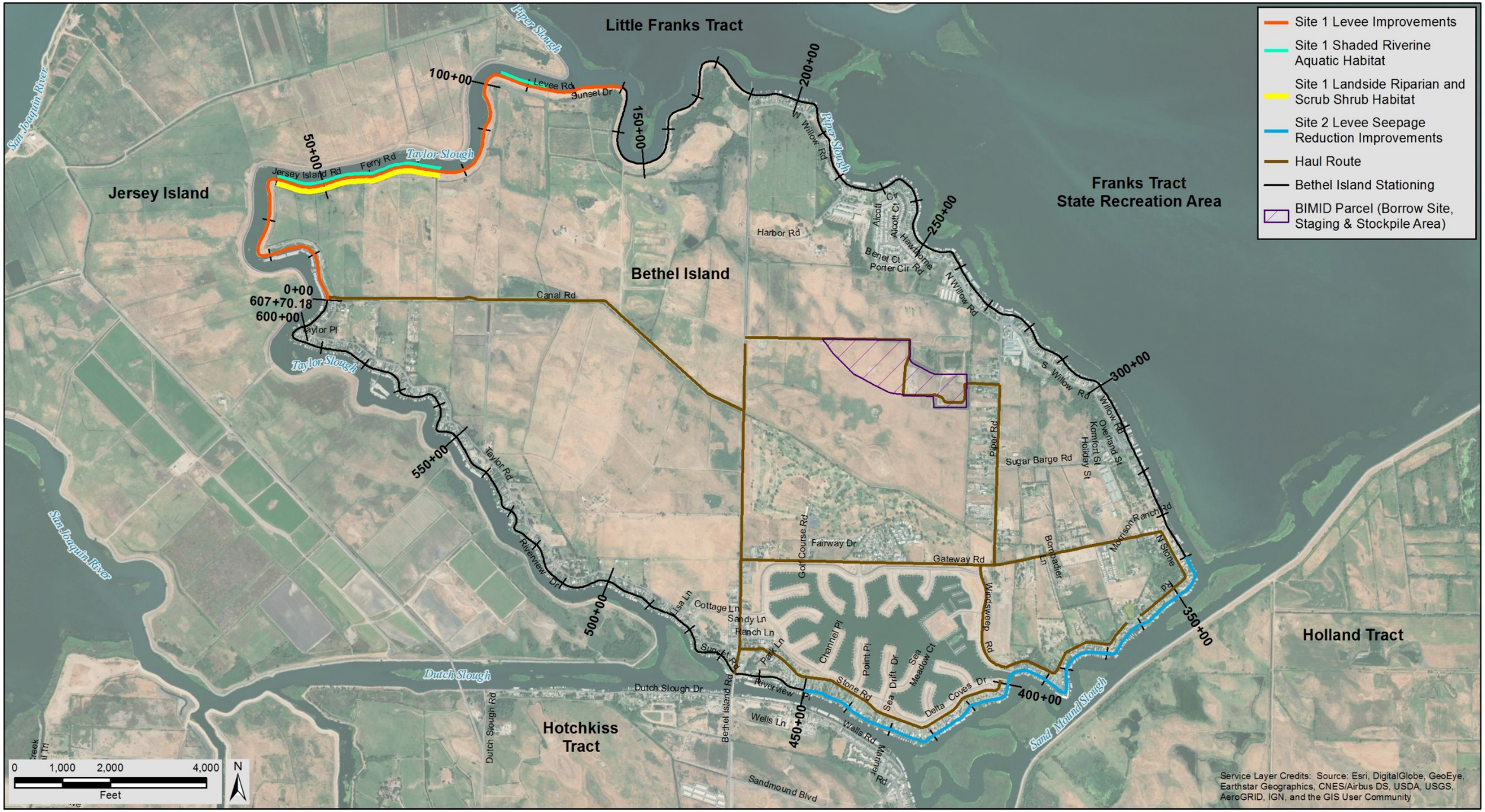
As one of the eight western islands in the Delta, Bethel Island is considered essential in preventing Delta water quality degradation due to salt water intrusion. It is also considered a Legacy Community as well as a Small Community in the Delta. The island contains approximately 3,500 acres of reclaimed lands, the majority of which lie below sea level. The island lands were reclaimed through the installation of about 11.5 miles of levee surrounding the island. The perimeter sloughs bordering Bethel Island are tidal in nature; consequently, the levees provide full-time flood protection from tidal waters.

Figure 2-1. Project Vicinity Map



Source: GEI Consultants, Inc.

Figure 2-2. Project Location



Source: GEI Consultants, Inc.

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Bethel Island is unique in comparison with the other seven western islands in that the island supports agricultural activities together with an on-island residential population of more than 2,300 people and commercial and recreational businesses. The year-round residents on Bethel Island fluctuate seasonally and can increase to about twice as many during the summer months, or a total of 4,600.

The bulk of residential developments on Bethel Island are concentrated along the perimeter of the island, principally on the southwestern, southern, southeastern, eastern and northeastern perimeters. The new Delta Coves development will add over 550 new housing units (single family homes and condos) to the Bethel Island community, potentially increasing the year-round population by 1,265 residents, assuming 2.3 residents per household (the County average residents per household is 2.8) for a total of 3,565 year-round residents. During the summer months when there is a seasonal influx of visitors and transitory inhabitants, the entire population of Bethel Island may grow two times resulting in a total of nearly 7,000 residents. The Delta Coves development will mainly consist of single-family residences and condos, and include a commercial marina and other recreational facilities when fully built out. The Delta Coves project adds operation and maintenance responsibility over new facilities to BIMID; including 3 miles of levee, 4 drainage pump stations to collect stormwater and a breach structure. The interior elevation of Bethel Island is below sea level; therefore, it relies on the levee system for flood protection; consequently, the Bethel Island levee system functions more like a dam than an intermittent flood control facility.

BIMID was created in 1960 by a special act of the State Legislature (Bethel Island Municipal District Act). BIMID not only replaced and assumed responsibility for levee maintenance from Reclamation District 1619, but was also given authority over the stormwater drainage system of the Bethel Island area. BIMID funds are provided through property tax money collected by Contra Costa County. A major portion of this baseline revenue is leveraged to meet local cost-share requirements of the State of California through work agreements to maintain levee integrity as well as to maintain proper drainage of the island.

DWR Bulletin 192-82 levee criteria include design for the 300-year flood with a minimum freeboard of 1.5 feet, a minimum 16-foot wide crest, a waterside slope of 2:1, and a land side slope varying between 5H:1V and 7H:1V depending on the depth of peat soil in the project area. At Site 1, the existing northwest levee reach between Taylor Slough levee stations 0+00 and 130+00 has some known deficiencies, including steep waterside slopes, active scour, seepage through the levee, and potentially liquefiable material within the levee and foundation. At Site 2, the Sand Mound Slough levee segment between stations 340+00 and 450+00 along the southeastern shore of the island is also experiencing through levee seepage, and current toe drains in this reach need to be cleared or rehabilitated to effectively redirect storm runoff and seepage flows away from the numerous residences that back up to the levee in this location.

The proposed project is a multi-objectives project and includes habitat enhancement components. On Bethel Island, riparian complexes occur as stringers and support a variety of migratory birds. Many of these species have declining populations, including tricolored blackbird, yellow-breasted chat, white-tailed kite, and Modesto song sparrow. The stringers also provide movement corridors for mesopredators. Creation of additional habitat on Bethel Island would provide much needed nesting and foraging habitat for these and other species.

2.3 Project Objectives

The proposed project is intended to correct the levee deficiencies at Site 1, minimize seepage and reduce impacts to residents at Site 2, and create or enhance waterside and landside habitat to support fish and wildlife. Specifically, the objectives of the proposed project are to:

- Provide levee improvements to the existing levee between Taylor Slough levee stations 0+00 to 130+00 consistent with Bulletin 192-82 standards.
- Improve toe drainage along the Sand Mound Slough levee near Windsweep and Stone roads between stations 340+00 and 450+00.
- Increase protections to water quality and water supply reliability.
- Promote co-equal goals and protect, restore, and enhance the Delta ecosystem to meet California Water Code (CWC) requirements.

2.4 Proposed Project

Two reaches of the Bethel Island levee system are included in the proposed project:

Site 1: Site 1 includes the northwest levee improvement component. This component encompasses an approximately 2.5-mile reach of Taylor Slough levee between stations 0+00 and 130+00 where improvements would be provided to meet Bulletin 192-82 standards. Along portions of the northwest levee, habitat enhancements are also proposed to create emergent aquatic vegetation (EAV) habitat on the waterside as well as riparian forest and scrub shrub habitat on the landside (*see* **Figure 2-2**).

Site 2: Site 2 includes levee seepage reduction improvements along Windsweep and Stone roads. This component encompasses an approximately 2-mile reach of Sand Mound Slough levee located along the southeast portion of the island between stations 340+00 and 450+00 where levee through and under seepage issues exist (*see* **Figure 2-2**).

2.4.1 Project Features

The proposed project would include the following features:

Site 1

- *Levee improvements between stations 0+00 and 130+00 to meet Bulletin 192-82 criteria.* These improvements would include raising the levee crest to an elevation of 10.5 feet above mean sea level (MSL); widening the levee crest to 22 feet and installing an all-weather road on the crown to improve vehicle access during flood fighting efforts; installing new or enhancing existing riprap on the waterside slope as needed to minimize scour and maintain a 2H:1V waterside slope; and flattening the landside slope to 5H:1V. Some peat soil would also be lightly placed on the landside slope to assist with vegetation growth and establishment of native grasses.
- *Creation of approximately 4,500 linear feet of 10-foot-wide berm on the waterside slope, from station 40+00 to 75+00 and 104+00 to 114+00, which would be planted to provide about 1 acre of emergent aquatic vegetation (EAV) habitat.* The bench would be planted with EAV to create approximately 1 acre of habitat that would benefit Delta fish and wildlife. BIMID would work with DWR and California Department of Fish and Wildlife (CDFW) to finalize plant selection and design prior to planting; however, most typical EAV in

the Delta is a combination of tules, rushes, and sedges. Along the shoreline, woody species may also be planted, such as various willow species, box elder, and Oregon ash. Because the bench would be above the mean high water (MHW) mark, an irrigation system would be installed to promote habitat growth. Excavated material from the waterside would be compacted and placed on the landside.

- *Creation of approximately 3,500 linear feet of landside freshwater marsh, riparian forest, and scrub shrub habitat from station 40+00 to 75+00.* The landside habitat enhancement area would be 15 feet wide, resulting in about 1.2 acres of freshwater marsh, riparian forest, and scrub shrub habitat. The design of the landside habitat component would be completed in consultation with DWR and CDFW. It is anticipated that landside freshwater marsh (FM) would be created between the levee toe setback and landside lowlands, and would be vegetated with native marsh plantings, including native forbs, herbs, sedges, rushes, and tules. Taller emergent species (about 5 feet in height), such as American bulrush, California tule, common rush, and bulrush would be planted in the deeper water portions of this zone. These species would then intergrade into medium stature emergent vegetation (3-4 feet in height), such as bentgrass, Santa Barbara sedge, spikerush, Baltic rush, and arrowheads, upslope. The transition zone between FM habitat and riparian forest would be planted with scrub shrub species, including a combination of shrubs such as willows and buttonbush, and smaller stature (≤3 feet) vegetation such as meadow barley, salt heliotrope, tule pea, blue-eyed grass, Suisun Marsh aster, saltgrass, and American vetch. Upslope of this zone the species would transition from shrubs to riparian forest, including California box elder, California sycamore, and Fremont cottonwood. The understory species would remain largely similar; however, species such as wild rye and fescue would be added to the mix. An irrigation system would also be installed to promote habitat growth. Prior to design, BIMID would negotiate with adjacent landowners to obtain a conservation easement for the landside vegetation area.

- *Some geotechnical remediation to address seepage in this reach of the levee system may also be included.* A geotechnical investigation is underway to determine what, if any, geotechnical remediation would be needed. Geotechnical remediation could include construction of a clay cutoff wall at the landside toe, installation of a drainage blanket on the landside slope, or placement of sheet piles along the landside of the levee at Site 1.

Figure 2-3 shows sample cross-sections of the proposed levee and habitat improvements, including approximate placement of rip-rap, landside seepage blanket, shaded riverine aquatic habitat, and landside habitat.

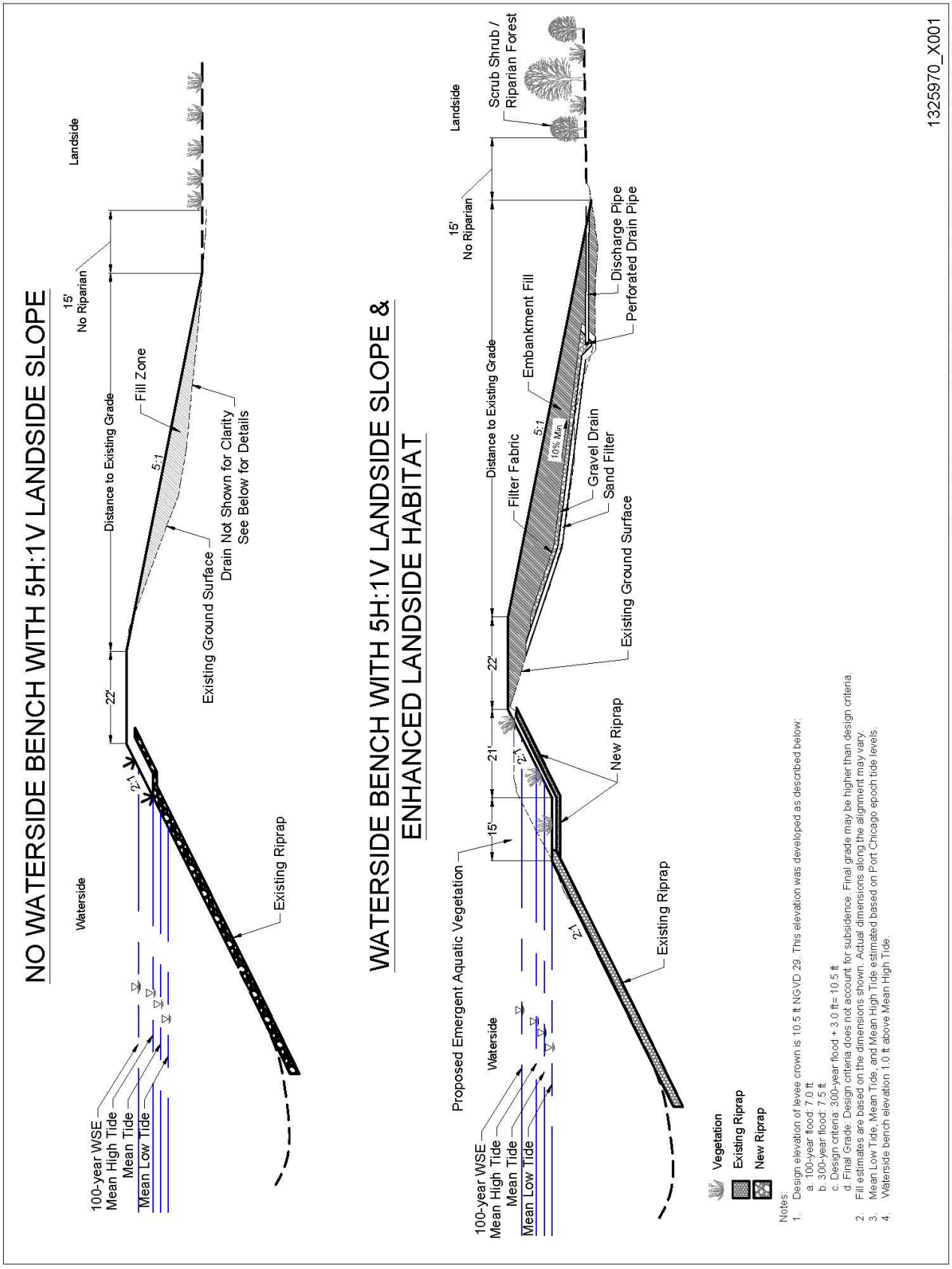
Site 2

- *Minimize seepage issues along the southeastern levee segment between stations 340+00 and 450+00 by evaluating and establishing the location and performance of the existing seepage drain system and improving system efficiency.* A geotechnical investigation is underway to determine what, if any, geotechnical remediation would be needed. Geotechnical remediation may include installing a new drainage blanket or enhancing any existing ones on the landside of the existing levee. Where needed, a pipe would be installed at the landside levee toe to convey the seepage to the existing Bethel Island drainage system.

- *Redirect seepage flows to the Bethel Island main pumping plant by improving the Bethel Island drainage system. BIMID may construct new open ditches or widen existing ditches and install new residential subsurface drainage systems or enhance existing systems where needed to facilitate redirection of seepage flows to the Bethel Island drainage system. Additional culverts may also be installed to increase capacity to convey seepage flows across Windsweep and Stone Roads. If additional culverts are needed, BIMID would work with Contra Costa County to facilitate installation.*

- *Assess the success of seepage reduction improvements by monitoring water levels along the landside of the levee.* Four-inch diameter monitoring wells may be installed where needed to monitor groundwater level and measure the seepage rate through and under the levee, if any.

Figure 2-3. Typical Levee Cross Sections (Site 1)



Source: GEI Consultants, Inc.

2.4.2 Construction Schedule

Construction of the proposed project would occur over a two-year period. All construction activities would be subject to the conditions of permits and authorizations issued by the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), the California Department of Fish and Wildlife (CDFW), and the Central Valley Regional Water Quality Control Board (CVRWQCB), Contra Costa County, and others.

The construction contract would allow the contractor to construct on an 8-hour-per day/5-days-per-week work schedule with typical construction hours of 7 am to 4 pm Monday through Friday.

2.4.3 Construction Sequencing and Methods

Site 1

The levee improvement project on the northwest side of the island would be implemented over two years to minimize risk of failure and cracking due to the added weight of the fill material. During the first year of construction, the work would consist mainly of excavating borrow material from the existing BIMID-owned parcel, employing geotechnical measures within the levee as needed, and beginning landside work, which includes expanding the levee. A limited amount of fill would be placed on the landside during the first year to avoid possible structural failure and cracking. No waterside work would occur during the first year of construction. During this time, BIMID would pursue the additional permitting needed to perform waterside work.

Work performed during the second year would include a continuation of the landside levee work to complete the levee setback, creation of the waterside berm, and planting vegetation in the waterside and landside habitat enhancement areas. At the completion of fill operations, Class 2 aggregate base rock would be placed on the levee crest to provide for an all-weather levee maintenance road.

Site 2

The improvement work to minimize levee seepage and redirect flows along Windsweep and Stone roads would begin in the first construction year. The monitoring wells would be installed and ditches would be completed during this period. BIMID would work with landowners adjacent to the levee to obtain authorization to perform the necessary work that may also include installation of subsurface drainage collection. BIMID's goal would be to complete this portion of the work in the first year; however, depending on the authorization process it may be the second year before this component would be completed.

A geotechnical investigation is underway to determine what, if any, geotechnical remediation would be needed. Geotechnical remediation could include installation or enhancement of a drainage blanket on the landside slope. Drainage blankets are typically installed on the landside levee slope by laying a synthetic fabric material on the slope before creating a gravel bed layer covered by fill material.

Monitoring wells would be constructed, installed, and developed by experienced contractors under the guidance of BIMID's engineering team. Monitoring of physical characteristics of the water level would be periodic and would be conducted under the supervision of BIMID's Superintendent. The number of monitoring wells would be based on the estimated quantity of through and under levee seepage and anticipated storm runoff. The monitoring wells would typically be constructed using PVC pipe with a slot screen suited for the well depth. Each well would be placed in a borehole approximately 4 inches

larger than the outside diameter of the casing and screen. The space between the screened section and the borehole would be backfilled with sand and the space above the sand pack would be sealed with bentonite to prevent water escaping through it. The finished wells would include lockable steel casings to protect against damage and vandalism.

2.4.4 Borrow, Stockpiling, and Construction Staging

Borrow material to construct the levee improvements and habitat enhancements at Site 1 would be obtained from the BIMID-owned parcel (*see* **Figure 2-2**) and transported to Site 1 in 20-ton (T) trucks. Preliminary evaluation indicates that borrow material on the BIMID parcel comprises approximately 75 percent usable borrow material for levee improvement work and 25 percent peat soil. Peat soil is organic and not usable for levee improvement work because of its unique properties. Levee improvements and habitat enhancements would require approximately 250,000 cubic yards (CY) of usable borrow material. To ensure that enough suitable borrow material is obtained to complete the proposed project, BIMID would excavate up to 350,000 CY of material from the BIMID parcel over the project construction period for use in improving the levees and enhancing habitat. The suitable and unsuitable (organic/peat) material would be separated; suitable material would be transported to Site 1 and used for levee improvement and the organic/peat soil would be stockpiled on the BIMID parcel for use as a topsoil in final grading of the landside levee.

Construction of Site 1 and Site 2 improvements would also require import of materials (i.e., rip rap, aggregate, sand, filter fabric, pipe, etc.) from off-island. Approximately 1,250 tons of rip rap, 2,600 CY of aggregate for the levee crown road, and 6,500 CY of material to construct the clay cutoff walls or drainage blankets at Site 1 and 800 CY of sand and gravel for Site 2 drainage blanket construction would be imported. Transport of soil material excavated from Site 2 during ditch widening activities to the BIMID parcel for stockpiling may also occur.

In addition to serving as the source of borrow material, the BIMID parcel would be used for project staging, storage of equipment, and stockpile drying for the suitable levee borrow material. It is anticipated that the temporary staging and stockpile areas would occupy approximately 1 acre of the borrow site.

2.4.5 Site Access and Haul Routes

Site 1 would be accessed from the south via Canal Road and from the north via Bethel Island Road. From these locations trucks would use the levee road (Sunset Road) and the levee toe road to access specific levee reaches. To facilitate circulation of trucks, loaded trucks may use the levee toe road and empty trucks may return using the levee crown road. The eastern portion of Site 2, along Windsweep Road, (approximately levee stations 340+00 – 375+00) would be accessed from the east or west end via Gateway Road to Windsweep Road, or from the west via Gateway Road to the levee crown road. The eastern portion of Site 2, along Stone Road, (approximately levee stations 400+00 – 450+00) would be accessed from the west via Bethel Island Road to Stone Road or to Riverview Place and the levee crown road. The BIMID parcel would be accessed from the east via Piper Road and from the west via Bethel Island Road. Haul routes are depicted on **Figure 2-2**. BIMID would avoid use of interior private roads for hauling materials to the maximum extent feasible.

2.4.6 Construction Equipment and Labor

Construction equipment would depend on the selected contractor's planned operations. Typical equipment that may be needed to construct the proposed project, along with an approximation of the

duration of each activity, is shown in **Table 2-1**. The construction labor force is estimated to average 10 persons over the construction period of approximately 7 months each construction year. Peak staffing could be close to 30 depending on the contractor's schedule.

Table 2-1. Project Construction Equipment

Construction Activity (based on sequencing discussion)	Equipment Type	Number of Units	Estimated Duration of Use (work days)
Site 1			
Landside Levee Construction	Motor Grader	1	154 (Yr 1)
	Dozer	1	154 (Yr 2)
	Pick-up Truck	2	
	Bottom Dump Truck	5	
	Vibratory Smooth Drum Roller	1	
Borrow Material Excavation	Vibratory Smooth Drum Roller	1	153 (yr 1)
	Scraper	1	153 (yr 2)
	Excavator	1	
	Utility Truck	1	
	Water Truck (4,000 gal)	1	
	Bottom Dump Truck	5	
Waterside Levee Construction	Excavator	2	86
	Pick-up Truck	1	
	Water Truck (2,000 gal)	1	
	Utility Truck	1	
Levee Crown Resurfacing	Vibratory Smooth Drum Roller	1	15
	Loader	1	
Site 2			
Geotechnical Remediation	Excavator	1	14
	Rough Terrain Forklift	1	
	Dozer	1	
Drainage Blanket Installation	Utility Truck	2	40
	Pick-up Truck	1	
	Water Truck (2,000 gal)	2	
Monitoring Well Installation	Drill Rig	1	5
	Generator	1	

Notes: gal = gallons, yr = year
Source: Data compiled by GEI Consultants in 2018

2.4.7 Project Operations, Maintenance, and Monitoring

Levee and Drainage Systems

BIMID, as a levee maintaining district, is responsible for ensuring levee integrity and public safety on Bethel Island. Levee and seepage improvements, once completed, would be maintained by BIMID staff and contractors in accordance with existing practices. Operations and maintenance activities may include the following:

- Extermination and control of burrowing animals and filling their burrows with compacted material to minimize seepage through the levee section.

- Shaping the levee crown to drain run-off freely.
- Repairing and shaping patrol or access roads and controlling the weight and speed of all vehicles using patrol roads on the levee crown.
- Repairing damaged gravel, asphalt, or paved surfaces.
- Repairing access roads.
- Repairing minor slip outs and erosion.
- Removing drift deposits, debris, and litter from the levee structure.
- Controlling seepage and boils.
- Cleaning drains and toe ditches that are adjacent to the landside levee toe and that intercept seepage.
- Controlling vegetation including cutting, removing, or trimming.
- Repairing or restoring rock protection.
- Removing or modifying encroachments that endanger the levee or interfere with maintenance.
- Maintaining habitat improvements and mitigation sites.

Culvert maintenance would be performed by Contra Costa County and maintenance of residential subsurface drainage systems would be the homeowners' responsibility.

Habitat Enhancements

A habitat enhancement monitoring plan may be developed, if requested by CDFW, and implemented to evaluate progress toward achieving success criteria. If monitoring is included, the enhancement project sites would be monitored for three years, and goals and measurable objectives would be established to achieve desired conditions. Monitoring phases would include pre-project assessment, reference site assessment, effectiveness monitoring, and ultimately validation. Both vegetative and faunal characteristics would be evaluated and monitored.

Metrics and techniques for effectiveness monitoring may include specimen survival and establishment through plot method, tree and shrub abundance through line intercept transects, tree and shrub composition through specimen line intercept transects, canopy cover through densiometer measurements, and species relative abundance through plot method. Validation monitoring may involve evaluating mammal and bird use of landside vegetation, and invertebrate diversity and abundance on the water side.

2.5 Regulatory Requirements, Permits, and Approvals

As the lead agency under CEQA, BIMID has the principal responsibility for approving and carrying out the proposed project and for ensuring that CEQA requirements and all other applicable regulations are met. Other agencies that may have permitting approval or review authority over portions of the proposed project are listed below:

- **Bay Area Air Quality Management District**—Title V permit for general construction

- **California Department of Fish and Wildlife**—California Fish and Game Code Section 1602 streambed alteration agreement; and California Endangered Species Act compliance

- **California State Lands Commission**—lease, permit, or other entitlement for use of State lands

- **Central Valley Regional Water Quality Control Board**—Clean Water Act Section 401 Water Quality Certification; ~~and~~ Clean Water Act Section 402 National Pollutant Discharge Elimination System stormwater permit for general construction, and permit for dewatering and other low threat discharges.

- **U.S. Army Corps of Engineers**—Clean Water Act Section 404 Permit for discharge of fill to Waters of the U.S.

- **U.S. Fish and Wildlife Service**—Endangered Species Act (ESA) compliance; Section 7 consultation

- **National Marine Fisheries Services**—Endangered Species Act (ESA) compliance; Section 7 consultation

- **Contra Costa County**—encroachment permit for construction in County right-of-way

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Chapter 3. Environmental Checklist

Project Information

1. Project title:	Northwest Levee Improvements and Stone Road Seepage Reduction Project
2. Lead agency name and address:	Bethel Island Municipal Improvement District
3. Contact person and phone number:	3085 Stone Road,
4. Project location:	P.O. Box 244
5. Project sponsor's name and address:	Bethel Island, CA 94511
6. General plan designation:	Regina Espinoza, District Manager, (925)684-2210
7. Zoning:	Bethel Island is located in the Sacramento-San Joaquin Delta (Delta), Contra Costa County, within the Wetlands Land Grant on the Jersey Island, California, U.S. Geological Survey 7.5-minute series topographic quadrangle.
8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)	Bethel Island Municipal Improvement District 3085 Stone Road P.O. Box 244 Bethel Island, CA 94511
9. Surrounding land uses and setting: Briefly describe the project's surroundings:	Land uses surrounding the project sites include agricultural lands, a marina, developed areas with single-family residences, levees, and, open water and riparian habitat. See attached Initial Study for additional information.
10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)	Bay Area Air Quality Management District, California Department of Fish and Wildlife, Central Valley Regional Water Quality Control Board, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Services, Contra Costa County

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.	The Torres Martinez Desert Cahuilla Indians has submitted a request for consultation on all projects within the lead agencies jurisdiction. A letter formally inviting the tribe to consult was issued by the lead agency on June 18, 2018.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology /Soils
☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials	☐	Hydrology / Water Quality
☐	Land Use / Planning	☐	Mineral Resources	☐	Noise
☐	Population / Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Tribal Cultural Resources	☐	Utilities / Service Systems
☐	Mandatory Findings of Significance				

Determination (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature _____ Date _____

Print Name _____ Title _____

Agency _____

Evaluation of Environmental Impacts

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-than-Signficant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) The significance criteria or threshold, if any, used to evaluate each question.

   b) The mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 Aesthetics

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
I. AESTHETICS – Would the project:					
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐	☐

3.1.1 Discussion

a) Have a substantial adverse effect on a scenic vista?

Less-Than-Significant Impact. Although there are no designated scenic vistas surrounding the Project site, there are views of Taylor Slough from Site 1, Dutch Slough and Sand Mound Slough from Site 2, and agricultural fields from the borrow site, which are important components of the region's visual character. The proposed Project would involve only temporary construction and maintenance activities that would not result in any permanent changes to existing views. Therefore, this impact would be less than significant.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less-Than-Significant Impact. There are no State or County designated scenic highways in the project vicinity. State Route 4, which is listed as an eligible state scenic highway by the California Department of Transportation (Caltrans), is located more than 10 miles southwest of Bethel Island (Caltrans 2017). The project site does not include any rock outcroppings, trees, historical buildings or sites, or other significant scenic resources that would be damaged during temporary construction and maintenance activities. Therefore, this impact would be less than significant.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less-Than-Significant Impact. The proposed levee and drainage improvements for Site 1 would involve routine levee and drainage construction and maintenance activities, as well as the creation of EAV habitat on the waterside bench and landside habitat consisting of freshwater marsh, riparian forest, and scrub shrub habitat. The constructed improvements would be consistent with the existing visual character of the area and habitat improvements may result in minor improvements to the existing visual

quality due to an increase in native Delta vegetation. The Contra Costa County General Plan Land Use and Open Space Elements include policies that serve to preserve and enhance the rural and recreational quality of Bethel Island and to protect and preserve marshes and riparian vegetation along Delta waterways, and the proposed project would be in compliance with these policies (Contra Costa County 2005a and 2005b).

Site 2 construction would occur in areas that are immediately adjacent to residences and could include installation of a drainage pipe along the levee toe, installation of a blanket drain, monitoring wells, and/or new ditches or improvements to existing ditches that would collect and redirect levee seepage to the existing Bethel Island drainage sump and pumps system. Due to Bethel Island's low ground surface elevation and the fact that homes are constructed on the landside of the levees, many residents have constructed stairs and/or raised walkways from their residences to the levee crown that are used to access private docks and scenic views along Dutch and Sand Mound sloughs. Direct access to scenic views via these walkways may be temporarily reduced during construction; however,, improvements at Site 2 would involve only temporary construction activities that may affect access or visual quality for nearby residents and due to the localized nature of Site 2 drainage improvements, private docks and scenic views would still be accessible to residents via short detours if work is occurring adjacent to their residence. After drainage improvements are complete, any disturbed areas would be revegetated and all stairs, walkways, and direct access to private docks and scenic views would be returned to preconstruction conditions. Therefore, at the completion of the project, the levees along Site 2 would look the same or substantially similar to existing conditions.

The Borrow Site consists of disturbed agricultural land that was previously used for extraction of fill materials. Adjacent properties are used for agricultural production. Project implementation would not substantially change or degrade the existing visual character or quality of the Borrow Site or its surroundings. The impact would be less than significant.

d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Less-Than-Significant Impact. In accordance with Contra Costa County General Plan Policy 11-8 and Contra Costa County Code Division 716-8.1008, to minimize disturbance of residents in the vicinity, proposed construction activities would occur during normal work hours, outside more sensitive evening and early morning periods (Contra Costa County 2005c). No night lighting would be required to construct or operate the proposed levee and drainage improvements, thus there would be no impact with regard to new sources of substantial lighting. Construction equipment associated with the proposed Project could create new temporary sources of daytime glare from glass surfaces on the equipment, but the moving equipment would not create stationary sources of glare that would be directed toward any residence. Additionally, construction would not occur on weekends when residents are more likely to be home and thus more likely to be exposed to temporary sources of glare from construction vehicles. The nearest residences to the Borrow Site are approximately 200 feet to the west and southwest but there are residences immediately adjacent to the southern end of Site 1 and all along Site 2; however, because of the limits on hours of construction, residences would not be subject to substantial light or glare. This impact would be less than significant.

3.2 Agriculture and Forest Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
II. AGRICULTURE AND FOREST RESOURCES:					
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. – Would the project:					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒	☐
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒	☐
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒	☐

Discussion

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping

and Monitoring Program of the California Resources Agency, to non-agricultural use?

No impact. Based on review of the California Department of Conservation's map of Contra Costa County Important Farmland (Department of Conservation 2014), the project site is designated as Farmland of Local Importance, Urban and Built-Up Land, and Other Land. Therefore, the project would have no impact on Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

Less-than-Significant Impact. Portions of Site 1 are zoned A-2 (General Agricultural District), A-3 (Heavy Agricultural District), or F-1 (Water Recreational) with a Flood Hazard Combining District Overlay. All of Site 2 and the balance of Site 1 is zoned F-1 with the Flood Hazard Combining District Overlay (Contra Costa County 2018a). The A-2 and A-3 zones are intended primarily for agricultural uses, and the F-1 zone allows crop and tree farming in addition to recreational and residential uses.

The project would include creation of an approximately 15-foot-wide strip of freshwater marsh, riparian forest, and scrub shrub habitat along 3,500 feet of the landside toe of the levee on Site 1. A total of 1.2 acres of habitat would be created on the landside of the levee. Although much of this habitat would be created on land that is zoned for agricultural use (in the A-2 and A-3 districts) or to permit some agricultural uses (in the F-1 district), the removal of a small, linear area from agricultural use would not preclude or inhibit the future use of the balance of these parcels for agriculture. There are no Williamson Act contracts on either Site 1 or Site 2. This impact would be less than significant.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. The project site is zoned A-2 (General Agricultural District), A-3 (Heavy Agricultural District), and F-1, with a Flood Hazard Combining District Overlay. No portion of the project site contains forest land or is used for timber production. The project would not result in a conflict with forestry activities or forestry-related zoning. There would be no impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. As discussed under 3.2(c), no portion of the project site contains forest land or is used for timber production. There would be no impact.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Less than significant. The project would include temporary construction activities and the permanent creation of approximately 1.2 acres of freshwater marsh, riparian forest, and scrub shrub habitat along 3,500 feet of the landside toe of the levee at Site 1. These activities would not result in indirect conversion of Farmland to non-agricultural use, or forest land to non-forest use. This impact would be less than significant.

3.3 Air Quality

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
III. AIR QUALITY:					
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations. Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐	☐

Discussion

a) Conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The Project site is in the San Francisco Bay Area Air Basin (SFBAAB), which comprises a single air district, the Bay Area Air Quality Management District. The Project site is in the Carquinez Strait region of the air basin. The BAAQMD prepares plans to attain ambient air quality standards in the air basin. The BAAQMD also prepares ozone attainment plans for the national ozone standard and clean air plans for the California standard, both in coordination with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG).

The BAAQMD prepared the 2017 Bay Area Clean Air Plan as an update to the Bay Area 2010 Clean Air Plan, pursuant to air quality planning requirements defined in the California Health & Safety Code. The 2017 Clean Air Plan defines an integrated, multipollutant control strategy to reduce emissions of particulate matter, toxic air contaminants, ozone precursors and greenhouse gases based on reducing emissions of criteria air pollutants and toxic air contaminants from all key sources, reducing emissions of "super-GHGs" such as methane, black carbon and fluorinated gases, decreasing demand for fossil fuels (gasoline, diesel, and natural gas), and decarbonizing the energy system. Control measures include stationary and mobile sources; transportation control measures, land use and local impacts measures; and energy and climate measures.

The proposed Project is a levee improvement Project, and it would not result in any new stationary or mobile sources or increased population or employment growth. It would not create any new vehicle miles traveled, beyond that anticipated in the ozone attainment plan and the Clean Air Plan. This is because the proposed Project would be limited to short-term construction activities and would not result in any development or other improvements that could directly or indirectly induce population growth in the area. Therefore, the proposed Project would not conflict with or obstruct implementation of the ozone attainment plan or the Clean Air Plan.

A Project is also determined to be consistent with these air quality plans if the Project includes applicable control measures in the plans and does not disrupt or hinder implementation of any control measures. As discussed in more detail under b) below, the proposed Project would not result in construction-generated or operations-related criteria air pollutants and/or precursor emissions that would exceed the BAAQMD thresholds of significance.

The proposed Project would support the goals of the ozone attainment plan and the Clean Air Plan; would include feasible control measures; would not disrupt or hinder implementation of any control measures; and would not result in vehicle trips greater than the projected population increase for the Project site. Therefore, the Project would be considered consistent with BAAQMD air quality plans and there would be no impact.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less-than-Significant Impact with Mitigation Incorporated. The BAAQMD has developed Project-level thresholds of significance to provide a conservative indication of whether a proposed Project could result in potentially significant air quality impacts. To meet the Project-level threshold of significance for construction- and/or operations-related criteria air pollutant and precursor impacts, the proposed Project must emit no more than 54 pounds per day (lbs/day) of the O_3 precursors (reactive organic gases [ROG] and/or nitrogen oxides [NOx]), no more than 54 lbs/day of fine particulate matter ($PM_{2.5}$), and no more than 82 lbs/day of coarse particulate matter (PM_{10}).

Construction. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but have the potential to represent a significant air quality impact. The proposed Project would result in the temporary generation of emissions resulting from excavation, material hauling, direct levee work, installation of drainage blankets and other seepage reduction measures, and worker trips over the course of two years. Fugitive dust, the dominant source of PM_{10} and $PM_{2.5}$ emissions, is generated when wheels or blades disturb surface materials. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. Off-road construction equipment is often diesel-powered and can be a substantial source of NOx emissions, in addition to PM_{10} and $PM_{2.5}$ emissions. Worker commute trips and asphalt paving are dominant sources of ROG emissions.

Construction-related exhaust emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2, which was the most currently available version at the time of this analysis. CalEEMod allows the user to enter project-specific construction information, such as the types, number, and horsepower of construction equipment, and the number and length of off-site motor vehicle trips. Construction related emissions for the proposed project were estimated for construction worker commutes, haul trucks, and the use of off-road equipment.

The predicted maximum daily construction-generated emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$, associated with Project construction and the BAAQMD significance criteria are shown in **Table 3.3-1**.

Table 3.3-1. Unmitigated Project Construction Emissions (Maximum) Pound Per Day

Construction Phase	Emissions (lbs/day)				
	ROG	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO**
Site 1					
Year 1 Construction Emissions	6.36	75.07	57.76	7.02	40.09
Year 2 Construction Emissions	5.76	69.76	31.04	5.13	38.10
Overall Maximum Construction Emissions	6.36	75.07	57.76	7.02	40.09
BAAQMD Significance Criteria	**54**	**54**	**82**	**54**	**None**
Significant?	*No*	*Yes*	*No*	*No*	*N/A*

Source: Emissions modeled by GEI Consultants Inc. using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 computer program. Refer to **Appendix A** for model data outputs. Note: lbs/day = pounds per day, ROG = reactive organic gases, NO_x = oxide of nitrogen, PM_{10}= particular matter with aerodynamic diameter less than 10 micrometers, $PM_{2.5}$ = particular matter with aerodynamic diameter less than 2.5 micrometers, CO = carbon monoxide. Accounts for the disturbance of 24 acres of land at the Borrow Site for the excavation of 350,000 cubic yards of material for levee improvements, hauled 4 miles to Northwest Levee over the project duration of two years. Also accounts for material processing/peat separation equipment and activity on the Northwest Levee site.

1. Accounts for construction of 4,500-foot length of Northwest Levee.
2. Accounts for hauling of 1,000 cubic yards of aggregate, sand, filter fabric, pipe, and other materials for 13 miles from Antioch to the Stone Road Levee site.
3. Accounts for construction of 1,100 -foot length of Stone Road Levee.
4. Accounts for construction of 10 monitoring wells along the 1,100 linear feet of levee improvements at the Stone Road Levee site.

As shown in **Table 3.3-1**, combined emissions generated during each construction year, which anticipated excavation, material hauling, and levee work to occur simultaneously, would exceed the BAAQMD's thresholds of significance for NOx emissions. This would be considered a potentially significant impact and require mitigation to reduce emissions to a level below the established threshold. NOx emissions are primarily associated with use of diesel-powered construction equipment (e.g., graders, excavators, rubber-tired dozers, tractors, loaders, backhoes). The Clean Air Act of 1990 directed the U.S. Environmental Protection Agency (USEPA) to study, and regulate if warranted, the contribution of off-road internal combustion engines to urban air pollution. The first federal standards (Tier 1) for new off-road diesel engines were adopted in 1994 for engines over 50 horsepower and were phased in from 1996 to 2000. In 1996, a Statement of Principles pertaining to off-road diesel engines was signed between USEPA, the California Air Resources Board (CARB), and engine makers (including Caterpillar, Cummins, Deere, Detroit Diesel, Deutz, Isuzu, Komatsu, Kubota, Mitsubishi, Navistar, New Holland, Wis-Con, and Yanmar). On August 27, 1998, USEPA signed the final rule reflecting the provisions of the Statement of Principles. The 1998 regulation introduced Tier 1 standards for equipment under 50 horsepower and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. As a result, all off-road, diesel-fueled construction equipment manufactured in 2006 or later has been manufactured to Tier 3 standards. The Tier 3 standards can reduce NOx and PM emissions by as much as 64 and 39 percent, respectively. Use of Tier 3 construction equipment during the organic material removal phase, would reduce temporary NOx emissions impacts generated during Project construction to a less-than-significant level, as shown

in **Table 3.3-2; however,** because Tier 3 construction equipment are not a requirement of the proposed project, impacts from construction-related emissions of NOx would be potentially significant.

Table 3.3-2. Mitigated Project Construction Emissions (Maximum) Pounds Per Day

Construction Phase	Emissions (lbs/day)				
	ROG	**NOx**	**PM10**	**PM2.5**	**CO**
Year 1 Construction Emissions	2.48	49.74	57.13	6.50	45.27
Year 2 Construction Emissions	2.45	49.74	30.36	4.38	41.22
Overall Maximum Construction Emissions	2.48	49.74	57.13	6.50	45.27
BAAQMD Significance Criteria	**54**	**54**	**82**	**54**	**None**
Significant?	*No*	*No*	*No*	*No*	*N/A*

Source: Emissions modeled by GEI Consultants Inc. using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 computer program. Refer to **Appendix A** for model data outputs. Note: lbs/day = pounds per day, ROG = reactive organic gases, NO_x = oxide of nitrogen, PM_{10}= particular matter with aerodynamic diameter less than 10 micrometers, $PM_{2.5}$ = particular matter with aerodynamic diameter less than 2.5 micrometers, CO = carbon monoxide.

1. Accounts for the disturbance of 24 acres of land at the Borrow Site for the excavation of 350,000 cubic yards of material for levee improvements, hauled 4 miles to Northwest Levee over the project duration of two years. Also accounts for material processing/peat separation equipment and activity on the Northwest Levee site.
2. Accounts for further development of 4,500-foot length of Northwest Levee.
3. Accounts for hauling of 1,000 cubic yards of aggregate, sand, filter fabric, pipe, and other materials for 13 miles from Antioch to the Stone Road Levee site.
4. Accounts for further development of 1,100-foot length of Stone Road Levee.
5. Accounts for construction of 10 monitoring wells along the 1,100 linear feet of levee improvements at the Stone Road Levee site.

Operation. The proposed Project would not include the provision of new permanent stationary or mobile sources of emissions; therefore, the Project would not generate quantifiable criteria emissions after construction is complete. The Project does not propose any buildings, and therefore, would not result in any permanent stationary source emissions. In addition, as determined in Section 3.16, Transportation/Traffic, the Project would not result in a permanent increase in traffic. Traffic conditions after the Project is constructed would be the same as existing traffic conditions. Therefore, new permanent stationary or mobile sources of emissions would not be generated and operations-related impacts would be less than significant.

Mitigation Measure AQ-1: Use California Air Resources Board Tier 3-Certified Construction Equipment.

During construction activities, all rubber-tired dozers, graders, scrapers, excavators, and tractors shall be California Air Resources Board (CARB) Tier 3-Certified or better.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure AQ-2: Implement Basic Construction Mitigation Measures from Bay Area Air Quality Management District's (BAAQMD) 2017 CEQA Air Quality Guidelines.

BIMID shall ensure that the Bay Area Air Quality Management District's (BAAQMD) basic construction mitigation measures from Table 8-1 of the BAAQMD 2017 CEQA Air Quality Guidelines are included in the construction documents. These basic construction mitigation measures include:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
- Use equipment and vehicles that are compliant with Air Resource Board (ARB) requirements and emissions standards for on road and off-road fleets and engines.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measures AQ-1 and AQ-2 would reduce the potentially significant impact associated with construction-related NOx emissions to a less-than-significant level because BAAQMD thresholds for air pollutant emissions would not be exceeded during Project construction.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less-than-Significant Impact with Mitigation Incorporated. Contra Costa County is currently designated as nonattainment for the state and federal ambient air quality standards for ground-level O_3 and $PM_{2.5}$ as well as for the state standards for PM_{10} (CARB 2017). The air basin's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its nature, air pollution is largely a cumulative impact. According to the BAAQMD, no single project by itself is sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. According to the BAAQMD, if a project exceeds its identified project level significance thresholds, the project would be cumulatively considerable. Because implementation of the Project would exceed BAAQMD's threshold for NOx emissions, the Project would result in a cumulatively considerable net increase in this criteria pollutant and this impact would be significant.

Mitigation Measure: Implement Mitigation Measures AQ-1 (Use California Air Resources Board Tier 3-Certified Construction Equipment) and AQ-2 (Implement Basic Construction Mitigation Measures from BAAQMD 2017 CEQA Air Quality Guidelines).

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measures AQ-1 and AQ-2 would reduce the Project's contribution to a significant cumulative impact associated with a net increase in NOx emissions to a less-than-significant level because BAAQMD thresholds for air pollutant emissions would not be exceeded during Project construction or operations.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less-than-Significant Impact. Some members of the population are especially sensitive to emissions of air pollutants and should be given special consideration during the evaluation of a project's air quality impacts. These people include children, older adults, persons with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

A toxic air contaminant, (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs usually are present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

Short-Term Construction Diesel Exhaust Particulate Matter Emissions

Diesel PM emissions associated with activity by heavy-duty construction equipment represent the greatest potential for TAC emissions. ARB classified diesel PM as a TAC in 1998. Construction activities, particularly at Site 2, but also near the southern boundary of Site 1, would occur in proximity to residential areas, and would involve the use of a variety of gasoline- or diesel-powered equipment that emit exhaust fumes (diesel exhaust particulate matter), which could negatively affect sensitive receptors

in the Project area; however, the duration of exposure would be short and exhaust from construction equipment dissipates rapidly. Because of the temporary and intermittent use of off-road construction equipment, the dispersive properties of diesel PM (Zhu et al. 2002), and the relatively low exposure period, temporary and short-term construction activities would not result in the exposure of sensitive receptors to substantial TAC concentrations. This impact would be less than significant.

Localized Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. In fact, 56 percent of the nationwide CO emissions are from on-road mobile sources and 22 percent from non-road engines and vehicles (such as construction equipment and boats). Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources (such as forest fires).

Transport of CO is extremely limited because carbon monoxide disperses rapidly with distance from the source. Therefore, CO problems tend to be localized, and the highest CO concentrations generally are associated with cold, stagnant weather conditions that occur during winter.

According to BAAQMD guidance, because localized CO concentrations near roadway intersections are a function of traffic volume, speed, and delay, projects meeting all the following screening criteria would be considered to have a less-than-significant impact to localized CO concentrations:

- The Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plans, and local congestion management agency plans.
- The Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The Project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

As discussed in subsection 16, Transportation/Traffic, construction would be spread over two seasons, and the maximum project-related increase in traffic volumes along the affected roadways would be 17 vehicles per hour during Year 1 and 15 vehicles per hour during Year 2, and traffic conditions after the Project is completed would be the same as the existing traffic conditions. Therefore, the Project would not result in traffic volumes at any intersection that would exceed BAAQMD's significance thresholds for CO, and this impact would be less than significant.

e) Create objectionable odors affecting a substantial number of people?

Less-than-Significant Impact. Project construction activities could result in odorous emissions from diesel exhaust associated with construction equipment in proximity to sensitive receptors, particularly at Site 2 and at the southern end of Site 1; however, odorous emissions from Project-related diesel exhaust emissions would be temporary in nature and because of the highly diffusive properties of diesel exhaust, exposure of sensitive receptors to these emissions would be limited. Therefore, this impact would be less than significant.

3.4 Biological Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
IV. BIOLOGICAL RESOURCES – Would the project:					
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations. Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒	☐

This section discusses the impacts, and mitigation for vegetation and wildlife and fisheries resources as they pertain to implementation of the Proposed Project.

3.4.1 Discussion

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

For the purposes of this document, "special-status" has been defined to include those species that meet the definitions of rare or endangered plants or animals under CEQA, including species that are:

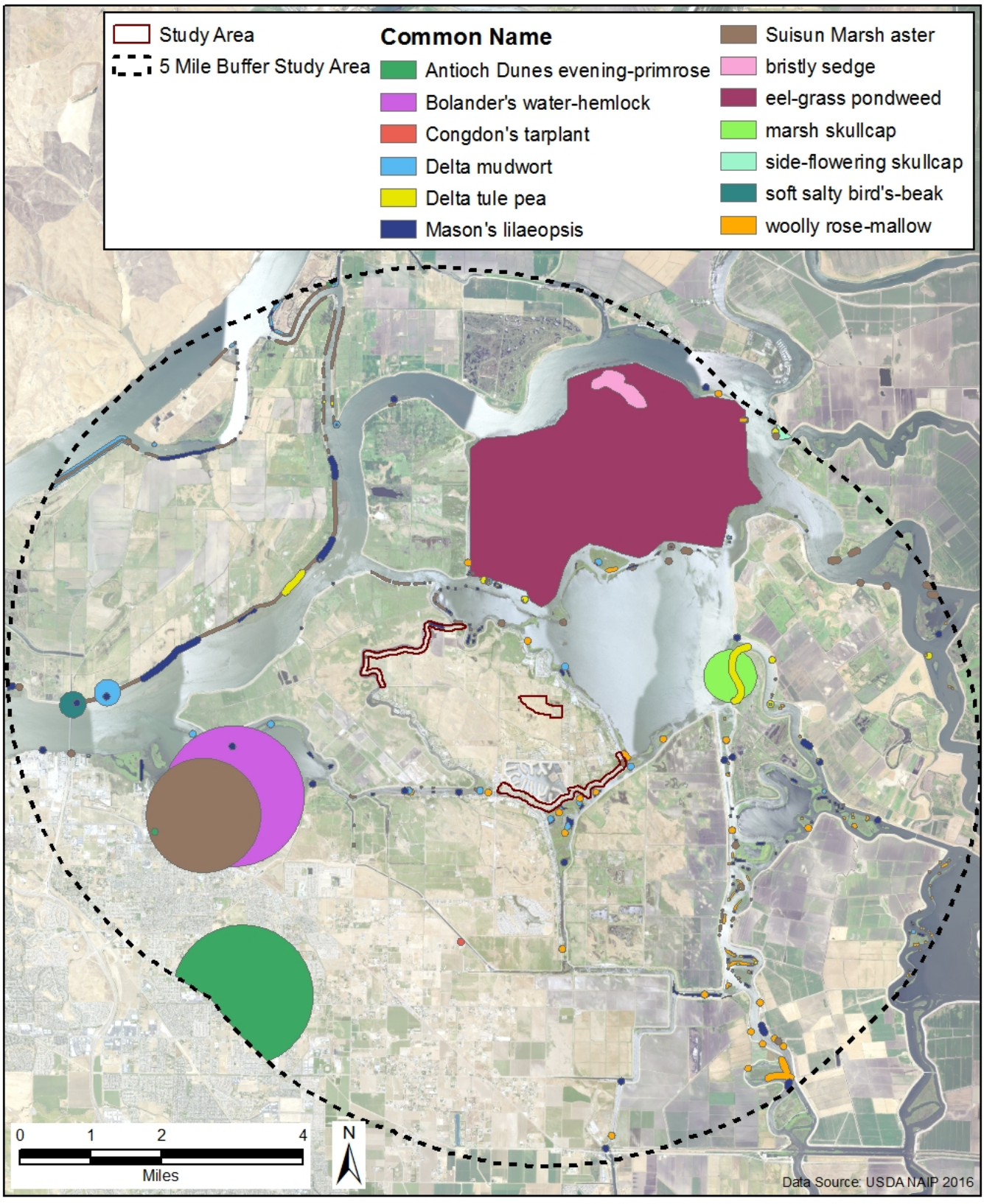
- Listed as Threatened or Endangered by the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS), pursuant to the federal Endangered Species Act (50 CFR Section17.11 and Section17.12)
- Listed as Rare, Threatened, or Endangered by the California Department of Fish and Wildlife (CDFW) pursuant to the California Endangered Species Act (California Fish and Game Code Section 2050, et seq.)
- Designated as Fully Protected under Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code
- Designated by CDFW as California Species of Concern
- Listed as Category 1A, 1B, and 2 by the California Native Plant Society (CNPS)
- Not currently protected by statute or regulation but considered rare, threatened, or endangered under CEQA

A search of the USFWS' Critical Habitat Portal (USFWS 2018b) and Information for Planning and Consultation Portal (USFWS 2018a) was performed for the Jersey Island, California, and Bouldin Island, California, USGS 7.5-minute quadrangles (quad) and all adjacent quads (Antioch North, Antioch South, Birds Landing, Brentwood, Holt, Isleton, Rio Vista, Terminous, Thorton, and Woodward Island) to identify federally protected species and their habitats that may be affected by the proposed Project. In addition, a query of the CDFW's California Natural Diversity Database (CNDDB) (CDFW 2018a) was conducted to identify known processed and unprocessed occurrences for special-status species within the quads listed above. Lastly, the CNPS Inventory of Rare and Endangered Plants database (CNPS 2018) was queried to identify special-status plant species with the potential to occur within the aforementioned quads. Raw data from the database queries can be found in **Appendix B**.

Queries of the USFWS, CNPS, and CDFW databases revealed several special-status species with the potential to occur in the project vicinity. **Figures 3.4-1** and **3.4-2** depict the locations of CNDDB occurrences, for special-status plants and wildlife, respectively, within a 5-mile radius of the project sites. Habitat requirements for each special-status species were assessed and compared to the habitats occurring within the vicinity of the project area (**Table 3.4-1)**.

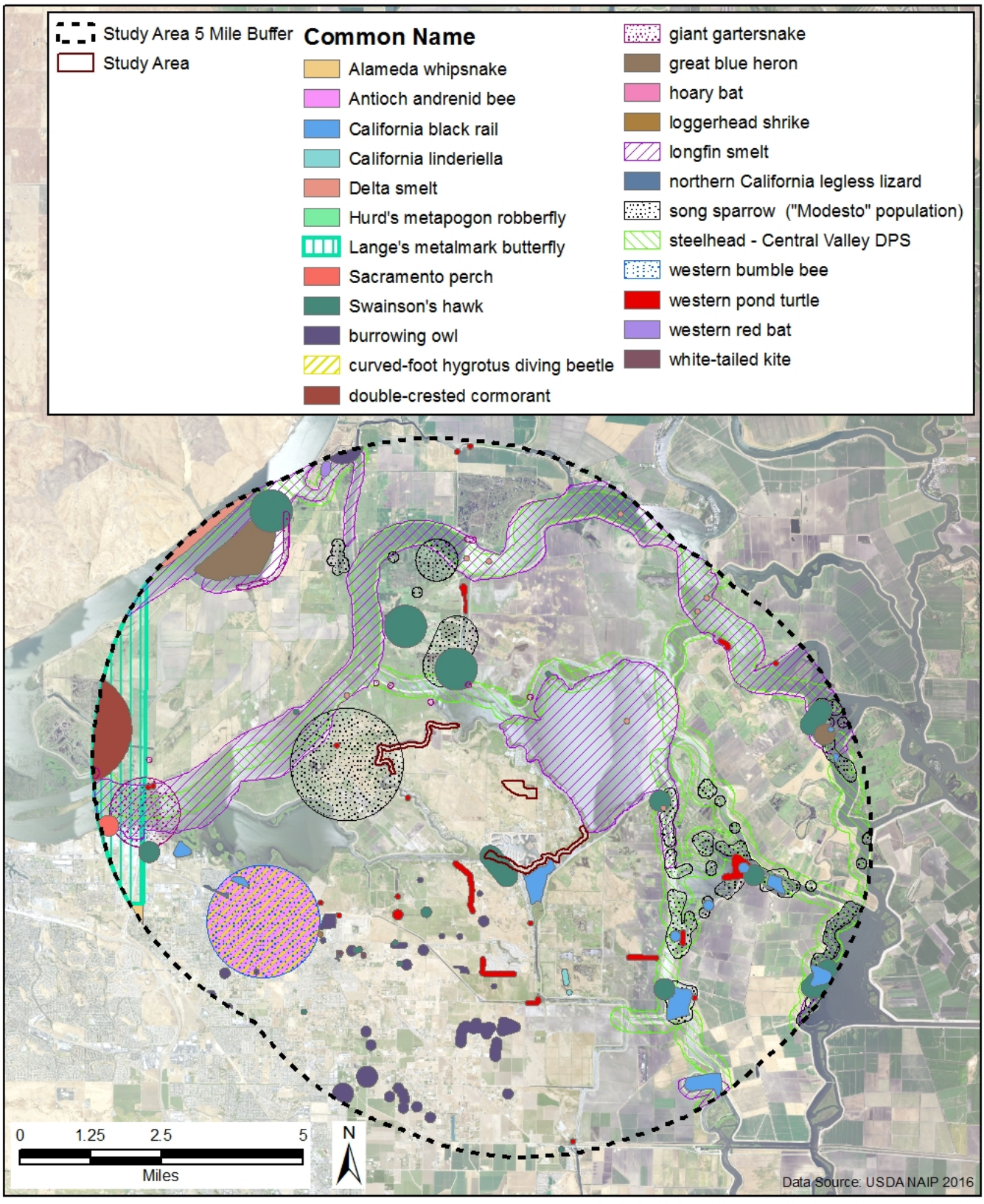
A field reconnaissance survey was conducted on May 21, 2018, by GEI biologists; this survey included a wetland delineation, a habitat characterization, and a general evaluation of biological resources in the proposed project area. Survey boundaries were delineated by the proposed footprint, as defined in Chapter 2, "Project Description," with an approximately 200-foot-wide buffer along either side. A total of eight land cover types occur within the project area; these are summarized below and are shown on **Figures 3.4-3a – 3.4-3k,** along with acreages within the project area.

Figure 3.4-1. CNDDB Plants



Source: GEI Consultants, Inc., 2018

Figure 3.4-2. CNDDB Animals



Z:\Projects\1325970_BethelIsland\1325970_G013_CNDDB_Animals_5mi.mxd
12June2018 BMC

Source: GEI Consultants, Inc., 2018

- **Active Agriculture:** Includes upland row crops, likely corn, and fallow fields. This land cover type occurs along Site 1.

- **Blackberry Thicket:** This scrub habitat, which is dominated by Himalayan blackberry (*Rubus armeniacus)* occurs in a couple locations along ditches in Site 1.

- **Disturbed:** This land cover type includes non-vegetated areas that have been substantially disturbed. This land cover type occurs along Site 1 and in the borrow area.

- **Ditch:** Typical vegetation within this land cover type includes slender wheatgrass (*Elymus trachycaulus),* duckweed (*Lemna* sp.), common smartweed (*Persicaria hydropiper),* and broadleaf cattail (*Typha latifolia).* Several invasive plants, including Himalayan blackberry and poison hemlock (*Conium maculatum)* and weeds also occur within this land cover type; these are identified in **Table 2** below. This land cover type occurs along Site 1 and in the borrow area.

- **Nonnative Annual Grassland:** This land cover type consists of open grasslands composed primarily of annual plant species (CDFW 2018b). Typical vegetation within this habitat type includes wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), papoose tarweed (*Centromadia parryi),* salt grass (*Distichlis spicata),* crane's bill geranium (*Geranium molle*), cheeseweed mallow (*Malva parviflora),* and annual yellow sweetclover (*Melilotus indicus).* Several invasive plants and weeds also occur within this land cover type; these are identified in **Table 2** below. This land cover type occurs along Site 1 and in the borrow area.

- **Open Tidal Waters:** This land cover, which occurs along Sites 1 and 2, is characterized by tidally influenced waters. Typical vegetation includes broadleaf cattail and tule (*Schoenoplectus acutus* var. *occidentalis)*.

- **Residential Development:** This land cover type is comprised of residential developments, which occur along Site 2.

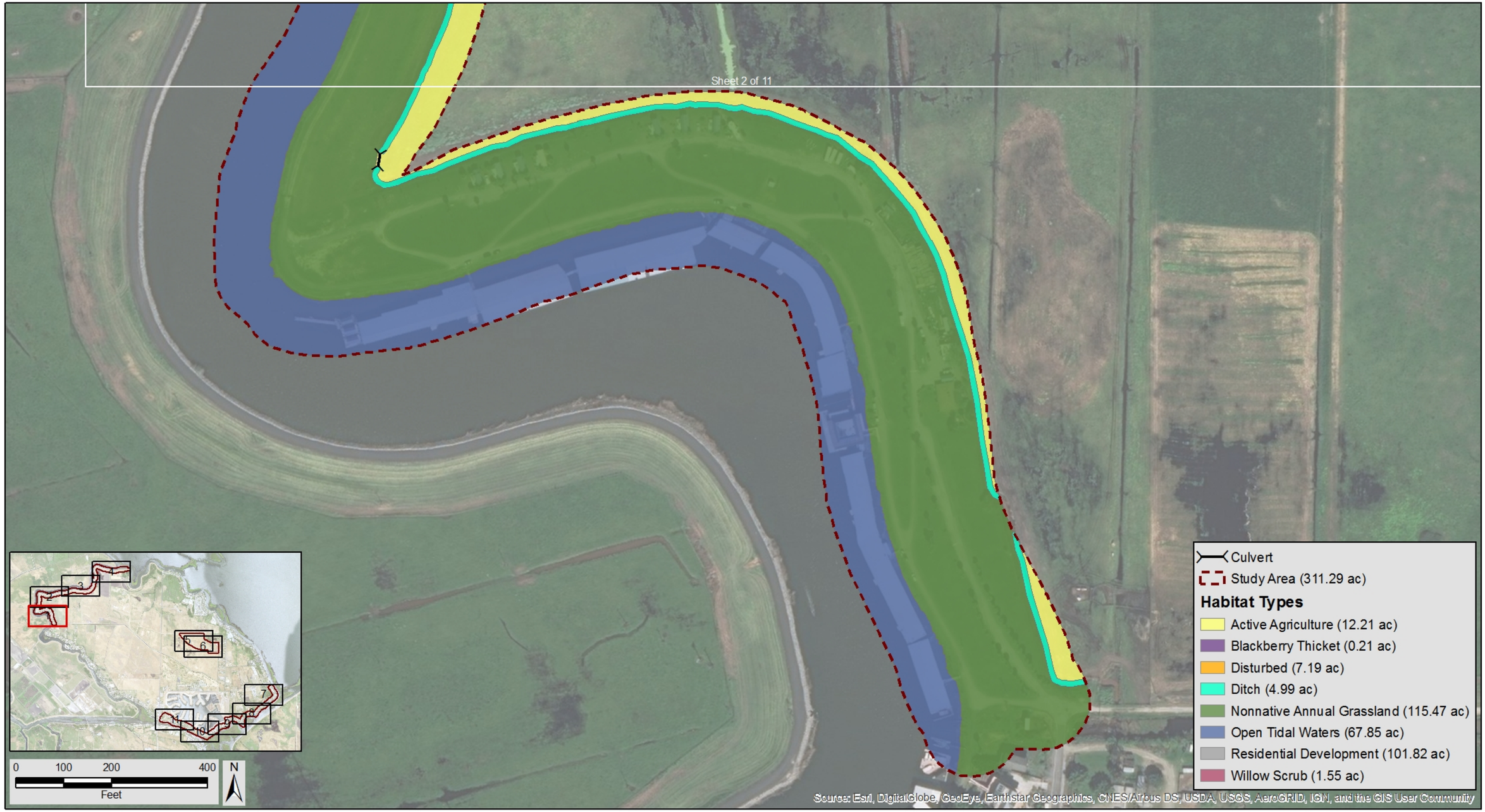
- **Willow Scrub:** Typical vegetation within this land cover type includes sandbar willow (*Salix exigua)* and Arroyo willow (*Salix lasiolepis).* This land cover type occurs along Site 1 and in the borrow area.

Based on the results of database searches and historic records, as well as known regional occurrences and the habitat assessments, several special-status plant and wildlife species have the potential to occur on the project sites. These species are identified in bold in **Table 3.4-1**.

Invasive plants are species that are introduced to a region, persist without human assistance, and have serious impacts on the natural environment (Davis and Thompson 2000). The California Invasive Plant Council (Cal-IPC) categorizes invasive plant species and maintains a list of species that have been designated as invasive in California. The term “noxious weed” is used by government agencies for non-native plants that have been defined as pests by law or regulation (CDFA 2010).

Invasive species known to occur in the project area, based on identification during field surveys, and their associated Cal-IPC category and California Department of Food and Agriculture rating are identified in **Table 3.4-2.** None of the species identified are listed as noxious weeds by the United States Department of Agriculture.

Figure 3.4-3a. Habitat Map

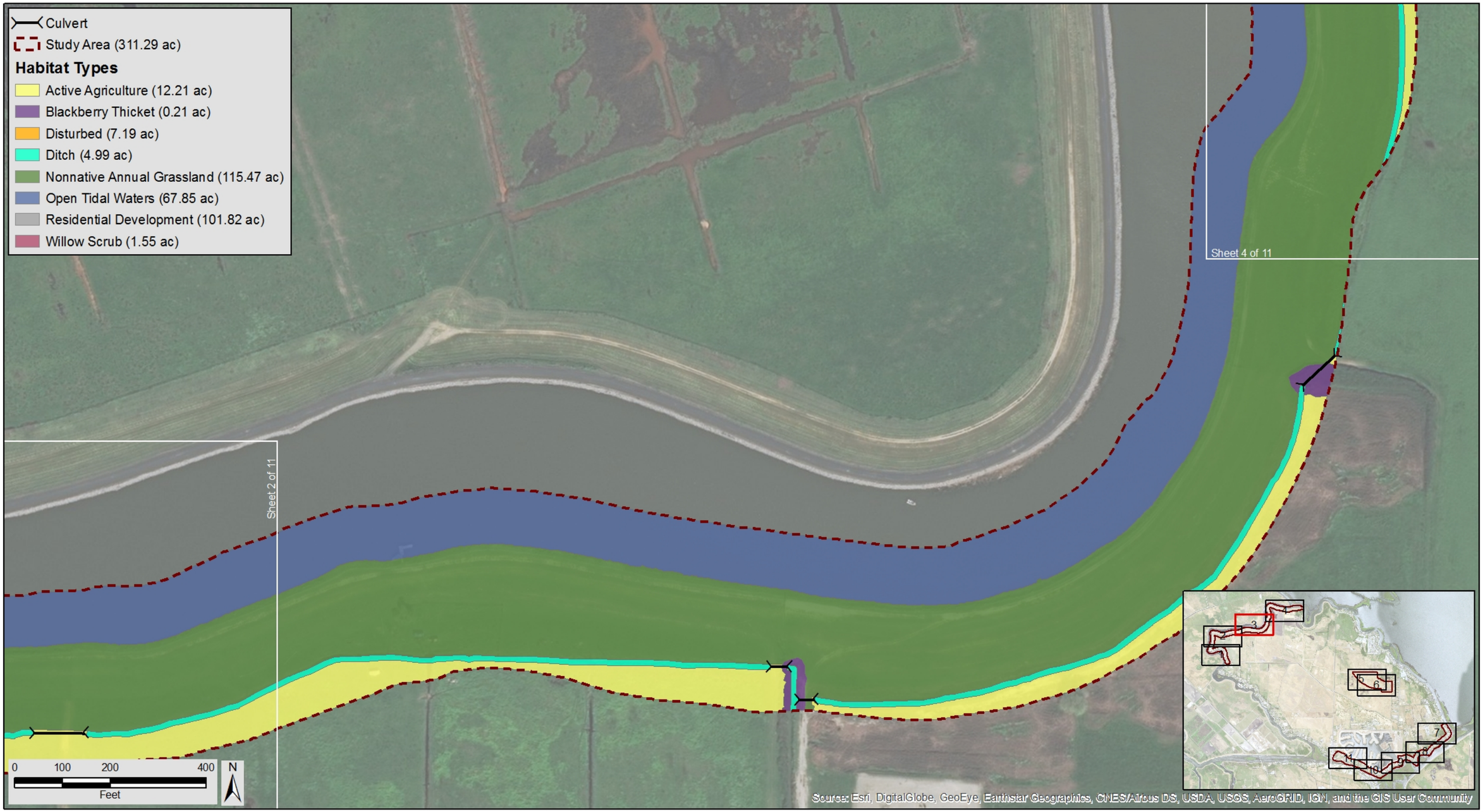


Source: GEI Consultants, Inc., 2018

Figure 3.4-3b. Habitat Map

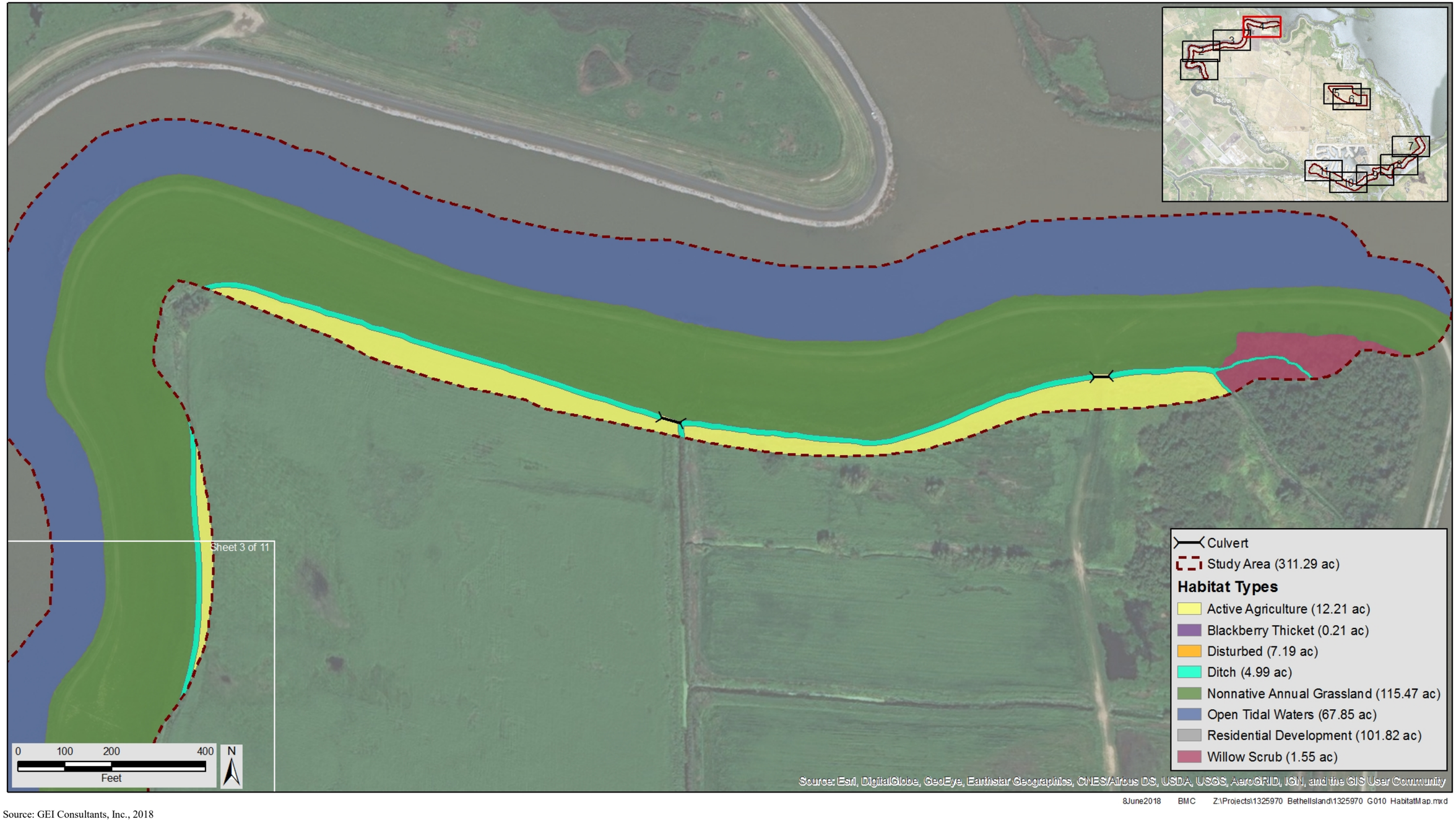
Source: GEI Consultants, Inc., 2018

Figure 3.4-3c. Habitat Map



Source: GEI Consultants, Inc., 2018

Figure 3.4-3d. Habitat Map

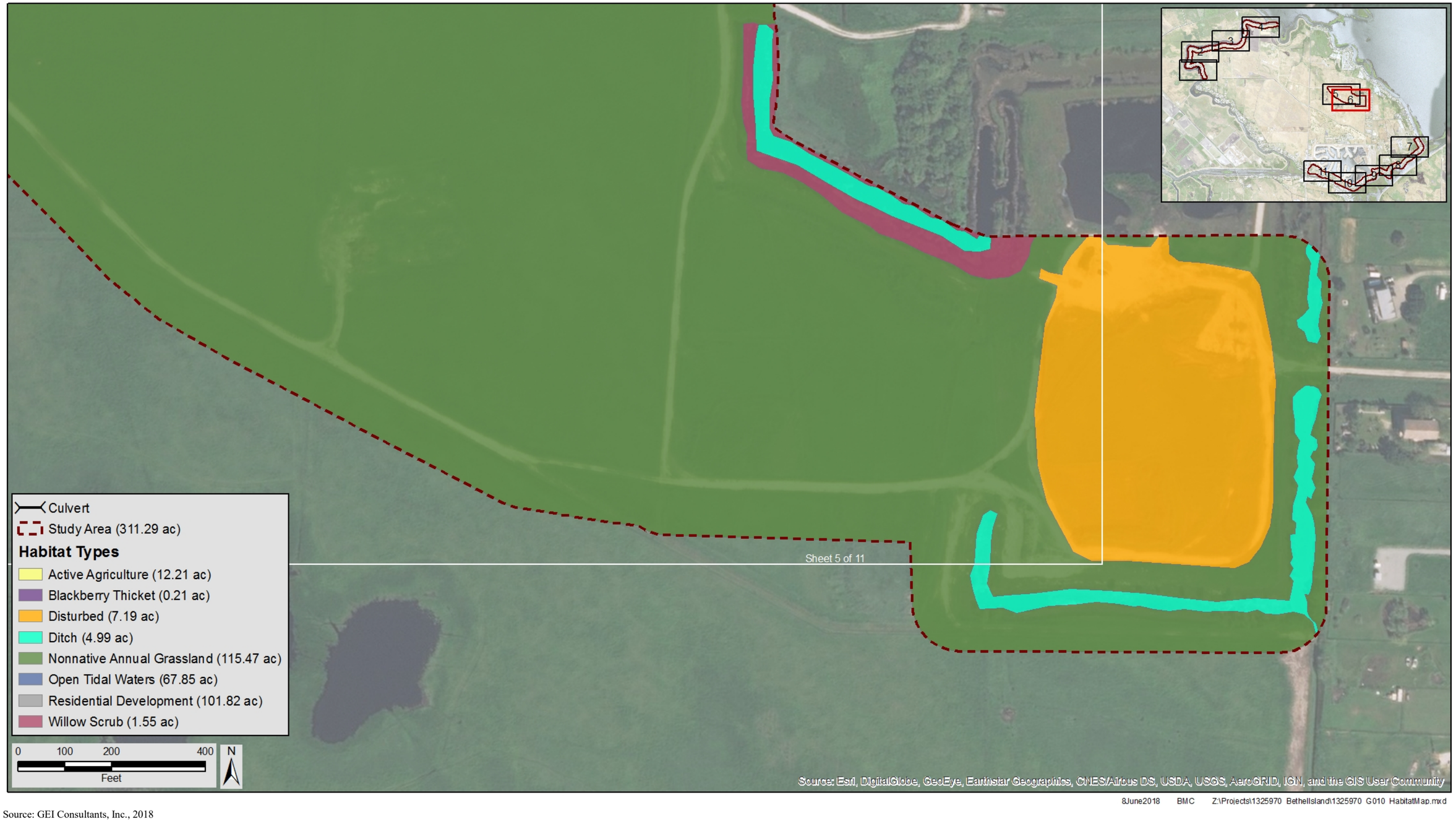


Source: GEI Consultants, Inc., 2018

Figure 3.4-3e. Habitat Map

Source: GEI Consultants, Inc., 2018

Figure 3.4-3f. Habitat Map



Source: GEI Consultants, Inc., 2018

Figure 3.4-3g. Habitat Map

Source: GEI Consultants, Inc., 2018

Figure 3.4-3h. Habitat Map

Source: GEI Consultants, Inc., 2018

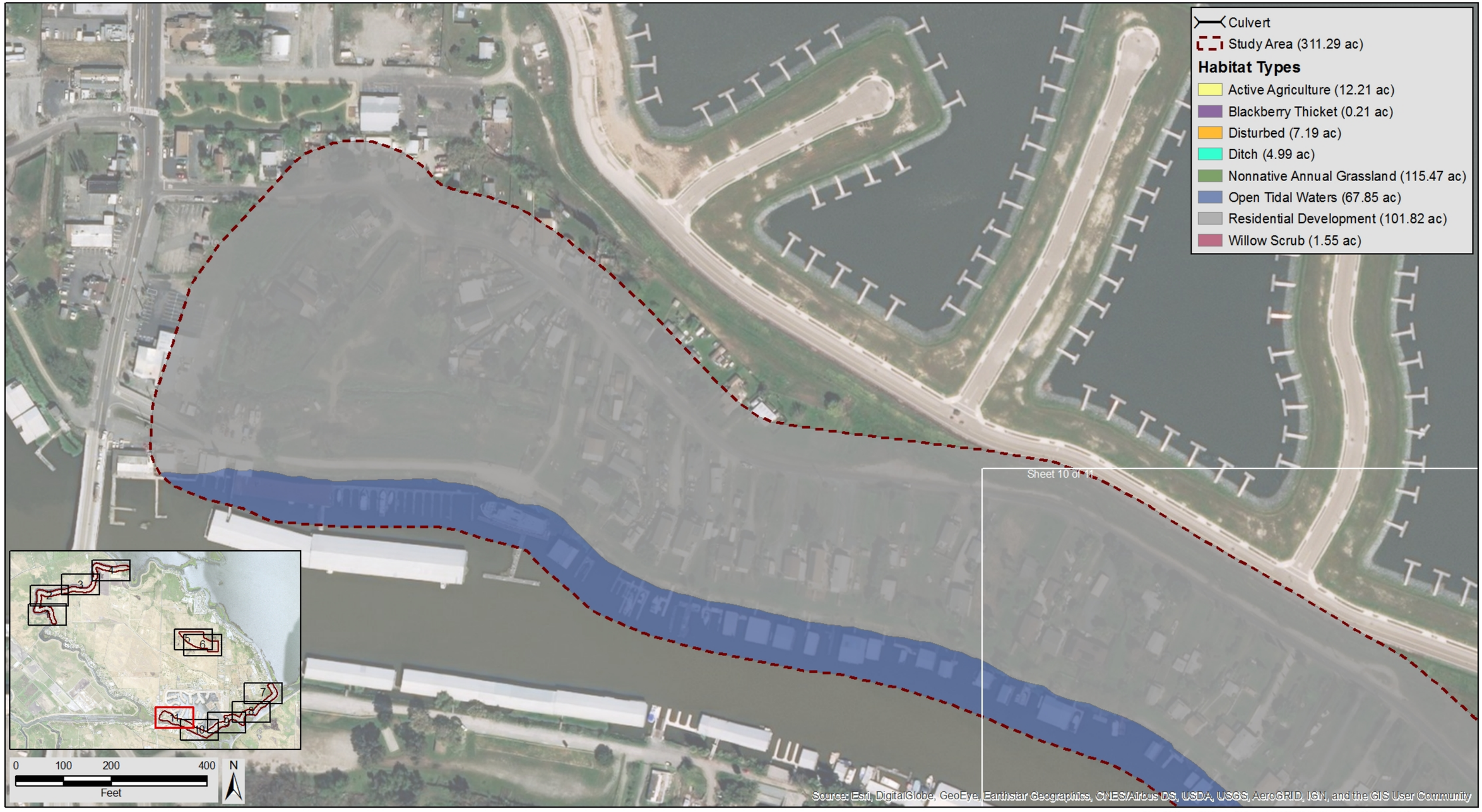
Figure 3.4-3i. Habitat Map

Source: GEI Consultants, Inc., 2018

Figure 3.4-3j. Habitat Map

Source: GEI Consultants, Inc., 2018

Figure 3.4-3k. Habitat Map



Source: GEI Consultants, Inc., 2018

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Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Plants				
Amsinckia grandiflora large-flowered fiddleneck	FE/SE/1B.1	Cismontane woodland, and valley and foothill grassland. Elevation: 902-1,804 feet (275-550 meters). Blooms: (Mar) Apr-May (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A; No DCH within project area
Arctostaphylos manzanita ssp. *laevigata* Contra Costa manzanita	--/--/1B.2	Rocky chaparral. Elevation: 1,640-3,680 feet (500-1,100 meters). Blooms: Jan-Apr (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Astragalus tener var. tener alkali milk-vetch	--/--/1B.2	Alkaline soils in playas, valley & foothill grassland (adobe clay), and vernal pools. Elevation: 3-197 feet (1-60 meters). Blooms: Mar-June (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Atriplex cordulata var. *cordulata* heartscale	--/--/1B.2	Saline or alkaline areas in chenopod scrub, meadows, seeps, and valley and foothill grassland. Elevation: 0-1,837 feet (0-560 meters). Blooms: Apr-Oct (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Atriplex depressa Brittlescale	--/--/1B.2	Alkaline and clay areas in chenopod scrub, meadows, seeps, playas, vernal pools, and valley and foothill grasslands. Elevation: 3-1,049 feet (1-320 meters). Blooms: Apr-Oct (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Blepharizonia plumosa big tarplant	--/--/1B.1	Usually clay in valley and foothill grasslands. Elevation: 98-1,656 feet (30-505 meters). looms: July-Oct (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Calochortus pulchellus Mt. Diablo fairy-lantern	--/--/1B.2	Chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. Elevation: 98-2,756 feet (30-840 meters). Blooms: Apr-June (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Carex comosa **bristly sedge**	--/--/2B.1	Coastal prairies, valley and foothill grasslands, as well as marshes, swamps, and lake margins. Elevation: 0- 2,051 feet (0-625 meters). Blooms: May-Sept (CNPS 2018).	Could occur. Suitable habitat is present within the project area. Wetlands, pond edges and slough edges provide suitable habitat for this species. An occurrence of this species is within 5 miles of the project sites (CDFW 2018a).	Ditch Open tidal waters
Centromadia parryi ssp. *congdonii* Congdon's tarplant	--/--/1B.1	Alkaline valley and foothill grasslands. Elevation: 0-755 feet (0-230 meters). Blooms: May-Nov (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Centromadia parryi ssp. parryi pappose tarplant	--/--/1B.2	Often in alkaline areas in chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernally mesic valley and foothill grasslands. Elevation: 0-1,378 feet (0-420 meters). Blooms: May-Nov (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Chloropyron molle ssp. molle soft salty bird's-beak	FE/SR/1B.2	Coastal salt marshes and swamps. Elevation: 0-10 feet (0-3 meters). Blooms: (June) July-Nov (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity.	N/A; No DCH within project area
Cicuta maculata var. bolanderi **Bolander's water-hemlock**	--/--/2B.1	Coastal, fresh, or brackish marshes and swamps. Elevation: 0-656 feet (0-200 meters). Blooms: July-Sept (CNPS 2018).	Could occur. Suitable habitat is present within the project area. Wetlands, pond edges and slough edges provide suitable habitat for this species. A CNDDB occurrence is within 2 miles of the project site (CDFW 2018a).	Open tidal waters
Downingia pusilla dwarf downingia	--/--/2B.2	Vernal pools and mesic valley and foothill grasslands. Elevation: 3-1,459 feet (1-445 meters). Blooms: Mar-May (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Eriogonum nudum var. psychicola Antioch Dunes buckwheat	--/--/1B.1	Inland dunes. Elevation: 0-66 feet (0-20 meters). Blooms: July-Oct (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Eriogonum truncatum Mt. Diablo buckwheat	--/--/1B.1	Sandy areas in chaparral, coastal scrub, and valley and foothill grasslands. Elevation: 10-1,148 feet (3-350 meters). Blooms: Apr-Dec (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Eryngium jepsonii Jepson's coyote-thistle	--/--/1B.2	Vernal pools and mesic valley and foothill grasslands. Elevation: 0-984 feet (3-300 meters). Blooms: Apr-Aug (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Eryngium racemosum delta button-celery	--/SE/1B.1	Vernally mesic clay depressions in riparian scrub. Elevation: 10-98 feet (3-30 meters). Blooms: June-Oct (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Erysimum capitatum var. *angustatum* Contra Costa wallflower	FE/SE/1B.1	Inland dunes. Elevation: 10-66 feet (3-20 meters). Blooms: Mar-July (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A; No DCH within project area
Eschscholzia rhombipetala diamond-petaled California poppy	--/--/1B.1	Alkaline and clay valley and foothill grasslands. Elevation: 0-3,199 feet (0-975 meters). Blooms: Mar-Apr (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Extriplex joaquinana San Joaquin spearscale	--/--/1B.2	Alkaline chenopod scrub, meadows, seeps, playas, and valley and foothill grasslands. Elevation: 3-2,739 feet (1-835 meters). Blooms: Apr-Oct (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Fritillaria liliacea fragrant fritillary	--/--/1B.2	Serpentinite soils in cismontane woodland, coastal prairie, coastal scrub, valley & foothill grassland. Elevation: 10-1,345 feet (3-410 meters). Blooms: Feb-Apr (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Helianthella castanea Diablo helianthella	--/--/1B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland, broad-leafed upland forest, and valley and foothill grasslands. Elevation: 197-4,265 feet (60-1,300 meters). Blooms: Mar-June (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Hesperolinon breweri Brewer's western flax	--/--/1B.2	Usually serpentinite, in chaparral, cismontane woodland, and valley and foothill grasslands. Elevation: 98-2,953 feet (30-900 meters). Blooms: May-July (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Hibiscus lasiocarpos* var. *occidentalis **woolly rose-mallow**	--/--/1B.2	Freshwater marshes and swamps. Elevation: 0-394 feet (0- 120 meters). Blooms: June-Sept (CNPS 2018).	Could occur. Slough edges provide suitable habitat for this species. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Open tidal waters
Isocoma arguta Carquinez goldenbush	--/--/1B.1	Alkaline valley and foothill grassland. Elevation: 3-66 feet (1-20 meters). Blooms: Aug-Dec (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Juglans hindsii Northern California black walnut	--/--/1B.1	Riparian forest/ woodland. Elevation: 0-1,444 feet (0-440 meters). Blooms: Apr-May (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A
Lasthenia conjugens Contra Costa goldfields	FE/--/1B.1	Mesic areas in vernal pools, cismontane woodland, alkaline playas, and valley and foothill grasslands. Elevation: 0-1,542 feet (0-470 meters). Blooms: Mar-June (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A; No DCH within project area
Lathyrus jepsonii var. jepsonii **Delta tule pea**	--/--/1B.1	Freshwater and brackish marshes and swamps. Elevation: 0-13 feet (0-4 meters). Blooms: May-Sept (CNPS 2018).	Could occur. Slough edges provide suitable habitat for this species. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Open tidal waters

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Lilaeopsis masonii **Mason's lilaeopsis**	--/SR/1B.1	Riparian scrub, and brackish or freshwater marshes and swamps. Elevation: 3-33 feet (0-10 meters). Blooms: Apr-Nov (CNPS 2018).	Could occur. Slough edges provide suitable habitat for this species. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Ditch Open tidal waters Willow scrub
Limosella australis **Delta mudwort**	--/--/2B.1	Usually mud banks in riparian scrub, and freshwater or brackish marshes and swamps. Elevation: 0-10 feet (0-3 meters). Blooms: May-Aug (CNPS 2018).	Could occur. Slough edges provide suitable habitat for this species. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Open tidal waters Willow scrub
Madia radiata showy golden madia	--/--/1B.1	Cismontane woodland, and valley and foothill grasslands. Elevation: 82-3,986 feet (25-1,215 meters). Blooms: Mar-May (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Malacothamnus hallii Hall's bush-mallow	--/--/1B.2	Chaparral and coastal scrub. Elevation: 33-2,493 feet (10- 760 meters). Blooms: (Apr) May-Oct (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Navarretia leucocephala ssp. bakeri Baker's navarretia	--/--/1B.1	Mesic areas in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools. Elevation: 16-5,709 feet (5-1,740 meters). Blooms: Apr-July (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Navarretia nigelliformis ssp. radians shining navarretia	--/--/1B.2	Sometimes clay in cismontane woodland, vernal pools, and valley and foothill grassland. Elevation: 249- 3,281 feet (76-1,000 meters). Blooms: (Mar) Apr-July (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Neostapfia colusana Colusa grass	FT/SE/1B.1	Large, adobe vernal pools. Elevation: 16-656 feet (5-200 meters). Blooms: May-Aug (CNPS 2018).	No potential to occur. Suitable habitat and appropriate soils are not present in the project area vicinity.	N/A; No DCH within project area
Oenothera deltoides ssp. *howellii* Antioch Dunes evening-primrose	FE/SE/1B.1	Inland dunes. Elevation: 0-98 feet (0-30 meters). Blooms: Mar-Sept (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity.	N/A; No DCH within project area
Plagiobothrys hystriculus bearded popcornflower	--/--/1B.1	Often in vernal swales in vernal pool margins and mesic valley and foothill grasslands. Elevation: 0-899 feet (0-274 meters). Blooms: Apr-May (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity.	

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Potamogeton zosteriformis **eel-grass pondweed**	--/--/2B.2	Assorted freshwater marshes and swamps. Elevation: 0- 6,102 feet (0-1,860 meters). Blooms: June-July (CNPS 2018).	Could occur. Sloughs provide suitable habitat. An occurrence of this species is within 1 mile of the project sites (CDFW 2018a).	Open tidal water
Sagittaria sanfordii **Sanford's arrowhead**	--/--/1B.2	Assorted shallow freshwater marshes and swamps. Elevation: 0-2,133 feet (0-650 meters). Blooms: May-Oct (CNPS 2018).	Could occur. Sloughs provide suitable habitat.	Open tidal waters
Scutellaria galericulata **marsh skullcap**	--/--/2B.2	Marshes, swamps, mesic meadows, and seeps. Elevation: 0-1,640 feet (0-500 meters). Blooms: (June) July-Sept (CNPS 2018).	Could occur. Slough edges provide suitable habitat. An occurrence of this species is within 2 miles of the project sites (CDFW 2018a).	Open tidal waters
Scutellaria lateriflora **side-flowering skullcap**	--/--/2B.2	Brackish and freshwater marshes and swamps. Elevation: 0-10 feet (0-3 meters). Blooms: (May) Jul-Nov (CNPS 2018).	Could occur. Slough edges provide suitable habitat. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Open tidal waters
Senecio aphanactis chaparral ragwort	--/--/2B.2	Sometimes alkaline in chaparral, cismontane woodland, and coastal scrub. Elevation: 49-2,625 feet (15-800 meters). Blooms: Jan-Apr (May) (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A
Sidalcea keckii Keck's checkerbloom	FE/--/1B.1	Serpentinite and clay soils in cismontane woodland and valley and foothill grasslands. Elevation: 246-2,133 feet (75-650 meters). Blooms: Apr-June (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity. Project area outside of typical elevation.	N/A; No DCH within project area
Symphyotrichum lentum **Suisun Marsh aster**	--/--/1B.2	Brackish and freshwater marshes and swamps. Elevation: 0-10 feet (0-3 meters). Blooms: (Apr) May-Nov (CNPS 2018).	Could occur. Slough edges provide suitable habitat for this species. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Open tidal waters
Tropidocarpum capparideum caper-fruited tropidocarpum	--/--/1B.1	Alkaline hills in valley and foothill grassland. Elevation: 3-1,493 feet (1-455 meters). Blooms: Mar-Apr (CNPS 2018).	No potential to occur. Suitable habitat is not present in the project area vicinity.	N/A
Invertebrates				
Apodemia mormo langei Lange's metalmark butterfly	FE/--/--	Limited to dense to moderately dense patches of food plant, wild buckwheat, in stabilized sand dunes.	Unlikely to occur in the project area. Historically restricted to sand dunes along the south bank of the Sacramento and San Joaquin rivers, and is currently found only at the Antioch Dunes in Contra Costa County.	N/A; No DCH within project area

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Branchinecta conservatio conservancy fairy shrimp	FE/--/--	Found in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal pools, vernal lakes, vernal swales, and other types of seasonal wetlands.	No potential to occur in the project area. Suitable habitat is not present in the project area vicinity.	N/A; No DCH within project area.
Branchinecta lynchi vernal pool fairy shrimp	FT/--/--	Found in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal pools, vernal lakes, vernal swales, and other types of seasonal wetlands.	No potential to occur in the project area. Suitable habitat is not present in the project area vicinity.	N/A; No DCH within project area.
Callophrys mossii bayensis San Bruno elfin butterfly	FE/--/--	Inhabits rocky outcrops and cliffs in coastal scrub on the San Francisco peninsula.	No potential to occur in the project area. Suitable habitat is not present in the project area vicinity.	N/A; No DCH within project area.
Desmocerus californicus dimorphus valley elderberry longhorn beetle	FT/--/--	Breeds and forages exclusively on elderberry shrubs (*Sambucus* sp.) with steams at least 1 inch in diameter at ground level, typically associated with riparian forests, riparian woodlands, elderberry savannas, and other Central Valley habitats. Occurs only in the Central Valley and adjacent foothills of California.	No potential to occur in the project area. Habitat for this species (elderberry shrubs) is not present within the project area or within 165 feet of the project footprints.	N/A; No DCH within project area.
Elaphrus viridis Delta green ground beetle	FT/--/--	Prefers the sandy mud substrate where it slopes gently into the water, with low-growing vegetation, 25-100% cover. Sparsely vegetated edges of vernal lakes and pools; occurs up to 250 feet from pools.	No potential to occur in the project area. No occurrences in project area. Suitable habitat is not present in the project area vicinity. Restricted to Olcott Lake and other vernal pools at Jepson Prairie Preserve, Solano County.	N/A; No DCH within project area.
Lepidurus packardi vernal pool tadpole shrimp	FE/--/--	Found in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal pools, vernal lakes, vernal swales, and other types of seasonal wetlands, which range in size from small, clear, well-vegetated vernal pools to highly turbid, alkali scald pools to large winter lakes.	No potential to occur in the project area. Suitable habitat is not present in the project area vicinity.	N/A; No DCH within project area.
Amphibians				
Ambystoma californiense California tiger salamander (central population)	FT/ST/--	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.	Unlikely to occur in the project area. Species not known to occur on delta islands. Project does not align with species range.	N/A; No DCH within project area.

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Rana draytonii California red-legged frog	FT/SSC/--	Breeds in slow moving streams, ponds, and marshes with emergent vegetation; forages in nearby uplands within about 200 feet. Extant records in the Sierra Nevada range are over 800 feet. Below this elevation, aquatic habitat supports stronger populations of non-native predators associated with warm water habitats such as bullfrogs and Centrarchid fish. Believed extirpated from the floor of the Central Valley prior to the 1960s.	Unlikely to occur in the project area. The project area occurs outside of the known extant geographic range for this species.	N/A; No DCH within project area.
Reptiles				
Actinemys marmorata **western pond turtle**	--/SSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks.	Likely to occur in the project area. Suitable habitat is present throughout the project area, except for the active agricultural fields. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Ditch Nonnative annual grassland Open tidal waters
Anniella pulchra northern California legless lizard	--/SCC/--	Occurs in moist warm loose soil with plant cover within sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and shaded stream terraces. Occurs from the southern edge of the San Joaquin River in northern Contra Costa County south to the Ventura County.	No potential to occur in the project area. Suitable habitat is not present in the project area vicinity.	N/A
Arizona elegans occidentalis California glossy snake	--/SCC/--	Inhabits arid scrub, rocky washes, grasslands, chaparral, preferring open areas and areas with soil loose enough for easy burrowing. Occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California.	No potential to occur in the project area. Suitable habitat is not present in the project area vicinity.	N/A
Masticophis lateralis euryxanthus Alameda whipsnake	FT/ST/--	Associated with chaparral and shrubland communities, but will range into adjacent grassland and woodlands (USFWS 2011).	Unlikely to occur in the project area. Suitable habitat is not present within the project area.	N/A; No DCH within project area.
Thamnophis gigas **giant garter snake**	FT/ST/--	Found primarily in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields and occasionally in slow-moving creeks in California's interior.	Likely to occur in the project area. Suitable habitat is present within the project area. An occurrence of this species is within 5 miles of the project sites (CDFW 2018a).	Ditch Blackberry thicket Nonnative annual grassland

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Fish				
Southern DPS of North American green sturgeon ***Acipenser medirostris***	FT/SSC/--	Anadromous. Requires seasonally inundated floodplains, rivers, tributaries, and the Delta. Adult migration to upstream spawning areas occurs late February–late July, and juveniles rear in fresh water and migrate to the ocean year-round. Primarily spawns in the Sacramento River (NMFS 2015). Although unlikely to move through Taylor Slough during the spawning season, waters near the proposed project area are within its known range.	Could occur in the project area. Suitable habitat is present within the project area.	Open tidal waters DCH within project area
White sturgeon ***Acipenser transmontanus***	SSC/SSC/--	Anadromous. Live primarily in estuaries of large rivers, only moving into freshwater to spawn (Moyle 2002). Adult migration to upstream spawning areas occurs late February–early June. Primarily spawns in the Sacramento and Feather Rivers (Klimley et al. 2015), although this species is known to spawn in the San Joaquin River in both wet- and dry-year conditions (CDFG Report Card Data 2008, 2009; Gruber et al. 2012; Jackson et al. 2016). Species may use water in the project area as migration corridor during spawning un, downstream juvenile emigration, and possibly during rearing.	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters No DCH within project area.
Delta smelt ***Hypomesus transpacificus***	FTSE/--	Semi-anadromous. Typically restricted to the Delta and the lower Sacramento River downstream of Isleton; juveniles move downstream with the currents (USFWS 1996; Sommer et al. 2001; Moyle 2002). In September or October, Delta smelt begin a migration back into freshwater areas where spawning is thought to occur; spawning is believed to occur from late January–late June or early July.	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters DCH within project area.

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Longfin smelt ***Spirinchus thaleichthys***	FC/ST/--	Anadromous. Live primarily in bays, estuaries, and nearshore coastal areas. Habitat includes waterways upstream from Rio Vista and downstream through Suisun Bay and Suisun Marsh. Adult migration to upstream spawning areas occurs January–March. Waters in the proposed project area have the potential to be used by this species during migration and spawning.	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters
Central Valley steelhead DPS ***Oncorhynchus mykiss***	FT/--/--	Anadromous. Requires cold fresh water streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and the Delta. Adult migration to upstream spawning areas occurs July–March (Hallock 1987). After spending 1–3 years in fresh water, smolt outmigration occurs in December–August (McEwan 2001). The waters adjacent to the proposed project area, provide potential migration routes through the Delta, but do not provide quality spawning habitat because they lack the needed fresh, flowing, shallow water habitat and gravel necessary to support spawning.	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters DCH within project area.
Sacramento River winter-run Chinook salmon ESU ***Oncorhynchus tshawytscha***	FE/--/--	Anadromous. Requires cold fresh water streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and the Delta. Adults migrate upstream in December–July (Moyle 2002). Smolt outmigration typically begins in August and peaks in September and October (Vogel and Marine 1991). Smolt outmigration occur July–March, and into June. The waters adjacent to the proposed project area, provide potential migration routes through the Delta.	Could occur in the project area. Suitable habitat is present within the project area.	Open tidal waters No DCH within project area. EFH within the project area.

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Central Valley spring-run Chinook salmon ESU[4] ***Oncorhynchus tshawytscha***	FT/--/--	Anadromous. Requires cold freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and the Delta. Historically spawned in the San Joaquin River upstream from the town of Friant from late August–October (Clark 1943). Adults migrate upstream in March–September (Yoshiyama et al. 1998). Smolt outmigration occurs following the onset of the winter storm season through March (CDFG 1998; Fisher 1994; S. P. Cramer and Associates 1995; Hill and Webber 1999).	Could occur in the project area. Suitable habitat is present within the project area.	Open tidal waters No DCH within project area. EFH within the project area.
Central Valley fall-/ late-fall run Chinook salmon ESU ***Oncorhynchus tshawytscha***	--/SSC/--	Anadromous. Requires cold fresh water streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and the Delta. Adults migrate in the Sacramento River from June–December (Moyle 2002) and in the San Joaquin River from October–January. Juveniles migrate downstream and out to the ocean soon after emerging (December–June), rearing in fresh water for only a few months (Yoshiyama et al. 1998).	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters EFH within the project area.
Sacramento splittail ***Pogonichthys macrolepidotus***	--/SSC/--	Endemic to the Sacramento and San Joaquin Rivers, Delta, and San Francisco Bay (SJRRP 2011). Adults move upstream in late November–late January, foraging in flooded areas along the main rivers, bypasses, and tidal freshwater marsh areas before spawning (Moyle et al. 2004). Juveniles move downstream in response to flow pulses into shallow, productive bay and estuarine waters from April–August (Meng and Moyle 1995, Moyle 2002).	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters
Sacramento perch ***Archoplites interruptus***	--/SSC/--	Inhabits sluggish rivers, sloughs, and lakes with beds of submerged and emergent vegetation. Spawning is triggered when water temperatures reach 18-28 degrees Celsius, generally from the end of March–October.	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
River lamprey ***Lampetra ayresii***	--/SSC/--	Adults migrate into freshwater during fall and spawn during February–May in tributary streams. Juvenile larvae remain in silty backwaters and eddies to feed, then begin to transform into adults during summer months (Moyle et al 2015), with metamorphisis requiring 9-10 months (Moyle 2015). Newly metamorphosed lamprey may aggregate immediately upriver from salt water and enter the ocean in late spring. Adults only spend 3-4 months in salt water (Moyle 2015).	Likely to occur in the project area. Suitable habitat is present within the project area.	Open tidal waters
Pacific lamprey ***Entosphenus tridentatus***	--/SSC/--	Anandromous. Adult spawning migrations occur in March–late June, with upstream movement typically occurring at night (Moyle et al. 2015). Larvae emerge and drift downstream to depositional areas where they burrow into fine substrates and filter feed on organic materials (Moore and Mallatt 1980). Larvae remain in freshwater for 4-7 years before undergoing a metamorphosis (Moore and Mallatt 1980, Moyle 2002, Moyle et al. 2015), after which smolts migrate to the ocean between fall and spring (Goodman et al. 2015). Lamprey remain in the ocean for approximately 18-40 months before returning to freshwater as immature adults (Kan 1975, Beamish 1980).		Open tidal waters
Birds				
Agelaius tricolor **tricolored blackbird**	--/SC/--	Largely endemic to California, most numerous in the Central Valley and nearby vicinity. Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water. Also nests in agricultural crops (e.g., silage), where colonies are threatened during harvest.	Likely to occur in the project area. Suitable habitat is present within the project area.	Foraging: Nonnative annual grassland Active agriculture Nesting: Blackberry thicket Willow scrub
Athene cunicularia **burrowing owl**	--/SSC/--	Found in open grasslands with low vegetation, golf courses, and disturbed/ruderal habitat in urban areas.	Likely to occur in the project area. Suitable habitat is present within the project area.	Nonnative annual grassland

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Buteo swainsonii **Swainson's hawk**	--/ST/--	Forages in open and agricultural fields and nests in mature trees usually in riparian corridors.	Likely to occur in the project area. Suitable habitat is present within the project area. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Foraging: Nonnative annual grassland Active agriculture Nesting: Mature trees in the vicinity of aquatic waterways
Charadrius montanus mountain plover	--/SSC/--	Frequents open plains with low, herbaceous, or scattered shrub vegetation below 3,200 feet (1,000 meters) (CDFW 2018b).	Unlikely to occur in the project area. Suitable habitat is not present within the project area.	N/A
Circus cyaneus **Northern harrier**	--/SSC/--	Nests on the ground in patches of dense, tall vegetation in undisturbed areas. Breeds and forages in variety of open habitats such as marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, pastures, croplands, sagebrush flats and desert sinks (Shuford and Gardali 2008).	Known to occur. Species was observed during field reconnaissance surveys.	Active agriculture Nonnative annual grassland
Elanus leucurus **white-tailed kite**	--/SFP/--	Forages in open grasslands and agricultural fields and marshes. Nests in scattered mature trees within foraging habitat.	Likely to occur in the project area. Suitable habitat is present within the project area. An occurrence of this species is within 5 miles of the project sites (CDFW 2018a).	Foraging: Nonnative annual grassland Active agriculture Nesting: Mature trees near aquatic waterways
Falco peregrinus anatum American peregrine falcon	FDL/SDL; SFP/--	Breeds mostly in woodland, forest, and coastal habitats, near wetlands, lakes, rivers or other water on high cliffs, banks, dunes, or mounds. Will nest of human-made structures, tree or snag cavities, or old nests of other raptors (CDFW 2018b).	Unlikely to occur in the project area. Suitable habitat is not present within the project area.	N/A
Geothlypis trichas sinuosa saltmarsh common yellowthroat	--/SSC/--	Breeds and winters in wet meadow, fresh emergent wetland, and saline emergent wetland habitats. Also breeds in valley foothill riparian, occasionally in desert riparian, annual grassland, and perennial grassland habitats.	Unlikely to occur in the project area. Project area is outside of species breeding range (Shuford and Gardali 2008).	N/A
Lanius ludovicianus **loggerhead shrike**	--/SSC/--	Inhabits a variety of woodland and open grassland habitats throughout California.	Could occur. Suitable habitat is present throughout the project area. An occurrence of this species is within 5 miles of the project sites (CDFW 2018a).	Throughout

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Laterallus jamaicensis coturniculus **California black rail**	--/ST; SFP/--	Yearlong resident of saline, brackish, and fresh emergent wetlands (CDFW 2018b).	Could occur. Small patches of emergent vegetation occur along slough edges and several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Open tidal waters
Melospiza melodia **song sparrow ("Modesto" population)**	--/SCC/--	Breeds and winters in riparian, fresh or saline emergent wetland, and wet meadows. Breeds in riparian thickets of willows, other shrubs, vines, tall herbs, and fresh or saline emergent vegetation (CDFW 2018b).	Could occur. Suitable habitat present. Suitable habitat is present in the project area. Several occurrences of this species are within 1 mile of the project sites (CDFW 2018a).	Willow scrub
Melospiza melodia maxillaris Suisun song sparrow	--/SCC/--	Occurs year-round in tidal salt and brackish marshes from the Suisan Bay to Antioch. Requires medium density vegetation for nesting, perching, and protection. Exposed open ground is needed for foraging (Shuford and Gardali 2008).	Unlikely to occur. Suitable habitat not present. Small patches of emergent vegetation occur along slough edges, however, not large enough to support species.	N/A
Rallus longirostris obsoletus California clapper rail	FE/SE; SFP/--	Occur almost exclusively in tidal and brackish marshes with unrestricted daily tidal flows, well developed tidal channel networks, and suitable nesting and escape cover providing refugia during extreme high tides (USFWS 2013).	Unlikely to occur in the project area. Suitable habitat is not present within the project area.	N/A; No DCH within project area.
Riparia bank swallow	--/ST/--	Riparian areas with sandy, vertical bluffs or riverbanks. Also nest in earthen banks and bluffs, as well as sand and gravel pits (CDFW 2018b).	No potential to occur in the project area. Project does not align with species range.	N/A
Mammals				
Antrozous pallidus pallid bat	--/SCC/--	Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings (CDFW 2018b).	Unlikely to occur. Suitable habitat is not present.	N/A
Lasiurus blossevillii western red bat	--/SCC/--	Roosting habitat includes forests and woodlands, often in edge habitats adjacent to streams or fields (CDFW 2018b).	Unlikely to occur. Suitable habitat is not present.	N/A
Reithrodontomys raviventris salt-marsh harvest mouse	FE/SE; SFP/--	Restricted to saline or subsaline marsh habitats around the San Francisco Bay Area and mixed saline/brackish areas in the Suisun Bay area (USFWS 2013).	Unlikely to occur. Suitable habitat is not present.	N/A; No DCH within project area.

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area
Sylvilagus bachmani riparius riparian brush rabbit	FE/SE/--	Found in dense, brushy areas of Central Valley riparian forests, marked by extensive thickets of wild rose (***Rosa*** spp.), blackberries (***Rubus*** spp.), and willows (***Salix*** spp.).	No potential to occur. Project does not align with species range.	N/A; No DCH within project area.
Taxidea taxus **American badger**	--/SSC/--	Found in dry, open grasslands, fields, and pastures. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Could occur. Suitable habitat is available throughout the project area vicinity.	N/A
Vulpes macrotis mutica San Joaquin kit fox	FE/ST/--	Grassland or grassy open stages with scattered shrubby vegetation; requires loose textured sandy soils for burrowing; requires suitable prey base of small rodents.	Unlikely to occur. Suitable habitat is not present.	N/A; No DCH within project area.

Notes: CNDDB = California Natural Diversity Database; CRPR = California Rare Plant Rank; DCH = designated critical habitat; DPS = distinct population segment; EFH = Essential Fish Habitat; ESU = evolutionary significant unit; N/A = not applicable

1 – Species that are **bolded** may occur (i.e., could occur, are likely to occur, or are known to occur) within the project area.

2 – Legal Status Definitions:

Federal

FC – Species identified as a candidate species for listing as threatened or endangered under the Federal Endangered Species Act.
FDL – Species delisted from the Federal Endangered Species Act.
FE – Species listed as Endangered under the Federal Endangered Species Act.
FT – Species listed as Threatened under the Federal Endangered Species Act.
SSC – Species listed as Species of Special Concern by the National Marine Fisheries Service.
– – No listing under the Federal Endangered Species Act.

State

SC – Species identified as a candidate species for listing as threatened or endangered under the California Endangered Species Act.
SDL – Species delisted from the California Endangered Species Act.
SE – Species listed as Endangered under the California Endangered Species Act.
SFP – Species listed as Fully Protected under the California Fish and Game Code.
SSC – Species listed as Species of Special Concern by the California Department of Fish and Wildlife.
ST – Species listed as Threatened under the California Endangered Species Act.
– – No listing under the California Endangered Species Act.

CRPR / California Rare Plant Rank

1B – Plant species considered Rare, Threatened, or Endangered in California and elsewhere.
2B – Plant species considered Rare or Endangered in California but more common elsewhere.
– – No California Rare Plant Rank listing or not applicable.
California Rare Plant Rank Extensions:
.1 – Seriously threatened in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat).
.2 – Moderately threatened in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).

3 – Potential for Occurrence Definitions:

No potential to occur: Suitable habitat is not present in the project area and/or the project area is not within the historical or current range of the species.
Unlikely to occur: Potential habitat present, but species unlikely to be present in the project area because of current status of the species, a very restricted distribution, and/or essential habitat components are not present.
Could occur: Suitable habitat is available in the project area; however, few or no other indicators show that the species may be present.
Likely to occur: Habitat conditions, behavior of the species, known occurrences in the project area, or other factors indicate a relatively high likelihood that the species would occur in the project area.
Known to occur: The species, or evidence of its presence, was observed in the project area during reconnaissance-level surveys or was reported by others.

4 – Spring-run Chinook salmon are currently being reintroduced to the San Joaquin River basin as part of the San Joaquin River Restoration Program. The reintroduced population is designated as a 10(j) non-essential experimental population under the Federal Endangered Species Act. As such, the species is not provided additional protections unless within National Parks or Refuges; thus, the experimental population is not provided additional protections within the proposed project area. The reintroduced non-essential experimental population has a higher likelihood of presence than the endangered Central Valley population as the proposed project occurs in the portion of the Delta more closely associated with the San Joaquin River drainage.

Table 3.4-1. Potentially Occurring Special-status Species

Species[1]	Fed/ State/ CRPR Status[2]	General Habitat	Potential to Occur in the Project Area[3]	Type of Suitable Habitat within the Project Area

Sources: CDFW 2018a, 2018b; CNPS 2018; USFWS 2018a, 2018b; data collected and compiled by GEI Consultants Inc. in 2018

Table 3.4-2. Prevalent Invasive Species in the Project Area

Scientific Name	Common Name	Cal-IPC Category[1]	CDFA Rating[2]
Terrestrial Species			
Centaurea solstitialis	yellow starthistle	high	C
Chondrilla juncea	rush skeletonweed	moderate	A
Cirsium vulgare	bull thistle	moderate	C
Cynodon dactylon	Bermuda grass	moderate	C
Erodium cicutarium	coastal heron's bill	limited	--
Festuca perennis	ryegrass	moderate	--
Hirschfeldia incana	short-pod mustard	moderate	--
Hordeum murinum ssp. *leporinum*	common foxtail	moderate	--
Lepidium latifolium	perennial pepperweed	high	B
Medicago polymorpha	burclover	limited	--
Rumex crispus	curly dock	limited	--
Salsola sp.	Russian thistle	limited	C
Silybum marianum	milk thistle	limited	--
Aquatic Species			
Arundo donax	giant reed	high	B
Conium maculatum	poison hemlock	moderate	--
Cotula coronopifolia	brass buttons	limited	--
Eichhornia crassipes	water hyacinth	high, red alert	C
Ludwigia peploides	water primrose	high	--
Raphanus sativus	wild radish	limited	--
Rubus armeniacus	Himalayan blackberry	high	--
Torilis arvensis	field hedge parsley	moderate	--

Notes:

[1] California Invasive Plant Council Inventory (Cal-IPC) Categories:

- High – Have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- Moderate – Have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Reproductive biology and other attributes are conducive to moderate to high rates of dispersal, but establishment generally depends on ecological disturbance. Ecological amplitude and distribution range from limited to widespread.
- Limited – Invasive but ecological impacts are minor on a Statewide level, or not enough information was available to justify higher rating. Reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are limited, but these species may be locally persistent and problematic.
- Red Alert – Plants with the potential to spread explosively; infestations currently small and localized.

[2] California Department of Food and Agriculture (CDFA) Rating:
A – A pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment.
B – A pest of known economic or environmental detriment, and if present in California, it is of limited distribution. B-rated pests are eligible to enter the State if the receiving county has agreed to accept them. If found in the State, they are subject to State-endorsed

Table 3.4-2. Prevalent Invasive Species in the Project Area

Scientific Name	Common Name	Cal-IPC Category[1]	CDFA Rating[2]

holding action and eradication only to provide for containment, as when found in a nursery. At the discretion of the individual county agricultural commissioner, they are subject to eradication, containment, suppression, control, or other holding action.
C – A pest of known economic or environmental detriment, and if present in California, it is usually widespread. C-rated organisms are eligible to enter the State as long as the commodities with which they are associated conform to pest cleanliness standards when found in nursery stock shipments. If found in the State, they are subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner. There is no State-enforced action other than providing for pest cleanliness.

Source: Cal-IPC 2018, CDFA 2010, USDA 2018

All work to be conducted at Site 2 on the southeast side of Bethel Island would occur on the landside of the levee within "Residential" land cover type. Because no special-status species occur within "Residential" land cover type in Site 2, implementation of this portion of the proposed project would not result in potential impacts to special-status fish and wildlife species. Affects associated with the proposed project on special-status species only pertain to work being conducted at Site 1 (including both the landside of the levee, as well as the waterside of the levee on the northwest side of Bethel Island in Taylor Slough) and the borrow site. Taylor Slough is the waterway located between Bethel and Jersey islands. Taylor Slough is tidally influenced and contains brackish water. The project site is upstream of the confluence of the Sacramento and San Joaquin Rivers.

Special-Status Plant Species

The proposed project has the potential to adversely affect several special-status plant species (see **Table 3.4-1**). Many of these species could occur in the tidal open waters along Site 1; some may also occur within the ditches located within Site 1 and the borrow site. Construction along the waterside of the levee in Site 1, as well as disturbance to the ditches within the borrow site, could result in the removal of plants and their habitats. Therefore, the proposed project could result in impacts to special-status plant species in upland and aquatic habitats if present within the construction footprint. While the sites would be restored to pre-project conditions, and a wetland bench with emergent vegetation would be created, Project-related activities could result in temporary, and potentially permanent, adverse effects through direct loss of individuals and habitat modifications to special-status plant species, if present. Therefore, this would be a potentially significant impact.

Special-Status Reptiles

Special-status reptiles with the potential to occur onsite include western pond turtle and giant garter snake. The tidal open waters (e.g., sloughs) as well as the inland ditches provide suitable aquatic habitat for both western pond turtle and giant garter snake. Giant garter snake has not been observed on Bethel Island; this special-status reptile has been seen on Jersey Island across from Taylor Slough. If present, both species would use adjacent upland habitat for nesting, basking, and cover. Upland habitat for these species, including nonnative annual grassland and fallow agriculture land within 200 feet of aquatic habitat, is present in Site 1 and the borrow site. Therefore, construction of project-related levee improvement activities in Site 1 and the borrow site could result in temporary substantial adverse effects, either directly or through habitat modifications, to these special-status reptile species. This would be a potentially significant impact.

Special-Status Fish

The proposed project has the potential to adversely affect several special-status fish species (see **Table 3.4-1**). All in-water impacts to Taylor Slough would be temporary in nature. Construction of the shallow

waterside bench with emergent vegetation is intended to improve the overall quality of the aquatic environment by providing fish-friendly levee enhancements in accordance with California Department of Water Resources guidelines. In-water activities have the potential to impact these species if individuals are present during construction. Most species are highly mobile and have the capability to leave an area when in-water activity is occurring and to return when activities cease. While in-water activities would not coincide with the spawning and/or migration of some species, or the in-water work would be conducted in shallow water near the shoreline where the species that are pelagic are unlikely to occur, or suitable spawning habitat is absent for most species, some species have a higher likelihood of occurring in the project area during in-water work. Nonetheless, all fish species in **Table 1** have the potential to occur in the project area, and in-water activities may occur during suitable spawning conditions for Sacramento perch. Implementation of project-related activities could result in temporary adverse effects through direct loss of individuals and habitat modifications to special-status fish species; therefore, project impacts would be potentially significant.

Burrowing Owl

Though no sign of burrowing owls was found during reconnaissance-level surveys, suitable habitat was present in the form of open, upland areas supporting ground squirrel populations. Project implementation could result in the loss of this species through destruction of active nesting sites and/or incidental burial of adults, young, and eggs, should they be present. Potential nest abandonment and mortality to burrowing owl individuals would be considered a potentially significant impact.

Swainson's Hawk

Suitable foraging habitat for Swainson's hawk is present along Site 1 and within the borrow site. According to the CDFW's Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (*Buteo swainsoni*) in the Central Valley of California (CDFG 1994), loss of foraging habitat within 1 mile of active Swainson's hawk nests calls for mitigation in the form of providing 1 acre of habitat management lands for every 1 acre of foraging habitat lost. Any permanent conversion of pasture or annual grassland on the project sites would result in a loss of foraging habitat. Project implementation could result in the permanent conversion of foraging habitat in the levee improvement footprint; therefore, project impacts would be potentially significant.

Special-Status Birds and Other Raptors and Migratory Birds

Habitats on and adjacent to the project sites may provide suitable nesting habitat for special-status birds and raptors (see **Table 3.4-1**). In addition, other raptors and migratory birds protected under the Migratory Bird Treaty Act and Section 3503.5 of the California Fish and Game Code may nest on the project sites. The removal of vegetation and/or trees during construction activities could result in noise, dust, human disturbance, and other direct/indirect impacts to nesting birds on or near the project site. Potential nest abandonment and mortality to individuals would be considered a potentially significant impact.

Special-Status Mammals

The proposed project has the potential to adversely affect several special-status mammal species (see **Table 3.4-1**). The American badger could occur in inland areas along Site 1 and at the borrow site. Construction could impact this species if present within the construction footprint through the removal of its burrows and its habitats. While the sites would be restored to pre-project conditions, if this species

is in the project area, it could be injured or killed as a result of project implementation. Therefore, this impact would be potentially significant.

Mitigation Measure BIO-1: Monitor Construction and Provide Worker Environmental Awareness Training.

A qualified biologist(s) shall monitor construction activities that could potentially cause significant impacts to sensitive biological resources. In addition, BIMID shall retain a qualified biologist to conduct mandatory contractor/worker awareness training for construction personnel. The awareness training would be provided to all construction personnel to brief them on the identified location of sensitive biological resources, including how to identify species (visual and auditory) most likely to be present, the need to avoid impacts to biological resources (e.g., plants, wildlife, and jurisdictional waters), and the penalties for not complying with biological mitigation requirements. All construction personnel will also receive training on relevant special-status species. If new construction personnel are added to the Project, the contractor shall ensure that they receive the mandatory training before starting work.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-1 would reduce these potentially significant impacts associated with special-status plant species, reptiles, fish, birds, and mammals to a less-than-significant level because BIMID would provide environmental awareness training to increase awareness about sensitive biological resources and special-status species in the vicinity of the proposed project area, and implement compliance monitoring during construction to avoid and minimize impacts on these resources.

Mitigation Measure BIO-2: Conduct Focused Surveys for Special-Status Plants and Provide Compensatory Mitigation.

Prior to any waterside levee work, and, as appropriate, inland in-water work, focused surveys shall be conducted to determine if special-status plants occur within the project footprint and/or temporary construction zone. Surveys shall be conducted in accordance with CDFW (2009) *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities*. These guidelines require rare plant surveys to be conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Surveys shall be scheduled to coincide with known blooming periods, and/or during periods of physiological development that are necessary to identify the plant species of concern.

If no state or federally listed of CNPS List 1 or CNPS List 2 plant species are found in or adjacent to (within 100 feet) proposed construction areas, no further mitigation is required. If any state- or federally-listed or CNPS List 1 or CNPS List 2 plant species are found in or adjacent to (within 100 feet) proposed impact areas during the surveys, these plant species shall be avoided to the greatest extent possible. Any special-status plant species that are identified adjacent to the Project site, but not proposed to be disturbed by the Project, shall be protected by barrier fencing to ensure that construction activities and material stockpiles do not impact any special-status plant species. These avoidance areas shall be identified on Project plans.

If Project-related impacts would result in the loss of greater than 10 percent of occupied habitat for a special-status plant species, compensatory mitigation shall be required for all impacts that exceed the 10 percent threshold. For example, if 18 percent of occupied habitat would be impacted, compensatory mitigation shall only be required for the 8 percent that exceeds the 10 percent threshold. Compensatory mitigation for permanent impacts to special-status plant species shall include the preservation of occupied habitat at a 1:1 ratio (i.e., 1 acre preserved for each acre impacted). Compensation for temporary impacts shall include the preservation of occupied habitat at a 0.5:1 ratio. Preservation areas may include undisturbed areas of the site that would be preserved and managed in perpetuity, off-site mitigation lands, or a combination of both. The preserved habitat shall be of equal or greater habitat quality to the areas impacted in terms of soil features, extent of disturbance, and vegetation structure, and contain extant populations of the same or greater size as the area impacted.

A report of special-status plants observed during focused surveys, as well as avoidance, minimization, and mitigation measures to be implemented, shall be prepared, and submitted to BIMID, CDFW, and USFWS (as appropriate) ~~no later than 30 days prior to implementing waterside levee construction and in-water work~~.

Timing: Before waterside levee construction and inland in-water work.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-2 would reduce the potentially significant impacts associated with special-status plant species to a less-than-significant level because BIMID would conduct focused surveys, identify areas to avoid during construction, and mitigate for unavoidable impacts.

Mitigation Measure BIO-3: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Avoidance and Minimization Measures.

A preconstruction survey for western pond turtle shall be conducted by a qualified biologist within 24 hours prior to the onset of construction activities. The survey area shall include a 100-foot buffer of the area to be affected. If a western pond turtle is found within the survey area, a qualified biologist, under consultation with the CDFW, shall move the individual 500 feet downstream to suitable habitat. If a turtle nest is found within the survey area, construction activities should not take place within 100 feet buffer of the nest until the egg have hatched and young have emerged and moved out of the Project area. The 100-foot buffer would be marked with stakes and flagging.

In the event a turtle is found during construction activities, construction activities shall stop within 100 feet of the turtle until the turtle leaves the immediate construction area on its own or a qualified biologist, under consultation with the CDFW, relocates the turtle to a suitable aquatic site 500 feet away and downstream from Project activities.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-3 would reduce the potentially significant impacts associated with western pond turtle, a special-status reptile species, to a less-than-significant level because BIMID would conduct preconstruction surveys and implement measures to avoid and minimize impacts to this species.

Mitigation Measure BIO-4: Conduct Surveys for Giant Garter Snake and Implement Avoidance and Minimization Measures.

A survey shall be conducted by a qualified biologist for the giant garter snake within the Project area 24 hours prior to the onset of levee improvements and any time activities are halted for more than two weeks thereafter.

During Project development, the work area shall be reduced to the smallest footprint feasible in sensitive habitat areas.

Work shall coincide with the giant garter snake's active season (May 1– October 1).

If work in the flowing portion of the affected water body is unavoidable, a qualified biologist shall survey the Project area for the giant garter snake every morning prior to construction activities that occur in the flowing portion of the water body.

Prior to initiation of construction activities within jurisdictional features, construction best management practices (BMP) shall be employed on-site to prevent degradation to on-site and off-site waters of the United States. Methods shall include the use of appropriate measures to intercept and capture sediment prior to entering jurisdictional features, as well as erosion control measures along the perimeter of all work areas to prevent the displacement of fill material. BMPs may include installing erosion and sedimentation controls (e.g., silt fences, staked straw bales/wattles, silt/sediment basins and traps, geofabric, trench plugs, terraces, water bars, and/or soil stabilizers), re-seeding and mulching to revegetate disturbed areas, specifying that staging areas for refueling and servicing equipment will be located away from sensitive habitats and waterways, and developing a spill prevention and response plan. All BMPs shall be in place prior to initiation of any construction activities and shall remain until construction activities are completed. All erosion control methods shall be maintained until all on-site soils are stabilized.

All exposed/disturbed areas and access points left barren of vegetation as a result of construction activities shall be restored using locally native grass seeds, locally native grass plugs, and/or a mix of quick-growing sterile non- native grass with locally native grass seeds. Seeded areas shall be covered with broadcast straw.

Tightly woven erosion control matting (mesh size less than 0.25 inch) or similar material shall be used for erosion control and other purposes at the Project site to ensure that giant garter snakes do not become trapped or entangled by the erosion control material. The edge of the material shall be buried in the ground to prevent giant garter snakes from crawling underneath the material. The use of plastic, monofilament, jute, or similar erosion control netting with mesh sizes larger than 0.25 inch that could entangle snakes at the Project site shall be prohibited.

During all phases of construction, snake exclusionary fencing shall be installed near the temporary construction zone boundary. The exclusionary fencing shall be maintained by the

construction contractor during all phases of construction. Any breaches in the fencing shall be fixed within a 24-hour period.

If a giant garter snake is encountered in the Project work area, all construction activities shall cease until appropriate corrective measures have been completed and the snake moves out of the construction area on its own. Any giant garter snake observed shall be immediately reported to the USFWS and the CDFW.

Vehicles driven on or near the levees in the Project area shall maintain a 15 mile per hour speed limit, and drivers shall be informed to watch for snakes and avoid running them over.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-4 would reduce the potentially significant impacts associated with giant garter snake, a special-status reptile species, to a less-than-significant level because BIMID would conduct preconstruction surveys and implement measures to avoid and minimize impacts to this species.

Mitigation Measure BIO-5: Adhere to In-water Work Windows.

In-water work activities will take place between August 1 and November 30, designated by CDFW and USFWS as a period when, special-status fish species, including Delta smelt, Central Valley steelhead, winter-run Chinook salmon and spring-run Chinook salmon, are least vulnerable to impacts from in-channel activities (USFWS 2004).

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-5 would reduce the potentially significant impacts associated with special-status fish species to a less-than-significant level because BIMID would conduct in-water work during appropriate work window to avoid impacts to these species.

Mitigation Measure BIO-6: Conduct Pre-Construction Surveys for Burrowing Owl and Implement Avoidance and Minimization Measures.

For any clearing and construction activities that occur during the nesting period for burrowing owls (February 1–August 31), BIMID shall retain a qualified biologist to conduct preconstruction surveys in accordance with the CDFW (2012) Staff Report on Burrowing Owl Mitigation. Surveys shall be conducted within 14 days prior to ground-breaking activities and shall be repeated if Project activities are suspended or delayed for more than 14 days during nesting season.

If no burrowing owls are detected, no further mitigation is required. If active burrowing owl nest sites are detected, BIMID shall implement the avoidance, minimization, and mitigation methodologies outlined in the CDFW's Staff Report on Burrowing Owl Mitigation prior to initiating Project-related activities that may impact burrowing owls.

Timing: Prior to ground-breaking activities.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-6 would reduce the potentially significant impacts associated with burrowing owl, a special-status bird species, to a less-than-significant level because BIMID would conduct preconstruction surveys and implement measures to avoid and minimize impacts to this species.

Mitigation Measure BIO-7: Compensate for Loss of Swainson's Hawk Foraging Habitat.

Prior to any construction activities, BIMID shall obtain Swainson's hawk foraging habitat mitigation at a ratio of 1 acre for each 1 acre of suitable foraging habitat converted. "Suitable foraging habitat" consists of row crops, forage crops, pasture, grasslands, or fallow fields that would be affected by construction activities. BIMID shall mitigate for loss of Swainson's hawk foraging habitat through (1) payment of an in-lieu fee for off-site preservation of foraging habitat to a resource agency or a third-party organization acceptable to a resource agency, or (2) acquisition of an irrevocable instrument (e.g., deed restriction or easement) for preservation of foraging habitat on a property that provides habitat of equal or greater quality.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-7 would reduce the potentially significant impacts associated with the foraging habitat of Swainson's hawk, a special-status bird species, to a less-than-significant level because BIMID would mitigate for the loss of this habitat.

Mitigation Measure BIO-8: Conduct Preconstruction Surveys for Active Raptor and Migratory Bird Nests and Implement Avoidance and Minimization Measures.

For any clearing and/or construction activities that occur during the nesting season (February 15–August 15), surveys to identify active raptor and migratory bird nests, including ground-nesting birds, shall be conducted by a qualified biologist within 14 days of construction initiation.

If active migratory bird nest sites are identified within 200 feet of Project activities, BIMID shall impose an exclusionary buffer for all active nest sites prior to commencement of any Project construction activities to avoid construction- or access-related disturbances to migratory bird nesting activities. An exclusionary buffer constitutes an area where Project-related activities (i.e., vegetation removal, earth moving, construction, Project staging) would not occur and would be imposed within 100 feet of any active nest sites until the nest is deemed inactive by a qualified biologist. Activities permitted within and the size (i.e., 100 feet) of the exclusionary buffer may be adjusted through consultation with the CDFW.

If active raptor nests are identified within 1,320 feet of Project activities, a 1,320-foot initial temporary nest disturbance buffer shall be established. If project-related activities within the temporary raptor nest disturbance buffer are determined to be necessary during the nesting season, an on-site biologist/monitor experienced with raptor behavior shall be retained by the BIMID to monitor the nest, and BIMID shall consult with the CDFW to determine the best

course of action necessary to avoid nest abandonment or take of individuals. Work may only be allowed to proceed within the temporary nest disturbance buffer if raptors are not exhibiting agitated behavior such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, and only with the agreement of the CDFW. Based on the behavior observed, the buffer may be reduced if the birds are tolerant of construction activities. The designated on-site biologist/monitor shall be on-site daily while construction-related activities are taking place within the above quarter-mile buffer and shall have the authority to stop work if raptors are exhibiting agitated behavior.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-8 would reduce the potentially significant impacts associated with special-status bird species to a less-than-significant level because BIMID would conduct preconstruction surveys and implement measures to avoid and minimize impacts to these species.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less-than-Significant with Mitigation Incorporated. Sensitive natural communities include those that are of special concern to resource agencies, such as the CDFW or USFWS, or are afforded specific consideration through CEQA and Section 1602 of the California Fish and Game Code. Sensitive habitats include (a) areas of special concern to resource agencies; (b) areas protected under CEQA; (c) areas designated as sensitive natural communities by the CDFW; (d) areas outlined in Section 1600 of the California Fish and Game Code; and (e) areas protected under local regulations and policies. The following habitat types are considered sensitive natural communities: willow scrub, coastal and valley freshwater marsh – which may occur along the margins of the tidal open waters and ditches, and riverine.

The proposed Project is anticipated to result in temporary impacts to willow scrub (Site 1 and borrow site), ditch features (Site 1 and borrow site), as well as tidal open waters (Site 1). Tidal open waters could be impacted temporarily during construction of the waterside bench within Site 1. This would be a potentially significant impact; however, enhancement of waterside habitat through creation of a tidal bench with emergent vegetation, is intended to improve the overall quality of the aquatic environment, and is anticipated to partially offset this potentially significant impact. Nevertheless, the remaining temporary impact would still be considered potentially significant.

No critical habitat for federally listed terrestrial plant and wildlife species has been designated within the project area. The project area is designated as critical habitat for steelhead and green sturgeon by NMFS, and Delta smelt by USFWS. The project area is designated as Essential Fish Habitat for Pacific salmon and Pacific Coast groundfish under the Magnuson-Stevens Fishery Conservation and Management Act. Project impacts to critical habitat would be temporary in nature and would not adversely modify physical and biological characteristics; rather construction of the shallow waterside bench with emergent vegetation is intended to improve the overall quality of the aquatic environment by providing fish-friendly levee enhancements in accordance with California Department of Water Resources guidelines. Therefore, this impact is considered less than significant.

As shown in Table 3.4-2, aquatic and terrestrial invasive plant species are known to occur in the project area and, thus, comprise the environmental baseline. Aquatic invasive plant species are prevalent in patches throughout Piper Slough, Taylor Slough, and other adjoining sloughs, and these invasives have been documented along levee slopes, both with and without rock slope protection as well as with and without associated tule stands. Invasive aquatic plant species – including aquatic invasive animals, such as quagga mussel – would only have the potential for introduction if the site were to be constructed by waterside barge; however, all rock placement and planting efforts would be conducted from the land side and no water vessels would be used to transport supplies or facilitate rock placement. The project is not expected to change baseline conditions. Therefore, this impact is considered less than significant.

Mitigation Measure BIO-9: Compensate for Loss of Riparian Habitats and Sensitive Habitat Communities.

For every acre of riparian habitat and sensitive habitat communities permanently affected by the proposed Project, BIMID shall replace the affected acreage at a minimum 2:1 ratio, or another approved ratio as determined by CDFW. Mitigation would be achieved through on-site creation or enhancement. Mitigation as required in regulatory permits issued through the CDFW may be applied to satisfy this measure.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-9 would reduce the potentially significant impacts associated with effects to riparian habitats and federally protected waters to a less-than-significant level because BIMID would adhere to permit conditions and, if appropriate, mitigate the impacts.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less-than-Significant with Mitigation Incorporated. Federally protected wetlands and waters, under the jurisdiction of the U.S. Army Corps of Engineers (USACE), are afforded specific consideration through Section 404 of the Federal Clean Water Act and the Porter-Cologne Act. The tidal open waters, riverine habitats, and possibly the ditches, are considered USACE jurisdictional.

GEI biologists conducted a wetland delineation of the project site in May 2018 (see **Figures 3a – 3k**). An approved jurisdictional determination from the USACE is pending.

Tidal open waters could be impacted temporarily during construction of the waterside bench within Site 1. This would be a potentially significant impact; however, enhancement of waterside habitat through creation of a tidal bench with emergent vegetation, is intended to improve the overall quality of the aquatic environment, and is anticipated to partially offset this potentially significant impact. Nevertheless, the remaining temporary impact would still be considered potentially significant.

Mitigation Measure BIO-10: Compensate for Loss of Federally Protected Wetlands and Waters.

For every acre of federally protected waters permanently affected by the proposed Project, BIMID shall replace the affected acreage at a minimum 2:1 ratio, or another approved ratio as determined by the USACE. Mitigation would be achieved through on-site creation or enhancement. Mitigation as required in regulatory permits issued through the USACE or the Central Valley Regional Water Quality Control Board may be applied to satisfy this measure.

Timing: Before construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measure BIO-910 would reduce the potentially significant impacts associated with effects to federally protected waters to a less-than-significant level because BIMID would adhere to permit conditions and, if appropriate, mitigate the impacts.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less-than-Significant Impact. The proposed work period of August 1- November 30 is outside of migration and spawning times for the Southern DPS of North American green sturgeon, Delta smelt, Central Valley Steelhead DPS, spring-run Chinook salmon ESU, Sacramento River winter-run Chinook salmon ESU, Sacramento splittail, and longfin smelt. The proposed project does not substantially interfere with the movement of any resident or migratory fish species. At no time does the project conduct activities that would inhibit the movement of native fishes to and from the site. In-water work is confined to the margins of the channel, which would allow for unimpeded and volitional movement of aquatic species at all times during the construction window. Therefore, this Project impact is considered less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The proposed project would not conflict with any county ordinances protecting fishery resources in Contra Costa County. Thus, the proposed project would have no impact.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The *East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan* includes a small portion of Bethel Island, but does not include the project area. The goal of this plan is to provide an opportunity to preserve diverse ecosystems, unique species, and scenic landscapes while clearing regulatory obstacles to continued economic development and growth. The project site falls within the study area of the Bay-Delta Conservation Plan (BDCP), which is designed to promote recovery of species of special concern and their habitats, and protect and restore water supplies. The proposed project is designed to improve levee stability along with creating habitat for special status

aquatic species. These activities are consistent with the habitat conservation plan and the BDCP goals and objectives. Thus, the proposed project would have no impact.

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3.5 Cultural Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
V. CULTURAL RESOURCES – Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐	☐
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐	☐

3.5.1 Discussion

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

No Impact. Inventory and evaluation efforts included a records search at the Northwestern Information Center, archival research, Native American consultation conducted by GEI's cultural resources specialists, field surveys of the project areas on May 22, 2018, by GEI's cultural resources specialists, an earlier survey conducted by Michael Baker, Inc. of the proposed borrow area, and limited presence/absence archaeological trenching of the borrow area by GEI cultural resource specialists.

This investigation identified one historic-era (45 years old or older) built environment resource in the project area, the Bethel Island Levee (P-07-003098). This levee was previously inventoried and evaluated in July 2001 by URS Corporation (today known as AECOM) for the *Bethel Island Bridge Replacement Project*. That evaluation determined that the levee was not eligible for the National Register of Historic Places (NRHP) because of a loss of integrity and its inability to evoke the early-20th century setting, feeling, and association when the Delta levees were built to create fertile farmland (Kostura 2001:5–6). The State Historic Preservation Officer concurred with the determination in October 2002 and assigned a California Historical Resource Status Code of 6Y (Determined Ineligible for the NRHP by Consensus Through Section 106 Process – Not Evaluated for the California Register of Historical Resources (CRHR) or Local Listing) (OHP 2012:7). As part of the current project, GEI agrees with that determination.

GEI also evaluated the levee using the criteria for the CRHR. While the levee maintains integrity of location and design, it has lost integrity of setting, feeling, and association which are important aspects of integrity for such a structure in the Delta. Therefore, it does not have sufficient integrity and is not eligible for the CRHR and is not considered a historical resource for the purposes of CEQA. Because

this historic-era built environment resource does not appear to meet the criteria for the NRHP or the CRHR because of a loss of integrity, there would be no impact to a historical resource.

Title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in tidal and submerged lands is vested in and under the jurisdiction of the State Lands Commission (PRC Section 6313). A search of the Northwest Information Center's digital database of cultural resources was conducted on May 15, 2018 and no shipwrecks were identified in the construction footprint of the proposed project.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less-than-Significant Impact with Mitigation Incorporated. No previously reported archaeological resources were identified during the records search conducted at the NWIC and no cultural resources were identified during the pedestrian surveys or archaeological trenching. Project areas adjacent to the levees in Sites 1 and 2 are either landscaped or covered in imported material. The levee roads are either graveled or paved. Vegetation was thick in open project areas, levee slopes, and landscaped areas but small exposed areas clear of vegetation and animal burrows were examined carefully. Examination of sample soils in archaeological trenches did not identify any archaeological resources in the proposed Borrow Site. There is, however, potential for undiscovered buried archaeological resources to be present in the project area and possibly damaged during project-related earth-moving activities; therefore, the project would have a potentially significant impact on archaeological resources.

Mitigation Measure CUL-1: Avoid Potential Effects on Undiscovered Unique Archaeological Resources.

To avoid potential effects on unique archaeological resources during project-related ground-disturbing activities BIMID and its construction contractor(s) will implement the following measures:

- Before the start of construction activities, construction personnel involved with earthmoving activities (including the site superintendent) shall be informed of the possibility of encountering archaeological resources, the appearance, and types of archaeological resources likely to be seen during construction activities, and proper notification procedures should archaeological resources be encountered. This worker training shall be prepared and presented by an experienced field archaeologist.

- If cultural resources are discovered during project-related ground-disturbing activities, then all construction activities that may damage the discovery will stop within 100 feet of the discovery and BIMID will be immediately notified. BIMID will hire a qualified archaeologist to determine if the discovery is a unique archaeological resource per CEQA. If necessary, the qualified archaeologist will develop a testing plan to determine if the discovery meets significance criteria for a unique archaeological resource; any testing plan will not be implemented until review by BIMID.

- If the discovery is determined not to be a unique archaeological resource, then construction in the area of the discovery may continue.

- If the discovery is determined to meet significance criteria, then the qualified archaeologist will develop and implement a treatment plan in consultation with BIMID, and the California State Lands Commission if the discovery is located on State sovereign lands, to mitigate any significant impacts to the discovery; preservation in place is the preferred mitigation measure. Work in the area of the discovery will not continue until treatment is completed.

  Timing: During construction.

  Responsibility: Bethel Island Municipal Improvement District.

Implementing Mitigation Measure CUL-1 would reduce the potentially significant impact on any previously undiscovered unique archaeological resources to a less-than-significant level because construction workers would be alerted to the possibility of encountering archaeological resources and, in the event that resources were discovered, the resources would be avoided and preserved in place, or assessed and treated in accordance with appropriate professional standards.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less-than-Significant with Mitigation Incorporated. The Borrow Site has been heavily disturbed through past agricultural activities and extraction of fill materials. Additionally, Sites 1 and 2 are already developed as part of the levee system and with residences on the landside of the levee at Site 2, and have been subject to past excavation, grading, and construction activities. It is unlikely that any paleontological resources are present; however, soils in the project area vicinity have been mapped as Holocene Sacramento-San Joaquin Delta mud and peat (northwest island margin) and latest Pleistocene to Holocene, fine grained, very well sorted, eolian dune sand (remainder of island) NRCS (2018). Holocene Sacramento-San Joaquin Delta mud and peat formations have a low paleontological sensitivity rating but late Pleistocene to Holocene, fine grained, very well sorted, eolian dune sand areas have a higher sensitivity rating and thus, the potential to contain fossils (Society of Vertebrate Paleontology 2010). Therefore, there is potential for unknown paleontological resources to be discovered during ground-disturbing activities such as those proposed during project construction and O&M. The proposed project would have a potentially significant impact.

Mitigation Measure CUL-2: Avoid Potential Effects on Undiscovered Unique Paleontological Resources.

To minimize the potential for destruction of or damage to potentially unique, scientifically important paleontological resources during earthmoving activities, BIMID will implement the measures described below.

- Before the start of construction activities, construction personnel involved with earthmoving activities (including the site superintendent) shall be informed of the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction activities, and proper notification procedures should fossils be encountered. This worker training may either be prepared and presented by an experienced field archaeologist at the same time as construction worker education on cultural resources or prepared and presented separately by a qualified paleontologist.

- If paleontological resources are discovered during earthmoving activities, the construction crew shall notify BIMID and shall immediately cease work within 50 feet of the discovery. BIMID shall retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines for impact mitigation (Society of Vertebrate Paleontology 2010). The recovery plan may include, but is not limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by BIMID to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District.

Implementing Mitigation Measure CUL-2 would reduce the potentially significant impact from the possible destruction of or damage to unique paleontological resources to a less-than-significant level because construction workers would be alerted to the possibility of encountering paleontological resources and, in the event that resources were discovered, fossil specimens would be recovered and recorded and would undergo appropriate curation.

d) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less-than-Significant with Mitigation Incorporated. No known human remains have been identified in the project area. There is the potential; however, that undiscovered human remains are present within the project area and may be disturbed by project-related, ground-disturbing activities. Therefore, the impact would be potentially significant.

Mitigation Measure CUL-3: Avoid Potential Effects on Undiscovered Burials.

To avoid potential disturbance to buried human remains during earthmoving activities, BIMID will implement the measures described below.

- In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, all ground-disturbing work in the area of the burial and a 100-foot radius shall halt and the Contra Costa County Coroner shall be notified immediately. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The NAHC shall designate a Most Likely Descendant for the human remains. After the coroner's findings have been made, an archaeologist meeting the Secretary of the Interior's Professional Standards for Archaeologists and the NAHC-designated Most Likely Descendant (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities of the Contra Costa Coroner for acting upon notification of a discovery of Native American human remains are identified in PRC Section 5097.9.

- Native American human remains, associated grave goods, and items associated with Native American human remains that are subject to California PRC Section 5097.98 will not be subjected to scientific analysis, handling, testing, or field or laboratory analysis without written consent from the MLD. If human remains are present, treatment shall conform to the requirements of State law under California Health and Safety Code Section 7050.5 and PRC Section 5097.87, unless the discovery occurs on Federal land. BIMID agrees to comply with other related State laws, including PRC Section 5097.9.

  Timing: During construction.

  Responsibility: Bethel Island Municipal Improvement District.

Implementing Mitigation Measure CUL-3 would reduce the potentially significant impact from the possible disturbance to human remains to a less-than-significant level because in the event of discovery, any human remains would be treated in compliance with the California Health and Safety Code and the PRC.

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3.6 Geology and Soils

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
VI. GEOLOGY AND SOILS – Would the project:					
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	☐	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated),), creating substantial risks to life or property?	☐	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒	☐

3.6.1 Discussion

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)

No Impact. Surface fault rupture is most likely to occur on active faults (i.e., faults showing evidence of displacement within the last 11,700 years). Damage from surface fault rupture is generally limited to a linear zone a few yards wide. No Alquist-Priolo earthquake fault zones are mapped on or near Bethel Island and no active faults are near the proposed project. Thus, ground rupture due to fault activity is unlikely. The Midland Fault is believed to run through the Delta in the vicinity of Bethel Island, but the extent of the fault is not well understood and no activity related to this fault has been documented (CGS 2018a). Construction of the levee and drainage improvements and continuation of existing land uses on Bethel Island would not create a new risk from fault activity. There would be no impact.

ii) Strong seismic ground shaking?

Beneficial Impact. The Project site is located near the San Francisco Bay Area, which is one of the most seismically active regions in the United States and has a high ground shaking hazard potential (CGS 2018b and 2018c). Known active faults that pose a hazard for strong seismic ground-shaking are located along the margin between the western Central Valley and the eastern Coast Ranges, and within the Coast Range itself. The closest active faults are located approximately 25 miles west of the project site, near Concord and Livermore, CA (DOC 2018a); however, the Project does not involve the development of any habitable structures. Thus, exposure of people or structures to loss, injury, or death due to strong seismic ground shaking at the project site is low. Furthermore, the planned levee and drainage improvements are intended to correct identified deficiencies, including steep waterside slopes, active scour, through-seepage, and potentially liquefiable material within the levee and foundation at Site 1, and through-seepage, under-seepage, and surface drainage issues at Site 2. The Project would improve public safety related to seismic ground shaking by increasing the static and seismic stability of the levees. Therefore, this impact would be beneficial.

iii) Seismic-related ground failure, including liquefaction?

Beneficial Impact. Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming similar to quicksand. Factors determining the liquefaction potential are soil type, the level and duration of seismic ground motions, and the depth to groundwater. Liquefaction is most likely to occur in low-lying areas where the substrate consists of poorly consolidated to unconsolidated water-saturated sediments or similar deposits of artificial fill. Based on soil type, Bethel Island is mapped as a liquefaction zone by the California Geological Survey (CGS); however, there is no documentation of historical surface liquefaction or paleoseismic liquefaction occurrences in the Jersey Island or Bouldin Island Quadrangles (CGS 2018b, 2018c, 2018d, and 2018e). Additionally, the planned levee and drainage improvements are intended to correct identified deficiencies, including steep waterside slopes, active scour, through-seepage, and potentially liquefiable material within the levee and foundation at Site 1, and through-seepage, under-seepage, and surface drainage issues at Site 2, that threaten levee integrity. The Project would improve public safety related to liquefaction by increasing the static and seismic stability of the levees. Therefore, this impact would be beneficial.

iv) Landslides?

No Impact. Because the project site is in an area with flat topography and the CGS has not mapped the area as a landslide hazard zone (CGS 2018b and 2018c), there would be no impact related to landslides.

b) Result in substantial soil erosion or the loss of topsoil?

Less-Than-Significant Impact with Mitigation Incorporated. The proposed construction activities (i.e., excavating, grading, hauling of fill materials) would expose site soils to wind and water erosion during construction. Construction would be conducted during the dry season to reduce impacts from site runoff. Final design and construction plans would demonstrate compliance with all applicable water quality standards and local Contra Costa County erosion and sediment control standards, would identify responsible parties, and would include detailed construction timelines and a BMP monitoring and maintenance schedule. Additionally, prior to the start of earth-moving activities, BIMID would obtain coverage under the State Water Resources Control Board's NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ as amended by Order 2012-006-DWQ), including preparation and submittal of a Notice of Intent (NOI) to discharge with the Central Valley Regional Water Quality Control Board (CVRWQCB). Additionally, to cover dewatering anticipated during excavation activities at the borrow site, BIMID will obtain coverage under an NPDES permit for dewatering and other low threat discharges (Order R5-2013-0074), including preparation and submittal of a NOI to discharge with the CVRWQCB. Construction activities would take place primarily during the typical construction season, April 1 to November 15, which corresponds to the dry season during which rain, and resulting stormwater runoff and ponding, are not expected in this region; however, due to the size and nature of landside project construction (approximately 2.5 miles of levee raising and grading at Site 1, riprap installation of an unknown quantity along Site 1, 1 acre of EAV habitat creation along Site 1, 1.2 acres of landside habitat creation at Site 1, and 2 miles of toe drain improvements along Site 2, a potentially significant impact could occur.

Mitigation Measure GEO-1: Prepare and Implement a Storm Water Pollution Prevention Plan or a Storm Water Management Plan and Associated Best Management Practices.

- BIMID shall prepare and implement the appropriate Stormwater Pollution Prevention Plan (SWPPP) or Stormwater Management Plan (SWMP) to prevent and control pollution and to minimize and control runoff and erosion. The SWPPP or SWMP shall identify the activities that may cause pollutant discharge (including sediment) during storms or strong wind events and the BMPs that will be employed to control pollutant discharge. Construction techniques that will be identified and implemented to reduce the potential for runoff may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. In addition, the SWPPP or SWMP shall include an erosion control plan and BMPs that specify the erosion and sedimentation control measures to be implemented, which may include silt fences, staked straw bales/wattles, silt/sediment basins and traps, geofabric, trench plugs, terraces, water bars, soil stabilizers and re-seeding and mulching to revegetate disturbed areas. The SWPPP shall also include dust control practices to prevent wind erosion, sediment tracking, and dust generation by construction equipment. No construction-related disturbance of surfaces shall occur between November 15 and April 1.

- The SWPPP or SWMP shall also include a spill prevention, control, and countermeasure plan, and applicable hazardous materials business plans, and shall identify the types of materials used for equipment operation (including fuel and hydraulic fluids), and measures to prevent and materials available to clean up hazardous material and waste spills. The SWPPP or SWMP shall also identify emergency procedures for responding to spills.

- The BMPs presented in either document shall be clearly identified and maintained in good working condition throughout the construction process. BMPs shall be applied to meet the maximum extent practicable and best conventional technology/best available technology

requirements and to address compliance with water quality standards. The construction contractor shall retain a copy of the approved SWPPP or SWMP on the construction site and modify it as necessary to suit specific site conditions through amendments approved by the Central Valley RWQCB, if necessary.

- Construction and postconstruction monitoring shall be conducted to ensure that all erosion-control efforts are performing as designed.

  Timing: Before and during construction.

  Responsibility: Bethel Island Municipal Improvement District.

Implementing Mitigation Measure GEO-1 would reduce the potentially significant impact from the exposure of site soils to wind and water erosion during construction to a less-than-significant level because BIMID would prepare and implement a SWPPP or SWMP to prevent and control substantial soil erosion or loss of topsoil.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Beneficial Impact. The Project would not involve the development of any habitable structures that could be at risk of damage due to unstable soil. Additionally, specific construction techniques have been developed for levees in the Delta that work to avoid possible structural or stability issues during construction on the peat soils. Specifically, for Site 1, a limited amount of fill would be placed on the landside during the first year of construction to avoid possible structural failure, subsidence, and cracking, which could lead to stability issues, and the remainder of landside levee material and waterside erosion protection material would be added in the second construction year. The levee improvements proposed as part of the Project are intended to correct identified deficiencies related to unstable soils and subsidence. Therefore, this impact would be beneficial.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?

Beneficial Impact. Soils in the project area have been mapped as Holocene Sacramento-San Joaquin Delta mud and peat (northwest island margin) and latest Pleistocene to Holocene, fine grained, very well sorted, eolian dune sand (remainder of island). NRCS (2018) has rated the project site soils as having a low shrink-swell potential, meaning they have a low clay content. All levee and drainage construction improvements would be designed based on the results of detailed geotechnical engineering studies currently underway by BIMID and would be required to comply with standard engineering practices for levee design. The levee and drainage improvements are intended to correct identified deficiencies, including those associated with any expansive soils encountered before or during construction. Therefore, this impact would be beneficial.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The proposed project would not include the development of any structures and would not involve the installation of septic tanks or alternative wastewater disposal systems. There would be no impact.

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3.7 Greenhouse Gas Emissions

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
VII.	**GREENHOUSE GAS EMISSIONS– Would the project:**					
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐	☐

3.7.1 Discussion

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment??

Less-than-Signficant Impact. Greenhouse gas (GHG) emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future Projects contributes substantially to the phenomenon of global climate change and its associated environmental impacts and as such is addressed only as a cumulative impact.

GHG emissions associated with the Project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust.

Construction. The BAAQMD does not have an adopted threshold of significance for construction-related greenhouse gas emissions. However, the BAAQMD recommends quantification and disclosure of GHG emissions that would occur during construction, in addition to making a determination on the significance of these construction-generated GHG emissions impacts in relation to meeting Assembly Bill (AB) 32 greenhouse gas reduction goals. AB 32 is the California Global Warming Solutions Act, enacted by the State Legislature in September 2006. AB 32 requires the reduction of statewide GHG emissions to 1990 levels by 2020.

Construction of the proposed Project would result in a maximum of 762 metric tons of construction-generated carbon dioxide equivalents (CO_2e) over the course of two years (**Table 3.7-1**).

In addition to quantifying construction-generated GHG emissions, the BAAQMD recommends that all construction Projects incorporate best management practices to minimize GHG emissions. The BAAQMD-recommended best management practices include using alternative-fueled (i.e., biodiesel, electric) construction vehicles and equipment to the maximum extent possible, using local construction materials (within 100 miles) to the maximum extent possible, and recycling construction waste and demolition materials to the maximum extent possible. Mitigation measure **AQ-1**, included in

subsection 3.3, Air Quality, requires the use of the most efficient heavy-duty diesel-powered equipment to implement the Project. This measure would minimize construction-related emissions, consistent with AB 32 reduction goals. Because the Project is a levee improvement Project, construction would not employ the use of typical construction materials. It is noted, however, that the material used to improve the levee would be excavated within 4 miles of the levee itself. Lastly, the 2016 Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code) requires the diversion of 50 percent of construction waste from landfills. For these reasons, Project construction would comply with BAAQMD-recommended best management practices and would therefore result in a less-than-significant impact.

Table 3.7-1. Unmitigated Project Construction Emissions Metric Tons per Year

Construction Phase	CO_2e
Year 1 Total	467
Year 2 Total	762
Maximum Emissions – Year 1 and Year 2	**762**
BAAQMD Significance Criteria	**None**
Significant?	No

Source: Emissions modeled by GEI Consultants Inc. using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 computer program. Refer to **Appendix C** for model data outputs.

1. Accounts for the disturbance of 24 acres of land at the Borrow Site for the excavation of 350,000 cubic yards of material for levee improvements, only 250,000 of the material hauled 4 miles to Northwest Levee over the project duration of two years. Also accounts for material processing/peat separation equipment and activity on the Northwest Levee mitigation site.
2. Accounts for further development of 4,500-foot length of Northwest Levee.
3. Accounts for hauling of 1,000 cubic yards of aggregate, sand, filter fabric, pipe, and other materials from a distance of 13 miles from Antioch to the Stone Road Levee mitigation site.
4. Accounts for further development of 1,100-foot length of Stone Road Levee.
5. Accounts for construction of 10 monitoring wells along the 1,100 linear feet of levee improvements at the Stone Road Levee site.

Operation. The BAAQMD threshold of significance applicable to the Project is whether the Project would exceed 1,100 metric tons per year of CO_2e; however, the proposed Project would not include new permanent sources of GHG emissions; therefore, it would not generate quantifiable criteria emissions from Project operations. The Project does not propose any buildings or other permanent source of stationary source emissions. In addition, as determined in subsection 16, Transportation/Traffic, the Project would not result in a permanent increase in traffic. Traffic conditions after the Project is completed would be the same as the existing traffic conditions. Therefore, there would be no new mobile sources of emissions. Because the proposed Project would not result in the long-term generation of GHG emissions and would not exceed BAAQMD greenhouse gas thresholds of significance, the operations-related impact would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less-than-Significant Impact. The proposed Project is subject to compliance with AB 32, which is a legal mandate requiring that statewide GHG emissions be reduced to 1990 levels by 2020. In adopting AB 32, the State Legislature determined the necessary GHG reductions for California to make to sufficiently offset its contribution to the cumulative climate change problem and reach 1990 levels. AB 32 is the only legally mandated requirement for the reduction of GHG emissions. As such, compliance

with AB 32 is the basis on which a lead agency can determine the significance of a Project's GHG impacts. As identified above, the proposed Project would not surpass the BAAQMD's GHG significance threshold of 1,100 metric tons per year of CO_2e, which was developed with the purpose of complying with the requirements of AB 32. BAAQMD thresholds were developed based on substantial evidence that such thresholds represent quantitative levels of GHG emissions, compliance with which means that the environmental impact of the GHG emissions would normally not be cumulatively considerable under CEQA. Compliance with such thresholds would be part of the solution to the cumulative GHG emissions problem, rather than hinder the State's ability to meet its goals of reduced statewide GHG emissions under AB 32. Therefore, the proposed Project would not conflict with AB 32, and this impact would be less than significant.

3.8 Hazards and Hazardous Materials

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
VIII.	**HAZARDS AND HAZARDOUS MATERIALS– Would the project:**					
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	☐
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	☐
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐	☐
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒	☐

3.8.1 Discussion

a, b) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or create a significant hazard to the public or the environment through reasonably foreseeable upset and

accident conditions involving the release of hazardous materials into the environment??

Less-Than-Significant Impact. As described previously, the proposed project consists of short-term construction activities and would not result in any long-term activities that would include the use, transport, or disposal of hazardous materials. Project-related activities would entail the storage and use of small amounts of hazardous substances necessary for the operation of construction equipment, such as fuels, lubricants, and oils. The transport and use of hazardous materials is strictly regulated by local, state, and federal agencies to minimize adverse hazards from accidental release. The EPA, the California Highway Patrol (CHP), Caltrans, and the California Department of Toxic Substances Control. (DTSC) implement and enforce state and federal laws regarding hazardous materials transportation. Contractors would be required to use, store, and dispose of any hazardous materials in accordance with all applicable regulations. In addition, the Contra Costa County Hazardous Materials Division operates an incident response program to ensure public safety in the event of an accidental release. Compliance with existing regulations and programs would minimize potential risks to the public and the environment associated with the use, storage, and transport of hazardous materials associated with the proposed project. Therefore, this impact would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. No existing or proposed schools are located within one-quarter mile of the project site. The closest school is Iron House Elementary School, over two miles away in Oakley, CA. There would be no impact.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. According to the State Water Resources Control Board's (2018) GeoTracker database and the California Department of Toxic Substances Control's (2018) EnviroStor database, there are no known hazardous materials release sites on or near the project alignment for Sites 1 and 2, or the Borrow Site. There would be no impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no airports or airstrips on or within two miles of Bethel Island and the area is not within an airport land use plan. The closest airstrip is Delta Air Park in Oakley, CA. There would be no impact.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no airports or airstrips on or within two miles of Bethel Island. The closest airstrip is Delta Air Park in Oakley, CA. There would be no impact.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less-than-Significant with Mitigation Incorporated. Neither Contra Costa County's Emergency Operations Plan (2011a) nor its Hazard Mitigation Plan Update (2018) identifies specific evacuation routes; however, Site 1 is in a rural area on a minor roadway and Site 2 is located along a residential corridor near the Delta Coves housing development. Neither Site 1 nor Site 2 is located near any critical public facilities (e.g., police stations, fire stations, hospitals). The closest fire and sheriff stations are in Oakley, CA and the nearest hospital is in Brentwood, CA with both locations over two miles away from the project site. Therefore, the proposed project would not interfere with implementation of the County's emergency response plans or emergency response during temporary project construction activities; however, the combination of the high-volume of slow-moving heavy-duty truck traffic on affected roadways during construction, workers entering and exiting construction sites, periodic short-term temporary road and lane closures associated with construction traffic, and potential damage to pavement during the construction period would increase traffic hazards on local roadways during and after construction. Therefore, the proposed project would have a potentially significant impact.

Mitigation Measure HAZ-1: Prepare and Implement a Construction Traffic Control Plan.

Before the start of project-related construction activities, BIMID shall prepare and implement a plan to manage expected construction-related traffic to the extent feasible, and to avoid and minimize potential traffic congestion during project-related construction. The construction traffic control plan shall outline the phasing of activities and the use of specific routes to and from the work site locations to minimize the daily volume of traffic on individual roadways.

The items listed below will be included, as terms of the construction contracts.

- Provide a site-specific access plan specifying the roadways on which construction workers are allowed travel to access the work sites.
- Prohibit construction workers from accessing work sites from any locations other than those specified in the plan.
- Provide 72-hour advance notification if access to driveways or private roads would be affected. Limit effects on driveway and private roadway access to working hours and provide uninterrupted access to driveways and private roads during non-work hours. If necessary, use steel plates, temporary backfill, or another accepted measure to provide access.
- Provide clearly marked bicycle detours to address bicycle route closures or if bicyclist safety would be otherwise compromised.
- Queue trucks only in areas and at times allowed by the appropriate jurisdiction.
- Post warnings about the potential presence of slow-moving vehicles.
- Use traffic control personnel when appropriate.
- Maintain access points for emergency vehicles.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District

Mitigation Measure HAZ-2: Return Affected Roadways to Pre-Project Conditions.

BIMID and/or its construction contractor(s) shall assess the condition of haul routes involving County roadways before the start of and after the completion of construction by taking photographs and recording images. Documented project-related potholes, fractures, or other damage to roadways used during construction shall be repaired at BIMID's expense.

Timing: Before and after construction.

Responsibility: Bethel Island Municipal Improvement District

Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce the potentially significant impact associated with increased hazards due to construction-related traffic to a less-than-significant level because BIMID would prepare and implement a construction traffic control plan and would return affected roadways to pre-project conditions.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. According to the California Department of Forestry and Fire Protection (CalFire 2009), the project site is designated non-VHFHSZ (outside of the very high fire hazard severity zone). Furthermore, the project involves temporary construction activities only and would not result in the development of any structures in or near urban areas or within the urban-wildland interface. There would be no impact.

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3.9 Hydrology and Water Quality

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
IX.	**HYDROLOGY AND WATER QUALITY – Would the project:**					
a)	Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	☐	☒	☐	☐	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	☐	☐	☐	☐	☒
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☐	☒
f)	Otherwise substantially degrade water quality?	☐	☒	☐	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒	☐
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒	☐
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☐	☒
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒	☐

Discussion

a, c, f) Violate any water quality standards or waste discharge requirements, substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation, or otherwise degrade water quality?

Less-than-Significant Impact with Mitigation Incorporated. The proposed project could cause surface or groundwater to become contaminated by soil or construction-related substances. The project site is in the San Joaquin Hydrologic Basin Planning Area, as designated by the Central Valley Regional Water Quality Control Board (RWQCB). In accordance with Section 303 of the federal Clean Water Act, water quality standards for this basin are contained in the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (Basin Plan). Stormwater runoff from the project site may be received by Taylor Slough, Dutch Slough, and Sand Mound Slough, and ultimately into the Sacramento-San Joaquin Delta and Pacific Ocean. Delta waterways (western portion), which include sloughs around Bethel Island, are listed for several constituents of concern for which Total Maximum Daily Loads (TMDLs) are required (Central Valley RWQCB 2016).

As described previously, the proposed project is limited to short-term construction activities that would cease upon project completion. During landside work at Sites 1 and 2, the proposed activities would disturb and expose soils to erosion from wind and stormwater, which could temporarily impair water quality should disturbed material, petroleum products from equipment, or construction-related wastes accidently be discharged into local drainage ditches or onto the ground where they could be carried into receiving waters. Accidental spills of construction-related substances such as oils and fuels could also contaminate both surface water and groundwater. The extent of potential impacts on water quality would depend on several factors: the tendency toward erosion of soil types encountered, soil chemistry, types of construction practices, extent of the disturbed area, durations of construction activities, proximity to receiving water bodies, and sensitivity of those water bodies to construction-related contaminants. During waterside work at Site 1, riprap along the levee may be replaced or enhanced and a waterside bench extending over 1 acre would be graded and planted with EAV plantings which could result in short-term increased turbidity or sedimentation in the adjacent Taylor Slough.

Restoration of the site would involve grading and seeding/revegetation, as needed at Sites 1 and 2 after construction. Management of excess water including runoff, seepage, and stormwater on and around the levees is a main objective of the Project, and construction would include new and/or improved drainage ditches, blanket drains, drainage pipe, and new connections to the existing BIMID drainage and pumping system. These design features would protect surface water quality in the project vicinity after construction. Additionally, the lack of degradation, such as excessive erosion or sedimentation, are success criteria for habitat enhancements planned for Site 1.

Construction activities would take place primarily during the typical construction season, April 1 to November 15, which corresponds to the dry season during which rain, and resulting stormwater runoff and ponding, are not expected in this region. BIMID will implement every measure to limit occurrence of a potentially significant impact during construction.

Mitigation Measure: Implement GEO-1 (Prepare and Implement a Storm Water Pollution Prevention Plan or a Storm Water Management Plan and Associated Best Management Practices).

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District.

Mitigation Measure HYD-1: Implement Water Quality Protection Measures During Waterside Levee Construction Activities

- BIMID will conduct waterside grading and planting to support EAV habitat establishment and riprap placement or enhancement during low tide, when feasible, to minimize impacts to water quality during waterside construction.
- BIMID will apply the best management practices to contain suspended sediments including the use of a continuous length of floating silt curtain. The construction contractor will be advised to monitor the equipment for and fix them if and when needed.

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District.

Implementing Mitigation Measures GEO-1 and HYD-1 would reduce the potentially significant impact due to accidental violation of water quality standards, alteration of site drainage patterns in a way that would increase erosion or siltation, or otherwise degrade water quality during construction to a less-than-significant level because BIMID would prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) or Stormwater Management Plan to prevent and control erosion during landside construction activities and would implement in-water construction protection measures during waterside levee and habitat construction activities.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Less-Than-Significant Impact. Groundwater use for the proposed project is limited to short-term, temporary use during construction at Sites 1 and 2 and the Borrow Site and for maintenance of habitat created along portions of Site 1. Construction water use would be limited to use of water trucks for dust control during levee improvements and water would be supplied from an existing BIMID well on the same property where the Borrow Site is located. It is estimated that daily onsite dust control would include the following: one, 2,000-gallon water truck at Site 1 during construction years 1 and 2; one, 2,000-gallon water truck at Site 2 during construction year 1; and one, 4,000-gallon water truck at the Borrow Site for construction years 1 and 2. Assuming construction activities could occur five days per week for 6.5 months at Sites 1 and 2 and the Borrow Site during Year 1, and 7.5 months at Site 1 and the Borrow Site during Year 2, the project's water demand for dust control purposes would be approximately 6 acre-feet (**Table 3.9-1**).

Table 3.9-1. Expected Water Use During Project Construction and Maintenance

Construction Location	Construction Working Days	Water Truck Capacity (gallon)	Total Volume (gallon)
Site 1			
Year 1	130	2,000	260,000
Year 2	150	2,000	300,000
Site 2			
Year 1	130	2,000	260,000
Year 2	n/a	n/a	n/a
Borrow Site			
Year 1	130	4,000	520,000
Year 2	150	4,000	600,000
Site 2 - Land and Waterside Habitat			
Year 1	n/a	n/a	n/a
Year 2	n/a	n/a	n/a
Post-construction	n/a	n/a	800
Total Gallons Used			**1,940,800**
Total Acre-feet Used			**5.96**

Notes: Assumes weekday work only, 20 working days per month, and one water truck load per specified site, per day is used.
Source: Data compiled by GEI Consultants in 2018

Additionally, groundwater may be used to irrigate the land and waterside habitat plantings at Site 1 during the establishment and monitoring period. Water would be taken from the existing BIMID well near the Borrow Site, transported via truck to Site 1, discharged into local drainage canals, and then applied to plantings via drip irrigation. Based on projects of a similar size and location, an estimated maximum of 800 gallons of water over a 7-month period may be required during the first year of irrigation but the actual volume of water for irrigation would be dependent on water year and climactic conditions (SAFCA 2015). Irrigation requirements would likely be less after the first year once plants are established. The use of groundwater for temporary dust suppression during construction and short-term irrigation of habitat creation areas at Site 1 is within normal use parameters for BIMID wells and would not result in a lowering of the local groundwater table or reduction in aquifer volume. Irrigation return water is a source of groundwater recharge, thus irrigation of landside habitat may result in slight localized groundwater replenishment. Additionally, Bethel Island is located within the San Joaquin Valley – Tracy groundwater subbasin (DWR Basin #5-022.16); this basin has not been designated as critically overdrafted and groundwater levels have remained stable for the last decade (DWR 2016). The impact would be less than significant.

d, e) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Beneficial Impact. See discussion in a, c, f) above. Stormwater runoff, as well as levee seepage water, currently flows overland to open drainage ditches along roadways and slowly flows to the main canal and west across the island to the pump station near the marina. Drainage is pumped over the levee into Taylor Slough. The proposed project would not increase drainage flows; however, seepage and drainage flows would be better managed due to the expansion of existing ditches and construction of new ditches, possible installation of new culverts across Stone Road and/or Windsweep Road, and enhancement of existing or installation of new drainage blankets and drainage pipes at Site 2 would more efficiently direct seepage and stormflows to the existing BIMID drainage system. Therefore, the project would not result in any on- or off-site flooding or exceedance of the existing drainage system and would improve drainage on the island. This impact would be beneficial.

g, h) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map or place within a 100-year flood hazard area structures that would impede or redirect flood flows?

No Impact. The proposed project would not result in the construction of any structures. Therefore, placement of housing or another structure within a 100-year flood hazard area would not occur with implementation of the proposed project. There would be no impact.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Beneficial Impact. The proposed project would be limited to short-term construction and maintenance activities that would be conducted outside of the flood season and would not expose people or structures to risk due to flooding, including from the failure of a levee or dam. As described previously, the project would include improvements to Bethel Island's levee system to correct identified deficiencies and minimize the risk of levee failure. This impact would be beneficial.

j) Inundation by seiche, tsunami, or mudflow?

No Impact. The possibility of a seiche occurring at the project site is low because the geometry of the adjacent sloughs and distance to seismic sources generally are not conducive to the occurrence of a seiche. Additionally, the project area is not within a mapped tsunami hazard zone (DOC 2018). Furthermore, with the exception of the levee slopes, the project site has very low topographic relief and the probability of the project site being exposed to a mudflow is low. There would be no impact.

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3.10 Land Use and Planning

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
X. LAND USE AND PLANNING – Would the project:					
a) Physically divide an established community?	☐	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒	☐

Discussion

a) Physically divide an established community?

No impact. The project includes short-term construction activities, improvements to existing drainage facilities (pipes, culverts, and ditches) and creation of new drainage facilities in an existing, developed area, and creation of habitat in 10- to 15-foot-wide strips along levee alignments. None of the project components would create a physical barrier dividing any established community. There would be no impact.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No impact. The project improvements would not result in new developed land uses on the project site, and there would be no conflict with General Plan land use designations (SH [Single Family Residential High-Density], CR [Commercial Recreation], AL [Agricultural Lands]) or zoning (A-2 [General Agricultural District], A-3 [Heavy Agricultural District], and F-1 [Water Recreational], with a Flood Hazard Combining District Overlay) (Contra Costa County 2018a, Contra Costa County 2018b). No zoning or land use designation changes are proposed. There would be no impact.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No impact. The project site is not subject to a habitat conservation plan or natural community conservation plan. There would be no impact.

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3.11 Mineral Resources

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XI.	**MINERAL RESOURCES – Would the project:**					
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒	☐
b)	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒	☐

3.11.1 Discussion

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. Although Bethel Island is partially underlain by the Dutch Slough Gas Field, there are no known active, inactive, or plugged wells in the vicinity that would be affected by project activities at Sites 1 and 2 or the Borrow Site (DOC 1999, DOC 2018). Additionally, construction of the proposed levee and drainage improvements would not cause the loss of availability of the gas resources or the ability to extract gas from this area in the future. There would be no impact.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The project area is not delineated as a mineral resource area in the Contra Costa County General Plan Conservation Element (Contra Costa County 2005). Additionally, construction of the proposed levee and drainage improvements and the excavation of borrow material from the Borrow Site would not preclude the future use of the property for mineral extraction in the future. There would be no impact.

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3.12 Noise

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XII.	**NOISE – Would the project:**					
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	☐	☒	☐	☐	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒	☐
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒	☐
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	☒

Discussion

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

Less-than-Significant Impact with Mitigation Incorporated. Construction noise impacts typically occur when construction activities take place during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), when construction activities occur immediately adjacent to noise sensitive land uses, or when construction durations last over extended periods of time.

The Noise Element of the County General Plan contains the land use compatibility guidelines for community noise. For residences, a noise level of 55-70dB is conditionally acceptable and 70-75dB is normally acceptable. Also, Policy 11-9. Section 11-8, states that construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods. Noise generated by the proposed Project would be limited

to temporary construction noise that would only occur during working hours between 7:00 am and 5:30 pm, Monday through Friday and would cease upon Project completion.

The Borrow Site is 200 feet from the nearest residences, and Site 1 is located in a rural area with a few isolated buildings. Because construction activities at Site 2 would occur on residential properties in close proximity to residences, worst case project-related noise was estimated (as shown in **Table 3.12-1**) using FHWA's Roadway Construction Noise Model and a list of heavy equipment expected to be used during construction at Site 2. As shown in **Table 3.12-1**, the unmitigated noise level produced by the combination of equipment planned to be used at Site 2 would be 87 dBA at a distance of 25 feet.

Table 3.12-1. Construction Activities, Equipment, and Calculated Noise Levels, for Site 2 (dB)

Construction Activity	Estimated Duration	Anticipated Number and Type of Equipment that May Be Used by the Contractor	Noise Level at 25 Feet, dB	
			L_{max}	L_{eq}
Installation of Drainage Blanket	40 days	(1) Backhoe	83.6	79.6
		(1) Pickup Truck	81	77
		Combined Noise Levels	83.6	81.5
Monitoring Wells	5 days	(1) Drill Rig Truck	85.2	78.2
		(1) Generator	86.7	83.6
		Combined Noise Levels	86.7	86.4

Note: dB = A-weighted decibels; Leq = equivalent noise level; Lmax = maximum A-weighted noise level
Source: Data compiled by GEI Consultants, Inc. 2018

Construction of the proposed project would also result in additional vehicle trips on the local roadway network as workers commute and equipment and materials are transported. Noise-sensitive land uses including residential properties are located approximately 100 feet from the centerline of the routes designated for hauling materials from the borrow area and delivering materials to Site 1 and Site 2. Project-related construction traffic noise levels were estimated using the FHWA's Roadway Noise Model at 100 feet. As shown in **Table 3.12-2**, the unmitigated noise level produced by the construction traffic for the proposed project would be approximately 52 dB at the nearest noise-sensitive uses would not exceed existing traffic noise levels (67dB) along the main roadway segments. These results represent the worst-case, conservative noise exposure because they do not consider noise attenuation associated with intervening structures and atmospheric absorption. Therefore, actual construction noise levels could be less.

Table 3.12-2. Traffic Noise - Existing + Construction Condition

Roadway	Roadway Segment	Traffic Noise Level dB, Leq at 100 feet			
		Existing	Construction	Existing + Construction	Project increase
Bethel Island Road	Cypress Road to Gateway Road	67	52	67	0

Note: dB = A-weighted decibels; Leq = equivalent noise level
Source: Modeling conducted by GEI Consultants in 2018

The Project would not result in the development of any new uses that could generate permanent noise and the Project would not result in the exposure of persons to or generate long-term noise levels in excess of applicable standards.

However, because noise levels during construction could exceed the conditionally acceptable and normally acceptable noise thresholds, the impact associated with construction noise would be potentially significant.

Mitigation Measures NOI-1: Implement Measures to Reduce Construction-Related Noise Effects during Construction.

BIMID shall require the construction contractor to implement the following measures to reduce impacts related to noise generation during construction activities within 100 feet of noise sensitive receptors:

- The construction contractor shall maintain construction equipment to manufacturers' recommended specifications and ensure that all internal combustion engine-driven equipment are equipped with mufflers that are in good condition and appropriate for the equipment.

- The construction contractor shall locate stationary noise-generating equipment as far as feasible from sensitive receptors when sensitive receptors adjoin or are near a construction disturbance area. In addition, the Project contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the Project Site.

- The construction contractor shall prohibit unnecessary idling of internal combustion engines.

- An on-site complaint and enforcement manager shall be available to respond to and track complaints. The manager will be responsible for responding to any complaints regarding construction noise and or dust and for coordinating with the adjacent land uses. The manager will determine the cause of any complaints and coordinate with the construction team to implement effective measures (considered technically and economically feasible) warranted for correcting the problem. Such measures could include but would not be limited to relocating stationary equipment, the use of sound blankets, the placement of temporary sound barriers around construction staging areas and/or continued coordination with the complainant regarding timing and duration of noise. The telephone number of the coordinator shall be posted at the construction site and provided to neighbors in a notification letter. The manager will be trained to use a sound level meter and should be available during all construction hours to respond to complaints.

Timing: During construction.

Responsibility: Bethel Island Municipal Improvement District.

Implementing Mitigation Measure NOI-1would reduce noise impacts associated with the project-related monitoring well construction to a less-than-significant level because BIMID would require the construction contractor to implement noise-reduction measures during construction.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less-than-Significant Impact. Project implementation could generate limited groundborne vibration as a result of heavy equipment operations. The Project would include the use of excavators, rubber tired

dozers, dumpers/tenders, scraper and rollers, water trucks, and generators. The Project would not require the use of a pile driver, vibratory compactor, pneumatic hammer, or other similar tool or apparatus. Human response to continuous vibration is summarized in Table 4 of the Caltrans transportation and construction vibration guidance manual (Caltrans 2013). Distinctly perceptible vibration is 0.035 PPV (in/sec) and strongly perceptible vibration is 0.10 PPV (in/sec). The FTA (2006) (Caltrans 2013) has developed vibration criteria based on building use, and the buildings for this project fall under Category 2: Residences and buildings where people normally sleep, which has a vibration impact threshold for frequent events of 75 VdB and 80 Vdb for infrequent events.

Proposed construction activities at the Borrow Site and Site 1 would include the use of heavy earthmoving and grading equipment. These activities would produce a vibration level of approximately 87 VdB (0.089 in/sec PPV) at a distance of 25 feet (which is the reference vibration level for operation of a large bulldozer [FTA 2006; Caltrans 2013]). The distance between proposed Site 1 and Borrow Site construction activities and the closest acoustically sensitive uses would be approximately 100 feet. Assuming a standard reduction of 9 VdB (0.0092 in/sec PPV) per doubling of distance (FTA 2006), project-related construction vibration level at the nearest receivers to Site 1 and the Borrow Site would be 69 VdB (0.071 in/sec PPV), which is distinctly perceptible but not strongly perceptible according to Caltrans standards. Furthermore, construction activities at Site 1 and the Borrow site would result in a vibration level of 69 VdB, which is below the threshold criteria for Category 2 land use.

Project construction would occur adjacent to residences at Site 2, and these activities, including installing a drainage blanket, trenching and installing monitoring wells, would be temporary and of short duration. The only equipment used at Site 2, as show in **Table 3.12-1**, would be backhoe, pick-up truck, drill rig, and a generator. According to FTA's vibration source levels for construction equipment, auger drilling generates a vibration level of 0.089 in/sec PPV at a distance of 25 feet. The actual distance drilling would occur from buildings is not known at this time. However, if drilling would occur within 10 feet of buildings, the vibration level would be 0.24 in/sec PPV, which is below the FTA threshold for older buildings (0.3 in/sec PPV).

Therefore, proposed activities on the Borrow Site, Site 1, and Site 2 would not be expected to adversely affect the nearest residences, and this impact would be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-than-Significant Impact. Noise generated by the proposed Project would be limited to temporary construction noise that would cease upon Project completion. The Project would not result in the development of any new uses that could generate permanent noise. Therefore, the Project would not result in the exposure of persons to or generation of long-term noise levels in excess of applicable standards. This impact would be less than significant.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-than-Significant Impact. Project construction activities would generate a temporary increase in ambient noise levels in the Project vicinity. In accordance with Contra Costa County General Plan Policy 11-8, the proposed construction activities would occur during normal work hours in order to provide relative quiet during the more noise-sensitive evening and early morning hours. Given the temporary nature of the Project and because the project would be consistent with Contra

Costa County General Plan Policy 11-8, noise impacts resulting from construction activities would be considered less than significant.

e, f) For a project located within an airport land use plan, within two miles of a public airport or public use airport where such a plan has not been adopted, or in the vicinity of a private air strip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. No airports or airstrips are located on or within 2 miles of Bethel Island. The closest airstrip is Delta Air Park in Oakley, CA. Therefore, the proposed Project would not be affected by noise related to airport operations and there would be no impact.

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3.13 Population and Housing

Environmental Issue		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XIII.	**POPULATION AND HOUSING – Would the project:**					
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒	☐
b)	Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	☐
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	☐

Discussion

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No impact. The proposed project would have only temporary construction impacts, and improvements to the flood control infrastructure would not enable construction of new housing or businesses. There would be no direct or indirect impact related to inducing population growth.

b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?

No impact. The project would not displace any homes. There would be no impact.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No impact. The project would not displace any people. There would be no impact.

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3.14 Public Services

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XIV.	**PUBLIC SERVICES – Would the project:**					
a)	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	☐	☐	☐	☒	☐
	Fire protection?	☐	☐	☐	☒	☐
	Police protection?	☐	☐	☐	☒	☐
	Schools?	☐	☐	☐	☒	☐
	Parks?	☐	☐	☐	☒	☐
	Other public facilities?	☐	☐	☐	☒	☐

Discussion

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the public services, including fire protection, police protection, schools, or other public facilities?

No impact. The project would involve short-term construction activities, and would not result in the development of any new residential or commercial uses. As such, the project would have no increased demand for public services. No new or expanded governmental facilities would be needed and there would be no impact.

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3.15 Recreation

Environmental Issue		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XV.	**RECREATION – Would the project:**					
a)	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒	☐
b)	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒	☐

Discussion

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No impact. The project would involve short-term construction activities, and would not result in the development of any new residential or commercial uses. As such, the project would not create increased demand for existing recreational facilities and there would be no impact.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No impact. The project would involve short-term construction activities, and would not result in the development of any new residential or commercial uses. As such, the project would have no increased demand for recreational facilities. No new or expanded facilities would be needed and there would be no impact.

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3.16 Transportation/Traffic

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XVI.	**TRANSPORTATION/TRAFFIC – Would the project:**					
a)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐	☐
b)	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒	☐
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐	☐
e)	Result in inadequate emergency access?	☐	☒	☐	☐	☐
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒	☐

Discussion

a, b) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit; or conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less-Than-Significant Impact. Although the Contra Costa Transportation Authority released a Countywide Comprehensive Transportation Plan in 2017, there are no published Level of Service (LOS) thresholds that apply to the project area, as LOS standards were discontinued for non-regional routes in 2009 (CCTA 2017a, Transplan 2009). The project area is not within the boundaries of the County's Congestion Management Program planning area (CCA 2013). There are several Class II and Class III bike lane/routes planned for major roads on Bethel Island, including the haul routes, however nothing has been constructed to date (CCTA 2017b). As described previously, the proposed project would be limited to short-term construction activities and would not result in the development of any permanent uses that would result in a permanent increase in traffic on area roadways or otherwise affect long-term traffic operations or conflict with local or regional transportation plans, ordinances or policies regarding congestion management or alternative transportation.

In the short term, the project would generate approximately 26,000 truck trips, spread over two construction seasons, primarily associated with transport of material from the Borrow Site to Site 1 via 20-ton dump trucks. These trips would be limited to on-island traffic. Additionally, approximately 1,000 truck trips may also be generated due to transport of aggregate from Antioch, CA approximately 13 miles from the project site, if needed, for blanket drain, cutoff wall, and/or riprap installation or habitat enhancement at Sites 1 and 2. Water trucks would fill from the BIMID well at the Borrow Site and from sloughs immediately adjacent to Sites 1 and 2, thus no additional trips would be generated by dust suppression during construction. Construction employee trips would originate from offsite, and would involve one-way travel of up to 15 miles, with a maximum of 13 employees traveling to the project site, as needed for specific activities. Truck trip estimates were based on the amount of material that would require removal and relocation or disposal, and the amount of new material that would be moved from the Borrow Site or imported. Since construction would be spread over two seasons, the maximum project-related increase in traffic volumes along the affected roadways would be 17 vehicles per hour during Year 1 and 15 vehicles per hour during Year 2. This level of traffic activity would not degrade traffic operations along the roadways used by haul trucks. Therefore, this impact would be less than significant.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. No airports or airstrips are located on or within 2 miles of Bethel Island. The closest airstrip is Delta Air Park in Oakley, CA. Furthermore, the proposed project would not result in the development of any permanent uses that would cause an increase in air traffic levels. The project would not include any changes that could result in safety risks related to air traffic. There would be no impact.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less-than-Significant Impact with Mitigation Incorporated. Trucks delivering materials and removing material and debris during construction would be within the legal load limits for County roads, but the high-volume of slow-moving, heavy-duty truck traffic on affected roadways during construction would be outside the normal use of project vicinity roadways. This activity combined with workers entering and exiting construction sites and periodic short-term temporary road and lane closures associated with construction traffic, would increase traffic hazards on local roadways during and after construction. Therefore, this impact would be potentially significant.

Mitigation Measure: Implement Mitigation Measures HAZ-1 (Prepare and Implement a Traffic Control and Road Maintenance Plan) and HAZ-2 (Return Affected Roadways to Pre-Project Conditions).

Timing: Before, during, and after construction.

Responsibility: Bethel Island Municipal Improvement District.

Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce the potentially significant impact associated with increased hazards due to a design feature or incompatible uses to a less-than-significant level because BIMID would prepare and implement a construction traffic control plan and would return affected roadways to pre-project conditions.

e) Result in inadequate emergency access?

Less-than-Significant with Mitigation Incorporated. The project would not result in any permanent changes to roadway configurations or emergency access points at the project sites. Project truck trips would be limited to daytime hours pursuant to Contra Costa County General Plan Policy 11-8 and would cease upon project completion; however,, the combination of the high-volume of slow-moving heavy-duty truck traffic on affected roadways during construction, workers entering and exiting construction sites, and periodic short-term temporary road and lane closures associated with construction traffic could temporarily limit emergency access in the vicinity of the project sites. Therefore, this impact would be potentially significant.

Mitigation Measure: Implement Mitigation Measure HAZ-1 (Prepare and Implement a Construction Traffic Control Plan).

Timing: Before and during construction.

Responsibility: Bethel Island Municipal Improvement District.

Implementation of Mitigation Measure HAZ-1 would reduce the potentially significant impact associated with increased hazards due to inadequate emergency access to a less-than-significant level because BIMID would prepare and implement a construction traffic control plan.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. Operation of the proposed project would not substantially change from existing conditions and there are no existing or planned public transit or pedestrian facilities adjacent to the project site. There are also no existing bicycle facilities on Bethel Island. As mentioned previously, there are several Class II and Class III bike lane/routes planned for major roads on Bethel Island, including the haul routes, however nothing has been constructed to date (CCTA 2017b). The project would be limited to short-term construction activities that would cease completely upon project completion. Therefore, the proposed project would not result in conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, and would not decrease the performance or safety of such facilities. There would be no impact.

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3.17 Tribal Cultural Resources

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XVII.	**TRIBAL CULTURAL RESOURCES – Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resource Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**					
a)	Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☒	☐	☐
b)	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐	☐

3.17.1 Discussion

a, b) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resource Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1?

Less-than-Significant Impact. The project is situated in the ethnographic territory of the Plains Miwok (Levy 1978: Figure 1). The Plains Miwok shared similar subsistence-settlement patterns, material culture, and social structure to most tribes in central California. The Plains Miwok were organized into small, politically autonomous units called tribelets. Important foods included acorn, various seeds, salmon, tule elk and pronghorn antelope.

On June 11, 2018, GEI submitted a request to the Native American Heritage Commission (NAHC) regarding the project asking for a review of their sacred lands file to determine if any previously reported sacred lands are present within the project area and to provide a list of Native American individuals and organizations that might have knowledge of Native American resources within the project area. The NAHC responded by letter on June 26, 2018. In their response, the NAHC stated that a search of the sacred lands file did not identify any previously reported Native American cultural resources within the project boundary.

The Torres Martinez Desert Cahuilla Indians are the only California Native American Tribe to request to be consulted under AB52. BIMID sent the Torres Martinez Desert Cahuilla Indians an AB52 consultation letter on June 12, 2018. Prior to release of a ND, MND, or EIR, the lead agency shall initiate consultation with a traditionally and culturally affiliated tribe if a tribe has sent a written request to the lead agency asking to be informed of proposed projects within their geographic area, and a tribe responds in writing within 30 days of receipt of formal notification from the lead agency, and requests consultation. As of July 12, 2018, the Torres Martinez Desert Cahuilla Indians has not responded to the initial AB52 consultation letter; therefore, AB 52 consultation with the tribe has concluded.

No Tribal Cultural Resources (TCRs) have been identified in the proposed project area as a result of consultation with Tribes that are culturally or traditionally affiliated with the proposed project area or as a result of archaeological investigations. Therefore, the impact is less than significant.

3.18 Utilities and Service Systems

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XVIII.	**UTILITIES AND SERVICE SYSTEMS – Would the project:**					
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒	☐
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒	☐
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☐	☒
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐	☐
e)	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒	☐
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒	☐

3.18.1 Discussion

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. As described previously, the proposed project would be limited to short-term construction activities (Site 1) and permanent drainage improvements along Site 2. None of these activities would result in the development of any permanent uses that could generate wastewater requiring treatment. There would be no impact.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The project would not result in the development of any permanent uses that would require treated water or generate wastewater requiring treatment. No new or expanded water or wastewater treatment facilities would be required and there would be no impact.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Beneficial Impact. The project would not involve the construction or expansion of any facilities for stormwater drainage purposes; however, drainage improvements along Site 2 (piping, expanded or new ditches, and residential subsurface drainage systems) may convey stormwater during storm events, in addition to the levee seepage water they are being constructed to manage. As discussed in Section 3.9, "Hydrology and Water Quality," the overall drainage pattern on the project site would be improved and all drainage water would be redirected to the main BIMID pumping plant. Storm runoff would continue to flow overland to open drainage ditches along roadways and ultimately to the BIMID pumping plant for conveyance to nearby sloughs. The project would result in a beneficial impact.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less-Than-Significant Impact. As discussed in Section 3.9, "Hydrology and Water Quality," project water demand would be short term, totaling approximately 6 acre-feet during project construction and demand would be distributed over two years. Also, as discussed previously, groundwater may be used to irrigate plantings along Site 1 during the establishment and monitoring period. This irrigation demand may also be met via surface water supplies obtained through agreement with adjacent landowners holding existing surface rights. If the surface water supply is used, it would be supplied through an existing siphon from a point of diversion along Taylor Slough. BIMID, through use of an existing well or through agreement with adjacent landowners, would have sufficient water supplies to meet this demand in addition to its existing commitments and would not require new or expanded entitlements. The impact would be less than significant.

e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. See Response a) above. The project would not result in the generation of any wastewater requiring treatment. There would be no impact.

f, g) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs and comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. The project would not result in the development of any permanent uses that would generate solid waste. Construction activities would consist of excavation and stockpiling at the borrow site, grading and material placement at Site 1, a lesser amount of excavation and aggregate/sand placement at Site 2, and material hauling to and from Sites 1, 2, and the borrow site. These activities would not generate solid waste requiring disposal in a landfill. Thus, the project would not exceed the capacity of any landfill or conflict with any solid waste regulations. There would be no impact.

3.19 Mandatory Findings of Significance

	Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XIX.	**MANDATORY FINDINGS OF SIGNIFICANCE – Would the project:**					
h)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐	☐
i)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐	☐
j)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒	☒

Authority: Public Resources Code Sections 21083, 21083.5.
Reference: Government Code Sections 65088.4.
Public Resources Code Sections 21080, 21083.5, 21095; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

Discussion

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

Less-than-Significant Impact with Mitigation Incorporated. The analysis conducted in this IS concludes that the proposed project with mitigation would not have a significant effect on the physical environment and would not result in any of the impacts defined above.

As discussed in Section 3.4, "Biological Resources," Section 3.5, "Cultural Resources," and Section 3.6, "Geology and Soils," Section 3.8, "Hazards and Hazardous Materials," and Section 3.9, "Hydrology and Water Quality," any potentially significant impacts related to the quality of the environment, plant, fish,

or wildlife habitat or populations, special-status species, and important historical or cultural resources would be reduced to a less-than-significant level through implementation of avoidance and minimization measures and by incorporating mitigation measures. No known cultural resources would be affected by the proposed project and if unidentified resources are encountered during construction, mitigation measures are in place to ensure that impacts would be less than significant.

For many fish and wildlife species, including migratory birds and Delta fish species, the habitat enhancements included as part of the project design could increase fish and wildlife populations and habitats. Beneficial impacts would result from the proposed project both in the short-term and long-term. As explained in more detail in Section 3.4, "Biological Resources," and Section 3.6, "Geology and Soils," and Section 3.9, "Hydrology and Water Quality," the proposed project would have a less-than-significant impact with mitigation incorporated to fish and wildlife as well as overall beneficial impacts to the overall quality of the environment, by improving drainage and flood protection on and around Bethel Island.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less-than-Significant Impact. Past and present projects within the project vicinity are limited as the island is primarily used for residential uses and some agricultural production. There are no other ongoing or proposed projects on Bethel Island that would overlap with construction of the proposed project. Construction of the proposed project would result in temporary and short-term impacts that would be limited to the project site and immediate vicinity over a two-year construction period and mitigation measures are proposed to avoid, minimize, rectify, reduce, eliminate, and/or compensate for any potentially significant impacts.

As discussed in this IS, the proposed project would result in less-than-significant impacts or no impacts on the following resource areas: aesthetics, agriculture and forestry resources, greenhouse gas emissions, land use and planning, mineral resources, population and housing, public services, recreation, and tribal cultural resources. Additionally, the proposed project would result in beneficial impacts to biological resources, hydrology and water quality, and utilities and service systems. Furthermore, mitigation measures have been included in this IS that would reduce impacts to a less-than-significant level in the following areas: air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and transportation and traffic. Therefore, all impacts would be less than significant or would be reduced to a less-than-significant level through implementation of required mitigation measures, and the proposed project would not make a cumulatively considerable incremental contribution to significant cumulative adverse impacts on those resource areas. The incremental effects of the proposed project would not be cumulatively considerable when viewed in connection with the effects of past, present, and reasonably foreseeable future projects. This impact would be less than significant.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Less-than-Significant and Beneficial Impact. As discussed throughout this IS, construction and operation of the proposed project would not cause substantial adverse effects on human beings, either

directly or indirectly. The proposed project is being implemented for the specific purpose of improving flood protection for residents of Bethel Island and protecting Delta water quality from saltwater intrusion, as Bethel Island is one of the eight western islands for which levee stability is essential to protect the SWP/CVP water supply corridor through the Delta. Project construction and operation would reduce the potential for adverse human health and ecological effects resulting from flooding.

Furthermore, mitigation measures are provided as necessary to reduce the proposed project's potentially significant effects on air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and transportation and traffic to less-than-significant levels. Thus, construction and operation of the proposed project would not cause substantial adverse effects on human beings, either directly or indirectly and would improve safety for humans by improving flood protection and protecting water supply. This impact would be less than significant and beneficial.

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