

MINUTE ITEM

This Calendar Item No. C02 was approved as Minute Item No. 02 by the California State Lands Commission by a vote of 2 to 0 at its 5/19/96 meeting.

**CALENDAR ITEM
C02**

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05/09/96
PRC 7889W 24958
L. Burks

GENERAL LEASE - PUBLIC AGENCY USE

APPLICANT:

Ironhouse Sanitary District
Attn: Jim Elder
P.O. Box 1105
Oakley, California 94561

AREA, TYPE LAND AND LOCATION:

A parcel of tide and submerged land located in Dutch Slough, Jersey Island, Section 18, T2N, R3E, MDM, Contra Costa County.

LAND USE:

Proposed installation of a 24-inch diameter treated effluent pipeline to provide reclaimed water for irrigation and wildlife habitat enhancement purposes on Jersey Island, and placement of approximately 1,500 cubic yards of rock riprap on each side of the pipeline for additional pipe protection.

PROPOSED LEASE TERMS:

Lease period:

Twenty-five years beginning August 1, 1996 and ending July 31, 2021.

CONSIDERATION:

The public use and benefit, with the State reserving the right to set a monetary rental if the Commission finds such action to be in the State's best interest.

BASIS FOR CONSIDERATION:

Pursuant to 2 Cal. Code Regs. 2003.

APPLICANT STATUS:

Applicant is owner/permittee of upland.

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CALENDAR ITEM NO. **C02** (CONT'D)

PREREQUISITE CONDITIONS, FEES AND EXPENSES:

Filing fee and processing costs have been received.

STATUTORY AND OTHER REFERENCES:

- A. Public Resources Code: Div. 6, Parts 1 and 2; Div. 13.
- B. Cal. Code Regs.: Title 2, Div. 3; Title 14, Div. 6.

AB 884:

10/11/96

OTHER PERTINENT INFORMATION:

- 1. An Environmental Impact Report (SCH 92093042) was prepared and adopted for this project by Ironhouse Sanitary District. The State Lands Commission's staff has reviewed such document and considered the information contained therein.

APPROVALS OBTAINED:

California Department of Fish and Game, U.S. Army Corps of Engineers, Contra Costa County Flood Control.

FURTHER APPROVALS REQUIRED:

State Lands Commission.

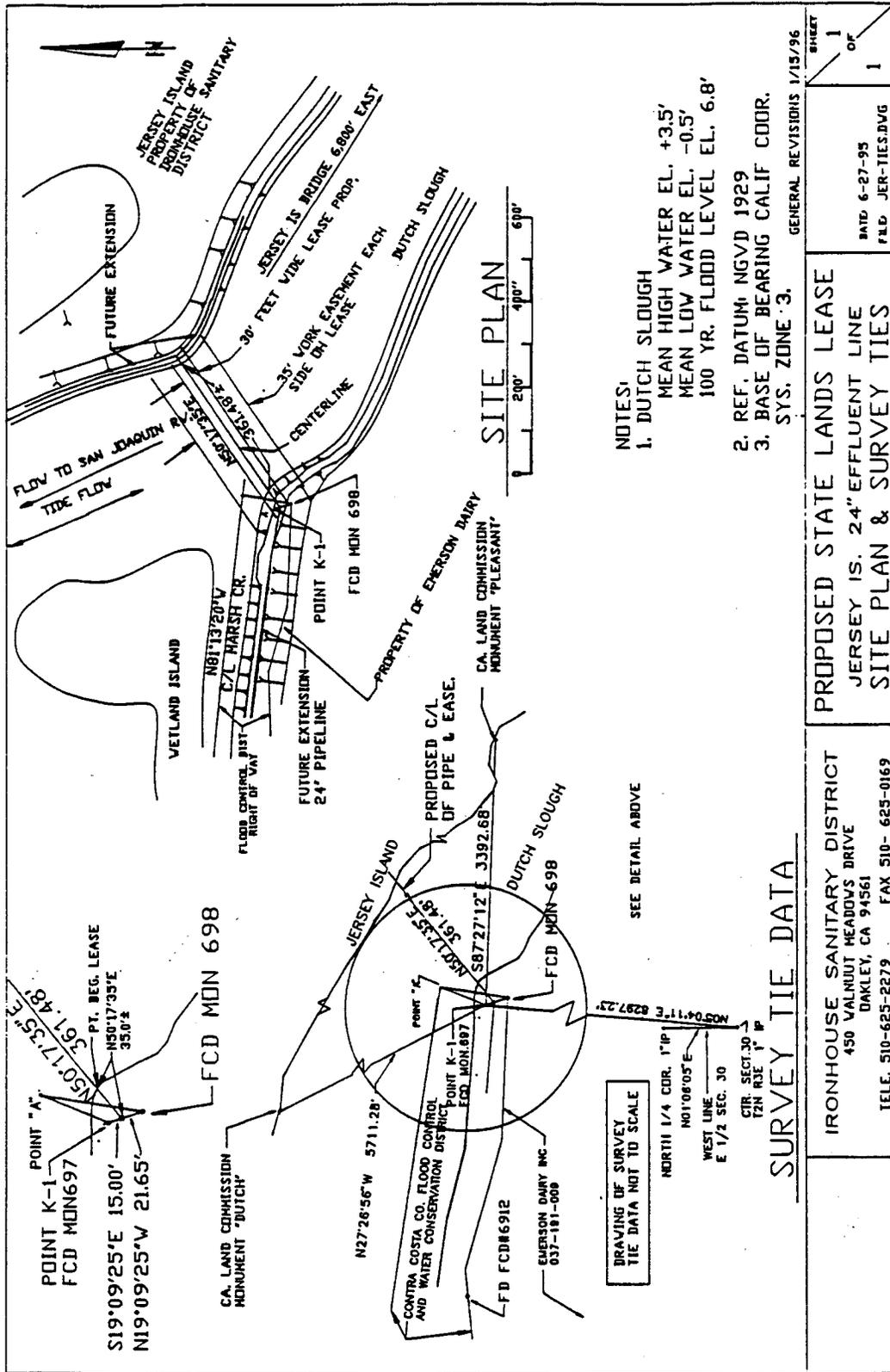
EXHIBITS:

- A. Site Map
- B. Location Map
- C. Resolution Adopting Statements of Findings and Facts in Support of Findings and the Mitigation Monitoring and Reports Program (Resolution NO. 94-26)
- D. Mitigation Monitoring and Reporting Program

CALENDAR ITEM NO. C02 (CONT'D)

IT IS RECOMMENDED THAT THE COMMISSION:

1. FIND THAT AN ENVIRONMENTAL IMPACT REPORT (SCH 92093042) WAS PREPARED AND ADOPTED FOR THIS PROJECT BY IRONHOUSE SANITARY DISTRICT AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.
2. ADOPT THE FINDINGS MADE IN CONFORMANCE WITH SECTION 15096(h) OF THE STATE CEQA GUIDELINES, AS CONTAINED IN EXHIBIT "C" ATTACHED HERETO.
3. ADOPT THE MITIGATION MONITORING PLAN, AS CONTAINED IN EXHIBIT "D" ATTACHED HERETO.
4. FIND THAT THIS ACTIVITY IS CONSISTENT WITH THE USE CLASSIFICATION DESIGNATED FOR THE LAND PURSUANT TO PUBLIC RESOURCES CODE SECTION 6370, ET SEQ.
5. AUTHORIZE ISSUANCE TO IRONHOUSE SANITARY DISTRICT OF A TWENTY-FIVE YEAR GENERAL LEASE - PUBLIC AGENCY USE, BEGINNING AUGUST 1, 1996; IN CONSIDERATION OF THE PUBLIC USE AND BENEFIT, WITH THE STATE RESERVING THE RIGHT TO SET A MONETARY RENTAL IF THE COMMISSION FINDS SUCH ACTION TO BE IN THE STATE'S BEST INTEREST; FOR THE INSTALLATION OF A 24-INCH DIAMETER EFFLUENT PIPELINE TO PROVIDE RECLAIMED WATER FOR IRRIGATION AND WILDLIFE HABITAT ENHANCEMENT PURPOSES ON JERSEY ISLAND, AND PLACEMENT OF ROCK RIPRAP ON EACH SIDE OF THE PIPELINE FOR ADDITIONAL PIPE PROTECTION; ON THE LAND DESCRIBED ON EXHIBIT "A" ATTACHED AND BY REFERENCE MADE A PART HEREOF.



This exhibit is solely for purposes of generally defining the lease premises, and is not intended to be, nor shall it be construed as, a waiver or limitation of any State interest in the subject or other property.

CALENDAR EXHIBIT "A" 8
MINUTE MAP 2493800713

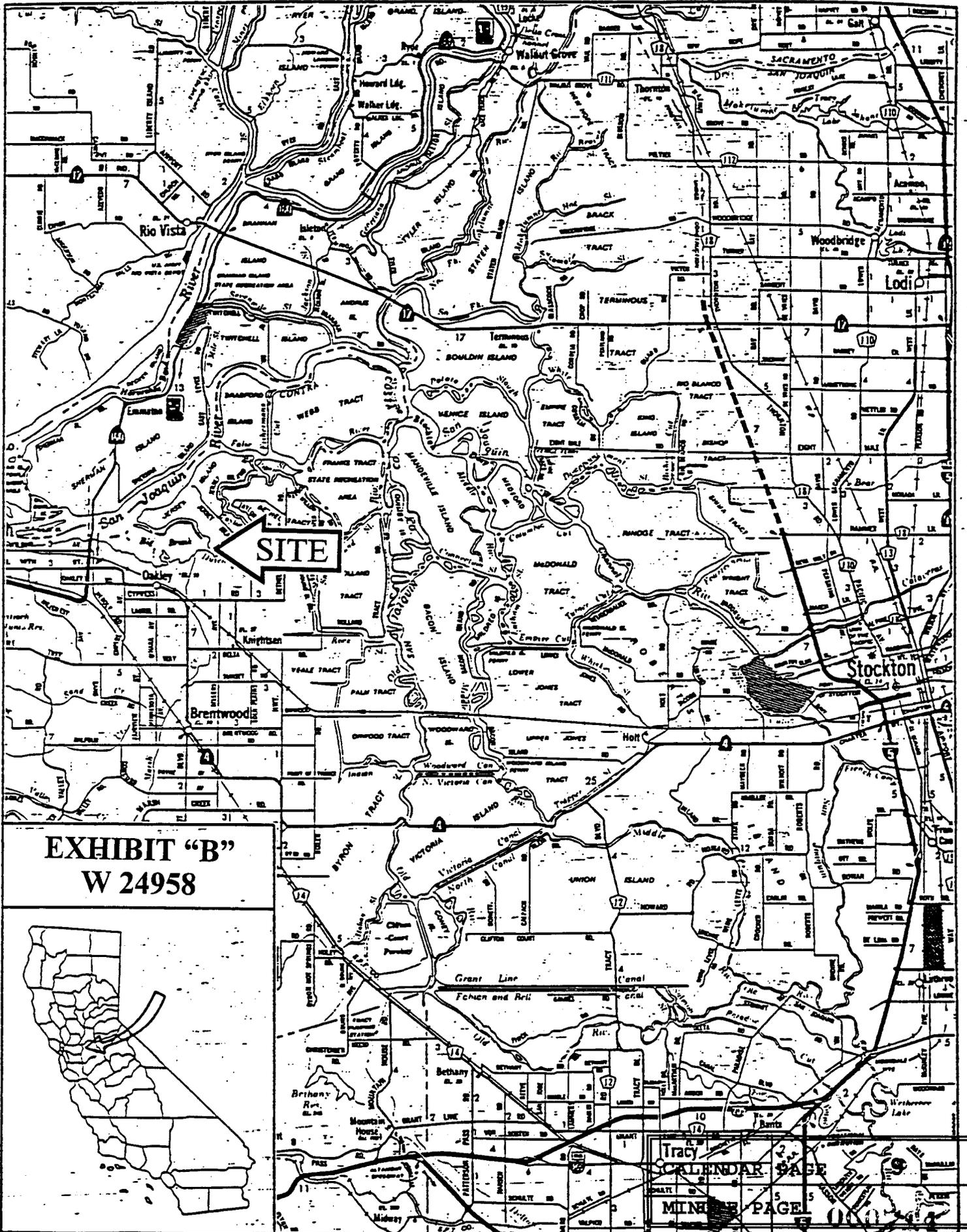


EXHIBIT "B"
W 24958



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RESOLUTION NO. 94-26

A RESOLUTION OF THE BOARD OF DIRECTORS ADOPTING STATEMENTS OF FINDINGS AND FACTS IN SUPPORT OF FINDINGS AND THE MITIGATION MONITORING AND REPORTING PROGRAM

WHEREAS, Ironhouse Sanitary District (the "District") is proposing the following Project (the "Project") comprising three parts:

- 1. The Wastewater Facilities Upgrade and Expansion,
2. The Delta Environment Science Center and related public trails, and
3. All permits and approvals associated with the foregoing.

WHEREAS, the Board of Directors (the "Board") of the District intends to make findings pursuant to Public Resources Code Section 21081 for the Project,

WHEREAS, the Board intends to condition its approval of the Project upon the incorporation into the Project of mitigation measures, and the Board intends to adopt a Mitigation Monitoring and Reporting Program for these measures, pursuant to Public Resources Code Section 21081.6,

NOW, THEREFORE, BE IT RESOLVED by the Board that, based on the foregoing facts and circumstances, and the administrative record concerning the Final EIR, which includes the public written and oral testimony received on the Draft EIR, the Board finds and determines:

- 1. The Statement of Findings and Facts in Support of Findings Regarding the Project, attached to this Resolution as Exhibit A, is adopted.
2. The Mitigation Monitoring and Reporting Program for the Project, attached to this Resolution, is adopted.

I hereby certify that the foregoing is a full, true and correct copy of a resolution duly passed and adopted by the Sanitary Board of the Ironhouse Sanitary District at a meeting thereof held on the 1st day of November, 1994.

AYES, and in favor thereof, Members: L. Byer, R. Kirkman, D. Meadows, W. Trice, D. Mickelson, I. Powell

NOES, Members: none

ABSENT, Members: none

Cynthia A. Bauer
Secretary
(SEAL)

APPROVED:

[Signature]
President

Table with 2 columns: CALENDAR PAGE (10), MINUTE PAGE (000715)

EXHIBIT A -- STATEMENT OF FINDINGS AND FACTS IN SUPPORT OF
FINDINGS REGARDING THE IRONHOUSE SANITARY DISTRICT WASTEWATER
FACILITIES PLAN & DELTA ENVIRONMENT SCIENCE CENTER

INTRODUCTION - page 2

I. FINDINGS REGARDING THE MITIGATION OF POTENTIALLY
SIGNIFICANT ENVIRONMENTAL IMPACTS - page 3

II. FINDINGS REGARDING PROJECT ALTERNATIVES - page 43

III. FINDINGS REGARDING SIGNIFICANT UNAVOIDABLE ADVERSE
IMPACTS AND STATEMENT OF OVERRIDING CONSIDERATIONS - page 52

INTRODUCTION

In Exhibit A, Ironhouse Sanitary District is referred to both as "ISD" and "the District."

The term "the Project" is used to refer to the Project which was analyzed in the Final EIR. The Project comprises three parts:

1. The Wastewater Facilities Upgrade and Expansion, also referred to in Exhibit A as the Facilities Project,
2. The Delta Environment Science Center and related public trails, also referred to in Exhibit A as the DESC Project, and
3. All permits and approvals associated with the foregoing.

In Exhibit A, as in the Final EIR, for ease of reference Impacts and Mitigation Measures are identified in alphabetical order by letter/number designator. Where a particular impact is missing, as indicated by a gap in the alphabetical order, this means that the Final EIR determined that the impact is either beneficial or is not significant and therefore does not require mitigation.

I. FINDINGS REGARDING THE MITIGATION OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS

This section of Exhibit A lists the significant impacts of the Project which were identified in the Final EIR, and for each impact states its corresponding mitigation measures which are being proposed by the District as part of the Project. This section states that for each impact, the Board of Directors finds that the implementation of its corresponding mitigation measure(s) would avoid or substantially lessen these impacts, thus reducing them to a less than significant level. This section also states the rationale or reasons supporting the Board's finding that these measures would reduce a particular impact to a less than significant level.

LAND USE, PLANS AND POLICIES

Impact 3.1-C: Operation of the oxidation ditch treatment process and/or open-air sludge drying beds could be incompatible with future adjacent residential land uses, the proposed DESC, and/or the establishment of three regional trails around the WWTP site.

Mitigation Measures Proposed by the District as Part of the Project

See Mitigation Measure 3.7-D1 in Section 3.7, Air Quality for mitigation which would reduce odor impacts.

See Mitigation Measures 3.8-A1, 3.8-A2, 3.8-A3, 3.8-A4, and 3.8-A5 in Section 3.8, Public Health/Hazardous Materials, for mitigation to reduce public health impacts associated with increased handling of hazardous materials.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Operation of the proposed treatment plant and open-air sludge drying beds would introduce additional sources of noise and odors, and would increase the use of hazardous materials onsite (discussed separately in Sections 3.6, 3.7, and 3.8, respectively). The expanded WWTP could, therefore, be incompatible with the Vintage Subdivision residential land uses, less than ¼ mile to the southwest, or with the future residential, commercial, or recreation land uses allowed by the M8 land use designation for Emerson dairy property, east of the WWTP. Incompatibility with adjacent land uses due to noise, odor, and hazardous materials use could be a significant impact if not sufficiently mitigated.

DEIR Sections 3.6, 3.7, and 3.8, Noise, Air Quality, and Public Health/Hazardous Materials, respectively, analyze the effects of WWTP noise, odors and hazardous materials use on existing or potential adjacent land uses. In Section 3.6, Noise, the impact analysis concludes the Project would not generate significant noise impacts during construction or operation. No mitigations are required for noise, and Project noise would not contribute to a land use compatibility impact.

In Section 3.7, Air Quality, Mitigation Measure 3.7-D1 is proposed to reduce potential Project odor impacts to less than significant. Mitigation Measure 3.7-D1 proposes that a minimum buffer zone of 1,000 feet be maintained between the upgraded WWTP and adjacent land uses. This mitigation would provide adequate distance between the WWTP and adjacent land uses to reduce the potential odor effects of plant operation upon neighboring land uses to less than significant by allowing sufficient distance for the dispersal of any odors. As proposed, the new treatment and sludge drying facilities would be located in the center of the ISD property, providing a buffer of more than 1,000 feet from adjacent properties

which would again allow for the dispersal of any odors.

Mitigation Measures 3.8-A1 through 3.8-A4 would promote the safe transport, storage and handling of chlorine. Measure 3.8-A5 proposes that a fence be built around the WWTP to prevent public trespass. These measures, along with the buffer zone established by Measure 3.7-D1, would decrease the public health risk associated with increased use of hazardous materials onsite. Implementation of mitigation measures to reduce the impacts of odor and hazardous materials use would reduce the Project's potential land use compatibility impacts to a less than significant level.

Geology and Seismicity

Impact 3.2-A: Project construction could result in soil erosion and sedimentation by wind or water.

Mitigation Measures Proposed by the District as Part of the Project

3.2-A1: ISD would cause the preparation of a Stormwater Pollution Prevention Plan (SWPP) in order to obtain a National Pollution Discharge Elimination System (NPDES) stormwater permit from the Central Valley Regional Water Quality Control Board (CVRWQCB) for construction. An erosion control plan would be a major component of the SWPP. The erosion control plan would be included in the construction contract specifications. The erosion control plan would include keeping soils moist, limiting the amount of stockpiled material, locating soil stockpiles on flat ground away from trenches and sensitive areas, cleaning up spills promptly, installing temporary runoff facilities, revegetating, repaving and restoring riprap shoreline and recompacting soils immediately after construction. Earthwork phases could be scheduled during the dry season (generally April to October).

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Construction of the first increment of the upgrade and expansion of the treatment system (see Section 2.4.1.1 of the Final EIR at page 2-11) would involve excavation of 18,200 cubic yards (cy) of material and fill of 20,600 cy of material. Cumulatively, full build-out of the 8 mgd plant would involve grading and site preparation of up to 40 acres and a total of 39,600 cy of excavation and 20,600 cy of fill. Each of the three proposed increments of plant expansion could result in wind

erosion and a loss of top soil during construction. Construction of the effluent pipeline from the ISD plant to Jersey Island would involve excavation of approximately 14,000 cy for the land application alternative and about 19,500 cy for the San Joaquin River discharge alternative. Additional grading and excavation would occur on Jersey Island to install effluent distribution facilities and grade the land for overland flow. Construction of the DESC Project, which would not be undertaken by the District, would involve minor excavation. Excavation and fill for project construction could result in substantial erosion by wind and/or water. This would be a significant impact, without mitigation.

Implementation of the Stormwater Pollution Prevention Plan (SWPP) and its concomitant erosion control plan, as provided by Mitigation 3.2-A1, would reduce the potential impact of erosion due to construction to a less than significant level through me. The SWPP and erosion control plan measures, including moistening of exposed soils, and revegetating of disturbed areas, would prevent the project's disturbance of soils from causing significant stormwater pollution and erosion.

Impact 3.2-B: Trench settlement and/or pipe failure may result from improper backfill of the pipeline excavation.

Mitigation Measures Proposed by the District as Part of the Project

3.2-B1: The design plans and specifications would specify standards for acceptable backfill material, and require testing of native soil if it is proposed to be used for structural or pipeline backfill. Backfill would be mechanically compacted or jetted to meet the performance criteria specified by the design engineer.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Improper trench backfill could consolidate at a later date and leave a depression on the ground surface, which would then collect and channel water. This impact would be significant without mitigation because it would constitute a major topographic alteration.

Additionally, improper trench backfill could provide inadequate support for the pipeline, and could therefore cause pipeline failure. This impact would be significant without mitigation because it would constitute exposure of

people and structures to major geologic hazards.

Selection of appropriate material for backfill and proper compaction of the material, as proposed in the mitigation above, would prevent excessive settling and would provide adequate pipeline support. This would reduce the impacts of topographic alteration and exposure of people and structures to geologic hazards to a less than significant level.

Impact 3.2-C: The Project would be constructed in an area with soils prone to liquefaction during strong ground shaking from an earthquake. Liquefaction could damage Project facilities, which could then expose people and the environment to treated and untreated wastewater.

Mitigation Measures Proposed by the District as Part of the Project

3.2-C1: Each component of the Project would be designed by the respective agency responsible for its construction to withstand earthquake groundshaking in accordance with applicable building and design standards. Design features would be incorporated into plans and specifications.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Alluvial soils with high ground water conditions, such as those in the Project Site, are identified as possessing high liquefaction potential. Soil liquefaction could cause catastrophic failure of the proposed pipeline during a strong ground shaking event, such as an earthquake. Damage to treatment facilities or effluent pipelines could release untreated wastewater into the environment. Release of untreated wastewater would be a potentially significant public health and environmental impact. The Facilities Project would be designed to withstand the maximum credible earthquake, as proposed in Mitigation 3.2-C1, thus the potential for severe earthquake damage would be limited to an acceptable level. The treatment facility would be contained within levees that provide flood protection so raw sewage would not be expected to migrate off site into surface waters, adjacent wetlands or surrounding properties.

There is an irrigation water collection system which returns surface runoff from the District's pastures to the treatment facility. This closed internal drainage collection system provides another level of sewage spill protection in the event of earthquake damage. Finally, the District's existing

onsite storage ponds (350 acre feet capacity) could provide for emergency storage of treated or untreated wastewater flows in the event of a plant upset. In sum, the potentially significant impact of a raw sewage spill would be mitigated to less than significant through the facility design.

A high potential for liquefaction exists below the levees on Jersey Island. In the event of liquefaction during an earthquake, pipelines over or through the Jersey Island levees could crack or break, causing the release of treated effluent. Effluent in pipelines crossing Jersey Island would have been treated in compliance with State and Federal standards and an accidental release would not pose a water quality or public health impact. However, pipeline rupture could result in soil or levee erosion, increasing the risk of levee failure. This potential significant impact could be reduced through careful design and construction of the pipelines on or near the levees.

The DESC would also be subject to strong groundshaking and potential liquefaction during an earthquake. Untreated wastewater pipeline failure, erosion of the levee and damage to the DESC due to groundshaking would constitute exposure of people and structures to major geologic hazards and would be significant impacts, if unmitigated. The structure would be designed by the agency constructing it and built in compliance with the Uniform Building Code and earthquake safety standards. The single story, wooden structure would be supported on piers, providing it greater stability and flexibility during groundshaking. The potential for earthquake damage would be minimized to a less than significant impact through building design.

Hydrology, Drainage and Water Quality

Impact 3.3-A: Construction could result in soil erosion with resultant sedimentation of surface water bodies, and the introduction of pollutants into surface waters within the Project Site, including Marsh Creek, Big Break and associated wetlands, and Dutch Slough.

Mitigation Measures Proposed by the District as Part of the Project

See Measure 3.2-A1 regarding the erosion control plan which would be implemented by the District.

3.3-A1: ISD and its contractors and the agency constructing the DESC Project would obtain required permits governing construction activities and would comply with requirements for erosion control and stormwater pollution prevention.

Applicable permits include CVRWQCB - NPDES Stormwater Pollution Prevent Permit, Corps of Engineers ("COE") 404 Wetlands Permit, and California Department of Fish and Game (CDFG) Streambed Alteration Agreement.

3.3-A2: Fluid spills from construction vehicles would be cleaned up immediately and disposed of in the appropriate manner.

Finding: The Board Finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Construction of the Project would require significant amounts of excavation and fill. Cubic yards of excavation and fill for each component of the Project are discussed in Section 3.2, Geology, Soils and Seismicity. Construction associated with installation of the pipeline could cause erosion along the pipeline trench, in Marsh Creek and in Dutch Slough. Erosion can increase the sediment load in waterways and disrupt hydrologic and biologic resources. Improper placement of the pipeline could increase erosion and scouring on the banks of Marsh Creek. Removal of riprap along Dutch Slough and construction on the levee could increase erosion to the Slough.

During construction of each of the three proposed phases of WWTP expansion, soil erosion could result in a loss of top soil and siltation of the adjacent surface waters and wetlands of Big Break. Although Marsh Creek and Big Break are protected from water erosion and sedimentation by levees, wind erosion could result in siltation of the creek channel.

Grading and excavation would occur on Jersey Island due to installation of the effluent pipeline and effluent distribution facilities and gradation of the land for overland flow. Erosion from the construction areas could cause siltation of irrigation drainage channels on both the Emerson Dairy property and Jersey Island and of Dutch Slough, Marsh Creek or Emerson Slough.

Erosion from construction of the DESC could result in siltation of the wetlands and surface waters of Big Break and Marsh Creek.

In addition to soil erosion, construction activities could also introduce other pollutants to local surface waters and groundwater. Fuels, chemicals, and other potentially harmful materials commonly used during construction could enter ground or surface waters via spills or stormwater runoff.

These potential impacts of construction, i.e., substantial erosion and resultant sedimentation, as well as temporary degradation of surface water quality, would be significant if unmitigated. However, the proposed mitigation measures would control erosion and spills, preventing degradation of surface water quality due to project construction. Proposed mitigation would thereby reduce this impact to a less than significant level.

Impact 3.3-B: Open trench pipeline installation across Marsh Creek and Dutch Slough would temporarily disrupt surface water flow and increase soil erosion, sedimentation and turbidity. If the trench is not properly installed, long-term erosion and sedimentation could persist along the pipeline trench.

Mitigation Measures Proposed by the District as Part of the Project

See Measure 3.2-A1 regarding the erosion control plan the District would implement.

3.3-B1: For construction across the Marsh Creek channel, the District would require the construction contractor to schedule construction for the months when stream flows are low.

3.3-B2: For Marsh Creek construction, the District would require the contractor to maintain a flow bypass around the construction site.

3.3-B3: Following pipeline installation, the creek/slough bed would be restored to its original contours.

See also Measure 3.3-C1 regarding possible installation of pipeline across Dutch Slough using a tunneling or drilling that avoids disruption of slough sediments.

Finding: Implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: The Marsh Creek channel is relatively narrow and shallow such that open trench pipeline installation could be accomplished using an "in the dry" technique where creek flow is temporarily diverted around the construction area in a by-pass pipe or channel. This temporary alteration of surface flows would not be a significant adverse impact; bypassing flows around the construction site would maintain aquatic organisms and downstream wetland vegetation. Without mitigation, however, trenching could cause substantial erosion which would

increase turbidity and sedimentation. Turbidity could adversely affect aquatic organisms, and sedimentation could adversely impact downstream wetland areas. This would be a significant impact.

Open trench pipeline construction across the approximately 300-foot-wide Dutch Slough channel could not be accomplished using an "in the dry" technique. Pipeline excavation and installation would occur in water and submerged soils. Short-term erosion of bottom muds and downstream sedimentation could be controlled to some extent, but would be unavoidable. This short-term erosion would increase water turbidity, which would adversely affect aquatic organisms and would result in downstream sedimentation of wetland areas. Without mitigation, pipeline installation in Dutch Slough could have the same erosion-associated impacts as those described above in the Marsh Creek channel. This would be a significant impact.

Implementation of an erosion control plan and restoration of the creek/slough beds to their original contours would prevent long-term erosion impacts. Erosion impacts would be temporary, lasting two to three weeks during construction. Turbidity levels would then return to normal and sedimentation would cease. In addition, restriction of construction across Marsh Creek to periods of low flow and maintenance of a bypass around the construction area would greatly reduce downstream impacts of construction in the channel. No permanent reduction or elimination of wetland habitat or aquatic populations would occur. Mitigation would therefore reduce this impact to a less than significant level.

Impact 3.3-C: Pipeline installation across Dutch Slough and/or construction of any effluent outfall into the San Joaquin River could interfere with navigation.

Mitigation Measures Proposed by the District as Part of the Project

3.3-C1: ISD may elect to install the pipeline across Dutch Slough using a tunneling or drilling technique that would avoid channel disturbance.

3.3-C2: The Department of Boating and Waterways oversees navigational safety through the COE permitting process. The COE Section 404 permit for construction in Dutch Slough would contain measures from the Department to insure boating safety. The District and its contractors would adhere to construction practices in the permit.

Finding: The Board finds that the implementation of the

mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Dutch Slough provides navigable access to Bethel Island and other island and mainland areas along Dutch Slough, Taylor Slough and Sand Mound Slough. Open trench construction across Dutch Slough would involve partial closure of the Dutch Slough Channel and detour of recreational boats around the construction zone. At least half the 300-foot-wide channel could be closed at one time. Construction equipment in use during pipeline installation, such as large cranes for pipeline installation, could pose a hazard to navigation past the construction site. If passage through Dutch Slough past the construction site were not feasible, vessels could be diverted around the north end of Jersey Island to Taylor Slough, which then joins Dutch Slough further upstream.

Open cut pipeline installation across Dutch Slough would require approximately two weeks. The pipeline would be buried below the channel bottom when completed. Following installation, the Dutch Slough channel would be restored for navigational use.

In the area of the proposed pipeline crossing, Dutch Slough varies from 10 to 13 feet deep at MLLW. If the pipeline is not buried deeply enough in Dutch Slough, erosion of bottom sediments could expose the pipeline. Exposure of the pipeline could create a hazard for navigation. Also, the pipeline must be placed below the maximum dredge depth in order for it not to interfere with dredging operations. If the pipeline is buried at too shallow a depth, it could be damaged during dredging, releasing treated effluent into Dutch Slough and posing an obstacle to navigation. Interference with navigation in any of the above-described ways would be a significant impact.

Tunneling beneath the slough, compliance with Department of Boating and Waterways requirements for timing and procedure of construction, or both would reduce the potential to interfere with navigation, reducing this impact to a less than significant level.

Under the direct river discharge alternative, the Project proposes to extend an effluent outfall into the San Joaquin River. The main channel in this section of the San Joaquin River is dredged and is approximately 32 to 34 feet in depth at MLLW. The outfall would be located so that it would not pose an obstacle to navigation, reducing this impact to a less than significant level.

Impact 3.3-F: Pipeline construction through, under or near delta levees along Dutch Slough and Marsh Creek could adversely affect levee stability and result in flooding or increase the risk of flooding.

Mitigation Measures Proposed by the District as Part of the Project

3.3-F1: The District would obtain and comply with the conditions in the County's flood control and/or drainage permits issued for construction of the Marsh Creek crossing.

3.3-F2: The District would work closely with the Board of Trustees of Reclamation District No. 830 in the latter's ongoing program of assessing the adequacy of the levees on Jersey Island and determining the need, if any, for additional stabilization.

3.3-F3: When paralleling a levee, the pipeline alignment would be set back from the levee a safe distance.

3.3-F4: The District would include in the construction contract requirements that the contractor keep staging areas and equipment away from the levees.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: The levees along Dutch Slough protect the Emerson property and Jersey Island from flooding. Portions of Jersey Island, in particular, lie up to 12 feet below the mean sea level. A breach in the levee could cause immediate flooding and further levee damage. Any construction activity that disrupts the integrity of the levee, particularly at the base, could initiate levee instability that could eventually lead to levee failure and flooding. This would be a significant impact.

Pipeline construction across Marsh Creek would be under the jurisdiction of the Contra Costa County Department of Public Works, Flood Control Department. Construction in a flood control right-of-way, such as Marsh Creek, would require a flood control permit. Construction which occurs in the department's jurisdiction but not in a flood control right-of-way would require a drainage permit.

The proposed effluent pipeline would extend through the Marsh Creek levees. The pipeline would also extend through the levees along Dutch Slough both on the Emerson Dairy property and on Jersey Island. In general, pipeline installation

would involve extending the pipe above ground up the slope of the levee, either over the top, or embedding it in and through the levee not far from the top. This method avoids disruption of the levee base which could affect levee integrity and stability.

Reclamation District No. 830 will review the construction of the effluent pipeline to confirm that it will not reduce the stability of the affected portion of the levee on Jersey Island. In addition, setback of pipeline alignments and construction staging areas from the levee would reduce the likelihood of indirect damage to the levee. Implementation of these mitigation measures would reduce the potential impacts of levee disruption and increased flood risk to less than significant. ISD may elect to install the pipeline across Dutch Slough using a tunneling or directional drilling technique which would not disrupt the levees.

Impact 3.3-H: All proposed facilities and effluent/sludge disposal areas lie within the 100-year flood plain and thus are exposed to flood risk. Flood would damage structures, which could then cause exposure of people and the environment to treated and untreated wastewater.

Mitigation Measures Proposed by the District as Part of the Project

3.3-H1: The District or Reclamation District No. 830, as appropriate, would construct and/or maintain the levees around all treatment facilities and effluent and sludge disposal areas at an elevation above the 100-year flood plain, and would design facilities to withstand a 100-year flood. The levee elevation and other design requirements for the levee would be determined by a California licensed civil engineer and incorporated into the design plans and specifications.

3.3-H2: The agency constructing the DESC should ensure that it is either placed on piers to raise the facility above the 100-year flood zone, or levees should be constructed around the facility sufficient to protect it from a 100-year flood event. Visitors to the DESC would be prohibited from using the walkways whenever the risk of a 100-year flood existed.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: All proposed treatment and disposal facilities are located within the 100-year floodplain, and all facilities are currently enclosed within

levees to protect them from flooding. Construction of the new wastewater treatment facilities or of the DESC in a 100-year flood zone without mitigation would be a significant impact, because flooding could damage structures, exposing people and the environment to direct and indirect flood hazards. Neither irrigation nor the effluent pipelines proposed as part of the Project would have significant flood-related impacts.

Flooding of the treatment facilities could release untreated wastewater into the surrounding environment, causing a threat to public and environmental health. This would be a significant impact. The design of the new treatment facilities includes construction of perimeter levees to provide protection against the 100-year flood event, as described in Mitigation 3.3-H1. These levees would also prevent the release of raw sewage from the WWTP into the irrigation area or surrounding properties, thereby reducing this impact to a less than significant level.

Levees currently extend along the northern boundary of the ISD property and along the eastern boundary along Marsh Creek, providing flood protection from Big Break and Marsh Creek for the ISD irrigation areas. Flooding of the disposal areas on the ISD WWTP site could release treated effluent onto the surrounding properties or towards the Contra Costa Canal, which is a domestic raw water source. The potential for treated effluent to enter the Canal during a flood event is, however, limited because the canal is contained within 5- to 7-foot levees that are above the projected water level of the 100-year flood event. In addition, the Canal water is treated to meet drinking water standards before human consumption so flooding to the Canal would not threaten human health.

All of Jersey Island lies within the 100-year flood plain. The ground elevation of the island ranges from 0 to 12 feet below mean sea level. Thus, the island lies below the adjacent river water level and would flood without the protection of the levees. The effluent used for irrigation would be treated to comply with applicable water quality standards. In the unlikely event of flooding of all or part of Jersey Island, effluent irrigation of the flooded area would be suspended until the cause of the flooding was corrected and the flood waters were removed. In the event that Plant flow exceeded other available storage and disposal capacity, the District would have to implement an emergency discharge to surface water. ISD and Reclamation District No. 830 share a common interest in the maintenance of the flood control levees on Jersey Island. Flooding of the fields irrigated with treated effluent would not result in significant water quality degradation that would pose a

serious public health or environmental impact.

Construction of the DESC and its associated walkways would occur within the 100-year flood zone of Big Break. The DESC Project site is not contained with the existing ISD WWTP site levees. Flooding of the DESC and its facilities could expose people to flood-related hazards, which would be a significant impact, if unmitigated by the agency constructing them.

Implementation of Mitigation Measure 3.3-H2, which would protect the DESC from a 100-year flood and keep people off walkways during the 100-year flood, would reduce the potential for flooding to harm structures or people. This mitigation would therefore reduce the potential flooding impacts to less than significant.

Impact 3.3-I: Proposed effluent irrigation, sludge application and increased cultivation activities could affect levee stability and in turn, increase the flood risk for Jersey Island.

Mitigation Measures Proposed by the District as Part of the Project

See Measure 3.3-F2. The District and Reclamation District No. 830 will assess the adequacy of the levees on Jersey Island and determine the need, if any, for additional stabilization and maintenance efforts.

3.3-I1: ISD would develop its cultivation and effluent irrigation plan to address the issues of peat soil oxidation and increased subsidence. Irrigation management and cultivation practices which minimize subsidence potential would be incorporated into the plan.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: The proposed effluent irrigation and sludge application and associated increase in crop cultivation versus pasture use could adversely affect levee stability on Jersey Island both directly and indirectly. Direct impact to levees could result from irrigation near or on the levee toe and/or slope which could cause erosion, sloughing or slumping of levee slopes and eventual instability leading to failure. Levees could also be affected if sludge application and discing occur up to the levee toe and result in direct damage or undermining of the levee base.

Indirectly, the proposed reuse/disposal of effluent and sludge for agricultural crops could also affect levee stability. Land management practices, particularly cultivation, are the most significant cause of oxidation of the peat soils which are characteristic of the Delta islands, such as Jersey Island. Oxidation of the peat soils causes subsidence (DWR, 1990). As the land subsides and the ground surface elevation drops further below the adjacent river water level, the risk of flooding increases. In addition, subsidence near the levees may undermine the levee stability and contribute to levee failure, which would be a significant impact.

Implementation of Mitigation Measure 3.3-I1, development of a cultivation and irrigation plan, would minimize subsidence, reducing potential to weaken levees and making this a less than significant impact.

Impact 3.3-J: Land application of effluent and sludge could degrade the surface water and/or groundwater quality on Jersey Island or in the San Joaquin River and, in turn, affect the state-designated beneficial uses of these waters.

Mitigation Measures Proposed by the District As Part of the Project

3.3-J1: The District would prepare a detailed effluent and sludge application plan specifying the types of crops to be grown, the location, crop rotation cycles, and proposed annual effluent and sludge application rates. The District would modify and update this plan annually based on the results of annual monitoring.

3.3-J2: The District would submit the proposed effluent and sludge application plan to the RWQCB for approval and apply for a revised WDR to permit program implementation. The District would comply with permit conditions.

3.3-J3: The District would conduct a monitoring and reporting program as specified by the WDR. The monitoring program would include groundwater monitoring, crop cultivation type and schedule, soil monitoring and sludge/effluent analysis for heavy metals and nitrogen.

3.3-J4: The District would maintain a minimum 100-foot setback between areas of effluent and sludge application and the domestic water wells on Jersey Island and conduct periodic well water monitoring in accordance with the WDR.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a

less than significant level.

Rationale for the Finding: The potential water quality impacts of the land application of treated effluent and sludge are a function of (a) the hydrological characteristics of the land application site, (b) the level of treatment of the effluent and the sludge, and (c) the management plan for the application of the effluent and the sludge.

The hydrological characteristics of the land application site are described above in Section 3.3.1.2, Project Site. The regulatory standards for the levels of treatment to which the effluent and sludge must conform are discussed in Section 3.3.1.6.

The management plan for the application of the effluent and the sludge, as provided by the above Mitigation Measures, would have two components: (1) an effluent and sludge application plan, and (2) a monitoring and reporting program. How this management plan responds to the hydrological characteristics of the land application site and the level of treatment of the effluent and the sludge is explained below.

The land application of sludge and treated effluent is limited primarily by three factors: heavy metal loading, nitrogen loading and the presence of pathogens. Metals tend to combine with soil particles in a process called adsorption and become immobilized, causing the land to accumulate metals or become a metals "sink." The EPA has set specific limitations on the amounts of individual metals permitted to accumulate in the soil as a result of land application of effluent and sludge. The application of sludge and effluent must comply with the annual cumulative pollutant loading rates established by the EPA (40 CFR, Part 503, Sludge Regulations).

In 1992, the District's consultant prepared an analysis of the proposed application of sludge on the 2,900-acres on Jersey Island which are owned by the District. The *Ironhouse Sanitary District Sludge Management Plan*, James M. Montgomery Engineers, March 1992, is incorporated by reference into the Final EIR.

Subsequent to completion of the *Sludge Management Plan*, the EPA adopted new Sludge Regulations in November 1992. According to these new regulations and the results of tests conducted by the District and its engineers, the quality of the sludge which will be produced by the District's expanded treatment system will permit its application on the same land for an unspecified number of years, provided annual loading limits are not exceeded.

While heavy metal loads for the site are based on annual cumulative loads, nitrogen loads are limited by annual crop uptake (agronomic) requirements. Plants require nitrogen and phosphorus, as well as other trace elements, for growth and reproduction. The nitrogen and phosphorus present in reclaimed water are used as fertilizer by plants and can increase growth rates and crop yields. Different species of plants use nutrients at different rates. Where nitrogen uptake is the limiting factor in recycled water application, crops with high nitrogen uptake rates, such as corn and barley, are often chosen when reclaimed water is applied.

The concentration of total nitrogen measured in ISD sludge is 100 milligrams per kilogram (mg/kg). To minimize the nitrogen concentration in the sludge, the District proposes the application of dried rather than liquid sludge, because the drying process reduces the nitrogen content. The effluent total nitrogen concentration is 34 mg/l. To manage the nitrogen load from the sludge and treated effluent, the District proposes to convert some of the existing pasture land to agricultural crops, which have higher nitrogen requirements than pasture grasses, and thus can more effectively use the nitrogen added through sludge and effluent application. ISD has identified several crops with relatively high nitrogen uptake levels which it may select to grow in the disposal area, including barley, corn and alfalfa. Based on cultivation of some or a combination of these crops on Jersey Island, the projected annual allowable nitrogen loading rate for the island would vary between 448,000 pounds per year (lbs/yr) and 1,344,000 lbs/yr (James M. Montgomery, 1992).

Application of treated effluent and sludge at agronomic rates would allow plant uptake of nitrogen so that excess nitrogen would not leach into the groundwater and pose a public health concern. Table 3-1 at page 3-49 of the Final EIR presents a projection of annual sludge and effluent application rates for the flow scenario of 8 mgd to demonstrate that the annual nitrogen load is within agronomic rates.

Treated effluent and sludge would not be simultaneously applied to the same area of land on Jersey Island, and they would be applied in a planned rotation throughout the 2,600 of the 2,900 acres owned by the District on Jersey Island which have been determined to be suitable for this purpose. Approximately 1,600 acres are required for the disposal of 8 mgd of effluent, which is the maximum flow capacity of the expanded treatment plant. Until the maximum flow capacity is reached, in excess of 1,000 acres would be available to support this planned rotation. Once maximum flow capacity is reached, approximately 1,000 acres would still be available for other purposes, including the rotation of the application

of treated effluent and sludge, and the application of treated effluent and sludge above the maximum flow capacity.

Three drinking water wells are located near the north end of Jersey Island Road on Jersey Island. These wells do not draw from the surface groundwater zone, but are approximately 125 to 200 feet deep and draw from the deeper zones. These wells have a small artesian head (Montgomery Watson, 1993). The application of treated effluent and sludge will not adversely effect these drinking water wells because the surface groundwater zone into which the effluent percolates is separated from the deeper groundwater zone by impermeable aquacludes. In addition, current and proposed DHS standards for irrigation with treated wastewater require a 50-foot setback from any domestic well. The District will comply with this standard, as well as the setback standards for surface water which are as dictated in the 503 Sludge Regulations.

Impact 3.3-L: Direct discharge of effluent to the San Joaquin River must comply with state and federal water quality and public health standards to insure that it does not degrade surface water quality and, in turn, adversely affect beneficial uses of these waters.

Mitigation Measures Proposed by the District as Part of the Project

3.3-L1: ISD would provide additional treatment to address the water quality requirements for direct discharge to the San Joaquin River. The District would apply for a revised NPDES permit for direct river discharge and would comply with the water quality standards specified in the NPDES permit.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Either as an alternative or in combination with land disposal of effluent on Jersey Island, the District proposes a direct surface water discharge to the San Joaquin River. An outfall with a diffuser would be extended north from Jersey Island into the river. The District conducted a preliminary evaluation of potential impacts from river discharge. This assessment concluded that a minimum initial dilution of effluent by river water of 30 to 1 could be achieved with a river outfall. The effect of added BOD and reduced dissolved oxygen levels in the river due to effluent discharge was shown to have minimal impact, and the effect on the Antioch freshwater intake downstream was found to be negligible (James M. Montgomery Engineers,

1991a).

River discharge would require a higher level of treatment than required for the current or proposed land disposal system. The State Water Resources Control Board (SWRCB) adopted the *Water Quality Control Plan for Inland Surface Waters* (ISWP) in 1991 for protection of receiving waters, such as the San Joaquin River (SWRCB, 1991). Effluent discharge to the San Joaquin River may require advanced treatment processing to comply with the water quality objectives set by the SWRCB in the *Inland Surface Waters Plan* or alternate SWRCB standards. The effluent must meet specific numerical limits set for various chemical constituents which have been established for protection of aquatic life and public health. In addition, ISD would be required to conduct bioassay testing for toxicity of the effluent to fish. Continuous flow-through 96-hour bioassays on undiluted plant effluent must be conducted three times monthly.

The secondary effluent produced by the proposed oxidation ditch activated sludge treatment process may not meet the requirements for direct river discharge. Particular constituents of concern would be metals and un-ionized ammonia, which can result in fish toxicity. To reduce un-ionized ammonia, some level of nitrification of the wastewater is required. The proposed oxidation ditch treatment process provides for a nitrified effluent. In order to meet the metal discharge requirements, if required, the District proposes to add an advanced treatment process, which could include but it not limited to microfiltration/reverse osmosis. With an advanced treatment process, effluent from the ISD plant would most likely meet the discharge standards. A pilot study to ensure compliance with metal standards may be required.

Additional discharge requirements that ISD would have to meet for river discharge include a limit on altering the ambient temperature of river water more than 5 degrees Fahrenheit. This requirement will be easily met due to the small quantity of effluent discharge in relation to the volume of river flow.

Impact 3.3-M: An outfall from Jersey Island into the San Joaquin River could interfere with navigation.

Mitigation Measures Proposed by the District As Part of the Project

3.3-M1: The District would apply to the Sacramento COE for a permit to install the proposed discharge outfall. ISD would comply with outfall design, location and construction

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requirements as specified by COE to ensure the facility does not interfere with navigation or pose a navigation hazard. The outfall could be relocated along the north shore of Jersey Island or extend from another point off the island.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: The proposed outfall for direct discharge to the San Joaquin River would extend north roughly from the center of Jersey Island (extending out from Jersey Island Road) into the river. A review of the navigational charts for this area indicates that the water depth along the north shore of Jersey Island ranges from 32 to 40 feet deep (mean lower low water). This is relatively deep compared to water depth elsewhere across the river channel in this reach. Given the deep water, the area just north of Jersey Island serves as a main navigation channel past the island. The outfall would be located outside the defined navigation channel. Given the depth of water in this area, the outfall would not be expected to pose a navigation hazard. However, the District would need to consult with COE on outfall location and design and would need to obtain a permit from COE for placement of a structure within a navigable waterway under Section 10 of the Rivers and Harbors Act (1899).

Impact 3.3-N: The proposed effluent irrigation areas could provide habitat for mosquito populations. Increasing mosquito populations could increase the public health risk of infection with diseases which are carried by mosquitoes.

Mitigation Measures Proposed by the District as Part of the Project

3.3-N1: The waste discharge requirements that would be issued to ISD by the CVRWQCB to permit the land application of effluent would require management of effluent irrigation activities such that excessive surface runoff which could cause ponding or flooding would not be created. This permit condition would help reduce the potential for irrigation practices to create ponded water habitat for mosquitoes.

3.3-N2: The District would consult with the Contra Costa County Mosquito Abatement District in designing the effluent irrigation program. Facilities and irrigation practices would be designed to minimize creation of habitat for mosquitoes.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the

Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Effluent application on Jersey Island could increase the surface area of ponded water. The creation of still, ponded water would provide habitat for mosquito breeding. Mosquitoes in this area are a known vector for two types of encephalitis. Although the incidence of these diseases is small, increased exposure of people to these two diseases would be a significant impact.

The mitigation measures identified above have been proven by past experience and scientific evidence to minimize mosquito habitat. The incorporation of these measures into the design of the Project would reduce this public health risk impact to a less than significant level. Also, the effluent produced by the treatment process tends to reduce mosquito growth.

Impact 3.3-O. Inconsistency with County General Plan policies regarding flooding and water quality would be a significant impact.

Mitigation Measures Proposed by the District as Part of the Project

Refer to the mitigation measures for Impacts 3.3-A, 3.3-B, 3.3-E, 3.3-F, 3.3-H, 3.3-I, 3.3-J, 3.3-K, 3.3-L, and 3.3-M, above.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: County General Plan policy 10-55 recognizes that the project area has a significant flood hazard, and that the effects of flooding would be substantial. This policy and its Implementation Measures 10-y and 10-ac require that construction in flood-hazard areas include an analysis of levee safety and appropriate mitigation measures to ensure that potential flooding impacts are adequately assessed and prevented. Impacts 3.3-F, 3.3-H, and 3.3-I all deal with flood hazards, including the effects of pipeline construction and increased subsidence on levee stability, and development of Project facilities in a 100-year floodplain. Since all of these impacts could be mitigated to less-than-significant levels by using appropriate construction techniques, the Project is consistent with this General Plan policy.

General Plan policies 7-23 and 7-25 and Implementation

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Measure 7-j deal with contamination of ground and surface water supplies. These policies protect the beneficial uses of water supplies by requiring the control of point and non-point water pollution sources and monitoring of groundwater supplies where a contamination hazard exists. Impacts 3.3-A, 3.3-B, 3.3-E, 3.3-J, 3.3-K, 3.3-L, and 3.3-M all involve impacts to ground or surface water quality, either temporary impacts due to construction or long-term impacts due to wastewater and sludge disposal practices. All of these impacts would be mitigated to less-than significant levels using appropriate construction and monitoring practices. With mitigation, the Project would be consistent with County General Plan policies.

Vegetation and Wildlife

Impact 3.4-B: Construction of the effluent pipeline to Jersey Island and of the DESC and associated boardwalks and piers could result in the loss of or disturbance to wetland and/or riparian habitats.

Mitigation Measures Proposed by the District as Part of the Project

3.4-B1: Prior to final design and siting of the plant and the routing of the effluent pipeline, the District would consult with the Sacramento COE to confirm the preliminary assessment conclusion that the proposed plant site and pipeline routing do not affect jurisdictional wetlands. If jurisdictional wetlands are present, the District would revise the facility siting and pipeline routing to avoid jurisdictional wetlands, to the extent possible. If Project development still involved fill of jurisdictional wetlands, it would likely affect less than one acre of wetland and, as such, could qualify for a Nationwide Permit. The District would obtain and comply with the applicable COE permit conditions, including minimizing the construction disturbance area in wetlands, prohibiting storage of materials or fill in adjacent wetlands, implementing erosion control measures, and restoring surface contours. As contemplated by mitigation measure 3.4-D1, the District would conduct surveys for special status plant and animal species with potential to occur in wetland areas.

3.4-B2: Prior to final design and siting of the DESC structure, its boardwalks and piers, the agency which would construct them would conduct a wetland delineation and consult with COE for a jurisdictional wetland determination. If jurisdictional wetlands are present, the agency would first revise the facility layout to avoid jurisdictional wetlands to the extent possible. If project development still involved fill of jurisdictional wetlands, it would

likely affect less than one acre of wetland and, as such, could qualify for a Nationwide Permit. The agency would obtain and comply with any required COE permit. As contemplated by mitigation measure 3.4-D1, the agency would conduct surveys for special status plant and animal species with potential to occur in wetland areas.

3.4-B3: The agency which will construct the DESC would locate it in an upland area outside of the Big Break wetlands and the 2.42-acre water storage area wetlands.

3.4-B4: Pipeline construction for the Dutch Slough crossing should avoid the willow riparian area identified on Jersey Island.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Wetlands and riparian areas are considered important and rare vegetation communities which provide habitat for native plants and animals, including several special status species. In accordance with the impact significance criteria, loss or disruption of wetland and riparian areas is a potentially significant impact. Activities that would place dredged or fill materials into "waters of the U.S." or wetlands are regulated by the COE (as described in Section 3.4.1.3, Regulatory Framework, above). The ISD Project Site is within the Sacramento COE District.

ISD Plant

A preliminary assessment of the ISD mainland property for jurisdictional wetlands was conducted by Wetlands Research Associates, Inc. WRA's preliminary conclusion is that this area does not contain wetlands within COE jurisdiction.

A review of historic aerial photographs indicated that the ISD mainland property has been used for grazing, hay production and vineyards since the early 1900's (WRA, 1993b). As part of the District's current operation of the treatment plant and pasture irrigation for effluent disposal, ISD has lowered the groundwater through pumping and drainage and currently maintains groundwater at four to five feet below the surface. When irrigation is not occurring, the pasture land is drained via ditches around the site perimeter. As a result of this active groundwater level maintenance, the pasture land does not exhibit wetland hydrology (i.e., saturated soils conditions) when irrigation is not occurring.

Construction of the new treatment facilities would fill

drainage ditches within 40 acres of the existing pasture land and thus would result in the loss of some emergent wetland vegetation. While some of the irrigation drainage ditches on the ISD mainland property have emergent wetland vegetation (e.g., cattails and tules), agricultural irrigation activity and ditches constructed and maintained for irrigation purposes are exempt from the 404 wetland regulations (WRA, 1993b). In addition, the value of these emergent wetlands in the drainage ditches as plant and animal habitat is very limited since the area is so actively managed for agriculture. New drainage ditches would be constructed around the perimeter of the expanded treatment plant and the emergent wetland vegetation would be expected to reappear. For these reasons, loss of emergent wetland vegetation due to fill of drainage ditches would not be a significant impact to plant or animal habitat.

Effluent Pipeline

The exact alignment for the effluent pipeline has not been finalized. The pipeline would extend across Marsh Creek and would result in disturbance of the riparian vegetation on the creek banks and the emergent wetland vegetation in the creek channel. The proposed crossing would remove up to about 7,000 square feet of riparian habitat (about 0.16 acre). Pipeline installation across the Emerson Dairy property and Jersey Island could also involve some fill or disturbance of wetland vegetation in scattered low-lying areas or drainage ditches. Installation of a pipeline across Jersey Island to the San Joaquin River could require the crossing of up to six drainage ditches that contain emergent wetland vegetation. This could result in the removal of roughly 5,000 square feet (about 0.11 acre) of wetland vegetation. Ditches and other low areas on Jersey Island that support wetland vegetation may fall under Corps jurisdiction and a permit could be required for any fill placement (WRA, 1993b).

COE wetland jurisdiction on Jersey Island and the Emerson property is unclear because of the extent of alteration of natural topography and hydrology (e.g., levees, drainage ditches and groundwater pumping) and because agricultural lands and activities are generally exempt from COE wetland regulation. The District would consult with COE for a formal jurisdictional determination. Whether or not the wetland areas fall within COE jurisdiction, the pipeline project would be likely to affect a total of less than one acre of wetlands, and these wetlands would not be permanently lost but would be restored following pipe installation. This temporary disturbance would not constitute a significant habitat impact.

Pipeline construction across Dutch Slough could result in the

temporary removal of up to roughly 0.2 acre of freshwater marsh vegetation that lines portions of the waterways surrounding Jersey Island and Big Break. Removal and disturbance of this wetland vegetation community would be potentially significant, but could be mitigated by avoidance of this habitat and through the implementation of construction measures that minimize the disturbed area and allow for restoration. The willow riparian area located on the southern portion of the Island near Big Break could be affected by construction activities within or adjacent to the area (See Figure 11 in the Final EIR at page 3-57). Removal and disturbance of this important vegetation community would be potentially significant, but could be mitigated by avoidance of this habitat.

Dredging or fill of wetlands for construction of a buried pipeline could be permitted under COE Nationwide Permit No. 12. The ISD pipeline project would meet the general conditions necessary to qualify for a Nationwide Permit: the pipeline project must not significantly affect the wetlands, water quality, a public drinking water supply source, aquatic resources, or special status species. The pipeline alignment would be sited to avoid the few mature trees along Marsh Creek; the wetland vegetation would restore naturally in the small area disturbed by construction and no permanent loss of wetlands would result. With implementation of the erosion control measures identified in Sections 3.2, Geology, Soils and Seismicity, and Section 3.3, Hydrology, Drainage and Water Quality, and measures to maintain bypass flow in Marsh Creek during construction (Measures 3.2-A1 and 3.3-B2), no significant short-term water quality impacts or aquatic ecology impacts would result during construction and no long-term impacts would occur. Marsh Creek is not a source of public drinking water. Survey of the proposed creek crossing area for special status species and their habitat would occur prior to finalizing the pipeline alignment.

DESC Project

Construction of the DESC and associated parking areas would result in the permanent removal of one acre or less of vegetation. The DESC and parking area would be located by the agency constructing them on upland, near but not in wetland areas. The DESC would be sited to avoid both the wetlands along Big Break and any wetlands associated with the 2.42-acre area used for temporary water storage off and on by ISD since 1978. Construction of the elevated boardwalks and piers into the wetlands and waters of Big Break would remove and temporarily disturb some freshwater marsh vegetation. Placement of pilings to support the boardwalks and piers would result in a minor loss of wetland vegetation and would not cause a significant, permanent reduction in wetland

habitat. Construction of the piers may or may not fall under COE's 404 jurisdiction and would probably fall under COE's Section 10 River and Harbors Act jurisdiction because the project area affects navigable waters of the U.S.

Impact 3.4-C: Disturbance to aquatic habitat and aquatic species could occur due to pipeline construction across Marsh Creek and Dutch Slough. Disturbance to the aquatic habitat could include disturbance to the water flow and increased sedimentation and erosion from the banks into the creek.

Mitigation Measures Proposed by the District as Part of the Project

See Measure 3.2-A1 regarding the erosion control program ISD would implement during pipeline construction.

See Measures 3.3-B1, B2, and B3 regarding mitigation to minimize flow disruption in Marsh Creek and to require that bypass flow be maintained during construction.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: The crossings of Marsh Creek and Dutch Slough associated with the installation of a 24-inch pipeline would disrupt the aquatic habitats of these areas. Trenching of substrate and/or pipeline installation could result in the direct loss of aquatic species caused by contact with pipelines and heavy equipment. Indirect impacts to aquatic vertebrates and habitat may also occur as a result of disruption of the aquatic habitat. Trench excavation and pipeline placement could increase suspended particulate matter in the water and increase turbidity, erosion and sedimentation. These would be short-term but, if unmitigated, potentially significant impacts. However, erosion control and minimization of flow disruption would substantially reduce the Project's potential to contribute to sediment in the nearby waters, and therefore, to degrade aquatic habitat. Hence, proposed mitigations would reduce potential impacts to aquatic species and habitat to a less than significant level.

Impact 3.4-D: Construction or operation of facilities along Big Break, Dutch Slough, and Marsh Creek could cause loss of or disturbance to special status species or their habitat.

Mitigation Measures Proposed by the District as Part of the Project

3.4-D1: The agency constructing the DESC would conduct surveys for special status plant species in wetland habitats along Big Break in the DESC boardwalk and pier area. If any populations of these special status species are found, they would be avoided and protected during construction.

3.4-D2: Prior to finalizing the pipeline alignment across Marsh Creek and Dutch Slough, ISD would have surveys conducted for potential special status plant and animal species. If any of these species is found, ISD would avoid or minimize habitat disturbance and schedule construction activities to minimize impacts on the local populations (e.g., to avoid breeding and/or migration periods).

See also Measure 3.4-B2 regarding mitigation of potential impacts to wetland habitats, including Marsh Creek. Minimizing impacts to wetlands and allowing for natural restoration would restore the habitat for the special status plant and animal species that could exist in Marsh Creek.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: While habitat for some special status species does occur in the Project Area, no special status species occurrences have been reported on the Project Site. There is little suitable habitat for such species on the Project Site, due to the long history of active agricultural activity on the ISD plant and effluent disposal site, Emerson Dairy and Jersey Island. Wetland Research Associates, Inc. conducted an assessment of potential special status species occurring on the Project Site. The results of the assessment are summarized below. The report is available for review at the ISD offices.

The treatment plant expansion would remove about 40 acres of potential hunting and foraging habitat for special status bird species. However, ample habitat for these species occurs throughout the area. Therefore, impacts to special status bird species using the site would not be significant.

The grasslands on the Project Site do not provide suitable habitat for the special status plant species associated with grassland habitats in this part of the County (see Table 3-2). Agricultural activity, including grazing, discing, crop production, and herbicide use, makes these grasslands poor habitat for native special status plants. Loss or disturbance of these grasslands would not have a significant impact on special status species.

The wetlands along Big Break, Dutch Slough, and Marsh Creek do provide suitable habitat for several of the special status plant species known to occur in association with freshwater wetlands (e.g., Mason's lilaepsis, Delta tule pea, California hibiscus and Suisun marsh aster; see Table 3-3). No survey for special status plants associated with wetlands has yet been conducted. Thus, these plant species could occur on the Project Site and plants could be removed or disturbed during the pipeline construction across Marsh Creek and Dutch Slough or installation of the DESC boardwalks and piers. In addition, these special status species could be affected by increased erosion and sedimentation from adjacent construction activities or changes in the water regime from application of water. If special status plant populations are found in wetlands on the Project Site, it would be feasible to relocate proposed facilities (pipeline, boardwalks and piers) to avoid or substantially reduce impacts to these plants, thereby reducing potential impacts to less than significant.

Pipeline construction across Marsh Creek could affect special status animal species habitat although Table 3-2 reports that the California tiger salamander, curved-foot hygrotis diving beetle and California red-legged frog are unlikely to occur on the Project Site or on adjacent lands. The removal of natural substrate and the disruption of water flows could remove and disturb habitat for these species. If these species are present in Marsh Creek, construction activities in the creek could cause significant impacts to the species populations (direct mortality) or could destroy habitat. The District would mitigate potentially significant impacts to these species to a less than significant level by routing the pipeline to avoid or minimize habitat and any known populations to the extent possible, by scheduling construction activities to avoid critical breeding and migration periods, and by restoring the creek bed and channel to pre-construction contours so that wetlands can restore and no permanent habitat loss results.

Impact 3.4-E: Effluent discharge to the San Joaquin River could impact river water quality and aquatic resources.

Mitigation Measures Proposed by the District as Part of the Project

3.4-E1: All effluent discharged to the San Joaquin River would meet all criteria in the District's National Pollutant Discharge Elimination System (NPDES) permit and in the adopted *Water Quality Control Plan for Inland Surface Waters* or alternate applicable SWQCB standards.

Finding: The Board finds that the implementation of the

mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Aquatic resources that occur in Dutch Slough and the San Joaquin River could be affected by the direct discharge of treated effluent. The discharge of effluent directly to the river under the river discharge alternative could affect the health of fisheries and aquatic invertebrates in the delta. This impact would be significant if unmitigated. Compliance with the District's NPDES permit criteria and the *Water Quality Control Plan for Inland Surface Waters* or alternate applicable SWQCB standards, as proposed in Mitigation 3.4-E1, would ensure that the District's effluent discharge would meet water quality standards set by the state to protect aquatic resources. This would reduce potential for impacts of discharge to aquatic resources to a less than significant level.

Traffic and Circulation

Impact 3.5-J: The public would access the DESC and the EBRPD trail head area through the entrance to the ISD WWTP and around the perimeter of the WWTP and Effluent Disposal Area. The interaction between visitor traffic and ISD plant operation traffic and/or plant operations could pose a public safety hazard.

Mitigation Measures Proposed by the District as Part of the Project

3.5-J1: The District, the DESC or EBRPD would upgrade, complete and maintain the perimeter access road to the DESC/trailhead to provide adequate two-way vehicle access.

3.5-J2: The District or the DESC would fence the treatment facilities and the effluent irrigation area to prevent the general public from entering the plant. Alternatively, the EBRPD trails would be fenced.

3.5-J3: The District, the DESC or EBRPD would provide adequate road signs to safely guide DESC/trailhead visitors around the ISD WWTP and Effluent Disposal Area.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: ISD proposes to facilitate access to the DESC from either Walnut Meadows Drive or Oakley Road through the entrance to its plant site past the

administration building and around the southern and eastern perimeter of the ISD property (See Figure 6 of the Final EIR at page 2-21). From a point where Walnut Meadows Drive turns to the southeast to reach the District's administration building, a separate vehicle access road to the DESC would begin and parallel Walnut Meadows Drive before turning northeast to generally follow the north side of the Contra Costa Canal and the west side of Marsh Creek. Without mitigation, this public access could have significant public and traffic safety impacts, including potential for accidents between public and District vehicles, and potential hazards of unintentional public trespass on District treatment and disposal areas.

The District would carry out the mitigations described above to minimize these risks. The District or DESC would upgrade and complete the extension of existing dirt and gravel roads around the southern and eastern perimeter of the ISD property. The perimeter roads would take visitors around the pasture and crop irrigation area. Delivery truck traffic would continue to enter the ISD plant site along Oakley Road extending from SR 4 on the south, rather than through the entrance from Walnut Meadows Drive on the west. Truck traffic and DESC/trail visitor traffic would share the ISD perimeter access road for only a short span. This upgraded road would be wide enough to provide adequate right-of-way for vehicles in both directions and would be evenly surfaced which would minimize skidding potential. Upgrade and maintenance of the access road, as proposed in Mitigation 3.5-J1, would therefore reduce the potential traffic hazard to a less than significant level.

The public would be prevented from entering the District's operating areas by fencing, and would be directed to the DESC and trails with road signs. These measures would limit accidental public access to District treatment and disposal areas, reducing this public hazard impact to a less than significant level.

Air Quality

Impact 3.7-A: Project-related earth moving and construction activities would result in localized and temporary increases in ambient concentrations of dust (respirable particulate matter-PM₁₀).

Mitigation Measures Proposed by the District as Part of the Project

3.7-A1: All unpaved construction areas would be sprinkled with water as needed to reduce dust emissions. Additional watering should be carried out on windy days.

3.7-A2: Trucks hauling dirt, debris and other dust-generating material would be covered as needed to reduce dust emissions.

3.7-A3: A person or persons would be designated to oversee the implementation of dust control measures and to increase watering and minimize visible dust emissions as needed.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Earth moving and construction activities, including excavation for treatment plant expansion and DESC construction and trenching for effluent pipelines installation, would result in localized and temporary increases in ambient concentrations of ten micron particulate matter (PM₁₀).

Construction activities would result in emissions of criteria air pollutants through combustion of fuel to run mobile construction equipment, through evaporation of volatile organic compounds used as architectural coatings, and through generation of construction worker motor vehicle trips. Emissions from fuel combustion would depend on the type of equipment, duration of use, operation schedules, and the number of construction workers. The primary pollutant associated with construction activities would be fugitive dust. Other than fugitive dust, construction-generated emissions would not be expected to have a significant effect on air quality.

PM₁₀ emissions resulting from soil handling were calculated using the guidelines of the South Coast Air Quality Management District (SCAQMD, 1992). This calculation assumed excavation of between 14,000 cy and 19,500 cy of material for pipeline installation and of 20,000 cy of material for Phase 1 treatment plant expansion. Assuming this excavation takes place over a four month period, a total soil handling volume of approximately 432 cy per day is expected. These estimates result in a calculated emission rate of 0.08 pounds per day of PM₁₀.

Dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the prevailing weather. Because of the relatively shallow depth to groundwater and proximity of the San Joaquin River, moisture content of excavated soil is expected to be high. Construction dust emissions would primarily result from equipment movement and material handling during construction

activities. On days when construction would involve extensive site preparation activities, earth moving activities, or truck travel over unpaved roads or during periods when these activities would occur when wind speeds are relatively high, construction dust would be substantial and could exacerbate the existing violations of the state standard for PM₁₀.

As shown in Table 3-6 at page 3-105 of the Final EIR, state standards for particulate matter are periodically violated in the Project Area. In 1991, standards were violated on 10 days out of 60 days sampled. Thus, while construction activities would generate very localized and temporary impacts, this effect could be significant when it contributes to violation of state standards. However, the proposed mitigations would greatly reduce the dust generated by Project construction. Watering, for example, (Mitigation 3.7-A1) could reduce particulate emissions by up to 50 percent. Designation of an individual responsible for overseeing implementation of dust control measures would insure that daily onsite construction conditions are responded to with appropriate measures to control dust. Proposed mitigations would substantially decrease the Project's contribution to local PM₁₀ concentrations and would reduce this impact to a less than significant level.

Impact 3.7-D: The proposed WWTP facilities and the addition of sludge air drying are potential sources of odor which could adversely affect existing and/or planned residential land uses near the WWTP.

Mitigation Measures Proposed by the District as Part of the Project

3.7-D1: ISD should maintain a minimum buffer zone of 1,000 feet between the treatment plant and sludge drying facilities and its property boundaries to the east and west where residential development is existing or planned on adjacent parcels. The proposed location for the new WWTP facilities provides this buffer zone.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: The WWTP facility processes raw sewage into treated effluent and sludge biosolids, in which the putrescible organic material has been consumed, or oxidized and stabilized to a non putrescible state. Odorous compounds, such as hydrogen sulfide, may result from raw and partially treated wastewater. The sludge biosolids produce

the odor common to garden manure.

The nearest existing sensitive receptor to the WWTP that could experience nuisance odors from the plant is the existing Vintage subdivision residential development southwest of the ISD plant site. Currently, homes in this subdivision have been built within approximately 300 feet of the western boundary of the ISD mainland property. Exposure of these sensitive receptors to substantial nuisance odors would be a significant impact. The new WWTP facilities would be located centrally on the ISD property, about 1,250 feet east of the western boundary (See Figure 4 of the Final EIR at page 2-9). Thus, there would be approximately a minimum of 1,500 feet between the new treatment facilities and the existing residences to the west. When the Vintage subdivision is completed, homes will lie within 200 feet from the plant's western boundary and roughly 1,400 feet or more from the new treatment facilities.

As described in the existing setting, the predominant wind direction in the Project Area is from the northwest towards the southeast. Thus, the Vintage subdivision does not lie in the path of the prevailing winds. In addition, with the proposed location of the new facilities in the center of the ISD property, ISD would maintain a minimum of 1,400 feet between the treatment facilities and the adjacent residences near the property border, 400 feet more than that proposed in Mitigation 3.7-D1. This buffer zone plays an important role in providing for the dilution of any strong odors before they reach the ISD plant boundary. This buffer zone distance of approximately 1,400 feet would substantially minimize the potential for nuisance odors to be experienced at the Vintage subdivision homes and would therefore reduce this impact to a less than significant level.

In accordance with the County General Plan M8 Land Use designation, the Emerson property immediately east of the ISD property could be developed with a mix of uses, including residential, office, and retail commercial. This property does lie in the path of the prevailing west winds. Exposure of these sensitive receptors to substantial nuisance odors would be a significant impact. Again, because the new treatment facilities would be located in the center of the ISD property, there would be a minimum distance of 1,000 feet between the new treatment facilities and the eastern ISD property boundary as proposed in Mitigation 3.7-D1, (See Figure 4). This buffer zone would be critical to minimizing the potential for nuisance odor to be detectable beyond the ISD property boundary, reducing this impact to a less than significant level.

Odors from the treatment processes or open-air sludge drying

operations could also have an adverse effect on the activities of the DESC and the use of proposed regional trails that could cross the WWTP site. The proposed DESC and regional trails would increase the frequency and number of persons that would be exposed to odors of the plant. However, one of the principal intended educational objectives of the DESC would be to educate and expose the public to wastewater treatment processes, as well as to the adjacent wetlands of Big Break. In general, visitors to the DESC and trails would only be in the plant vicinity for a brief stay; occasional exposure to noticeable odors from the plant would not be a significant impact.

Public Health/Hazardous Materials

Impact 3.8-A: Expanding and upgrading the ISD WWTP would involve increased handling and storage of hazardous materials and generation of hazardous wastes at the WWTP.

Mitigation Measures Proposed by the District as Part of the Project

3.8-A1: ISD would update and continue to apply provisions of its Hazardous Materials Management Plan to WWTP operations during and after the expansion. The Plan, to be kept on file at the WWTP, would be modified to cover new conditions.

3.8-A2: ISD would ensure that an up-to-date Hazardous Materials Management Plan and Hazardous Materials Inventory Statement are prepared (or updated) for the upgraded treatment facilities, and submitted to the County. These are required under the Business Plan Act and are filed at the Contra Costa County Health Services Department Hazardous Materials Division.

3.8-A3: ISD would require that all personnel working with hazardous chemicals have health and safety training. This is a OSHA requirement under the Worker Right to Know regulations found in the Federal Code of Regulations, Title 29. The training would include the proper use of safety equipment, hazard identifications, and proper handling and disposal of spilled hazardous materials. Training records would be kept in the WWTP's administrative files.

3.8-A4: ISD would ensure that any hazardous wastes generated by the WWTP upgrade are disposed of according to federal, state and local regulations. Legal requirements mandate generators to complete a hazardous waste manifest and ship wastes by a permitted hazardous waste transporter to a licensed disposal or treatment facility. These requirements are enforced by Cal/EPA, where hazardous waste manifests and annual reports are filed.

3.8-A5: The WWTP would be surrounded by a chain-linked fence or the fence alongside the EBRPD trails would be designed to separate the public from the WWTP.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Hazardous materials that could be used at the District's WWTP include chlorine, sulfur dioxide, polymer and alum. The proposed amounts are shown in Table 3-8 at page 3-123 of the final EIR. Chemicals stored on site would include seven two-ton cylinders of chlorine delivered every two weeks, five two-ton cylinders of sulfur dioxide (for river discharge only) delivered every two weeks, 1,200 gallons of polymer (for filtration only) delivered monthly, and 18,000 gallons of alum (for filtration only) delivered monthly. In addition, diesel, cleaning solvents, paints, thinners, and oils/grease would also be stored and used on site. The 1,000 gallon above-ground storage tank of diesel for the emergency generator would remain.

Despite the numerous safeguards incorporated into the transport and storage of chlorine cylinders, there remains a certain public health risk associated with the use of gaseous chlorine because it is an acutely hazardous material. In the unlikely event of a chlorine container leak, chlorine gas would be released to the atmosphere. Chlorine gas is about two and a half times heavier than air, and, if released at the WWTP, would move toward lower elevations. This characteristic would tend to limit the extent and vertical dispersion of any potentially dangerous plume.

The public health risk associated with the use of chlorine gas at the ISD WWTP would be mitigated to a less than significant impact through implementation of the spill prevention measures and emergency response measures contained in the Hazardous Material Management Plan, which will be updated as proposed in Mitigation Measures 3.8-A1 and 3.8-A2. Additionally, risk of public exposure to chlorine gas would be substantially minimized by the buffer zone effectively established between the proposed treatment facilities and the nearest existing or planned developed uses. As described in the setting (Section 3.8.1.2.4), planned residential development west and east of the ISD mainland property could ultimately be located within 200 feet of the property boundary. The new proposed treatment facilities, however, would be located in the center of the ISD property, effectively establishing a buffer zone of approximately 1,000 between the area of chlorine gas storage and use at the WWTP

and the ISD property line. Planned development east and west of the ISD property would be at least 1,200 feet from the area of chlorine gas storage and use. This buffer zone is an important component of the mitigation for this potential impact.

Routine operations at the WWTP produce small amounts of hazardous wastes, primarily waste chemicals from laboratory tests and spent cleaning solvents. These wastes are handled and disposed according to state and local regulations, a practice that would not be affected by WWTP expansion and upgrade. The small amounts of hazardous wastes generated at the ISD WWTP are transported away by a licensed waste hauler.

Handling or accidental release of hazardous materials and hazardous wastes could pose a threat to public health or safety, which would be a significant impact. The mitigation measures would promote proper handling and storage of hazardous materials and reduce the public health risk, thereby reducing this impact to a less than significant level.

Impact 3.8-C: Project construction or operation activities could occur in areas where there are a few small, known sites of minor soil contamination or where there may be as-yet-undiscovered hazardous contamination, which could pose a hazard to humans or the environment.

Mitigation Measures Proposed by the District as Part of the Project

3.8-C1: In the event that site remediation is required, ISD would prepare a site remediation plan that would (1) specify measures to be taken to protect workers and the public from exposure to potential site hazards, and (2) certify that the proposed remediation measures would clean up the wastes, dispose of the wastes, and protect public health in accordance with federal, state, and local requirements. Permitting or work in the areas of potential hazard should not proceed until the site remediation plan is on file with the County. All reports, plans, and other documentation should be added to the administrative record.

3.8-C2: In accordance with OSHA requirements, any activity performed at a contaminated site would be preceded by preparation of a separate site health and safety plan (prepared by ISD and filed with the County) for the protection of workers and the public.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a

less than significant level.

Rationale for the Finding: As described in the Setting, the Phase I Environmental Site Audit Report prepared by Montgomery Watson found that Jersey Island was the location of some minor contamination resulting from spills associated with waste oil storage, a leaking tank of 2,4-D (herbicide) mixed with water, and a small fence post treating facility. The report stated that soil contamination at these sites appeared to cover a small area to only a shallow depth, and appeared to be at concentrations lower than typical action levels. In addition, water samples from a nearby well were found not to be contaminated. The three known areas of soil contamination are not likely to contaminate groundwater. However, human contact with the soil could potentially pose a health hazard. Without mitigation, this could be a significant impact.

The Phase I Environmental Site Audit Report recommended that personnel be restricted from contact with stained soils. The report also recommended that minor surface-stained areas associated with the fence post treating facility and herbicide application tanks be remediated so that unlimited access can be provided in these areas. In the event that site remediation is found to be necessary, a qualified contractor should be retained to excavate and haul the contaminated surface soils to appropriate disposal facilities. A composite sample from each stockpile will be necessary for the disposal facilities to profile and accept the wastes. Copies of waste manifests and locations and depths of excavations should be held on file by the ISD. Remediation of the Project Site would eliminate the health threats posed by hazardous wastes and would prevent workers and the public from encountering such materials in the event of any future excavation at the Project Site. Removal of the toxic materials would also eliminate a potential local source of groundwater contamination. Hence, remediation, if deemed necessary, would reduce potential human and environmental health hazard impacts to a less than significant level.

Site remediation measures themselves could have impacts. During site remediation, workers, and possibly the public, could be exposed to hazardous materials in soils, soil gases, or groundwater. Workers directly engaged in the sampling activity would face the greatest potential for exposure. The public could be exposed to contaminants if access to the Project Site was not controlled. The public and the environment could also be exposed to airborne chemical compounds migrating from a site under remediation. Accidents during transportation of contaminated soils and/or groundwater could lead to exposure of the public and the environment to the chemical compounds. Exposure to hazardous

materials could cause various short-term or long-term health effects. For particular substances, such health effects are described in detail in standard references (Sittig, 1985; Sax and Lewis, 1989)

Procedures for site remediation would be outlined in a site remediation plan, as described in Mitigation 3.8-C1, and would be performed in compliance with a site health and safety plan, as described in Mitigation 3.8-C2. If remediation is deemed necessary, preparation of and compliance with these plans would ensure that remediation is conducted in a safe and legal way. This would reduce the potential health hazard impacts of remediation to a less than significant level.

At the start of construction for the installation of the effluent pipeline, all debris and vegetation that would interfere with construction activities would be cleared. Soil would be excavated and stockpiled on site for use in backfilling if suitable or removed for reuse or disposal offsite. It is possible that contaminated soil, contaminated groundwater, and/or old or abandoned underground storage tanks, (USTs), would be encountered during construction of the effluent pipeline. The contents of USTs could be hazardous. A previously unknown UST, uncovered or disturbed during excavation, could threaten the health and safety of site workers. Leaking USTs are one of the primary sources of environmental contamination in the Bay Area. A leaking UST could pose additional threats to groundwater resources and the environment, and could also pose a possible explosion hazard.

Since no record has been found of USTs or hazardous materials on Jersey Island, other than those revealed in the Phase I Site Audit, it is unlikely that hazardous materials would be encountered during construction of the pipeline. However, if as-yet-unidentified hazardous materials are in fact encountered during construction, the District would conduct a site audit to determine if remediation was necessary. Without mitigation, remediation of hazardous materials encountered during pipeline construction could pose a significant environmental and human health hazard. If remediation is necessary, the District would prepare a site remediation plan and a site health and safety plan, as described in Mitigations 3.8-C1 and 3.8-C2, and would retain a qualified contractor to remediate in accordance with those plans. If remediation is deemed necessary, preparation of and compliance with these plans would ensure that remediation is conducted and materials disposed in a safe and legal way. This would reduce the potential health hazard impacts of remediation to a less than significant level.

Cultural Resources

Impact 3.9-A: Any prehistoric site which may exist on western Jersey Island could be adversely affected by effluent irrigation, sludge application and associated agricultural practices.

Mitigation Measures Proposed by the District as Part of the Project

3.9-A1: Prior to commencement of land application of effluent on Jersey Island, the existence of the western Jersey Island prehistoric burial site should be verified (the site boundary should be established and field-verified). If it still exists, the site should then be examined by a qualified archaeologist to determine whether or not the site is still important and has not, in fact, been degraded below minimum standards of importance under CEQA by previous irrigation, submersion and other agricultural practices.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: If the prehistoric burial site is determined to exist and to be an important resource, it would then be determined if the application of treated effluent would be likely to have any adverse impacts on the site. If effluent irrigation is determined to be potentially harmful, then the site would be excluded from the effluent disposal area by an appropriate method, including, but not limited to, erecting a fence around the site. This mitigation would be most useful if the site is not irrigated at present.

Wet/dry cycling from irrigation is known to have significant adverse affects on certain cultural resources (NWIC, 1991). Western Jersey Island has been under irrigation by the former owner(s), and as a result the Project may not change the irrigation status of the possible archaeological site. All of Jersey Island is subject to a pumping regimen conducted by Reclamation District No. 830 and implemented by a series of levees and drainage pump stations. The possible site and any archaeological resources it may contain could be submerged. The integrity of this site is therefore questionable.

In the past, Jersey Island has been grazed, and crops, including asparagus and hay, have been grown there. Grazing requires little or no land alteration, but farming practices include land leveling, plowing, and discing which can mix archaeological deposits permanently, thereby destroying the integrity of cultural materials. Plowing and discing can

disturb surface soils to depths of up to a foot; more typically, 6 to 8 inches (Werner, 1992). In addition, asparagus is a deep-rooted crop, so past asparagus farming could have caused deep ground ripping on the Project Site. It is probable that past farming of the Project Site has degraded any cultural resource sites which may have existed there.

The proposed Project involves land application of effluent and sludge, and further farming of the island. The crops that are likely to be grown on-site are shallow root crops, so no deeper ground ripping activities would be necessary. It is possible, however, that farming carried out as part of the Project could damage the known cultural resource site, if it has not already been degraded by past irrigation and farming.

Damage to an important and relatively intact prehistoric site due to agricultural activity would be a significant impact. The proposed Mitigation 3.9-A1, pre-construction examination of the archaeological site, and site exclusion, if deemed appropriate, would protect this resource, and would therefore reduce this impact to a less than significant level.

Impact 3.9-B: Construction of the Project could disturb additional as-yet-undiscovered archaeologically significant sites.

Mitigation Measures Proposed by the District as Part of the Project

3.9-B1: Prior to construction, the likelihood of significant cultural resources will be further evaluated by an on-site inspection, and if the presence of significant cultural resources is probable, a qualified cultural resources specialist will be contracted to monitor construction activities in the areas where there is such a likelihood and to evaluate the impacts on any cultural resources site that may be discovered during construction.

3.9-B2: If cultural resources are encountered during any portion of the project, construction in the immediate vicinity at the discovered site should cease immediately and a qualified cultural resource consultant should evaluate the situation. The materials and context at any discovered site should not be altered until the completion of this evaluation, receipt of the consultant's recommendations, and a course of action acceptable to all concerned parties has been adopted in accordance with applicable CEQA requirements.

A procedure and chain of reporting and command should be established and followed in the event that cultural resources

are encountered during the expansion project. Identified cultural resources should be recorded on forms DPR 422 (archaeological sites) and/or DPR 523 (historic properties) or similar forms.

3.9-B3: If human remains are encountered, excavation in their immediate vicinity should be halted and the County Coroner should be immediately notified. The County Coroner shall be responsible for notifying the Native American representative designated by the Coroner for this purpose.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Although no additional archaeological sites have been found within the Project Site, only a small percent of this area has been surveyed and so, the possibility of additional sites cannot be eliminated. Construction in these areas, especially subsurface pipeline construction, could inadvertently disturb currently unknown archaeological resources. Indicators of prehistoric resources include chert or obsidian flakes, projectile points, mortars, and pestles, and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Indicators of historic resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits, often in old wells and privies (Beard, 1991).

Disturbance of important and relatively intact as-yet-undiscovered cultural resources during construction would be a significant impact. Mitigations 3.9-B1 through 3.9-B3 would prevent cultural resources from going unrecognized and being damaged during construction. These mitigations would reduce this impact to a less than significant level.

Impact 3.9-C: The Project Site may contain cultural resources, including archaeologically significant sites, which will not be discovered during the construction of the Project, but which may be discovered during the operation of the Project. Degradation of these resources, once they are discovered, would be a significant impact.

Mitigation Measures Proposed by the District as Part of the Project

3.9-C1: The likelihood of significant cultural resources will be further evaluated by an inspection of the Project Site. As to areas where the presence of significant cultural

resources is probable, during operation of the Project, personnel will be instructed to report indicators of significant cultural resources. Upon such a report, land application of effluent or sludge at the immediate vicinity of the discovered site would cease immediately and a qualified cultural resource consultant would evaluate the situation.

See measures 3.9-B2 and 3.9-B3, above. The applicable portions of these measures should be implemented to address this impact.

Finding: The Board finds that the implementation of the mitigation measures proposed by the District as part of the Project, as set forth above, would reduce this impact to a less than significant level.

Rationale for the Finding: Land application of effluent and sludge on Jersey Island could adversely affect unknown archaeological sites on this property in the same ways discussed in Impacts 3.9-A and 3.9-B. Though the District's mainland property is also designated for effluent and sludge application, NWIC states that this site is less likely to contain archeological sites and recommends no further study on this property at the present time (Beard, 1991).

Disturbance of important and relatively intact as-yet-undiscovered cultural resources due to irrigation and agricultural activity would be a significant impact. Mitigation 3.9-C1 (which incorporates Measures 3.9-B2 and 3.9-B3) insures that cultural resources, if discovered, would be evaluated and treated as recommended by a qualified cultural resources consultant. These mitigations would reduce this impact to a less than significant level.

II. FINDINGS REGARDING PROJECT ALTERNATIVES

The District undertook an extensive planning process in order to identify a range of reasonable alternatives to the proposed Project, or to the location of the proposed Project, which could feasibly attain its basic objectives, and to evaluate the comparative merits of these alternatives. The alternatives evaluation included the "No Project" alternative, which is the maintenance of the status quo. This evaluation process resulted in the selection of the proposed Facilities and DESC Projects which are the subject of the Final EIR.

Treatment System Alternatives

The District examined alternative processes for expanding the

capacity of the treatment system, as well as alternatives for the location of the upgraded and expanded treatment system. In addition to the No Project alternative, the District identified and evaluated the following methods for upgrading and expanding the capacity of the existing treatment system:

- Transport to and treatment of flows by the Delta Diablo Sanitary District,
- Joint Wastewater Treatment with the City of Brentwood,
- Expand Existing Pond System,
- Activated Sludge Processes:
 - oxidation ditch treatment system (with or without a microfiltration/reverse osmosis treatment facility),
 - pond conversion, and
 - conventional activated sludge.

Finding: The Board finds that the oxidation ditch treatment system, which may be used in combination with an advanced treatment system, including but not limited to a microfiltration-reverse osmosis treatment facility, is environmentally superior to the No Project alternative and to most of the treatment process alternatives, and has no greater level of environmental impact than the other alternatives.

Rationale for the Finding: Under the No Project alternative, the District would not expand its existing treatment capacity, leaving it with a reserve capacity of 0.7 mgd. Depending on the rate at which new connections are established, this capacity would be exhausted within three to eight years.

The environmental impacts of the No Project alternative would include preventing the District from providing a higher level of effluent treatment than it currently provides, depriving the District of the ability to meet the more stringent effluent standards which are anticipated in the future, and requiring new development to rely upon on-site methods of wastewater treatment. These on-site treatment methods include septic tanks, which experience a higher rate of failure than off-site treatment methods, and "package" treatment plants, which have high energy costs of operation and are also subject to a greater failure rate, since they usually are not staffed on a 24 hour basis. For these reasons, the No Project alternative was determined not to be environmentally superior to expanding the capacity of the treatment system.