Novato Creek Flood Control Dredging Project
DRAFT CEQA INITIAL STUDY – MITIGATED NEGATIVE DECLARATION

Marin County
Department of Public Works
Flood Control and Water Conservation District

March 2008
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I. BACKGROUND

A. Project Sponsor's Name and Address: Marin County Department of Public Works: Flood Control and Water Conservation District
3501 Civic Center Drive, Room 304
San Rafael, CA 94903

B. Lead Agency Name and Address: Marin County Department of Public Works: Flood Control and Water Conservation District
3501 Civic Center Drive, Room 304
San Rafael, CA 94903

C. Contact Person and Phone Number: Reuel Brady, Marin County Public Works Water Resources, Associate Civil Engineer
415-499-6525

II. PROJECT DESCRIPTION

A. Project Title: Novato Creek Dredging Project

B. Type of Application(s): Routine Maintenance Dredging

C. Project Location: Novato Creek between Diablo Avenue at the Novato Fair Bridge, in downtown Novato, (just east of the railroad trestle), east of US Highway 101, Novato, Marin County, CA.

D. General Plan Designation: Flood Zone 1 District

E. Zoning: Residential and Commercial

F. Description of Project: The Novato Creek Flood Control Dredging Project (Project) will occur within the Novato Creek and its tributary creeks in Novato, California, approximately 20 miles north of San Francisco, California (Regional Location Map – Figure 1). The Project is designed to remove an estimated 70,000 cubic yards of accumulated silt from the creek beds of Novato Creek, Warner Creek, and Arroyo Avichi Creek (Aerial View of Dredging Project – Figure 2). The dredged material will be transported by truck to sites south and/or north of Novato via US Highway 101, (US 101), (See Figures 3, 4 and 5). The dredged material deposition sites are described in detail in Section 2.3 “Project Description.” The Project will occur between June 2008 and September 2008.

The Project’s goal is to restore originally designed channel functionality to Novato Creek to ensure its intended flood control capacity. A detailed project description is provided under Section 2.3, Page 8.
NOT TO SCALE

Source: DeLorme Topo USA v5.0, 2005

KLEINFELDER
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Santa Rosa, CA 95407-5009
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www.kleinfelder.com

REGIONAL LOCATION MAP

NOVATO CREEK DREDGING PROJECT
NOVATO, CALIFORNIA

DRAWN BY: P. Hubbard
REVISIED BY:
CHECKED BY: S. Ackert

Figure 1
2.1 ENVIRONMENTAL SETTING

Novato Creek Dredging Site

The Project area consists of portions of Novato Creek between Diablo Avenue at the Novato Fair Bridge, (just east of the railroad trestle and US 101, Novato, California), and selected areas of its tributary streams, (Arroyo Avichi Creek and Warner Creek), located within the City of Novato, California (Figure 1).

The Project area is within Flood Control Zone 1 overseen by the Marin County Department of Public Works, Flood Control and Water Conservation District (District).

Novato Creek is a perennial tidally influenced channel that extends about 17 miles from its headwaters at Stafford Dam to San Pablo Bay. Areas near the Bay are largely salt marsh and wetlands. The Novato Creek system supports intermittent populations of steelhead and other native fishes. Upper areas are impacted by effects of the dam and by bank and terrace erosion from grazing practices. Mid to lower reaches are urbanized and impacted by non-point source (NPS) pollution from storm drains, construction runoff, bank and terrace erosion, and hydro-modification (bank stabilization). Novato Creek is a 2002, 303(d)-listed impaired waterbody that is adjacent to a Wildlife Refuge (the San Pablo Bay National Wildlife Refuge, Pacheco Pond Wildlife Preserve, and a planned wetland restoration area at Bel Marin Keys).

Soil Deposition Sites

The Project dredged material will be deposited at one or more of the following five sites:

1. Camerlos River Ranch site (see Figure 6 and Appendix F-18)
2. Redwood Landfill (See Figure 7 and Appendix F-17)
3. Gnos Field (See Figure 8 & Appendices F-12 to F-16)
4. Novato Creek levee tops
5. Marsh Road site (See Figure 9 & Appendix F-11)

For a detailed description of each of the deposition sites listed above, their permit requirements for handling soil deposition, and the proposed deposition amount for this Project, please see Section 2.3 “Project Description”, below, starting on Page 8.

CEQA documents were prepared previously for each of the proposed deposition sites (See Section 2.3 below) with the exception of the Marsh Road site; the Marsh Road soil deposition site is a temporary storage location and occupies approximately 0.4 acres. These documents are included by reference in this report and are enumerated in Attachment 1.

Table 2.1 (below) details amounts and percentage of total dredged material for each of the deposition sites. Deposition sites are further described in Section 2.3 below.
### Table 2.1 Proposed Deposition Sites and Quantities (cubic yards)

<table>
<thead>
<tr>
<th>Dredged Material Deposition Sites</th>
<th>Possible Quantity Range (cubic yards)</th>
<th>Maximum Possible Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameros River Ranch</td>
<td>0 to 70,000</td>
<td>0% to 100%</td>
</tr>
<tr>
<td>Redwood Landfill</td>
<td>11,690 to 32,830</td>
<td>17% to 47%</td>
</tr>
<tr>
<td>Gnoss Field Primary Site</td>
<td>15,160 to 25,270</td>
<td>22% to 36%</td>
</tr>
<tr>
<td>Gnoss Field Secondary Site</td>
<td>3,320 to 5,540</td>
<td>5% to 8%</td>
</tr>
<tr>
<td>Gnoss Field Levee/s</td>
<td>5,490</td>
<td>8%</td>
</tr>
<tr>
<td>Novato Creek Levee System</td>
<td>8,739 to 14,565</td>
<td>12% to 21%</td>
</tr>
<tr>
<td>Marsh Road Storage Site</td>
<td>4,480 to 7,470</td>
<td>6% to 11%</td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td><strong>70,000</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

(Source # (s): 20)
2.2 PROJECT BACKGROUND

Marin County Flood Control and Water Conservation District

The Marin County Department of Public Works, Flood Control and Water Conservation District (District) is the Lead Agency and sponsor for the Project.

The District was formed in 1955 by an Act of the State Legislature found in Chapter 68 of the State Water Code. The Board of Supervisors sits as Board of the District and the District is staffed by the Department of Public Works. The boundaries of the District are contiguous with those of the County of Marin with eight “Zones” established to address specific watershed flooding problems. Each Zone has an “Advisory Board” of 5 or 7 residents, which are appointed by the Board of Supervisors. These Boards review Zone budgets and master plans and advise the Board on flood control matters. The District is obligated to provide a 50-year storm frequency flood protection to the Novato basin.

Flood Control Zone 1 encompasses the City of Novato plus the unincorporated area around the City. The Zone’s boundary is essentially the entire watershed tributary to Novato and Rush Creeks. Novato Creek is a perennial stream that extends approximately 17 miles from San Pablo Bay to its headwaters at Stafford Lake. This creek, along with its tributaries including Bowman Creek, Simmons Creek, Warner Creek, and Arroyo Avichi, drains an approximately 27,500-acre watershed. The Novato basin flood control design was designed to pass 3,330 cubic feet of water each second (cfs).

In 1970, Flood Control Zone 1 was formed as a result of the realization that a combination of significant precipitation events, population growth, and design inefficiencies were capable of producing substantial flooding in the downtown areas of the City of Novato. The Zone’s regular activities include the periodic maintenance dredging of portions of Novato Creek, Warner Creek and Arroyo Avichi, an annual creek-clearance program carried out by the Marin Conservation Corps under the direction of District staff, operation and maintenance of four stormwater pumping stations, and on-going consultation with the City of Novato regarding development proposals and their related flood control issues.

Novato Creek Dredging Project Background

The Novato Creek Dredging Project (Project) was developed between 1987 and 1990. Due to the relatively high rate of sedimentation (See Site Pictures at Appendices F-1, F-2, F-4, F-5) the subject portions of the Project have been dredged four times since construction; Table 2.2 below details the years and estimated quantities of sediment removed by previous dredging projects. Portions of previous reports have been included by reference in this study. Without these periodic dredging operations, the Novato Creek would quickly become incapable of sustaining high water levels.

The Project area involving portions of Novato Creek and its tributaries are largely urbanized stream channels and were constructed under U.S. Army Corps of Engineers (USACE) Permit #16112N33 and dredged most recently in the summer of 2004 under Permit #28601N. The upper reaches of the Project vary from residential zones to retail/commercial areas until reaching the lower Project limits to the east of US Highway 101 and the Northwestern Pacific Railroad trestle.

Original design inefficiencies and other factors, such as channelization, an obstructing railroad bridge (Appendix F-1), increased runoff and sediment generation in the headwater reaches, along with the loss of functional tidal creeks and marshland leads to the present scenario of a predictable
high-rate of sediment aggradation. The Project reach has become the functional sediment basin for the Novato Creek area and its connected sub-watersheds.

The District has been active in its efforts to work with upstream property owners to find solutions to current erosion trends. The District acknowledges the difficulty in maintaining full channel capacity with the current amount of material deposited through this reach. In addition, sediment from the bay deposited in Novato Creek by tidal processes contributes a small but unknown quantity of silts and clays. Although these sources are probably not individually as significant as in-stream sources, collectively they may be significant.

Table 2.2 Historic Quantities of Excavated Sediment from Novato Creek

<table>
<thead>
<tr>
<th>Year</th>
<th>Sediment Quantity (cubic yards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>49,000</td>
</tr>
<tr>
<td>1996</td>
<td>47,200</td>
</tr>
<tr>
<td>2000</td>
<td>49,000</td>
</tr>
<tr>
<td>2004</td>
<td>55,000</td>
</tr>
<tr>
<td>Total: 1990 - 2004</td>
<td>270,200</td>
</tr>
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(Source #: 12)

2.3 PROJECT DESCRIPTION

Project Description

The Novato Creek Flood Control Project (Project) proposes to remove an estimated 70,000 cubic yards of accumulated silt from the bed of Novato Creek and its tributaries: Warner Creek, and Arroyo Avichi Creek within the City of Novato, California.

The Project reach consists of: 5,630 linear feet of Novato Creek from Diablo Avenue to 500 feet downstream of the Northwestern Pacific Railroad Bridge, 1,780 linear feet of Warner Creek from Diablo Avenue to the confluence with Novato Creek, and 680 linear feet of Arroyo Avichi Creek from South Novato Boulevard to the confluence with Novato Creek (Figure 2). The upper reaches of the Project vary from residential zones to retail/commercial areas until reaching the lower Project limits to the east of US Highway 101 and the Northwestern Railroad trestle. At this point, the conditions change to the Deer Island Wetland Preserve and surrounding open space. There are multiple bridge crossings along the channels as well as various sizes and types of outfall structures. The Project reach will be dewatered using three temporary cofferdams installed at the Project upper limit of Novato and Warner Creeks downstream of Diablo Avenue and at the downstream Project limit of Novato Creek approximately 500 feet downstream of the Railroad Bridge. The upstream cofferdams will be installed first, with the downstream cofferdam installed later at low tide to minimize the amount of water to be dewatered and minimize the presence of fish. Residual freshwater flows will be collected and conveyed by existing drain lines to the primary overflow area, Baccaglio Basin, or to a possible secondary overflow basin (Figure 2), in order to avoid the dewatered area. Channel bottom width varies from 20 feet to 115 feet with up to 4 feet of accumulated sediment.

Approximately two acres of wetland vegetation (Appendix A - Wetland Delineation; Appendix F - Site Pictures), primarily cattails with some Scirpus, will be removed as a result of the dredging.
Excavation of Dredged Materials

Excavation work will be performed using draglines, excavators, dozers, and dump trucks. Table 2.3 (below) shows an estimate of the types and numbers of equipment expected to be used during the dredging operation. Final grading work will be done with dozers and graders upstream of US Highway 101. The installation of the temporary cofferdams, dewatering, and subsequent dredging of the creek bed will all occur in the creek bed during the low flow period of June 15th to October 15th. Existing access ramps located in the upper Project limits of Novato Creek and Warner Creek will be used to minimize impacts to riparian vegetation growing on the creek banks and terraces. Dredged material will be removed and placed on levee tops along lower Novato Creek using best management practices to avoid material entering the surrounding wetlands. The majority of dredged material will be stored temporarily along the top of stream banks in previously disturbed upland areas for dewatering prior to being trucked to the various storage sites.

As previously stated, the District is obligated to ensure that the Novato basin flood control system maintains a 50-year flood capacity, which has been established at 3,330 cubic feet per second (cfs). Sedimentation studies performed by Laurel Collins (1998) indicate that approximately 70% of sediment in the Project reach is generated by channel bank and terrace erosion in upstream reaches. Although past engineering analysis has shown that the channel must be dredged from toe to toe in order to pass 5,140 cfs, which is the needed amount to maintain flows compliant with the 50 year flood maximum, the Project proponent will continue to explore the option of leaving a vegetated bench along the southern portion of Novato Creek from US 101 downstream to the railroad crossing.

Table 2.3 Estimated Project Equipment

<table>
<thead>
<tr>
<th>Numbers</th>
<th>Equipment</th>
<th>Type</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Large Generators</td>
<td>Gas/Diesel</td>
<td>Electrical power at site, operation of pumps</td>
</tr>
<tr>
<td>1</td>
<td>D-6 Mudcat</td>
<td>Diesel</td>
<td>Moving soil, scraping</td>
</tr>
<tr>
<td>2</td>
<td>D-6 Bulldozers</td>
<td>Diesel</td>
<td>Moving soil, scraping</td>
</tr>
<tr>
<td>3</td>
<td>Long Reach Excavators</td>
<td>Diesel</td>
<td>Excavating from bank</td>
</tr>
<tr>
<td>1</td>
<td>330 Excavator</td>
<td>Diesel</td>
<td>Digging, excavating in channel</td>
</tr>
<tr>
<td>2</td>
<td>950 Loaders</td>
<td>Diesel</td>
<td>Moving soil, loading trucks</td>
</tr>
<tr>
<td>12-15</td>
<td>Dump Trucks</td>
<td>Diesel</td>
<td>Hauling</td>
</tr>
<tr>
<td>1</td>
<td>Lattice Crane w/ clamshell bucket</td>
<td>Diesel</td>
<td>Dredging channel</td>
</tr>
<tr>
<td>3</td>
<td>Pumps</td>
<td>Diesel, Centrifugal</td>
<td>Dewatering pumps</td>
</tr>
</tbody>
</table>

(Source # (s): 7, 19)

Transportation of Dredged Materials

Dredged material will be left to dry in the channel for up to one month to reduce weight and subsequent haul costs. A portion (13%) of dredged material will be incorporated for use at the top of Novato Creek’s current levee system (Table 2.1 above). Remaining portions of the dredged material will be transported utilizing local roads along Diablo Boulevard to Redwood Boulevard to the Rowland Boulevard on-ramp where they will access US Highway 101, where they will be dumped at several different sites for storage or use. The drier, coarser material located in upstream areas can be carried by trucks within two weeks after coffer dams are built and dewatering commences. Heavier, wetter material would have to dry out for at least two weeks to one month before being loaded onto trucks.
Materials taken offsite (not stored on Novato Creek's levee's) would be transported by various major routes through Novato to US Highway 101 and then on to several deposition sites:

**Carneros River Ranch:**
Once on southbound US 101, the trucks would travel 1.1 miles to exit at the Highway 37 off-ramp. The trucks would travel 4.2 miles on Highway 37 to the left turn lane across from the Port of Sonoma. The storage site is located directly adjacent to and north of Highway 37 (see Figure 6 and Appendix F)

**Redwood Landfill:**
Once on northbound US Highway 101, the truck would travel approximately 4.6 miles north to the Redwood Landfill turnoff, then proceeding east approximately ½ mile to the front gate of the landfill (see Figure 7 and Appendix F)

**Gnoss Field Site:**
Once on northbound US 101, the truck would travel 1.33 miles to exit at the Atherton Avenue off-ramp. The truck would then travel east approximately 100 yards to exit at Binford Road to travel north 1.6 miles to the entrance to Gnoss Field (see Figure 8 and Appendix F).

**Marsh Road Site:**
Once on southbound US 101, the trucks would travel 1.1 miles to exit at the Highway 37 off-ramp. The trucks would then pass over US 101 and immediately exit the right lane to access Marsh Road. The storage site is located directly adjacent to and north of Highway 37 (see Figure 9 and Appendix F).

**Deposition of Dredged Material**
The Project differs from past projects due to the final disposition of dredged material. In previous years, project dredged material was primarily deposited on the levees of the Project area. The current Project plans to deposit only a portion of dredged material on the levees with the remainder to be transported to one or more sites: Carneros River Ranch, Redwood Landfill, Gnoss Field, and Marsh Road (see Figures 3, 4 and 5).

**Carneros River Ranch**
The Carneros River Ranch Dredged Material and Fill Placement site is located at 275 Sears Point Road, Petaluma, California 94953, approximately 4.2 miles east of the US Highway 101 and Highway 37 interchange. The acceptance and deposition for the dredged material is provided for and has been analyzed in the Carneros River Ranch Negative Declaration and Initial Study (Source #28) and Waste Discharge Requirements (WDR) and Water Quality Certification (Source # 29), as follows:

*The Carneros River Ranch deposition site holds Waste Discharge Requirements and Water Quality Certification Order R2-2003-0075, dated August 21, 2003, from the Regional Water Quality Control Board - San Francisco Bay Region to accept dredge materials on the North West and North Central Fields for the placement of dredge material and fill on existing agricultural fields. The site is located immediately north of Highway 37 across from the Port of Sonoma. The fields are used for the purpose of growing silage. The dredge material is placed within seven-foot high berms created from native soils excavated within and adjacent to the agricultural fields. Placement of the fill is necessary to elevate the land surface from an average -2 feet National Geodetic Vertical Datum (NGVD) elevation where soils and groundwater are saline to an elevation of +2 feet NGVD where the crop roots will be sufficiently beyond the influence of saline shallow groundwater.*

Provision E.1 of the WDR requires that the data characterizing the quality of the dredged material proposed for placement be submitted to the Regional Water Quality Control Board for review, as
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coordinated through the Dredged Material Management Office (DMMO), of which the Water Board is a member. As discussed below in the section on the Analysis of Dredged Material, the dredged material has already been sampled and analyzed, and a report prepared and submitted to the DMMO. The DMMO concluded that the dredged material is acceptable for placement at the Hamilton Wetlands Restoration Project site, a previously but not currently considered placement site.

Redwood Landfill

The Redwood Landfill is located at 8950 Redwood Highway, Novato, California 94948, approximately 3 miles north of the Novato City limits. Dredged material at Redwood Landfill will meet a variety of Landfill needs and will be used as needed by landfill operators. The acceptance and storage for use of the dredged material is provided for and has been analyzed in the Redwood Landfill Final EIR (Source #21) as follows:

Redwood Landfill (RLI) holds a quarry permit (Permit #Q-76-01, originally issued in 1976) from the Marin County Department of Public Works to quarry soil on an adjacent property for landfill cover material. The quarry is located immediately north of the landfill access road. When needed, cover soil is removed from the borrow area and transported by off-road trucks to the working face, where it is stockpiled for use as daily cover when alternative cover is not used. At present, use of this source of cover materials is minimized due to the availability of alternative daily cover (ADC), clean soil delivered by franchise haulers and commercial customers, deliveries of petroleum contaminated soils that meet the facility’s acceptance criteria, and periodic deliveries of dredged sediments (GeoSyntec, 1998).

Landfill operations include utilizing dredged material for different applications within the landfill depending on whether they are classified as uncontaminated or contaminated, and their grain size, for example, fines and clays are used for capping fill, with larger grained sands and soils used for fill, roads, and levees. (personal conversation: A. McCutcheon, Redwood Landfill 10/2007).

Gnoss Field

Gnoss Field is located at 451 Airport Boulevard, Novato, California 94949, approximately 1½ miles north of the Novato city limits. Once at Gnoss Field, the dredged material will be distributed to three (3) distinct disposal sites within the Airfield property (see Figure 6 Below). The storage and use of soils within Gnoss Field is primarily for the rebuilding of levees which are prone to subsidence over time; ultimate use of the dredge material will be determined by responsible Gnoss Field staff. The acceptance, storage, and use of soil on the site is consistent with the guiding policies and objectives of Gnoss Field. The acceptance, storage, and use of soils has been assessed in several regulatory documents, including the following:

- Gnoss Field Levee Reconstruction Project – CEQA, Initial Study (10/2001), (Source #23)
- Gnoss Field Levee Reconstruction Project – Joint Aquatic Resource Permit Application (2/2004), (Source #24)
- Gnoss Field Levee Reconstruction Project – Wetland Delineation (1/2003), (Source #25)

Marsh Road Site

The Marsh Road site is located adjacent to Marsh Road, a frontage road along the south side of the Westernmost end of Highway 37, just east of the Novato city limits. The Marsh Road site will be used as a short-term (one to two years after drying) storage site for the dredged material. The Marsh Road site has previously been used by the Marin County Public Works Department for the temporary
storage of wet and dry dredged material. The District has stated in an October 2007 letter (See Appendix G), that the footprint of the area of disposal will be 0.4 acres overall and that Stormwater BMPs will be followed as directed in Section IV of this report.

**Analysis of Dredged Material**

After consultation with the Dredged Materials Management Office (DMMO), a Sampling and Analysis Plan (SAP) was prepared and submitted to the DMMO for their review and approval (September 27, 2006). The DMMO approved the SAP and sampling was conducted from September 23rd through October 3rd, 2006. Samples were analyzed for the following chemical constituents: **metals, butyltins, pesticides, polynuclear aromatic hydrocarbons, polychlorinated biphenyls, phenols, total petroleum hydrocarbons as diesel, motor oil, gasoline, jet fuel, benzene, toluene, ethylbenzene, and xylenes, dioxins, total organic carbon, salinity, pH, sulfur, and redox potential**, physical characteristics (grain size, total solids, and specific gravity), and biological characteristics (elutriate and benthic toxicity bioassays).

Dredge material sampling results were submitted to the DMMO in a report dated December 5, 2006, and an addendum dated December 11, 2006, which documented the field activities, presented the analytical results, and evaluated the results by comparison to the DMMO acceptance criteria. The DMMO approved the report and authorized their acceptance of the material at their meeting of December 13, 2006, (Appendix D, Attachment 1 - #27).

**Statement of Objectives**

The Project’s objective is to restore originally designed channel functionality to Novato Creek to ensure its intended flood control capacity.
2.4 CIRCULATION AND REVIEW

This Initial Study is being circulated for review and comment compliant with CEQA's 30 day public review provisions, Guidelines Section 15073. Project information and studies in support of this Initial Study are referenced in topical sections by source number and listed in the appendices found at the back of this document and also incorporated by reference.

This Initial Study is being circulated to agencies that have jurisdiction over the subject property or natural resources affected by the project and to consultants, community groups, and interested parties to attest to the completeness and adequacy of the information contained in the Initial Study as it relates to the concerns that are germane to the agency's or organization's jurisdictional authority or to the interested parties' issues. The following trustee/responsible agencies have jurisdiction over this Project and will receive a copy of this Initial Study.

U.S. Army Corps of Engineers (USACE)

Clean Water Act, 33 U.S.C. Sections 1251-1376: The Clean Water Act (CWA) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 404 establishes a permit program administered by USACE regulating the discharge of dredged or fill material into waters of the United States (including wetlands). Implementing regulations by USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the Environmental Protection Agency (EPA) in conjunction with USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts. The Project involves maintenance dredging within "Waters of the U.S." pursuant to Section 404 of the Clean Water Act; accordingly, the USACE will be a responsible agency for this project.

San Francisco Bay Regional Water Quality Control Board (RWQCB)

Section 401 requires that an applicant for a Federal license or permit that allows activities resulting in a discharge to waters of the United States, must obtain a state certification that the discharge complies with other provisions of CWA. The Regional Water Quality Boards administer the certification program in California. The Project involves maintenance dredging within "Waters of the State." pursuant to Section 401 of the Clean Water Act; accordingly, the RWQCB will be a responsible agency for this project.

California Department of Fish and Game (CDFG)

Fish and Game Code Sections 1602: Under these sections of the Fish and Game Code, applicants are required to notify CDFG prior to a project that would divert, obstruct or change the natural flow, bed, channel, or bank of river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

Fish and Game Code Sections 2050: California Endangered Species Act. This act establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The California Endangered Species Act (CESA) mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under CESA.
For projects that affect both a state and federal listed species, compliance with the Federal Endangered Species Act (FESA) will satisfy CESA if the Department of Fish and Game determines that the federal incidental take authorization is “consistent” with CESA under Fish & Game Code Section 2080.1. For projects that will result in a take of a state-only listed species, CalTrans must apply for a take permit under Section 2081(b).

Fish and Game Code Sections 1900-1913: Native Plant Protection Act. California's Native Plant Protection Act (NPPA) requires all State agencies to utilize their authority to carry out programs to conserve endangered and rare native plants. Provisions of NPPA prohibit the taking of listed plants from the wild and require notification of the CDFG at least 10 days in advance of change in land use. This allows CDFG to salvage listed plant species that would otherwise be destroyed. CalTrans is required to conduct botanical inventories and consult with CDFG during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

The Project involves maintenance dredging within Waters of the U.S and State; the area where maintenance dredging will occur also involves wetlands and sensitive species. Accordingly, the CDFG will be a responsible agency for this project pursuant to Sections 1602, 1900-1913, and 2050 of the Fish and Game Code.

National Marine Fisheries Service (NMFS)
Endangered Species Act Of 1973 (16 U.S.C. 1531-1543). This Act and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend.

Section 7 requires Federal agencies in consultation with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The U. S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) share responsibilities for administering the Act. Regulations governing interagency cooperation under Section 7 are found at 50 CFR Part 402. The opinion issued at the conclusion of consultation will include a statement authorizing take that may occur incidental to an otherwise legal activity.

The Project involves maintenance dredging within Novato Creek and its tributaries which does have the potential to include threatened and endangered aquatic species. Accordingly, the NMFS will be a responsible agency for this project pursuant to Section 7 of the ESA.

State Lands Commission
The Legislature has given the California State Lands Commission authority over California’s sovereign lands – lands under navigable waters. These are lands to which California received title upon its admission to the Union and that are held by virtue of its sovereignty. These lands are also known as public trust lands. The Commission administers public trust lands pursuant to statute and the Public Trust Doctrine – the common law principles that govern use of these lands.

The Project involves maintenance dredging within Novato Creek and its tributaries involving “navigable waters.” Accordingly, the State Lands Commission will be an interested agency pursuant to the Public Trust Doctrine.
In conjunction with this application, the Applicant has submitted the following technical reports to help define and address potential impacts related to the proposed development.

**Preliminary Jurisdictional Wetland Delineation, Novato Creek Dredging Project, Marin County, California, Kleinfelder Inc., March 2007**

**Biological Assessment, Novato Creek Dredging Project, Marin County, California, Kleinfelder Inc., March 2007**

Other technical reports related to previous dredging operations and other projects in the area provided extensive documentation on Novato Creek and its related ecosystems and habitats. These documents are referenced in Attachment 1 and are available at the Marin County Department of Public Works.

### III. EVALUATION OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Pursuant to Section 15063 of the CEQA Guidelines, and the County EIR Guidelines, Marin County will prepare an Initial Study for all projects not categorically exempt from the requirements of CEQA. The Initial Study evaluation is a preliminary analysis of a project which provides the County with information to use as the basis for deciding whether to prepare an Environmental Impact Report (EIR) or Negative Declaration. The points enumerated below describe the primary procedural steps undertaken by the County in completing an Initial Study checklist evaluation and, in particular, the manner in which significant environmental effects of the project are made and recorded.

**A.** The determination of significant environmental effect is to be based on substantial evidence contained in the administrative record and the County's environmental database consisting of factual information regarding environmental resources and environmental goals and policies relevant to Marin County. As a procedural device for reducing the size of the Initial Study document, relevant information sources cited and discussed in topical sections of the checklist evaluation are incorporated by reference into the checklist (e.g. general plans, zoning ordinances). Each of these information sources has been assigned a number which is shown in parenthesis following each topical question and which corresponds to a number on the database source list provided herein as Attachment 1. See the sample question below. Other sources used or individuals contacted may also be cited in the discussion of topical issues where appropriate.

**B.** In general, a Negative Declaration shall be prepared for a project subject to CEQA when either the Initial Study demonstrates that there is no substantial evidence that the project may have one or more significant effects on the environment. A Negative Declaration shall also be prepared if the Initial Study identifies potentially significant effects, but revisions to the project made by or agreed to by the applicant prior to release of the Negative Declaration for public review would avoid or reduce such effects to a level of less than significance, and there is no substantial evidence before the Lead County Department that the project, as revised, will have a significant effect on the environment. A signature block is provided in Section VII of this Initial Study to verify that the project sponsor has agreed to incorporate mitigation measures into the project in conformance with this requirement.
C. All answers to the topical questions must take into account the whole of the action involved including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts. Significant unavoidable cumulative impacts shall be identified in Section VI of this Initial Study (Mandatory Findings of Significance).

D. A brief explanation shall be given for all answers except “Not Applicable” answers that are adequately supported by the information sources the Lead County Department cites in the parenthesis following each question. A “Not Applicable” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A “Not Applicable” answer shall be discussed where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

E. “Less Than Significant Impact” is appropriate if an effect is found to be less than significant based on the project as proposed and without the incorporation of mitigation measures recommended in the Initial Study.

F. “Potentially Significant Unless Mitigated” applies where the incorporation of recommended mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less than Significant Impact.” The Lead County Department must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section V, “Earlier Analyses,” may be cross-referenced).

G. “Significant Impact” is appropriate if an effect is significant or potentially significant, or if the Lead County Department lacks information to make a finding that the effect is less than significant. If there are one or more effects which have been determined to be significant and unavoidable, an EIR shall be required for the project.

The answers in this checklist have also considered the current California Environmental Quality Act Guidelines and the Initial Study Checklist contained in those Guidelines.
IV. ISSUES (AND SUPPORTING INFORMATION SOURCES):

1. LAND USE AND PLANNING

Would the proposal:

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<tr>
<th>a) Conflict with applicable Countywide Plan designation or zoning standards? (source #s): 1, 3, 4</th>
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The County determinations of significance with respect to zoning standards and the Findings required for discretionary entitlements are generally informed by policies contained in the Marin Countywide Plan (CWP), and the regulations of the Marin County Code. However, environmental characteristics that are specific to the subject Project area influence determinations regarding the threshold of significance for a particular effect, as is further discussed below.

The Project is subject to the goals and policies of the CWP. The CWP serves as the general plan for the unincorporated areas of the County and contains goals, policies, and programs that govern existing and future development. The CWP requires flood control as discussed in CWP Section 2. The Marin County Department of Public Works, Flood Control and Water Conservation District (District) was formed to provide for flood protection. The Project area is located within the District’s Flood Control Zone 1. Zone 1 encompasses the City of Novato plus the unincorporated area around the City. The Zone’s boundary is essentially the entire watershed tributary to Novato and Rush Creeks. Novato Creek is a perennial stream that extends approximately 17 miles from San Pablo Bay to its headwaters at Stafford Lake. This creek, along with its tributaries including Bowman Creek, Simmons Creek, Warner Creek and Arroyo Avichi, drains an approximately 27,500-acre watershed. The Novato basin flood control design was designed to pass 3,330 cubic feet of water each second (cfs). The Zone’s regular activities include the periodic maintenance dredging of portions of Novato Creek, Warner Creek and Arroyo Avichi, an annual creek clearance program carried out by the Marin Conservation Corps under the direction of District staff, operation and maintenance of four stormwater pumping stations, and on-going consultation with the City of Novato regarding development proposals and their related flood control issues.

Accordingly, the Project would not result in significant impacts to the environment because the maintenance dredging activities would be compatible with existing visual resources and the character of the local community and consistent with the policies contained in the CWP, including Zone 1. Further discussion of these policies is included in the sections below as they are related to the thresholds of significance for various potential environmental impacts.

In addition, as identified on the CWP section of the Marin County GIS website, the creek area parcels are designated as tax exempt, and the immediately adjacent parcel land uses are either commercial or residential. The Project will not conflict with applicable CWP designations or Marin County Title 22 zoning standards because no land use or zoning changes will occur.
b) Conflict with applicable environmental plans or policies adopted by Marin County? (source #s: 1, 4)

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The determinations of policy consistency as discussed in this Initial Study section represent County staff interpretation of policies. However, this Initial Study does not determine policy consistency. The formal policy consistency determinations are made by the County decision-makers.

Policy inconsistencies may not necessarily indicate significant environmental effects. Section 15358(b) of the CEQA Guidelines states that “effects analyzed under CEQA must be related to a physical change in the environment.” Therefore, only those policy inconsistencies that would lead to a significant effect on the physical environment are considered significant impacts pursuant to CEQA. Where potentially significant environmental impacts are raised in the discussion below, they have been mitigated to a less-than-significant impact and, therefore, project activities are determined to be consistent with the relevant policies cited. Mitigations are addressed further in the topical impact sections following plan policy analyses.

LOCAL PLANS, POLICIES, AND REGULATIONS
Land use designations and maintenance dredging activities proposed by the Project are governed by the objectives and policies of the Marin CWP (CWP), as well as District policies listed for Flood Control Zone 1 (where the Project is located).

As discussed in Section IV. 1 (a) “Land Use Planning” of this Initial Study, the Project would result in less than significant environmental impacts and, therefore, are determined to be consistent with the relevant policies cited.

The Marin Countywide Plan (CWP)

Countywide Plan: Consistent
The basic goals and policy objectives of the CWP which are relevant to the environmental consequences of the Project include the following: (1) protection of vegetation, wildlife species, and habitat; (2) avoidance of geologic hazards; (3) minimization of excavation and grading; (4) protection of visual qualities and views; and (5) preservation of creeks and wetlands.

The Project would avoid physical hazards and development constraints, protect natural resources, and provide public services because the Project would not result in significant adverse effects to the quality of the environment or character of the local community. Accordingly, based on the reasons stated above, as well as the mitigation requirements included in this Initial Study, the project would be consistent with the following CWP policies:

Environmental Quality Element

Policy EQ-2.4 Land uses in Stream Conservation Areas (SCAs). The following uses are permitted in the SCA provided these uses are allowed by the underlying zoning:
• All currently existing structures and uses including reconstruction and repairs.
• Necessary water supply projects.
• Flood control projects.
• Projects to improve fish and wildlife habitat.
• Grazing of livestock and other agricultural uses.
• Maintenance of water channels for erosion control and other purposes.
• Road and utility line crossings.
• Water monitoring installations.
• Trails.

**Consistent:** As listed above, flood control projects and maintenance of water channels are included as a permitted activity under Policy EQ-2.4. The District is obligated to provide a 50-year storm frequency flood protection to the Novato basin because the Project area is within Flood Control Zone 1. Therefore, the maintenance dredging is consistent with Policy EQ-2.4 because it is a permitted activity pursuant to Flood Control Zone 1 objectives and Policy EQ-2.4.

**Policy EQ-2.38 Flood Control Measures.** Flood control measures should retain natural features and conditions as much as possible. Compatible uses (agriculture, wildlife habitat, recreation, etc.) of flood ponding areas and seasonal floodways should be promoted.

**Consistent:** The existing conditions of the Project area, which includes portions of Novato Creek and its tributaries, are largely urbanized stream channels constructed under USACE permits and have been dredged four times since construction, most recently in the summer of 2004. The previous flood control measures removed existing wetland vegetation. The Project will also result in the temporary removal and loss of emergent wetland vegetation currently existing within the creek bed. However, this type of vegetation (Cattails, Tules) quickly repopulates suitable habitat areas and is expected to return to the edges of the dredged channel within one to two years, as it has with the previous flood control measures.

The Project will also result in the removal of the top layer of sediments within the stream channel. Anadromous juvenile steelheads migrate downstream through the area and will rear and forage for a limited period of time before moving further downstream into San Pablo Bay. Resident fish species are also likely to forage within the length of stream that is proposed for dredging. The forage species consist primarily of insects and other invertebrate organisms that may inhabit this shoreline vegetation, as well as the top layer of sediments. As mentioned previously, the vegetation that supports insect populations quickly reestablishes in the area, and invertebrates are expected to quickly repopulate back into the area either through natural distribution or along with sediments transported into the Proposed Project area during flow events. Potential impacts to marine species are anticipated to be less than significant and no mitigation is required or recommended.

Accordingly, the Project is consistent with Element EQ-2.38 because the maintenance dredging (flood control measures) will result in only a temporary change with natural restoration occurring to existing conditions within one to two years, providing additional habitat.

**Objective EQ-3. The Built Environment.** To establish a method and approach for managing the built environment within the context of the natural environment and available resources of Marin County.
Consistent. The project would contribute minimally to air, water, and noise pollution to the extent analyzed in this Initial Study. No significant effects (with mitigation) related to air, water, or noise pollution are identified. Therefore, the project would be consistent with this policy, as discussed below.

Air Pollution:

As discussed in Section IV.5 “Air Quality,” the Project would not result in potentially significant impacts on air quality relating to dust impacts during maintenance dredging and the placement of the dredged soil at the deposition sites. As the Project impacts are minimal and temporary, (largely related to the traffic trips for the dredge material), the Project will result in less-than-significant impacts. As a matter of good business practice, the Project will also incorporate suggested Best Management Practices (BMPs) provided by the BAAQMD’s standard measures to control dust during construction to further reduce impacts. Accordingly, the Project is consistent with Policy EQ-3.2.

Water Pollution:

The Project would not result in secondary impacts to adjacent water sources. Implementation of the standard County permit requirements and mitigation measures contained in Section IV.4(c) “Water” of this Initial Study will ensure conformance with the identified policy by reducing the potential pollution impacts to a less-than-significant level. Accordingly, the Project is consistent with Policy EQ-3.2.

Noise:

The proposed project will create noise associated with maintenance dredging activities and traffic for hauling dredge material to the deposition sites. Section IV.10 “Noise,” concluded that the noise associated with maintenance dredging activities would be less-than-significant, as it falls within the acceptable standards provided in the CWP, and dredging and traffic trips associated with hauling the dredge deposition would occur during work-week hours ensuring compliance with the identified policy. Accordingly, the Project is consistent with Policy EQ-3.2.

Policy EQ-3.4 Changes to Hydrological and Biological Processes. No operation shall cause irreversible damage or more than minimum reversible change to natural hydrological and biological processes.

Consistent: The Project area has become the functional sediment basin for the Novato Creek area and its connected sub-watersheds. As a consequence, sediment regularly builds up to dangerous levels, increasing the risk of flooding portions of the City of Novato. Maintenance dredging is expected to improve hydrological conditions by the removal of the excess sediment buildup, allowing for a return to a more functional hydrological drainage process. Therefore, the maintenance dredging is consistent with Policy EQ-3.4 because it restores the hydrological processes to their original design specifications.

Changes to the biological processes are anticipated to be temporary. The existing type of vegetation (Cattails, Tules) quickly repopulates suitable habitat areas and is expected to return to the edges of the dredged channel within one to two years, as it has with the previous flood control measures. Therefore, the maintenance dredging is consistent with
Policy EQ-3.4 because no long-term changes are expected to the existing biological processes.

**Policy EQ-3.6 Wildlife, Vegetation, and Habitats.** A diversity and abundance of wildlife and marine life shall be maintained. Vegetation and animal habitats shall be preserved wherever possible.

*Consistent:* Maintenance dredging will cause temporary impacts to aquatic vegetation. The existing type of vegetation (Cattails, Tules) quickly repopulates suitable habitat areas and is expected to return to the edges of the dredged channel within one to two years, as it has with the previous flood control measures. The Project will also result in the removal of the top layer of sediments within the stream channel. Anadromous juvenile steelheads migrate downstream through the area and will rear and forage for a limited period of time before moving further downstream into San Pablo Bay. Resident fish species are also likely to forage within the length of stream that is proposed for maintenance dredging. The forage species consist primarily of insects and other invertebrate organisms that may inhabit this shoreline vegetation as well as the top layer of sediments. As previously observed, the vegetation that supports insect populations quickly reestablishes in the Project area, and invertebrates quickly repopulate the area either through natural distribution or along with sediments transported into the Project area during flow events. Potential impacts to marine species is anticipated to be less than significant because dredging activities will occur during the dry season to avoid spawning season. Accordingly, with the proposed mitigation and monitoring measures provided under Section 7 “Biological Resources,” the Project is consistent with Policy EQ-3.6 because no long-term changes are expected to the existing biological processes.

**Policy EQ-3.7 Avoidance of Hazards from Earthquake, Erosion, Landslide, Floods, and Fires.** Construction and operations shall be located and designed to avoid or minimize the hazards from earthquakes, erosion, landslides, floods, fire, and accidents consistent with policies and programs in the Environmental Hazards Element.

*Consistent:* The proposed maintenance dredging does not involve issues of earthquakes, erosion, landslides, and fires. The Project reach has become the functional sediment basin for the Novato Creek area and its connected sub-watersheds. As a consequence, sediment regularly builds up to dangerous levels, increasing the risk of flooding portions of the City of Novato. The implementation of the maintenance dredging is expected to improve hydrological conditions by the removal of the excess sediment buildup, allowing for a return to a more functional hydrological drainage process. Therefore, the Project is consistent with Policy EQ-3.7 because the proposed maintenance dredging will decrease the risk of flooding the City of Novato.

**Policy EQ-3.10 Coordination of Public Services.** Water supply, flood control, wastewater and solid waste disposal, soil conservation, open space preservation, and natural resource extraction shall be coordinated to create the greatest public benefit and the least degree of environmental damage.

*Consistent:* The only affected public service of the Project is flood control. The proposed maintenance dredging will improve hydrological conditions and decrease the risk of flooding the City of Novato. Accordingly, the Project is consistent with Policy EQ-3.10.
Environmental Hazards Element

Objective EH-8. Safety from Inundation. To assure public safety in areas subject to inundation.

Consistent: The Project’s objective is to ensure that the capacity of Novato Creek and its tributaries is maintained by the implementation of maintenance dredging pursuant to Policy EH-8.6 “Flood Runoff;” maintenance dredging will remove sediment build-up in the watershed that could cause flooding and a public safety concern in the City of Novato. Accordingly, the Project is consistent with Objective EH-8 and Policy EH-8.6.

Natural Systems and Agriculture Element

Goal BIO-4 Riparian Conservation. Protect and, where possible, restore the natural structure and function of riparian systems.

Policy BIO-4.4 Promote Natural Stream Channel Function. Retain and, where possible, restore the hydraulic capacity and natural functions of stream channels in SCAs (stream conservation areas). Discourage alteration of the bed or banks of the stream, including filling, grading, excavating, installation of storm drains and culverts. When feasible, replace impervious surfaces with pervious surfaces. Protect and enhance fish habitat, including through retention of large woody debris, except in cases where removal is essential to protect against property damage or prevent safety hazards. In no cases shall alterations that create barriers to fish migration be allowed on streams mapped as historically supporting salmonids. Alteration of natural channels within SCAs for flood control should be designed and constructed in a manner that retains and protects the riparian vegetation, allows for sufficient capacity and natural channel migration, and allows for reestablishment of woody trees and shrubs without compromising the flood flow capacity where avoidance of existing riparian vegetation is not possible.

Consistent: The Project reach has become the functional sediment basin for the Novato Creek area and its connected sub-watersheds. As a consequence, sediment regularly builds up to dangerous levels, increasing the risk of flooding portions of the City of Novato and deceasing the hydraulic capacity and natural functions. The implementation of the maintenance dredging is expected to improve hydrological conditions by the removal of the excess sediment buildup, allowing for a return to a more functional hydrological drainage process. Therefore, the Project is consistent with Policy BIO-4.4 because the maintenance dredging will serve to restore the hydraulic capacity and natural function of the Project reach.

Policy BIO-4.5 Restore and Stabilize Stream Channels. Pursue stream restoration and appropriate channel redesign where sufficient right-of-way exists that includes: a hydraulic design, a channel plan form, a composite channel cross-section that incorporates low flow and bankfull channels, removal and control of invasive exotic plant species, and biotechnical bank stabilization methods to promote quick establishment of riparian trees and other native vegetation.

Consistent: The existing conditions of the Project, which includes portions of Novato Creek and its tributaries, are largely urbanized stream channels constructed under USACE permits and have been dredged four times since construction, most recently in the summer of 2004. Accordingly, the Project is consistent with Policy BIO-4.5 because the maintenance dredging serves to maintain the stabilization of the stream channels by removing excess sediment buildup.
### Environmental Hazards Element

**Goal EH-3  Safety from Flooding and Inundation.** Protect people and property from risks associated with flooding and inundation.

**Program EH-3.m Maintain Flood Controls.** Continue to implement adopted flood control programs, including limitations on land use activities in flood hazard areas and through repair and maintenance of necessary flood control structures.

**Consistent:** The District is obligated to provide a 50-year storm frequency flood protection to the Novato basin because the Project area is within Flood Control Zone 1. Therefore, the Project is consistent with Program EH-3.m because the maintenance dredging fulfills the District’s flood control program obligation.

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<th>c) Affect agricultural resources, operations, or contracts (e.g. impacts to soils or farmlands, impacts from incompatible land uses, or conflicts with Williamson Act contracts)? (source #s: 1, 4, 6, 7, 28, 29)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
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<th>Not Applicable</th>
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The Project and the designated soil deposition sites (top of the Novato Creek levees, Redwood Landfill, Gnoss Airfield, and the Marsh Road site) do not impact, involve, nor are associated with agricultural resources or operations. The Carneros River Ranch deposition site is an active agricultural site that will benefit from the placement of fill to raise the root crop zone above the underlying saline groundwater. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve the taking or placement of dredge material on encumbered land pursuant to the Williamson Act.

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<th>d) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)? (source #s: 1, 3, 4 )</th>
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The Project and the designated soil deposition sites are existing locations. Accordingly, this element is not applicable because no changes will occur to the existing physical arrangement of the established community.

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<th>e) Result in substantial alteration of the character or functioning of the community, or present or planned use of an area? (source #s: 1, 3, 4 )</th>
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f) Substantially increase the demand for neighborhood or regional parks or other recreational facilities, or affect existing recreational opportunities? (source #(s): 1, 3, 4 )

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The Project area is not accessible to the public. Accordingly, this element is not applicable because the maintenance dredging will not increase the demand for neighborhood or regional parks or other recreational facilities, or affect existing recreational activities opportunities.

2. POPULATION AND HOUSING. Would the proposal:

a) Increase density that would exceed official population projections for the planning area within which the project site is located as set forth in the Countywide Plan and/or community plan? (source #(s): 1, 3, 4 )

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The Project would not increase population density because no residential construction is proposed. Accordingly, this element is not applicable because it involves only the maintenance dredging of an existing flood control channel, and the population and housing in the area would essentially be the same whether or not the proposed project is implemented.

b) Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)? (source #(s): 1, 3, 4 )

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The Project will not induce substantial growth because it involves only the maintenance dredging of an existing flood control channel. Accordingly, this element is not applicable because it involves only the maintenance dredging of an existing flood control channel, and it will not induce growth or contribute to a situation of unplanned growth.

c) Displace existing housing, especially affordable housing? (source #(s): 1, 3, 4 )

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The Project will not displace existing housing because it involves only the maintenance dredging of an existing flood control channel. Accordingly, this element is not applicable because it involves only the maintenance dredging of an existing flood control channel, and it will not displace existing housing.

3. GEOPHYSICAL. Would the proposal result in or expose people to potential impacts involving:

<table>
<thead>
<tr>
<th>Location in an area of geologic hazards, including but not necessarily limited to: 1) active or potentially active fault zones; 2) landslides or mudslides; 3) slope instability or ground failure; 4) subsidence; 5) expansive soils; 6) liquefaction; 7) tsunami; or 8) similar hazards? (source #(s): 1, 7, 10, 12)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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County determinations of significance with respect to the Project’s impacts to geologic hazards are based on environmental characteristics specific to the subject properties, as is further discussed below.

Review of resource maps maintained by the Marin County Community Development Agency indicated that the Project is not located in an area of geologic hazards, is not located within an Earthquake Study Zone, and that no active faults were identified on the property (*Quaternary Geologic Map, Napa, California, Sowers et al., 1998*). The nearest active faults are the Hayward Fault, located 8 miles east of the City, and the San Andreas Fault, located 12 to 14 miles west of the City. Seismic activity on these faults may cause some shaking and subsidence of fills and soils at some distance from the epicenter (*Liquefaction Susceptibility Map, Napa, California, Sowers et al., 1998*). This soil type does present shaking amplification and shear wave velocity due to the sand, silt, and mud. However, the Project site does not have structures located in the Novato Creek, its tributaries, or on the proposed deposition locations. The addition of fill to the proposed levee deposition sites is intended to improve the stability of the receiving levees. Accordingly, seismically-induced subsidence would affect only the fill and no structures would be at risk. Accordingly, the Project would result in a less than significant impact as it relates to geologic hazards, including landslides, slope stability, and liquefaction.

b) Substantial erosion of soils due to wind or water forces and attendant siltation from excavation, grading, or fill? (source #(s): 1, 7, 10)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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County determinations of significance with respect to the Project’s impact to erosion are based on environmental characteristics that are specific to the subject properties, as is further discussed below.

The Project involves only the maintenance dredging of an existing flood control channel and may cause short-term erosion associated with dredging operations and ingress/egress (but not associated with the actual maintenance dredging activities itself). Accordingly, dredge material deposition locations, staging areas, and ingress/egress locations could involve potential erosion and sediment to enter into Novato Creek resulting in potentially significant impacts unless mitigated. The following
mitigation measures will be incorporated into the Project; implementation of the mitigation measure below would reduce erosion and siltation impacts to a less than significant level.

**IMPACT 3.b.1: Dredging and associated activities may cause short-term erosion that would result in sediments in Novato Creek**
Grading, truck traffic, and other construction activities would result in ground disturbance and loose soil that could be washed into Novato Creek by stormwater runoff. Increasing siltation in the creek would adversely affect its ecological value by reducing the surface area, depth and connectivity of the in-stream pools that provide habitat for anadromous fish. Dredging will take place during the dry season, and will be exempt from standard requirements for the implementation of Stormwater Pollution Prevention Plan (SWPPP). However, the dredge material soils deposited at the deposition locations would leave bare soil because reseeded areas would not have sufficient time to become established with ground cover before the onset of winter storms. In order to mitigate this impact, the Applicant shall prepare and implement a SWPPP that incorporates measures such as placement of sterile straw, silt fencing, or other suitable barrier materials (e.g., filter fabric, plywood) along staging area boundaries; bare soils associated with dredging deposition, shall be governed by existing permit conditions and requirements for each site. Implementation of the mitigation measure below would reduce erosion and siltation impacts to a less than significant level.

**Mitigation Measure 3.b.1**
The Applicant shall construct the project in a manner that avoids erosion from the project and prevents accumulation of silt in drainage-ways through measures such as placement of sterile straw, silt fencing, or other suitable barrier materials (e.g., filter fabric, plywood) along staging areas associated with the maintenance dredging project. This mitigation measure shall be implemented through the preparation of a SWPPP that is subject to the review and approval by Department of Public Works staff. The SWPPP shall be submitted as part of the Conditions of Approval. The Applicant shall implement the SWPPP as approved.

**Mitigation Measure 3.b.2**
Before the Applicant commences on maintenance dredging activities, the Applicant shall submit a SWPPP that indicates the measures that would be employed to reduce stormwater runoff and sedimentation for the review and approval of Department of Public Works staff.

**Monitoring Measure 3.b.1**
Before the Applicant commences on maintenance dredging activities, staff from the Department of Public Works shall inspect the site to verify that the erosion control measures have been properly implemented.

<table>
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<tr>
<th>c) Substantial changes in topography from excavation, grading or fill, including but not necessarily limited to: 1) ground surface relief features; 2) geologic substructures or unstable soil conditions; and 3) unique geologic or physical features? (source #s: 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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Based on the application materials, the Project would restore the Novato Creek, Warner Creek, and Arroyo Avichi Creeks to their original flood design levels; and it will also improve the levees at the proposed deposition locations, which are in need of raising. Accordingly, the Project will result in less than significant impacts for changes in topography because the actual proposed action involves
restoring levees and the flood channel to their planned and designed levels, it would not substantially reform the natural topography on the site, and it would avoid unique geologic features in the area. In addition, the Carneros River Ranch deposition site is an active agricultural site that will benefit from the placement of fill to raise the root crop zone above the underlying saline groundwater.

<table>
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<th>4. WATER. Would the proposal result in:</th>
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<tbody>
<tr>
<td>a) Substantial changes in absorption rates, drainage patterns, or the rate and amount of surface runoff? (source #(#s): 7, 10, 12)</td>
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<td>Significant Impact</td>
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The Project will restore the Novato Creek and tributary channels to their original design hydraulic capacity of 3,300 cfs to accommodate a 50-year storm event, thus improving the drainage pattern and surface runoff capacity. In addition, the removal of the excess sediment burden is expected to improve absorption rates because the channels will be able to carry more water, thus increasing the residency time for absorption. Furthermore, the purpose of placing the fill material at the proposed deposition sites is to utilize the low permeable material for daily cover (Redwood Landfill) or improve levees (Redwood Landfill and Gnoss Field) by raising their elevations, thus improving the drainage patterns of the deposition sites. The Carneros River Ranch deposition site is an active agricultural site that will benefit from the placement of fill to raise the root crop zone above the underlying saline groundwater. Therefore, both the maintenance dredging and the proposed end use of the dredged material will result in less than significant impacts.

<table>
<thead>
<tr>
<th>b) Exposure of people or property to water related hazards, including, but not necessarily limited to: 1) flooding; 2) debris deposition; or 3) similar hazards? (source #(#s): 7, 12)</th>
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<td>Significant Impact</td>
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The Project area is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 0601780002C. The Project is a maintenance dredging effort with the intent of restoring Novato Creek and select tributaries back to planned and designed flood levels. The project areas are within zones designated as AE ("Base flood elevations determined") or AH ("Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined"). The Project will reduce the sediment buildup in Novato Creek and its tributaries, thus reducing the potential for flooding. The placement of the fill material on levees at Redwood Landfill and Gnoss Field will also serve to reduce the potential for flooding by improving those levees with the addition of low-permeable fill. Therefore, the Project will improve existing conditions and result in a less than significant impact.

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<tr>
<th>c) Discharge of pollutants into surface or ground waters or other alteration of surface or ground water quality (e.g. temperature, dissolved oxygen or turbidity)? (source #(#s): 2, 7, 8)</th>
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There are two issues relevant to this element: (1) potential pollutants associated with the dredge materials, and (2) potential pollutants associated with equipment to be used to move the dredge material. Each is addressed in the sections below.

Dredge Material - As described in the Weston/Kleinfelder Report *Results of Chemical, Physical and Biological Testing of Sediments from Novato Creek*, soil samples of the material to be dredged were submitted to analytical laboratories for chemical and biological analysis to evaluate whether the material could be accepted at the environmentally-sensitive Hamilton Wetlands Reclamation Site, a previously-considered and currently rejected receiving location for the dredged material. No action levels were exceeded that would have prevented the use of the dredged material for wetlands construction. As indicated by the acceptance letter in Appendix D, the following regulatory agencies concluded that the use of this dredged material would not present unacceptable discharge of pollutants into a sensitive wetland habitat: the US Environmental Protection Agency- Region IX, the Bay Conservation and Development Commission, the Regional Water Quality Control Board, the California Department of Fish & Game, the US National Marine Fisheries Service, and the US Fish & Wildlife Service. Therefore, the use of the dredged material on agricultural fields, levees, and as landfill cover material is also considered a less than significant impact.

Equipment - Project activities may present the potential for the discharge of pollutants from accidental spills of fuels, lubricants and other project equipment fluids. The development and implementation of the approved *Hazardous Materials Management/Spill Prevention Countermeasure and Control Plan* (SPCCP) as described in Mitigation Measure 4.c.1 (below) will mitigate potential impacts to less than significant levels.

Deposition Sites are covered by their own permit requirements and Conditions of Approval, with the exception of Marsh Road. The Marsh Road site will not encompass an area of over 1 acre, thus, not requiring a SWPPP. However, without implementing required measures to reduce the chance of erosion, water quality could potentially be impacted by sedimentation. Accordingly, with the inclusion of Mitigation Measure 4.c.2 to reduce erosion and sedimentation, impacts will be reduced to less than significant levels.

Accordingly, staging areas, and ingress/egress locations associated with maintenance dredging could involve potential erosion and sediment to enter into Novato Creek, the following mitigation measures will be incorporated into the Project; Implementation of the mitigation measure below would reduce erosion and siltation impacts to a less than significant level.

**IMPACT 4.c.1: The potential for an accidental release of pollutants from equipment into Novato Creek**

**Mitigation Measure 4.c.1:** The Applicant shall require a *Hazardous Materials Management/Spill Prevention Control and Countermeasure Plan* (SPCCP) be developed by the contractor and submitted to Marin County for review prior to final submittal to the Regional Water Quality Control Board for review and approval prior to construction. The approved plan will be given to contractors working on the project. At least one copy will be on-site at all times. The purpose of the SPCCP will be to provide on-site construction personnel, environmental compliance monitors, and regulatory agencies with a detailed description of hazardous materials management, spill prevention, and spill response/cleanup measures associated with the construction of project elements.
Mitigation Measure 4.c.2:
The Applicant shall include the requirement that the contractor prepare a SPCCP in the bid specifications. The SPCCP shall include the requirement described above in Mitigation Measure 4.c.1.

Mitigation Measure 4.c.3
Before the Applicant commences on maintenance dredging activities, the SPCCP shall be submitted to the RWQCB for their review and approval prior to maintenance dredging activities.

Monitoring Measure 4.c.1
Before the Applicant commences on maintenance dredging activities, staff from the Department of Public Works shall inspect the site to verify that the SPCCP measures have been properly implemented.

IMPACT 4.c.2: Dredging and associated activities may cause short-term erosion that would result in sediments in Novato Creek
Grading, truck traffic, and other construction activities would result in ground disturbance and loose soil that could be washed into Novato Creek by stormwater runoff. Increasing siltation in the creek would adversely affect its ecological value by reducing the surface area, depth, and connectivity of the in-stream pools that provide habitat for anadromous fish. Dredging would take place during the dry season and would be exempt from standard requirements for the implementation of Stormwater Pollution Prevention Plan (SWPPP). However, the dredged material soils would leave bare soil because reseeded areas would not have sufficient time to become established with ground cover before the onset of winter storms. In order to mitigate this impact, the Applicant shall prepare and implement a SWPPP that incorporates measures such as placement of sterile straw, silt fencing, or other suitable barrier materials (e.g., filter fabric, ply wood) along staging area boundaries; bare soils associated with dredging deposition, shall be governed by existing permit conditions and requirements for each site. Implementation of the mitigation measure below would reduce erosion and siltation impacts to a less than significant level.

Mitigation Measure 4.c.2
The Applicant shall construct the project in a manner that avoids erosion from the project and prevents accumulation of silt in drainageways through measures such as placement of sterile straw, silt fencing, or other suitable barrier materials (e.g., filter fabric, ply wood) along staging areas associated with the maintenance dredging project. This mitigation measure shall be implemented through the preparation of a SWPPP that is subject to the review and approval by Department of Public Works staff. The SWPPP shall be submitted as part of the Conditions of Approval. The Applicant shall implement the SWPPP as approved.

Mitigation Measure 4.c.2.1
Before the Applicant commences on maintenance dredging activities, the Applicant shall submit a SWPPP that indicates the measures that would be employed to reduce stormwater runoff and sedimentation for the review and approval of Department of Public Works staff.

Monitoring Measure 4.c.2
Before the Applicant commences on maintenance dredging activities, staff from the Department of Public Works shall inspect the site to verify that the erosion control measures have been properly implemented.
Substantial change in the amount of surface water in water body or ground water either through direct additions or withdrawals, or through intersection of an aquifer by cuts or excavations? (source #(s): 7, 10, 12)

<table>
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<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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No change in surface or ground water morphology will occur as a result of the Project. The removal of accumulated silt will serve to restore the capacity of the flood control systems to their original design specifications. The restoration of the originally-designed capacity of the flood control system will have the immediate effect of increasing the flood capacity; therefore the amount of surface runoff will actually be reduced due to the increase in width and depth of the creek channel which is considered a beneficial impact. No work will be performed in relation to an aquifer in this project. The proposed deposition sites where the dredged material is to be added to levees will subsequently have improved control of surface water due to the increase in levee height with low permeable material. The use of some of the dredge material as cover material at Redwood Landfill will serve to reduce rainfall infiltration into the buried waste. Accordingly, the Project will result in a less than significant impact.

Substantial changes in the flow of surface or ground waters, including, but not necessarily limited to: 1) currents; 2) rate of flow; or 3) the course or direction of water movements? (source #(s): 7, 10, 12)

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<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Project will improve surface water currents, rates of flow, and surface water flow directions by the removal of sediment buildup that is reducing the carrying capacity of Novato Creek and its tributaries. Groundwater flow characteristics will not be impacted since this Project is focused on surface water. Accordingly, the Project will result in a less than significant impact.

Substantial reduction in the amount of water otherwise available for public water supplies? (source #(s): 7, 4)

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<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The North Marin Water District (NMWD) provides water to the City of Novato and surrounding areas. The NMWD has two water sources: Stafford Lake and the Russian River (via an aqueduct connection to the Sonoma County Water Agency aqueduct system). The City of Novato derives no municipal water from Novato Creek or its tributaries. The Project will not involve public water supply for maintenance dredging activities nor for the placement of dredging deposition. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve water supply.
5. AIR QUALITY. Would the proposal:

<table>
<thead>
<tr>
<th>a) Generate substantial air emissions that could violate official air quality standards or contribute substantially to an existing or projected air quality violation? (source #:s): 1, 7</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The City of Novato is within the jurisdiction of the San Francisco Bay Area Air Quality Management District (BAAQMD), which regulates air quality in the nine-county San Francisco Bay Area. The BAAQMD is primarily responsible for regulating air pollution emissions from stationary sources (such as factories) and from indirect sources (e.g. traffic associated with new development) and for monitoring ambient pollution concentrations. Direct emissions from motor vehicles are regulated by the State of California and the U.S. Environmental Protection Agency (EPA). These agencies have established ambient air quality standards for criteria pollutants: ozone, carbon monoxide, inhalable particulate matter, nitrogen dioxide, and sulfur dioxide. Standards have also been established for lead, sulfate, hydrogen sulfide and vinyl chloride.

During the dredging portion of the proposed project, air quality impacts, including the generation of PM₁₀ (dust, particulates) and mobile source exhaust emissions may occur. Dust is the pollutant of greatest concern with respect to construction activities. The BAAQMD’s approach to CEQA analyses of construction and related impacts (i.e. dredging), is to emphasize implementation of effective and comprehensive control measures rather than quantification of emissions.

Construction dust during dredging operations is anticipated to be minimal due to the wet or moist nature of the material to be removed. Drier areas will be properly moistened to minimize potential dust from equipment activity. The loading, transporting and deposition of the dredged materials would have the potential to generate PM₁₀ emissions from limited dredging activities and associated truck trips to haul the dredge deposition. Accordingly, the Project would result in less than significant impacts for dredging activities and associated truck trips related to the dredge deposition.

Although project impacts will be less than significant, the Project will include the following BMPs listed in the BAAQMD’s CEQA Guidelines Table 2, as a matter of good practice, to further reduce impacts.

Best Management Practices 5.a.1
The District will require the construction contractor to implement a dust abatement program, which should include the following elements:

- Water all active construction areas at least twice daily, depending on type of operation, and wind exposure.
- Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.
- Construction grading activity should be discontinued in high wind conditions that cause excessive neighborhood dust problems, based on the opinion of the construction inspector.
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer) in accordance with Section 23114 of the California Vehicle Code during transit to and from the site.
• Pave, apply water three times daily, or apply non-toxic soil stabilizers (e.g., latex acrylic copolymer) on unpaved access routes, parking areas, and staging areas at construction sites, and cover inactive storage piles.
• Sweep daily (preferably with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
• Sweep streets daily (preferably with water sweepers) if visible soil material is carried onto adjacent public streets.
• Hydroseed or apply soil binders to inactive construction areas.
• Enclose, cover, water twice daily or apply soil binders to exposed stockpiles.
• Limit traffic on unpaved roads to 15 mph.
• Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
• Replant vegetation in disturbed areas as quickly as possible.
• Minimize idling time (e.g., 10-minute maximum).
• Maintain properly tuned equipment.
• Limit the hours of operation of heavy-duty equipment and/or the amount of equipment used.

**Best Management Practices Mitigation Measure 5.a.1**
The applicant will provide a weekly monitoring report while dredging activities are occurring in support of the Project to the District to ensure that the above BMPs are being implemented.

**Monitoring Measure 5.a.1**
The Department of Public Works shall review the above-referenced monitoring reports to ensure that Best Management Practices are being implemented.

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<th>b) Expose sensitive receptors to pollutants, such as noxious fumes or fugitive dust? (source #(#s): 7, 8)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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Residences adjacent to the south bank of Novato Creek, Warner Creek, and Arroyo Avichi could experience temporary impacts from PM₁₀, as well as heavy equipment and vehicle emissions during construction operations. BAAQMD CEQA Guidelines recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that provides the basis for regional air quality plans, and that construction emissions are not expected to impede attainment of ozone standards in the Bay Area (BAAQMD, 1999). Thus, the BAAQMD recommends that determination of significance with respect to construction impacts be based not on quantification of emissions and comparison to thresholds, but upon inclusion of feasible control measures for PM₁₀. Accordingly, the Project would result in less than significant impacts for dredging activities and associated truck trips as it relates to exposure to noxious fumes or fugitive dust.
Although project impacts will be less than significant, the Project will include the following BMPs listed in the Bay Area AQMD's CEQA Guidelines Table 2, as a matter of good practice, to further reduce impacts. These BMPs are provided above under “Best Management Practices 5.a.1”.

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<th>c) Alter air movement, moisture, or temperature, or cause change in climate? (source #s): 7, 8</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Project does not include activities that would significantly alter climate or temperature conditions. Therefore, impacts would be less-than-significant.

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<th>d) Create objectionable odors? (source #s): 1, 7</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The material to be dredged has been accumulating in the channel for over 3 years and subjected to the ebb and flow of the tides. The decomposed organics and wet silt are likely to generate some objectionable odors to be emitted locally during dredging operations. However, this would only be temporary in nature during the process of removing the sediment buildup from the channels and is considered to be a less-than-significant impact. No mitigation is required or recommended.

6. TRANSPORTATION/CIRCULATION. Would the proposal result in:

<table>
<thead>
<tr>
<th>a) Substantial increase in vehicle trips or traffic congestion such that existing levels of service on affected roadways will deteriorate below acceptable County standards? (source #s): 1, 6, 7 &amp; Appendices C</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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Both the CWP and the TACP provide policies relative to the acceptable level of service (LOS) in the Project area. The CWP establishes LOS D or better (LOS A, representing free-flowing conditions to LOS F, representing very severe congestion and intersection breakdown) as the minimally acceptable LOS for all streets in the unincorporated areas of Marin (Transportation Policies T-1.1 and T-1.4). The TACP adopts LOS D or better during PM peak-hour conditions as the lowest acceptable LOS for all intersections within Zone #1 and routes leading to the proposed dredge deposition sites.

The increased traffic volumes occurring during the course of the dredging project would be expected to have an almost imperceptible impact on operating conditions at affected local road intersections. Based on prior analysis conducted by Whitlock & Weinberger Transportation, Inc. (W-Trans), including the Draft Traffic Study for the North Redwood Redevelopment Project, May 2007, and the Draft Hanna Ranch Traffic Impact Study, March 2006, the intersections at the Rowland Boulevard and Atherton Avenue interchanges that would be
affected by the Project traffic currently operate at LOS C or better. The addition of up to 38 peak hour trips at Rowland Boulevard intersections and up to 10 peak hour trips at the Atherton Avenue interchange would be expected to result in minor increases to average delay, though certainly not enough to push delays beyond the limit of LOS D, which is considered acceptable by both the City of Novato and the County of Marin (W-Trans: Novato Creek Dredging Project Traffic Report. Appendix C). Likewise, under the alternative deposition scenario, the 32 peak hour trips that would be added to US 101 north of Rowland Boulevard and the ten at the Atherton Avenue interchange would be expected to result in less-than-significant changes to operation.

Materials taken offsite (not stored on Novato Creek’s levees) would be transported by various major routes through Novato to US Highway 101 and then on to several deposition sites:

**Carneros River Ranch:**
Once on southbound US 101, the trucks would travel 1.1 miles to exit at the Highway 37 off-ramp. The trucks would travel 4.2 miles on Highway 37 to the left turn lane across from the Port of Sonoma. The storage site is located directly adjacent to and north of Highway 37 (See Figure 6 and Appendix F).

**Redwood Landfill:**
Once on northbound US 101, the truck would travel approximately 4.6 miles north to the Redwood Landfill turnoff, then proceed east approximately ½ mile to the front gate of the landfill (See Figure 7 and Appendix F).

**Gnoss Field Site:**
Once on northbound US 101, the truck would travel 1.33 miles to exit at the Atherton Avenue off-ramp. The truck would then travel east approximately 100 yards to exit at Binford Road to travel north 1.6 miles to the entrance to Gnoss Field (See Figure 8 and Appendix F).

**Marsh Road Site:**
Once on southbound US 101, the trucks would travel 1.1 miles to exit at the Highway 37 off-ramp. The trucks would then pass over US 101 and immediately exit the right lane to access Marsh Road. The storage site is located directly adjacent to and north of Highway 37 (See Figure 9 and Appendix F).

A maximum of 38 trips per hour would be created by trucks transporting dredged material along the haul route between the site and the Carneros River Ranch site. Under the alternative deposition scenario, it is estimated that 22 trip ends per hour would be oriented to Redwood Landfill, located approximately six miles north of the Rowland Boulevard interchange; 10 trip ends per hour to Gnoss Field via the Atherton freeway interchange, approximately two miles north of Rowland Boulevard; and one trip per hour to Marsh Road, approximately, one mile to the south of Rowland Boulevard adjacent to the US 101/SR 37 freeway interchange, with the remaining five trips occurring within the Project Site along the banks of the Novato Creek levees. A summary of the truck trip distribution estimates and added trips to individual US 101 freeway segments is provided in Table 1, below. [W-Trans, Inc.: Novato Creek Dredging Project Traffic Report. Appendix C].
Table 1: Truck Trip Distribution by Freeway Segment

<table>
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<tr>
<th>Destination</th>
<th>Percent Dredged Materials Deposited</th>
<th>Maximum Truck trips per Hour on US 101</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Truck Trip Ends</td>
</tr>
<tr>
<td>Proposed Project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camero's Ranch</td>
<td>100%</td>
<td>38</td>
</tr>
<tr>
<td>Alternative Deposition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novato Levee</td>
<td>13%</td>
<td>5</td>
</tr>
<tr>
<td>Redwood Landfill</td>
<td>57%</td>
<td>22</td>
</tr>
<tr>
<td>Gnoss Field</td>
<td>27%</td>
<td>10</td>
</tr>
<tr>
<td>Marsh Road</td>
<td>3%</td>
<td>1</td>
</tr>
<tr>
<td>Total Truck Trips</td>
<td></td>
<td>38</td>
</tr>
</tbody>
</table>

The freeway segment anticipated to carry the largest share of dredging truck traffic is the US 101 between Rowland Boulevard and Atherton Avenue. Approximately 38 bi-directional truck trips per hour would travel along this freeway segment, corresponding to about one vehicle every minute and a half (or one vehicle every three minutes in each direction). The added trips to US 101 are expected to have a less-than-significant impact on US 101 as the vehicle density on the freeway with the added trips indicates LOS D operation, which is considered acceptable by both the County of Marin and the City of Novato. [W-Trans, Inc.: Novato Creek Dredging Project Traffic Report. Appendix C].

The added trips to the Redwood Landfill interchange would also be expected to have a less-than-significant impact given the overpass and ramp improvements completed in 2006. The overpass project eliminated hazardous conditions associated with slow-moving trucks making left turn movements across northbound traffic and merging into the fast lane of southbound US 101. The project also significantly lengthened the deceleration lane into the landfill, and constructed an 800-foot long southbound acceleration lane on a downhill segment that allows trucks to approach freeway speeds before merging into mainline traffic. [W-Trans, Inc.: Novato Creek Dredging Project Traffic Report. Appendix C].

Accordingly, although the Project would result in 38 trips per hour, these truck trips are largely related to the hauling of dredge deposition to the offsite locations during a temporary and defined period of time. Moreover, the addition of up to 38 peak hour trips at Rowland Boulevard intersections and up to 10 peak hour trips at the Atherton Avenue interchange would be expected to result in minor increases to average delay, though certainly not enough to push delays beyond the limit of LOS D, which is considered acceptable by both the City of Novato and the County of Marin. Therefore, the project would result in a less-than-significant impact as it relates to congestion such that existing levels of service on affected roadways will not deteriorate below acceptable County standards.

b) Traffic hazards related to: 1) safety from design features (e.g. sharp curves or dangerous intersections); 2) barriers to pedestrians or bicyclists; or 3) incompatible uses (e.g. farm equipment)? (source #s: 1, 6 & Appendix C)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Project will not pose significant hazards and/or safety concerns in terms of traffic resulting from sharp curves, dangerous intersections, barriers to pedestrians or bicyclists, and/or incompatible uses. This Project is a maintenance dredging project which will not result in a permanent action or entity. The truck trips associated with hauling of dredge material to offsite locations will be temporary and during a defined period of time posing no barriers or long-term impacts to roadways. The freeway segment anticipated to carry the largest share of dredging truck traffic is the US 101 between Rowland Boulevard and Atherton Avenue. Approximately 38 bi-directional truck trips per hour would travel along this freeway segment, corresponding to about one vehicle every minute and a half (or one vehicle every three minutes in each direction). The added trips to US 101 are expected to have a less-than-significant impact on US 101 as the vehicle density on the freeway with the added trips indicates LOS D operation, which is considered acceptable by both the County of Marin and the City of Novato. [W-Trans, Inc.: Novato Creek Dredging Project Traffic Report. Appendix C].

Consideration was also given the safety impacts associated with trucks turning left from eastbound SR 37 into the deposition site and entering westbound SR 37 via a right-turn. There is an existing opening in the median on SR 37 at the access location, and the taper leading into the opening provides adequate storage space for trucks waiting to turn left into the site to do so without impeding through traffic. Trucks are expected to encounter limited delays before turning into the site as gaps in oncoming westbound traffic will be created by the traffic signal at SR 37/Lakeville Highway. With an average of 4-minute headways between trucks and regular gaps created by the signal, it is not expected that the queue will exceed one truck waiting to enter the site at a time. The project is therefore expected to have less-than-significant safety impacts.

Likewise, safety impacts associated with trucks turning onto SR 37 are expected to be less-than-significant as sight lines are very good and right-turns can be made in the gaps created by the traffic signal to the east without impeding through traffic.

The added trips to the Redwood Landfill interchange under the alternative deposition would also be expected to have a less-than-significant impact given the overpass and ramp improvements completed in 2006. The overpass project eliminated hazardous conditions associated with slow-moving trucks making left turn movements across northbound traffic and merging into the fast lane of southbound US 101. The project also significantly lengthened the deceleration lane into the landfill, and constructed an 800-foot long southbound acceleration lane on a downhill segment that allows trucks to approach freeway speeds before merging into mainline traffic. [W-Trans, Inc.: Novato Creek Dredging Project Traffic Report. Appendix C]. Accordingly, the Project will result in a less-than-significant impact as it relates to traffic hazards.

c) Inadequate emergency access or access to nearby uses? (source #(s): 1, 6, 7, & Appendix C)

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<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
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Project work areas are not located in or close enough to traffic corridors. Haul trucks may present momentary impediments to emergency vehicles but will move to the side of the road as necessary. Trucking routes will be varied and dispersed sufficiently to minimize specific geographic “pinch-points” and project related traffic hot-spots. Accordingly, the Project will have a less than significant impact on emergency access.
d) Insufficient parking capacity on-site or off-site? (source #s: 7, & Appendix C)

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<th>Significant Impact</th>
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<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Project will result in a maximum of 38 truck trips per hour, largely associated with hauling dredge deposition to offsite locations. Due to the number of truck trips per hour, the operation will involve multiple trucks to park within the Project site and a number (less than 5 per hour) to park offsite while waiting to pickup dredge materials. Accordingly, the Project has the potential to result in potentially significant impacts unless mitigated. The following mitigation measures will be incorporated to reduce impacts to less-than-significant.

**IMPACT 6.d.1: Insufficient Parking Associated with Hauling Dredge Deposition and Dredging Activities**

**Mitigation Measure 6.d.1**
The District will require the Contractor to submit a detailed Traffic Control Plan (TCP) to the District prior to initiating the Project. The TCP will be prepared in accordance with professional traffic engineering standards to show specific methods for maintaining traffic flows on roadways directly affected by project construction and will include, at a minimum, the following elements:

- A Construction Parking Plan.
- Haul routes minimizing truck traffic on local roadways will be used to the extent possible.
- The TCP will arrange for safe detours for vehicles, pedestrians and bicyclists at the vicinity of the construction site. The contractor will install appropriate barriers or fencing around construction zones and put up signage showing detours to ensure the safety of pedestrians and bicyclists.
- The TCP will arrange for and require Safety Flaggers as needed, especially at critical ingress and egress points. Flaggers will be placed based on recommendations from the District and traffic engineers instrumental in project route design and approval.

**Monitoring Measure 6.d.1**
The Department of Public Works staff shall periodically check the Project site to verify that the contractor is implementing the TCP.

e) Substantial impacts upon existing transportation systems, including rail, waterborne or air traffic systems? (source #s: 7, 1, & Appendix C)

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<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
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The Project is not related to and does not impact local air traffic or access to air transportation systems. Truck traffic trips on Gnoss Field’s access road (Binford Road) will amount to a maximum of 10 trips per hour; however, the access road is south of the airport operations and will not intersect any of the airport traffic. Project truck traffic will not impact currently operating rail lines. Novato Creek is not a navigable water way and will be dry and dewatered prior to commencement of project.
operations. Accordingly, the Project will result in less-than-significant impacts as it relates to rail, waterborne or air traffic systems.

### 7. BIOLOGICAL RESOURCES.

Would the proposal result in:

<table>
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<tr>
<th>Reduction in the number of endangered, threatened or rare species, or substantial alteration of their habitats including, but not necessarily limited to: 1) plants; 2) fish; 3) insects; 4) animals; and 5) birds listed as special-status species by State or Federal Resource Agencies? (source #s: 7, &amp; Appendices A, E,)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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County determinations of significance with respect to the Project’s impacts to biological resources are based on environmental characteristics that are specific to the selected sections of Novato Creek and its tributaries designated for maintenance dredging, and the off-site deposition areas. As discussed in the environmental setting section, the mosaic of habitats present within the Project area support a variety of plant and wildlife species (this is discussed in detail below as it relates to potential impacts). A Biological Assessment (Kleinfelder, 2006) has been completed which further explains the biological setting (Appendix E) for flora and fauna; this information is presented below as it relates to significant thresholds and impacts.

Sections 404 and 401 of the Clean Water Act, and Section 1602 of the California Fish and Game Code regulate dredging activities for this project. Generally, activities that involve fill (and/or “incidental fallback” from dredging activities) into a Waters of the U.S./State and/or a jurisdiction wetland are considered a significant impact unless mitigated. Previous maintenance dredging activities for Novato Creek and select tributaries were permitted under U.S. Army Corps of Engineers (USACE) permit #16112N33 and dredged most recently in the summer of 2004 under permit #28601N.

The Project will involve impacts to wetlands and associated habitats. First, the Project reach will be dewatered using three temporary cofferdams installed at the Project upper limit of Novato and Warner creeks downstream of Diablo Avenue and at the downstream Project limit of Novato Creek. The upstream cofferdams will be installed first, with the downstream cofferdam installed later at low tide to minimize the amount of water to be dewatered and minimize the presence of fish. According to the County of Marin’s biological database (using a 2 kilometer radius) derived from the California Natural Diversity Database (CNDDB), and additional data derived and compiled by the Klamath Resource Information System (KRIS), Steelhead Trout (*Oncorhynchus mykiss*) are the only threatened or endangered species known to exist in the Project area. Other species such as the Tidewater Goby (*Eucyphlogobius newberryi*), the California Clapper Rail (*Rallus longirostris obsoletus*), and the California Red-legged Frog (*CLR*, *Rana aurora draytonii*) have been known to have habitat near or in the Project reach of the creek, but, due to the past urbanization of the area, no habitat exists for these species within the Project area. Most recently (August 2003), CRLF surveys (both day and night) were completed by the Marin County Creek Biologist and no CRLF were observed.

There are six rare plant species known to occur within the Project region (Novato, 7.5 mm, USGS quad map). However, per the Biological Assessment, no suitable habitat exists for these species.

The Project reach is primarily a migratory passage for fish and not known to have spawning habitat. The Project will be conducted during late summer and will not interfere with the migration of either
returning adult steelhead or out-migrating juvenile steelhead. The Project may affect foraging opportunities for steelhead by removal of vegetation and sediment that support insects and invertebrates. However, these features and related invertebrate communities will quickly reestablish within the impacted area, as has been demonstrated during the previous maintenance dredging events. Due to the timing of out-migration of juvenile steelhead in spring, invertebrate communities will have already begun to reestablish. Accordingly, less than significant impacts are expected in terms of direct and/or indirect impacts to fish and other listed species as a result of dredging.

Impacts are also expected to be less than significant in regards to placement of dredge materials at the three off-site locations: (A) Carneros River Ranch (B) Redwood Landfill, (C) Gnoss Field, and (D) Marsh Road. Placement of dredge materials will be governed by existing permits for both the Redwood Landfill and Gnoss Field locations. This is discussed in more detail below:

**Carneros River Ranch**

The Carneros River Ranch Dredged Material and Fill Placement site is located at 275 Sears Point Road, Petaluma, California 94953, approximately 4.2 miles east of the US Highway 101 and Highway 37 interchange. The acceptance and deposition for the dredged material is provided for and has been analyzed in the Carneros River Ranch Negative Declaration and Initial Study (Source #28) and Waste Discharge Requirements (WDR) and Water Quality Certification (Source # 29), as follows:

*The Carneros River Ranch deposition site holds Waste Discharge Requirements and Water Quality Certification Order R2-2003-0075, dated August 21, 2003, from the Regional Water Quality Control Board - San Francisco Bay Region to accept dredge materials on the North West and North Central Fields for the placement of dredge material and fill on existing agricultural fields. The site is located immediately north of Highway 37 across from the Port of Sonoma. The fields are used for the purpose of growing silage. The dredge material is placed within seven-foot high berms created from native soils excavated within and adjacent to the agricultural fields. Placement of the fill is necessary to elevate the land surface from an average -2 feet National Geodetic Vertical Datum (NGVD) elevation where soils and groundwater are saline to an elevation of +2 feet NGVD where the crop roots will be sufficiently beyond the influence of saline shallow groundwater.*

Provision E.1 of the WDR requires that the data characterizing the quality of the dredged material proposed for placement be submitted to the Regional Water Quality Control Board for review, as coordinated through the Dredged Material Management Office (DMMO), of which the Water Board is a member. As discussed below in the section on the Analysis of Dredged Material, the dredged material has already been sampled and analyzed, and a report prepared and submitted to the DMMO. The DMMO concluded that the dredged material is acceptable for placement at the Hamilton Wetlands Restoration Project site, a previously, but not currently considered, placement site.

**Redwood Landfill**

The acceptance and storage for use of the dredged material is provided for and has been analyzed in the Redwood Landfill Final EIR (Source #21) as follows:

*Redwood Landfill (RLI) holds a quarry permit (Permit #Q-76-01, originally issued in 1976) from the Marin County Department of Public Works to quarry soil on an adjacent property for landfill cover material. The quarry is located immediately north of the landfill access road. When needed, cover soil is removed from the borrow area and transported by off-road trucks to the working face, where it is stockpiled for use as daily cover when alternative cover is not used. At*
present, use of this source of cover materials is minimized due to the availability of alternative daily cover (ADC), clean soil delivered by franchise haulers and commercial customers, deliveries of petroleum contaminated soils that meet the facility’s acceptance criteria, and periodic deliveries of dredged sediments (GeoSyntec, 1998).

Gnoss Field

Once at Gnoss Field, the dredged material will be distributed to three (3) distinct disposal sites within the Airfield property. The storage and use of soils within Gnoss Field is primarily for the rebuilding of levees which are prone to subsidence over time; ultimate use of the dredge material will be determined by responsible Gnoss Field staff. The acceptance, storage and use of soil on the site is consistent with the guiding policies and objectives of Gnoss Field. The acceptance, storage, and use of soils has been assessed in several regulatory documents, including the following:

- Gnoss Field Levee Reconstruction Project – CEQA, Initial Study (10/2001), (Source #23).
- Gnoss Field Levee Reconstruction Project – Joint Aquatic Resource Permit Application. (2/2004), (Source #24)

Marsh Road Site

The Marsh Road site will be used as a short-term storage site for the dredged material. The Marsh Road site has previously been used by the Marin County Public Works Department for the temporary storage of wet and dry dredged material. The District has stated in an October 2007 letter (See Appendix G), that the footprint of the area of disposal will be 0.4 acres overall and that Stormwater BMPs will be followed as directed in Section IV of this report.

Although the Project will result in a less than significant impact to listed species and their habitats, because the Project will be conducted during late summer and will not interfere with the migration of either returning adult steelhead or out-migrating juvenile steelhead, there is a chance that Steelhead could be impacted during the dewatering process. Moreover, dredging activities will involve “incidental fallback” and temporary reduction of wetland habitat. As seen in the attached photos (Appendix F), the amount of revegetated growth which occurred during the three years after the previous dredging operation in 2004, is quite significant: even with quick regeneration, Sections 404 and 401 of the Clean Water Act, and Section 1602 state that “incidental fallback” as a result of dredging activities and fill placed into jurisdictional wetlands should be considered significant and shall be mitigated. Accordingly, the Project will result in potentially significant impacts to wetlands and Steelhead unless mitigated. Mitigation and monitoring as it relates to dewatering and wetlands are provided below.

IMPACT 7.a.1: Dredging activities may cause short-term impacts to Jurisdictional Wetlands

Mitigation Measure 7.a.1: The Applicant shall submit a wetland delineation (Appendix A) and coordinate with the USACE, RWQCB, and CDFG pursuant to Sections 401 and 404 of the Clean Water Act and Section 1602 of the CA Fish and Game Code in getting the appropriate permit approvals and shall enter into a mitigation and monitoring agreement for wetland impacts prior to the initiation of dredging activities. As the Project involves only the temporary removal and loss of emergent wetland vegetation (i.e. Cattails, Tules), and these species repopulate within one year along the edges of the channel due to sedimentation and seed flow, appropriate mitigation determined by the resource agencies could likely involve wetland enhancement outside of the “bed-and-bank” of the channel.
Mitigation Measure 7.a.1: The Applicant shall provide required monitoring and documentation of such monitoring to the District and resource agencies as stipulated in the mitigation and monitoring agreement.

Monitoring Measure 7.a.1: The District shall review the above-referenced monitoring documentation to verify the applicant has complied with the mitigation and monitoring agreement.

IMPACT 7.a.2: Dewatering activities may cause Steelhead to become stranded

Mitigation Measure 7.a.2: The Applicant shall, prior to commencing the removal of dredge materials, have a qualified fisheries biologist (with NMFS Steelhead permits), be retained by the District to recover stranded fish during the dewatering process. Steelhead netted from the project area shall be released upstream of the project area in suitable habitat. Dewatering shall be conducted with screens on the intake valves and in the sumps. Dewatering shall be conducted in a manner to reduce turbidity downstream of the project area.

Mitigation Measure 7.a.2: The Applicant shall provide daily monitoring reports by a qualified fisheries biologist (with NMFS Steelhead permits) to the District, NMFS, and CDFG.

Monitoring Measure 7.a.1: The District shall review the above-referenced daily monitoring reports to verify that the measures to recover stranded fish are implemented.

<table>
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<tr>
<th>b) Substantial change in the diversity, number, or habitat of species of plants or animals currently present or likely to occur at time throughout the year? (source #s: 7, &amp; Appendices A, E,)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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Anadromous juvenile steelheads migrate downstream through the area and will rear and forage for a limited period of time before moving further downstream into San Pablo Bay. Resident fish species are also likely to forage within the length of stream that is proposed for maintenance dredging. The forage species consist primarily of insects and other invertebrate organisms that may inhabit this shoreline vegetation as well as the top layer of sediments. As previously observed, the vegetation that supports insect populations quickly reestablishes in the Project area, and invertebrates quickly repopulate the area either through natural distribution or along with sediments transported into the Project area during flow events. Accordingly, the Project will result in less than significant impacts in regards to the diversity, number, or habitat of plants or animals present because the hydrophilic vegetation removed along the edges of the channel will re-establish itself (due to sediment and seed flow) within one year.

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<tr>
<th>c) Introduction of new species of plants or animals into an area, or improvements or alterations that would result in a barrier to the migration, dispersal or movement of animals? (source #s: 7, &amp; Appendices A, E,)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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No new species of plants or animals will be introduced to the Project reach because no new material is being brought in. No plants or other structures will be introduced with the potential to obstruct the passage of fish or animals. As seen in the attached photos (Appendix F), the amount of revegetated growth which occurred during the three years after the previous dredging operation in 2004, is quite significant. Therefore, the impacts of the maintenance dredging have a less than significant impact.

8. **ENERGY AND NATURAL RESOURCES. Would the proposal result in:**

<table>
<thead>
<tr>
<th>a) Substantial increase in demand for existing energy sources, or conflict with adopted policies or standards for energy use? (source #(#): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Project will not increase demand for existing energy sources or standards for energy because energy sources are not involved with the project. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve an increase in existing energy sources or conflict with adopted policies for energy.

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<tr>
<th>b) Use of non-renewable resources in a wasteful and inefficient manner? (source #(#): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Project’s focus is maintenance dredging and disposal of deposition soils. Vehicle fuel will be required to run the dredging activities as well as transport but this project is not a long-term commitment. Accordingly, the Project will result in less than significant impacts as it relates to the use of non-renewable resources.

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<th>c) Loss of significant mineral resource sites designated in the Countywide Plan from premature development or other land uses which are incompatible with mineral extraction? (source #(#): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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No significant mineral resources are known to exist within neither the Project area nor the proposed deposition sites. Accordingly, this element is not applicable.
9. HAZARDS. Would the proposal involve:

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<th>a) A risk of accidental explosion or release of hazardous substances including, but not necessarily limited to: 1) oil, pesticides; 2) chemicals; or 3) radiation? (source #(s): 1, 5, 7, 8)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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Construction and dredging operations for the Project have the potential to result in a significant impact due to an accidental release of hazardous materials, unless mitigated. The District will require the construction contractor to prepare a *Hazardous Materials Management/Spill Prevention Control and Countermeasure Plan* (SPCCP), (see Mitigation Measure 4.c.1.1, copied below); the implementation of this measure, if contamination is encountered, would reduce potential impacts to less-than-significant levels.

**IMPACT 4.c.1: The potential for an accidental release of hazardous substances from equipment into Novato Creek**

**Mitigation Measure 4.c.1**: The Applicant shall require a *Hazardous Materials Management/Spill Prevention Control and Countermeasure Plan (SPCCP)* be developed by the contractor and submitted to Marin County for review prior to final submittal to the Regional Water Quality Control Board for review and approval prior to construction. The approved plan will be given to contractors working on the project. At least one copy will be on-site at times. The purpose of the SPCCP will be to provide on-site construction personnel, environmental compliance monitors, and regulatory agencies with a detailed description of hazardous materials management, spill prevention, and spill response/cleanup measures associated with the construction of project elements.

**Mitigation Measure 4.c.2**: The Applicant shall include the requirement that the contractor prepare a SPCCP in the bid specifications. The SPCCP shall include the requirement described above in Mitigation Measure 4.c.1.

**Mitigation Measure 4.c.3** Before the Applicant commences on maintenance dredging activities, the SPCCP shall be submitted to the RWQCB for their review and approval prior to maintenance dredging activities.

**Monitoring Measure 4.c.1** Before the Applicant commences on maintenance dredging activities, staff from the Department of Public Works shall inspect the site to verify that the SPCCP measures have been properly implemented.

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<th>b) Possible interference with an emergency response plan or emergency evacuation plan? (source #(s): 1, 7, 9)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
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The Project is located in Novato Creek, selected tributaries, City and County-maintained roads, and the deposition sites. The maintenance dredging and the deposition sites are not located next to facilities that would have emergency response plan or emergency evacuation plans. The Project will not interfere with any Gnoss Field emergency plans because the Gnoss Field deposition sites are accessed prior to entering the air field itself. The related trucking and traffic will be routed specifically to disperse congestion and points of concentration. The Project would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact is anticipated.

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<th>c) The creation of health hazard or potential health hazard? (source #(#): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Project will reduce the potential creation of flood-related health hazards to the area by alleviating flood constrictions and increasing the capacity of existing flood water conveyances. Construction and dredging operations for the Project have the potential to result in a significant impact due to an accidental release of hazardous materials, unless mitigated. The District will require the construction contractor to prepare a Hazardous Materials Management/Spill Prevention Control and Countermeasure Plan (SPCC), (see Mitigation Measure 4.c.1), the implementation of this measure, if contamination is encountered, would reduce potential impacts to less-than-significant levels.

<table>
<thead>
<tr>
<th>d) Exposure of people to existing sources of potential health hazards? (source #(#): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
</tr>
</thead>
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</table>

There are no known existing sources of potential health hazards associated with the Project area. Therefore, this element, as it relates to existing health hazards, is not applicable.

<table>
<thead>
<tr>
<th>e) Increased fire hazard in areas with flammable brush, grass, or trees? (source #(#): 7, 8)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
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</table>

No increase in fire hazards will occur on the site from the dredging activities because the maintenance dredging will occur in wet creek channels. Accordingly, this element, as it relates to an increased fire hazard, is not applicable.
10. NOISE. Would the proposal result in:

<table>
<thead>
<tr>
<th>a) Substantial increases in existing ambient noise levels? (source #(s): 1, 7, 8, 18, 19)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
</tr>
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</table>

This section evaluates the Project's noise impacts associated with the dredging, transport and placement of dredged materials. Noise impacts resulting from creek bed dredging operations have been previously addressed in the Novato Creek Dredging Project Initial Study of 2004 (*Source #7*), which is incorporated by reference in this Initial Study.

The maintenance dredging is anticipated to occur intermittently over a three to four month time period from approximately June to October 2008. Residential receptors situated in the vicinity of the creek dredging areas will experience temporary and intermittent increases of noise levels during maintenance dredging and transportation activities to levels that may be greater than 60 dBA from dredging and loading equipment, and hauling trucks. Some receptors in the vicinity of the dredging area could experience potentially significant night-time noise intrusions from the operation of dewatering pumps, which will need to be run 24-hours per day throughout the construction period in order to keep the dredging operations area dry. Fixed construction equipment such as compressors and generators will be located as far as possible from noise-sensitive receptors. Contractors will be required to shroud or shield impact tools, and muffle or shield intakes and exhaust ports on power construction equipment. Equipment and vehicles will be properly maintained and equipped with exhaust mufflers that meet state standards. Idling equipment will be shut off when not in use. The dredged materials will be transported to the deposition sites with dump trucks routed onto established trucking routes passing through areas of mostly commercial uses and open space areas.

Section 6.70 of the Marin County Code and the Safety and Noise Element (Chapter V) of the City of Novato General Plan (1996) provide regulations for construction activity noise for the creek maintenance dredging activities of the Proposed Project. The City of Novato regulations are more specific and stringent. The City's General Plan identifies acceptable noise levels in residential areas with a maximum conditionally acceptable exterior noise level of 60 dBA (*City of Novato 1996*). The City of Novato regulations also require limiting construction-related operations to daytime periods, between the hours of 7:00 am to 5:00 pm, Monday through Friday, and 9:00 am to 5:00 pm on Saturdays. The deposition sites are under the jurisdiction of Marin County, subject to the Marin County Code Noise Element, Section 6.70. The County regulations require construction-related activities be limited to daytime periods, between the hours of 7:00 am to 6:00 pm, Monday through Friday, and 9:00 am to 5:00 pm on Saturdays, and prohibited on Sundays and holidays.

The Project will not permanently increase ambient noise levels in the area of dredging operations because the operations will be conducted over a four month period of time with restricted hours of operation, resulting in a less-than-significant impact. Construction operations (dredging, transportation and placement of materials) will result in intermittent, temporary elevated noise levels at nearby receptors. Accordingly, the Project will result in potentially significant impacts unless mitigated. Mitigation measures addressing impacts are provided below.
Impact 10.a.1: The Project may result in a temporary and intermittent increase in noise to above ambient levels.

Mitigation Measures

10.a.1. The District will include maintenance dredging and transportation hours limitation requirements in maintenance dredging specifications.

10.a.2. The District will require contractors to adhere to local ordinances regulating hours of activity (7:00 a.m. to 6:00 p.m. on Mondays through Fridays; 9:00 a.m. to 5:00 p.m. on Saturdays; and no activities on Sundays and holidays) in order to minimize the potential for sleep disturbance and annoyance.

10.a.3. The District will include equipment location requirements in maintenance dredging specifications that will require contractors to locate fixed construction equipment such as compressors and generators as far as possible from noise-sensitive receptors. Contractors will be required to shroud or shield impact tools, and muffle or shield intakes and exhaust ports on power construction equipment. Equipment and vehicles will be properly maintained and equipped with exhaust mufflers that meet state standards. Idling equipment will be shut off when not in use.

10.a.4. The District will require contractors to adhere to the requirements for the location of fixed construction equipment.

Monitoring Measures.

10.a.1. The District will review the maintenance dredging plan prepared by the contractor to verify that the hours of operation comply with the City of Novato local noise ordinance.

10.a.2. The District will confirm by random field inspection that hours limitation requirements are being observed.

10.a.3. The District will review the maintenance dredging plan prepared by the contractor to verify that equipment will be located and operated in such a manner to minimize noise.

10.a.4. The District will confirm by random field inspection that maintenance dredging equipment location requirements are being observed.

<table>
<thead>
<tr>
<th>b) Exposure of people to significant noise levels, or conflicts with adopted noise policies or standards? (source #(#): 1, 7, 8, 18, 19)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
</tr>
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</table>

As discussed above in Section IV.10(a), the maintenance dredging and transportation activities may result in noise levels exceeding City of Novato acceptable noise levels for residential uses. Although Project-generated noise levels may not always remain within City and County parameters for acceptable noise limits for residential land uses, this would be an intermittent and temporary situation and does not represent a significant or long-term impact. The Proposed Project is designed to comply with City and County requirements by limiting activities from between 7:00 am - 6:00 pm, Monday through Friday, or 9:00 am to 5:00 pm on Saturdays, and no holidays, consistent with the both the City's and the County's General Plan and Marin County Noise Ordinance requirements (Marin
11. PUBLIC SERVICES. *Would the proposal have an effect upon, or result in a need for new or altered government service in* of the following areas:

<table>
<thead>
<tr>
<th>a) Fire protection? (source #(#s): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
</tr>
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<td>[ ]</td>
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</tbody>
</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve the need for fire protection.

<table>
<thead>
<tr>
<th>b) Police protection? (source #(#s): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</tbody>
</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve the need for additional police protection resources.

<table>
<thead>
<tr>
<th>c) Schools? (source #(#s): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve schools.

<table>
<thead>
<tr>
<th>d) Maintenance of public facilities, including roads? (source #(#s): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</table>

The Project involves the maintenance dredging of a portion of Novato Creek and its tributaries, and the transportation of the dredged material to the deposition sites. As described in the Traffic Study (Appendix C), the Project is estimated to require a maximum of 38 truck trips per hour. Roads to be
used are currently rated for truck traffic. At the Gnoss Airfield site, the trucks will turn to the deposition sites prior to entering or passing by the airfield itself.

Due to the number of truck trips, the Project has a potential for significant impacts as it relates to maintenance of public facilities/roads, unless mitigated. To minimize the impact to maintenance of the existing roads, the mitigation and monitoring measures discussed below will be implemented to minimize the track-in and track-out of soil and dredged material. The Project will have a less-than-significant impact providing the mitigation measures described below are implemented.

Mitigation Measures

11.d.1. The District will include track-in and track-out prevention measures requirements in the maintenance dredging specifications.

11.d.2. The District will require contractors to adhere to the track-in and track-out prevention measures in the maintenance dredging specifications.

Monitoring Measures

11.d.1. The District will review the track-in and track-out prevention measures prepared by the contractor to verify that the measures will minimize the wear and tear on the transport roads.

11.d.2. The District will confirm by random field inspection that track-in and track-out prevention measures are being implemented.

<table>
<thead>
<tr>
<th>e) Other governmental services? (source #(#s): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve other governmental services and, therefore, will have no impact.

12. UTILITIES AND SERVICE SYSTEMS. _Would the proposal result in a need for new systems, or substantial alterations to the following utilities?:_

<table>
<thead>
<tr>
<th>a) Power or natural gas? (source #(#s): 7)</th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
</tr>
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</tbody>
</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve alterations to power or natural gas.
b) Communications systems?
(source #(#s): 7)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project will have no impact on communications systems.

c) Local or regional water treatment or distribution facilities?
(source #(#s): 7, 26)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve water treatment or distribution systems.

d) Sewer or septic tanks?
(source #(#s): 7, 26)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve alterations to sewer or septic tanks.

e) Stormwater drainage?
(source #(#s): 7)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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<tr>
<td></td>
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</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. The Project will have a beneficial impact through providing additional stormwater drainage capacity in the creek, fewer impediments for debris clogs (improved channel capacity), and improved flows in the creek channel itself from urban run-offs. The Project will also significantly lower the potential for flooding. Accordingly, impacts will be less than significant.
The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. The Project will have no impact on solid waste disposal because solid waste disposal is not involved. No alterations to solid waste disposal would be required by the maintenance dredging project. The amount of project spoils’ deliveries would not impact Redwood Landfill operations because the material is to be used either as daily cover or as material for the maintenance of their levees and are within landfill operations guidelines. Accordingly, the Project would involve less than significant impacts.

13. AESTHETICS/VISUAL RESOURCES. Would the proposal:

<table>
<thead>
<tr>
<th></th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</thead>
<tbody>
<tr>
<td>f) Solid waste disposal? (source #(#s): 7, 21, 22)</td>
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</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Accordingly, this element is not applicable because the Project (including the designated soil deposition sites) does not involve scenic vistas or aesthetic or visual policies or standards because the urbanized channels and deposition sites are not accessible to the public, the transportation routes are public streets or highways to be temporarily used, and the deposition sites are not scenic vistas for the public.

b) Have a demonstrable negative aesthetic effect by causing a substantial alteration of the existing visual resources including, but not necessarily limited to: 1) an abrupt transition in land use; 2) disharmony with adjacent uses because of height, bulk or massing of structures; or 3) cast of a substantial amount of light, glare, or shadow? (source #(#s): 7)

<table>
<thead>
<tr>
<th></th>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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</thead>
<tbody>
<tr>
<td>b)</td>
<td>[ ]</td>
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<td>[X]</td>
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</table>

As discussed above, the Project will have no impact because the maintenance dredging of the creek does not involve and will, therefore, not alter scenic vistas and adopted aesthetic visual policies to the surrounding community.
KLEINFELDER

14. CULTURAL RESOURCES: Would The Proposal:

<table>
<thead>
<tr>
<th>a) Disturb paleontological, archaeological, or historical sites, objects or structures?</th>
<th>Significant Impact</th>
<th>Potentially Significant Impact Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>(source #(s): 7, 8)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[X ]</td>
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</tbody>
</table>

The Project involves maintenance dredging, transportation of the dredged material, and deposition of the dredged material at selected deposition sites. Cultural resources have not been identified on the Proposed Project site nor have been found in previous maintenance dredging projects. Because the Proposed Project site has been dredged four times, no cultural resources are anticipated. Review of the Marin County Archaeological Sensitivity Maps indicates that the subject property is located in the vicinity of areas of low archaeological sensitivity. The only possibility for the discovery of a cultural resource would be if a cultural resource had been washed down Novato Creek during the past three years. The discovery of a cultural resource would be a potentially significant impact. The Proposed Project dredging operation specifications will require that in the event cultural resources should be discovered during construction, work shall immediately be stopped and the services of a qualified consulting archaeologist shall be engaged to assess the value of the resource and to develop appropriate mitigation measures, as discussed below. The discovery of cultural resources at the deposition sites is not possible because no excavation is to occur at the deposition sites.

IMPACT 14(a): The maintenance dredging activities may encounter cultural resources washed into the Project area from upstream areas.

Mitigation Measure 14.a.1: In the event that human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during maintenance dredging activities on part of the Proposed Project site, work at the vicinity of the discovered site shall stop and the project sponsor shall contact the Marin County Environmental Coordinator immediately. If human remains are encountered, the County Coroner must also be contacted. A registered archaeologist, chosen by the County and paid for by the project sponsor, shall assess the site and submit a written evaluation to the Agency Director advancing appropriate conditions to protect the site and the resources discovered. State law designates procedures should human remains be encountered. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission so that a “Most Likely Descendant” can be designated. No work at the site may recommence without approval of the Agency Director.

Monitoring Measure 14.a.1. In the event of discovery, the Marin County CDA staff shall verify that an archaeological report has been submitted and maintenance dredging work has been stopped. In the event that the report indicates that human remains, artifacts, or other indicators of prehistoric or historic use of the Proposed Project area are encountered, the Marin County CDA staff shall verify that a registered archaeologist has been retained to assess the site and had submitted a written evaluation to the Agency Director advancing appropriate conditions to protect the site and the resources discovered before work commences on the site. If human remains are encountered, the CDA staff shall verify that the County Coroner has been contacted and that all future work is carried out in accordance with the mitigation measures.
b) Have the potential to cause a physical change which would adversely affect unique ethnic cultural values, or religious or sacred uses within the project area? (source #(#s): 7)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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<tr>
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</tbody>
</table>

No known historic ethnic, religious, or sacred uses are known to exist on or near the project site. Therefore, the Proposed Project will have no impact.

15. SOCIAL AND ECONOMIC EFFECTS. *Would The Proposal Cause:*

c) Physical changes which can be traced through a chain of cause and effect to social or economic impacts. (source #(#s): 7)

<table>
<thead>
<tr>
<th>Significant Impact</th>
<th>Potentially Significant Unless Mitigated</th>
<th>Less Than Significant Impact</th>
<th>Not Applicable</th>
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The Proposed Project will not result in known changes to social and economic conditions and, therefore, will have no impact.
Pursuant to Section 15065 of the State EIR Guidelines, a project shall be found to have a significant effect on the environment if any of the following are true:

<table>
<thead>
<tr>
<th></th>
<th>Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?</th>
<th>No</th>
<th>Maybe</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Yes</td>
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</table>

Discussion: As described in Section VII of this Initial Study, potential environmental impacts from the proposed project would be mitigated to a level of insignificance.

<table>
<thead>
<tr>
<th></th>
<th>Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?</th>
<th>No</th>
<th>Maybe</th>
</tr>
</thead>
<tbody>
<tr>
<td>b)</td>
<td>Yes</td>
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</table>

Discussion: As described in Section VII of this Initial Study, potential environmental impacts from the proposed project would be mitigated to a level of insignificance.

<table>
<thead>
<tr>
<th></th>
<th>Does the project have impacts that are individually limited, but cumulatively considerable? (&quot;Cumulatively considerable&quot; means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).</th>
<th>No</th>
<th>Maybe</th>
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<td>c)</td>
<td>Yes</td>
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</table>

Discussion: As described in Section VII of this Initial Study, potential environmental impacts from the proposed project would be mitigated to a level of insignificance.

<table>
<thead>
<tr>
<th></th>
<th>Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?</th>
<th>No</th>
<th>Maybe</th>
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<tbody>
<tr>
<td>d)</td>
<td>Yes</td>
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</table>

Discussion: As described in Section VII of this Initial Study, potential environmental impacts from the proposed project would be mitigated to a level of insignificance.
VI. PROJECT SPONSORS INCORPORATION OF MITIGATION MEASURES:

Acting on behalf of the project sponsor or the authorized agent of the project sponsor, I (undersigned) have reviewed the Initial Study for the Novato Creek Dredging Project application and have particularly reviewed the mitigation measures and monitoring programs identified herein. I accept the findings of the Initial Study, including the recommended mitigation measures, and hereby agree to modify the proposed project applications now on file with Marin County to include and incorporate mitigation measures and monitoring programs set out in this Initial Study.

VII. DETERMINATION:

Pursuant to Sections 15081 and 15070 of the State Guidelines, the forgoing Initial Study evaluation, and the entire administrative record for the project:

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

[ X ] I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared.

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

__________________________    ________________________
Signature                                                      Date

For
ENVIRONMENTAL CHECKLIST FORM
The following is a list of relevant information sources, which have been incorporated by reference into the foregoing Initial Study pursuant to Section 15150 of the State CEQA Guidelines. The number assigned to each information source corresponds to the number listed in parenthesis following the incorporating topical question of the Initial Study checklist. These documents are both a matter of public record and available for public inspection at the Planning Division office of the Marin County Community Development Agency, Room 308, Civic Center, 3501 Civic Center Drive, San Rafael. The information incorporated from these documents shall be considered to be set forth fully in the Initial Study.

2. *Results of Chemical, Physical and Biological Testing of Sediments from Novato Creek* – Weston/Kleinfelder, December 2006
3. Marin County Zoning Ordinance, Title 22, Community Development Agency - Planning Division
4. Marin County Development Standards, Title 24, Marin County Department of Public Works, Land Use & Water Resources Division
5. *Biological Assessment of Novato Creek*, Elizabeth Lewis, Marin County, Public Works
14. *Natural Diversity Data Base Map (San Geronimo Quadrangle)*, California Department of Fish and Game (periodically updated)
15. *Marin County Slope Stability Map*, Community Development Agency - Planning Division, 1976
19. Project equipment usages from 2004 Novato Creek Dredging Project - Memo (Marin County, Public Works)
22. *Redwood Landfill Solid Waste Facility Permit* #21-AA-0001
27. Environmental Data Resources Study of Novato Creek – EDR August, 2006


Young, Glenn, 2007 - Novato City, Engineering Director, Novato, CA: *Personal Communication*

Karkal, Sandeep, 2006 - Novato Sanitary District, Novato, CA: *Personal Conversation*


McCUTCHEON, ALISHA, 2007 - Environmental Protection Manager, Redwood Landfill, *Personal Communication*
OTHER LITERATURE EXISTING ON NOVATO CREEK AND THE PROJECT

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Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Area
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PRELIMINARY JURISDICTIONAL WETLAND DELINEATION
(Section 404 of the Clean Water Act)
NOVATO CREEK DREDGING PROJECT
MARIN COUNTY, CALIFORNIA

March 13, 2007

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A Report Prepared for:

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PRELIMINARY JURISDICTIONAL WETLAND DELINEATION
NOVATO CREEK DREDGING PROJECT
MARIN COUNTY, CALIFORNIA

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APPENDICES

Appendix A  Wetland Field Data Forms
Appendix B  Preliminary Wetland Maps

FIGURES

Figure 1  Regional Location Map
Figure 2  Project Site Map
1.0 SUMMARY

The Marin County Flood Control and Water Conservation District (District) plans to dredge the Novato Creek channel and two tributary channels (Warner and Arroyo Avichi Creeks). The purpose of this project is to remove approximately 45,000 cubic yards of accumulated silt from 5,630 linear feet of Novato Creek from Diablo Avenue to 500 feet downstream of the Northwestern Pacific Railroad Bridge, 1,780 linear feet of Warner Creek from Diablo Avenue to the confluence with Novato Creek, and 680 linear feet of Arroyo Avichi Creek from South Novato Boulevard to the confluence with Novato Creek.

A Kleinfelder biologist conducted preliminary wetland delineations within a study area encompassing the reaches of the creeks to be dredged and along a portion of the route to the dredge disposal site at Hamilton Air Station (Figures 1 and 2). A preliminary jurisdictional wetland delineation was conducted in order to identify specific features within the study area that may fall within the jurisdiction of the United States Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. Such potentially jurisdictional features are primarily “other waters,” referred to herein as “Waters of the U.S.” (WUS) and are defined by the presence of an ordinary high water mark (OHWM) in the non-tidal reaches of the creeks and by the “high tide line” (33 CRF 328.4) in the tidally influenced reaches of the creeks. Wetlands are also present along the margins and above the OHWM and high tide line of the creeks. Wetlands are defined by hydrology, hydric soil, and hydrophytic vegetation.

Kleinfelder biologists surveyed creek channels within the study area and determined that all of creek channels met the USACE standards for WUS. Of the 8,090 linear feet of WUS, approximately 5,290 linear feet were determined to be seasonal in nature, and 2,800 linear feet were determined to be perennial. The total land area for the observed potential WUS was calculated to be 7.5 acres. In addition to the WUS, approximately 11 acres met the USACE standards for wetlands. All the wetland habitats were defined by emergent brackish to freshwater vegetation.
2.0 INTRODUCTION

2.1 REGULATORY SETTING

Under the federal Clean Water Act (CWA), Section 404 and Section 10 of the Rivers and Harbors Act of 1899 (CFR Parts 320-330), the Environmental Protection Agency (EPA) and the United States Army Corp of Engineers (USACE) share regulatory authority over WUS. WUS includes all waters that are, have, or may be used for interstate and/or international commerce, including all water that is subject to the tide; all waters that are rivers, streams, sloughs, lakes, mudflats, sandflats, wetlands, wet meadows, prairie potholes, playa lakes, or natural ponds and the use, degradation, or destruction, of fore mentioned, which could affect interstate and international commerce; all impoundments of above mentioned; all tributaries of above mentioned; territorial seas; and all wetlands adjacent to above mentioned WUS. In areas of non-tidal waterways where wetlands are absent, the jurisdictional boundary for the USACE is the OHWM. OHWM is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR 328 and 329). In tidal waterways the USACE Section 404 jurisdiction extends up to the “high tide line” (33 CFR 328.4) which, in this case, was determined to be 5.8 feet National Geodetic Vertical Datum (NGVD). Vegetated areas below and immediately above the high tide line were considered potential jurisdictional wetlands and un-vegetated areas below the high tide line were considered to be “other WUS.”

2.2 PROJECT DESCRIPTION

The Flood Control District is obligated to continue to provide a 50-year storm frequency flood protection to the Novato basin, which was designed to pass 3,330 cfs. Sedimentation studies performed by Laurel Collins in 1998 indicate that approximately 70% of sediment in the project reach is generated by channel bank and terrace erosion throughout the entire drainage system from the lowland valleys to the headwater tributaries. With the present scenario of increased
runoff and sediment generation in the headwater reaches, channelization, obstructing railroad bridge, and loss of functional tidal creeks and marshland, the tidally influenced system is destined to aggrade. Essentially, this area has become the sediment basin for this material. While the District continues to work with upstream property owners to find solutions to current erosion trends, we realize our efforts cannot keep up with the current amount of material deposited through this reach.

The purpose of this project is to remove approximately 45,000 cubic yards of accumulated silt from the creek bed of Novato Creek and its tributaries along the project reach. The project reach consists of 5,630 linear feet of Novato Creek from Diablo Avenue to 500 feet downstream of the Northwestern Pacific Railroad Bridge, 1,780 linear feet of Warner Creek from Diablo Avenue to the confluence with Novato Creek, and 680 linear feet of Arroyo Avichi Creek from South Novato Boulevard to the confluence with Novato Creek. The project reach will be dewatered using three temporary coffer dams installed at the project upper limit of Novato and Warner Creeks downstream of Diablo Avenue, and at the downstream project limit of Novato Creek approximately 500 feet downstream of the Railroad Bridge.

Residual freshwater flows will be collected and conveyed by existing drain lines to Baccaglio Basin in order to avoid the dewatered area. Channel bottom width varies from 20 feet to 115 feet with up to 4 feet of accumulated sediment. Work will be performed using draglines, excavators, dozers, and dump trucks. Final grading work will be done with dozers and graders upstream of Redwood Highway. All dredging will occur in the creek bed during the low flow period of July 1st to October 15th. Existing access ramps located in the upper project limits of Novato and Warner Creek will be used to minimize impacts to riparian vegetation growing on the creek banks and terraces.

Approximately 2.5 acres of wetland vegetation, primarily cattails with some *Scirpus*, will be removed as a result of dredging the creek bed; however, the cattails are fast growing and will re-colonize the area in approximately 1 to 2 years. All spoils removed will be trucked to an approved dredge disposal site at Hamilton Air Base using best management practices to ensure this material is not discharged into the surrounding wetlands.
2.3 PURPOSE OF ASSESSMENT AND WETLAND CRITERIA

A wetland delineation is required to determine if jurisdictional wetlands or other WUS will be adversely affected by a proposed project. USACE has developed a method to identify jurisdictional wetlands ([Corps of Engineers Wetlands Delineation Manual, Environmental Laboratory, January 1987](#)), which was used to delineate all potential wetlands in the study area. Wetlands are defined in 33 Code of Federal Regulations (CFR) Section 328.3(b) as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

The filling of WUS ("other waters" and "wetlands") is regulated by the USACE under Section 404 of the Clean Water Act. Mitigation measures may be required where project impacts are deemed significant. If there is no connectivity between wetlands and WUS, then the wetlands may be considered isolated and not under the jurisdiction of the USACE. However, exclusion from USACE jurisdiction does not mean that other agencies do not have jurisdiction, such as RWQCB, and CDFG.

In the absence of human disturbances or unusual circumstances, an area must contain three characteristics to be considered a wetland: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. In the presence of human disturbances or unusual circumstances, the three criteria are still desired, but not required. Under this scenario it is important to define whether all three criteria would exist under "normal" conditions.

2.4 PROJECT LOCATION

The dredge removal site can be reached via Highway 101 north of the Golden Gate Bridge. To reach the east end of the dredge removal site, take the Rowland Boulevard off-ramp and go east to Vintage Oaks Way and make a left turn to Novato Creek. The dredge disposal site is located south of Novato Creek. From Novato Creek, take Highway 101 south to Bell Marin Keys Boulevard and go east. Turn right through a gate just before entering the Bell Marin Keys housing development and head south. The dredge disposal site is located at the end of a new
temporary road through an open field to a bridge crossing over a drainage channel and then
continuing south on Hamilton Perimeter Road atop a levee to the disposal site. A Location Map,
Vicinity Map, and Site Map are included in Figure 1.

2.5 SITE DESCRIPTION

The proposed dredging site includes the a lower reach of Novato Creek between Diablo Avenue
to just east of the Northwestern Pacific Railroad tracks (Figure 1). In addition to Novato Creek
the proposed project would include the dredging of two small tributaries, Warner and Arroyo
Avichi Creeks, located at the western end of the reach of Novato Creek to be dredged.

The approved dredge disposal site is located south of Novato Creek at the western side of the
Hamilton Air Station. Access to the disposal site would be along paved public roads including
Highway 101 and Bell Marin Keys Boulevard. From Bell Marin Keys Boulevard the haul route
would turn south onto a temporary rocked road through an open field, across a drainage ditch
and onto Hamilton Perimeter Road which is atop a levee. The proposed disposal site a piece of
property owned by the State Lands Commission and is a portion of the approved Hamilton
Wetland Restoration Project.

For the purposes of this jurisdictional delineation, the study area is defined as the area included
between the bank tops of the creeks to be dredged and the portion of the proposed haul route that
passes through the open field and over the drainage channel (See attached Delineation Maps,
Appendix B).

In delineating wetlands and other WUS, three environmental features are considered; vegetation,
hydrology, and soils in accordance with the U.S. Army Corps of Engineers Wetland Delineation
Manual (USACE Environmental Laboratory, 1987, see Section 3 below for additional details).
The following is a brief description of each of these features within the proposed dredging sites
and the portion of the haul route where the temporary road is to be placed.
Vegetation

Vegetation along this reach of Novato, Warner, and Arroyo Avichi Creeks grades from brackish marsh along the lower southeastern reaches to freshwater riparian near the northwestern edge of the project site. Levees are dominated primarily by non-native annual grassland, including Italian ryegrass (*Lolium mutiflorum*), wild radish (*Raphanus sativus*), black mustard (*Brassica nigra*), wild oats (*Avena fatua*), barley (*Hordeum murinum*), bristly ox-tongue (*Picris echioides*), curly dock (*Rumex crispus*), and fennel (*Foeniculum vulgare*). Brackish marsh vegetation is dominated by broad-leaved cattail (*Typha latifolia*), alkali bulrush (*Scripus robustus*), and gum plant (*Grindelia stricta var. angustifolia*). Other less prominent plant species include tule (*Scirpus acutus var. occidentalis*), and common pickleweed (*Salicornia virginica*). Freshwater riparian vegetation is dominated by Fremont cottonwood (*Populus fremontii ssp. Fremontii*), arroyo willow (*Salix lasiolepis*), Himalayan blackberry (*Rubus discolor*), and bur-reed (*Sparganium eurycarpum*).

None of the riparian trees and shrubs growing along the banks of the creeks are to be removed during the dredging operation. These areas will be flagged or fenced off prior to the beginning of the project. Instream or emergent wetland vegetation generally re-colonizes the area after the first year.

The temporary haul road to the dredge disposal site on the State Coastal Conservancy land currently supports annual grasslands composed of Italian rye grass (*Lolium mutiflorum*), birdfoot trefoil (*Lotus corniculatus*), and barley (*Hordium murinum*). There are some areas of slight depressions which appear to pool surface water at times of the year and support a slightly different vegetation community. The rye and barley grasses fall out but the birdfoot trefoil persists with Hysop (*Lythrum hyssopifolium*), and a prostrate *Polygonium* sp. The main difference between these depressions and the grassland matrix they occur in, is the fact they pool water for short periods of time during the wet season.

The temporary haul road will have to cross a drainage channel as it enters Hamilton Air Base property. The drainage channel is between two levees which support upland vegetation consisting of annual grasses and coyote brush (*Baccharis pilularis*). The channel bottom is
choked with akali bulrush and varies in width between nine and 25 feet. The vegetation at the disposal site itself is described in detail in the *Waste Discharge Requirements and Water Quality Certification* for the Hamilton Wetland Restoration Project (California Regional Water Quality Control Board, 2005) but in general consists of an existing 124.5 acres of wetlands and 543 acres of grasslands, uplands or developed lands.

**Hydrology**

The principal natural hydrological sources for the project site are precipitation, surface run-off, groundwater, seasonal water flow from off-site sources, and tidal action. Novato Creek and its tributaries begin in the hills west of the project site and flow southeast under Highway 101 and past the Northwestern Pacific Railroad tracks and out of the project site toward San Pablo Bay. Freshwater flows in the upper portion of the project site are from storm water runoff, and seasonal releases from Stafford Lake located approximately 10 miles up the watershed. Tidal action influences the lower part of Novato Creek within the project site. Twice daily water enters the creek channel from San Pablo Bay, inundating creekside brackish marsh vegetation. The depth and duration of the inundation varies depending on tidal cycles.

The water source for the drainage channel along the proposed haul road appears to be drainage water from the surrounding grasslands. This water flows east to a larger drainage channel and then eventually out to the San Pablo Bay. The water source for the depression areas within the grasslands is storm water that, after a short while, percolates into the ground and off the site. The entire grassland area and associated surroundings were at one time part of the San Pablo baylands with heavy clay soils. Consequently, slight depression (6 inches or greater) in this area will fill with surface water for a short period of time and revert to more wetland type vegetation.
The Marin County Soil Survey (National Resources Conservation Service web site, 2007) indicates that the dredge removal sites are generally dominated by two soil types:

158 – Reyes Clay

204 and 203 – Xerothents-Urban land complex, 0 to 9 percent slopes

Both these soils are listed as hydric soils on the Hydric Soils Report for Marin County (NRCS, web site 2007). Reyes clay soils are very deep, very poorly drained soils found along the margins of bays and tidal marshes. Reyes clay soils are found in the lower reaches of Novato Creek east of the railroad tracks and all along the proposed temporary haul road near Hamilton Air Base. The Xerothents-Urban land complex soils consist of cut and fill areas that vary greatly in depth and drainage characteristics. Other physical properties of these soils are highly variable as well depending upon the type and amount of fill material and cutting and grading. In cases where these soils occur in a tidal flat or salt marsh, it is listed as a hydric soil. In summary, all the soils on the flat portions of the study area are hydric and, thus, meet one of the USACE criteria for wetlands.
3.0 SURVEY METHODOLOGY

The preliminary wetland delineation was conducted in accordance with the Corps of Engineers Wetlands Delineation Manual (1987) and consisted of the following:

- Using the Routine, Small Area, Determination Method described in the USACE Wetlands Delineation Manual (1987), sample plots were used to determine wetland or non-wetland status. Visual observations were used to identify vegetation, soil, and hydrological characteristics within the vicinity of the sample plots. Completed wetland delineation forms for each sample plot are attached at the end of this report in Appendix A.

- Hydrophytic vegetation dominates areas where the frequency and duration of inundation or soil saturation exerts a controlling influence on the plant species present. Plant species are assigned wetland indicator status according to the probability of species occurring in wetlands (Reed, 1988). More than fifty percent of the dominant species must be hydrophytic to meet the wetland vegetation criterion. Hydrophytic plant indicator status designations conform to the following:
  - OBL – Plants that occur almost always (estimated probability >99 percent) in wetlands under natural conditions but may also occur rarely (estimated probability <1) in non-wetlands.
  - FACW – Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands under natural conditions but also occur (estimated probability 1 percent to 33 percent) in non-wetlands.
  - FAC – Plants with a similar likelihood (estimated probability 33 to 67 percent) of occurring in both wetlands and non-wetlands.
  - FACU – Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands but occur more often (estimated probability >67 percent to 99 percent) in non-wetlands.
  - UPL – Plants that occur rarely (estimated probability >1 percent) in wetlands but almost always occur (estimated probability >99 percent) in non-wetlands under natural conditions.

- Soil pits were placed at sample plots for the potential wetlands being investigated. Munsell Soil Color Charts (MacBeth, 2001) were used to evaluate the color, hue, and chroma of representative soils and associated soil mottles. Soil mottles were also characterized by their size, distinction, and frequency of occurrence. The biologist then recorded indicators from the samples and determined if the soils were hydric. Also noted were other hydrological indicators such as soil saturation within the upper 12 inches of the soil, standing water existing within the soil pits, and the depth to saturated soil.
The OHWM is defined as the line on the shore established by the fluctuations of water and is indicated by physical characteristics. Such characteristics include a clear, natural line impressed on the bank or shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas to be influenced by water flow. The OHWM is the width measured between two adjacent banks at the normal level of water flow.

A Kleinfelder biologist conducted the field work for the wetland delineation on November 29 and December 4, 2006.
4.0 WETLAND ASSESSMENT

Wetlands may be bordered by both wetter areas (aquatic habitats) and by drier areas (non-wetlands). The purpose of the investigation is to define the boundaries of the wetland and upland habitats and to identify the location of aquatic habitats or other WUS. The USACE jurisdictional limits typically include natural aquatic habitats and end at the boundary of the wetland and non-wetland habitats. The following are definitions used by the USACE in describing wetlands, aquatic habitats and uplands or non-wetland habitats.

- **Wetland.** Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated and anaerobic soil conditions.

- **Aquatic Habitats.** Areas that are permanently inundated and do not support rooted-emergent or woody plant species.

- **Non-wetland.** Areas that are seldom or never inundated, or if frequently inundated, they have saturated soils for only brief periods during the growing season and have vegetation adapted to aerobic soil conditions.

Typically, wetlands have positive indicators for all the three parameters used in delineating wetlands; soils, hydrology, and vegetation. The following is a brief discussion of each of these diagnostic parameters and their characteristics in the study area at the time the investigation was conducted.

4.1 POTENTIAL SECTION 404 OTHER WATERS OF THE US

The center of Novato Creek within the tidally influenced zone supports no emergent vegetation, is typically under water at least twice a day, and, as noted above, the soils are hydric. The upper reaches of Novato Creek and the two tributary creeks (Warner and Arroyo Avichi) typically have less than 5% vegetation cover and are well defined by bed and banks. These open water or aquatic habitats are characterized as “other waters of the US” and within the Section 404 jurisdiction of the USACE. The width of these “other waters” varies depending upon the location within the system with a wider channel in the lower reaches of Novato Creek and narrower channels in the tributaries and upper reaches of Novato Creek.
4.2 POTENTIAL SECTION 404 WETLANDS

Potential jurisdictional wetlands were located along Novato Creek, its two tributaries, and the drainage channel along the proposed haul route. The width and size of the wetlands varied depending upon the topographic configurations of the banks and in the channels. Field data collected at 4 locations are presented on Corps data forms in Appendix A. The data location points are presented on the attached Preliminary Delineation Map in Appendix B. A short discussion on the three parameters for each sample point is presented below.

Vegetation

Wetland plant communities were found all along the margins of the creek channels to be dredged. The only exceptions to this occurred where concrete was placed along the creek banks. Two sampling points were established along Novato Creek; one at the lower end (NC-1 and -2) and two additional points near the upper reach of Novato Creek (NC-3 and NC-4). The vegetation in plot NC-1 was dominated by Facultative wet (FACW) and obligate (OBL) hydrophytic plant species including broad-leaved cattail, tule, gum plant, and fat hen. Sub-diminate plants included common-pickleweed (OBL). These plants were common within the brackish marsh habitats in the lower reach of Novato Creek near the Highway 101 bridge. The vegetation down in the creek bottom and immediately along the channel margins (NC-3) in the upper reaches of Novato Creek as well as the two tributaries is more indicative of freshwater wetlands and was dominated by FACW and FAC hydrophytic plant species including arroyo willow seedlings, plantain, and salt grass. Moving up the slope of the creek banks (NC-4) the vegetation continued to be dominated by hydrophytic species like blackberry (Rubus discolor) and arroyo willows. These plants, however, are deep rooted and can occur in uplands above the waters of a wetland. The sub-diminate plants in this plot were more indicative of an upland habitat and included Bermuda grass (Facultative upland or FACU), nightshade (FAC), and bedstraw (FACU). Consequently, the vegetation was of little help in defining the wetland boundary in the upper reaches of Novato Creek and the other tributary channels.

Four sample plots were established along the temporary access road alignment near Hamilton. The first two (HAM-1 and HAM-2) were associated with the drainage ditch the temporary road
is to cross. The vegetation within the channel bottom of this ditch (HAM-2) is a monotypic stand of alkali bulrush, an OBL hydrophytic plant species. Moving out of the channel bottom and up the slopes, the vegetation continues to be dominated by FACW (salt grass) and FAC (Italian rye grass) hydrophytic species. However, the sub-dominates range from FACW (fat hen) to species that are designated as “no indicator” or NI. The vegetation at this location was not definitive where the wetland boundary occurs but does suggest it is very near. Moving further up-slope, the NI species begin to dominate very quickly.

Sample plots HAM-3 and HAM-4 were located out in the open field that had been disked. The vegetation within the slight depression (HAM-3) ranged from FACW (loostife) to NI (sow thistle). The sub-dominate plant species are more indicative of wetland habitats (FACW). The vegetation suggests a wetland habitat but marginal at best. These slight depressions in the field probably pool with water but remain full of water for a long enough time to form a wetland depending on the rainfall for any given season. The vegetation in the surrounding matrix (HAM-4) is dominated by FAC species (Italian rye grass, and lotus). Once again, this vegetation is suggestive of a wetland community but only marginally.

**Hydrology**

Those sampling locations on Novato Creek within wetlands (NC-1 and NC-3) had at least three primary hydrologic indicators including nearby inundation, water marks, and drift lines. NC-3 also had free water within five (5) inches of the ground surface and saturated soils within three (3) inches of the ground surface. The sample plots outside of the wetlands (NC-2 and NC-4) had no hydrologic indicators and the depth to saturated soils was over 14-inches.

The sample point within the drainage channel near Hamilton (HAM-2) had three primary hydrology indicators (drift lines, sediment deposits, and drainage pattern) and two secondary hydrology indicators (oxidized root channels in the upper 12 inches and water-stained leaves. The sample point outside of the wetland (HAM-1) had one secondary hydrologic indicator (oxidized root channels) but the depth to saturated soils was greater than 16-inches.
The sample point within the slight depression in the open field where the temporary road is to be located (HAM-3) had two primary hydrologic indicators (drift lines and sediment deposits) and one secondary hydrologic indicator (oxidized root channels). The sample outside of the depression (HAM-4) had no hydrologic indicators and the depth to saturated soils was greater than 12-inches.

Soils

Both soils mapped in the project study areas; Reyes clays and Xerothents-Urban land complex, are listed as hydric soils in the Hydric Soils Report for Marin County (NRCS, web site 2007). The matrix chroma color of sample points NC-1, -2, and -3 were all 2, which is low enough to be considered a primary hydric soil indicator. The matrix chroma color of NC-4 was a bit higher (4) and thus not a good indicator of a wetland soil.

The matrix chroma color of sample points Ham-2, -3, and -4 were all 1, which is a positive indicator of a wetland soil. The matrix chroma of the HAM-1 sample point was 3, which is not a positive indicator of a wetland soil.
5.0 CONCLUSIONS

In summary, sample points NC-1 and -3, and Ham-2 and possibly -3 occur in wetland habitats. Within the two mile Novato Creek study area there is a nearly unbroken strip of wetlands of variable widths along both sides of the creeks, and un-vegetated jurisdictional “other waters” along the center of the creeks. The areas that meet the tree wetland criteria given in the *Corps of Engineers Wetlands Delineation Manual* (1987) are shown on the map (Figure 1) in Appendix B. The amount of potential Section 404 jurisdictional wetlands on the Novato Creek portion of the study area is approximately 11-acres. A total of approximately 7.5 acres of potential jurisdictional waters occurs within Novato Creek and its tributaries in the study area. The amount of potential Section 404 jurisdictional wetlands in the Hamilton portion of the study area is approximately 0.25-acres.
6.0 LIMITATIONS

Kleinfelder prepared this report in accordance with generally accepted standards of care that exist in Marin County at this time. This report may be used only by Marin County Flood Control and Water Conservation District and only for the purposes stated within a reasonable time from its issuance but in no event later than one (1) year from the date of the report. All information gathered by Kleinfelder is considered confidential and will be released only upon written authorization of Marin County Flood Control and Water Conservation District or as required by law. Non-compliance with any of these requirements by Marin County Flood Control and Water Conservation District or anyone else, unless specifically agreed to in advance by Kleinfelder in writing, will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party and Marin County Flood Control and Water Conservation District agrees to defend, indemnify, and hold harmless Kleinfelder from any claim or liability associated with such unauthorized use or non-compliance.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present. Although risk can never be eliminated, more detailed and extensive investigations yield more information which can help understand and manager the level of risk. Since detailed investigation and analysis involve greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface investigations, or field tests, may be performed to reduce uncertainties. Acceptance of this report will indicated that Marin County Flood Control and Water Conservation District has reviewed the document and determined that it does not need or want a greater level of service than provided.
During the course of the performance of Kleinfelder’s services, hazardous materials may be discovered. Kleinfelder will assume no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, generator, or person who arranges for disposal, transport, storage, or treatment of hazardous materials within the meaning of any governmental statute, regulation, or order. Marin County Flood Control and Water Conservation District will be solely responsible for notifying all governmental agencies, and the public-at-large of the existence, release, treatment, or disposal of any hazardous materials observed at the project site, either before or during performance of Kleinfelder’s services. Marin County Flood Control and Water Conservation District will be responsible for all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials including cuttings and samples resulting from Kleinfelder’s services.

Regulations and professional standards applicable to Kleinfelder’s services are continually evolving. Techniques are, by necessity, often new and relatively untried. Different professionals may reasonably adopt different approaches to similar problems. As such, our services are intended to provide Marin County Flood Control and Water Conservation District with a source of professional advice, opinions, and recommendations. Our professional opinions and recommendations are based on our limited number of field observations and tests, collected and performed in accordance with the generally accepted engineering practice as it exists at the time and may depend on, and be qualified by, information gathered previously by others and provided to Kleinfelder by Marin County Flood Control and Water Conservation District. Consequently, no warranty or guarantee, express or implied, is intended or made.


DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

<table>
<thead>
<tr>
<th>Project/Site:</th>
<th>NOVATO CREEK DREDGING - NOVATO CREEK</th>
<th>Date: 10/4/86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Owner:</td>
<td>Marin County Public Works Dept.</td>
<td>County: Marin</td>
</tr>
<tr>
<td>Investigator:</td>
<td>Ric Villasenor</td>
<td>State: CA</td>
</tr>
</tbody>
</table>

Do Normal Circumstances exist on the site? □ Yes □ No
Is the site significantly disturbed (Atypical Situation)? □ Yes □ No
Is the area a potential Problem Area? (If needed, explain on reverse) □ Yes □ No

VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Typha latifolia</td>
<td>S</td>
<td>OBL</td>
<td>9. Persicaria perfoliata</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>2. Salix discolor</td>
<td>H</td>
<td>OBL</td>
<td>10. Rumex crispus</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>3. Grindelia stricta var</td>
<td>S</td>
<td>FACW</td>
<td>11. Salix nova virginica</td>
<td>H</td>
<td>OBL</td>
</tr>
<tr>
<td>4. Anchusa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Atropa pubescens</td>
<td>H</td>
<td>FACW</td>
<td>13. Lathyrus multiflorum</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>6.</td>
<td></td>
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<td></td>
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<tr>
<td>7.</td>
<td></td>
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<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC - ). 100 %

Remarks: Strong vegetation indicators. These are plants just above the high tide line (+7'). The Typha, Salix & Grindelia all extended out into the zone of inundation.

HYDROLOGY

Recorded Data (Describe in Remarks):

- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other (Soil Survey)
- No Recorded Data Available

Field Observations:
- Depth of Water Surface: 0 (in.)
- Depth of Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: >14 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- Inundated (nearby)
- Saturated in Upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- Oxidized Root Channels in Upper 12 inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Tide tables indicated a relatively high tide (+7') at the time the site was surveyed.
Map Unit Name: Reyes clay
(Series and Phase): Drainage Class: Somewhat poorly drained
Taxonomy (Subgroup): Field Observations

<table>
<thead>
<tr>
<th>Confirm Mapped Type</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Profile Description:

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>A</td>
<td>2.5 YR 2.5/2</td>
<td>NONE</td>
<td>VERY RARE</td>
<td>Gravelly-loam</td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors

Remarks:

Hydric Soil Indicators:

- Concretions
- High Organic Content in Surface layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Wetland Determination

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hydric Soils Present</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Remarks:
### DATA FORM

**ROUTINE WETLAND DETERMINATION**

(1987 COE Wetlands Delineation Manual)

<table>
<thead>
<tr>
<th>Project/Site:</th>
<th>Novato Creek Dredging/Novato Creek</th>
<th>Date:</th>
<th>13/21/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Owner:</td>
<td>Marin Co, Public Works Dept</td>
<td>County:</td>
<td>Marin</td>
</tr>
<tr>
<td>Investigator:</td>
<td>Villasenor</td>
<td>State:</td>
<td>CA</td>
</tr>
</tbody>
</table>

- **Do Normal Circumstances exist on the site?** Yes [X] No [ ]
- **Is the site significantly disturbed (Atypical Situation)?** Yes [ ] No [X]
- **Is the area a potential Problem Area?** Yes [ ] No [X]
  (If needed, explain on reverse)

### VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fagopyrum esculentum</td>
<td>H</td>
<td>FACL</td>
<td>Raphanus sativus</td>
<td>H</td>
<td>NT</td>
</tr>
<tr>
<td>Rumex crispus</td>
<td>H</td>
<td>FACW-</td>
<td>Vicia sativa</td>
<td>H</td>
<td>FACW-</td>
</tr>
<tr>
<td>Paro echinodes</td>
<td>H</td>
<td>FAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Various Annual Grasses</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

- **Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).** 32% 

**Remarks:** Plot is located just upslope at the foot of the bank.

### HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - Stream, Lake or Tide Gauge
  - Aerial Photographs
  - Other (Soil Survey)
  - No Recorded Data Available

**Field Observations:**

- Depth of Water Surface: 0 (in.)
- Depth of Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: 7/12 (in.)

**Wetland Hydrology Indicators:**

- **Primary Indicators:**
  - [ ] Imundated (nearby)
  - [ ] Saturated in Upper 12 inches
  - [ ] Water Marks
  - [ ] Drift Lines
  - [ ] Sediment Deposits
  - [ ] Drainage Patterns in Wetlands

- **Secondary Indicators (2 or more required):**
  - [ ] Oxidized Root Channels in Upper 12 inches
  - [ ] Water-Stained Leaves
  - [ ] Local Soil Survey Data
  - [ ] FAC-Neutral Test
  - [ ] Other (Explain in Remarks)

**Remarks:** No Indicators
SOILS

Map Unit Name: **Reyes clay**

(Series and Phase): 

Drainage Class: 

Taxonomy (Subgroup): 

Field Observations

Confirm Mapped Type □ Yes □ No

<table>
<thead>
<tr>
<th>Profile Description:</th>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:

- □ Histosol
- □ Histic Epipedon
- □ Sulfidic Odor
- □ Aquic Moisture Regime
- □ Reducing Conditions
- □ Gleyed or Low-Chroma Colors

Remarks: **Soil results same as plot NC-1**

Wetland Determination

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present</th>
<th>□ Yes □ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>Hydric Soils Present</td>
<td>□ Yes □ No</td>
</tr>
</tbody>
</table>

Is this Sampling Point Within a Wetland? □ Yes □ No

Remarks:
## DATA FORM

**ROUINTE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

<table>
<thead>
<tr>
<th>Project/Site:</th>
<th>NOVATO CREEK-DREDGING/NOVATO CREEK</th>
<th>Date:</th>
<th>12/4/96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Owner:</td>
<td>MARIN CD, PUBLIC WORKS DEPT</td>
<td>County:</td>
<td>MARIN</td>
</tr>
<tr>
<td>Investigator:</td>
<td>R.C. VILLASENOR</td>
<td>State:</td>
<td>CA</td>
</tr>
</tbody>
</table>

- **Do Normal Circumstances exist on the site?** Yes [x] No [ ]
- **Is the site significantly disturbed (Atypical Situation)?** Yes [ ] No [x]
- **Is the area a potential Problem Area?** (If needed, explain on reverse) Yes [ ] No [x]

### VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix lasiolepis</td>
<td>T</td>
<td>FACW</td>
<td>9. TRIPOLIUM SP.</td>
<td>H</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Platanus major</td>
<td>H</td>
<td>FAC</td>
<td>10. Taxodium distichum</td>
<td>H</td>
<td>FACW</td>
</tr>
<tr>
<td>3. Distichlis epikata</td>
<td>H</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):** 100%

**Remarks:** Salix was seedlings only.

### HYDROLOGY

- **Recorded Data (Describe in Remarks):**
  - [ ] Stream, Lake or Tide Gauge
  - [x] Aerial Photographs
  - [ ] Other (Soil Survey)
  - [ ] No Recorded Data Available

**Field Observations:**
- Depth of Water Surface: 0 (in.)
- Depth of Free Water in Pit: 5" (in.)
- Depth to Saturated Soil: 3" (in.)

**Wetland Hydrology Indicators:**

#### Primary Indicators:
- [x] Immerged (nearby)
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [x] Drift Lines
- [x] Sediment Deposits
- [x] Drainage Patterns in Wetlands

#### Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12 inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

**Remarks:** Plot is located on sand bar at the base of the bank slope.
## SOILS

**Map Unit Name:** Reyes clay

**Depth Horizon Matrix**

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix Color (Munsell Mois.)</th>
<th>Mottle Colors (Munsell Mois.)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>7.5YR 7.5/2</td>
<td>NONE</td>
<td>NONE</td>
<td>GRAVEL</td>
</tr>
</tbody>
</table>

**Hydric Soil Indicators:**

- Histosol
- High Organic Content in Surface layer in Sandy Soils
- Concretions
- Organic Streaking in Sandy Soils
- Aquic Moisture Regime
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Sulphidic Odor
- Reducing Conditions
- Listed on National Hydric Soils List
- Gleyed or Low-Chroma Colors
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

**Remarks:**

**Wetland Determination**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hydric Soils Present</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Is this Sampling Point Within a Wetland?  Yes  No

**Remarks:**
### DATA FORM

**ROUTINE WETLAND DETERMINATION**

(1987 COE Wetlands Delineation Manual)

<table>
<thead>
<tr>
<th>Project/Site:</th>
<th>NOVATO CREEK-DREDGING/NOVATO CR</th>
<th>Date:</th>
<th>10/4/86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Owner:</td>
<td>MARIN CO. PUBLIC WORKS DEPT</td>
<td>County:</td>
<td>MARIN</td>
</tr>
<tr>
<td>Investigator:</td>
<td>PIC VILLASENOR</td>
<td>State:</td>
<td>CA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do Normal Circumstances exist on the site?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the site significantly disturbed (Atypical Situation)?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Is the area a potential Problem Area? (If needed, explain on reverse)</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

#### VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix lasiolepis</td>
<td>T</td>
<td>FACW</td>
<td>9. Salix lasiolepis</td>
<td>H</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Rubus discolor</td>
<td>B</td>
<td>FAC</td>
<td>10. Salix lasiolepis</td>
<td>H</td>
<td>FACW</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td>11. Salix lasiolepis</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td>12. Salix lasiolepis</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td>13. Salix lasiolepis</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>6.</td>
<td></td>
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<td>14. Salix lasiolepis</td>
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<td>FAC</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td>15. Salix lasiolepis</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td>16. Salix lasiolepis</td>
<td>H</td>
<td>FAC</td>
</tr>
</tbody>
</table>

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC -): \( 100 \% \)

**Remarks:** Both willows & blackberries are deeply rooted and thus occur often beyond the boundaries of wetlands.

#### HYDROLOGY

- Recorded Data (Describe in Remarks):
  - Stream, Lake or Tide Gauge
  - Aerial Photographs
  - Other (Soil Survey)
  - No Recorded Data Available

**Field Observations:**

<table>
<thead>
<tr>
<th>Field Observation</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth of Water Surface:</td>
<td>0 (in.)</td>
</tr>
<tr>
<td>Depth of Free Water in Pit:</td>
<td>0 (in.)</td>
</tr>
<tr>
<td>Depth to Saturated Soil:</td>
<td>7 1/2 (in.)</td>
</tr>
</tbody>
</table>

**Wetland Hydrology Indicators:**

- **Primary Indicators:**
  - Inundated (nearby)
  - Saturated in Upper 12 inches
  - Water Marks
  - Drift Lines
  - Sediment Deposits
  - Drainage Patterns in Wetlands

- **Secondary Indicators (2 or more required):**
  - Oxidized Root Channels in Upper 12 inches
  - Water-Stained Leaves
  - Local Soil Survey Data
  - FAC-Neutral Test
  - Other (Explain in Remarks)

**Remarks:** NO INDICATORS.
Map Unit Name: **Reyes clay**

(Series and Phase): 

Drainage Class: 

Taxonomy (Subgroup): 

Field Observations

<table>
<thead>
<tr>
<th>Confirm Mapped Type</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Profile Description:

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>A</td>
<td>5YR 3/4</td>
<td>NONE</td>
<td>SANDY</td>
<td></td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

Wetland Determination

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Is this Sampling Point Within a Wetland?  

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks:
DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NOVATO CREEK DREDGING/REHAB
Date: 11/29/96
Application/Owner: MARIN COUNTY PUBLIC WORKS DEPT.
County: MARIN
Investigator: RIC VILLASENOR
State: CA.

Do Normal Circumstances exist on the site? □ Yes □ No
Community ID:
Is the site significantly disturbed (Atypical Situation)? □ Yes □ No
Transect ID: HAM-DITCH
Is the area a potential Problem Area? (If needed, explain on reverse) □ Yes □ No
Plot ID: #1-HAM

VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Sub</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loliwm multifloum</td>
<td>H</td>
<td>FAC</td>
<td>9</td>
<td>Atripllex triangulalis</td>
<td>H</td>
<td>FACW</td>
</tr>
<tr>
<td>Distichis spicata</td>
<td>H</td>
<td>FACW</td>
<td>10</td>
<td>Parthenium sativus</td>
<td>H</td>
<td>NL</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td></td>
<td></td>
<td>Baccharis pilularis</td>
<td>S</td>
<td>NL</td>
</tr>
</tbody>
</table>

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: On lower portion of bank slope just above channel.

HYDROLOGY

□ Recorded Data (Describe in Remarks):
  □ Stream, Lake or Tide Gauge
  □ Aerial Photographs
  □ Other (Soil Survey)
∇ No Recorded Data Available

Field Observations:
Depth of Water Surface: 0 (in.)
Depth of Free Water in Pit: 0 (in.)
Depth to Saturated Soil: 716 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
  □ Inundated (nearby)
  □ Saturated in Upper 12 inches
  □ Water Marks
  □ Drift Lines
  □ Sediment Deposits
  □ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
  □ Oxidized Root Channels in Upper 12 inches
  □ Water-Stained Leaves
  □ Local Soil Survey Data
  □ FAC-Neutral Test
  □ Other (Explain in Remarks)

Remarks: No hydrologic indicators.
SOILS

Map Unit Name: **Reyes Clay**
(Series and Phase): **Reyes Clay**
Drainage Class: **Somewhat poorly drained**
Taxonomy (Subgroup): 
Field Observations

<table>
<thead>
<tr>
<th>Confirm Mapped Type</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Profile Description:

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16&quot;</td>
<td>A</td>
<td>7.5YR 3/3</td>
<td>10YR 4/6</td>
<td>Along rooting zone only</td>
<td>Loam</td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors

Remarks:

- [ ] Concretions
- [ ] High Organic Content in Surface layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Wetland Determination

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydric Soils Present</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is this Sampling Point Within a Wetland?

Remarks: "Plants suggest periodic flooding by oxidized root channels but soils matrix color and lack of any other hydrologic indicators suggest flooding is not long enough to define a true wetland"
### DATA FORM
**ROUTINE WETLAND DETERMINATION**
*(1987 COE Wetlands Delineation Manual)*

<table>
<thead>
<tr>
<th>Project/Site:</th>
<th>NOYETO CREEK DREDGING/HA</th>
<th>Date:</th>
<th>11/30/86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Owner:</td>
<td>MARIN COUNTY PUBLIC WORKS</td>
<td>County:</td>
<td>MARIN</td>
</tr>
<tr>
<td>Investigator:</td>
<td>RIC VILLASENOR</td>
<td>State:</td>
<td>CA</td>
</tr>
</tbody>
</table>

- **Do Normal Circumstances exist on the site?** Yes [□] No [x]
- **Is the site significantly disturbed (Atypical Situation)?** No [□] Yes [x]
- **Is the area a potential Problem Area?** (If needed, explain on reverse) Yes [□] No [x]

#### VEGETATION

<table>
<thead>
<tr>
<th>#</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scirpus robustus</td>
<td>H</td>
<td>OBL</td>
<td>Distichlis spicata</td>
<td>H</td>
<td>FACW</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:** The Scirpus has choked the creek or drainage channel at this location.

#### HYDROLOGY

- **Recorded Data (Describe in Remarks):**
  - Stream, Lake or Tide Gauge
  - Aerial Photographs
  - Other (Soil Survey)

**No Recorded Data Available**

- **Field Observations:**
  - Depth of Water Surface: 0 (in.)
  - Depth of Free Water in Pit: 0 (in.)
  - Depth to Saturated Soil: 7 1/2 (in.)

**Wetland Hydrology Indicators:**

- **Primary Indicators:**
  - Inundated (nearby)
  - Saturated in Upper 12 inches
  - Water Marks
  - Drift Lines
  - Sediment Deposits
  - Drainage Patterns in Wetlands

- **Secondary Indicators (2 or more required):**
  - Oxidized Root Channels in Upper 12 inches
  - Water-Stained Leaves
  - Local Soil Survey Data
  - FAC-Neutral Test
  - Other (Explain in Remarks)

**Remarks:** The plot is located on the edge of the drainage channel. It appears the channel drains towards the east and eventually out to San Pablo Bay.
SOILS

Map Unit Name: **Reyes Clay**

(Series and Phase): ____________________________ Drainage Class: **Somewhat Partly Drained**

Taxonomy (Subgroup): ____________________________ Field Observations

Confirm Mapped Type:  □ Yes  □ No

Profile Description:

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>216&quot;</td>
<td>A</td>
<td>10R 2/1</td>
<td>70YR 6/6</td>
<td>NONE</td>
<td>CLAY</td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:

□ Histosol  □ Concretions  □ High Organic Content in Surface layer in Sandy Soils

□ Histic Epipedon  □ Organic Streaking in Sandy Soils  □ Listed on Local Hydric Soils List

□ Sulfidic Odor  □ Aquic Moisture Regime  □ Listed on National Hydric Soils List

□ Aquic Moisture Regime  □ Reducing Conditions  □ Other (Explain in Remarks)

Remarks: ____________________________

Hydric Soil Indicators:

□ Gleyed or Low-Chroma Colors

Wetland Determination

Hydrophytic Vegetation Present  □ Yes  □ No

Wetland Hydrology Present  □ Yes  □ No  Is this Sampling Point Within a Wetland?  □ Yes  □ No

Hydric Soils Present  □ Yes  □ No

Remarks: ____________________________
**DATA FORM**
**ROUTINE WETLAND DETERMINATION**
(1987 COE Wetlands Delineation Manual)

<table>
<thead>
<tr>
<th>Project/Site:</th>
<th>NOVATO CREEK DREDGING/HAM:</th>
<th>Date:</th>
<th>11/30/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Owner:</td>
<td>MARIN COUNTY PUBLIC WORKS</td>
<td>County:</td>
<td>MARIN</td>
</tr>
<tr>
<td>Investigator:</td>
<td>RIC VILASENO</td>
<td>State:</td>
<td>CA</td>
</tr>
</tbody>
</table>

Do Normal Circumstances exist on the site? [ ] Yes [ ] No

Is the site significantly disturbed (Atypical Situation)? [ ] Yes [ ] No

Is the area a potential Problem Area? [ ] Yes [ ] No

---

**VEGETATION**

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
</table>

| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC -): | 100% |

**Remarks:** Indicators are not strong and may vary from year to year depending upon how long water pools in these areas.

---

**HYDROLOGY**

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other (Soil Survey)
  - [x] No Recorded Data Available

**Field Observations:**

<table>
<thead>
<tr>
<th>Depth of Water Surface:</th>
<th>0 (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth of Free Water in Pit:</td>
<td>0 (in.)</td>
</tr>
<tr>
<td>Depth to Saturated Soil:</td>
<td>12 (in.)</td>
</tr>
</tbody>
</table>

**Wetland Hydrology Indicators:**

**Primary Indicators:**
- [ ] Imundated (nearby)
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

**Secondary Indicators (2 or more required):**
- [x] Oxidized Root Channels in Upper 12 inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

**Remarks:**
## SOILS

### Map Unit Name:

Reyes May

#### (Series and Phase):__

#### Drainage Class:

#### Taxonomy (Subgroup):__

#### Field Observations

Confirm Mapped Type □ Yes □ No

### Profile Description:

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>A</td>
<td>2.5YR 4/1</td>
<td>NONE</td>
<td>NONE</td>
<td>Loam</td>
</tr>
</tbody>
</table>

### Hydric Soil Indicators:

- □ Histosol
- □ Histic Epipedon
- □ Sulfidic Odor
- □ Aquic Moisture Regime
- □ Reducing Conditions
- □ Gleyed or Low-Chroma Colors

- □ Concretions
- □ High Organic Content in Surface layer in Sandy Soils
- □ Organic Streaking in Sandy Soils
- □ Listed on Local Hydric Soils List
- □ Listed on National Hydric Soils List
- □ Other (Explain in Remarks)

Remarks:

### Wetland Determination

#### Hydrophytic Vegetation Present

- □ Yes □ No

#### Wetland Hydrology Present

- □ Yes □ No

Is this Sampling Point Within a Wetland?

- □ Yes □ No

Remarks:

These slight depressional areas may vary from year to year. Hydro & Soils are good strong indicators but vegetation is somewhat weak.
### DATA FORM
**ROUTINE WETLAND DETERMINATION**
*(1987 COE Wetlands Delineation Manual)*

<table>
<thead>
<tr>
<th>Project/Site:</th>
<th>NOVATO CREEK DREDGING/HAMilton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Owner:</td>
<td>MARIN COUNTY PUBLIC WORKS</td>
</tr>
<tr>
<td>Investigator:</td>
<td>RIC VILLASENOR</td>
</tr>
<tr>
<td>Date:</td>
<td>11/29/06</td>
</tr>
<tr>
<td>County:</td>
<td>MARIN</td>
</tr>
<tr>
<td>State:</td>
<td>CA</td>
</tr>
</tbody>
</table>

- **Do Normal Circumstances exist on the site?** Yes [ ] No [x] Community ID: [ISOLATED DEPRESSION]
- **Is the site significantly disturbed (Atypical Situation)?** Yes [ ] No [x] Transect ID: [ #4-HAM]
- **Is the area a potential Problem Area?** (If needed, explain on reverse) Yes [ ] No [x] Plot ID: [ ]

#### VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lolium multiflorum</td>
<td>H</td>
<td>FAC</td>
<td>9.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Lapsana camara</td>
<td>H</td>
<td>FAC</td>
<td>10.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hordeum murinum</td>
<td>H</td>
<td>NI</td>
<td>11.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td>12.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td>13.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td>15.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td>16.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC -): [60] %

**Remarks:** Field of Lolium on clay soils. Vegetation suggests a marginal wetland with species that thrive in wetlands 50% of the time.

#### HYDROLOGY

- **Recorded Data (Describe in Remarks):**
  - Stream, Lake or Tide Gauge [ ]
  - Aerial Photographs [ ]
  - Other (Soil Survey) [ ]
  - [x] No Recorded Data Available

**Field Observations:**
- Depth of Water Surface: [0] (in.)
- Depth of Free Water in Pit: [0] (in.)
- Depth to Saturated Soil: [>12] (in.)

**Wetland Hydrology Indicators:**

**Primary Indicators:**
- [ ] Inundated (nearby)
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drainage Patterns in Wetlands
- [ ] Sediment Deposits
- [ ] Oxidized Root Channels in Upper 12 inches

**Secondary Indicators (2 or more required):**
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

**Remarks:** No hydrologic indicators.
**Map Unit Name:** Reyes Clay  
**Drainage Class:** Somewhat poorly drained  
**Field Observations**

<table>
<thead>
<tr>
<th>Confirm Mapped Type</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

### Profile Description:

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Contrast</th>
<th>Texture, Concretions Structures, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>A</td>
<td>2.5YR 4/1</td>
<td>NONE</td>
<td>NONE</td>
<td>Loamy Clay</td>
</tr>
</tbody>
</table>

### Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors

### Remarks:

Hydric soils present, yes 0 no

---

### Wetland Determination

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydric Soils Present</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is this Sampling Point Within a Wetland?  

**Remarks:**

Wetland vegetation indicators and no hydrology indicators. Clay soils will retain water long enough for the vegetation to grow, but no surface hydrology was evident.
APPENDIX B:

Mitigation Monitoring and Reporting Plan
**M ITIGATION MONITORING AND REPORTING PLAN AND BEST MANAGEMENT PRACTICES**

**AIR QUALITY**

**Measure 5.a.1:** The District will require the construction contractor to implement a dust abatement program, which should include following elements:

- Water all active construction areas at least twice daily depending on type of operation, and wind exposure.
- Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.
- Construction grading activity should be discontinued in high wind conditions that cause excessive neighborhood dust problems, based on the opinion of the construction inspector.
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer) in accordance with Section 23114 of the California Vehicle Code during transit to and from the site.
- Pave, apply water three times daily, or apply non-toxic soil stabilizers (e.g., latex acrylic copolymer) on any unpaved access routes, parking areas, and staging areas at construction sites, and cover inactive storage piles.
- Sweep daily (preferably with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (preferably with water sweepers) if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply soil binders to inactive construction areas.
- Enclose, cover, water twice daily or apply soil binders to exposed stockpiles.
- Limit traffic on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Minimize idling time (e.g., 10-minute maximum).
- Maintain properly tuned equipment.
- Limit the hours of operation of heavy-duty equipment and/or the amount of equipment used.

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
<th>MONITORING AND REPORTING ACTIONS</th>
<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District includes the preparation of a dust abatement program in construction specifications.</td>
<td>1. District reviews contractor’s dust abatement program.</td>
<td>1. District</td>
<td>1. Prior to construction</td>
</tr>
<tr>
<td>2. Contractor implements measures in the program.</td>
<td>2. Confirmation by District that measures are being implemented.</td>
<td>2. District</td>
<td>2. During Construction</td>
</tr>
</tbody>
</table>

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Page B - 1 of 9

March 13, 2007
BIOLOGICAL RESOURCES

Measure 7.a.1: The Applicant shall submit a wetland delineation (Appendix A) and coordinate with the USACE, RWQCB, and CDFG pursuant to Sections 401 and 404 of the Clean Water Act and Section 1602 of the CA Fish and Game Code in getting the appropriate permit approvals and shall enter into a mitigation and monitoring agreement for wetland impacts prior to the initiation of dredging activities. As the Project involves only the temporary removal and loss of emergent wetland vegetation (i.e. Cattails, Tules), and these species re-populate within one year along the edges of the channel due to sedimentation and seed flow, appropriate mitigation determined by the resource agencies could likely involve wetland enhancement outside of the “bed-and-bank” of the channel.

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
<th>MONITORING AND REPORTING ACTIONS</th>
<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District shall submit a wetland delineation and coordinate with the USACE, RWQCB, and CDFG to acquire appropriate permits.</td>
<td>1. District submits wetland delineation</td>
<td>1. District</td>
<td>1. Prior to construction</td>
</tr>
<tr>
<td>2. Contractor complies with specifications and the monitor’s instructions.</td>
<td>2. Monitor oversees implementation of measures. Reports to the County and resource agencies as appropriate.</td>
<td>2. District</td>
<td>2. Prior to, during, and immediately following construction.</td>
</tr>
<tr>
<td>3. District reviews monitoring documentation to verify contractor has complied with mitigation and monitoring agreement.</td>
<td>3. District confirms that measures have been implemented.</td>
<td>3. District</td>
<td>3. During and after construction.</td>
</tr>
</tbody>
</table>
**Measure 7.a.2:** Prior to commencing the removal of dredge materials, a qualified fisheries biologist with NMFS Steelhead permits, will be retained by the District to recover stranded fish during the dewatering process. Steelhead netted from the project area will be released upstream of the project area in suitable habitat. Dewatering will be conducted with screens on the intake valves and in the sumps. Dewatering will be conducted in a manner to reduce turbidity downstream of the project area. Water removed from the channels will be pumped into a wetland basin (Baccaglio Basin). Work crews will be provided with pre-construction education in methods for the avoidance of a chance take of steelhead, Chinook salmon or Western pond turtles. A biologist will monitor the site during construction and will report any incidents to the Districts, and the appropriate resource agencies (USFWS or CDFG).

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
<th>MONITORING AND REPORTING ACTIONS</th>
<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District includes specifications for dewatering procedures and a fisheries biological monitor and coordination requirements in contractor specifications.</td>
<td>1. District reviews contractor specifications.</td>
<td>1. District</td>
<td>1. Prior to approval of construction specifications.</td>
</tr>
<tr>
<td>2. District secures the services of a qualified fisheries biological monitor.</td>
<td>2. Monitor provides the necessary instruction and direction to work crew. Reports to the County and agencies as appropriate.</td>
<td>2. District</td>
<td>2. Prior to, during, and immediately following construction.</td>
</tr>
<tr>
<td>3. Contractor complies with specifications and the monitor’s instructions.</td>
<td>3. Confirmation by District that measures have been implemented.</td>
<td>3. District</td>
<td>3. During and after construction.</td>
</tr>
</tbody>
</table>
KLEINFELDER

CULTURAL

Measures 14.a.1: In the event that human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during maintenance dredging activities on part of the Proposed Project site, work at the vicinity of the discovered site shall stop and the project sponsor shall contact the Marin County Environmental Coordinator immediately. If human remains are encountered, the County Coroner must also be contacted. A registered archaeologist, chosen by the County and paid for by the project sponsor, shall assess the site and submit a written evaluation to the Agency Director advancing appropriate conditions to protect the site and the resources discovered. State law designates procedures should human remains be encountered. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission so that a "Most Likely Descendant" can be designated. No work at the site may recommence without approval of the Agency Director.

In the event of discovery, the Marin County CDA staff shall verify that an archaeological report has been submitted and maintenance dredging work has been stopped. In the event that the report indicates that human remains, artifacts, or other indicators of prehistoric or historic use of the Proposed Project area are encountered, the Marin County CDA staff shall verify that a registered archaeologist has been retained to assess the site and has submitted a written evaluation to the Agency Director advancing appropriate conditions to protect the site and the resources discovered before work commences on the site. If human remains are encountered, the CDA staff shall verify that the County Coroner has been contacted and that all future work is carried out in accordance with the mitigation measures.

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
<th>MONITORING AND REPORTING ACTIONS</th>
<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the event that cultural resources are encountered, Project Contractor shall notify the District.</td>
<td>1. Project Contractor shall notify District.</td>
<td>1. Project Contractor</td>
<td>1. Upon discovery of cultural resources</td>
</tr>
<tr>
<td>2. The District shall retain a registered archaeologist to evaluate the resources and provide written recommendations and procedures.</td>
<td>2. District verifies that written report has been prepared and that recommendations and procedures have been implemented.</td>
<td>2. District</td>
<td>2. Prior to resuming construction</td>
</tr>
</tbody>
</table>
GEOPHYSICAL, HYDROLOGY, AND WATER

Measures 3.b.1, 3.b.2, and 4.c.2: The Applicant shall construct the project in a manner that avoids erosion from the project and prevents accumulation of silt in drainage ways through measures such as placement of sterile straw, silt fencing, or other suitable barrier materials (e.g., filter fabric, ply wood) along staging areas associated with the maintenance dredging project. The Project Contractor will be required to develop, submit for District and Regional Water Quality Control Board (RWQCB) approval, and implement a project Stormwater Pollution Prevention Plan (SWPPP), which includes Best Management Practices (BMPs) to minimize potential water quality impacts during construction.

At least one copy of the SWPPP will be kept at the project site throughout the entire construction phase. It is anticipated that a single SWPPP would be prepared and that the individual project phases would implement appropriate BMPs as appropriate.

The BMPs will be identified as specified by the California Storm Water Best Management Practices Handbook (Stormwater Quality Task Force, 2003) and/or the Manual of Standards for Erosion and Sediment Control Measures (ABAG, 1995). The BMPs include measures guiding the management and operation of construction sites to control and minimize the potential contribution of pollutants to storm runoff from these areas. These measures address procedures for controlling erosion and sedimentation, and managing all aspects of the construction process to ensure control of potential water pollution sources. Erosion and sedimentation control practices include installation of silt fencing, straw wattle, soils stabilization, re-vegetation, and runoff control to limit increases in sediment in storm water runoff (e.g., detention basins, straw bales, silt fences, check dams, geofabrics, drainage swales, and sand bag dikes). Implementation of the plan starts with the commencement of construction and continues through the completion of the project. Runoff controls shall be monitored and maintained to ensure storm events, vandalism, or other activities do not diminish the effectiveness of these controls. Monitoring should occur after major storm events and on a scheduled basis to address potential vandalism of the control measures. Specific control measures and the appropriate maintenance program will be developed prior to initiating construction. Upon completion of the project, the District must submit a Notice of Termination to the RWQCB to indicate that construction is completed.

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
<th>MONITORING AND REPORTING ACTIONS</th>
<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District shall prepare a SWPPP according to the requirements identified above</td>
<td>1. District reviews and signs off on SWPPP.</td>
<td>1. District.</td>
<td>1. Prior to approval of construction specifications.</td>
</tr>
<tr>
<td>2. Contractor implements the SWPPP.</td>
<td>2. District confirms that measures have been implemented.</td>
<td>2. District.</td>
<td>2. During construction.</td>
</tr>
<tr>
<td>3. Contractor maintains effectiveness all runoff controls during construction.</td>
<td>3. Contractor monitors runoff controls and reports to District.</td>
<td>3. Contractor, with confirmation by District.</td>
<td>3. Throughout construction phase.</td>
</tr>
</tbody>
</table>
WATER, HAZARDS AND HAZARDOUS MATERIALS

Measure 4.c.1, 4.c.2, 4.c.3: A **Hazardous Materials Management/Spill Prevention Control and Countermeasure Plan** (SPCCP) will be developed by the contractor and submitted to the District for review prior to final submittal to the Regional Water Quality Control Board for review and approval prior to construction. The approved plan will be given to all contractors working on the project. At least one copy will be on-site at all times. The purpose of the plan is to provide on-site construction personnel, environmental compliance monitors, and regulatory agencies with a detailed description of hazardous materials management, spill prevention, and spill response/cleanup measures associated with the construction of project elements.

<table>
<thead>
<tr>
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<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Contractor prepares and implements the Hazardous Materials Management/Spill Prevention Plan.</td>
<td>2. District confirms that the measures have been implemented.</td>
<td>2. District</td>
<td>2. During construction.</td>
</tr>
</tbody>
</table>
**NOISE**

**Measure 10.a.1 and 10.a.2:** The District will require contractors to adhere to local ordinances regulating hours of construction (7:00 a.m. to 9:00 p.m. on weekdays; 9:00 a.m. and after 9:00 p.m. on weekends and holidays) in order to minimize the potential for sleep disturbance and annoyance.

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
<th>MONITORING AND REPORTING ACTIONS</th>
<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District shall include construction hours' limitation requirements in construction specifications.</td>
<td>1. District reviews construction specifications.</td>
<td>1. District</td>
<td>1. Prior to approval of construction specifications.</td>
</tr>
<tr>
<td>2. Contractor will adhere specified requirements.</td>
<td>2. District confirms construction hour limits are observed.</td>
<td>2. District</td>
<td>2. During construction.</td>
</tr>
</tbody>
</table>

**Measure 10.a.3 and 10.a.4:** The District will require contractors to locate fixed construction equipment such as compressors and generators as far as possible from noise-sensitive receptors. Contractors will shroud or shield all impact tools, and muffle or shield all intakes and exhaust ports on power construction equipment. Construction vehicles should be properly maintained and equipped with exhaust mufflers that meet state standards. Idling equipment should be shut-off when not in use.

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
<th>MONITORING AND REPORTING ACTIONS</th>
<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District shall include the above requirements in the construction specifications.</td>
<td>1. District reviews and approves construction specifications.</td>
<td>1. District</td>
<td>1. Prior to approval of construction specifications.</td>
</tr>
<tr>
<td>2. Contractor implements noise abatement measures.</td>
<td>2. District confirms that measures have been implemented.</td>
<td>2. District</td>
<td>2. During construction.</td>
</tr>
</tbody>
</table>
Measure 6.d.1: The District will either draft or require the Contractor to submit a detailed Traffic Control Plan (TCP) to the District. The TCP will be prepared in accordance with professional traffic engineering standards to show specific methods for maintaining traffic flows on roadways directly affected by project construction, and will include, at a minimum, the following elements:

- Haul routes minimizing truck traffic on local roadways will be used to the extent possible.
- The TCP will arrange for safe detours for vehicles, pedestrians and bicyclists at the vicinity of the construction site. The contractor will install appropriate barriers or fencing around construction zones and put up signage showing detours to ensure the safety of pedestrians and bicyclists.
- The construction contractor will be required to provide emergency access at all times during construction.
- Access for emergency vehicles will be provided at all times.
- The TCP will arrange for and require Safety Flaggers as needed, especially at critical ingress and egress points. Flaggers will be placed based on recommendations from the District and traffic engineers instrumental in project route design and approval.

<table>
<thead>
<tr>
<th>IMPLEMENTATION PROCEDURE</th>
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<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The District shall either prepare or require the contractor to prepare a construction TCP.</td>
<td>1. District Public Works Department review and approve TCP.</td>
<td>1. District</td>
<td>1. Prior to approval of construction specifications.</td>
</tr>
<tr>
<td>2. Contractor implements the TCP.</td>
<td>2. District confirms TCP is implemented.</td>
<td>2. District</td>
<td>2. During construction</td>
</tr>
</tbody>
</table>
Measure 11.d.1 and 11.d.2: Due to the number of truck trips, the Project has a potential for significant impacts as it relates to maintenance of public facilities/roads, unless mitigated. To minimize the impact to maintenance of the existing roads, the Project Contractor shall develop and implement mitigation and monitoring measures to minimize the track-in and track-out of soil and dredged material, and include those measures in the maintenance dredging specifications.

<table>
<thead>
<tr>
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<th>MONITORING RESPONSIBILITY</th>
<th>MONITORING SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Project Contractor shall develop track-in and track-out prevention measures and include the measures in the maintenance dredging specifications.</td>
<td>1. District shall review and approve measures.</td>
<td>1. District</td>
<td>1. Prior to approval of construction specifications.</td>
</tr>
<tr>
<td>2. Project Contractor implements track-in and track-out prevention measures.</td>
<td>2. District confirms measures are implemented.</td>
<td>2. District</td>
<td>2. During construction</td>
</tr>
</tbody>
</table>
March 5, 2008

Mr. Michael Burns
Kleinfelder
2240 Northpoint Parkway
Santa Rosa, CA 95407

Novato Creek Dredging Project Initial Study

Dear Mr. Burns;

Whitlock & Weinberger Transportation, Inc. has prepared an updated evaluation of the potential traffic impacts associated with the proposed Novato Creek Dredging Project. The analysis has been conducted based on information contained in the Dredged Sediment Routing Alternatives Study, Nutie Engineering, November 2006, plus updated information on spoils disposal sites provided by Kleinfelder in September 2007 together with direction provided by County staff. The project would entail the dredging and transport of 70,000 cubic yards of materials during late summer 2008.

A maximum of 38 trip ends per hour would be created by trucks transporting dredging spoils. Two alternatives for disposing of the spoils were considered, with the primary option being deposition of spoils at Carneros River Ranch and the secondary option utilizing the Redwood Landfill, Gnoss Field and a site off of Marsh Road as well as some on-site deposition.

Under the primary deposition option it is estimated that all of the 38 trip ends per hour would be destined to and from the Carneros River Ranch site. Under the alternative deposition scenario, 22 trip ends per hour would be oriented to Redwood Landfill, 10 trip ends per hour would be to or from Gnoss Field, five trip ends would remain on-site, and one trip per hour would be to or from Marsh Road. A summary of the truck trip distribution estimates added trips to individual US 101 freeway segments is provided in Table 1.

<table>
<thead>
<tr>
<th>Destination</th>
<th>Percent Spoils Deposited</th>
<th>Truck Trip Ends</th>
<th>Trips Added to US 101</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rowland to SR 37</td>
</tr>
<tr>
<td>Primary Alternative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carneros Ranch</td>
<td>100 percent</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Secondary Alternative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redwood Landfill</td>
<td>57 percent</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Gnoss Field</td>
<td>27 percent</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Novato Levee (onsite)</td>
<td>13 percent</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Marsh Road</td>
<td>3 percent</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
The freeway segments anticipated to carry the largest share of dredging truck traffic are US 101 between Rowland Boulevard and SR 37 and SR 37 east of US 101. Approximately 38 bidirectional truck trips per hour would travel along these freeway segments, corresponding to about one vehicle every minute and a half (or one vehicle every three minutes in each direction). The added trips are expected to have a less-than-significant impact on these facilities as the vehicle density on the freeway with the added trips indicates LOS D or better operation, which is considered acceptable by both the County of Marin and City of Novato.

The added trips for the alternative deposition scenario to the Redwood Landfill interchange would also be expected to have a less-than-significant impact given the overpass and ramp improvements completed in 2006. The overpass project eliminated hazardous conditions associated with slow-moving trucks making left turn movements across northbound traffic and merging into the fast lane of southbound U.S. 101. The project also significantly lengthened the deceleration lane into the landfill, and constructed an 800-foot long southbound acceleration lane on a downhill segment that allows trucks to approach freeway speeds before merging into mainline traffic.

The increased traffic volumes occurring during the course of the dredging project would be expected to have an almost imperceptible impact on operating conditions at affected intersections. Based on prior analyses conducted by W-Trans, including the Draft Traffic Impact Study for the North Redwood Redevelopment Project, May 2007, and the Draft Hanna Ranch Traffic Impact Study, March 2006, the intersections at the Rowland Boulevard and Atherton Avenue interchanges that would be affected by Project traffic currently operate at LOS C or better. The addition of up to 38 peak hour trips at Rowland Boulevard intersections and up to 10 peak hour trips at the Atherton Avenue interchange would be expected to result in minor increases to average delay, though certainly not enough to push delays beyond the limit of LOS D, which is considered acceptable by both the City of Novato and the County of Marin.

Due to the nature of the project and the location of the site, no traffic hazards will be created. Ingress and egress at the various sites will occur along the haul routes designated by the County of Marin and flaggers will be used at appropriate times and locations. The adjacent neighbors and businesses will have continual access to their properties during the construction period with minimal traffic delays.

Consideration was also given the safety impacts associated with trucks turning left from eastbound SR 37 into the deposition site and entering westbound SR 37 via a right-turn. There is an existing opening in the median on SR 37 at the access location, and the taper leading into the opening provides adequate storage space for trucks waiting to turn left into the site to do so without impeding through traffic. Trucks are expected to encounter limited delays before turning into the site as gaps in oncoming westbound traffic will be created by the traffic signal at SR 37/Lakeville Highway. With an average of 4-minute headways between trucks and regular gaps created by the signal, it is not expected that the queue will exceed one truck waiting to enter the site at a time. The project is therefore expected to have less-than-significant safety impacts.

Likewise, safety impacts associated with trucks turning onto SR 37 are expected to be less-than-significant as sight lines are very good and right-turns can be made in the gaps created by the traffic signal to the east without impeding through traffic.

The project has no adverse impact on emergency access or alternative mode facilities.
We hope this information adequately addresses the likely impacts of the Novato Creek Dredging project.

Sincerely,

Dalene J. Whitlock, P.E., PTOE
Principal

DjW/zm/NOV088.L3.wpd
APPENDIX D: Dredged Materials Management Office (DMMO) Letter

March 13, 2007
DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

OCT 23 2006

Regulatory Branch

SUBJECT: File Number 2006-400144N: Novato Creek Maintenance Dredging; Sampling and Analysis Plan; DMMO Serial Number: 06-055

Mr. Reuel Brady
Marin County Flood Control and Water Conservation District
P.O. Box 4186
San Rafael, California 94913-4186

Dear Mr. Brady:

The U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, and the Corps of Engineers, have completed their review of the sediment sampling and analysis plan (SAP) for the approximately 90,000 cubic yards of sediments proposed to be dredged from Novato Creek, located in Novato, Marin County, California. The SAP is as presented in the report prepared by Weston Solutions entitled, “Novato Creek, Dredged Material Evaluation,” dated September 2006. The proposed placement of the material is at the Hamilton Wetland Restoration Project site.

The above inter-agency group has approved the adequacy of the sampling plan as characterized in the above report with the condition that Tables 5 and 6 be revised to include the same reporting limits as those included in the SAP presented to the US Fish and Wildlife Service. The updated Tables should be provided as an addendum to the SAP.

If you have any questions please call me at (415) 977-8020, or write to me at the above address and refer to the file number at the head of this letter.

Sincerely,

Robert J. Lawrence
Acting Chief, DMMO
Operations and Readiness Division

March 13, 2007
Copies Furnished:

Michael Burns, Kleinfelder, Inc., Santa Rosa, CA
Scott Bodensteiner, Weston Solutions, Tiburon, CA
US EPA, San Francisco, CA, Attn: Ross
CA BCDC, San Francisco, CA, Attn: Goeden
CA RWQCB, Oakland, CA, Attn: Christian
CA SLC, Sacramento, CA, Attn: Oetzel
CA F&G, Menlo Park, CA, Attn: Isaac
US NMFS, Santa Rosa, CA, Attn: Mulvey, Woodbury
US FWS, Sacramento, CA, Attn: Olah

March 13, 2007
APPENDIX E:

BIOLOGICAL ASSESSMENT
INTRODUCTION

The Marin County Flood Control and Water Conservation District (MCFC&WCD or District) is proposing to perform maintenance dredging of lower Novato Creek to maintain a 50-year storm frequency flood protection within the existing flood control project that was designed to pass 3,330 cubic feet per second (cfs). Sedimentation studies performed by professional geomorphologist Laurel Collins for the MCFC&WCD in 1998 indicate that approximately 70% of the sediment in the project reach is generated by channel bank and terrace erosion throughout the entire drainage system from the lowland valleys to the headwater tributaries. With the present scenario of increased urban runoff, sediment generation in the headwater reaches, channelization, obstructing railroad bridge, and loss of functional tidal creeks and marshland, the tidally influenced system is destined to aggrade. Essentially, this reach of Novato Creek has become the defacto sediment basin for this material. While the District continues to work with upstream property owners to find solutions to current erosion trends, we realize our efforts currently cannot keep up with the current amount of material deposited through this reach without maintenance dredging.

The District proposes to remove approximately 70,000 cubic yards of silt from the creek bed of Novato Creek and its tributaries along the project reach. The silt removal project will affect 5,630 linear feet (LF) of Novato Creek, 1,780 LF of Warner Creek and 680 LF of Arroyo Avichi Creek within the Novato Creek Watershed (see figure 1). This reach of Novato Creek and its tributaries is largely urbanized stream channels that were constructed under ACOE permit #16112N33 and dredged most recently in the summer of 2004 under permit #28601N. Land use along the upper reaches of the project varies from residential zones to retail/commercial areas until reaching the lower project limits to the east of Highway 101 and the Northwestern Railroad
trestle. From the railroad trestle downstream land use transitions into public open space (Deer Island Wetland Preserve) and flood control lands. There are multiple bridge crossings along the channels as well as various sizes and types of outfall structures.

This reach of Novato Creek, Warner Creek, and Arroyo Avichi are largely tidally influenced and elevation varies from sea level to +9 feet elevation at the upper reaches of Novato and Warner Creeks. Vegetation present in the project area indicative of wetland communities includes: *Scirpus, Typha, Grindelia, Atriplex and Distichlis* (see attached wetland delineation). Riparian habitats composed of *Salix, Populus* and *Rubus discolor* occur along much of the channel alignments. The vegetation within the creek channels and along the creek banks and the wetland communities along the edge of the creek channels and on sand bars and sediment deposits are relatively recent occurrences and represent a plant community that re-populates disturbed areas or areas of recent sediment deposition. Many of these wetland communities within the channel bottoms are expected to quickly re-occur after the dredging project is completed and new sediment deposition occurs.

**PROPOSED PROJECT DESCRIPTION**

The purpose of this project is to remove approximately 70,000 cubic yards of accumulated silt from the creek bed of Novato Creek and its tributaries along the project reach in the summer of 2008. The project reach consists of 5,630 linear feet of Novato Creek from Diablo Ave. to 500 feet downstream of the Northwestern Pacific Railroad Bridge, 1,780 linear feet of Warner Creek from Diablo Ave. to the confluence with Novato Creek, and 680 linear feet of Arroyo Avichi Creek from South Novato Blvd. to the confluence with Novato Creek. The project reach will be dewatered using three temporary earthen coffer dams installed at the project upper limit of Novato Creek downstream of Diablo Ave., Warner Creek immediately upstream of Diablo Ave., and at the downstream project limit of Novato creek approximately 500 feet downstream of the Railroad Bridge. Residual freshwater flows and periodic releases of water from Stafford Lake up stream of the project area will be collected and conveyed by existing drain lines to Baccaglio Basin in order to avoid the dewatered area.
Channel bottom width varies from 20 feet to 115 feet with up to 4 feet of accumulated sediment. Work will be performed using draglines, excavators, dozers, and dump trucks. The actual work will not impact the existing sanitary facilities that cross Novato Creek near the Novato Fire Station on Redwood Blvd and near the Novato Fair Shopping Center and the fiber optic that crosses near Redwood Blvd. Final grading work will be done with dozers and graders upstream of Redwood Hwy. All dredging will occur in the creek bed during the low flow period of July 1st to October 15th. Existing equipment access ramps located in the upper project limits of Novato and Warner Creek will be used to minimize impacts to riparian vegetation growing on the creek banks and terraces.

Some wetland vegetation (primarily cattails with some *Scirpus* or tules) will be removed during the silt removal; however, the cattails and tules are fast growing and expected to re-colonize the area in approximately 1-2 years.

In the past, all dredged sediment was used to raise the levees along Novato Creek. Currently, there is limited room to continue dredge disposal in this manner. Consequently, trucks will remove 87-to-100-percent of the dredged-sediment for deposition at the sites discussed in the 2008 Initial Study for this project.

The drier, coarser dredge material located in upstream areas can be transported within two weeks after the coffer dams are built and dewatering commences. The finer sediment material in the lower reaches will be wetter and thus will need a month to dry out before being removed and trucked to the disposal site. It is expected that truck transport will occur for two to two and a half months.

ENVIRONMENTAL SETTING

Vegetation

Vegetation along this reach of Novato, Warner, and Arroyo Avichi Creeks grades from brackish marsh along the lower southeastern reaches to freshwater riparian near the northwestern edge of the project site. Levees are dominated primarily by non-native annual grassland, including
Italian ryegrass (*Lolium mutiflorum*), wild radish (*Raphanus sativus*), black mustard (*Brassica nigra*), wild oats (*Avena fatua*), barley (*Hordeum murinum*), bristly ox-tongue (*Picris echioides*), curly dock (*Rumex crispus*), and fennel (*Foeniculum vulgare*). Brackish marsh vegetation is dominated by broad-leaved cattail (*Typha latifolia*), alkali bulrush (*Scripus robustus*), and gum plant (*Grindelia stricta var. angustifolia*). Other less prominent plant species include tule (*Scirpus acutus var. occidentalis*), and common pickleweed (*Salicornia virginica*), Freshwater riparian vegetation is dominated by Fremont cottonwood (*Populus fremontii ssp. Fremontii*), arroyo willow (*Salix lasioleois*), Himalayan blackberry (*Rubus discolor*), and bur-reed (*Sparganium eurycarpum*).

None of the riparian trees and shrubs growing along the banks of the creeks will be removed during the dredging. These areas will be flagged or fenced off prior to the beginning of the project.

In-stream or emergent wetland vegetation generally re-colonizes the area after the first year.

### Hydrology

The principal natural hydrological sources for the project site are precipitation, surface run-off, groundwater, seasonal water flow from off-site sources, and tidal action. Novato Creek and its tributaries begin in the hills west of the project site and flow southeast under Hwy. 101 and past the Northwestern Pacific Railroad tracks and out of the project site toward San Pablo Bay. Freshwater flows in the upper portion of the project site are from storm water runoff and seasonal releases from Stafford Lake located approximately 35 miles up the watershed. Tidal action influences the lower part of Novato Creek within the project site. Twice daily water enters the creek channel from San Pablo Bay, inundating creekside brackish marsh vegetation. The depth and duration of the inundation varies depending on tidal cycles.

The water source for the drainage channel along the proposed haul road appears to be drainage water from the surrounding grasslands. This water flows east to a larger drainage channel and then eventually out to the San Pablo Bay. The water source for the depression areas within the grasslands is storm water that, after a short while, percolates into the ground and off of the site.
The entire grassland area and associated surroundings was at one time part of the San Pablo baylands with heavy clay soils. Consequently, slight depression (6’’ or greater) in this area will fill with surface water for a short period of time and revert to more wetland type vegetation.

SENSITIVE SPECIES AND HABITATS

Plants
There are six rare plant species recorded within the Novato 7.5 minute U.S. Geologic Survey map as mapped by the California Natural Diversity Database (CNDDB, CDFG 2006):

- Bent-flowered fiddleneck (*Amsinckia lunaris*)
- Mt. Tamalpais Manzanita (*Arctotaphylos hookeri* ssp. *montana*)
- Point Reyes bird’s-beak (*Cordylanthus maritimus* ssp. *palustris*)
- Marin Western flax (*Hesperolinon congestum*)
- Baker’s navarretia (*Navarretia leucocephala* ssp. *Bakeri*)
- Mt. Tamalpais jewel-flower (*Streptanthus glandulosus* ssp. *Pulchellus*)

Five of these rare plants are known to occur in upland habitats not found along the reaches of the project creeks in the project site. The Point Reyes bird’s-beak typically occurs in salt marshes, a plant community found further downstream on Novato Creek. Please refer to Table 1 for more details on these species. Due to the fact that these plant community types are not found within the project site, no impacts to these species are anticipated.

Animals
Those special status species that may potentially exist within the project site are discussed below. All the special status species known to occur or have the potential of occurring in the project area (Novato, USGS 7.5 minute quad map) as mapped by the California Natural Diversity Database (CNDDB, CDFG 2006) are listed and summarized in Table 2.

The Tidewater Goby (*Eucyclobius newberryi*) inhabits brackish and freshwater lagoons with slow moving water and aquatic vegetation. This species was collected in 1945 at the Highway 101 crossing of Novato Creek (CDFG, 2006). However, the section of creek at Highway 37 was
sampled in October 1994 and no tidewater gobies were found (Leidy 2003), and now this species is believed to have been extirpated from Novato Creek. It is unlikely the tidewater goby occurs within the project area due to the channelization of this reach and urbanization of the surrounding area. This species was recently de-listed by the US Fish and Wildlife Service.

The clapper rail (Rallus longirostris obsoletus) occurs downstream of the project site with the highest numbers near the mouth of Novato Creek. The project area is contained within flood control levees and provides minimal to no Pacific cordgrass cover. The extent of dredging is limited to previously disturbed areas to avoid impacts to rails using the channel and adjacent marsh area upstream and downstream of Highway 37. The terminus of the dredging project is located 1.5 channel miles upstream of Highway 37, and the nearest recorded sighting of the clapper rail on Novato Creek is 0.8 miles upstream of Highway 37. Significant impacts to this sensitive bird species from the proposed project are not expected.

Novato Creek is located within the historic range of the California Red-Legged Frog (Rana aurora draytonii). Recent surveys to USFWS protocol were conducted in August 2003. Although suitable habitat occurs in Warner Creek, no California red-legged frogs were detected. The closest sighting of a California red-legged frog is in the headwaters of Novato Creek (approximately 8 miles upstream). The presence of non-native predators such as bullfrogs, mosquito fish, and crayfish and a lack of habitat (i.e., overhanging vegetation and pools greater than 3’ deep) may preclude the presence of California red-legged frogs in this reach.

Surveys of California Freshwater Shrimp (Syncaris pacificus) were conducted by Larry Serpa in 1997 on June 27 and July 4. No shrimp were found in Novato Creek (Novato Creek ADEIR, 1998, MCFC&WCD). No impacts to freshwater shrimp are anticipated.

There are two sensitive snail species known to occur in the region and in habitats similar to those within the project site: Tryonia imitator (California brackishwater snail) and Vespericola marinensis (Marin Hesperian snail). Both of these species of snail are species of some concern, but are not listed as endangered, threatened, or of concern to the CDFG or USFWS. Impacts, if any, to these species of snail are not expected to be significant.
There are four birds that could nest or forage in the project site, especially at the dredge disposal site: *Asio flammeus* (Short-eared owl), *Circus cyaneus* (Northern harrier), both of which may nest within the dredge disposal site, and *Accipiter Cooperii* (Cooper’s hawk) and *Accipiter striatus* (Sharp-shinned hawk) which may nest in trees along the dredge removal areas. Pre-construction surveys should be conducted within the dredge disposal site and along the dredge removal reaches supporting trees if the work is to be conducted during the breeding season for these birds (January – August). Should a nest be found and if it appears the construction activities are disturbing the birds and threatening the successful rearing and fledging of young birds, then the CDFG should be consulted to determine what further actions may be needed to protect the nests.

The Great blue heron (*Ardea herodias*) has been sighted feeding within the project site, there is one reported roosting site in the project area near Bell Marin Keys. The proposed project may have a temporary negative effect upon the feeding and habitats for this bird on-site. Although unlikely, the truck traffic to and from the dredge disposal site could disturb these sensitive birds while they are nesting. It is unlikely since the existing roosting site is located next to Bell Marin Keys Road and in an area with occupied buildings and structures. Should construction traffic and activities occur during the breeding season for these birds (March – September), the roosting site should be monitored by a qualified biologist. If it appears the construction activities are disturbing the birds and threatening the successful rearing and fledging of young birds, then the CDFG should be consulted to determine what further actions may be needed to protect the nests.

A small colony of Burrowing Owls (*Ahene cunicularia*) has been sighted approximately 1 mile south of Hamilton Air Force Base in 1984. Although this bird has not been sighted within the project site, suitable nesting habitat does occur in and around the proposed dredge disposal site. Pre-construction surveys should be conducted within the dredge disposal site and along the dredge removal reaches supporting trees if the work is to be conducted during the breeding season for these birds (January – August). If it appears the construction activities are disturbing the birds and threatening the successful rearing and fledging of young birds, then the CDFG should be consulted to determine what further actions may be needed to protect the nests.
The **White-tailed kite (Elanus leucurus)** has been sighted nesting just north of Novato in 1973. Although this bird has not been sighted within the project site, suitable nesting habitat does occur in and around the proposed dredge disposal site. The proposed project will not result in the removal of large woody trees and thus not threaten any potential nesting sites for this bird. However, pre-construction surveys should be conducted within the dredge disposal site and along the dredge removal reaches supporting trees if the work is to be conducted during the breeding season for these birds (January – August). Should a nest be found and if it appears the construction activities are disturbing the birds and threatening the successful rearing and fledging of young birds, then the CDFG should be consulted to determine what further actions may be needed to protect the nests.

The **Saltmarsh Common Yellowthroat (Geothlypis trichas sinuosa)** is known to occur east of the project site on the Petaluma River. Although this bird has not been sighted within the project site, suitable nesting habitat does occur in and around the proposed dredge disposal site. Pre-construction surveys should be conducted within the dredge disposal site and along the dredge removal reaches supporting trees if the work is to be conducted during the breeding season for these birds (January – August). If it appears the construction activities are disturbing the birds and threatening the successful rearing and fledging of young birds, then the CDFG should be consulted to determine what further actions may be needed to protect the nests.

The **California Black Rail (Laterallus jamaicensis coturniculus)** has been sighted and reported to occur on Novato Creek just south of the Highway 37 bridge in 1993. The extent of the proposed dredging is limited to previously disturbed areas to avoid impacts to rails using the channel and adjacent marsh areas downstream of Highway 37. The terminus of the dredging project is located 1.5 channel miles upstream of Highway 37, and the nearest recorded sighting of the black rail on Novato Creek is 0.2 miles downstream of Highway 37 or more than one and a half miles from the nearest proposed dredging location. Significant impacts to this sensitive bird species from the proposed project are not expected.
The San Pablo Bay Song Sparrow (*Melospiza melodia samuelis*) has been sighted and recorded recently in the Petaluma River marsh and in Novato in 1901. Although suitable habitat for this bird does occur within or in the immediate vicinity of the project site, the proposed dredging of the channels is not expected to have a significant or long term impact to these habitats.

The Salt-marsh Harvest Mouse (*Reithrodontomys raviventris*) is known to occur in the Petaluma River marsh and elsewhere in the marshes of San Pablo Bay. Although suitable habitat for this mouse may occur within or in the immediate vicinity of the project site, the proposed dredging of the channels is not expected to have a significant or long-term impact to these habitats.

Steelhead young of the year (Steelhead Trout *Oncorhynchus mykiss*) have been observed in Novato Creek in a few pools with overhanging vegetation that are at least 1-2 feet deep. Generally the project area has minimal spawning and rearing habitat, most of the substrate is dominated by sand and small gravel, and very little cobble and/or gravel is found within this reach. Most of the suitable spawning habitat for Steelhead is found upstream of the project area. Hardier fish species such as the stickleback, roach and sculpin will probably re-colonize the area once the dredging is completed. Juvenile Sacramento sucker also use this area and will probably re-colonize the area a year or two after the dredging project. These species currently utilize the project area.

Temporary impacts to Steelhead associated with the dredging project include the following:

- There may be an indirect loss of Steelhead Trout rearing habitat due to temporary loss of instream vegetation (increased solar radiation and loss of terrestrial insect drop) and homogenization of the channel bottom.
- Increased turbidity from the project may impact Steelhead in lower Novato Creek.
Mitigation measures to address these impacts include the following:

- Michael Fawcett, a qualified fisheries biologist with NMFS Steelhead permits, will be retained to recover stranded fish during the dewatering process. Steelhead netted from the project area will be released upstream of the project area in suitable habitat.

- Best Management Practices (BMPs) will be used to control siltation during dredging and all disturbed areas (i.e., access ramps and spoils areas) will be seeded with native grasses. Dredging will not begin until the channel is dewatered to reduce turbidity.

- Riparian trees and shrubs growing along the banks of Novato, Warner, and Arroyo Avichi Creeks will be protected during the dredging project. These areas will be flagged or fenced off prior to the beginning of the dredging project. The trees will be limbed up as needed to provide clearance for heavy equipment moving through the channel.

- Instream wetland vegetation generally re-colonizes the area after the first year of dredging.

- Dewatering will be conducted with screens on the intake valves and in the sumps. Michael Fawcett will move any stranded Steelhead to upstream habitat on Novato Creek and Warner Creek respectively. No Steelhead are known to occur in Arroyo Avichi due to the lack of pools and water. Dewatering will be conducted in a manner to reduce turbidity downstream of the project area. Water is being pumped into a wetland basin (Baccaglio Basin).

- The creeks will be protected from equipment oil, grease, and any other chemical discharges associated with equipment maintenance through the use of BMPs (i.e., by requiring designated bermed areas for equipment maintenance).

- To assure that the project will not disturb any nesting sites of sensitive bird species, a pre-construction survey should be conducted. If nests are found then the identified nests should be monitored by a qualified biologist. If it appears that the construction activities are a threat to the successful rearing or fledging of the young in the nest, then the CDFG should be consulted to determine what mitigation measures should be applied. The responsibility of the pre-construction surveys and monitoring of the dredge disposal site may be negotiated between the property owner and the County.

CONCLUSIONS

The dredging project will have no significant impact on Steelhead because dredging will occur during low flow months; BMPs for pollution prevention will be used and a certified fisheries biologist will be on-site to rescue any stranded Steelhead. Erosion control measures will be implemented on all disturbed areas once dredging is complete.

No California Red-legged frogs, California Freshwater Shrimp or any other sensitive species were found in the project area or immediately upstream.

Prepared by: Ric Villasenor, Senior Biologist
APPENDIX F:

SITE PHOTOGRAPHS
Fig. F-1
View looking north at the lower end of Novato Creek across the RR trestle.

Fig. F-2
View looking downstream toward the end of the project reach in Novato Creek.
Fig. F-3
View looking upstream of Novato Creek near the confluence of Warner Creek.

Fig. F-4
View looking at the confluence of Novato (foreground) and Warner (background) Creeks.

Fig. F-5
View looking downstream at the upper reach of Warner Creek.
Fig. F-6

View of the confluence of Arroyo Avichi (left) and Novato (foreground) Creeks
Fig. F-7
View looking upstream from the confluence of Arroyo Avichi and Novato Creeks.

Fig. F-8
View looking downstream near the upper reaches of Arroyo Avichi.
Fig. F-9
View looking downstream, at Novato Creek To Rowland Blvd overcrossing and Railroad bridge beyond.

Fig F-10
View of Heavy Vegetation Growth in Novato Creek.
Fig F-11: View of Marsh Road Site looking east, (Highway 37 is on right)

Fig F-12: View of Binford Road looking east to Gnoss Field
Fig F-13: View of Gnows Field Deposition Site A

Fig F-14: View of Gnows Field Deposition Site A
Fig F-15: View of Gnoss Field Deposition Site B (View looking Northeast)

Fig F-16: View of Gnoss Field Levees (looking southwest)
Fig F-17: View of Highway 101 on-ramp leaving Redwood Landfill (southbound)

Fig F-18: View of Carneros River Ranch, North Central Field dredge material deposition site
APPENDIX G:

MARIN COUNTY PUBLIC WORKS LETTER CONCERNING
MARSH ROAD SITE USAGE
October 3, 2007

Scott Ackert, Senior Environmental Planner
Kleinfelder West, Inc.
2240 Northpoint Parkway
Santa Rosa, CA 95407-5009

Re: Novato Creek Maintenance Dredge Project

Dear Mr. Ackert:

A Storm Water Pollution Prevention Plan is not considered necessary for Marsh Road.

Please be advised that our Marsh Road site has been used for temporary storage of dredge spoils in the past. This site has been used to dry wet material prior to placement on existing levee systems. It is our intention for the 2008 Novato Creek Maintenance Dredge Episode to temporary store dredge spoils until permanent disposal is possible. The footprint for the site is approximately 1900 square yards which is 40% of an acre. Our construction plans are still in development but for environmental purposes, please include this correspondence that the Marsh Road storage site is less than one acre and that appropriate mitigation like Best Management Practices will be required for the actual work.

Very truly yours,

Reuel Brady
Associate Civil Engineer

c: Tracy Clay
   Liz Lewis
   Joanna Charlton