Upper Sand Creek Basin
Contra Costa County Flood Control and Water Conservation District
Work Plan

INTRODUCTION

The Contra Costa County Flood Control and Water Conservation District (District) proposes the construction of the Upper Sand Creek Basin Project (USCB or Project), in eastern Contra Costa County, for funding under the California Department of Water Resources' (DWR) Integrated Regional Water Management (IRWM) Grant Program for Stormwater Flood Management grants, funded under Proposition 1E.

The proposed Project will consist of a 900 acre-foot capacity stormwater detention basin to provide regional flood protection to areas in the Cities of Antioch, Brentwood, and Oakley. Figure 1 shows the location of the Project within the region. Figure 2 shows the existing site and surrounding facilities. Page 15 of the attached 90 percent plans shows an overview of the Project. USCB will provide stormwater attenuation, stormwater infiltration, trash capture, and environmental enhancement of 3,500 linear feet of Sand Creek. The Project will also create seasonal wetlands and riparian habitat fed by urban runoff. Construction of USCB will allow the future development of the site as a regional sports park for the City of Antioch.

Goals and Objectives

The **primarily objective of USCB is flood control** along Sand Creek and the lower reach of Marsh Creek between Sand Creek and the Marsh Creek outfall into the Sacramento-San Joaquin River. Secondary objectives of the Project include:

- Stormwater attenuation
- Stormwater infiltration
- Water quality improvement in Sand Creek, Marsh Creek and the Sacramento-San Joaquin River Delta
- Trash capture
- Environmental enhancement
- Habitat restoration
- Open space preservation

The **regional goal for USCB is to significantly reduce the peak flow contribution** from the upper Sand Creek watershed into Marsh Creek from 2870 to 134 cubic feet per second (cfs) for a 100-year storm event.

A "Functionally Equivalent" Integrated Regional Water Management Plan (IRWMP) was developed for the East Contra Costa County Region and adopted in July of 2005. USCB has been identified as a high-priority project for short-term implementation in the IRWMP. Objectives of the IRWMP that USCB fulfills are:

- Water Quality: Maximize Public Health Protection
- Ecosystem Restoration/Preservation: Minimize Environmental Impacts
- Ecosystem Restoration/Preservation: Maximize Environmental Benefits
- Flood Control: Protect Against Flooding

- Implementability: Maximize Implementability

Purpose and Need

As described above, successful implementation of USCB will further important IRWMP objectives. In addition, it is critical that this project be implemented to avoid a series of negative impacts associated with non-implementation, which include:

- Delta Water Supply Impacts: If the Project does not move forward, urban runoff from areas in east Contra Costa County will continue to flow to the Delta, and water quality there will be continue to be impacted. Water quality impacts to Delta water supplies could have ramifications statewide.
- Local Flood Damages: If the Project does not proceed, flood-related damages will persist in Brentwood and Oakley.
- Ecosystem Degradation and Fragmentation: If the Project is not implemented, the ecosystem along Sand Creek will continue to be unsupportive of native species and lack critical habitats.

Project List and Completed Work

USCB consists of a single project owned and operated by the District. As previously noted, the proposed Project will consist of a stormwater detention basin that will provide local and regional flood protection to eastern Contra Costa County. USCB will also provide stormwater attenuation, stormwater infiltration, trash capture, and environmental enhancement of Sand Creek. Status of the Project is shown in following table.

Task No.	Description	Status
1	Project Administration	Initiated upon award of grant
2	Land Purchase/Easements	Almost Complete

3	Planning/Design/ Engineering/Environmental Documentation	• Planning: Complete
		• Design Engineering: 90 Percent Complete
		• Environmental Documentation
		  ○ CEQA: Complete, Approved by the Board of Supervisors November 2010
		  ○ U.S. Army Corps of Engineers 404 Permit: Application Submitted and Under Review
		  ○ Habitat Conservation Plan: Restoration Plan Complete and Submitted
		  ○ Department of Fish and Game Lake and Streambed Alteration Agreement/Regional Water Quality Control Board Section 401 Water Quality Certification: Applications to be Submitted by June 2011

4	Construction/ Implementation	• Advertisement Scheduled for December, 2011 • Construction Scheduled for May-October, 2012

Task No.	Description	Status
5	Environmental Compliance/Mitigation/ Enhancement	• Restoration Plan Complete and Submitted • Mitigation/Enhancement Scheduled for November, 2012 to March, 2013
6	Construction Administration	Concurrent with Construction
7	Other Items (Including Legal, Permitting, and Licenses)	As Necessary
8	Construction /Implementation Contingency	Concurrent with Construction

Integrated Elements of Project

USCB is a single project and is capable of providing the benefits claimed in the absence of other projects; as a result, implementation of the tasks described in this Attachment will yield full benefits, and the schedule of proposed Project are not dependent on any other project. USCB may be linked with nearby large-scale grading projects such as the Highway 4 Bypass Sand Creek Road Interchange or the e-BART Antioch Station. Coordination of USCB with other projects needing fill material will reduce the costs and truck traffic associated the construction of both projects.

Existing Data and Studies

Planning, permitting, and design efforts on USCB are nearing completion. The site has been studied extensively for environmental, historical, geological and geotechnical purposes. The following reports have been prepared as part of the Project:

- Cardno Entrix. March 2011. *Upper Sand Creek Basin Restoration, Maintenance, and Monitoring Plan*. Sacramento, CA.
- GEI Consultants. May 2009. *Upper Sand Creek Detention Basin, Draft Design Report*. Oakland, CA. This Geological and Geotechnical Study report was prepared for submittal to the DWR, Division of Safety of Dams. The report is focused on the geological and geotechnical aspects of the site, especially as they affect dam design. This report is included as part of the grant application.
- Fugro West, Inc. March 2003. *Geotechnical Investigation-Draft Submittal, Lower Sand Creek Detention Basin, Old Sand Creek Road, Brentwood, California*. Oakland, CA.
- Fugro West, Inc. June 2004. *Geotechnical Study, Upper Sand Creek Detention Basin, Old Sand Creek Road, Antioch, California*. Oakland, CA.
- Nomad Ecology. May 2009a. *Biological Resources Assessment Report for the Upper Sand Creek Detention Basin, Contra Costa County, California*. Martinez, CA.
- Nomad Ecology. May 2009b. *Wetland Delineation and Preliminary Jurisdiction Determination Report for the Upper Sand Creek Detention Basin, Contra Costa County, CA*. Martinez, CA.
- Subsurface Consultants, Inc. (SCI). *2002. Preliminary Soil Characterization Study, Lower Sand Creek Basin, Antioch, CA.* Oakland, CA.
- Subsurface Consultants, Inc. (SCI). 2000. *Preliminary Soil Characterization Study, APN# 057-050-010 & 057-050-012, Upper Sand Creek Basin, Antioch, CA*. Oakland, CA.
- William Self Associates (WSA). August 2010. *CEQA Evaluation Addendum to Final Archaeological Testing and Data Recovery Report for the Upper Sand Creek Basin*

Expansion Project. The Sullenger Ranch Complex (CA-CCO-681/H), Antioch, Contra Costa County, CA. Orinda, CA.
- William Self Associates (WSA). March 2009. *Archaeological Testing and Data Recovery at Sullenger Ranch (CA-CCO-681/H), Antioch, Contra Costa County, CA*. Orinda, CA.
- William Self Associates (WSA). August 2010. *CEQA Evaluation Addendum to Final Archaeological Testing and Data Recovery Report for the Upper Sand Creek Basin Expansion Project. The Sullenger Ranch Complex (CA-CCO-681/H), Antioch, Contra Costa County, CA*. Orinda, CA.
- William Self Associates (WSA). March 2009. *Archaeological Testing and Data Recovery at Sullenger Ranch (CA-CCO-681/H), Antioch, Contra Costa County, CA*. Orinda, CA.
- William Self Associates (WSA). August 2010. *CEQA Evaluation Addendum to Final Archaeological Testing and Data Recovery Report for the Upper Sand Creek Basin Expansion Project. The Sullenger Ranch Complex (CA-CCO-681/H), Antioch, Contra Costa County, CA*. Orinda, CA.

Project Maps

Figure 1 shows the location of the Project within the region. Figure 2 shows the existing site and surrounding facilities. Figure 3 shows the Marsh Creek Watershed and the District facilities found in it. 90 percent design drawings including site plans are also included as part of the grant application. Page 15 of the attached 90 percent plans shows an overview of the Project.

Project Specifics

Sand Creek is the largest tributary in the lower Marsh Creek Watershed as it contributes approximately 15 square miles of drainage to Marsh Creek. Analyses of the Sand Creek drainage area indicate that 900-acre feet of flood storage capacity is ultimately required at the USCB site. Sand Creek will convey local stormwater runoff and stormwater generated in the watershed to the basin where it will be stored and released slowly through the basin outlet, reducing peak flows downstream and reducing the potential for flooding downstream properties. Secondary purposes of the Project include habitat restoration and water quality enhancements. USCB is part of a master plan for flood protection in the greater Marsh Creek watershed (as adopted by the Contra Costa County Board of Supervisors).

The construction of USCB will expand an existing interim flood control basin from 41-acres in area to a final constructed area of approximately 62 acres, increasing its flood storage capacity of the basin from 123 acre-feet to 900-acre feet with a 35-foot maximum depth. The expansion will be constructed by excavating the existing interim basin floor to create a deeper basin where water will be held and slowly released downstream during major storm events. Excavation depths will range from zero to approximately 37 feet below existing grade. Soil removed from the excavation will be used to construct an earthen dam on the northeast side of the basin to impound floodwaters from major storm events. Any remaining soil will be hauled off-site, stockpiled in the basin, or placed on adjacent parcel(s) for future use by interested parties.

The construction of USCB will incorporate the Sand Creek channel, creating an "in-line" basin behind the dam. Approximately 3,876 feet of Sand Creek will be excavated up to 10 feet below its current elevation and approximately 3,612 feet will be reconstructed with a fluvial geomorphic (natural creek) design to restore and enhance Sand Creek within the basin. The remaining 264 feet will be re-created on-site as wetland acreage. For maintenance access, the

basin will have a continuous perimeter service road as well as ramps to the basin bottom and drainage structures.

USCB will be a normally dry reservoir (except for low-flows) that will attenuate peak runoff by containing stormwater flows up to the 100-year storm event. During typical rains, the creek and local stormwater runoff flows will be carried in a low-flow channel and will discharge through the primary outlet pipe under the dam. This primary outlet will release a maximum peak flow of 134 cfs into the creek below the dam. This reduction will help reduce the overall flow from Sand Creek into Marsh Creek to 400 cfs. Creek flows that exceed the inlet-controlled discharge capacity of the outlet works from more severe storms would pond in the basin, causing the basin stage to rise. After the peak of the storm has passed, and once the creek flow becomes smaller than the outlet discharge, the water stored in the basin would be passively released back into Sand Creek. For storms greater than the 100-year storm event, flood flows will pass over the emergency spillway and follow a controlled route to enter the creek downstream of the basin.

USCB will be the first of two basins on Sand Creek. Lower Sand Creek Basin, which will be built downstream in the City of Brentwood, will be built after USCB has been completed. Operation of USCB is not dependent on construction Lower Sand Creek Basin.

The USCB project also includes trash capture for a major storm drain entering the basin from developed areas. This will improve water quality by capturing trash before it enters Sand Creek.

Project Timing and Phasing
USCB is a single project and will operate on a standalone basis. The Project will be fully functional without implementation of subsequent projects. Funding provided by the grant will be used for the construction phase of the Project.

PROPOSED WORK/TASKS

Task 1 – Project Administrative Tasks

Project administration tasks will include overall project administration and management, development of a Labor Compliance Program, and project reporting (including reporting on project monitoring and assessment).

Current Status:
No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:
Project administration tasks are summarized in the following table.

Task	Description	Deliverables
1. Administration	This task involves general project administration including coordination with project partners and preparation of project invoices. In addition, this task includes development of a Labor Compliance Plan and preparation and submittal of the quarterly, annual, and final reports required by the Grant Agreement.	Invoices Labor Compliance Program Quarterly, Annual and Final Reports

Task 2 – Land Purchase/Easement Tasks
This task will include acquisition of easements for slopes and for a PG&E electrical distribution line that will be relocated.

Current Status:
Acquisition of easements from adjacent properties is nearing completion. Property acquisition from one adjacent landowner is nearing completion and is expected to be complete by June 1, 2011. Order of possession for condemnation of property from a second adjacent landowner was completed on February 11, 2011. Negotiations with PG&E are ongoing.

Proposed Work Tasks & Deliverables:
Easement-related work tasks are summarized in the following table.

Task	Description	Deliverables
2. Land Purchase/ Easement	Acquisition of property and easements for project	Fee title and easements for property

Task 3 – Planning/Design/Environmental Documentation Tasks
This task involves completing planning and design work, and securing all necessary approvals.

Current Status:
Planning and Design Status. Design is nearly complete. Bid documents will prepared closer to the expected 2012 construction advertisement.

Environmental Documentation Status. CEQA is complete and was approved by the Contra Costa County Board of Supervisors November 3, 2010.

Permitting Status. Several permits have been identified for this project. The current status and expected approval dates for each applicable permit are presented in the following table.

Permit	Status
ACOE Section 404 Permit	Permit application submitted August 24, 2010. Approval is expected in May of 2011.
RWQCB Section 401 Water Quality Certification	Certification submitted December 15, 2010. Approval is expected May of 2011.
SWRCB NPDES Permit for Storm Water Discharges Associated with Construction Activity	Application to be submitted during award stage of construction contract, March 2012. Approval is expected April 1, 2012.
DFG Lake and Streambed Alteration Agreement	Streambed Alteration Agreement submittal scheduled for May 2011. Approval is expected August, 2011.
DSOD Approval of Plans	DSOD has reviewed 90% plans and has provided comments. Approval is expected in May of 2011.

Proposed Work Tasks & Deliverables:
Proposed planning, design, environmental documentation, and permitting work tasks are summarized below.

Task	Description	Deliverables
3.1 Planning	This task includes verification of the conceptual basin design and operation.	Hydrology and Hydraulic Report (to be finalized by June, 2011)
3.2 Design	This task involves preparation of a preliminary design report including geotechnical investigation, testing, and analyses; 30%, 60%, and 90% design stages; and complete bid documents. It also includes Division of Safety of Dams approval of plans.	Plans and specifications (to be completed by June, 2011)
3.3 Environmental Documentation	This task includes the CEQA Initial Study/Mitigated Negative Declaration (finalized November 3, 2010) and the Habitat Conservation Plan/Natural Community Conservation Plan coordination (project presented to HCP Board September 22, 2010).	CEQA Documentation
3.4 Permitting	This task involves securing approvals for the following permits: • ACOE Section 404 Permit (application submitted August 24, 2010) • RWQCB Section 401 Water Quality Certification (application submitted December 15, 2010) • SWRCB NPDES General Permit for Storm Water Discharges Associated with Construction Activity (application submittal pending until project awarded and Stormwater Pollution Prevention Plan (SWPPP) has been received, April 1, 2012) • DFG Lake and Streambed Alteration Agreement (application submittal pending; anticipate by May, 2011)	Permit Approvals

Task 4 – Construction/Implementation Tasks
Construction tasks for this project are described below.

Current Status:
No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:
Proposed construction-related tasks are summarized in the following table.

Task	Description	Deliverables
4.1 Construction Contracting	This task includes advertising for bids, holding a pre-bid meeting, awarding the construction contract, and issuing a notice to proceed.	Bid Advertisement Pre-bid Meeting Contract Award Notice to Proceed

Task	Description	Deliverables
4.2 Mobilization and Sitework	This task includes traffic control, mobilization, clearing and grubbing, excavation safety plan development, construction area signs, storm water pollution prevention plan development, and control of water.	Completed sitework
4.3 Construction	This task includes physical construction tasks including erosion control, basin excavation, dam embankment overexcavation, foundation preparation, channel excavation, basin inlet structure, primary spillway trash rack, headwall and sluice gate, and perimeter road and fence.	Construction contract Completed facility

Task 5 – Environmental Compliance/Mitigation/Enhancement Tasks
This task includes all environmental mitigation needed to offset potential impacts of project implementation.

Current Status:
No work has been completed on this task to-date. A restoration plan for this task has been prepared.

Proposed Work Tasks & Deliverables:
Environmental mitigation work tasks are summarized in the following table.

Task	Description	Deliverables
5. Environmental Mitigation/ Enhancement	This task includes mobilization and site preparation for restoration, restoration grading and planting, demobilization, and site monitoring.	Restoration construction contract Completed restoration Monitoring reports

Task 6 – Construction Administration Tasks
This task will includes all construction administration activities, including advertisement for bids, bidding, contract award, insurance confirmation and tracking, submittal review and tracking, invoice review and payment, schedule maintenance, and contract closeout.

Current Status:
No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:
Construction administration tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
6. Construction Administration	This task includes resident engineering, consultant review of construction activities, and construction materials testing.	Resident Engineer hired Inspection reports Testing reports

Task 7 – Other Tasks
No other tasks are anticipated for this project; however, this task may be used for miscellaneous items or issues as they arise.

Additional Project Information
Additional detail about the project is provided below:

Coordination with Partner Agencies:
The District has coordinated with the City of Antioch on property acquisition efforts for adjacent parcels. The basin has been designed to allow future use by the City as a sports park. The basin restoration area design has been presented to the Habitat Conservation Plan board for concurrence.

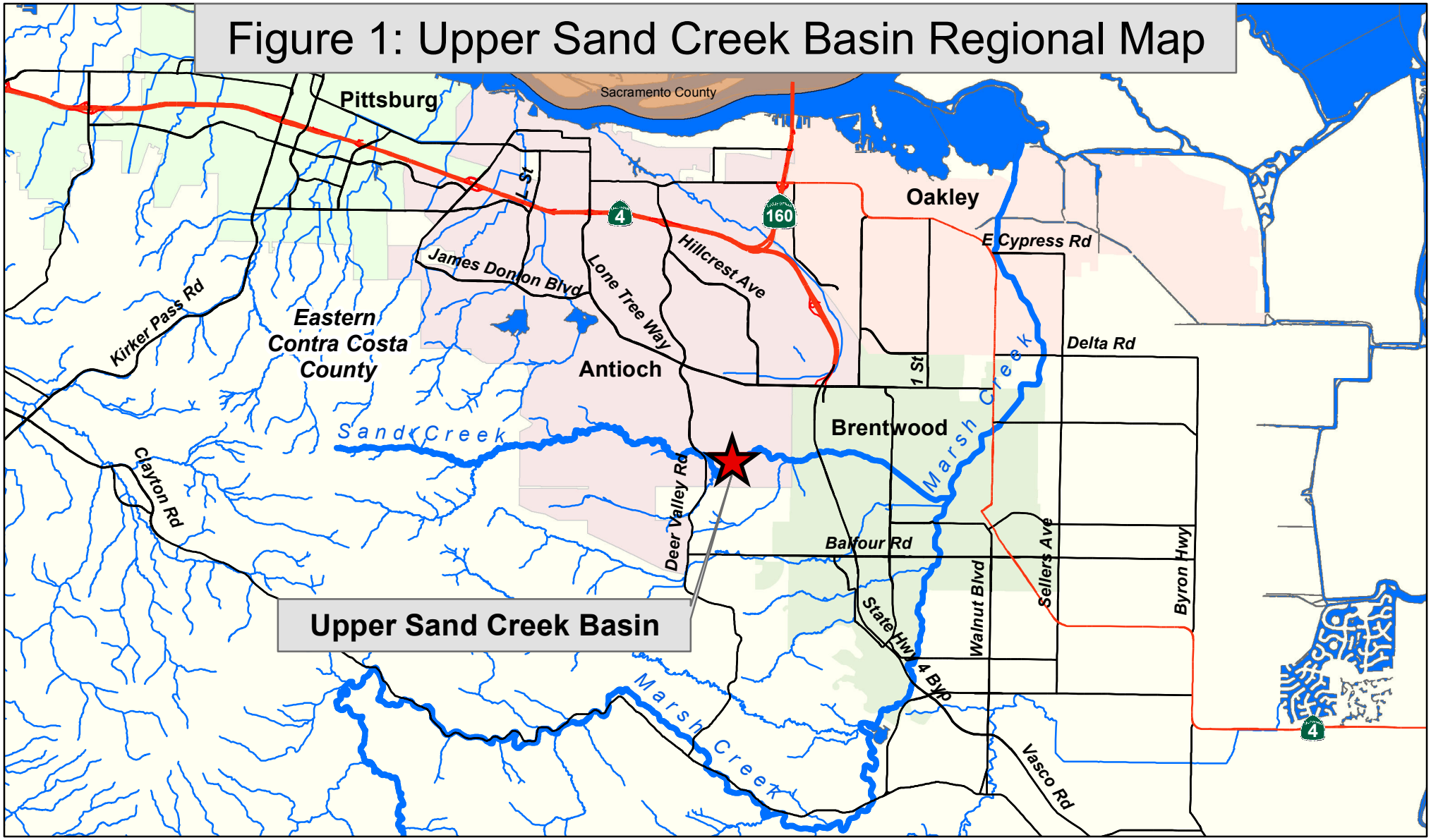
Standards that Will Be Used in Implementation:
USCB will be built to Contra Costa County specifications and to Division of Safety of Dams standards. Adherence to these specifications and standards will be monitored by the Resident Engineer.

Performance Measures and Monitoring Plans:
Project monitoring will be conducted to assess and evaluate project performance. Specifically, placed fill and facility subgrades will tested to ensure that they are compacted to level specified. Concrete used for facility hydraulic structures will be destructively tested to verify conformance with Project specifications. The dam structure incorporates settlement monuments so that its settlement can be monitored. Restoration planting will be periodically monitored to ensure the success of the plantings, and plantings that do not survive will be replanted. Additional information is provided in Attachment 6, Monitoring, Assessment, and Performance Measures.

Merits of Materials and Computational Methods:
The dam constructed for USCB will use primarily material excavated from basin. Soil material not used in the dam will be used for fill at other nearby sites such as the Highway 4 Bypass, Sand Creek Road Interchange and the e-BART Antioch Station.

Deliverables to DWR:
As required, the grant recipient will submit quarterly and final reports to DWR. The District is currently submitting similar quarterly report to DWR for the Local Levee Evaluation program in a different watershed.

Figure 1: Upper Sand Creek Basin Regional Map



N

0 1 2 4 6 8 Miles

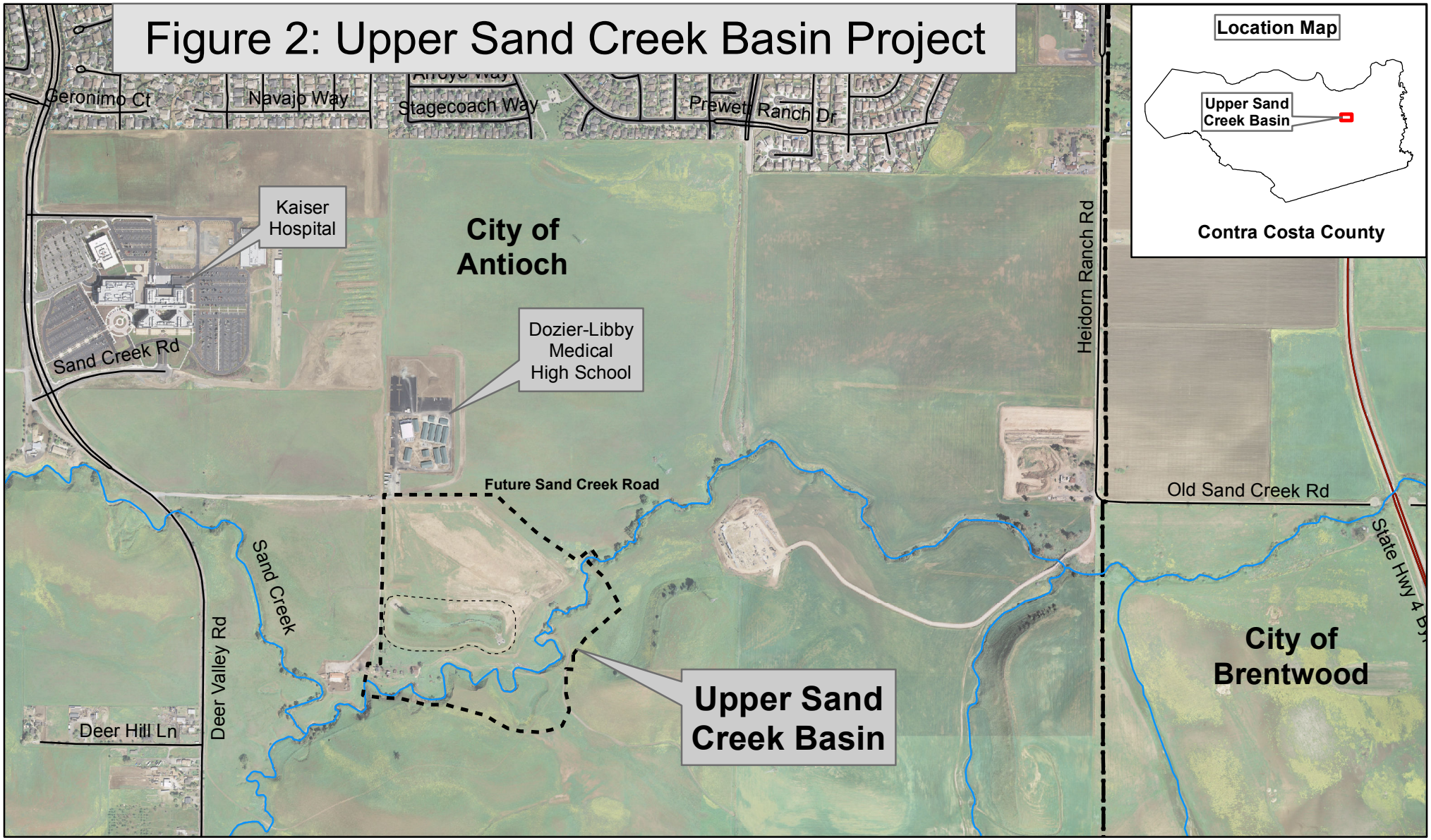
Major Roads

Creeks and Drainages

Contra Costa County Flood Control & Water Conservation District

G:\fldctl\GIS\UpperSandCreek\Prop 1E Grant Application\Figure1RegionalMap.mxd

Figure 2: Upper Sand Creek Basin Project



N

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,000 feet

Aerial photo taken March/April 2008

City Limit Boundaries

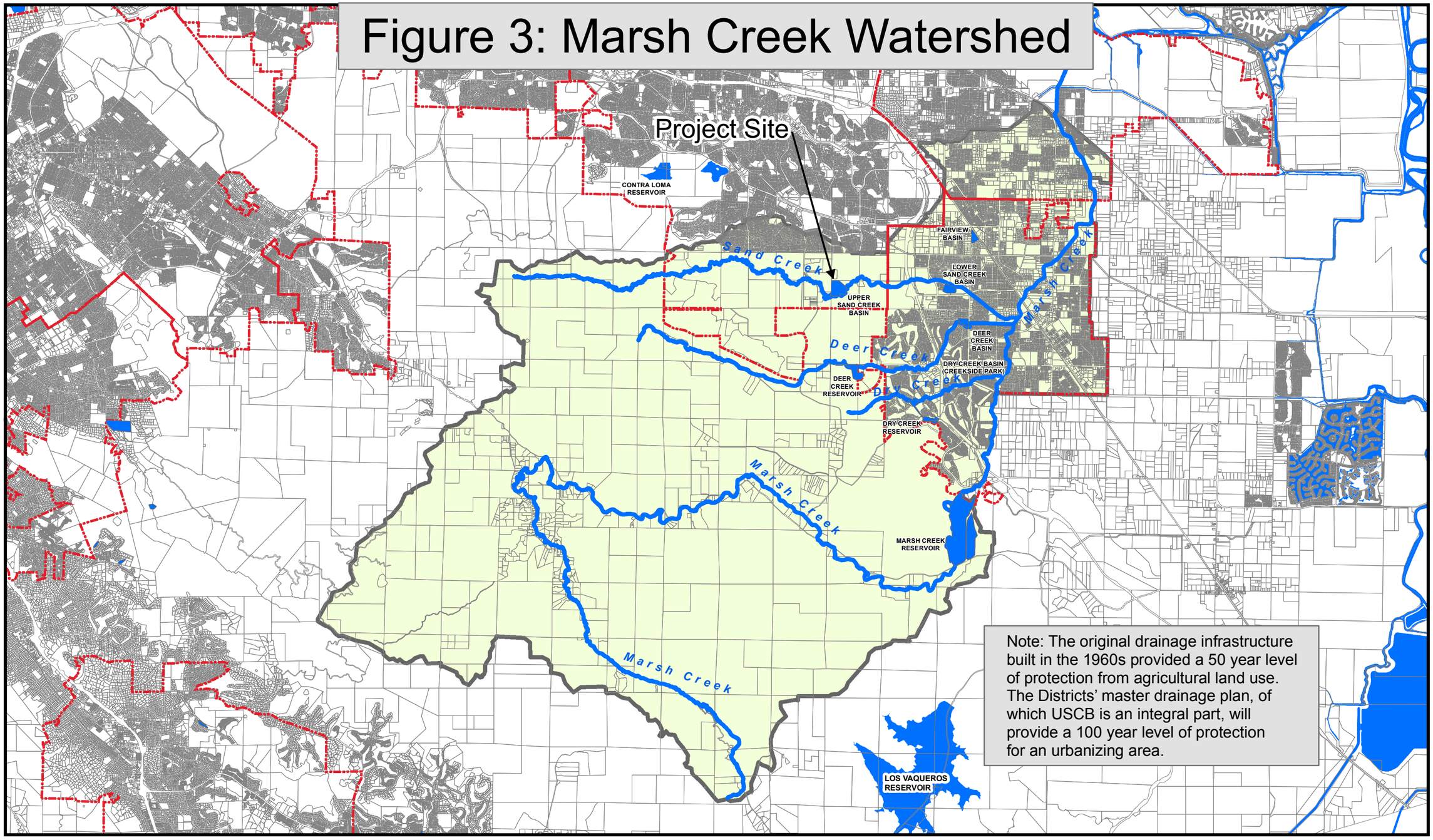
Creek

Existing Interim Basin

Proposed Basin Expansion

Contra Costa County Flood Control & Water Conservation District

Figure 3: Marsh Creek Watershed



Note: The original drainage infrastructure built in the 1960s provided a 50 year level of protection from agricultural land use. The Districts' master drainage plan, of which USCB is an integral part, will provide a 100 year level of protection for an urbanizing area.

N

0 4,500 9,000 18,000 27,000 36,000 Feet

- Watershed Boundary
- Major Creeks
- City Limit Boundary Lines
- Existing Detention Basins

Contra Costa County Flood Control & Water Conservation District

G:\fldctl\GIS\UpperSandCreek\Prop 1E Grant Application\Figure3MarshCreekWatershed.mxd