APPENDIX A.3

Hydropower Team Trip Report

(June 18-20, 2003)

UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION - PHASE 1

HYDROPOWER ANALYSIS TRIP REPORT - SITE VISITS TO RETAINED SITES

June 18 – 20, 2003

INTRODUCTION

This field trip report was prepared to document on-site data collection activities in support of an appraisal-level hydropower evaluation of surface storage options under consideration in the Phase 1 Upper San Joaquin River Basin Storage Investigation. As part of Task 1, Data Collection, field trips were made to three potential Temperance Flat dam locations on the San Joaquin River at river mile (RM) 274, RM 279, RM 286; and at two potential dam sites for off-steam storage reservoirs at Fine Gold Creek and Yokohl Creek. Field trips were also made to the Pacific Gas and Electric (PG&E) and Southern California Edison (SCE) hydroelectric facilities likely to be impacted by dams at RM 274, RM 279 and RM 286. The PG&E facilities included Wishon Powerhouse, Kerckhoff Dam, Kerckhoff No: 1 Powerhouse and Kerckhoff No: 2 Powerhouse. The SCE facilities included Big Creek No: 4 Powerhouse, Redinger Dam and Big Creek No: 3 Powerhouse. The PG&E and SCE facilities are all located on the San Joaquin River.

Potential dam locations and existing PG&E and SCE facilities were visited as follows:

Wednesday, June 18, 2003:	RM 286, Big Creek No: 4 Powerhouse, Redinger Dam, Big Creek No: 3 Powerhouse, and Fine Gold Creek.
Thursday, June 19, 2003:	Kerckhoff Dam, Wishon Powerhouse, Kerckhoff No: 1 Powerhouse, Kerckhoff No: 2 Powerhouse, and Yokohl Creek.
Friday, June 20, 2003:	Millerton Lake, RM 274, Fine Gold, and RM 279.

The core field trip team consisted of the following MWH members of staff:

Foster Pelton, Civil Engineer

James M. Herbert, Engineering Geologist

Jill N. Miller, Civil Engineer

The field trip on Wednesday, June 18 was made in conjunction with the MWH team of environmental specialists. On Thursday, June 19, a representative of PG&E accompanied the core field trip team. On Friday, June 20, sites were viewed by boat on Lake Millerton where the core field trip team was part of a larger Bureau of Reclamation and MWH group.

The field trip team stayed each night in the town of Clovis just northeast of Fresno. The team assembled in Clovis on the evening of Tuesday, June 17.

Details of the field trips are given below for each day. Photographs are given in the Attachment in the order the sites were visited.

FIELD TRIP – WEDNESDAY, JUNE 18

The route to the RM 286 Dam Location from Clovis was northeast on Route 168 to the town of Prater. About a mile after Prater, a left turn was made onto Auberry Road and this was followed to the town of Auberry. From Auberry, the group continued north on Powerhouse Road and then west on Smalley Road to a viewpoint of the RM 286 dam location. Arrangements had been made by the Bureau of Reclamation for the gates on the final section of access to the viewpoint to be unlocked.

RM 286 Dam Location

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Big Creek No: 4 Powerhouse

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Redinger Lake Dam

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Big Creek No: 3 Powerhouse

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Fine Gold Creek

The Fine Gold Creek area was accessed by road from Chawanakee through North Fork and then south on North Fork Road. The general reservoir area was viewed as well as the Fine Gold Creek damsite location.

FIELD TRIP – THURSDAY, JUNE 19

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Kerckhoff Dam

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Wishon Powerhouse

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Kerckhoff No: 1 Powerhouse

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Kerckhoff No: 2 Powerhouse

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

Yokohl Creek Site

This section of the report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

FIELD TRIP – FRIDAY, JUNE 20

Millerton Lake Tour

The boat tour began at 10:00 am and Friant Dam was viewed from the upstream side. Various aspects of raising Friant Dam were pointed out. Following this, the boat proceeded to the locations of:

- RM 274 Dam Location;
- RM 279 Dam Location; and
- Fine Gold Dam Location.

At the RM 274, RM 279 and Fine Gold Creek dam sites, the proximity of reservoirs downstream is such that powerhouses for each of these sites will be at or close to the dams themselves and not at remote locations. Penstocks would likely be through the dam structures or abutments and would be relatively short.

Power transmission lines dedicated to the projects would be required from the powerhouses to suitable interconnection points on the power grid system.

Attachments

Field Trip Photos

A. -

B. -

C. -

D. -

E. Fine Gold Creek

F. -

G. -

H. -

I. -

J. -

K. Millerton Lake

E – Fine Gold Dam ~01.jpg

6/18/2003

View from local road

E – Fine Gold Creek. Downstream.jpg

6/18/2003

E – Fine Gold Creek Upstream.jpg

06/18/2003

E – Fine Gold Dam ~02.jpg

6/18/2003

View from local road

K – Millerton Lake ~01.jpg

6/19/2003

View from Local Road over looking Fine Gold site

K – Millerton Lake ~01.jpg

6/19/2003

View from local road overlooking Fine Gold site

APPENDIX B

Environmental Field Trip Report

Fine Gold Reservoir

ENVIRONMENTAL FIELD TRIP REPORT. FINE GOLD RESERVOIR

INTRODUCTION

A team of environmental specialists completed an initial field trip to the Fine Gold Reservoir site on May 29, 2002. Field visitation was the first task in the environmental study of several potential surface storage options identified for initial review during the Upper San Joaquin River Basin Storage Investigation. For initial consideration, the environmental review focused mainly on construction and potential upstream impacts associated with surface storage sites. The site visit provided an opportunity to conduct preliminary reconnaissance of existing resources at the site for the following resource areas: terrestrial biology; aquatic biology and water quality; recreation; cultural resources; and land use.

This appendix includes a brief overview of the resource specialists' observations, trip logs prepared by team members, photographs taken during the field trip, and maps used to identify and review existing resources.

Remote sites were viewed by airplane and by boat. Observations for these areas are concomitant with this viewing limitation.

SUMMARY OF FIELD OBSERVATIONS

This storage option would involve constructing a new dam at the mouth of Fine Gold Creek, where it enters Millerton Lake. Fine Gold Creek traverses private property, which is characterized by moderate to steeply sloping hillsides comprised of open grassland and oak woodlands. Private residences are scattered throughout the area and are accessible by paved and gravel roads. Unpaved dirt roads provide access to more remote areas along Fine Gold Creek and the surrounding area.

Botany

- This is a relatively large stream with large pools of slow moving water.
- Riparian vegetation exists along shoreline of creek where it is not precluded by bedrock.
- Adjacent hillside have Foothill Pine- Blue Oak woodland vegetation with abundant grass and forb, shrub understory.
- Some areas have open grassland and savannah type habitat conditions. Cattle are abundant in area.
- Substantial amounts of riparian and wetland vegetation could be affected.
- Would cause the substantial loss of other habitats.
- If vernal pools are present the possibility of special status species is moderate to high.

Wildlife

This stream may support sensitive wildlife species such as Western pond turtle, foothill-yellow legged and red-legged frog. This area may also be used as deer habitat.

Aquatic Biology/Water Quality

- The Fine Gold Arm of Millerton Lake is narrow and moderately steep-sided.
- Riparian vegetation is well developed, especially in the upstream end of the reservoir arm.
- Upstream of the reservoir, Fine Gold Creek runs through a gorge filled with very large boulders that shelter the stream.
- Proposed diversions to the New Fine Gold Reservoir from the San Joaquin River and/or Millerton Lake could impact flows in the San Joaquin River and water levels in Millerton Lake and adversely affect water quality conditions and fisheries resources, including American shad and hardhead.
- The shad population of Millerton Lake is the only known American shad population that is landlocked and hardhead is a California State Species of Special Concern.
- Construction of the reservoir would destroy some lotic habitat and create new lentic habitat and fisheries opportunities, primarily for exotic fish species.
- Inundation of abandoned mines, if any are present, could result in water quality degradation.

Recreation

- There are no developed recreation facilities in this area. However, dispersed uses such as fishing, hunting, and recreational mining probably occur in areas where paved and unpaved roads provide access.
- Construction of this dam and reservoir is not expected to result in substantial impacts to recreation resources and/or opportunities in the Fine Gold Creek area.
- Diversions from Millerton Lake and/or the San Joaquin River could impact recreation resources and opportunities, depending on the location of the intake and the affect of withdrawals on flows in the San Joaquin River and water levels in Millerton Lake.

Cultural Resources

- A permanent stream (Fine Gold Creek), riparian woodland and Blue Oak woodland would have provided diverse natural resources in prehistoric times.
- There is a high probability of prehistoric archaeological sites including BRM stations, hunting & fishing camps, seasonal village sites.
- A historic “Glory hole” mining venture was observed in a granite outcrop with a quartz vein, on the west shore of Fine Gold Creek near Millerton Lake.

- An associated foot trail has dry laid rock walls in some places, and this may have been a sluice for mining.
- Other historic sites likely, associated with mining and other activities.

Land Use

- This is a generally undeveloped natural resource area.
- Private homes and roads may be in the area of inundation.

Environmental Team Field Trip Log - Botany		
Trip Log Number:	S4	**Project No.:** 8004094
Dates:	May 29, 2002	
Site Name:	New Fine Gold Dam	
Location:	Fine Gold Creek at Millerton Lake	
Prepared By:	Jeff Glazner/Barry Anderson/David Stevens	
Date:	June 3, 2002	

Weather Conditions:	Hot and dry
Areas Covered (attach map with notations)	
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	Yes

Field Observations:

Existing Facilities:

None existing.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

This is a relatively large stream with large pools of slow moving water. Riparian

vegetation exists along shoreline of creek where it is not precluded by bedrock. Adjacent hillside have Foothill Pine- Blue Oak woodland with abundant grass and forb, shrub understory. Some areas have open grassland and savannah type habitat conditions. Cattle are abundant in area. Riparian vegetation occurs along the creek. Seeps and springs are likely. Flatter areas in valleys could have vernal pools.

Need for additional (engineering/hydrological, or other) information on measures

Geology and soils maps

Spillway elevation and limits of inundation

Location of tunnel

Location of any pipelines, pump locations, or storage facilities

Location of realigned roads

Location of work pads, access roads, and other construction areas

Additional data needs (within each specific discipline)

CNDDB report

CNPS report

Ceres report

1993 biology report

Field surveys for wetlands and special status species and habitats

Environmental Team Field Trip Log - Wildlife		
Trip Log Number:	S4	**Project No.:** 8004094
Dates:	May 29, 2002	
Site Name:	New Fine Gold Dam	
Location:	Fine Gold Creek at Millerton Lake	
Prepared By:	Dave Stevens, Stephanie Murphy	
Date:	June 5, 2002	

Weather Conditions:	Hot and dry
Areas Covered (attach map with notations)	
Attachments	
Photo Log	
Photos	
Topographic Map(s)	

Field Observations:

Existing Facilities:

None

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

This is a relatively large stream with large pools of slow moving water. Riparian vegetation exists along shoreline of creek where it is not precluded by bedrock. Adjacent

hillside have Foothill Pine- Blue Oak woodland with abundant grass and forb, shrub understory. Some areas have open grassland and savannah type habitat conditions. Cattle are abundant in area. This stream may support sensitive wildlife species such as Western pond turtle, foothill-yellow legged and red-legged frog. This area could also be utilized as deer habitat.

Need for additional (engineering/hydrological, or other) information on measures

Hydrologic models, dam, inundation zones

Potential project features in addition to dam, size and location, etc.

Additional data needs (within each specific discipline)

Need to coordinate with resource agency biologists and agency files on known distribution of sensitive species for this area.

Further research is necessary to determine extent of possible impact to sensitive wildlife species with this alternative.

Environmental Team Field Trip Log - Fish and Water Quality		
Trip Log Number:	S4	**Project No.:** 8004094
Dates:	May 29, 2002	
Site Name:	New Fine Gold Dam	
Location:	Fine Gold Creek at Millerton Lake	
Prepared By:	Philip Unger	
Date:	June 10, 2002	

Weather Conditions:	Hot and dry
Areas Covered (attach map with notations)	Fine Gold Creek and Millerton Lake
Attachments	
Photo Log	No
Photos	No
Topographic Map(s)	Yes (see S1)

Field Observations:

Existing Facilities:

Millerton Lake inundates the lower reach of Fine Gold Creek. Fine Gold Creek traverses lands characterized by moderate to steeply sloping hillsides comprised of open grassland and oak woodlands. Private residences are scattered throughout the area and are accessible by paved and gravel roads. Unpaved dirt roads provide access to more remote areas along Fine Gold Creek and the surrounding area.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

The Fine Gold Arm of Millerton Lake is narrow and moderately steep-sided. The extent of inundation varies with reservoir elevation. Reservoir elevation was high during our field visit. Riparian vegetation, especially in the upstream end of the reservoir arm, is well developed. Upstream of the reservoir, Fine Gold Creek runs through a gorge filled with very large boulders that hide most of the creek from view (see Photo ?).

Need for additional (engineering/hydrological, or other) information on measures

Need information on range of seasonal flow conditions in Fine Gold Creek.

Need information on the area that would be submerged by New Fine Gold Reservoir.

Need the following reservoir data for each of the alternative Fine Gold Dam elevations:

- Mean depth for each month, April – October.
- Mean surface area of shallow water habitat (less than 15 feet deep) in each month, April – October.
- Mean rate of water level fluctuation for each month, April – October.

This project may involve diverting water from the San Joaquin River and storing it in New Fine Gold Reservoir. If so, the following information would be needed:

- Where would the diversion on the San Joaquin River be located?
- Where would the conveyance structure be located?
- How much flow would be diverted from the San Joaquin and when?
- Would diversions from the San Joaquin affect the operation of other reservoirs (e.g. Millerton, Kerkhoff, Redinger, etc.)?
- Timing and magnitude of water level fluctuations at all affected reservoirs.

Additional data needs (within each specific discipline)

Need information on use by Millerton Lake fish species of Fine Gold Creek Arm of reservoir. Need information on summer water temperatures in Fine Gold Creek and list of fish species likely to be present in the creek. Also, any existing water quality information.

Also:

Water temperature, dissolved oxygen profiles and any other existing water quality data from Millerton Lake, especially from sites in the Fine Gold Arm.

Information on the location and types of active and abandoned mines in the inundation zone of the proposed reservoir.

Environmental Team Field Trip Log - Recreation		
Trip Log Number:	S4	**Project No.:** 8004094
Dates:	May 29, 2002	
Site Name:	New Fine Gold Dam	
Location:	Fine Gold Creek at Millerton Lake	
Prepared By:	Sandra Perry	
Date:	June 3, 2002	

Weather Conditions:	Hot and dry
Areas Covered (attach map with notations)	Fine Gold Creek and Millerton Lake
Attachments	
Photo Log	No
Photos	No
Topographic Map(s)	Yes (see S1)

Field Observations:

Existing Facilities:

This project would involve constructing a new dam at the mouth of Fine Gold Creek, where it enters Millerton Lake. Fine Gold Creek traverses private property, which is characterized by moderate to steeply sloping hillsides comprised of open grassland and oak woodlands. Private residences are scattered throughout the area and are accessible by paved and gravel roads. Unpaved dirt roads provide access to more remote areas along Fine Gold Creek and the surrounding area.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

There are no developed recreation facilities situated in the immediate project area. However, some recreation likely occurs in the area, particularly where unpaved roads provide access to undeveloped areas along Fine Gold Creek. Recreation activities may include angling, hiking, nature viewing, picnicking, camping, mountain biking, and OHV use. Some recreational mining such as gold dredging or panning may also occur.

Need for additional (engineering/hydrological, or other) information on measures

Need information on the area that would be submerged by New Fine Gold Reservoir.

This project may involve pumping water from the San Joaquin River and storing it in New Fine Gold Reservoir. If so, the following information is necessary:

- Where would the diversion on the San Joaquin River be located?
- Where would the conveyance structure (e.g. flowline) be located?
- Would the flowline be above ground (canal) or underground (tunnel)
- How much flow would be diverted from the San Joaquin and when?
- Would diversions from the San Joaquin affect the operation of other reservoirs (e.g. Millerton, Kerkhoff, Redinger, etc.)
- Timing of water level fluctuations at affected reservoirs
- Timing and magnitude of diversions from the San Joaquin

Additional data needs (within each specific discipline)

Additional information regarding dispersed use in the inundation area is needed to fully assess the potential impacts to recreation. It is unlikely that any use data would be available but anecdotal information regarding activities and popular use areas may be available through the county planning department and local residents.

Additional information regarding the San Joaquin River and Millerton Lake may also be necessary, depending on whether the project would involve these areas. See S1 notes for necessary information.

Environmental Team Field Trip Log – Cultural Resources

Trip Log Number:	S4	**Project No.:** 8004094
Dates:	May 29, 2002	
Site Name:	New Fine Gold Dam	
Location:	Fine Gold Creek at Millerton Lake	
Prepared By:	David White	
Date:	May 29, 30 2002	

Weather Conditions:	Hot & dry
Areas Covered (attach map with notations)	Fine Gold Creek drainage by aerial reconnaissance May 29. Lower Fine Gold Creek from Millerton Lake by boat, May 30. Brief pedestrian reconnaissance along west shore of Fine Gold Creek near Millerton Lake, May 30. Also see Trip Log S1.
Attachments	
Photo Log	Yes – MWH 0205
Photos	Yes – nos. 12-14, 56-69
Topographic Map(s)	Millerton Lake West quad

Field Observations:

Existing Facilities:

Friant Dam impounds Millerton Lake downstream; Fine Gold would be new dam. Various jeep trails, foot trails within creek drainage that would be flooded.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Cultural resources:

Prehistoric: Permanent stream (Fine Gold Creek), riparian woodland and Blue Oak woodland would have provided diverse resources. High probability of prehistoric archaeological sites including BRM stations, hunting & fishing camps, seasonal village sites.

Historic: "Glory hole" mining venture observed in granite outcrop with quartz vein, on west shore of Fine Gold Creek near Millerton Lake. Associated foot trail, dry laid rock walls; possible sluice for mining. Various sites likely, associated with mining and other activities.

Need for additional (engineering/hydrological, or other) information on measures

Need precisely mapped footprint of reservoir, with various potential dam levels; also need footprint of all associated project-related ground disturbance areas, to include but not be limited to project offices and maintenance buildings, construction set-up and lay-down areas, access roads, electric transmission lines, water conveyance structures, and all other project facilities.

Additional data needs (within each specific discipline)

Need archaeological records search with California Historic Resources Inventory System (CHRIS) information center. Clearinghouse: Southern San Joaquin Valley Info Center, CSU-Bakersfield.

Need consultation with the BuRec cultural resource specialist regarding sites that may not be recorded with the CHRIS information center.

Also need brief review of archaeological and ethnographic literature pertaining to the area. Minimal level of effort: (1) to identify types of archaeological remains expected, time periods represented; and (2) to identify Native American tribes historically occupying the area, along with published information on major named villages or other ethnographic sites.

Environmental Team Field Trip Log – Land Use		
Trip Log Number:	S4	**Project No.:** 8004094
Dates:	May 29, 2002	
Site Name:	New Fine Gold Dam	
Location:	Fine Gold Creek at Millerton Lake	
Prepared By:	Irina Torrey	
Date:	June 12, 2002	

Weather Conditions:	Hot and dry
Areas Covered (attach map with notations)	Fine Gold Creek and Millerton Lake
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	No

Field Observations:

Existing Facilities:

This project would involve constructing a new dam at the mouth of Fine Gold Creek, where it enters Millerton Lake. Fine Gold Creek traverses private property, which is characterized by moderate to steeply sloping hillsides comprised of open grassland and oak woodlands. Private residences are scattered throughout the area and are accessible by paved and gravel roads. Unpaved dirt roads provide access to more remote areas along Fine Gold Creek and the surrounding area.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Private residences and roads may be located in the areas of inundation.

Need for additional (engineering/hydrological, or other) information on measures

Need information on the area that would be submerged by New Fine Gold Reservoir. Need to determine if any homes and if so, how many homes would be within the inundation area

Additional data needs (within each specific discipline)

No additional information is needed.

Picture: P5290023 Fine Gold Creek drainage, May 29 2002, early afternoon

Picture: P5290024 Fine Gold Creek drainage, May 29 2002, early afternoon

Picture: P5290025 Fine Gold Creek drainage, May 29 2002, early afternoon

Millerton Lake looking up Fine Gold Creek 5/30/02

Millerton Lake, Fine Gold Creek Arm from across the lake, view N, 5/30/02

Millerton Lake, upper end of Fine Gold Creek Arm, 5/30/02

Millerton Lake, upper end of Fine Gold Creek Arm, 5/30/02

Millerton Lake, upper end of Fine Gold Creek Arm, 5/30/02

Millerton Lake, upper end of Fine Gold Creek Arm, 5/30/02

Millerton Lake area, boulder-filled gorge of Fine Gold Creek, 5/30/02

Millerton Lake area, Fine Gold Creek in boulder-filled gorge, 5/30/02

Millerton Lake area, Fine Gold Creek in boulder-filled gorge, 5/30/02

Millerton Lake area, Fine Gold Creek in boulder-filled gorge, 5/30/02

Millerton Lake, view SW from Fine Gold Creek area, 5/29/02

Millerton Lake, view SW from Fine Gold Creek area, 5/29/02

APPENDIX B.2

Environmental Team Trip Report 2

(June 17-19, 2003)

Upper San Joaquin River Basin Storage Investigation

Environmental Trip Report

August 6, 2003

Prepared for:
Bureau of Reclamation

Prepared by:

MWH
MONTGOMERY WATSON HARZA

Upper San Joaquin River Basin Storage Investigation

Environmental Trip Report

August 6, 2003

Prepared for:
Bureau of Reclamation

Prepared by:

Table of Contents

1.0 INTRODUCTION

1.1 PURPOSE FOR THE TRIP

The MWH environmental team completed a Trip Report on June 17, 2002 for 15 potential options considered in Phase 1 of the Upper San Joaquin River Basin Storage Investigation. Since the completion of that report, one of the options, Temperance Flat Dam, was reconfigured to include several alternatives — each characterized by construction of a dam at different locations along the San Joaquin River — namely at river mile 274, 279, and 286, and with a range of potential water surface elevations from 800 to a maximum of 1600 (this varies for each option; see Table 1).

The purpose of the June 2003 field trip was to conduct a preliminary reconnaissance of the new Temperance Flat options. The trip was conducted on June 17 - 19 and designed to provide a similar level of early pre-planning reconnaissance for all three options similar to the reconnaissance in the earlier field trip conducted on May 29 - 31, 2002. While in the vicinity the team also visited the potential Fine Gold Dam site. The environmental team included key resource specialists in the areas of concern in developing any option within the range described above.

1.2 FIELD TRIP TEAM

The field trip team included the following project resource specialists: botanist, wildlife biologist, aquatic biologist, cultural resources specialist, recreation and geology specialist, land use planner, project coordinator, and project manager.

1.3 CONTENTS OF THE FIELD REPORT

This Field Report includes brief resource area overviews for each of the alternative options identified for study, trip logs for each of the sites visited, and photos. The existing conditions viewed during the field trip are briefly described and their implications for project development are noted. A subsequent report on site constraints and opportunities will develop the implications of site conditions with an initial impact hypothesis in somewhat greater detail.

1.4 ITINERARY

June 17th

10:00am	Meet at MWH Office
10:00am to 2:00pm	Travel to Clovis
2:00pm to 4:00pm	Meet with Tracy Rowland (car tour of San Joaquin River Gorge Area)

TABLE 1. TEMPERANCE FLAT AREA STORAGE OPTIONS (EXPANDED RANGE TO BE EVALUATED IN PHASE 1)

Dam Site (River Mile)	Maximum Water Surface Elevation (ft)									Dam Types
	800	900	960	1100	1200	1300	1400	1500	1600	
274	TSC 0.5 MAF 3.3 K ac.	MWH 0.9 MAF 4.6 K ac.	MWH 1.2 MAF 5.6 K ac.	TSC 2.1 MAF 8.2 K ac.						CFRF
279		Done 0.4 MAF 2.7 K ac.	MWH 0.6 MAF 3.4 K ac.	Done 1.3 MAF 4.0 K ac.	MWH 1.9 MAF 5.6 K ac.	TSC 2.7 MAF 9.4 K ac.				CFRF RCC
286					TSC 0.5 MAF 3.2 K ac.	MWH 0.8 MAF 4.7 K ac.	TSC 1.4 MAF 6.3 K ac.	MWH 2.1 MAF 8.2 K ac.	TSC 3.0 MAF 10.0 K ac.	CFRF RCC Arch

Key: MWH or TSC (USBR Technical Service Center) – party responsible for cost estimate

Net new storage capacity (in millions of acre-feet, MAF)

Gross inundated area (in thousands of acres, K ac.)

Tentative - As of July 9, 2003

June 18th

7:00am	Meet in Hotel Lobby
7:00am to 8:00am	Travel
8:00am to 11:00am	Adit No. 1 Overlook/RM 286
11:00am to Noon	Lunch in Auberry
1:00pm	Wishon/Big Creek No. 4
3:00pm	Reddinger Dam and San Joaquin River Canyon
4:00pm	Chawanakee (Big Creek No. 3)
5:00pm	Chawanakee Schoolhouse and San Joaquin River Canyon
6:00pm	Fine Gold Reservoir Area (Road 210)
7:00pm	Fine Gold Dam site (Hidden Lake Estates)
8:00pm	Return to Clovis for a Late Dinner

June 19th

7:00am to 11:00am	Temperance Flat/Sullivan Mine (Meet with Marc Springer)
11:00am to Noon	Lunch on Boat
Noon to 5:00pm	Patterson Mine/Prospect (MP279) Site
5:00pm	Return Home

2.0 SITE RECONNAISSANCE OVERVIEW

2.1 KERCKHOFF HYDROELECTRIC GENERATING FACILITY NO. 1

This section of report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

2.2 RM 286 DAM SITE

This section of report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

2.3 KERCKHOFF LAKE AND BIG CREEK NO. 4

This section of report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

2.4 THE RIVER BELOW REDINGER DAM, AND REDINGER LAKE

This section of report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

2.5 TEMPERANCE FLAT AND PATTERSON MINE SITES

This section of report deleted from Fine Gold Reservoir TM, but included in Temperance Flat Reservoir TM.

2.6 FINE GOLD CREEK AND DAM SITE

2.6.1 Botany

- Fine Gold Creek near bridge crossing of Road 210 (southwest of Hildreth Mtn) is a wide alluvial channel with large scattered granite boulders.
- The corridor supports a well-developed riparian community. The channel was almost dry at the time of the visit indicating a seasonal stream. Based on the vegetation, however, near surface groundwater is probably available for most of the year. Riparian vegetation includes Oregon ash, cottonwood, willow and buttonwillow. Annual vegetation in streambed includes monkeyflower, rabbit's-foot grass, pennyroyal, nutsedge, and clover.
- Surrounding vegetation includes foothill woodland (foothill pine, blue and interior live oak).

Areas of potential rare plant species would be affected by inundation.

Carpenteria only occurs in the San Joaquin River drainage and has relatively narrow habitat requirements. In areas with suitable habitat that have not been surveyed by botanists it should be considered to have a moderate to high probability of occurring. Other special status species occur in habitats that are more common and widespread in the area. These species, too, have a moderate to high probability of occurring in areas that have not been surveyed.

2.6.2 Wildlife

The upland wildlife habitats around the Fine Gold area consist of foothill woodland, open grassland, and chaparral habitats.

The relatively diverse habitat assemblage is likely to support a broad wildlife community as well.

Probably all of the species of special concern discussed for Temperance Flat are also potential inhabitants of this area:

One juvenile western pond turtle was observed in a portion of an upper tributary to Fine Gold Creek.

Pond turtles have been recorded in this area in the past.

A golden eagle was observed in the area. Osprey as known from the area well.

2.2.3 Aquatic Biology/Water Quality

- The reach of Fine Gold Creek in the upper portion of the proposed inundation zone (near bridge at upper crossing of Road 210) has an open, alluvial channel with scattered large granite outcrops and boulders.
- Flow at the time of the field visit was very low and most aquatic habitat consisted of warm isolated pools and backwaters with algae covered gravel substrates. However, scour marks gave evidence of very high flows.
- Riparian vegetation was well developed.
- Many unidentified small fish and tadpoles were found in the creek and two green sunfish were in a pool near the bridge.
- The next lower reach of Fine Gold Creek (near ford at lower crossing of Road 210) has an alluvial channel abruptly transitioning to a highly bedrock-constrained channel (slot) filled with very large boulders.
- Several unidentified small fish were found in a nearly dewatered pool in the alluvial portion of the reach and a sculpin was observed in a pool that was almost completely enclosed by large boulders in the bedrock portion.
- No aquatic habitat was observed from the site overlooking the proposed dam site.

- Construction of the new reservoir would destroy lotic habitat in Fine Gold Creek and its tributaries and create new lentic habitat and fisheries opportunities, primarily for exotic fish species.
- The new reservoirs would affect Millerton Reservoir operations and operation of upstream reservoirs, potentially resulting in habitat impacts such as magnitude and timing of lake level fluctuations and volume and water temperature of flow releases.
- Inundation of abandoned mines, if any are present, could result in water quality degradation.

2.6.4 Recreation

The Fine Gold Creek Dam site is situated within the boundaries of the Millerton Lake Recreation Area.

There are not developed recreation facilities in the immediate area of the dam site, along the Fine Gold Creek arm of Millerton Reservoir, or upstream.

On-boat camping is allowed on the Fine Gold Creek arm, but boats must be self-contained.

A floating restroom is located at the mouth of the Fine Gold Creek arm.

There are no developed recreation facilities within the Fine Gold Creek inundation area but dispersed use along the creek is likely, particularly where paved and unpaved roads provide access.

Fine Gold Creek drains an historic mining district suggesting gold panning may occur.

Inundation of the Fine Gold Creek area is not expected to result in significant impacts to recreation resources. A new reservoir would provide recreation opportunities that do not currently exist in the area, particularly if recreation facilities and access are provided.

2.6.5 Cultural Resources

A permanent stream (Fine Gold Creek), riparian woodland and Blue Oak woodland would have provided diverse natural resources in prehistoric times.

There is a high probability of prehistoric archaeological sites including BRM stations, hunting and fishing camps, and seasonal village sites.

BRMs were observed along Fine Gold Creek in SW ¼ Sect.26, T9S R21E; these would be inundated by 1,000 foot or 1,100 foot pool.

Historic mining features were observed during the prior reconnaissance (May 2002).

Other historic archaeological sites are likely, associated with mining and other activities.

2.6.6 Land Use/Mineral Resources

- Hidden Lake Estates contains substantial houses and many undeveloped sites that would require new infrastructure.
- Most of the area would be outside the line of inundation and therefore would not be affected.

Attachment A

Fine Gold Creek and Dam Site Trip Logs and Photos

Field Trip Log – Aquatic Biology/Water Quality		
Trip Log Number:	6	**Project No:** 1003811.010101
Dates:	June 18, 2003	
Site Name:	Fine Gold Creek and Dam Site	
Location:	Upper Fine Gold Creek downstream to proposed damsite	
Prepared By:	Philip Unger	
Date:	July 11, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Fine Gold Creek at upper and lower Road 210 crossings and overlooking proposed damsite.
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	

Field Observations:

Existing Facilities:

Paved and unpaved roads, bridges, residences, power and transmission lines in the upper basin. Millerton Reservoir in the lower basin. Fine Gold Creek traverses lands characterized by moderate to steeply sloping hillsides comprised of open grassland and oak woodlands. Private residences are scattered throughout the area and are accessible by paved and gravel roads. Unpaved dirt roads provide access to more remote areas along Fine Gold Creek and the surrounding area.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

The reach of Fine Gold Creek in the upper portion of the proposed inundation zone (near bridge at upper crossing of Road 210) has an open, alluvial channel with scattered large granite outcrops and boulders. Flow at the time of the field visit was very low and most aquatic habitat consisted of warm isolated pools and backwaters with algae covered gravel substrates. However, scour marks gave evidence of very high flows. Riparian vegetation was well developed. Many unidentified small fish and tadpoles were found in the creek. Two green sunfish were in a pool near the bridge. The next lower reach of Fine Gold Creek (near ford at lower crossing of Road 210) had an alluvial channel abruptly transitioning to a highly bedrock-constrained channel (slot) filled with very large boulders. Several unidentified small fish were found in a nearly dewatered pool in the alluvial portion of the reach and a sculpin was observed in a pool that was almost completely enclosed by large boulders in the bedrock portion. No aquatic habitat was observed from the site overlooking the proposed dam site.

Need for additional (engineering/hydrological, or other) information on measures

Need surface area vs. elevation projections for proposed Fine Gold Creek Reservoir and monthly reservoir surface area projections for different water year types.

Need detailed information on timing and water volumes of pump-back operations and information on the depths in Fine Gold Reservoir and Millerton Reservoir from which water would be diverted.

Also, need information on how operation of new reservoir would affect operation of Millerton Reservoir, and reservoirs and river flows upstream on the San Joaquin River.

Additional data needs (within each specific discipline)

Need the following information:

Use by Millerton Lake fish species of Fine Gold Creek and reservoir arm, especially for spawning and rearing.

Summer water temperatures in Fine Gold Creek and fish species present in the creek.

Water temperature, dissolved oxygen profiles and any other existing water quality data from Millerton Lake, especially from sites in the Fine Gold Arm.

Projected water temperature and dissolved oxygen regimes in Fine Gold Reservoir for

different seasons and water surface elevations.

Information on the location and types of active and abandoned mines in the inundation zone of the proposed reservoir.

Field Trip Log - Biology		
Trip Log Number:	6	**Project No:** 1003811.010101
Dates:	June 18, 2003	
Site Name:	Fine Gold Creek and Dam Site	
Location:	Upper Fine Gold Creek downstream to proposed damsite	
Prepared By:	David Stevens	
Date:	July 19, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Fine Gold Creek at upper and lower Road 210 crossings and overlooking proposed damsite.
Attachments	None
Photo Log	
Photos	
Topographic Map(s)	

Field Observations:

Existing Facilities:

Paved and unpaved roads, bridges, residences, transmission lines in the upper basin. Millerton Reservoir in the lower basin. Fine Gold Creek traverses lands characterized by moderate to steeply sloping hillsides comprised of open grassland, oak savannah and foothill woodland habitats. Private residences are scattered throughout the area and are accessible by paved and gravel roads and by boat from the lake. Unpaved dirt roads provide access to more remote areas along Fine Gold Creek and the surrounding area.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Fine Gold Creek in the upper portion of the proposed inundation zone (near bridge at upper crossing of Road 210) has an open, alluvial channel with scattered large granite outcrops and boulders with established riparian habitats dominated by willow, mulefat and cottonwoods. The stream had little or no flow in various portions of the stream in this area. There were large, isolated pools where aquatic life was concentrated. proposed dam site. This observation showed that the upper reaches of Fine Gold are an ephemeral stream that likely dries up during summer months. However, the presence of Pacific chorus frog tadpoles and a juvenile western pond turtle shows that these species survive the xeric periods. Surrounding the stream reaches are grasslands, oak savannah and foothill woodland habitats. Cattle grazing appeared to be heavy and to influence the quality of the riparian, aquatic and upland habitats. Nevertheless, Fine Gold has historically supported a population of western pond turtles, an important population to the area.

Need for additional (engineering/hydrological, or other) information on measures

Inundation levels associated with establishment of the area as a reservoir, including yearly and seasonal changes.

Calculated habitat losses of each habitat type.

Additional data needs (within each specific discipline)

Maps of habitat types and distribution.

Existing resource data on all important wildlife species of the area, including known population levels, historic trends, influencing factors, etc.

Known populations of species of special concern.

Habitats and potential habitat areas for species of special concern.

Field Trip Log - Botany		
Trip Log Number:	6	**Project No:** 1003811.010101
Dates:	June 18, 2003	
Site Name:	Fine Gold Creek and Dam Site	
Location:	Upper Fine Gold Creek downstream to proposed damsite	
Prepared By:	Jeff Glazner	
Date:	July 25, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Fine Gold Creek at upper and lower Road 210 crossings and overlooking proposed damsite.
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	

Field Observations:

Existing Facilities:

Paved and unpaved roads, bridges, residences, power and transmission lines in the upper basin. Millerton Reservoir in the lower basin. Fine Gold Creek traverses lands characterized by moderate to steeply sloping hillsides comprised of open grassland and oak woodlands. Private residences are scattered throughout the area and are accessible by paved and gravel roads. Unpaved dirt roads provide access to more remote areas along Fine Gold Creek and the surrounding area.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Fine Gold Creek near bridge crossing of Road 210 (sw of Hildreth Mtn) is a wide alluvial channel with large scattered granite boulders. The corridor supports a well developed riparian community. The channel was almost dry at the time of the visit indicating a seasonal stream. Based on the vegetation, however, near surface groundwater is probably available for most of the year. Riparian vegetation includes Oregon ash, cottonwood, willow and buttonwillow. Annual vegetation in streambed includes monkeyflower, rabbitsfootgrass, pennyroyal, nutsedge, and clover. Surrounding vegetation includes foothill woodland (foothill pine, blue and interior live oak).

Need for additional (engineering/hydrological, or other) information on measures

None at present.

Additional data needs (within each specific discipline)

Need to locate any additional information on presence or absence of rare plant species in area. Spring ground surveys.

Field Trip Log – Cultural Resources		
Trip Log Number:	6	**Project No:** 1003811.010101
Dates:	June 18, 2003	
Site Name:	Fine Gold Creek and Dam Site	
Location:	Upper Fine Gold Creek downstream to proposed damsite	
Prepared By:	David White	
Date:	June 18, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Fine Gold Creek at upper and lower Road 210 crossings and overlooking proposed damsite.
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	Millerton Lake West

Field Observations:

Existing Facilities:

Friant Dam impounds Millerton Lake downstream; Fine Gold would be new dam. Various jeep trails, foot trails within creek drainage that would be flooded.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Prehistoric: Permanent stream (Fine Gold Creek), riparian woodland and Blue Oak woodland would have provided diverse resources. High probability of prehistoric archaeological sites including BRM stations, hunting & fishing camps, seasonal village sites. BRMs observed along Fine Gold Creek in SW ¼ Sect.26, T9S R21E; would be inundated by 1000' or 1100' pool.

Historic: Mining features observed during prior reconnaissance (May 2002).

Need for additional (engineering/hydrological, or other) information on measures

Need footprint of all associated project-related ground disturbance areas, to include but not be limited to project offices and maintenance buildings, construction set-up and lay-down areas, access roads, electric transmission lines, water conveyance structures, and all other project facilities.

Additional data needs (within each specific discipline)

Need archaeological records search with California Historic Resources Inventory System (CHRIS) information center. Clearinghouse: Southern San Joaquin Valley Info Center, CSU-Bakersfield.

Need consultation with the BOR cultural resource specialist regarding sites that may not be recorded with the CHRIS information center.

Also, need brief review of archaeological and ethnographic literature pertaining to the area. Minimal level of effort: 1) to identify types of archaeological remains expected, time periods represented; and 2) to identify Native American tribes historically occupying the area, along with published information on major named villages or other ethnographic sites.

Field Trip Log - Recreation		
Trip Log Number:	6	**Project No:** 1003811.010101
Dates:	June 18, 2003	
Site Name:	Fine Gold Creek and Dam Site	
Location:	Upper Fine Gold Creek downstream to proposed damsite	
Prepared By:	Sandra Walter-Perry	
Date:	July 15, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Fine Gold Creek at upper and lower Road 210 crossings and overlooking proposed damsite.
Attachments	
Photo Log	None
Photos	None
Topographic Map(s)	Millerton Lake West

Field Observations:

Existing Facilities:

The Fine Gold Creek Dam site is located on the Fine Gold Creek arm of Millerton Reservoir. There are no existing facilities in the immediate area of the dam, although numerous houses are located immediately upslope.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquatic-water quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

The Fine Gold Creek Dam site is situated within the boundaries of the Millerton Lake Recreation Area. There are no developed recreation facilities in the immediate area of the dam site, along the Fine Gold Creek arm of Millerton Reservoir, or upstream. On boat camping is allowed on the Fine Gold Creek arm, but boats must be self contained. Boating speeds are limited to 5 mph. A floating restroom is located at the mouth of the Fine Gold Creek arm.

There are no developed recreation facilities within the Fine Gold Creek inundation area but dispersed use along the creek is likely, particularly where paved and unpaved roads provide access. Fine Gold Creek drains an historic mining district suggesting gold panning may occur.

Need for additional (engineering/hydrological, or other) information on measures

None at present.

Additional data needs (within each specific discipline)

Determine whether there are any active mining claims along the creek.

Fine Gold Creek from bridge (view downstream, June 18 2003) (023_20.JPG)

Isolated pool in Fine Gold Creek stream channel (June 18 2003) (024_21.JPG)

Pools and backwaters in Fine Gold Creek stream channel (view downstream, June 18 2003) (025_22.JPG)

Fine Gold Creek dam site (June 18 2003) (026_23.JPG)

Millerton Reservoir from Fine Gold Creek dam site (June 18 2003) (027_24.JPG)

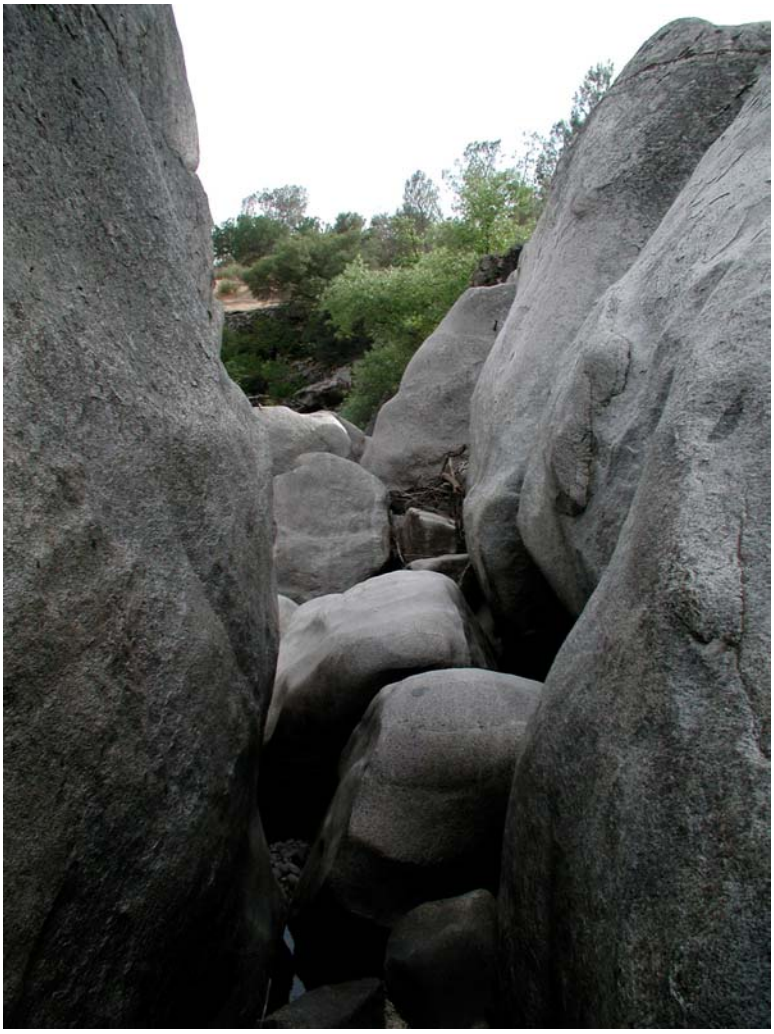
Bedrock mortar (BRM) along the west side of Fine Gold Creek at the upper end of the potential reservoir; in SW ¼ Sect.26, T9S R21E; would be inundated by 1000' or 1100' pool; Dave Stevens standing alongside (late afternoon).

(P6180047.JPG)

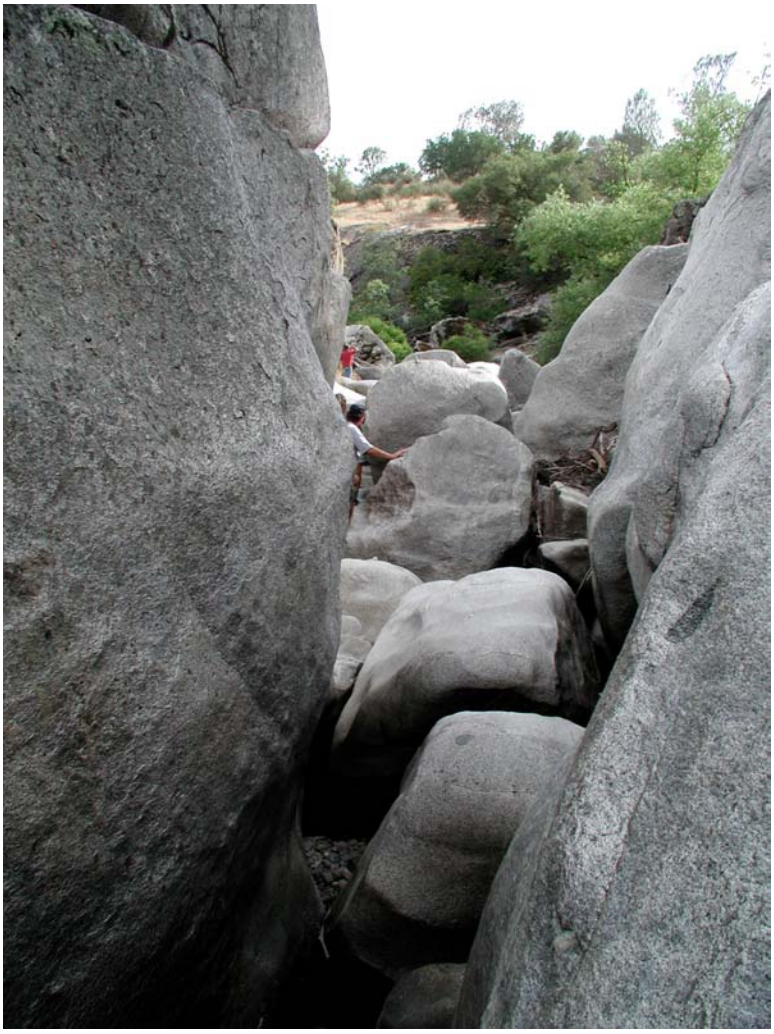
Bedrock mortars (BRMs) along the west side of Fine Gold Creek at the upper end of the potential reservoir; in SW ¼ Sect.26, T9S R21E; would be inundated by 1000' or 1100' pool; at least 18 BRMs counted here (late afternoon). (P6180048.JPG)

Bedrock mortars (BRMs) along the west side of Fine Gold Creek at the upper end of the potential reservoir; in SW ¼ Sect.26, T9S R21E; would be inundated by 1000' or 1100' pool; someone's feet in upper right background (late afternoon). (P6180049.JPG)

Bedrock mortars (BRMs) along the west side of Fine Gold Creek at the upper end of the potential reservoir; in SW ¼ Sect.26, T9S R21E; would be inundated by 1000' or 1100' pool (late afternoon). (P6180050.JPG)



Boulder-strewn bed of Fine Gold Creek in NW ¼ NW ¼ Sect.1, T10S R21E, view downstream (late afternoon). (P6180051.JPG)



Boulder-strewn bed of Fine Gold Creek in NW ¼ NW ¼ Sect.1, T10S R21E, view downstream; MWH team members visible in center-left background (late afternoon). (P6180052.JPG)

Boulder-strewn bed of Fine Gold Creek in NW ¼ NW ¼ Sect.1, T10S R21E, view downstream; Joel Sturm walking toward camera (late afternoon). (P6180053.JPG)

Fine Gold Dam site, view E, from Hidden Lake Estates (late afternoon).

(P6180054.JPG)

Potential reservoir area from west side of Fine Gold Dam site, view NE, from Hidden Lake Estates (late afternoon).

(P6180055.JPG)

Potential reservoir area from west side of Fine Gold Dam site, view N, from Hidden Lake Estates (late afternoon). (P6180056.JPG)

Fine Gold Creek from bridge (view upstream, June 18 2003) (073.JPG)

Fine Gold Creek from bridge (view downstream, June 18 2003) (076.JPG)

Fine Gold Creek from bridge (view upstream, June 18 2003) (078.JPG)

Fine Gold Creek from bridge (view upstream, June 18 2003) (079.JPG)

Fine Gold Creek (June 18 2003) (080.JPG)

Fine Gold Creek (June 18 2003) (081.JPG)

Fine Gold Creek (June 18 2003) (082.JPG)

Fine Gold Creek (June 18 2003) (084.JPG)

Fine Gold Creek (June 18 2003) (086.JPG)

Millerton Reservoir from Fine Gold Creek dam site, panoramic view (June 18 2003) (088.JPG)

Millerton Reservoir from Fine Gold Creek dam site, panoramic view (June 18 2003) (091.JPG)

Millerton Reservoir from Fine Gold Creek dam site, panoramic view (June 18 2003) (092.JPG)

Millerton Reservoir from Fine Gold Creek dam site, panoramic view (June 18 2003) (093.JPG)

Millerton Reservoir from Fine Gold Creek dam site, panoramic view (June 18 2003) (094.JPG)

APPENDIX C

Cost Estimate Tables

Fine Gold Reservoir

CODE:D-8170

ESTIMATE WORKSHEET

SHEET__1__ OF __2___

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev. 900
Concrete Faced Rockfill Dam (CFRF)

PROJECT:
CALFED

DIVISION:

FILE: Briefcase\USBR Cost Sheets - Updated Sept 2003\[FGE_900 FY03.xls]B

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	**Diversion and care of river**					
		Upstream Cofferdam (Crest @ El. 655)		112,060	CY	$22.00	$2,465,320
		Excavation for Diversion Tunnel		21,900	CY	$185.00	$4,051,500
		Concrete Liner for Tunnel		7,040	CY	$300.00	$2,112,000
		Furnishing and Handling Cement		1,990	TONS	$120.00	$238,800
		Furnishing and Handling Reinforcement		1,056,000	LBS	$0.65	$686,400
		Temp Tunnel Supports (Rock Bolts)		2,365	BOLTS	$300.00	$709,500
		Drilling for Rock Bolts		26,015	LF	$20.00	$520,300
		Diversion and care subtotal					**$10,783,820**
						Say	**$10,780,000**
		Spillway					
		Excavation for Spillway		321,940	CY	$12.00	$3,863,280
		Concrete in spillway crest		2,090	CY	$200.00	$418,000
		Concrete in spillway training walls and Apron		1,090	CY	$230.00	$250,700
		Furnishing and Handling Cement		900	TONS	$120.00	$108,000
		Furnishing and Handling Reinforcement		477,000	LBS	$0.65	$310,050
		Spillway subtotal					**$4,950,030**
						Say	**$4,950,000**
		Outlet Works					
		Concrete in Outlet Works Intake Structure		445	CY	$480.00	$213,600
		Excavation of Outlet Shaft and Gate Structure		4,490	CY	$360.00	$1,616,400
		Concrete in Outlet Works Shaft and Gate Structure		1,360	CY	$485.00	$659,600
		Furnishing and Handling Cement		385	TONS	$120.00	$46,200
		Furnishing and Handling Reinforcement		204,000	LBS	$0.70	$142,800
		Temporary Supports for Shaft					
		No. of Rock Bolts		216	Bolts	$350.00	$75,600
		Depth of Drilling		2,160	LF	$20.00	$43,200
		Outlet Works Trashracks		90,000	LBS	$3.25	$292,500
		Outlet Works Bulkhead & Seats for Intake Structure		82,000	LBS	$5.00	$410,000
		Outlet Gate for Gate Structure		544,600	LBS	$7.50	$4,084,500
		Outlet Works subtotal					**$7,584,400**
						Say	**$7,580,000**

QUANTITIES		PRICES	
BY: S. Higinbotham	CHECKED	BY: R. Baumgarten	CHECKED
DATE PREPARED	APPROVED	DATE: 01/11/04	PRICE LEVEL: Appraisal 03

CODE:D-8170

ESTIMATE WORKSHEET

SHEET__2___ OF __2___

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev. 900
Concrete Faced Rockfill Dam (CFRF)

PROJECT:

DIVISION:

FILE: C:\Documents and Settings\smosgood\Desktop\My Briefcase\USBR Cost Sheets - Updated Sept 2003\[FGE_900 FY03.xls]B

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Powerplant					
		Steel Pipe		1,837,140	LBS	$2.00	$3,674,280
		Valves, all Sizes and Types		523,200	LBS	$6.00	$3,139,200
		Hydraulic Control System		20,000	LBS	$10.00	$200,000
		Pump Units		372,100	LBS	$7.00	$2,604,700
		Turbines		651,880	LBS	$6.50	$4,237,220
		Generator		500,000	LBS	$8.00	$4,000,000
		Governors, Motors, etc.		1-Unit	LS		$1,200,000
		Excavation for Pump/Generator Structure		154,590	CY	$15.00	$2,318,850
		Concrete in Pump/Generator Structure		35,800	CY	$350.00	$12,530,000
		Furnishing and Handling Cement		10,100	TONS	$100.00	$1,010,000
		Furnishing and Handling Reinforcement		5,370,000	LBS	$0.60	$3,222,000
		Powerplant subtotal					**$38,136,250**
						Say	**$38,100,000**

QUANTITIES		PRICES	
BY S. Higinbotham	**CHECKED**	**BY** R. Baumgarten	**CHECKED**
DATE PREPARED	**APPROVED**	**DATE** 01/11/04	**PRICE LEVEL** Appraisal 03

ESTIMATE WORKSHEET

FEATURE	*PROJECT*	11-Jan-04
Fine Gold Dam - 380' high	Upper San Joaquin River	05:02 PM
Elevation = 900'	*DIVISION*	
Appraisal Design Stage		
Tab = fg900	*File* Settings\smosgood\Desktop\My Briefcase\USBR Cost Sheets - Updated	

	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		GEOTECH					
	10	Mobilization - 5%	8313	1	LS		$5,300,000
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.	8313	98,500	CY	$7.00	$689,500
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul). Toe slab imperv. cap	8313	21,000	CY	$10.00	$210,000
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mi. haul). Shell for Zone 1A	8313	35,000	CY	$7.50	$262,500
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul.) Deck foundation.	8313	60,000	CY	$22.00	$1,320,000
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul.) Transition to shell.	8313	60,000	CY	$21.50	$1,290,000
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away.) Upstream shell.	8313	1,600,000	CY	$9.50	$15,200,000
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away.) Downstream shell.	8313	1,690,000	CY	$9.25	$15,632,500
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	21,900	CY	$260.00	$5,694,000
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing	8313	2,750	CY	$260.00	$715,000
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	12,350	anchors	$40.00	$494,000
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	1,960	CY	$460.00	$901,600
	130	Drilling for grout program (setup, drill, test) setups=576	8313	28,000	LF	$33.00	$924,000
	140	Grouting (grout injection into competent granite.)	8313	21,000	bags	$27.00	$567,000
	150	Unwatering (assumes 30 month construction)	8313	1	LS		$1,500,000
	160	Spillway (left abut, in rock)	8130	1	LS		$4,950,000
	170	Outlet Works (tunnel or cut and cover?)	8130	1	LS		$7,580,000
	180	Pumping/Powerplant	8130	1	LS		$38,100,000
	190	Diversion and care of river	8130	1	LS		$10,780,000
		Subtotal					**$112,110,100**
		Unlisted Items - 15%					**$17,889,900**
		Contract Cost					**$130,000,000**
		Contingenices - 25%					**$30,000,000**
		Field Cost					**$160,000,000**

QUANTITIES		**PRICES**	
BY Mark Pabst	CHECKED	BY R. Baumgarten	CHECKED
DATE PREPARED 8/11/2002	APPROVED	DATE 1/11/2004	PRICE LEVEL Appraisal 2003

CODE:D-8170

ESTIMATE WORKSHEET

SHEET__1__ OF __2___

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev.900
Concrete Gravity Dam (RCC)

PROJECT:
CALFED

DIVISION:

FILE: **Briefcase\USBR Cost Sheets - Updated Sept 2003\[FGC_900 FY03.xls]FGC_900 FY03**

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Diversion and care of river					
		Upstream Cofferdam (Crest @ El. 590)		14,540	CY	$25.00	$363,500
		Steel Pipe		1,682,400	LBS	$2.00	$3,364,800
		Concrete Encasement		2,950	CY	$150.00	$442,500
		Downstream Cofferdam (Crest @ El. 578)		52,070	CY	$25.00	$1,301,750
	2	Excavation, all classes, for dam foundation		30,150	CY	$16.00	$482,400
	3	RCC in dam		911,280	CY	$40.00	$36,451,200
	4	Concrete facing elements		31,320	CY	$120.00	$3,758,400
	5	Concrete cap on top of dam		1,720	CY	$250.00	$430,000
	6	Leveling concrete in dam foundation		7,540	CY	$200.00	$1,508,000
	7	Concrete in spillway crest		770	CY	$250.00	$192,500
	8	Concrete in spillway training walls		335	CY	$350.00	$117,250
	9	Concrete in Outlet Works Intake Structure		N/A	CY		
	10	Concrete in Outlet Works Pipe Encasement		1,100	CY	$150.00	$165,000
	11	Excavation for Pump/Generator Structure		135,000	CY	$15.00	$2,025,000
	12	Concrete in Pump/Generator Structure		35,800	CY	$350.00	$12,530,000
	13	Furnishing and Handling Cement		194,314	TONS	$90.00	$17,488,260
	14	Furnishing and Handling Reinforcement		5,960,000	LBS	$0.60	$3,576,000
	15	Grout Hole Drilling		19,650	LF	$35.00	$687,750
	16	Foundation Grouting		62,000	Sacks	$23.00	$1,426,000
		Subtotal					$86,310,310

QUANTITIES		PRICES	
BY S. Higinbotham	**CHECKED**	**BY** R. Baumgarten	**CHECKED**
DATE PREPARED	**APPROVED**	**DATE** 01/11/04	**PRICE LEVEL** Appraisal 03

CODE:D-8170 **ESTIMATE WORKSHEET** SHEET__2___ OF __2___

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev.900
Concrete Gravity Dam (RCC)

PROJECT:

DIVISION:

FILE: **Briefcase\USBR Cost Sheets - Updated Sept 2003\[FGC_900 FY03.xls]FGC_900 FY03**

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	17	Set up for Drain Holes in Gallery		131	Holes	$200.00	$26,200
	18	Drilling Drain Holes		15,610	LF	$58.00	$905,380
	19	Outlet Works Trashracks		72,000	LBS	$3.50	$252,000
	20	Outlet Works Bulkhead for Intake Structure		45,500	LBS	$4.00	$182,000
		Seats and Guides for Bulkhead		36,000	LBS	$5.00	$180,000
	21	Steel Pipe		2,177,040	LBS	$2.00	$4,354,080
	22	Valves, all Sizes and Types		523,200	LBS	$6.00	$3,139,200
	23	Hydraulic Control System		20,000	LBS	$10.00	$200,000
	24	Pump Units		372,100	LBS	$7.00	$2,604,700
	25	Turbines		651,900	LBS	$6.50	$4,237,350
	26	Generator		500,000	LBS	$8.00	$4,000,000
	27	Governors, Motors, etc.		1-Unit	LS		$1,200,000
		Mobilization					$5,400,000
		Subtotal					**$112,991,220**
		Unlisted Items (15%)					$17,008,780
		Contract Cost					**$130,000,000**
		Contingencies (25%)					$30,000,000
		Field Cost					**$160,000,000**

QUANTITIES		PRICES	
BY S. Higinbotham	**CHECKED**	**BY** R. Baumgarten	**CHECKED**
DATE PREPARED	**APPROVED**	**DATE** 01/11/04	**PRICE LEVEL** Appraisal 03

CODE:D-8170

ESTIMATE WORKSHEET

SHEET__1__ OF __2___

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev. 1100
Concrete Faced Rockfill Dam (CFRF)

PROJECT: CALFED

DIVISION:

FILE: Briefcase\USBR Cost Sheets - Updated Sept 2003\[FG_1100 FY03.xls]B

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	**Diversion and care of river**					
		Upstream Cofferdam (Crest @ El. 655)		112,060	CY	$22.00	$2,465,320
		Excavation for Diversion Tunnel		22,600	CY	$180.00	$4,068,000
		Concrete Liner for Tunnel		8,900	CY	$285.00	$2,536,500
		Furnishing and Handling Cement		2,510	TONS	$120.00	$301,200
		Furnishing and Handling Reinforcement		1,335,000	LBS	$0.65	$867,750
		Temp Tunnel Supports (Rock Bolts)		2,000	BOLTS	$300.00	$600,000
		Drilling for Rock Bolts		24,000	LF	$20.00	$480,000
		Diversion and care subtotal					**$11,318,770**
						Say	**$11,300,000**
		Spillwasy					
		Excavation for Spillway		576,754	CY	$11.00	$6,344,294
		Concrete in spillway crest		2,090	CY	$200.00	$418,000
		Concrete in spillway training walls and Apron		1,090	CY	$230.00	$250,700
		Furnishing and Handling Cement		900	TONS	$120.00	$108,000
		Furnishing and Handling Reinforcement		477,000	LBS	$0.65	$310,050
		Spillway subtotal					**$7,431,044**
						Say	**$7,400,000**
		Outlet Works					
		Concrete in Outlet Works Intake Structure		745	CY	$420.00	$312,900
		Excavation of Outlet Shaft and Gate Structure		3,270	CY	$345.00	$1,128,150
		Concrete in Outlet Works Shaft and Gate Structure		2,010	CY	$485.00	$974,850
		Furnishing and Handling Cement		570	TONS	$120.00	$68,400
		Furnishing and Handling Reinforcement		301,500	LBS	$0.70	$211,050
		Temporary Supports for Shaft					
		No. of Rock Bolts		150	Bolts	$350.00	$52,500
		Depth of Drilling		1,500	LF	$20.00	$30,000
		Outlet Works Trashracks		112,500	LBS	$3.00	$337,500
		Outlet Works Bulkhead & Seats for Intake Structure		115,600	LBS	$5.00	$578,000
		Outlet Gate for Gate Structure		544,600	LBS	$7.50	$4,084,500
		Outlet Works subtotal					**$7,777,850**
						Say	**$7,800,000**

QUANTITIES		PRICES	
BY S. Higinbotham	**CHECKED**	**BY** R. Baumgarten	**CHECKED**
DATE PREPARED	**APPROVED**	**DATE** 01/11/04	**PRICE LEVEL** Appraisal 03

CODE:D-8170

ESTIMATE WORKSHEET

SHEET__2___ OF __2___

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev. 1100
Concrete Faced Rockfill Dam (CFRF)

PROJECT:

DIVISION:

FILE: Briefcase\USBR Cost Sheets - Updated Sept 2003\[FG_1100 FY03.xls]B

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Powerplant					
		Steel Pipe		2,717,000	LBS	$2.00	$5,434,000
		Valves, all Sizes and Types		4,448,300	LBS	$5.00	$22,241,500
		Hydraulic Control System		25,000	LBS	$10.00	$250,000
		Pump Units		359,400	LBS	$7.00	$2,515,800
		Turbines		629,670	LBS	$6.50	$4,092,855
		Generator		780,000	LBS	$8.00	$6,240,000
		Governors, Motors, etc.		1-Unit	LS		$1,200,000
		Excavation for Pump/Generator Structure		145,840	CY	$15.00	$2,187,600
		Concrete in Pump/Generator Structure		35,800	CY	$350.00	$12,530,000
		Furnishing and Handling Cement		10,100	TONS	$100.00	$1,010,000
		Furnishing and Handling Reinforcement		5,370,000	LBS	$0.60	$3,222,000
		Powerplant subtotal					**$60,923,755**
						Say	**$60,900,000**

QUANTITIES		PRICES	
BY S. Higinbotham	**CHECKED**	**BY** R. Baumgarten	**CHECKED**
DATE PREPARED	**APPROVED**	**DATE** 01/11/04	**PRICE LEVEL** Appraisal 03

ESTIMATE WORKSHEET

FEATURE	*PROJECT*	11-Jan-04
Fine Gold Saddle Dam Elevation = 1100' Appraisal Design Stage Tab = fgsaddle	Upper San Joaquin River	06:42 PM
	DIVISION	
	File C:\Documents and Settings\smosgood\Desktop\My Briefcase\USBR Cost Sheets - Updated	

	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		GEOTECH					
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.	8313	82,200	CY	$7.00	$575,400
	30	Zone 1 -Core- Exc, haul, & place (CL, SM, GM in 6" lif to 98% Proctor, 2 mile haul).	8313	380,000	CY	$9.00	$3,420,000
	40	Zone 2 - Filter -Exc, haul, & place processed SM, GM lifts to 98% Proctor, 0.5 mile haul.)	8313	260,000	CY	$20.00	$5,200,000
	50	Zone 3 -Shell- Exc, haul, & place (processed GP in 18 lifts to 95% Proctor, 0.5 mile haul.)	8313	1,500,000	CY	$11.00	$16,500,000
	60	Riprap - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul.)	8313	34,300	CY	$16.00	$548,800
	70	Slope Protection - Exc, haul, & place (rockfill, 18" max 3' lifts, blasting operation 0.5 mile away.)	8313	10,300	CY	$15.00	$154,500
		Subtotal					**$26,398,700**

QUANTITIES		PRICES	
BY Mark Pabst	CHECKED	BY R. Baumgarten	CHECKED
DATE PREPARED 8/11/2002	APPROVED	DATE 1/11/2004	PRICE LEVEL Appraisal 2003

ESTIMATE WORKSHEET

FEATURE

Fine Gold Dam - 580' high

Elevation = 1100'
Appraisal Design Stage

Tab = fg1100

PROJECT
Upper San Joaquin River

11-Jan-04
06:42 PM

DIVISION

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	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		GEOTECH					
	10	Mobilization - 5%	8313	1	LS		$13,000,000
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.	8313	175,000	CY	$6.50	$1,137,500
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul). Toe slab imperv. cap	8313	30,000	CY	$9.00	$270,000
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mi. haul). Shell for Zone 1A	8313	50,000	CY	$7.00	$350,000
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul.) Deck foundation.	8313	166,000	CY	$19.00	$3,154,000
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul.) Transition to shell.	8313	166,000	CY	$18.50	$3,071,000
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away.) Upstream shell.	8313	7,550,000	CY	$8.00	$60,400,000
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away.) Downstream shell.	8313	7,850,000	CY	$7.75	$60,837,500
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	61,000	CY	$220.00	$13,420,000
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing	8313	4,350	CY	$220.00	$957,000
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	19,500	anchors	$40.00	$780,000
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	3,250	CY	$425.00	$1,381,250
	130	Drilling for grout program (setup, drill, test) setups=910	8313	53,300	LF	$32.00	$1,705,600
	140	Grouting (grout injection into competent granite.	8313	40,000	sacks	$24.00	$960,000
	150	Unwatering	8313	1	LS		$2,400,000
	160	Spillway (left abut, in rock)	8130	1	LS		$7,400,000
	170	Outlet Works (tunnel or cut and cover?)	8130	1	LS		$7,800,000
	180	Pumping/Powerplant	8130	1	LS		$60,900,000
	190	Diversion and care of river	8130	1	LS		$11,300,000
	200	Saddle Dam	8313	1	LS		$26,398,700
		Subtotal					**$277,622,550**
		Unlisted Items - 15%					**$42,377,450**
		Contract Cost					**$320,000,000**
		Contingenices - 25%					**$80,000,000**
		Field Cost					**$400,000,000**

QUANTITIES		PRICES	
BY: Mark Pabst	CHECKED	BY: R. Baumgarten	CHECKED
DATE PREPARED: 8/11/2002	APPROVED	DATE: 1/11/2004	PRICE LEVEL: Appraisal 2003

CODE:D-8170

ESTIMATE WORKSHEET

SHEET__1__ OF __2___

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev.1100
Concrete Gravity Dam (RCC)

PROJECT:
CALFED

DIVISION:

FILE: C:\Documents and Settings\smcgood\Desktop\My Briefcase\USBR Cost Sheets - Updated Sept 2003\[FGC_1100 FY03.xls]B

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Diversion and care of river					
		Upstream Cofferdam (Crest @ El. 590)		14,540	CY	$25.00	$363,500
		Steel Pipe		3,557,000	LBS	$1.75	$6,224,750
		Concrete Encasement		4,500	CY	$150.00	$675,000
		Downstream Cofferdam (Crest @ El. 578)		64,240	CY	$25.00	$1,606,000
	2	Excavation, all classes, for dam foundation		102,420	CY	$14.00	$1,433,880
	3	RCC in dam		3,604,420	CY	$33.00	$118,945,860
	4	Concrete facing elements		92,850	CY	$80.00	$7,428,000
	5	Concrete cap on top of dam		5,010	CY	$250.00	$1,252,500
	6	Leveling concrete in dam foundation		25,610	CY	$180.00	$4,609,800
	7	Concrete in spillway crest		770	CY	$250.00	$192,500
	8	Concrete in spillway training walls		1,040	CY	$350.00	$364,000
	9	Concrete in Outlet Works Intake Structure		N/A	CY		
	10	Concrete in Outlet Works Pipe Encasement		2,120	CY	$150.00	$318,000
	11	Excavation for Pump/Generator Structure		180,000	CY	$15.00	$2,700,000
	12	Concrete in Pump/Generator Structure		35,800	CY	$350.00	$12,530,000
	13	Furnishing and Handling Cement		724,922	TONS	$90.00	$65,242,980
	14	Furnishing and Handling Reinforcement		6,712,000	LBS	$0.60	$4,027,200
	15	Grout Hole Drilling		88,250	LF	$30.00	$2,647,500
	16	Foundation Grouting		88,250	Sacks	$22.00	$1,941,500
		Subtotal					$232,502,970

QUANTITIES		PRICES	
BY S. Higinbotham	CHECKED	BY R. Baumgarten	CHECKED
DATE PREPARED	APPROVED	DATE 01/11/04	PRICE LEVEL Appraisal 03

CODE:D-8170

ESTIMATE WORKSHEET

SHEET__2___ OF __2____

FEATURE: 11-Jan-04

Fine Gold Dam Site
Elev.1100
Concrete Gravity Dam (RCC)

PROJECT:

DIVISION:

FILE: C:\Documents and Settings\smosgood\Desktop\My Briefcase\USBR Cost Sheets - Updated Sept 2003\[FGC_1100 FY03.xls]B

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	17	Set up for Drain Holes in Gallery		353	Holes	$200.00	$70,600
	18	Drilling Drain Holes		75,330	LF	$52.00	$3,917,160
	19	Outlet Works Trashracks		81,000	LBS	$3.50	$283,500
	20	Outlet Works Bulkhead for Intake Structure		82,500	LBS	$4.00	$330,000
		Seats and Guides for Bulkhead		61,700	LBS	$5.00	$308,500
	21	Steel Pipe		4,448,300	LBS	$1.75	$7,784,525
	22	Valves, all Sizes and Types		831,940	LBS	$6.00	$4,991,640
	23	Hydraulic Control System		25,000	LBS	$10.00	$250,000
	24	Pump Units		359,400	LBS	$7.00	$2,515,800
	25	Turbines		629,700	LBS	$6.50	$4,093,050
	26	Generator		780,000	LBS	$8.00	$6,240,000
	27	Governors, Motors, etc.		1-Unit	LS		$1,200,000
	28	Saddle Dam		1	LS		$23,338,700
		Mobilization					$14,500,000
		Subtotal					**$302,326,445**
		Unlisted Items (15%)					$47,673,555
		Contract Cost					**$350,000,000**
		Contingencies (25%)					$80,000,000
		Field Cost					**$430,000,000**

QUANTITIES		PRICES	
BY S. Higinbotham	CHECKED	BY R. Baumgarten	CHECKED
DATE PREPARED	APPROVED	DATE 01/11/04	PRICE LEVEL Appraisal 03

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