Executive Summary

San Joaquin County and the San Joaquin County Flood Control and Water Conservation District (SJCFCWCD) commissioned this study to determine the potential of using the Freeport Regional Water Agency (FRWA) Freeport Project conveyance system to make use of San Joaquin County's water right filing on the South Fork of the American River.

Use of the South Fork filing is part of the overall strategy for San Joaquin County water management described in the July 2007 Eastern San Joaquin Integrated Regional Water Management Plan (IRWMP). This project is described herein as the "Freeport Element of the American River Use Strategy" or "Freeport Element."

This document covers three major activities:

- **Activity A - Water Rights, and Institutional Support** – This activity includes development of the Purpose and Need statement and critical evaluation of the water rights application
- **Activity B - Develop and Evaluate Alternative Project Facilities –** This activity includes formulation of alternatives, screening them to select the most promising and developing them to a conceptual level of design suitable for detailed environmental analysis
- **Activity C - Environmental Compliance, Reporting and Planning –** This third activity presents an approach for environmental compliance, presents an analysis of environmental impacts, and presents a scope for subsequent environmental documentation

Introduction

The Freeport Regional Water Project is currently under construction and will provide up to 185 million gallons per day (mgd) to customers in Sacramento County and within the East Bay Municipal Utility District (EBMUD). The project will have the capacity to convey 100 mgd to a connection point to EBMUD's Mokelumne Aqueduct in San Joaquin County (see Figure ES-1). As this is a supplemental supply for EBMUD, pipeline capacity is expected to be available for use by others roughly two-thirds of the time, during average and wet years. These are precisely the times when San Joaquin County's American River water supply is expected to be most abundant.

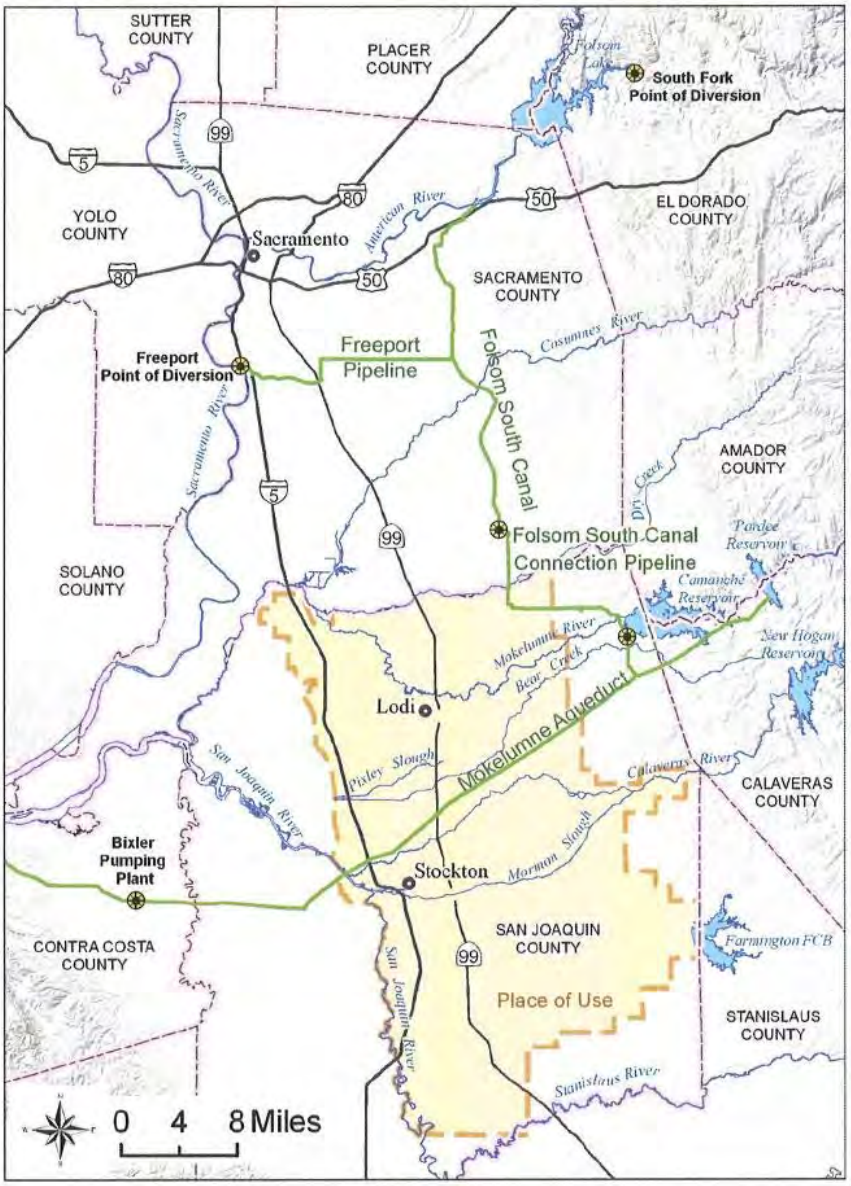
Purpose and Need

The purpose of the Freeport Element Project (Chapter 2) is to make use of the County's American River water right filing and secure a long-term supplemental surface water supply as part of developing locally supported conjunctive use projects that improve water supply reliability and sustainability in San Joaquin County.

Implementation of the proposed Freeport Element will serve to implement the IRWMP/ICU Program by meeting the following objectives:

- Secure additional surface water supply as part of implementing the County's IRWMP Integrated Conjunctive Use (ICU) Program and meeting the program objectives to:
    - Protect and restore the Eastern San Joaquin County groundwater basin
    - Meet the future water supply needs of the County
    - Provide benefits to both the County and the broader region
- Secure a supply that provides for local control by pursuing a surface water right for the County (Application 29657)
- Maximize use of existing facilities and coordination with other regional infrastructure in the interest of minimizing cost and environmental effects and

Figure ES-1. Regional Map



providing for regional system interties that may enhance regional supply reliability

Water Right Application

San Joaquin County filed water right application 29657 in February 1990 for diversion of up to 620 cubic feet per second (cfs) from the South Fork of the American River. The point of diversion was moved to the Freeport site and diversion rate reduced to 350 cfs in August 2003. The water right was noticed by the State Water Resources Control Board on January 25, 2008.

An estimated average 54,000 acre-feet per year of the County's supply could be conveyed using EBMUD's unused Freeport Pipeline capacity (see Chapter 3). A 2006 study performed for the Department of Water Resources and the Northeastern San Joaquin County Groundwater Basin Authority (GBA) showed that an average 53,000 acre-feet per year could be conveyed to the County from the South Fork and other sources[1].

Initial Project Alternatives

Seven principal alternatives were studied, characteristics of which are summarized in Table ES-1**Error! Reference source not found.** Generally, each alternative is characterized by a single **recharge mechanism**, as follows:

Recharge Mechanisms

a. Urban In-Lieu: Alternatives C1 & C2 – serve water treatment plants to replace existing municipal groundwater pumping

b. Agricultural In-Lieu: Alternatives G1a, G1b & G1c – provide surface water to agricultural uses in lieu of existing groundwater pumping

c. Recharge Ponds: Alternatives G2 & R1-- percolate water to water table aquifers

d. Injection Wells: Alternative R1 – places surface water into deeper or confined aquifers using injection/extraction wells

[1] Water Resources & Information Management Engineering, Inc., January 2006, "San Joaquin County Groundwater Basin Authority Integrated Regional Water Management Plan Technical Memorandum, Freeport Regional Water Project Analysis"

e. Field Flooding: (no alternatives evaluated) – percolates water through flooding of fields in the non-irrigation season

Table ES-1. Initial Project Alternatives

Alternative	Recharge Method	Max Diversion Rate (cfs)	Max Recharge Rate (cfs)	Water Source(s)
C1	Delivery to Water Treatment Plants	79	79	American River\1
C2	Delivery to Water Treatment Plants via Jack Tone Pipeline	155	155	American River\1
G1a	Ag In-Lieu (w/o storage)	155	155	American River\1
G1b	Ag In-Lieu (w/150 kaf Duck Creek Reservoir)	1,155	355	American\1 & Mokelumne Rivers\2
G1c	Ag In-Lieu (w/75 kaf Duck Creek Reservoir)	155	200	American River\1
G2	Recharge Ponds	155	155	American River\1
R1	Regional Banking	182	182	American\1 & Mokelumne Rivers\3

Key:
\1 San Joaquin County water right filing 29657 on the South Fork American River (diverted from the Sacramento River at Freeport)
\2 Mokelumne River Power and Water Authority water right filing 29835 on the Mokelumene River
\3 EBMUD, Amador Co, and Calaveras Co water rights

Conveyances

Four classes of conveyances are represented in the alternatives:

a. Pipelines. Water conveyed in the Freeport Pipeline is pumped, and pipelines can use the pump pressure to move water considerable distances. Two key facilities are:
   i. **Elliot Road Pipeline**: Included in all Alternatives except G1c (Ag In-Lieu/small reservoir). This is a key facility that takes advantage of installed Freeport pumping capacity.

   ii. **Jack Tone Road Pipeline**: Alternative C2. A reversible north-south conveyance along this general alignment has been a long-sought regional facility.

b. Natural Channels. The Freeport Pipeline crosses local natural channels in several locations which would allow conveyance of water for considerable distances at minimal cost. Natural channels are already used extensively in the County. Channels included in the alternatives are:
   i. **Bear Creek and Pixley Slough**: Alternatives C1 (WTPs), G2 (Recharge Ponds), and R1 (Regional Banking). These conveyances may have endangered species and erosion/ sedimentation/ flood control issues.

   ii. **Duck Creek**: Water is conveyed through the Duck Creek watershed in Alternatives C1 (WTPs) and G1a (Ag In-Lieu/no

reservoir).

c. Duck Creek Reservoir: Water is stored and conveyed in the reservoir in Alternatives G1b & G1c.

d. Canals. Because pipelines are expensive, a canal was examined to evaluate cost savings in sub-Alternative C2b. Unlike a pipeline, water conveyed via canal generally will need to be re-pumped to the recharge site.

Water Sources

a. American River. All Alternatives attempt to maximize use of American River water available under the County's water right filing, conveyed at the nominal 155 cfs capacity of EBMUD's facilities. Enhanced yield from these facilities is examined in sub-Alternatives G2b and R1b.

b. Mokelumne River Joint Project.

   i. Facilities jointly operated with the **MORE Water Project** are evaluated in Alternative G1b (Ag In-Lieu/large reservoir).

   ii. A potential implementation of the **Integrated Regional Conjunctive Use Project** is evaluated as Alternative R1 (Regional Banking).

Each of the alternatives was developed to clearly distinguish between recharge mechanisms and conveyances, generally using a single recharge mechanism. The "best" or optimal alternative may be a mix of recharge mechanisms that is not represented in the list of preliminary alternatives.

Project Performance

Analysis of water right availability (see Chapter 3) is based on post-processed CalSim II model studies. Generally, when water surplus to other in-stream and downstream needs is available at the South Fork American River diversion location, significantly greater quantities are passed through the Lower American River to meet instream flow standards. This makes it highly likely the water will be available. This water is not dependent on regulation in Folsom Reservoir.

The average annual water availability of American River supply is 44,000 acre-feet per year when limited by EBMUD's 155 cfs Freeport Project conveyance capacity. The ability to use this supply is influenced by the following factors:

Seasonality. Under the County's water right filing and constrained by Freeport pipeline capacity, water is available December through June in approximately 70 percent of years. The following observations can be made:

a. Water availability is poorly matched to urban or agricultural in-lieu demand

b. Surface storage and regulation (e.g. Duck Creek Reservoir) significantly improves Project performance

c. Recharge ponds and injection wells can accept water at any time of the year, and are thus fully compatible with the American River supply

Natural Channels. The capacity of natural channels is assumed to be available when needed. This assumption could be moderated by the following:

a. Actual operation during spring runoff will likely compromise yield

b. Water diversion from Bear Creek to Pixley Slough is assumed in Alternatives C1 (WTPs), G2 (Recharge Ponds), and R1 (Regional Banking); however:

   i. Flood control operations may restrict this diversion

   ii. Use of natural channels may increase sedimentation and/or erosion.

   iii. Use of natural channels may have detrimental or beneficial resource impacts

c. The above factors may also apply (to a lesser degree) to use of Duck Creek for conveyance in Alternatives C1 (WTPs), G1a (Ag In-Lieu/no reservoir), G1b (Ag In-Lieu/large reservoir), and G1c (Ag In-Lieu/small reservoir)

Capital Costs

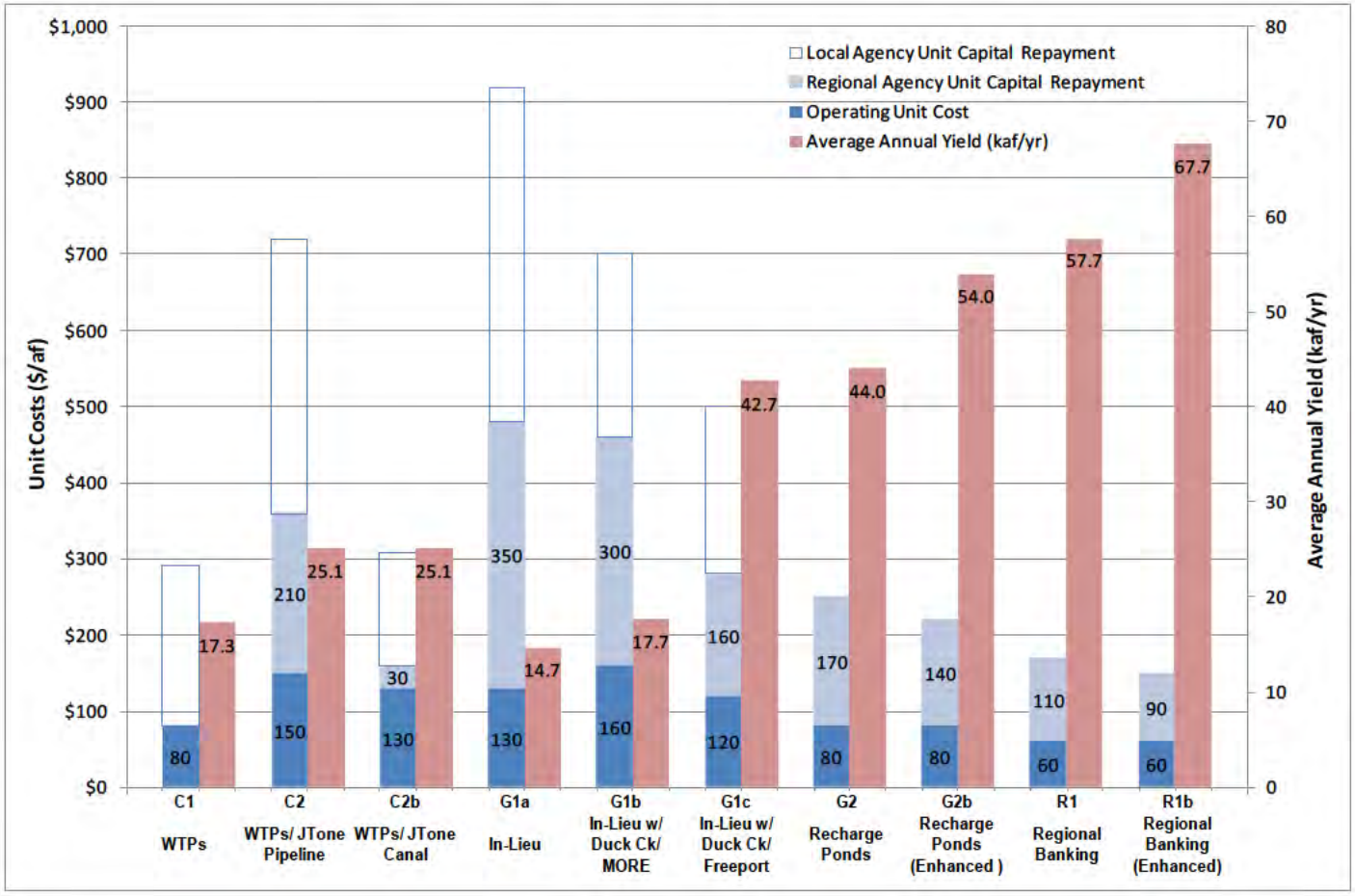
For each alternative, a complete, buildable design was developed from which quantities of pipelines, land, and other facilities were estimated. Caveats and assumptions used in the capital cost estimates include:

1. All estimates exclude payments for use of the Freeport Pipeline. These costs are subject to negotiation with EBMUD and Sacramento County, and could range from zero to a proportional share of the cost of construction.

2. Commodity prices used for estimation have recently been at all-time highs, though several key suppliers (e.g. pipeline manufacturers) do not report significant declines.
3. Land costs are currently very uncertain; estimates herein are based on judgment and recent sales.
4. Alternative G1b (Joint MORE Water Project Duck Creek Reservoir) excludes the cost of Duck Creek Reservoir and Pardee Tunnel – these are assumed to be fully MORE Water costs. Full benefits of the reservoir are assigned to the MORE Water Project. The Freeport Element is assigned only the marginal benefits from using the reservoir. Costs for the agricultural in-lieu distribution system are assigned to the two projects in proportion to the volume recharged.
5. Alternative G1c (half-sized Duck Creek Reservoir, Freeport Element only) Duck Creek Reservoir costs are fully assigned to the Freeport Element. The Freeport Element is assigned the full benefits from using the reservoir.
6. Alternative R1 (Regional Project) excludes the cost of rehabilitation of the Bixler Pumping Plant. This pumping plant is used for moving recovered groundwater to EBMUD, and is not factored into the cost of moving water to San Joaquin County users.
7. Potential local cost share was estimated by assigning single-user costs to the local agency. Suggested local agency costs include distribution systems that are planned or will require rehabilitation.

A summary of water yield and unit (dollar per acre-foot) costs is presented as Figure ES-2. The timing mismatch between water availability and demand gives agricultural in-lieu Alternative G1a (Ag In-Lieu/no reservoir) the highest unit cost. The ability to use all available water, minimal facility requirements, banking partner cost participation and leave-behind water give the regional banking alternatives R1 (Regional Banking) the lowest unit cost.

Figure ES-2. Summary of Unit Cost and Project Yield



Project Ratings

Projects were rated on 30 Performance Measures on a 9-point [H]igh, [M]edium, [L]ow rating scheme. Detailed ratings are described in Chapter 7, and summarized in Table 7-10. This table uses the [H]igh, [M]edium, [L]ow rating scheme as well as corresponding "stoplight" (Green-Yellow-Red) shading to aid in visual integration.

The bottom of Table 7-10 shows an overall rating for the alternatives, assuming all Performance Measures are weighted equally. All alternatives, including the No Action alternative, rate [M] or [M+] based on this weighting.

The following observations can be made:

Best
H+
H
H-
M+
M
M-
L+
L
L-
Worst

Alternatives

C1	Water Treatment Plants
C2	Water Treatment Plants via Jack Tone Pipeline
C2b	Jack Tone Canal
G1a	Ag In-Lieu
G1b	Ag In-Lieu w/ MORE Water & Duck Creek Reservoir
G1c	Ag In-Lieu w/ Small Duck Creek Reservoir
G2	Recharge Ponds
G2b	Enhanced Yield
R1	Regional Banking
R1b	Enhanced Yield

No Action

- The No Action Alternative ranks high for the absence of environmental impact, but ranks low for criteria associated with water supply reliability and sustainability, compatibility with planned growth and future facilities, and flexibility to adapt to changing conditions.

Water Treatment Plants

- Alternative C1, which provides water to the region's water treatment plants, is compatible with planned growth and existing cultural practices, but ranks low in reliability and sustainability due to the low overall project yield. Serving water treatment plants may be fatally flawed due to limited water purveyor interest in taking Freeport Element water.
- Alternative C2, which provides water to the region's water treatment plants and includes the Jack Tone Pipeline regional conveyance, is similar to Alternative C1, and has the potential to move greater amounts of water. As with Alternative C1, serving water treatment plants may be fatally flawed due to limited water purveyor interest in taking Freeport Element water.

Agricultural In-Lieu

- Alternative G1a (Ag In-Lieu/no reservoir) is highly compatible with existing agricultural practices by providing new supplies for agricultural uses, but has limited water supply ability due to the fundamental mismatch in timing of winter/spring Freeport Element supplies and spring/summer agricultural needs.
- Alternative G1b (Ag In-Lieu/large reservoir) overcomes some of the timing mismatch by storing a portion of the Freeport Element supply in Duck Creek Reservoir, where it can be regulated to meet irrigation season needs. This alternative includes an extensive water distribution system in conjunction with the MORE Water Project, with consequent higher costs and environmental issues. Full costs and yield associated with Duck Creek Reservoir are assigned to the MORE Water Project in this alternative; only marginal costs and benefits are assigned to the Freeport Element.
- Alternative G1c (Ag In-Lieu/small reservoir) makes use of a half-size Duck Creek Reservoir, fully dedicated to Freeport Element supplies. This alternative is assigned full cost and full yield associated with the Duck Creek facility. The regulatory storage allows for full use of Freeport Element supplies delivered as

needed to meet agricultural demands. The dedicated reservoir has high capital and operating costs, and relatively high environmental impacts. Permitting the reservoir on lands with an existing conservation easement will make implementation more difficult.

Recharge Ponds

- Alternative G1 would utilize all available Freeport Element supplies through recharge in percolation ponds. This alternative has a low unit cost, low environmental impacts, and is considered compatible with existing facilities and highly implementable. Permanent conversion of 750 acres of agricultural land to recharge ponds is the major drawback.
- Alternative R1 (Regional Banking) would utilize all available Freeport Element supplies through recharge in percolation ponds, similar to Alternative G1. This alternative also adds groundwater banking facilities which allow for additional yield and shared costs. Alternative R1 has the lowest unit cost, is and considered highly compatible with existing facilities. Permanent conversion of 750 acres of agricultural land to recharge ponds, and the need to formulate a multi-party groundwater banking arrangements are the major drawbacks.

Sensitivity Analysis

As noted above, Table 7-10 summarizes the ratings by weighting the 30 Performance Measures equally. By changing the relative weighting of the Performance Measures, the following observations can be made (see Table ES-2):

Overall Ratings

- When all criteria are weighted evenly all projects rank [M] or [M+]
- Heavily weighting the Reliability/Sustainability category elevates reservoir Alternatives G1b (Ag In-Lieu/large reservoir) and G1c (Ag In-Lieu/small reservoir) to [H-] and depresses the No Action and water treatment plant Alternatives C1 and C2 to [M-]
- Heavily weighting the Economics category drops capital-intensive Alternatives C2 (Jack Tone pipeline) and G1c (Duck Creek Reservoir) to [L+]
- Heavily weighting the Compatibility category elevates agricultural in-lieu Alternatives G1b and G1c to [H-]
- Heavily weighing the Environmental category elevates the No Action alternative to [H-]

- Heavily weighting the Implementability category drops the No Action alternative to [L+]
- Weighting only the cost and yield (i.e. unit cost) factors elevates Alternative R1 (Regional Banking) to [H-]

Environmental Ratings

- Impacts to vernal pools may be overestimated in already developed agricultural lands, particularly in agricultural in-lieu Alternatives G1a, G1b, and G1c
- There are considerable impacts estimated for conveying water in Bear Creek. Impact to the California tiger salamander in Bear Creek may be overestimated (impacts may actually be beneficial)

A number of sensitivity analyses were performed to test cost, energy, and yield estimates. These include:

Cost Sensitivity

a. Regional conveyance. Alternative C2 (Water Treatment Plants via Jack Tone Pipeline) was originally added to evaluate cost sensitivity of Alternative C1 (Water Treatment Plants) using a Jack Tone Pipeline instead of pumping water through the Bear Creek and Duck Creek watersheds. Although sized for 155 cfs (100 mgd), maximized use of this a long-envisioned regional facility were not evaluated.

b. Canal. Alternative C2b (Jack Tone Canal) examines cost savings of canal along the Jack Tone Road alignment

c. Unit costs. Costs for key commodities and adders were compared with other sources. These comparisons included:

   i. Farmington Project costs (pipeline and adders) being developed for SEWD and USACE by Montgomery Watson Harza

   ii. Pipeline bid costs for the Freeport Water Project

   iii. Well costs based on recent bids

Alternatives	
C1	Water Treatment Plants
C2	Water Treatment Plants via Jack Tone Pipeline
C2b	Jack Tone Canal
G1a	Ag In-Lieu
G1b	Ag In-Lieu w/ MORE Water & Duck Creek Reservoir
G1c	Ag In-Lieu w/ Small Duck Creek Reservoir
G2	Recharge Ponds
G2b	Enhanced Yield
R1	Regional Banking
R1b	Enhanced Yield

d. Energy cost. The viability of alternatives assuming a doubling of energy cost was examined as part of Performance Measure 7[2]

e. Greenhouse gases. A comparison of EBMUD Freeport Project operation to the Regional Banking alternative (R1) was conducted. Alternative R1 could deliver twice as much water to EBMUD (14 vs. 7 kaf/yr) at a quarter of the energy use (i.e. greenhouse gas emission). This is due to lower overall pumping lift (402 vs. 820 ft) and a lower volume of water moved (14 vs. 23 kaf)

f. Enhanced yield. The Folsom South Canal pump station is designed to provide approximately 400 feet of pressure to the Camanche pump station at a velocity of about 5.5 feet per second. This high pumping capacity could also be used to move greater amounts of water to lower elevations under San Joaquin County's water right application, which has a maximum diversion rate of 350 cfs. If the system is allowed to operate at 7 feet per second, an extra average annual 10,000 acre-feet could be conveyed (a 23% increase). This extra capacity is examined in Alternatives G2b and R1b.

g. Local cost share. Many of the alternatives include installation or rehabilitation of water distribution systems. Facilities that serve a single entity were segregated as an approximation of potential cost share.

[2] Performance Measures are presented in Chapters 4 and 7

Table ES-2. Ranking of Alternatives with various Weighting Schemes

Weighting	Weight	0 No Action	C1 WTPs	C2 WTPs/ JTone Pipeline	G1a In-Lieu	G1b In-Lieu w/ Duck Ck/ MORE	G1c In-Lieu w/ Duck Ck/ Freeport	G2 Recharge Ponds	R1 Regional Banking
Evenly Weighted x1	30	M	M	M	M+	M	M	M+	M+
Reliability/Sustainability Weighted x15	100	M-	M-	M-	M+	H-	H-	M+	M+
Economics Weighted x36	100	M-	H-	L+	M	M	L+	M	M+
Compatibility Weighted x19	102	M	M+	M+	M+	H-	M	H-	M+
Environmental Weighted x8	100	H-	M+	M+	M+	M	M	M+	M
Implementalbility Weighted x9	102	L+	M	M	M+	M+	M	M+	M+
Cost & Yield (Unit Cost) x36	100	M-	M	M-	M	M	M	M+	H-

Recommendations

Based on the analysis performed in this study, the Project Team makes the following recommendations:

Projects Set Aside From Further Consideration

a. **Alternative C1** (Water Treatment Plants)

- This Alternative may be fatally flawed due to limited of purveyor (Lodi, Stockton) interest in taking this water
- The Lodi and Stockton treatment plants are better served from the Mokelumne River using the MORE Water Project facilities
- Moderately high unit cost ($290/af)
- High number of "Low" ratings (6)
- Alternative C2 (WTPs/Jack Tone Pipeline) is retained for further study of service to the SEWD water treatment plant, and to carry forward the regional conveyance concept
- Service to water treatment plants might be included as an adjunct to any other alternative

b. **Alternative G1a** (Agricultural In-Lieu with no reservoir)

- Does not maximize use of American River supply.
- Low yield (14,700 acre-feet per year) due to fundamental mis-match between winter water availability and irrigation season demand.
- Highest unit cost ($920/af)

Alternative Recommended to Carry Forward

1. **Alternative G1c** (Agricultural In-Lieu from 75,000 af Duck Creek Reservoir)
    - Maximizes use of American River supply
    - High number of "Low" ratings (7)
    - High energy requirements ($80/af)
    - High unit cost ($500/af)
2. **Alternative G2** (Recharge Ponds)
    - Maximizes use of American River supply
    - Moderate unit cost ($250/af). Unit cost drops (to $220/af) for enhanced yield variant
    - Lowest number of "Low" ratings (1), related to permanent removal of prime agricultural land from production
    - High reliability
    - Moderate energy requirements ($60/af)
3. **Alternative R1** (Regional Project)
    - Maximizes use of American River supply
    - Water bankers leave water behind – highest yield.
    - Low number of "Low" ratings (2), related to permanent loss of farmland and difficultly to negotiate regional banking agreement
    - Moderately low unit cost ($170/af). Unit cost drops (to $150/af) for enhanced yield variant
    - Moderate energy requirements ($60/af)
    - Potential EBMUD greenhouse gas offsets included

Alternatives	
C1	Water Treatment Plants
C2	Water Treatment Plants via Jack Tone Pipeline
C2b	Jack Tone Canal
G1a	Ag In-Lieu
G1b	Ag In-Lieu w/ MORE Water & Duck Creek Reservoir
G1c	Ag In-Lieu w/ Small Duck Creek Reservoir
G2	Recharge Ponds
G2b	Enhanced Yield
R1	Regional Banking
R1b	Enhanced Yield

Alternatives Meriting Additional Study

1. **Alternative C2** (Jack Tone Pipeline)
    - Identify hybrid uses for pipeline and decrease unit cost

    a. **Alternative C2b** (Jack Tone Canal)
    - Estimate performed as a pure cost sensitivity analysis – no detailed routing or impact studies
    - May save 70% of capital cost ($65M vs. $215M)
    - May reduce unit cost by half (depending on hybrid uses as noted for Alt C2 above)
    - Alignment studies will likely increase cost and impact estimates

2. **Alternative G1b** (joint Duck Creek Reservoir)
    - Detailed operating studies with optimized fill rules would increase Freeport Element yield and lower unit cost (now $700/af)

3. **Alternative G2b** (Recharge Ponds with Enhanced Capacity)
    - Alternative G2 was designed assuming sustained percolation rates of 0.5 ft/day. Tests performed for the Farmington Project indicate that rates 50% higher may be possible
    - The Freeport Pipeline has a nominal capacity of 155 cfs at 5.5 ft/s. Using the extra head available and allowing 7.0 ft/s, yield can be increased 10 kaf/yr
    - Unit cost drops to $220/af

4. **Alternative R1b** (Regional Project with Enhanced Capacity)
    - Similar to Alternative G2, Alternative R1 was designed assuming sustained percolation rates of 0.5 ft/day. Tests performed for the Farmington Project indicate that rates 50% higher may be possible
    - The Freeport Pipeline has a nominal capacity of 155 cfs at 5.5 ft/s. Using the extra head available and allowing 7.0 ft/s, yield can be increased by 10,000 acre-feet per year
    - Unit cost drops to $150/af

5. **Production Unit Concept**
    - A hybrid pond/in-lieu alternative pairing an acre of recharge ponds with

each 40 acres of irrigated land to allow farming with no net extraction from groundwater

- Direct in-lieu supply March-June in the 70% of years when American River water is available with percolation of excess supply December-June
- Extract from groundwater to meet agricultural needs July-September (and March-June when American River supply is not available)
- Provides uniform supply to participating grower
- No net extraction from groundwater
- Locates benefits and impacts in same area

6. **Other Hybrid Alternatives**
    - Combine recharge mechanisms (e.g. supply to SEWD agriculture and urban uses; supply to NSJWCD agriculture and recharge ponds)
    - Promote favorable concepts (recharge ponds, surface storage)
    - Discard unfavorable concepts (stream conveyance)

Future Studies

Recommended additional studies include:

1. Groundwater modeling to quantify benefits and impacts, quantify mounding and migration, and to develop groundwater banking rules
2. CalSim modeling to quantify Sacramento River and Delta impacts and integrate modeling of the Mokelumne River
3. Develop operating rules for coordinated operation of American, Calaveras and Mokelumne river supplies to optimize deliveries
4. Prepare Program Environmental Impact Report
5. Carry forward promising Freeport Element alternatives into the MORE Water Project alternatives analysis
6. Carry forward promising Freeport Element alternatives into the Farmington Project implementation planning
7. Develop groundwater banking agreements
8. Develop an early implementation (“no regrets”) capital improvement plan targeting grant funding

Figure ES-3. Freeport Diversion under construction September 2007