Economic &
Planning Systems

Real Estate Economics
Regional Economics
Public Finance
Land Use Policy

PRELIMINARY FEASIBILITY STUDY

FORMATION OF A COMMUNITY SERVICES DISTRICT TO PROVIDE WATER SERVICES TO THE MARK WEST AREA

Prepared for:

The Sonoma County Water Agency

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In Association with Coastland Civil Engineering, Inc.

March 2007

EPS #16017

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TABLE OF CONTENTS

I. INTRODUCTION 1
Summary of Findings 1

II. CURRENT SERVICES AND FACILITIES 4
Water Sources 4
Facilities 4
Operations 6

III. FUTURE SERVICE AND FACILITIES 10
Population 10
Supply Capacity 10
Future Facilities 10
Cost Allocation of Capital Improvement Projects 13

IV. PUBLIC ACQUISITION 17
Eminent Domain 17
Acquisition Process 17
Estimated Acquisition Costs 19
Impacts on Property Owners and Ratepayers 23
Impacts on Other Agencies 25

V. ORGANIZATIONAL OPTIONS 26
Status Quo 26
Public Acquisition 26

APPENDICES

Appendix 1: Larkfield-Wikkiup District Preliminary Engineering Feasibility Study
Appendix 2: Current Larkfield General Metered Water Rates
Appendix 3: Steps in the Formation of a CSD

LIST OF TABLES AND MAPS

Table 1: Comparison of Water Rates in Sonoma County 7
Table 2: Summary of 2007 Estimated Cal-Am Expenditures 9
Table 3: Expected Population Growth Until Area Buildout 11
Table 4: Water Capacity Needs: 2010 to Buildout 12
Table 5: Storage Needs: 2010 to Buildout 14
Table 6: Strategic Capital Expenditure Plan 15
Table 7: Summary of 2007 Estimated Earnings 20
Table 8: Total Potential Acquisition Value 21
Table 9: Total Potential Acquisition Cost 22
Table 10: Potential Impact on Ratepayers 24

Map 1: Larkfield District Service Area Map 5

I. INTRODUCTION

The Sonoma County Water Agency (SCWA) retained Economic & Planning Systems (EPS) to assess the feasibility of the formation of a Community Services District (CSD) in the Mark West area to acquire, operate, and manage the area's water system. California-American Water Company (Cal-Am), a privately held company whose operations are regulated by the California Public Utilities Commission (CPUC), owns and operates the system serving approximately 2,050 residential connections and 280 commercial connections.

This report represents an initial review of feasibility. The report describes advantages and drawbacks of public operation of the currently private system, as well as the potential impacts on rates and other costs to residents and property owners related to acquisition and operation. Chapter V discusses options related to the phasing of the CSD formation, bond issuance, and acquisition. If the community decides to proceed with the process, EPS will prepare a more detailed analysis of potential operating costs and expenditures in support of actions by the Sonoma County Local Agency Formation Commission (LAFCO).

To evaluate the feasibility of a CSD for water system operations, EPS and Coastland Civil Engineering, Inc. (Coastland) reviewed the current condition of the existing water utility's facilities, potential future growth and planned improvements, estimated the possible cost of acquiring the private water utility, and identified potential acquisition and financing options. The review is based on information filed by Cal-Am with the CPUC, information provided directly by Cal-Am, and additional independent research and analysis where information was not provided or was unavailable.

Cal-Am recently submitted information to the CPUC as a part of its rate case, and it is expected that the information will include updated capital improvement and Master Plan information. In the absence of this information, EPS and Coastland have not been able to fully validate improvements proposed by Cal-Am.

SUMMARY OF FINDINGS

CSD FORMATION

- The formation of a Community Service District (CSD) would provide a mechanism for funding the acquisition of the water system, and would create an entity to publicly operate the system. The formation process could be initiated by a petition of voters or by resolution of the Board of Supervisors. Appendix 3 provides additional detail about steps in the formation process.

- While the focus of the current report is on water services, a CSD could provide additional services, other than water provision, desired by the community.

PUBLIC ACQUISITION

- Acquisitions may occur through a negotiated sale or through eminent domain. Eminent domain may be necessary to acquire Cal-Am's water system in the Mark West area, since Cal-Am has indicated that it is unwilling to sell the system. The eminent domain process would be initiated by the CSD (contracting County Counsel or a private firm).

- There are a number of steps required in the acquisition process. First, Local Agency Formation Commission (LAFCO) approval is necessary for the formation of a Community Services District (CSD). Following CSD formation, voter approval is required to create a levy that will be required to repay bonds issued for acquisition, start-up and initial capital improvements. An appraisal of the water system is required to enable the CSD to make a purchase offer, followed by eminent domain actions assuming the purchase is not accepted. The eminent domain proceedings will determine the purchase price. If eminent domain is successful, the start-up of operations begins.

- There are both benefits and drawbacks to acquiring Cal-Am's water system. A primary benefit is the local management and accountability of the water service that could result, and potential cost savings due, in part, to competitive bidding and local oversight.

- A primary drawback would be the CSD's initial inexperience in operating and managing a water system. Another major drawback would be the acquisition cost of the system, which could increase existing annual homeowner costs by 75 percent or more depending on the purchase price and potential cost savings.

- The estimated acquisition value is $9 million; the actual price could differ depending on the outcome of future appraisals and legal proceedings. When finance costs, reserves, initial capital, and other costs are added to the acquisition value, the total cost could be in excess of $22 million.

- The total acquisition cost is estimated to be approximately $8,000 per residential customer, or $50 per month. Potential cost savings, e.g., from elimination of the system's taxes and profit, could reduce the average acquisition cost per residential customer to $42 per month. These rates would not apply to properties not currently served by Cal-Am, or by the future CSD.

CURRENT SERVICES AND FACILITIES

- The Cal-Am water system has five water sources: an aqueduct connection with SCWA and four ground water wells. A contract being negotiated with the SCWA provides for a maximum monthly average use of 800,000 gallons per day (gpd), or

560 gallons per minute (gpm). The four wells have a total reported 2006 capacity of 1,030 gallons per minute (gpm). Water production trends indicate that production from the wells has been declining over time.

- The Larkfield water system and associated facilities appear to be in good condition and in compliance with the California Department of Health Services (DHS) requirements. System operations and maintenance also appear to be satisfactory; however, there is a need for additional storage capacity and possibly an additional filter in the future.

- Water rates in the Mark West area are at, or above average, for larger water service providers in the surrounding areas. Cal-Am's monthly base rate is average for the surrounding area, but the per-unit or commodity charge is one of the highest. This relative comparison is likely to change in the future due to anticipated rate increases for Cal-Am as well as the other water service providers.

FUTURE SERVICES AND FACILITIES

- Given current population projections, demand is expected to exceed capacity by 2010. Based on analysis by Coastland Civil Engineering, one well must be added by 2010 in order to meet growing demand and declining production of existing wells. In addition, due to the limited capacity of Well 6 (the Mark West Station Well), another well will be required by 2020 to meet the demands of development in the area. The system currently serves approximately 2,350 connections and the number of connections is expected to increase by almost 400 by 2030.

- Cal-Am's strategic capital expenditure plan proposes approximately $13 million for projects from 2006-2009. Of the $13 million, a portion is allocated for projects that are associated with new development, while another portion is for projects necessary for the continued operation of the water system. Some of the projects necessary to serve new development include the construction of new wells, a new tank, and new mains.

OTHER ISSUES

- Public ownership of the system will reduce property tax by an estimated $80,000 annually. These taxes benefit the County, as well as other agencies serving the area.

II. CURRENT SERVICES AND FACILITIES

The Larkfield water system serves an unincorporated area on the eastern side of the Santa Rosa Valley in Sonoma County approximately 4 miles north of Santa Rosa. The service area is shown in **Map 1**. The water system is owned and operated by California American Water (Cal-Am). The water system currently serves approximately 2,380 customers, of which about 86% are residential. Annual water production is approximately 1,250 acre feet or 400 million gallons.

WATER SOURCES

The Cal-Am water system obtains water from five sources: four ground water wells and an aqueduct connection with the SCWA. The four ground water wells are Wells 1A, 3A, 4A, and 5. The wells pump water primarily from the Glen Ellen formation. Well capacities fluctuate over the year and have generally declined over time.

Cal-Am also purchases water from the SCWA. The sources of water from the SCWA are wells adjacent to the Russian River and, to a lesser extent, wells located along the Cotati Aqueduct in the Santa Rosa Plain. The current agreement between Cal-Am and the SCWA allows for a maximum monthly average of 0.7 million gallons per day (MGD). Currently, SCWA and Cal-Am are negotiating over an agreement for a proposed maximum average of 0.8 MGD.

FACILITIES

In addition to the ground water wells, the Larkfield water system consists of transmission, treatment, storage, and distribution facilities.

TREATMENT FACILITIES

Water from each well is transported directly to the treatment plant through transmission piping. There is a total of approximately 7,940 feet of transmission piping to move the water from the wells to the treatment plant. Due to the high contaminant levels of iron and manganese, the water is treated in the Larkfield Water Treatment Plant before entering the distribution system. The treatment plant is located to the east of Old Redwood Highway and south of Mark West Creek. Cal-Am indicates that they own the property on which the treatment plant is located.

The treatment plant facilities include filters, chemical addition facilities, a backwash tank, and associated controls and monitoring equipment. Groundwater is treated by oxidation, ferric hydroxide co-precipitation, greensand filtration and hypochlorination. The treatment facility is capable of treating up to 1,200 gpm.

Map 1

LARKFIELD DISTRICT SERVICE AREA MAP

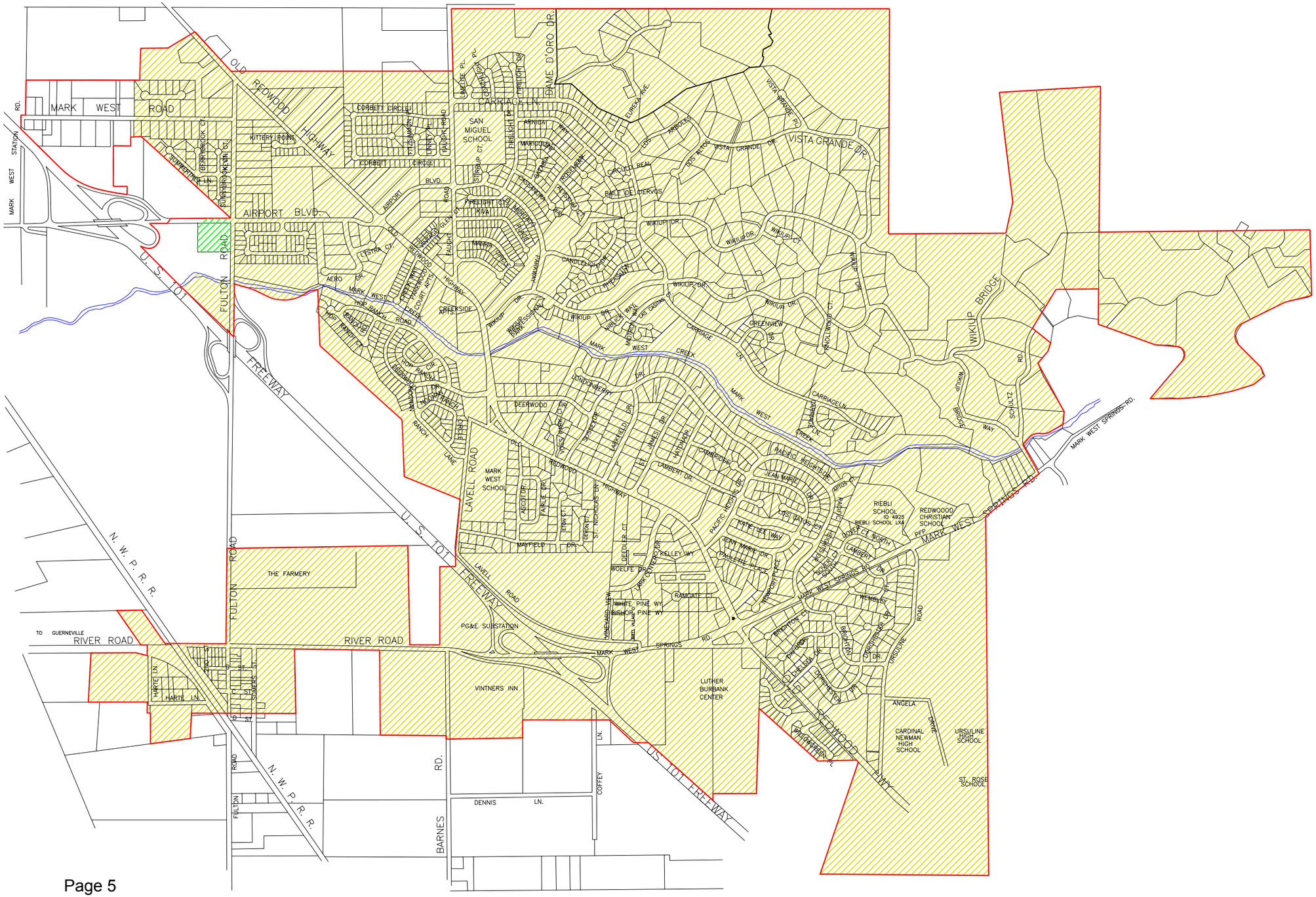
California-American Water Company

EXISTING SERVICE AREA

ADDITION TO SERVICE AREA

DELETION FROM SERVICE AREA

SERVICE AREA BOUNDARY



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STORAGE FACILITIES

After the water is treated it is then transmitted to the storage facilities. The water system has six storage tanks that have a combined capacity of 852,000 gallons. The water is then pressurized and moved through the distribution system.

DISTRIBUTION FACILITIES

The distribution system is divided into three pressure zones: the Larkfield Zone, the Middle Wikiup Zone, and the Upper Wikiup Zone. In addition, there is one reduced pressure zone, the Montebello Zone. The Larkfield and Middle Wikiup Zones are pressurized by tanks, while the Upper Wikiup Zone is pressurized by a booster pump and hydropneumatic pump. The distribution system consists of 157,000 feet of piping. The size of the backbone grid of pipeline is sufficient to distribute water from the treatment plant to storage and to various customers throughout the system.

According to Coastland Civil Engineering, the water system and associated facilities appear to be in good condition and in compliance with current DHS requirements. System operations and maintenance are also satisfactory.

OPERATIONS

PERSONNEL

The Larkfield water system is staffed by six individuals: Operations Manager, Superintendent, Water Systems Operator, and Administrative Assistant. The Operations Manager works in Sacramento at its corporate administrative office. The other five staff members work out of an office located at 640 Larkfield Shopping Center.

REVENUE

Water rates are the sole source of revenue for the Larkfield water system. Since it is a private investor-owned utility, it is regulated by the California Public Utilities Commission (CPUC). The CPUC determines the rates that Cal-Am can charge its customers. In setting the rates, the CPUC also determines the amount of profit that Cal-Am is able to earn.

Water rates in the Larkfield/Wikiup area are generally at or above average when compared to water rates in the surrounding areas. **Table 1** shows the average monthly rates for a residential customer in Larkfield and the surrounding areas. The Larkfield water system's base rate is below average for the area, but they have the second highest quantity or per unit charge.

Table 1
Comparison of Water Rates in Sonoma County
Mark West Area District Formation Feasibility Study, EPS #16017

	Monthly Residential Charges			
Water Service Provider	**Base Rate**	**Commodity Charge**	**Assessments**	**Average Monthly Charge**
Armstrong Woods Valley (California Water Service Company) [1]	$43.75	$96.76		$140.51
Sweetwater Springs Water District [2]	$22.20	$25.62	$16.50	$64.32
City of Healdsburg [3]	$32.40	$27.95		$60.35
Larkfield (Cal-Am) [4]	$13.98	$41.32		$55.30
City of Santa Rosa [5]	$5.53	$34.65		$40.18
City of Sebastopol [6]	$10.79	$19.56		$30.34
Town of Windsor [7]	$6.03	$17.87		$23.90

[1] Cal Water charges a $43.75 service charge plus a quantity charge of $6.58 per 100 cf. Assumes 11,000 gallons.

[2] SSWD charges a bi-monthly base rate of $44.40 plus $1.05 for the first 5 units and $2.10 for the next 10 units. 1 unit is 748 gallons. Assumes 11,000 gallons. Customers also pay an additional $198 per year parcel tax to the water district to repay the bonds that were issued to fund the purchase of the water utility in 1989.

[3] Healdsburg has a base charge of $32.40 for the first 500 cf and $2.88 per 100 cf for anything over that amount. Assumes 11,000 gallons.

[4] Cal-Am charges a $13.98 service charge plus a quantity charge of $2.81 per 100 cf. Assumes 11,000 gallons.

[5] Santa Rosa charges a $5.53 service charge plus a quantity charge of $3.15 per 1,000 gallons. Assumes 11,000 gallons. The City has been operating the water system at a deficit and as a result may have to increase rates in order to cover increases in expenses.

[6] Sebastopol charges a bi-monthly base rate of $21.57 plus $1.33 per 100 cf. Assumes 11,000 gallons.

[7] Windsor charges a $6.03 monthly service charge plus $1.44 per thousand gallons for the first 5,000 gallons, $1.71 per thousand gallons for 6,000-10,000 gallons, and $2.12 for 11,000-20,000 gallons. Assumes 11,000 gallons. The Town has been operating the water system at a deficit and as a result may have to increase rates in order to cover increases in expenses.

Source: Respective water service providers; Economic & Planning Systems, Inc.

It is important to note that while the Town of Windsor currently has the lowest average monthly charge, they are currently operating the water utility at a deficit, which indicates that the rates do not reflect the true operating costs. The City of Santa Rosa is also operating the water utility at a deficit. These two utilities will most likely increase rates in the near future to offset the increases in water operation expenses.

Future rates relative to the Larkfield/Wikiup area, however, will also depend on the magnitude of future Cal-Am rates, which are also likely to grow as a result of operating cost increases and capital investments. Cal-Am submitted documentation in support of a request for a rate increase in February, 2007. Cal-Am is also requesting that its rate base be consolidated, which may result in lower rates if granted by the CPUC.

The other private water provider shown on the table is the California Water Service Company, which serves areas near Guerneville. Its rates are significantly higher than the public providers listed.

EXPENDITURES

Table 2 summarizes estimated expenses for the water system, based on 2007 Cal-Am general rate case filings with the CPUC. The majority of the expenses are for payroll, operations and maintenance (O&M), and administrative and general expenses. Costs also include an allocation of corporate expenses, and an acquisition premium related to their purchase of the utility.

Table 2
Summary of 2007 Estimated Cal-Am Expenditures
Mark West Area District Formation Feasibility Study, EPS #16017

Item	Amount
Payroll	$289,800
Division Expenses	
Operation Expenses	$489,800
Maintenance Expenses	$24,000
Administrative and General Expenses	$267,000
Subtotal	$780,800
Allocated Corporate Office	$163,800
Acquisition Premium	$106,500
RWE Expense Savings	($15,000)
Total Expenditures	**$1,325,900**

Source: Application of California-American Water Company for Authority to Increase Rates in its Larkfield District, 01/22/07

III. FUTURE SERVICE AND FACILITIES

There are a number of capital improvement projects necessary for the continued operation of the water system and in anticipation of future needs associated with population growth and the reduction in current well production.

POPULATION

According to Coastland Civil Engineering ("Coastland"), the Sonoma County Permit & Resource Management Department (PRMD) growth projections assume an average rate of new housing construction of 21 units per year through 2020 and 10 units per year between 2020 and 2030. Coastland estimates the growth in the number of connections assuming that there are 2.62 persons per household and 3.3 persons per connection. **Table 3** summarizes the projections for the number of connections from 2000 to area buildout, which shows approximately 2,900 connections at buildout, an increase of approximately 400 connections.

SUPPLY CAPACITY

Currently, the Larkfield water system's capacity to supply water is 1,585 gpm. Given population projections from PRMD, by 2010 the required water supply capacity of 1,646 gpm will exceed the system's current capacity, according to Coastland. Since water demands are met through a combination of ground water from wells and water purchased from the SCWA and the SCWA will not increase the allocation over 800,000 gpm, additional ground water sources are needed. Therefore at least one well must be added between now and 2010 to meet demand. In addition, due to the limited capacity of Well #6 (the Mark West Station Well) resulting from the concern of its impact on existing wells, another well will be required by 2020 to meet the demands of development in the area. **Table 4** identifies capacity needs from 2010 to area buildout.

Cal-Am proposes to build two new wells to serve development of the Sutter Hospital facilities, as well as planned development on Faught Road. Another well, Well #6, is also planned to serve growth as well as to provide additional supply to address declining production of existing wells.

FUTURE FACILITIES

Coastland has reviewed the capacity of the system and its ability to serve existing and future development. However, due to the unavailability of an updated Master Plan, Coastland was unable to determine the validity of the improvements currently proposed by Cal-Am. Therefore, a degree of uncertainty and range of potential improvements and costs exists, some of which are noted below.

Table 3
Expected Population Growth Until Area Buildout
Mark West Area District Formation Feasibility Study, EPS #16017

Year	Number of Connections [1]	Household Population Estimate [2,3]	Non-Household Population Estimate [4]	Total Population Estimate
2000	2,357	7,778	250	8,028
2005	2,433	8,028	268	8,296
2010	2,508	8,277	285	8,562
2015	2,584	8,527	303	8,830
2020	2,659	8,776	320	9,096
2025	2,696	8,898	330	9,228
2030	2,733	9,020	350	9,370
Buildout	2,936	9,687	376	10,063

[1] Assumes 3.3 persons per connection
[2,3] Assumes an additional 21 housing units per year between 2000-2020 and an additional 10 housing units per year from 2020-2030. Assumes 2.62 persons per household
[4] The percent of non-household population within the service district is assumed to be equal to the Santa Rosa Planning Area percentage and assumed to remain constant.

Source: Coastland Civil Engineering

Table 4
Water Capacity Needs: 2010 to Buildout
Mark West Area District Formation Feasibility Study, EPS #16017

Year	Number of Connections [1]	Required Firm Capacity (gpm)	Current Firm Capacity (gpm)	Required Additional Capacity (gpm)
2010	2,508	1,646	1,585	61
2015	2,584	1,696	1,585	111
2020	2,659	1,745	1,585	160
2025	2,696	1,769	1,585	184
2030	2,733	1,794	1,585	209
Buildout	2,936	1,926	1,585	341

[1] Based upon Sonoma County growth projections of 21 housing units per year from 2000-2020 and 10 housing units per year from 2020-2030. Estimates 2.6 persons per household and one connection per 3.3 persons.

Source: Coastland Civil Engineering

TREATMENT SYSTEM

Only ground water from the wells requires treatment and filtering. The current treatment system is limited by the number of filters in use. According to Coastland the current filtration capacity exceeds the system's well capacity. The system has two filters capable of filtering 600 gpm each, for a total of 1,200 gpm. It is expected that in the future an additional filter may be needed by 2030.

STORAGE

A new 400,000 gallon storage tank is planned by Cal-Am for completion in 2007. The plan for the new storage tank is in response to the 400,000 gallon storage deficit anticipated when 2,502 service connections are reached, which was identified in a Water System Master Plan completed by Hydro Science Engineers Inc. in January 1999 . **Table 5** indicates the projected storage requirements at buildout. The projections assume that the additional 400,000 gallon storage has been built. By 2015, required storage will exceed storage capacity.

DISTRIBUTION

In light of the conclusion in the 1999 Master Plan that the backbone structure of the water system was adequate, Coastland estimates that any changes necessary for the distribution system will be limited to the provision of water to new developments, to provide redundancy to the system, or to replace small 3-4 inch lines.

COST ALLOCATION OF CAPITAL IMPROVEMENT PROJECTS

The cost of these capital improvement projects is important for assessing the feasibility of acquiring the private utility. The CSD will need to provide for the funding of required capital improvements; some of these costs may need to be included in the initial debt service issued for acquisition of the system. Depending on the timing of the improvements compared to the timing of CSD water service provision, it may be possible for the CSD to develop alternative mechanisms for infrastructure funding, e.g., by instituting connection fees.

Table 6 shows recurring projects, investment projects, and associated costs anticipated by Cal-Am. This Strategic Capital Expenditure Plan was provided by Cal-Am on October 2, 2006. The table also includes projects that are funded through contributions from the government or developers.

Table 5
Storage Needs: 2010 to Buildout
Mark West Area District Formation Feasibility Study, EPS #16017

Year	Connections	Required Storage (gpm)	2007 Storage Capacity (gpm) [1]	Required Additional Capacity (gpm)
2010	2,508	1,248,000	1,252,000	0
2015	2,584	1,279,000	1,252,000	27,000
2020	2,659	1,311,000	1,252,000	59,000
2025	2,696	1,326,000	1,252,000	74,000
2030	2,733	1,341,000	1,252,000	89,000
Buildout	2,936	1,426,000	1,252,000	174,000

[1] Capacity includes the 400,000 gallon tank now in design and is expected to be completed in 2007.

Source: Coastland Civil Engineering

Table 6
Strategic Capital Expenditure Plan
Mark West Area District Formation Feasibility Study, EPS #16017

	Prior (included in rate base)	2006	2007	2008	2009	Total
RECURRING PROJECTS						
Developer / Governmental Contributions		$101,785	$50,000	$50,375	$34,050	$236,210
Network - Replacement / Renewal		$20,000	$20,000	$50,000	$50,000	$140,000
Network - Extension		$5,000	$5,000	$10,075	$5,675	$25,750
Hydrants - Replacement		$8,000	$10,000	$10,075	$11,350	$39,425
Hydrants - New		$10,000	$5,000	$5,038	$5,675	$25,713
Services - Replacement		$30,000	$30,000	$35,000	$36,500	$131,500
Services - New		$7,000	$5,000	$5,038	$5,675	$22,713
Meters - Replacement		$135,550	$250,000	$50,000	$10,000	$445,550
Meters - New		$5,174	$10,000	$10,075	$11,350	$36,599
ITS Equipment and Systems		$9,201	$10,000	$10,000	$10,000	$39,201
Offices and Operations Centers		$500	$1,080	$1,100	$1,120	$3,800
Vehicles						
Tools and Equipment		$5,000	$5,000	$7,556	$5,675	$23,231
Process Plant - Replacements		$46,445	$65,000	$80,000	$90,800	$282,245
Process Plant - Additions		$18,000	$19,000	$20,000	$21,000	$78,000
Treatment Media Replacement and Process Rehabilitation (capitalized)			$75,000	$75,000		$150,000
Tank Rehabilitation / Painting (capitalized)						
Comprehensive Planning Studies		$443,135				$443,135
Total Recurring Projects		**$844,790**	**$560,080**	**$419,332**	**$298,870**	**$2,123,072**
Total Recurring Projects (excluding contributions)		**$743,005**	**$510,080**	**$368,957**	**$264,820**	**$1,886,862**
INVESTMENT PROJECTS						
Construct Well #6 and Treatment Plant	$1,581,027	$645,522	$850,000	$1,000,000		$4,076,549
Construct Sutter Well and 2,400 Ft of Raw Water Main (Contribution)			$400,000	$1,200,000		$1,600,000
Construct Faught Rd Well & 1,500 Ft of Raw Water Main (Contribution)			$300,000	$1,050,000		$1,350,000
Construct Emergency Interconnection with City of Santa Rosa			$50,000	$250,000	$500,000	$800,000
North Wikiup Tank #2	$99,793	$630,000	$452,000			$1,181,793
Larkfield Arsenic		$97,511				$97,511
Larkfield WTP-Prod Improv (Contribution - Faught Well)				$600,000		$600,000
Distribution Monitoring System Improvements (SCADA)					$300,000	$300,000
Larkfield WTP Site Drainage Improvements			$110,000			$110,000
Well 4A Motor Starter Replacement			$70,000			$70,000
Install 860 Ft of 8-inch Reinforcing Main to Lower Wikiup Tank Site			$30,000	$281,000		$311,000
Install Rate of Flow Control Valves on Existing WTP Filters				$90,000		$90,000
B Street Main Extension & Loop - Phase 1		$90,000				$90,000
B Street Main Extension & Loop - Phase 2				$80,000	$120,000	$200,000
B Street Main Extension & Loop - Phase 3						
Total Investment Projects	**$1,680,820**	**$1,463,033**	**$2,262,000**	**$4,551,000**	**$920,000**	**$10,876,853**
Total Investment Projects (excluding contributions)	**$1,680,820**	**$1,463,033**	**$1,562,000**	**$1,701,000**	**$920,000**	**$7,326,853**
Total Investment and Recurring Projects (including contributions)	**$1,680,820**	**$2,307,823**	**$2,822,080**	**$4,970,332**	**$1,218,870**	**$12,999,925**
Total Investment and Recurring Projects (excluding contributions)	**$1,680,820**	**$2,206,038**	**$2,072,080**	**$2,069,957**	**$1,184,820**	**$9,213,715**

Source: California-American Water Company

Cal-Am has allocated a total of approximately $2.1 million from 2006-2009 for projects to maintain the water system. These projects include the replacement of hydrants, meters, networks, etc. These projects appear to be necessary for the continued operation of the water system. The $2.1 million also includes costs that Cal-Am expects to be funded initially by developers or the government, and subsequently reimbursed by rate payers. The allocated amount is $1.9 million after the governmental and developer-related improvements are excluded.

The cost for investment projects is about $10.9 million. These projects are larger scale and include construction of wells, a new tank, new mains, etc. Some of these projects are for the provision of service to new developments, such as the planned Sutter Hospital and the Faught Road well, which initially are expected to be funded by developers with subsequent reimbursement from rate payers. Excluding these improvements, the cost allocated for investment projects is $7.3 million.

The total allocation for capital expenditures is approximately $13 million, including development-related improvements. Two of the investment projects have costs that were previously included in the rate base. The two projects are the construction of Well #6 and Treatment Plant and the North Wikiup Tank #2. These two projects account for approximately $1.7 million. This amount should be deducted from the total cost allocation for 2006-2009 as it is already included in the existing rate base. After also deducting development-related improvements, the total capital expenditure is $7.5 million.

Future development will generate additional rate revenue to contribute towards the reimbursement planned for the development-related costs. It is beyond the scope of the current study to determine the extent to which the additional revenues exceed or fall short of funding the required improvements.

IV. PUBLIC ACQUISITION

The public acquisition of private water utilities has occurred throughout the country. The last major acquisition in Sonoma County involved the Sweetwater Springs Water District acquisition in 1992. A smaller acquisition occurred in 1999 when the Hacienda Water Company (150 connections) was acquired by the Russian River Consolidated Water Company for a total of about $80,000. Acquisition can occur through a negotiated sale between the two parties or through eminent domain. Cal-Am has indicated that it is not interested in a negotiated sale. Therefore, eminent domain, which is described in this chapter, seems the likely means of acquisition of the Cal-Am system serving the Mark West area.

EMINENT DOMAIN

Eminent domain is the power of the government to take control over private property without the owner's consent for public use with just compensation for the property. In order for eminent domain actions to be taken it must be shown that the action will result in a "public benefit". In this case, it must be shown that the acquisition will result in a public benefit, such as improved service provision or water quality. The process requires both appraisal and legal action. Ultimately, the price paid for acquisition will be determined through the legal process. Eminent domain can incur substantial pre-acquisition costs including various engineering, legal, and appraisal services.

The eminent domain process would be initiated by the CSD (contracting with County Counsel or a private firm).

ACQUISITION PROCESS

Following the current feasibility analysis which the SCWA has initiated and funded, the process to form a Community Service District (CSD) can begin. The CSD would be responsible for the operation of the water system. The CSD also provides a mechanism for raising required funds for acquisition and operation.

According to state law the formation of a CSD begins with either a petition signed by no less than 25 percent of the registered voters residing in the district area or the adoption of a resolution of application by the County Board of Supervisors. The Local Area Formation Commission (LAFCO) then provides a decision on formation and determines whether there are sufficient revenues, and may condition the formation of the CSD on voter approval of a funding source.

Voter approval will be necessary to approve taxes or assessments that will repay bonds issued to fund the acquisition of the water utility.

A formal appraisal of the water system will occur to ascertain its value and to enable the CSD to make an offer to Cal-Am. Since Cal-Am has stated that it is unwilling to sell the system, it is not anticipated that the offer would be accepted, and eminent domain proceedings would begin. The proceedings ultimately will require a court determination of the water utility's value and acquisition price. If eminent domain is successful, then the start-up of the water district and transition of operations will begin.

BENEFITS OF ACQUISITION

A primary benefit of acquiring the Larkfield water system is local management and accountability. Cal-Am has personnel working in the Larkfield area, and according to a letter from Cal-Am dated October 2, 2006, they conduct meetings with a customer advisory group. However, the water system's Operations Manager is in Sacramento and the company itself is a subsidiary of an international corporation, subject to their control; ultimately, the residents have no authority, other than in an advisory capacity or through CPUC proceedings, to make decisions regarding levels of service and investment. In comparison, a CSD will be governed by a locally elected board, all of whom live in the area and are customers of the water district.

Local control of rates and capital investment decisions are benefits to public acquisition. The CSD will not be subject to CPUC regulation, as investor-owned Cal-Am is now. Therefore rate setting and investment decisions will be at the discretion of the locally elected board with input from the community. The CSD is likely to make its decisions based on service levels and on controlling or reducing rates, which are partly determined by level and type of capital investment, and may be able to achieve cost reductions through its competitive bidding process; whereas Cal-Am, as a private for-profit entity, must also base its decisions on maximizing revenue and increasing its capital investments and returns.

The CSD will also have the ability to institute connection charges to allocate specific costs incurred by new development to the benefiting party. Similarly, a CSD could establish separate rate zones. These are mechanisms that can be employed to avoid burdening existing ratepayers with additional costs related to serving new development.

The formation of the CSD would create an agency with a shared community of interest. The CSD may be able to provide additional services, other than water provision, desired by the community. Cal-Am can only provide water service and the ability to leverage the CSD in this manner may be a great benefit to the area.

DRAWBACKS TO PUBLIC ACQUISITION

One primary drawback to acquisition is the initial inexperience in managing and operating a water system, and relatively small size of the service entity. The CSD would

be a new entity with no prior experience operating a water system. As a result, there may be difficulties with service as the CSD starts operations. In addition, the CSD would not be able to provide the technical expertise and services available from a much larger entity.

Another major factor is the costs associated with acquisition. Since Cal-Am apparently is unwilling to sell the water system, eminent domain is the likely means of acquisition. The eminent domain process can be lengthy and costly, often requiring significant legal proceedings. It is difficult to estimate the timeframe as it depends on the details of the case, but it may be upwards of two years or more. For example, the eminent domain action in Felton, California is in its second year and it is not yet resolved. Associated costs, such as legal fees, increase with the length of the eminent domain process. The result may be costly, with no guarantee of success if the courts rule that there is not sufficient proof of "public benefit".

The potential costliness of eminent domain, as well as the costs associated with acquiring the water system, such as financing and start-up costs, are likely to lead to an increase in water rates and/or taxes and assessments. The magnitude of these potential increases is described in the following section.

ESTIMATED ACQUISITION COSTS

For purposes of this preliminary feasibility analysis, EPS has estimated the acquisition price by reviewing other public acquisitions of private water utilities, consideration of the revenues produced by the system, and also factoring in the potential value created by public ownership through reduced taxes and elimination of a profit factor. This estimate is intended to illustrate the potential magnitude of the potential impacts on local property owners and ratepayers. As noted previously, the actual acquisition price will be determined through an appraisal process as a part of eminent domain proceedings, and may consider a range of other factors, resulting in a total cost different from the estimates in this report.

The estimated acquisition price of the water system is based on Cal-Am's summary of estimated 2007 earnings from the 2007 general rate case, as shown in **Table 7**. The estimated acquisition value is $9 million, as shown in **Table 8**.

Table 9 shows a potential acquisition scenario. As shown, a public buyer of the system would not pay property taxes and income taxes, and does not earn a profit. The public entity would be able to pay more for the private water utility than a private company. The resulting price, assuming the aforementioned savings is approximately $9 million. This price assumes a 5 percent expected rate of return; this return is greater than the 2007 Cal-Am operating income (after taxes) of 2.3 percent, assuming a portion of future

Table 7
Summary of 2007 Estimated Earnings
Mark West Area District Formation Feasibility Study, EPS #16017

Item	Amount
Operating Revenues	**$2,027,377**
Revenues From Contributions	**0**
Operating Revenue Deductions	
O&M, A&G, and G.O. Expenses	$1,325,900
Depreciation (Excluding G.O.)	441,800
General Taxes	144,600
Income Taxes	(71,300)
Total Deductions	**$1,841,000**
Utility Operating Income	**$186,377**
Average Rate Base	**$8,089,700**
Rate of Return	**2.30%**

Source: Application of California-American Water Company for Authority to Increase Rates in its Larkfield District, 01/22/07

Table 8
Potential Acquisition Value
Mark West Area District Formation Feasibility Study, EPS #16017

Item	Amount
Operating Income	**$186,377**
Capitalized Value at 5%	**$3,728,000**
Potential Rate Savings From Public	
Taxes (General and Income)	$73,300
Allocated Corporate Office Expense [1]	$81,900
Acquisition Premium	$106,500
Subtotal	$261,700
Capitalized Potential Rate Savings From Public [2]	**$5,234,000**
Acquisition Value	**$9,000,000**
Acquisition Value vs. Rate Base	**1.11**

[1] Assumes public buyer has CSD board costs of about 50% of current Cal-Am corporate overhead

[2] Assumes capitalization rate at 5%

Table 9
Total Potential Acquisition Cost
Mark West Area District Formation Feasibility Study, EPS #16017

Item	Amount
Acquisition Value [1]	$9,000,000
Acquisition Costs [2]	$1,000,000
Other Costs [3]	$1,500,000
Capital Improvement Projects [4]	$7,533,000
Subtotal	$19,033,000
Finance Costs [5]	$3,806,600
Total Cost	$22,839,600
Cost per Residential Customer [6]	$8,000
Annual Debt Service [7]	$1,840,561
Cost per Residential Customer [6]	$600
Monthly Cost	$50

[1] Cost assumes acquisition by a public entity, based on operating income excluding taxes, capitalized at a rate of 5%. Actual cost will be subject to appraisal process .

[2] This includes costs associated with appraisal, legal, and other services in preparation of acquisition.

[3] Other costs include initial startup, equipment, leases, and operating reserves.

[4] Capital improvement projects (excluding costs in current rate base) necessary for the continued operation of the water system and the anticipated growth in service. Cost figures from Cal-Am's strategic capital expenditure plan provided to EPS on 10/2/06.

[5] Assumes costs will be 20% of the net bond proceeds. Includes costs associated with bond issuance, reserves, and other financing costs.

[6] Based on approximate share of water consumption and current residential customers; future cost will vary depending on growth in number of customers.

[7] Assumes a payment each year for 30 years at a 7% interest rate.

rate increases are granted. As indicated previously, the actual price will be determined through eminent domain proceedings and a detailed appraisal process, and the price is likely to vary from the price shown in this report.

Table 9 also estimates the total cost of acquisition by including pre-acquisition and financing costs. Acquisition costs include costs in preparation of acquiring the water system, such as appraisal, legal, and engineering services. After reviewing previous acquisitions, these costs are estimated to be approximately $1 million. Depending on the length and complexity of the eminent domain proceedings, costs could be higher.
In addition to pre-acquisition costs, there will be other cost factors such as assets, future capital investments, reserves, contingencies, etc. The estimated cost includes $7.5 million for capital improvements. As noted previously, it may be possible for the CSD to require new connections to fund some of these improvements directly, with no reimbursement from other ratepayers. Alternatively, total costs could be higher to the extent that developer reimbursements need to be included in the initial bond funds. Future facility costs could also differ to the extent that a competitive bidding process by the CSD may result in some cost savings over the current projected cost estimates.

In addition, total costs will include finance costs. In order to finance the acquisition of the Larkfield water system, a bond issuance is necessary. It is assumed that initial finance and bond issuance costs will be approximately 20 percent of the acquisition value and other costs, or $3.8 million. After acquisition and finance costs are added to the acquisition values, the total costs are approximately $22.8 million. The resulting annual debt service is $1.8 million.

IMPACTS ON PROPERTY OWNERS AND RATEPAYERS

As shown in **Table 9**, the total potential cost of $22.8 million results in an average cost per residential customer of about $8,000, or the equivalent of $50 per month assuming long-term financing.

Several potential cost savings would effectively reduce the financial burden on homeowners. As shown in **Table 10**, the elimination of taxes and profit as a result of public ownership could reduce the residential customers' acquisition costs for the system to an estimated $42 per month, in addition to water rates. This represents about a 75 percent increase over current average charges. Additional savings may be possible related to operating costs and capital improvements as a result of public ownership, competitive bidding, and local public oversight.

Without public acquisition, it is likely that current Cal-Am rates will increase in any event to cover future capital improvements (e.g., improvements included in the estimated acquisition costs described above), as well as possible operating cost increases.

Table 10
Potential Impact on Ratepayers
Mark West Area District Formation Feasibility Study, EPS #16017

Item	Amount
Annual Debt Service from Acquisition	$1,840,561
Potential Rate Savings from Public Ownership	
Taxes (General and Income)	$73,300
Profit (Revenue minus Costs)	$186,377
Allocated Corporate Office Expense [1]	$81,900
Acquisition Premium	$106,500
Subtotal	$448,077
Additional Revenue Required for Debt Service	$1,392,484
Cost per Residential Customer	$500
Monthly Cost	$42
% Change vs. Current Avg. Rate	75%

[1] Assumes public buyer has CSD board costs of about 50% of current Cal-Am corporate overhead

Source: Application of California-American Water Company for Authority to Increase Rates in its Larkfield District, 01/22/07; Economic and Planning Systems, Inc.

IMPACTS ON OTHER AGENCIES

Public ownership of the system will reduce property tax by an estimated $80,000 annually. These taxes benefit the County, as well as other agencies serving the area.

V. ORGANIZATIONAL OPTIONS

As described in the prior chapters, acquisition of the existing private water company serving the Mark West area will require a significant upfront capital commitment. This chapter describes options (in addition to the "status quo") for the timing and manner of bond issuance, as well as the designation of a management entity.

STATUS QUO

As indicated in the report, the existing private water company generally appears to be well-managed, services are provided in an effective manner, and infrastructure is well-maintained. While rates are not unreasonable by comparison to other water service providers, it is likely that future rates will increase due to a number of factors, including general inflation and its impact on operating costs, as well as the cost impacts of future capital investments.

PUBLIC ACQUISITION

Public acquisition offers the potential to provide a greater level of local, public control over operational and investment decisions, with the potential to reduce rates and/or to constrain rate increases that otherwise may occur under private ownership. The following options assume the immediate or eventual creation of a CSD for management purposes. An option does exist for the County to create a zone to the existing County Service Area (CSA) 41, however, the Board of Supervisors would be responsible for all aspects of water service acquisition and operation; this option has not been explored in this report, but would entail financial implications to ratepayers similar to the CSD option.

1. CREATE SPECIAL TAX, ISSUE BOND

This option would create a special tax, e.g., through formation of a Mello-Roos Community Facilities District (CFD), to fund a bond issue. The County would be responsible for district formation, bond issuance, and subsequent acquisition steps. The special tax would be subject to two-thirds local voter approval.

Initially, bond funds would be required for the acquisition process; if acquisition is unsuccessful, the property owners within the CFD would be responsible for continued payment of the special tax for the initial acquisition funds required.

If acquisition is successful, the County would need to designate a management entity. Initially, the County would be the responsible entity, and may choose to form a Community Services District (CSD) to manage operations. The CSD would consist of a locally-elected Board, and operate independently of the County, depending on the

formation process. Formation of the CSD would require LAFCO approval, and LAFCO would need to make findings that the CSD would be financially feasible.

Property owners would be responsible for the special tax to repay the costs for the acquisition process, as well as for the purchase price and other startup costs. It is likely that the special tax would be designed to enable a property owner to "buy out" their total obligation with a single lump-sum payment. Properties not served by the water district would not be subject to the special tax.

2. FORM CSD (NO BOND ISSUE INITIALLY)

This option would form a CSD with an accompanying special tax only for the purpose of funding basic CSD operations, as well as any other designated services (including investigation of water system acquisition). The CSD would consist of a locally-elected Board, and would have authority to undertake several different public services in addition to water system operation. The CSD could be responsible for parks and recreation services and facilities, open space, landscape maintenance, additional levels of police protection, and other services.

Formation of the CSD would require LAFCO approval, and LAFCO would need to make findings that the CSD would be financially feasible. In order to do this, it is likely that LAFCO would require, as a condition of approval of the CSD, that a special tax be approved by the voters to fund authorized services of the CSD. Upon formation of the CSD, funding would also be required for basic operations of the CSD board, as well as any services related to the further investigation of water system acquisition and/or other services the CSD would provide.

If and when the CSD chooses to acquire and operate the water system, an additional (or increased) special tax would be required to fund acquisition and initial operations and improvements, as discussed in this report. The initial special tax could be subject to a sunset provision, e.g., 5-years; the special tax for system acquisition would remain in force as long as it was required to repay debt issuances. In all cases, approval of a special tax would require two-third's voter approval.

This option would allow the community the opportunity to establish a Board, further explore a range of service options in a public forum with locally-elected representatives, and create a successful track record of local services management. The Board could also choose to further evaluate water system acquisition and costs within the context of other desired public service priorities.

3. FORM CSD, CREATE SPECIAL TAX, ISSUE BOND

This option would form a CSD and create a special tax to fund bonds required for acquisition efforts and the purchase price (and other startup and CSD operational costs). The primary purpose of the CSD would be water system acquisition, although it could be empowered to undertake additional services as described in the options described above. The special taxes would be subject to two-thirds voter approval.

As noted above, property owners (benefiting from the potential water system acquisition) would be responsible for repayment of the initial acquisition efforts, even if acquisition were unsuccessful.

Economic &
Planning Systems
Real Estate Economics
Regional Economics
Public Finance
Land Use Policy

APPENDIX 1

LARKFIELD-WIKKIUP DISTRICT
PRELIMINARY ENGINEERING FEASIBILITY STUDY

LARKFIELD - WIKKIUP DISTRICT

PRELIMINARY ENGINEERING FEASIBILITY STUDY

FORMATION OF A COMMUNITY SERVICES DISTRICT TO PROVIDE WATER SERVICES TO THE MARK WEST AREA

PREPARED FOR:
THE SONOMA COUNTY WATER AGENCY

PREPARED BY:
COASTLAND CIVIL ENGINEERING, INC.
IN ASSOCIATION WITH ECONOMIC & PLANNING SYSTEMS, INC.

NOVEMBER 2006

Coastland Civil Engineering, Inc.

TABLE OF CONTENTS

TITLE PAGES

Executive Summary…...……...4-5
Introduction……..6-7
Existing Facilities……...8-15
System Operations……16-19
Projected Growth and Future Service Population……19-20
Improvements Recommended by Previous Studies…….21-22
Current and Projected Needs……22-26
Capital Improvement Program…….26-29
Cost Estimates for Capital Improvement Program……...29-31
Cost Allocations……...31-32
Comments on Staffing and Operational Costs ……32-34

LIST OF TABLES

TABLE # - TITLE PAGES

Table ES-1–Capital Improvement Projects with Estimated Costs and Cost Allocation….4
Table 1 – Well Production……...8
Table 2 – Source Firm Capacity from DHS Water Supply Permit……..9
Table 3 – Source Firm Capacity……12
Table 4 – Water Treatment Plant Capacities (1978-2003)……13
Table 5 – Storage Facilities and Capacities……...14
Table 6 – Personnel……16
Table 7 – Complaints Reported (Written or Verbal)……17
Table 8 – System Problems……...……18
Table 9 – PRMD Proposed Larkfield Population 2000-2030……..……..20
Table 10 – Comparison of Future Connection Estimates 2030……20
Table 11 – Larkfield Water Production, Purchase, and Average Usage 1997-2005….....23
Table 12 – Firm Source Capacity Needs 2010 to Buildout (Existing Wells & SCWA)...24
Table 13 – Treatment Needs 2010 to Buildout…….……24
Table 14 – Storage Needs 2010 to Buildout.....….....25
Table 15 – Capital Improvement Projects...…….…….……26
Table 16 – Estimated Cost of Capital Improvement Projects……....30
Table 17 – Cost Allocation of Capital Improvement Projects.....32

EXECUTIVE SUMMARY

The Larkfield District water system serves the unincorporated areas commonly referred to as Larkfield, Wikiup and Fulton. Coastland Civil Engineering (Coastland) was hired by Sonoma County Water Agency, to assist Economic & Planning Systems (EPS) in analyzing the feasibility of public acquisition of the Larkfield District water system from California American Water District (CalAm). Tasks included assisting EPS and updating 1999 Engineering Feasibility Study.

The CalAm system derives water from five sources: an aqueduct connection with the Sonoma County Water Agency (SCWA), and four ground water wells (Wells 1A, 3A, 4A and 5). We estimate a total sustained yield of 1,585 gpm. The Treatment Facility has two 600 gpm multimedia pressure filters capable of treating a total of up to 1,200 gpm. There are six storage tanks in the Larkfield District water system, with a combined capacity of 852,000 gallons. An additional 400,000 gallon tank is planned for 2007. The Distribution system consists of approximately 157,000 feet of piping, ranging in size from three to fourteen inches in diameter. The distribution system is generally in good condition and the backbone grid of pipelines is sufficiently sized. Fire flows are adequate.

Table ES-1

Capital Improvement Projects with Estimated Costs and Cost Allocations

Year	Project	Cost	Existing Customers	Future Customers	Existing Customers	Future Customers
2007	North Wikiup Tank #2	$1,050,000	94%	6%	$987,000	$63,000
2008	Lower Wikiup Main Relocation	$357,760	100%		$357,760	$0
2008	Mark West Station Well and Treatment Filter	$1,320,000	50%	50%	$660,000	$660,000
2008	Faught Road Well and Treament Filter	$1,320,000	0%	100%	$0	$1,320,000
2009	SCADA Emergency Control Extension to Upper and Lower Wikiup	$137,000	100%		$137,000	$0
2009	Sutter Hospital Well*	$1,320,000		100%	$0	$1,320,000
2010	Sutter Lavell Road 12" Main*	$832,000	80%	20%	$665,600	$166,400
2012	Old Redwood Highway 12 "main extension	$270,400		100%	$0	$270,400
2015	Additional Storage Tank	$236,250		100%	$0	$236,250
2025	Fulton 12" Main Extension	$1,497,600		100%	$0	$1,497,600
2030	Additional Storage Tank	$236,250		100%	$0	$236,250
	Total	**$8,577,260**	**33%**	**67%**	**$2,807,360**	**$5,769,900**

We estimate that the system will serve 2,733 connections by 2030. This is based on PRMD projections. This is a total population of 9,370 and includes a proposed Sutter Hospital. To meet this growth, the district must provide an additional 209 gpm of sustainable groundwater supply and 89,000 gallons of storage. Additionally, a separate well will be needed to serve Sutter Hospital. Additional treatment capacity will also be required, although it is likely that it will be less expensive to add treatment at each well head rather than construct transmission facilities to the central water treatment plant. Extensions will also be needed to the distribution system. Some of these extensions will provide loops in the existing system increasing system reliability.

Costs for this new infrastructure should be allocated in accordance to the benefit received. Improvements to serve new developments should be paid for by the new connections. The Table ES-1 provides a list of capital improvements, estimated costs and recommended allocations for the cost of those projects.

INTRODUCTION

The Larkfield District water system serves the unincorporated areas commonly referred to as Larkfield, Wikiup and Fulton located on the eastern side of the Santa Rosa Valley in Sonoma County, approximately four miles north of the City of Santa Rosa.

In response to citizen concerns regarding continued private ownership and operation of the water system, the Sonoma County Water Agency (SCWA) agreed to act as the lead Agency for the preparation of a study that would determine whether or not, and under what conditions, public acquisition and operation of the Larkfield District water system from California American Water District (CalAm) might be feasible.

Coastland Civil Engineering (Coastland) was hired by Sonoma County Water Agency to assist Economic & Planning Systems (EPS) in analyzing the feasibility of public acquisition of the Larkfield District water system. Coastland was tasked with the following:

1. Field Survey of CalAm facilities.

2. Review of CalAm draft CIP document.

3. Update Capital Improvement Program in the 1999 Engineering Feasibility Study including approximate phasing and priority.

4. Prepare a summary of anticipated new connections based on review of available CalAm information and other data as necessary (e.g., County planning information, project proposals, vacant land zoned for development, etc.).

5. Identify and summarize issues potentially affecting future services, service costs, rates, water availability, regulatory requirements, etc. If cost implications are available, quantify cost impacts and approximate phasing.

6. Based on prior tasks, review/edit the 1999 Engineering Feasibility Study description of existing facilities and operations.

7. Review and comment on proposed budget for publicly-owned system (to be prepared by EPS); provide information on comparable systems, and/or identify potential comparables; comment on level of current operations, staffing and cost relative to comparable systems. For example, are cost differences between systems justifiable and appropriate, or are there options whereby a publicly owned system could operate at a lower cost (or, are there potential system improvements that could reduce costs)? If so, what are the potential implications for service levels and long-term maintenance and reliability? No engineering analysis is anticipated as a part of this task.

8. Attend community meeting on September 16th to be available to respond to questions related to the above.

After it became apparent that CalAm would not provide the CIP before the September 16th meeting, the task list was adjusted. A draft report was produced on September 15, 2006. This draft was used in the presentation by EPS at the September 16th community meeting.

Subsequent to this meeting Coastland received comments from CalAm dated October 2, 2006. This letter is included as Appendix A to this report. In this final report, Coastland has, as much as possible, included or provided comment on the applicable comments received from Cal Am in their October 2, 2006 letter.

Coastland attempted to gather additional information from CalAm, either by meeting with CalAm representatives or by obtaining portions of studies CalAm is in the process of completing. From October 13, 2006 through November 15, 2006, Coastland made numerous attempts via phone and email messages to get clarification on items mentioned in the CalAm letter dated October 2, 2006. No additional information was forthcoming. Also, while CalAm requested a meeting in their October 2, 2006 letter, they were unable to arrange such a meeting.

Background Documents

As background, Coastland was provided:

1. The Water Master Plan for the Larkfield District completed in January 1999 by HydroScience Engineers (Master Plan).

2. The Engineering Feasibility Study completed in October 1999 by Brelje and Race (Feasibility Study).

3. The Larkfield Capacity Analysis completed in October 2003 by Winzler and Kelley (Capacity Analysis).

4. Planning figures for the Larkfield Wikiup Water Service Area from the Sonoma County PRMD.

5. Annual Reports for the Cal American Water System from Sonoma County Department of Health Services (DHS).

6. Larkfield Water District Water Supply Permit, including 2006 amendment and DHS Engineering Report.

7. CalAm letter dated October 2, 2006.

Since much of the tasking revolved around updating portions of the 1999 Feasibility Study, this report is based upon and follows the applicable sections of that report.

EXISTING FACILITIES

General

The following water system information was gleaned from DHS reports, the Master Plan, Feasibility Study, and the Capacity Analysis and to the extent possible, confirmed by field reviews of existing facilities. The water system appears to be in generally good condition and in compliance with current DHS requirements. System operations and maintenance appear satisfactory.

Water Sources

The CalAm system derives water from five sources: an aqueduct connection with the Sonoma County Water Agency (SCWA), and four ground water wells (Wells 1A, 3A, 4A and 5). The wells were the primary source of water for the area from the first development in the area in the late 1950's to the early 1990's. SCWA water was considered an alternative water supply that was inconsistent and used only to offset the wells. Use of the SCWA water increased, and in the 1990's the SCWA supply became the main source of water with the wells used to offset the SCWA supply.

Well water in the Larkfield system is produced from wells that pump water from the Glen Ellen formation. Located on the eastern side of the Santa Rosa Valley, CalAm's groundwater wells have been developed generally at depths of 300 to 600 feet, each with a steel casing, gravel pack, annular seal and concrete surface seal. Typically, the wells contain iron and manganese above secondary standards with some occurrences of arsenic above the federal standard of 10 ug/l. The wells are located in residential to light commercial or agricultural areas. Additional information regarding each well is presented in Table 1 and in the paragraphs below.

Table 1

Well Production									
SOURCE	Original Capacity (gpm)	1998 Capacity (gpm)	2003 Capacity (gpm)	May 2006 Capacity (gpm)	Reported 2006 Capcity	Total Depth (feet)	Casing Diameter (inches)	Service Year	Horsepower
Well 1A	250	124	150	120	90	570	12	1992	30
Well 3	315	290				380	10	1971	50
Well 3A[1]	450	N/A	450	460	460	690	16	2003[1]	75
Well 4A	600	300	250	380	380	362	16	1988	50
Well 5	N/A	118	110	100	100	295	12	1989	25
Total		832	960	1060	1030				

[1]Well brought online May 2003 replacing Well 3.

As is common with ground water wells, the capacities fluctuate during the year and have generally declined over time. Elevated levels of iron and manganese in the groundwater have aggravated this natural decline in capacity. The firm capacity of the wells, per the

DHS Water Supply Permit, is shown in Table 2. Generally the capacity listed is based on summer flows (conservative value).

Table 2
Source Firm Capacity from DHS Water Supply Permit

Source	PS Code	Status	Capacity	Treatment
Well 01A	4910023-006	Active	120 gpm	Oxidation, Ferric Hydroxide Co-Precipitation, Greensand Filtration, Hypochlorination
Well 03A	4910023-007	Active	460 gpm	
Well 04A	4910023-004	Active	380 gpm	
Well 05	4910023-005	Active	100 gpm	
Agency (SCWA Purchased)	4910023-011	Active	486 gpm	NONE

Well 1A

Well 1A was drilled in November 1991 to a depth of 570 feet using the reverse circulation drilling method. The well features a 12-inch diameter steel casing to a depth of 565 feet. It is gravel-packed from 170 to 570 feet, has an intermediate seal from 160 to 170 feet and a 75-foot annular seal. Perforations occur at depths from 210 to 260, 325 to 400, 434 to 446, and 515 to 520 feet. The well log indicates typical mixtures of clay, gravel and sand layers to about 370 feet at which time cemented layers of gravel and hard clays occur to final depth. The pump was pulled in May 2001 for well rehabilitation and returned to service in late 2001. The well is equipped with a 25 horsepower (hp) submersible pump and can produce a sustained yield of approximately 82 gpm. Static water level is around 80 feet with some seasonal variations; pumping levels vary from 220 to 280 feet. Water from Well 1A is high in arsenic.

Well 3A

Well 3A was drilled in May and June 2002, to a depth of 600 feet as a replacement to Well 3. The well is cased to a depth of 130 feet with 16-inch low carbon steel and continues to 545 feet in stainless steel. It has a 135-foot cement grout annular seal, a transition seal from 135 to 140 feet and is gravel packed from 140 to 560 feet. Intermediate seals of bentonite exist from 340 to 350, 480 to 490 and 560 to 570 feet; cement grout was set at 570 to 650 feet. The well has stainless steel wire wrap 0.080-inch screens at depths of 160 to 194, 234 to 264, 286 to 316, 420 to 470 and 496 to 536 feet. The lithology is primarily clay, sandy-clay and gravel throughout the entire depth. The resistivity and well logs indicate the predominant gravel layers exist from about 150 to 320 feet. Well 3A is equipped with a 60 hp vertical shaft, water-cooled turbine pump; its sustained yield is approximately 460 gpm. Static water level is approximately 60 feet, with pumping levels varying between 130 and 150 feet. Water from Well 3A has high arsenic levels.

Well 4A

Well 4A was drilled in January 1988 to a depth of 380 feet. The well is cased to 352 feet and has a 16-inch diameter steel casing. It is gravel-packed, has a 60-foot annular seal and an intermediate annular seal from 128 to 148 feet. It has stainless steel wire wrap screen from depths of 180 to 238, 244 to 262, 302 to 312, and 328 to 340 feet. The lithology is predominantly sands and gravels down to about 60 feet, a large clayey layer with some occurrences of brown sands and gravels down to the first screened level. Sands, gravels and intermittent clay layers occur down to the finished well depth. Well 4A is equipped with a 50 hp deep well submersible pump, its yield is approximately 380 gpm but its safe yield is at 250 gpm. Static water level is approximately 70 feet, while pumping levels vary from 160 to 190 feet.

Well 5

Well 5 was drilled in December 1989 to a depth of 295 feet using the rotary air method. The well features a 12-inch diameter steel casing to a depth of 282 feet. It is gravel-packed and has a 65-foot annular seal. It has stainless steel wire wrap "screen" from depths of 165 to 211 and 250 to 270 feet. The well log indicates typical layers of silty clay and gravels to about 90 feet, at which the first cemented gravel layers are encountered. Sandy brown and blue clays with small streaks of gravels follow to about 160 feet. Loose mixed gravels occur through the first screened zone with mostly sandy brown clays and small loose gravel seams occurring before a final sticky brown clay layer at final depth. Static water level is around 70 feet with pumping levels varying from 165 to 220 feet. Equipped with a 20 hp deep well submersible pump, Well 5 yields approximately 100 gpm.

Sonoma County Water Agency Aqueduct

Purchased water from the Sonoma County Water Agency (SCWA) originates from six Ranney collector wells adjacent to the Russian River near the Wohler Bridge and seven conventional wells along the Russian River and wells along the Cotati Aqueduct in the Santa Rosa Plain.

The connection to SCWA is on the west side of State Highway 101, near River Road and Hart Lane. The connection is off the 36-inch Santa Rosa Aqueduct at Turnout No. 71. According to the Department of Health Services 2006 Engineering Study (DHS Report), the aqueduct has an ultimate capacity of 1100 gpm (1.584 MGD). The connection is an 8-inch line controlled by a solenoid operated altitude control valve. The valve feeds water to the Larkfield system if the system pressure in the main pressure zone (Lower Wikiup) drops below 60 psi, or the water level in the North Wikiup tank falls below a preset level (various seasonally). Water is conveyed from this connection through 8, 12 and 14-inch pipe into the distribution system on the east side of State Highway 101.

The 1999 Feasibility Report stated that the SCWA aqueduct has a hydraulic capacity of approximately 800 gpm. The Capacity Analysis stated that the contract with SCWA

limits the average monthly flow to an average of 694 gpm or 1 mgd. These figures seem to be in error.

The DHS Report states: "CalAm does not have a right or entitlement to Agency (SCWA) water... The aqueduct yield can not be credited based upon usage since CalAm has no specific allocation contractually with the SCWA. The Department has met with SCWA, and through discussions, it was determined that if the Agency could give CalAm a firm allotment, that allotment would be approximately 486 gpm or 0.7 MGD, which is significantly lower than what CalAm has used on average. Thus the sustained yield that the Department can credit CalAm is 486 gpm."

SCWA has told Coastland that the agreement being developed for the Larkfield water system will allow a maximum monthly average use of 0.8 MGD, with a total annual use of 700 acre feet per year. This would allow for this peak use for all but 2.45 months per year. July and August usage has typically exceeded the peak. Although there has been discussion of increasing the purchased water supply from SCWA, the County has assured us that there will be no increases beyond 0.8 MGD.

The SCWA contract has been treated differently in various studies.

Based on the projected 2012 population of 8,330 people (2,502 equivalent units), the Master Plan anticipated a Source Capacity shortage of 901 gpm. This assumed no SWCA water was available. The 1999 Engineering Feasibility Study suggested that a more reasonable approach would involve reducing purchases from SCWA to about 0.3 mgd, or about 200 gpm, on an annual basis. Based on this, the Feasibility Study projected a long term shortfall of 450 gpm.

The Capacity Analysis indicated that the SCWA connection was limited to a monthly average of 1 mgd or 694 gpm. With this, the Maximum Day Demand for 2338 connections exceeded the amount of water available from the wells and the SCWA connection. The Capacity Analysis noted that the 1 mgd from SCWA was an average and assumed that for a peak day additional ultimate capacity would be available.

There is a risk to assuming that the peak day water use can be absorbed by uses above the 800,000 gpd. First, this peak day use is likely to happen during a peak month and large deviations could cause Larkfield to exceed their 800,000 gpd average for the month. Second, while the SCWA can deliver up to 1100 gpm (1.58 mgd) to the Larkfield District, Larkfield must share a maximum of 2.7 mgd with other customers. Third, as pointed out by the Master Plan, SCWA water may not be available, or may be reduced, in a drought. Finally, and most conclusively, DHS used the peak month average day use in the permit to establish total sustained yield.

For these reasons, in this report we will assume a compromise position between the previous studies. We will assume that the 800,000 gpd is available for use. This is similar to the position by DHS in the Water Supply Permit. This is conservative compared to the assumptions in the Capacity Study, but is less conservative than either the Master Plan or the Feasibility Study.

Total Sustained Yield

The DHS Report states CalAm's sources of supply with a total sustained yield of 1,546 gpm or 2.226 MGD.

Table 3

Source Firm Capacity		
SOURCE	May 2006 Capacity (gpm)	Adjusted 2006 Capacity (gpm)
Well 1A	120	90
Well 3		
Well 3A[1]	460	460
Well 4A	380	380
Well 5	100	100
Subtotal	1060	1030
SCWA	486	555
Total	1546	1585

There are two possible modifications to this. First the SCWA aqueduct supply will be increased to 0.8 MGD or 555 gpm. Second, the operators provided us with up to date summer well capacities that are slightly different than those in the DHS Report. Table 3 shows current available source capacity including the Sonoma County Water Agency connection.

Transmission Facilities

Water from each well is conveyed to the treatment plant site through transmission piping dedicated solely to that purpose. According to the Feasibility Study, the transmission main from well 1A to the treatment plant consists of 1,875 feet of asbestos cement piping located in Londonberry Drive. The first 1,132 feet of piping is six-inch diameter and the remainder eight-inch diameter. The transmission main from Well 3 to the treatment plant consists of approximately 3,360 feet of asbestos-cement piping. The transmission main route follows Mayfield Drive to Lavelle Road, proceeds northerly on Lavelle Road to Old Redwood Highway, then continues northerly along Old Redwood Highway, crossing under Old Redwood at the treatment plant entry road. The first 140 feet of piping is six-inch diameter and the remainder eight-inch diameter. Water from Well 5 is conveyed to the treatment plant through the same transmission main used for Well 3. The distance from the well to the treatment plant is approximately 2,700 feet.

Treatment Facilities

Water produced from wells 1A, 3A, 4A and 5 exceed the secondary maximum contaminant levels for iron and manganese. Furthermore, water from wells 1A and 3A contain high levels of arsenic. Thus, these wells pump directly to the Larkfield Water

Treatment Plant (LWTP) prior to entering the distribution system. All groundwater is conveyed to the treatment plant located on the easterly side of Old Redwood Highway and just southerly of Mark West Creek. The Feasibility Study indicated this property is a private driveway. Cal America states that they own the land upon which the Treatment Plant is located. Table 4 shows the capacities of the treatment system with time.

Table 4

WATER TREATMENT PLANT CAPACITIES (1978-2003)

Year	Number of Filters	Filter Size	Filter Capacity (gpm)	Total Filter Capacity (gpm)	Backwash Tank Capacity (gallons)
1978	1	5' x 17'	250	250	50,000
1989	2	2 @ 5' x 17'	250	500	50,000
1999	3	2 @ 5' x 17' 1@ 8' x25'	2 @ 250 1@ 600	1,100	245,000
2003	2	8' X 25'	600	1,200	245,000
2006	2	8' X 25'	600	1,200	245,000

The plant facilities include filters, chemical addition facilities, a backwash tank, and associated controls and monitoring equipment. Groundwater is treated by oxidation, ferric hydroxide co-precipitation, greensand filtration and hyopochlorination. The Treatment Facility has two 600 gpm multimedia pressure filters capable of treating a total of up to 1,200 gpm.

Backwash and rinse water from the filters is piped to an onsite 245,000 gallon bolted steel tank. Supernatant from this tank is mixed with raw well water entering the plant at a rate not exceeding 10 percent of influent flow. The average recycle rate varies between 50-80 gpm.

The Larkfield District uses sodium hypochlorite for disinfection and oxidation. The sodium hypochlorite is added twice, in pre-filtering and in post-filtering. The current injection rate for sodium hypochlorite is approximately 3.2 ppm in the pre-filter phase and 0.3 ppm in the post-filter phase. Currently ferric chloride is added to remove the arsenic.

Raw water turbidity, plant effluent free chlorine concentration and plant effluent turbidity is continuously monitored and recorded at the plant site. The effluent turbidity and chlorine residual monitoring equipment is connected to an alarm system that will shut down the treatment plant and automatically telephone the Larkfield District operator if the plant effluent turbidity exceeds 0.60 NTU or if plant effluent free chlorine concentration is below 0.2 mg/L. If the free chlorine exceeds 2.5 mg/L the alarm is activated but the plant is not shut down. A warning call is made to the Larkfield District operation when plant effluent turbidity exceeds 0.4, without plant shut down.

Storage Facilities

There are six storage tanks in the Larkfield District water system, with a combined capacity of 852,000 gallons. All tank sites are fenced and appear well maintained. Space is available at the North Wikiup site for an additional tank of at least 400,000 gallons. Design for this tank is underway. Construction of the tank may begin in October of 2006. The new tank may be operational in May of 2007. Further information regarding each storage tank can be found in Table 5.

Distribution Facilities

The distribution system is divided into three distinct pressure zones and a fourth reduced pressure zone. The main pressure zone is the Larkfield Zone, which is pressurized by the North Wikiup and Lower Wikiup tanks. The treatment plant and the SCWA aqueduct feed this zone. The Middle Wikiup Zone is pressurized by the Upper Wikiup tanks. A booster station located at the Lower Wikiup site fills the Upper Wikiup tanks. A booster pump and hydropneumatic tank located at the Upper Wikiup tank site pressurizes the Upper Wikiup Zone. The Montebello Zone is a reduced pressure zone that is pressurized by the North Wikiup booster pump. There are 13 units in this zone.

Table 5

STORAGE FACILITIES AND CAPACITIES

LOCATION	TANK	1980 Capacity (GALLONS)	1998 Capacity (GALLONS)	2007 Capacity (GALLONS)	Pressure Zone	Construction (Tank/Roof)	Year Installed	Elevations
LOWER WIKIUP	No. 1	300,000	300,000	300,000	Larkfield (main)	Conc/ Alumin	1956	260/245
LOWER WIKIUP	No. 2	174,000	174,000	174,000	Larkfield (main)	Conc/ Conc	1977	259/245
UPPER WIKIUP	No. 1	48,000	48,000	48,000	Wikiup	Conc/ Metal	1958	565/550
UPPER WIKIUP	No. 2		75,000	75,000	Wikiup	Welded Steel	1981	565/550
UPPER WIKIUP	No. 3		5,000	5,000	Upper Wikiup	Welded Steel		Pressure
NORTH WIKIUP	No. 1		250,000	250,000	Larkfield (main)	Welded Steel	1986	320/304
NORTH WIKIUP	No. 2			400,000			In Design	
Total		**522,000**	**852,000**	**1,252,000**				

The Distribution system consists of approximately 157,000 feet of piping, ranging in size from three to fourteen inches in diameter. The Capacity Study stated that a review of the Larkfield distribution map and system hydraulics indicated a sufficiently sized backbone

grid of pipelines exists to distribute water from the treatment plant to storage and throughout the system to the various customers. The Capacity Study stated that fire flow tests conducted by operations staff verified this conclusion. Although fire flows are acceptable, the district has a program to add hydrants to the system.

The Water Master Plan indicated that the distribution system is generally in good condition. The Feasibility Study stated that leak mapping indicated the distribution system was in good condition except for a cluster of service lateral leaks that had occurred in the northwest portion of the water system.

The oldest piping in the system was installed in the late 1950s during construction of the original Larkfield development. All new piping is PVC C900 or ductile iron installed according to the CUCC Standards.

Telemetry

The Lower and North Wikiup tank levels are used to control the operation of water supplies from the wells and the SCWA aqueduct. Tank levels are transmitted to the treatment plant in two ways: CMC Micromac and SCADA.

The CMC Micromac system employs a matched-pair of remote telemetry units operating over dedicated leased telephone lines. The receiving units at the plant provide setpoint actuated control signals to the plant and to a control valve at the SCWA aqueduct turnout. The Lower and Upper Wikiup boosters and tanks use the CMC Micromac system.

The Larkfield District has begun installing a centralized supervisory control and data acquisition (SCADA) system to allow data logging, logical control, and alarm and remote control capabilities. Previous studies have recommended the installation of SCADA facilities for added system reliability and efficiency. The North Wikiup booster and tank use the SCADA system. The WTP has receivers for both CMC Micromac and SCADA systems.

SYSTEM OPERATIONS

Personnel

Six individuals, whose titles and certification grades are described in Table 6, staff the system. Five of the staff members work out of an office located in the District at 640 Larkfield Shopping Center. The Operations Manager works in the CUCC administrative office in Sacramento.

Table 6
Personnel

Job Title	Number	Certification Grade
Operations Manager	1	5
Superintendent	1	4
Water Systems Operator	3	2&3
Administrative Assistant	1	None Required

Customer Complaints

DHS records indicate that the Larkfield District receives complaints about tastes and odors several times each year. These complaints are probably associated with chlorine management. Management of chlorine additives at the treatment plant has minimized these complaints. Other complaints are related to water pressure, corrosion, and color.

Customers also occasionally complain about the lack of water pressure. There is a low pressure zone at Carriage Lane and Greenview, where water pressure is 38 psi at the hydrants. However, most pressure problems in the district are caused by individual maintenance or the use of softeners that accumulate salts within customer piping.

During the 1990's, corrosion problems occurred in houses with copper piping. Cathodic protection or the replacement of copper piping with polyethylene piping has been installed in approximately 546 units to solve this problem. Polyethylene piping has since been required on all new construction. Cathodic protection must be monitored and replaced every 7-10 years.

Due to the high levels of minerals in the water, color is a concern. Purple-tints to the water supply have been caused by excess potassium permanganate in the system. Yellow tinted water was caused by excess manganese. The updates of filters and chlorine policies have eliminated the color variations. No waterborne illnesses have occurred. The number and type of complaints for the years 2003-2005 are listed in Table 7.

Table 7

Complaints Reported (Written or Verbal)

Type of Complaint	Year	Number of Complaints Reported	Number of Complaints Investigated	Number of Complaints Reported to DHS
Taste and Odor	2003	6	6	0
	2004	7	7	0
	2005	4	4	0
Color	2003	2	2	0
	2004	2	2	0
	2005	2	2	0
Turbidity	2003	1	1	0
	2004	2	2	0
	2005	0	0	0
Worms and other Visible Organisms	2003	0	0	0
	2004	0	0	0
	2005	0	0	0
Pressure (High or Low)	2003	1	1	0
	2004	2	2	0
	2005	0	0	0
Illnesses (Waterborne)	2003	0	0	0
	2004	0	0	0
	2005	0	0	0
Other	2003	2	2	0
	2004	4	4	0
	2005	1	1	0
Total	2003	12	12	0
	2004	17	17	0
	2005	7	7	0

System Repair

System repair occurs when Service Connections are broken /leak, mains are broken /leak, water outages, and boil water orders occur. In 2003, the number of Service Connection breaks/leaks was 8. In 2004, 9 breaks occurred. In 2005, that number increased to 17.

Although water outages have only occurred for maintenance and for new tie-ins, they are a concern within the district. Fluctuations occur in the number of outages that occur from year to year. In 2003, 12 customers experienced a water outage. In 2004, that number dropped to 4. In 2005, there were 13 outages.

District orders to Boil Water occur when coliform levels reach unsafe health levels, or other the water within the system is otherwise found to be unsafe. There have been no orders to Boil Water in over a decade. Repairs to the existing system have not been

significant enough to cause a public health concern. Repairs for the years 2003-2005 are listed in Table 8.

Table 8

System Problems

Type of Problem	Year	Number of Problems	Number of Problems Investigated	Number of Problems Reported to DHS
Service Connection Breaks/Leaks	2003	8	8	0
	2004	9	9	0
	2005	17	17	0
Main Breaks/Leaks	2003	5	5	0
	2004	2	2	0
	2005	4	4	0
Water Outages	2003	12	12	0
	2004	4	4	0
	2005	13	13	0
Boil Water Orders	2003	0	0	0
	2004	0	0	0
	2005	0	0	0
Total	2003	25	25	0
	2004	15	15	0
	2005	34	34	0

Regulatory Agency Compliance

The Larkfield District water system currently complies with all DHS requirements; there are no outstanding directives or orders.

Permit amendment No. 2 to Water Supply Permit No. 02-18-02P4910023 was issued on May 26, 2006. The amendment revised the source flows and maximum daily demand for the system and included provisions for changes in the water treatment to remove arsenic.

Annual water quality reports for 2004 and 2005 noted no violations of lead or copper, regulated substances or secondary substances.

Due to arsenic contamination in the well supply the treatment system is now using ferric chloride to precipitate out arsenic in the green sand filter.

Since 1994, there have been zero maximum contaminant level (MCL) bacterial violations in the distribution system. Water samples have tested positive for total coliform bacteria. In each case, subsequent testing did not indicate the presence of any coliform bacteria. No enforcement action was taken by DHS.

The Water Supply Permit for the Larkfield Water System states that "*Larkfield shall develop and submit a distribution system operations plan by October 22, 2003. The plan shall at a minimum, describe the water system's program for each of the following:*

flushing of water mains, tank inspection and cleaning, main evaluation, repair, and replacement, responding to emergencies within the distribution system, responding to consumer complaints, maintenance and testing of backflow prevention devices, valve exercising and maintenance, and pump station operation and maintenance." This system has been implemented with the exception of the valve exercising program. Valves are periodically exercised when repairs to other equipment occurs.

Larkfield must develop an emergency power plan for both the Upper and Lower Wikiup tank sites.

PROJECTED GROWTH AND FUTURE SERVICE POPULATION

The Master Plan notes that in 1996 the total number of connections served was 2,104. Ninety one percent of these connections were in the Lower Wikiup zone and four and a half percent of the connections were in each of the Middle and Upper Wikiup zones.

The Water Master Plan for the Larkfield District (Master Plan) had a short term planning horizon of five years to provide a detailed, project specific capital improvement plan. The master plan also incorporated a 15 year long term planning horizon, assuming an annual growth rate of 1.1% through 2012. The total connections projected for 2012 was 2,502.

The Capacity Analysis completed in October 2003 (Capacity Analysis), stated that annual growth since the 1999 Master Plan was 1.4%, and there were 2318 connections serving approximately 7,700 people. From 2003 through 2005, approximately 40 connections have been added representing about 1% annualized growth.

PRMD growth assumes an average rate of new housing construction in the Larkfield area of 21 units per year through 2020 and 10 units per year between 2020 and 2030. The percent of non-household population within Cal American service district is assumed to be equal to the Santa Rosa Planning Area percentage, and non-household population as a percentage of household population was assumed to remain constant over the 2000-2030 period. County planning figures for future years are shown in Table 9. The number of connections is estimated as one connection per 3.3 persons. This is the ratio used by Cal-American in their annual reports. It is also the ratio of connections to population in 2000, using the 2000 Census and the number of connections in the Capacity Study.

PRMD also provided us a letter from Cal Am dated February 2, 2005, which provided projections for approved and pending projects. This included 118 estimated EDUs for approved projects and another 164 estimated EDUs of pending development, plus Sutter Hospital with an estimated 40 EDUs. This is a total of 322 total EDUs of approved and pending development requiring. Cal Am estimated an annual water requirement of 257.6 acre feet to service this development. However, they used an annual use of 0.8 acre-feet per year per EDU. The 2003 Capacity Report showed that average use per connection has been 0.57 acre-feet per connection. A connection is larger than an EDU. To adjust the estimated needs in the 2005 letter to match the historical use documented in the Capacity Study, the annual use per EDU would have to be lowered by 47%. We do not,

however, know if large users such as Sutter Hospital provided water use and then were converted to EDUs using the 0.8 acre-feet per year formula. Ignoring Sutter Hospital, the growth projected by the 2005 letter was about 282 EDUs. At 2.5 EDUs persons per EDU this is a population increase of 705 people. Given 3.3 people per connection this would be an addition of 214 connections. The 2005 report indicated 2,356 connections on the water system. An increase of 214 connections would be 2,570 connections. This is equivalent to the year 2010 in Table 9 which is reasonable considering that these are approved and pending projects.

Table 9
PRMD PROPOSED LARKFIELD POPULATION 2000-2030

YEAR	**NUMBER OF CONNECTIONS***	*NUMBER OF EDUs*	*VACANT UNITS*	*Occupied Units*	*Household Population Estimate**	*Non-Household Population Estimate**	*Total Population Estimate*
2000	**2,357**	3,194	225	2,969	7,778	250	8,028
2005	**2,433**	3,300	233	3,067	8,028	268	8,296
2010	**2,508**	3,406	240	3,166	8,277	285	8,562
2015	**2,584**	3,512	248	3,264	8,527	303	8,830
2020	**2,659**	3,618	255	3,363	8,776	320	9,096
2025	**2,696**	3,668	259	3,409	8,898	330	9,228
2030	**2,733**	3,718	262	3,456	9,020	350	9,370
Ultimate	**2,936**	3,993	281	3,712	9,687	376	10,063

* Assumes 3.3 persons per connection
* Assumes 2.62 persons per household
Assumes 21 units per year 2000-2020 and 10 units per year 2020-2030

In this report we will use the growth projections in Table 9 and account for Sutter Hospital separately as a big user. We will assume a separate well must be provided for Sutter Hospital and also some changes to the distribution system.

A comparison of various population projections in 2030 is shown in Table 10. For this study, we will use a 2030 projection of 2,733 connections. This is the smallest number of connections that result from projecting the various growth estimates out to 2030. Note that according to PRMD figures this represents 93.11% residential Buildout. Given this, the ultimate Buildout would be 2,936 connections.

Table 10
Comparison of Future Connection Estimates 2030

Source	Estimated Connections	Comments
SCWA Sewer Ultimate Buildout	3,160	800 new connections
Master Plan	3,168	1.1% Growth
Capacity Study	3,335	1.4% Growth
PRMD	2,733	

IMPROVEMENTS RECOMMENDED BY PREVIOUS STUDIES

The Master Plan and Feasibility Study recommended the following projects within the Larkfield Wikiup District:

1. Well station and transmission main.
2. Upgrade the LWTP to address efficiency and operational problems.
3. North Wikiup tank.
4. Correct 1,000 feet of water main deficiencies.
5. Water service repair replacements (550) or cathodic protection.
6. Replace tank liner at Lower Wikiup tank.
7. SCADA system installation.
8. Lavell Road main extension.
9. Old Redwood Hwy main extension
10. Water main replacements.
11. Distribution system upgrades.

Status of Recommended Projects

1. Well 3A has been drilled (2002) replacing Well 3, and additional wells have been proposed for Mark West Station (2008), Faught Road (2008), and the Sutter Hospital well (2009).
2. Filter replacement and the addition of ferric chloride to address arsenic levels. A third filter will be added to the plant as a part of the Faught Road Well project.
3. The North Wikiup Tank #2 project is currently in the final design phase. The tank is 400,000 gallons and construction may begin as early as October of 2006 and be operational by summer of 2007.
4. The district has replaced 1700 feet of main on Wikiup Bridge Way.
5. Two methods to alleviate premature failing of copper piping have been implemented: the district now requires all new plumbing to be polyethylene and secondly, cathodic protection has installed where copper piping is used in private residences. Cathodic protection can protect piping for 7-10 years. Replacement of cathodic devices can occur, but if additional leaks develop during that time the

service is replaced. Currently 91 service replacements have occurred and 33 sites have had replacement cathodic protection.

6. The Lower Wikiup Tank has been recoated; however, a small leak has been observed.

7. Upgrades to the tanks and boosters for SCADA equipment will be completed by 2010. Some portions of a SCADA system have been installed.

8. The Lavell Road extension is dependent on the construction of Sutter Hospital.

9. The Old Redwood Highway Main Extension is dependent on housing development within the area and will be partially funded by developers.

10. Water main replacement is an ongoing program and includes the Wikiup Bridgeway project.

11. In the community of Fulton, a looped main project is planned but development in the region will determine the timeframe of construction for this project.

CURRENT AND PROJECTED NEEDS

Supply

The DHS report stated that, "*The source capacity of the CalAm system can provide 1,546 gpm (2.226 MGD) from its combined sources. On July 18, 2003, an MDD of 2.190 million gallons (MG) was recorded. Based upon CalAm's source capacity and the usage history of its customers during peak day demands, the CalAm system can supply its current customer base. However, with several residential developments currently under construction and several more waiting for 'will-serve' letters CalAm must continue its efforts to acquire additional sources of supply*."

The DHS Report recommending revising Provision 10 of Permit No. 02-18-02P4910023 to read:

"CalAm must develop new sources of supply to reliably meet the current and future demands of the Larkfield District."

Table 11 shows water use from 1997 through 2005. Maximum Day Demand (MMD) through this period was 2.190 MG or 945 gpd per connection. Given this MMD, Table 12 shows required water supply to accommodate future growth and the additional supply required to meet these needs.

Table 11
LARKFIELD WATER PRODUCTION, PURCHASE, AND AVERAGE USAGE 1997-2005

Year	*Connections*	*Water Produced (millions of gallons)*		*SCWA Water Purchases (millions of gallons)*		*Annual Total*	*Average Use GPD/Connection*		
		ANNUAL	MAX MONTH	ANNUAL	MAX MONTH		ANNUAL	MAX MONTH	MAX DAY
1997	2125	200.7	22.700	215.3	30.6	416	536	810	
1998	2182	252.7	27.800	189	21.8	361.6	454	733	
1999	2207	224.9	31.000	185.3	23.4	410.2	509	795	
2000	2246	274.7	29.600	161.1	31.2	435.8	531	873	
2001	2278	282.5	28.500	142.5	27.4	425	511	792	
2002	2300[1]	224.172	16.010	200.094	36.879	424.266	505	748	940[2]
2003	2354	279.033	31.870	126.491	22.457	405.524		781	945[3]
2004	2363	270.8	26.858	173.813	27.273	444.613			
2005	2356	248.684	23.956	165.021	29.981	413.705			
						ave	508	790	943

[1]Number of connections on Max Month & Max Day was 2281
[2] Max Day 2002 = July 9, 2002 at 2.144 MG
[3] Max Day 2003 = July 18, 2003 at 2.190 MG with 2318 connections (amended May 26, 2006)

The current water supply requirement (maximum day demand), is approximately 2.19 MG or 1521 gallons per minute (gpm) and is projected to increase to 2,620 gpm at service area build out. Currently, water demands are satisfied by a combination of purchases from the Sonoma County Water Agency and groundwater derived from local wells.

Since allocations from SCWA will not increase over 0.8 MGD, additional sources of supply must be found. Presumably, these will be from groundwater sources, including deep wells in the Larkfield area. Given population projections by PRMD, one well must be added between now and 2010 to meet demand. Currently, wells serving the Larkfield system average 460 feet in depth and 260 gpm. If the new well has this average capacity, and existing wells continue to produce water at the existing rate, this new well will be sufficient to supply capacity through 2030. However, the Mark West Station Well (Well 6) will be limited to 150 gpm rather than the studied safe capacity of 300 gpm due to concerns of local residents. Therefore, another well will be required to meet the demands of development within the region by 2020. Table 12 summarizes the expected future capacities and expected shortfalls. Note that Table 12 table does not account for decline in existing well production. Generally, water productions from wells in the Larkfield area have declined over time.

Table 12
Firm Source Capacity Needs 2010 to Buildout (Existing wells & SCWA)

Year	Connections	Required Firm Capacity (gpm)	Current Firm Capacity (gpm)	Required Additional Capacity (gpm)
2010	2,508	1,646	1,585	61
2015	2,584	1,696	1,585	111
2020	2,659	1,745	1,585	160
2025	2,696	1,769	1,585	184
2030	2,733	1,794	1,585	209
Ultimate	2,936	1,926	1,585	341

In their letter of October 2, 2006 CalAm stated that the future water needs specifics in the draft report were "incorrect and I would like to work with your firm to correct these discrepancies …. The Estimated EDU's for Larkfield need to be clarified with our staff." Despite several attempts to have CalAm provide additional specific information, no explanation of this comment was received. Figures received from CalAm relating to water consumption per connection were conflicted. When we asked for and received clarification on this, the revised usage figures were still conflicted but generally reflected the annual use per connection determined by us.

DHS is more concerned with the ability of the system to meet peak flows, rather than annual use. Peak flows, as reflected in historical data are what have been used in this report.

Treatment System

The current treatment system is limited by the number of filters in use. Currently, there are two filters each capable of filtering 600 gpm for a total of 1200 gpm. Only well water is filtered. At this time the filtration capacity exceeds the firm well capacity of 1022 gpm. Since all new capacity will be from wells, all the new capacity must be filtered. Table 13 shows that one filter may need to be added by 2030. It is likely, however, that filtering well water at the well site may be more economically feasible than providing lengthy transmission lines to the LWTP. This could result in additional filtration systems.

Table 13
Treatment Needs 2010 to Buildout

Year	Connections	Required Well Capacity (gpm)	Current Firm Capacity (gpm)	Required Additional Capacity (gpm)
2010	2,508	1,091	1,200	-109
2015	2,584	1,141	1,200	-59
2020	2,659	1,190	1,200	-10
2025	2,696	1,214	1,200	14
2030	2,733	1,239	1,200	39
Ultimate	2,936	1,371	1,200	171

Storage

Projected storage requirements at service area build-out are set forth in Table 14. The requirements are based on the same criteria as the Master Plan and the Capacity Analysis: Chart 3 of Title 22 with a fire flow requirement as established by the local fire district; 180,000 gallons (1500 gpm for 2 hours).

Table 14
Storage Needs 2010 to Buildout

Year	Connections	Title 22 Requirements	Fire Flow Requirements	Required Storage (gpm)	2007 Storage Capacity (gpm)	Required Additional Capacity (gpm)
2010	2,508	1,068,000	180,000	1,248,000	1,252,000	0
2015	2,584	1,099,000	180,000	1,279,000	1,252,000	27,000
2020	2,659	1,131,000	180,000	1,311,000	1,252,000	59,000
2025	2,696	1,146,000	180,000	1,326,000	1,252,000	74,000
2030	2,733	1,161,000	180,000	1,341,000	1,252,000	89,000
Ultimate	2,936	1,246,000	180,000	1,426,000	1,252,000	174,000

* Includes 400,000 gallon tank now in design

Previously, the Master Plan indicated an ultimate storage deficit of 400,000 gallons when the number of service connections reached 2,502. The Capacity Analysis noted when the number of connections reached 2,338, the system would have a storage deficit of 383,000 gallons. The current number of connections is about 2,360 and a new 400,000 gallon tank is being designed and is planned for completion in 2007. Table 14 assumes that this tank is completed. Deficiencies in future years assume this tank has been built. Table 14 shows with the new tank, capacity should be sufficient through 2010, but that another 90,000 gallons of storage will be needed by 2030.

The Feasibility Study noted that a slightly more conservative test is often used to assess storage volume requirements. Coastland usually uses this more conservative approach in which the required storage volume consists of a reserve component equal to an average day demand, an equalizing component equal to one quarter of the maximum day demand and fire storage component as established by the local fire district. The Feasibility Study offset this additional requirement by noting that the line from SCWA could be used counted as additional storage. For this report, we discount any storage in the SCWA aqueduct and use the criteria in Title 22.

Distribution System

As part of the preparation of the Larkfield Water Master Plan, a computerized water system network analysis was performed. Two areas were identified where the distribution system is deficient to deliver fire flows recommended by the local fire district. Fire hydrants do need to be added throughout the system. The Master Plan noted that

eliminating these deficiencies would involve installing about 1000 feet of 8-inch or larger water main. This was performed as a part of the Wikiup Bridge Way project.

Coastland did not perform a hydraulic analysis of the existing system. Based on the general Master Plan statement that the backbone structure of the distribution system was adequate and that fire flows could be met with minor modifications noted above, we would estimate that distribution system modifications required in the future will be limited to those required to deliver water to new developments, to provide redundancy within the system, or to replace small 3-4 inch lines.

Miscellaneous

The Larkfield District has considered installing a centralized supervisory control and data acquisition (SCADA) system to allow data logging, logical control, and alarm and remote control capabilities. A new SCADA system would enhance system reliability and efficiency. A new control system of some sort will eventually be needed since parts and service for the old control system are, or will shortly be, unavailable.

CAPITAL IMPROVEMENT PROGRAM

Table 15

Capital Improvement Projects

Year	Project	Storage	Treatment	Distribution	Source
2007	North Wikiup Tank #2	400,00 gallons			
2008	Lower Wikiup Main Relocation			Regulates distribution	
2008	Mark West Station Well and Treatment Filter		600 gpm		1 Well output to be 150 gpm
2008	Faught Road Well and Treatment Filter				1 Well output will vary
2009	Sutter Hospital Well*				1 Well output will vary
2009	SCADA Emergency Control Extension to Upper and Lower Wikiup	Regulates tanks/booster pumps	Regulates plant operations	Regulates distribution	Regulates tanks/booster pumps
2010	Sutter Lavell Road 12" Main*			Increases distribution	
2012	Old Redwood Highway 12"main extension			Increases distribution/ stabilizes system pressure	
2015	Additional Storage Tank	90,000 gallons			
2025	Fulton 12" Main Extension			Increases distribution/ stabilizes system pressure	
2030	Additional Storage Tank	90,000 gallons			

*Assumes that the Sutter Hospital is developed

Coastland was not able to get a Capital Improvement Program from Cal-Am. We understand that this is still under development. We did, however, interview the Superintendent and based on that review developed a likely list of future projects and later received CalAm's Strategic Capital Expenditure Plan (SCEP) for the Larkfield system. From these sources and our analysis, we created the Capital Improvement Plan in Table 15.

Table 15 does not include all projects in the CalAm's SCEP. It does not include the any recurring projects, as the need for all the projects was not provided. A modest allowance is suggested for recurring capital maintenance. Of special note in the recurring projects in the SCEP is the line item Comprehensive Planning Studies for $443,135. We do not know what these studies entail. However, this seems extremely high for a water system the size of the Larkfield system. A recent combined master plan for Sebastopol that included, over flight photography and survey, base map development, and all of water, sewer and storm drain master plans cost $260,000. Adjusted for inflation a fairly comprehensive Water Master Plan completed for Cloverdale in 1998 cost about $30,000. A wastewater master plan recently completed in Point Arena cost $35,000.

Table 15 does not include the emergency interconnection with Santa Rosa since an agreement had not been reached with the City and this would be expected to result in savings somewhere else in the supply or storage budget. It does not include rate of flow valves on the existing treatment filters. No need was presented for this project and the filters have operated satisfactorily for years. Our CIP list does not include drainage improvements at the WTP site since no pressing need was presented to us which justifies the project.

The improvement projects are generally listed in the order in which they should be accomplished. While we have attached estimated project years, the timing of projects is largely dependent on the rate, type and location of new development. In particular, three projects are very development dependent. The Sutter Hospital improvements, would be developed only if Sutter Hospital is approved and constructed. The Sutter Hospital improvements would also include the extension on Lavell Road. The Lavell Road extension will create a loop that will provide greater fire protection in the region. The Old Redwood Highway main extension is dependent on development in that area. This project will provide redundancy within the system. This project will be funded by the private development at 175 Airport Boulevard. The extension of piping down Fulton Road to create another loop is also dependent on development within the region. This project will involve the installation of piping under Highway 101 and is highly subject to housing development along Fulton Road

Supply

As indicated in Table 12, an additional well will be needed by 2010. Well 6 is currently being developed. Initial studies have estimated output at the proposed well site to be 300 gpm. The well will be located in a deep aquifer below the aquifer currently used by

surrounding wells. Filters for iron, manganese, and arsenic will be installed at the wellhead.

At 300 gpm, Well 6 could meet the 2010 demand. However, due to concerns regarding influence of Well 6 on the existing neighboring wells, the output of this Well 6 is limited in the CEQA document to 150 gpm. Therefore, a second well will be needed by 2010 or 2015.

Given the steady decline on well yield over time, (depending on the yield of the second well), a third well may be required at some point between now and 2030. The timing of this is dependent on new development and on the decline in output of other wells. Also, should Sutter Hospital be constructed an additional third well will be needed for its use. We have not included this replacement well in our calculations since we believe a second well could produce 300 gpm and with the Sutter well, would meet the growth needs with extra capacity to make up for decline in the other wells.

The locations of wells are not known. Given this unknown and the cost of transmission lines and the cost of filtration, we are assuming each new well will be outfitted with a filtration treatment system.

Treatment System

Additional treatment capacity will be needed by 2030. Depending on the location of the future wells, this treatment may be placed at the wells. This may be less expensive than installing a transmission line to the existing treatment plant and expanding the treatment plant. For this report we will assume each well will have a local filtration treatment system.

Storage

As indicated in Table 14, an additional storage is needed before 2015, and 90,000 gallons of storage will be needed by 2030. An additional 90,000 gallon of storage will be needed by ultimate build out. The timing of this additional storage is dependent upon new development.

Negotiations between the City of Santa Rosa and the Larkfield District have been initiated to construct a system tie-in between the two districts. This would allow the Larkfield District to possibly share storage facilities with Santa Rosa. Other advantages for both districts would make a connection beneficial. Since negotiations are in the beginning stages, we have not included this intertie in our future projects.

Distribution System

As noted above, Coastland did not model the distribution system. The projects in the CIP were taken from discussions with the system Superintendent. We note, however, that the

need for the loops in the system has been raised in previous studies. Many of the main extension projects would add redundancy to the system.

The original 8-inch main from the Lower Wikiup booster/tanks to the distribution system piping is a major artery within the distribution system. The main is located across private properties and within wooded areas making it subject to damage by unsuspecting home owners and potential damage by falling trees. If damage to this main were to occur, detection and repair would be severely limited by its location. Damage to this main would cripple the ability of the district to deliver water to customers. A project to relocate this main along Wikiup Drive is currently being planned.

Replacement of small mains (3-inch and 4-inch) is also a concern to the district. Small mains limit both water delivery and fire protection.

COST ESTIMATES FOR CAPITAL IMPROVEMENT PROGRAM

Table 16 provides the estimated costs of projects shown in Table 15. Coastland began by using costs taken from the newly updated June 2006 Santa Rosa Final (DRAFT) Water Master Plan and modifying these based on costs for recent projects in the cities served by Coastland. In accordance with the methodology used in the Santa Rosa Final (DRAFT) Water Master Plan, costs include a 50% mark-up over construction that includes:

- 20% construction contingency
- 10% Engineering
- 10% Construction Management
- 10% Administrative, Legal, Environmental & misc.

With these mark-ups the June 2006 Santa Rosa Final (DRAFT) Water Master Plan uses the following costs:

- 8 inch water line - $480/LF
- 12 inch water line - $520/LF
- 16 inch water line - $595/LF
- Water Well - $2.6 million each
- Steel Water Reservoir Tank - $2.62/gallon

These estimated costs are recent, and accepted by the City of Santa Rosa. Coastland believes that the cost for the pipelines may be about 20% high. We base this on recently completed water line projects. We have, therefore, adjusted the Santa Rosa pipe costs down by 20%. Tank costs are in line with our recent experience.

While well construction costs are often a function of the depth, screening and material, rather than production, we believe the Santa Rosa costs, which were for 1,000 gpm wells, are probably high for Larkfield. Therefore, well costs for this report were taken from an actual recent groundwater project in Yountville.

Based on these considerations the costs used in this report are as follows:

- 8 inch water line - $384/LF
- 12 inch water line - $416/LF
- Water Well - $1.32 million each
- Steel Water Reservoir Tank - $2.62/gallon

These costs, and the costs presented in Table 16 do not include the costs of land. The cost of land could be significant.

Table 16
Estimated Cost of Capital Improvement Projects

Year	Project	Size	Unit	Unit Cost	Cost	Comments
2007	North Wikiup Tank #2	400,000	gallons	$2.63	$1,050,000	Currently being designed
2008	Lower Wikiup Main Relocation	860	LF	$416	$357,760	Currently being designed
2008	Mark West Station Well and Treatment Filter	1	each	$1,320,000	$1,320,000	Output will vary required by 2010. Does not include land.
2008	Faught Road Well and Treatment Filter	1	each	$1,320,000	$1,320,000	Timing Dependent on development and decline in other wells. Does not include land
2009	SCADA Emergency Control Extension to Upper and Lower Wikiup	1	each	$137,000	$137,000	Regulates tanks/booster pumps
2009	Sutter Hospital Well*	1	each	$1,320,000	$1,320,000	Contingent on Sutter Hospital Development
2010	Sutter Lavell Road 12" Main*	2,000	LF	$416	$832,000	Contingent on Sutter Hospital Development
2012	Old Redwood Highway 12 "main extension	650	LF	$416	$270,400	Contingent on Development
2015	Additional Storage Tank	90,000	gallons	$2.63	$236,250	Does not include land
2025	Fulton 12" Main Extension	3,600	LF	$416	$1,497,600	Extension to new development and loop fire system
2030	Additional Storage Tank	90,000	gallons	$2.63	$236,250	Does not include land
Total					**$8,577,260**	

In addition to the projects and costs in Table 16, there is ongoing distribution maintenance that needs to be performed, including protecting and replacing services and mains as noted in the Master Plan and Feasibility Study. Based on these studies, conversations with the Superintendent and a review of the system, we believe that an

annual minor construction budget of $30,000 should be set aside for these projects. This would include gradual replacement of 3 and 4 inch mains.

The SCEP provided by CalAm with their October 2, 2006 letter provides for slightly different costs. Most notably, the cost for Well #6 is estimated at about $4 million. The well will produce about 150 to 300 gpm. Recent planning level cost estimates for 1000 gpm wells in Santa Rosa are 2.6 million and include a 20% contingency. A well recently completed in Yountville with a filter and 3,800 feet of transmission line cost $1.25 million. We have used this latter figure adjusted for inflation. Some of the difference may include property costs, but without further explanation, the Cal Am costs seem high and we have chosen to retain the costs calculated in our draft study.

COST ALLOCATIONS

Project costs should be allocated to those who benefit. Projects that serve new construction development, should be paid for by the developers. Projects that serve to remedy deficiencies in the existing system, should be paid for by the existing users.

Table 17 provides a breakdown of costs allocated to existing customers and future customers.

Projects that will, at least in part, meet the needs of the existing users, and should be funded by them include:

- Items in the minor construction budget including replacement of small mains. These make up for existing deficiencies in those mains.
- A majority of the cost of the 400,000 gallon tank, which serves to bring storage up to standards.
- About half the costs of the Mark West Well and treatment system. This will make up for declines in existing wells.
- The SCADA control system. This has been a noted deficiency in every report. It will soon be required when parts for the existing control system become unavailable.
- The Sutter Lavell main loop. Although this loop serves Sutter Hospital, it makes up for a deficiency in the existing system with respect to redundancy and fire pressures.

All other projects will be constructed to serve future development and should be funded by future development. Note that some of the projects will be constructed by developers. This indicates a possible need to set up a funding mechanism for developer reimbursement.

Table 17						
Allocation of Capital Improvement Project Costs						
Year	Project	Cost	Existing Customers	Future Customers	Existing Customers	Future Customers
2007	North Wikiup Tank #2	$1,050,000	94%	6%	$987,000	$63,000
2008	Lower Wikiup Main Relocation	$357,760	100%		$357,760	$0
2008	Mark West Station Well and Treatment Filter	$1,320,000	50%	50%	$660,000	$660,000
2008	Faught Road Well and Treament Filter	$1,320,000	0%	100%	$0	$1,320,000
2009	SCADA Emergency Control Extension to Upper and Lower Wikiup	$137,000	100%		$137,000	$0
2009	Sutter Hospital Well*	$1,320,000		100%	$0	$1,320,000
2010	Sutter Lavell Road 12" Main*	$832,000	80%	20%	$665,600	$166,400
2012	Old Redwood Highway 12 "main extension	$270,400		100%	$0	$270,400
2015	Additional Storage Tank	$236,250		100%	$0	$236,250
2025	Fulton 12" Main Extension	$1,497,600		100%	$0	$1,497,600
2030	Additional Storage Tank	$236,250		100%	$0	$236,250
	Total	**$8,577,260**	**33%**	**67%**	**$2,807,360**	**$5,769,900**

The October 2, 2006 letter from Cal Am stated that they "have allocated the likely production of several wells for specific purposes. Water from the Faught Road Well is allocated to specific development. Water from Mark West Station Well (Well 6) and any water from the Sutter well that exceeds their needs will provide a cushion for our current water supply in the event we lose one of the primary sources."

We have allocated 50 % of the Mark West well to existing customers to make up for future decline in other wells. Since DHS has determined that the existing supply is adequate for the existing population, we believe that future development should pay for he additional wells.

COMMENTS ON STAFFING AND OPERATIONAL COSTS

Coastland has not completed a complete analysis of staffing and operational costs as part of this study. We do, however, offer a few comments in this regard.

The 1999 Feasibility Study provided a comparison of local water treatment water system budgets. The budget presented was reasonable. We do however offer the following observations:

1. In terms of dollars per MG sales, this budget would be the lowest of all the systems shown except Windsor. We believe Windsor has an advantage in economy of scales. This indicates that the budget may be a little low.

2. The cost of utilities, primarily electricity, is 5% less than Cloverdale's. While Cloverdale and Larkfield have similar populations, Larkfield sells 10% more water. Larkfield also has a greater change in elevation. The cost of utilities seems low.

3. The personnel wages and benefits budget proposed was $350,000. The $350,000 proposed for personnel wages and benefits in 1998 would be equivalent to about $440,000 today.

4. In 2004, the average annual earnings of a water treatment plant operator in California was $47,000, which is about $51,000 today. Grade 4 operators acting as supervisors are routinely solicited at salaries of $75,000 per year with good benefits. With a benefits ratio of 1.3, the proposed budget may not be sufficient for the existing staffing in Larkfield.

5. The study states that the Larkfield system is closest to Cloverdale. In terms of population, the proposed staffing budget is more cost per customer than Cloverdale. In terms of water treated this is similar to Cloverdale. Cloverdale has two treatment plant operators, one Grade 3 treatment operator and one grade 2 treatment plant operator. The $313,000 in salary and benefits shown for Cloverdale suggest they also account for some expense beyond the two treatment plant operators, likely including redundancy with other City workers and the Public Works Officer. Staffing for the Larkfield system consists of 6 persons including a grade 5 treatment operator and a grade four treatment operator.

6. Staffing costs in Larkfield could be cut two ways.

    a. Head count could be reduced. We note that since 1999, one additional operator has been added to the staff, indicating the potential for a cut in staffing. We also note however, that the district has not fully implemented a valve exercise program; this may be due to manpower constraints. Perhaps one place to cut staff would be the Grade 5 operations manager position. Exactly what the operations manager does is not clear. When we tried to contact him we were told he had left the company. While this person's name was included in the 2005 Annual Report to the Drinking Water Program, he did not sign the report and his name was not on earlier reports. The position is based in Sacramento, the time is split between the Larkfield system and the much larger Sacramento system. We do not know how charges are split. Evan Jacobs stated this position has been vacant for much of the last couple years. Based on the above we believe this position may not be required in a community owned system with an active Board of Directors.

b. Lower the grade levels of the operators. Larkfield is classed as a T2 treatment facility and a D3 distribution system. This is a lower certification than is held by the current staffing as shown in Table 6. However, there is an advantage to having more qualified staffing and experienced operators are getting more difficult to find and hire.

Economic &
Planning Systems
Real Estate Economics
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APPENDIX 2

CURRENT LARKFIELD GENERAL METERED WATER RATES

Appendix 2
Current Larkfield General Metered Water Rates
Mark West Area District Formation Feasibility Study, EPS #16017

Rates	Per Meter Per Month
Quantity Rate per 100 cubic ft.	$2.8123
Service Charge [1]	
5/8 x 3/4 inch meter	$13.98
3/4 inch meter	$20.98
1 inch meter	$34.98
1-1/2 inch meter	$69.92
2 inch meter	$111.87
3 inch meter	$210.77
4 inch meter	$351.62
6 inch meter	$699.21
8 inch meter	$1,118.73
10 inch meter	$1,398.41

[1] The service charge is applicable to all metered service and is added to the monthly charge computed at the quantity rates.

Source: California-American Water Company's website, www.amwater.com.

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APPENDIX 3

STEPS IN THE FORMATION OF A CSD

SONOMA LAFCO

Steps in the Formation of a Community Services District pursuant to the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (commencing with Section 56000) of Title 5 of the Government Code and the Community Services District Law, Division 3 (commencing with Section 61000) of Title 6 of the Government Code

1. A proposal to form a new district may be made by petition to the local agency formation commission ("LAFCO" or "the Commission").

   A. The petition shall comply with Government Code section 56700 et seq and shall include the following:

      (1) State that the proposal is made pursuant to section 56700.
      (2) State the nature of the proposal and list all changes of organization.
      (3) Describe the boundaries of the proposed district and provide a map showing the boundaries.
      (4) State any proposed terms and conditions.
      (5) State the reason or reasons for the proposal.
      (6) State whether the petition is signed by registered voters or owners of land, indicate the date of signing, and provide information identifying the place of residence or land owed by the signer.
      (7) Designate not more than three people as chief petitioners, stating their names and addresses.
      (8) Request proceedings for the proposal.
      (9) State whether the proposal is consistent with the sphere of influence of any affected city or district.

   B. The petition shall also comply with Government Code section 61011 and shall include the following:

      (1) State which services allowed by the Community Services District law it is proposed that the district be authorized to provide upon formation.
      (2) Set forth the proposed methods, including, but not limited to, special taxes, benefits assessments, and fees, by which the district will finance those services.
      (3) Propose a name for the district.
      (4) Specify the method of selecting the initial board of directors.

   C. Before circulating any petition, the proponents shall publish a notice of intention which shall include a written statement not to exceed 500 words, setting forth the reasons for forming the district, the proposed services that the district will provide, and the proposed method by which the district

will be financed. The notice shall be published in one or more newspapers of general circulation within the territory proposed to be included in the district. One or more of the proponents shall sign the notice. The form of the notice must comply with GC section 61012 and 56700.4.

D. Within five days after the date of publication, the proponents shall file with LAFCO a copy of the notice and an affidavit from a representative of the newspaper certifying to the fact of publication.

E. After filing the notice with LAFCO, the petition may be circulated for signatures. The petition shall be signed by not less than 25 percent of the registered voters residing in the area to be included in the district, as determined by LAFCO. No petition shall be accepted for filing unless the signatures on the petition are secured within six months of the date on which the first signature on the petition was affixed and the petition is submitted to LAFCO for filing within 60 days after the last signature is affixed.

2. A proposal to form a new district may also be made by adoption of a resolution of application by the legislative body of any county, city, or special district which contains any of the territory proposed to be included within the district. Except for provisions regarding the signers, signatures, and proponents, a resolution of application shall contain all the information specified above.

A. Before adopting a resolution of application, the legislative body shall conduct a public hearing on the resolution.

B. Notice of hearing shall be published in one or more newspapers of general circulation within the county, city or special district.

C. At least 20 days prior to the hearing, the legislative body shall provide mailed notice to LAFCO. The notice shall generally describe the proposed formation of the district and the territory proposed to be included in the district.

D. The clerk of the legislative body shall file a certified copy of the resolution of application with LAFCO.

3. A proposal for formation of a district, whether by petition or resolution of application, must be submitted to LAFCO on appropriate application forms. In accordance with the fee schedule in effect at the time of application, before processing of the application can commence, a deposit towards actual costs must be provided and an agreement to pay costs must be signed by chief petitioners or proponents.

4. If LAFCO receives an application by petition, within 30 days of such receipt, LAFCO will request verification of registered voters by the County Register

of Voters, to determine sufficiency of the petition. If the requisite number of signers is confirmed, LAFCO will issue a certificate of sufficiency; otherwise, LAFCO will notify proponents and provide an additional 15 days for a supplemental petition to be submitted.

5. LAFCO makes referrals to affected agencies, notifying them of the application, and requesting comments. Within 30 days of receipt of an application, the executive officer determines whether the application is complete and acceptable for filing or incomplete. If incomplete, the executive officer notifies the proponents as to those parts of the application that are incomplete and the manner in which they can be made complete. If complete, the executive officer issues a certificate of filing and proceeds to set the proposal for hearing and give published notice.

6.. The date of hearing shall not be more than 90 days after the issuance of the certificate of filing. Notice of public hearing is published in a newspaper of general circulation and posted on the LAFCO website not less than 21 days prior to the public hearing. In addition, notice is provided to affected agencies, including cities within three miles of the exterior boundaries of the proposed district, the proponents, owners of land within the boundaries of the proposed district, registered voters residing within the boundaries of the proposed district, and anyone requesting special notice.

7. The executive officer completes a report on the proposal and recommendation to the Commission, based on statutory factors to be considered, comments from affected agencies, and an analysis of the proposal, including, but not limited to, a financial feasibility study. LAFCO may act as lead agency for the proposal pursuant to the California Environmental Quality Act (CEQA) and the State CEQA Guidelines. The Commission considers the proposal on its merits and, after a public hearing, makes determinations, among them whether the proposed district will have sufficient revenues to carry out its purposes. If the Commission determines that the proposed district will not have sufficient revenue, it can condition its approval on the concurrent approval, by voters, of special taxes or benefit assessments that will generate sufficient revenues; otherwise the district shall not be formed. If the Commission denies the proposal, no further proceedings shall be held on the proposal, and a similar proposal involving the same or substantially the same territory shall not be initiated for one year after adoption of the resolution terminating proceedings, unless the Commission finds that requiring this waiting period is detrimental to the public interest.

8. If LAFCO approves the proposal, within 30 days of adoption of the resolution of determination, anyone may file an application for reconsideration, stating what new or different facts that could not have been presented previously are claimed to warrant the reconsideration. The Commission must consider the request at the next meeting for which notice can be given; oral and written testimony is taken at that time. The Commission may approve or disapprove the request, with or without amendment, wholly, partially, or conditionally. If

the Commission approves, it shall adopt a resolution which supersedes the original resolution. The Commission's determination shall be final and conclusive.

9. After approval of the proposal, the Commission shall conduct protest proceedings, to allow owners of land within the proposed boundaries of the district and registered voters residing within those boundaries to protest the action. Not less than 21 days prior to the public hearing, LAFCO must publish a notice in a newspaper of general circulation and post notice on its website; notices are sent to owners of land within the proposed district boundaries as well as registered voters residing within the boundaries of the proposed district, affected agencies, the proponents, and persons requesting special notice. The right of protest is allowed to owners of land within the proposed district boundaries, if the proposal is uninhabited (fewer than 12 registered voters reside within) or to owners of land and registered voters, if inhabited. Protests must be written, state whether made by a landowner or registered voter, provide descriptive information to identify the location of the land or address of the voter, show the date of signing, and be signed.

10. At the conclusion of protest proceedings, the Commission shall determine the value of written protests filed and not withdrawn and shall take one of the following actions:

    a. Terminate proceedings if, (1) in the case of inhabited territory, 50 percent or more of registered voters file and do not withdraw written protests or (2) in the case of uninhabited territory, landowners owning 50 percent or more of assessed land value file and do not withdraw written protests.
    b. Order the formation of the district, if protests filed and not withdrawn are insufficient, based on 9(a), subject to approval by registered voters of the formation and, if so conditioned by LAFCO, on voter approval of a special tax to fund district operations and other needs.

11. The Commission shall request that the board of supervisors direct its election officials to conduct necessary elections on behalf of the proposed district.

12. The election may be conducted at polling places or by mail ballot. Upon completion of the canvass of ballots, the elections official shall report the results to the LAFCO executive officer. Within 30 days, the executive officer shall execute a certificate of completion, if a majority of those voting favored district formation, or a certificate of termination if a majority of votes was cast against district formation.