Appendix C

Water Supply Master Plan

Sutter Pointe Specific Plan
Water Supply Master Plan

Prepared by
MacKay & Somps Civil Engineers, Inc.
1771 Tribute Road, Suite E
Sacramento, California 95818
(916) 929-6092

December 17, 2008

TABLE OF CONTENTS

Abbreviations And Acronyms:

Ac	Acres
AFY	Acre-feet per year
Ac-ft/Yr/Ac	Acre-feet per year per Acre
ADF	Average day flow
AF	Acre-feet
Approx.	Approximately
CFS	Cubic feet per second
EPA	Environmental Protection Agency
FF	Fire Flow
Ft	Feet
GPM (gpm)	Gallons Per Minute
M&I	Municipal and Industrial
MDF	Maximum Daily Flow
MG	Million Gallons
MGD	Million Gallons per Day
NCMWC	Natomas Central Mutual Water Company
PHF	Peak Hour Flow
PSI (psi)	Pound per Square Inch
Project site	Sutter Pointe Specific Plan area
SPSP	Sutter Pointe Specific Plan
SWRCB	State Water Resources Control Board
WSMP	Water Supply Master Plan

1.0 Executive Summary

The Sutter Pointe Specific Plan (SPSP), consisting of approximately 7527.6± acres in South Sutter County, is proposing to be developed into a mixed-use urban community. The Measure M Group, consisting of landowners and developers for this area, is leading the planning process to urbanize this agricultural area. The availability of potable water for the SPSP area is a critical issue in the development of the planning area, as a reliable water supply is needed to meet the water demands of this new development. The possible water supply sources, conveyance methods, and facilities required have been explored in this Water Supply Master Plan (WSMP).

Presently, the Natomas Central Mutual Water Company (NCMWC) supplies irrigation water to the SPSP area through the surface water rights they hold for this area. NCMWC shareholder land comprises approximately 67%± of the SPSP project area (5009.3 ± acres) and is irrigated by surface water. The area of non-shareholder land (2518.3 ± acres) is irrigated by NCMWC supplemental surface water and existing ground water wells.

It is proposed that the future development within the SPSP area be served by the conversion of these surface water rights to meet Municipal and Industrial (M&I) demands for this area and the exercise of overlaying ground water rights to the aquifers lying below the planning area.

Since the M&I demands are generally lower than the irrigation demands, it is anticipated that sufficient surface water will be available for use in the Sutter Pointe community. However, the availability of the surface water sources for use in the SPSP may take a few years to develop. Until the surface water is available, ground water sources can be utilized[1].

[1] The Proposed Water Supply Program is capable of meeting 51.9% of the demand of the project from groundwater sources. Alternate "A" Revised Water Supply Program is capable of meeting 37.9% of the demand of the project from groundwater sources and Alternate "B" Winter Diversion Water Supply Program is capable of meeting approximately 26.1% of the demand of the project from groundwater sources.

Groundwater studies have verified the capacity of the aquifer to provide groundwater for all of the near term demands, as well as approximately one half of the long term needs of the community[2], on a sustainable basis. NCMWC currently delivers surface waters to the lands with the SPSP planning area for agricultural irrigation.

It is the expressed intent of the County of Sutter to provide M&I service within the SPSP planning area. Sutter County would initially provide groundwater for the early phases of development, and a combination of ground and surface water to meet the ultimate needs of the development. Surface water would be obtained from NCMWC which has the authority to serve M&I water to shareholders and public agencies. The existence of these surface waters is certain, as they are currently used to irrigate agricultural lands within the SPSP planning area.

It is the intent of Sutter County to provide retail water service to the Sutter Pointe Specific Plan Area through a dependent or independent special district (i.e., a Community Services District, a County Service Area, or some other County agency). A domestic water system to deliver ground and surface water to the Sutter Pointe Specific Plan Area will be developed. Potable water will be provided in sufficient quantity and of acceptable quality to meet the needs of all M&I uses within the Sutter Pointe Specific Plan Area. The water system will include water supply and treatment facilities, storage reservoirs, booster pumps, transmission pipelines, and distribution pipelines to all customers within the planning area. The system will have the capability of providing adequate supplies during normal and critical dry years to meet the domestic and fire protection needs of the plan area.

Golden State Water Company (GSWC), through its parent company (American States Water Company), entered into an agreement with NCMWC on July 1, 2004 to provide M&I water service within the NCMWC service area. GSWC is an

[2] Depending on the water supply scenario and the extent of well field development this percentage can vary from approximately 26.1% to 51.9% of normal year demands.

investor owned, California Public Utilities Commission (PUC) regulated, private water company. GSWC has expressed the intent to be the water service purveyor for the Sutter Pointe planning area and caused a Master Infrastructure Advance Planning Study (MIAPS) to be prepared (Wood Rodgers, April 24, 2006) setting forth their plan to provide ground and surface water to the development. The service plan outlined in the MIAPS is reasonably similar to the plan set forth in this master plan, albeit a higher level planning study as compared to the detailed study set forth in this master plan. GSWC has applied to the PUC for permission to service the Sutter Pointe planning area. Sutter County, however, has gone on record opposing that application. GSWC asserts its contract with NCMWC authorizes it to be the exclusive M&I purveyor within the Natomas Basin utilizing NCMWC water rights and contractual entitlements under the Settlement Contract with the U.S. Bureau of Reclamation; the County asserts that the GSWC/NCMWC contract is not sufficient to assure GSWC's ability to control water supplies because the delivery of water by a mutual water company is appurtenant to the shares, and the shareholders have not pledged their shares to NCMWC or GSWC.

At this time it is uncertain that GSWC will gain the necessary PUC approvals to serve the development. Regardless of the entity that provides the service, though, the same sources of water supply would be used; therefore the analysis of the physical water availability would not change depending on which entity prevails.

The 2008 Water Supply Master Plan for the Sutter Pointe Specific Plan (SPSP) area was prepared on a conceptual level and intended for planning and entitlement purposes only. Additional and more detailed Master Plans will need to be developed as the project moves closer and into the design stages of the development. It is the intent of this master plan to provide water facilities that meet generally accepted industry standards and that are comparable in features and quality to those provided in neighboring agencies with similar developments. For clarification, all future analysis and final design master plans will be

completed to comply with Sutter County Standards and will be subject to the review and approval of the Public Works Director of Sutter County.

2.0 Introduction

The Measure M Group is proposing to develop approx. 7527.6± acres in South Sutter County generally referred to as the Sutter Pointe Specific Plan (SPSP) area. As a part of the Sutter Pointe Specific Plan, new backbone water system facilities will be developed to meet the estimated demands for the proposed land uses.

This WSMP has been prepared to provide sources of water supply and demonstrate that a sufficient supply exists to support the proposed project. The objectives of this study are as follows:

- Identify water demands for the project area.
- Identify water supply sources (initial and build-out) for the project area.
- Identify onsite and offsite water infrastructure necessary for supply, treatment, storage, and distribution for the project.

Obviously, as the project is implemented the final land uses will be adjusted to reflect the current thinking and to respond to market forces, including the use density transfers. This master plan has been designed to provide the needed flexibility in terms of infrastructure. Over time, this master plan will need to be updated to keep pace with changes in the land use plan. Understandably, changes in land uses, if significant in nature, could result in changes to the projected water demands that might require changes in the proposed water system.

The total water demands to develop the Sutter Pointe Specific Plan Area and the requirements for transmission pipelines, distribution pipelines, and water storage facilities are presented in this study.

Surface water will be obtained from the Natomas Central Mutual Water Company (NCMWC) which currently serves SPSP area with agricultural irrigation water. The surface water will be transferred from a diversion point along the Sacramento River and conveyed through an offsite water pipeline to the location

of the proposed surface water treatment facility, approximately located between Powerline Road and SR 99/70, south of Riego Road. Additionally, a proposed well field will supply raw water to the location of the proposed ground water treatment facility, when surface water is in limited supply and/or not available, and also during the initial phase of the development.

This study evaluates three water supply programs for the SPSP area. The Proposed Water Supply Program will provide a base supply of surface water to meet the demands of the development throughout the summer months and a base supply of groundwater to meet the year round demands of the non-shareholders lands as well as supply the wintertime demands of the entire community when surface water is not available. The Alternate "A" Water Supply Program (the "Revised Water Supply Program") will provide a base supply of surface water to meet the demands of the development throughout the summer months and a base supply of groundwater to meet the demands in the winter. The Alternative "B" Water Supply Program (the "Winter Diversion Water Supply Program") will meet summer and winter demands through a supply comprised of groundwater pumping, summer surface water diversion, and the procurement of additional winter diversion rights from the Sacramento River.

The criteria used to evaluate each water supply program and the results for each program are presented herein. The proposed infrastructure, water supply, and hydraulic calculations provided within this study are preliminary and will be refined during design phase of the project.

2.1 Study Area Description

The SPSP area is located on the southeastern corner of Sutter County abutting Sacramento and Placer Counties (See Figure 1 Vicinity Map). State Route 99/70 (SR 99/70) traverses the site in a north-south fashion and Riego Road and Sankey Road runs east west through the project area. On the western side of SR 99/70 the project reaches out to Powerline Road and to the east the project reaches out to Natomas Road. The site is covered in four U.S. Geological Survey 7.5-minute series quadrangle maps (U.S. Geological Survey 1968),

namely Verona, Pleasant Grove, Taylor Monument and Rio Linda. The Sacramento River flows southerly about a mile west of the western boundary of the project area.

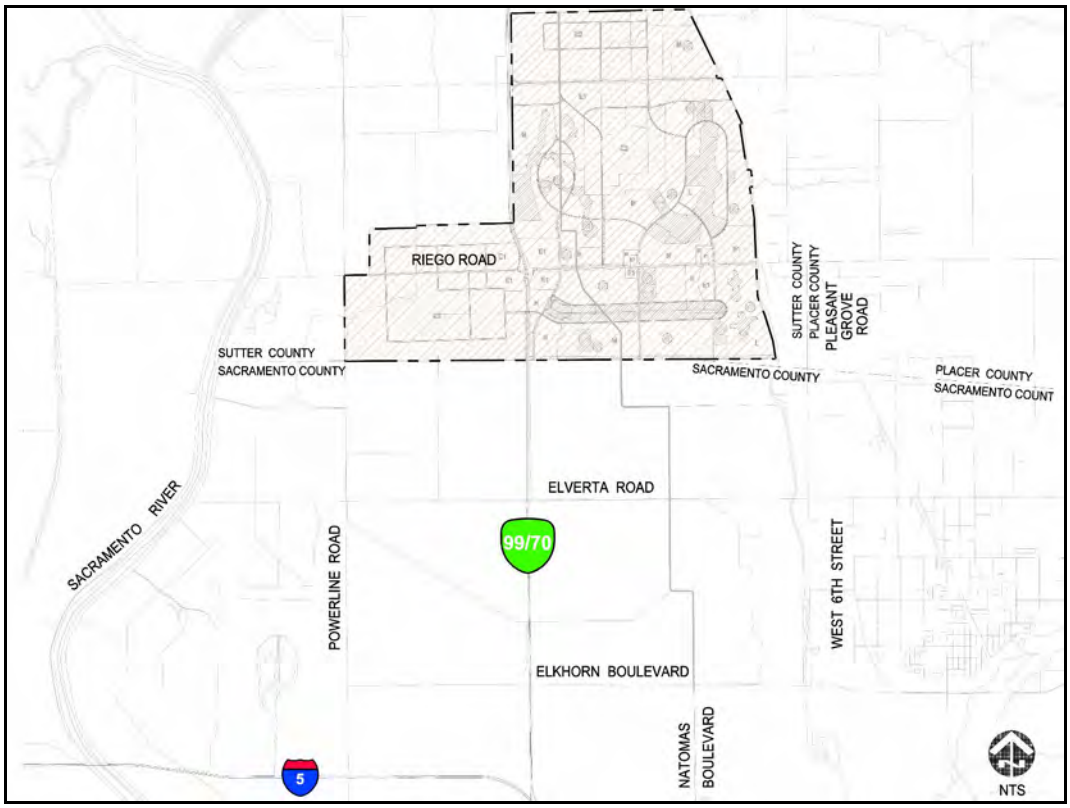


Figure 1 Vicinity Map

2.2 Topography

The site generally slopes towards SR 99/70 and southward. Elevations on the eastern end of the project site range from approximately 37 to 25 (NGVD 29). The western end of the project is relatively flat with elevations ranging from 22 to 19. The southern end of the project site reaches a low elevation of approximately 14. The Natomas East Main Drain is located along the eastern boundary of the plan area with levee elevations ranging from 44 to 30. At the southeast corner of the SPSP area elevations are at approximately 25 and slope in a southwesterly direction.

2.3 Land use and Zoning

The existing land within the SPSP area has been primarily used for agriculture with rice being the predominant crop. Numerous irrigation ditches traverse the entire plan area. Areas surrounding the project site are also being used for agricultural purposes.

The SPSP area is specified as an industrial/commercial reserve with the current zoning identified as agricultural (AG) in the Sutter County General Plan and Zoning Map dated April 06, 2006. Land surrounding the project area is also zoned as agricultural (AG). The proposed SPSP consists of a total of 7527.6± acres. It is made up of 2895.0± acres of Residential area, 1001.3± acres for Community facilities, and 3631.3± acres of Employment uses. The Sutter Pointe Specific Plan Land Use Plan is shown in Figure 2.

2.4 Development Phasing

The SPSP area will be developed in several phases. The proposed phases are divided into two categories, residential villages (Phases 1-4) and employment villages (Phases A-D). The phasing sequences were determined by analyzing the proposed infrastructure needs of the Sutter Pointe community, the potential impacts of the economy, surrounding regional growth, and proposed future changes in the surrounding infrastructure/public facilities. It is estimated that the residential villages (Phases 1-4) will be developed at an average rate of 1000 units per year, with ultimate build-out in approximately 20± years, however this could fluctuate depending on the economic strength of the housing industry.

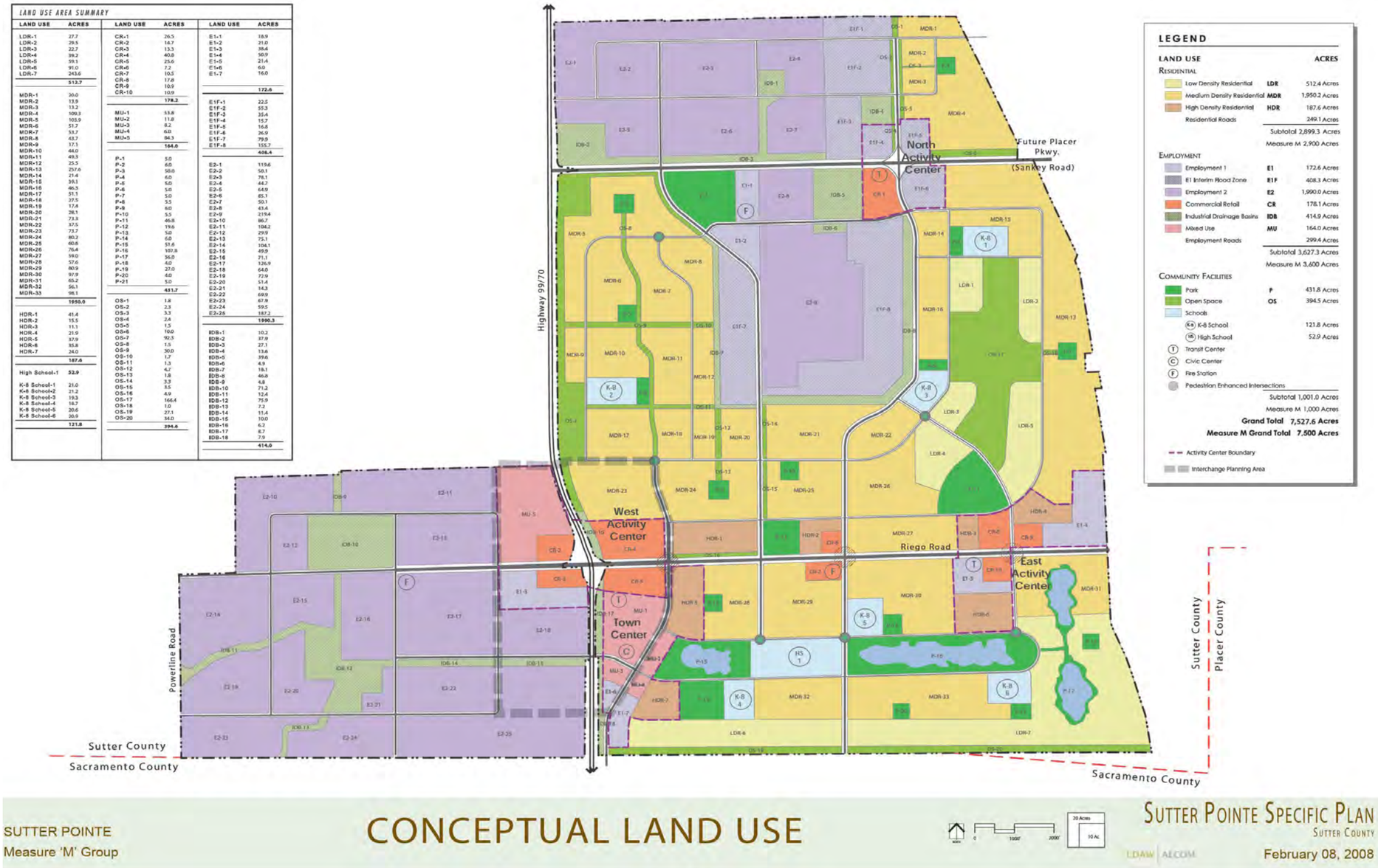
While it may be that the employment villages (Phases A-D) will develop concurrently with the residential villages (Phases 1-4), it is more reasonable to believe that this development rate will be much lower, with full build-out in approximately 40± years. Due to the development rate of the employment villages being affected by a multitude of social and economic factors, it is difficult to determine the total amount of the employment lands developing in any given year. From an engineering perspective, it is difficult to predict the water supply

needs of a new development where there are numerous variables as to the construction timing of the various phases. Therefore, for the purposes of this WSMP, a simplifying yet conservative approach was implemented, which assumes the development of the residential villages and employment villages achieve ultimate build-out in the same time frame. With this assumption in place and for simplicity of this analysis, the following build-out years for each phase have been established:

- Phase 1+A (build-out in approximately 7± years)
- Phase 2+B (build-out in approximately 5± years)
- Phase 3+C (build-out in approximately 3± years)
- Phase 4+D (build-out in approximately 5± years)

Given this breakdown of development phases, and for the purposes of this WSMP analysis, it is assumed that the ultimate build-out is achieved in approximately 20± years. The Sutter Pointe Specific Plan Conceptual Phasing Plan is shown in Appendix A, Exhibit 4.

Figure 2 Land Use Plan



3.0 Existing Irrigation System

Presently, there are no public municipal water supply facilities within the project area. The nominal amount of development that currently exists within the plan area is served by private wells with limited capacity. The predominant existing land use within the planning area is large agricultural operations; principally rice farming and some dry farms. Irrigation of these lands is provided by water diverted from the Sacramento River by the Natomas Central Mutual Water Company (NCMWC), a privately owned water purveyor within the Natomas Basin.

3.1 NCMWC System

During normal years NCMWC has the right to divert 120,200 acre-feet per year (AFY) under its existing surface water rights/licenses and its recently renewed Bureau of Reclamation Settlement Contract.[3] During critical dry years NCMWC's CVP Contract entitlement is cutback by 25% to a maximum of 90,150± AFY.

NCMWC owns and operates several surface water diversion facilities that divert surface water from the Sacramento River under their existing water rights, licenses, and contracts. Diverted water is pumped into a series of irrigation ditches that flow by gravity to deliver water to the fields. The farmers use lift pumps and/or gravity turnouts to deliver water to the fields themselves. Over time, as farming gives way to urbanization, the existing irrigation ditches within the plan area will be abandoned, and/or piped to accommodate the Sutter Pointe development and provide continued delivery of irrigation water to the agricultural lands within and outside the SPSP area.

NCMWC has a closed irrigation system wherein the tail water from irrigation is captured in Reclamation District No. 1000 local drainage ditches and is therefore available to be

[3] The renewed Bureau of Reclamation Settlement Contract is included in its entirety in Appendix E.

recycled to the highline ditches owned by NCMWC. Recycled irrigation water reduces the quantity of "new" water that needs to be diverted from the Sacramento River to meet the irrigation demands of NCMWC shareholder lands.

Additionally, runoff from urban areas in the developed portions of the Natomas Basin in Sacramento County augments the volume of water available within Reclamation District No. 1000 drainage ditches during the irrigation season, principally a result of summer time nuisance flows from lawn irrigation and the like.[4] Since these drainage ditches are inter-tied throughout the entirety of the Natomas Basin, these urban runoff waters are available for recycling by NCMWC shareholders for agricultural irrigation. Although recycling of urban runoff may be practiced by NCMWC, the use of this recaptured urban runoff is not acceptable, nor is it assumed, within this Master Plan to meet the projected M&I demands of the Sutter Pointe development.

To the extent that lands are converted from agricultural production to urban land uses within the SPSP area, the amount of tail water from irrigation that will enter Reclamation District No. 1000 ditches will be reduced. On the surface this would appear as a net decrease in the quantity of recycled irrigation water available for agricultural irrigation of non-SPSP area agricultural lands.

The volume of water available for irrigation of non-SPSP lands, however, will actually not change. This is due to the fact that those waters will continue to remain in the NCMWC system prorate since they will not be delivered to lands within the SPSP area for agricultural irrigation purposes. That is, if those waters aren't pulled out of the NCMWC system for irrigation within the SPSP area, then they will remain in the NCMWC system for use by others – a no net change situation.

While data is not available on the quantity or the volume of tailwater used or generated by the irrigation of lands within the SPSP area, it is not known if the conversion of these lands to urban uses will actually create a net reduction in the

[4] The urbanized areas within Sacramento County are provided surface water from the City of Sacramento's water system.

availability of tailwater within the NCMWC system. There is, however, no indication that the irrigation of lands with the SPSP area generates a higher volume or rate of tailwater than other lands within the NSMWC service area. Accordingly, there is no reason to suspect a net reduction in the availability of tailwater within the NCMWC system.

3.2 NCMWC Water Rights

NCMWC has the following water rights permits or licenses from the State Water Resources Control Board (SWRCB) – Refer to Table 1. As mentioned above, these licenses are controlled through the CVP Settlement Contract that limits NCMWC diversion right at 120,200 AFY. This amount includes 98,200 AFY of "Base Supply"[5] and an additional 22,000 AFY of "Project Water".[6] The total diversion rights held by NCMWC, including Permit 19400, which is not controlled by the settlement contract, totals 130,200 acre feet per annum. As the planning area is urbanized, these contracts and licenses will need to be amended to include M&I use of the water and to add the non-shareholder lands lying within in the planning area to the place of use of the above listed NCMWC water rights, licenses, and settlement contract.[7]

[5] "Base Supply" – Is defined as the diverted surface water from the Sacramento River as a result of the appropriative rights acquired under State law. The base supply may be diverted from the Sacramento River during the Agricultural growing season for irrigation purposes only.

[6] "Project Water" – Is defined as the diverted surface water from the Sacramento River as a result of the contract rights pursuant to a settlement agreement with the U.S. Bureau of Reclamation for water rights from the CVP. The CVP project water, by contract, is currently limited to use for irrigation during the growing season (April-October). However, the CVP water rights permits issued to the Bureau by the State Board include M&I as a permitted use.

[7] The provision of NCMWC water to non-shareholder lands would require approvals from NCMWC and the Bureau of Reclamation and may require approvals from the State Water Resources Control Board, and the California Department of Corporations. However, since the total M&I surface water used under any of the three water supply alternatives is significantly lower than current agricultural surface water irrigation use on the existing shareholder lands within the SPSP planning area, these approvals are not anticipated to be problematic. For each of the three water supply programs, there will neither be a net increase in diversions under the Settlement Contract nor a negative impact on the existing NCMWC shareholders. The groundwater extracted under the Proposed Water Supply Program will be sufficient to meet the total annual needs of the non-shareholder lands. As such, since the groundwater supply exceeds the demands of the non-shareholder lands on an annual basis, none of the above mentioned regulatory approvals should be necessary as the surface supply usage can all be allocated to the shareholder lands. Alternate "A" and Alternate "B" Water Supply Programs, however, have a lower dependence on groundwater pumping than does the Proposed Water Supply Program.

3.3 Settlement Contract Provisions

NCMWC entered into Contract No. 14-06-200-885A (Settlement Contract) with Reclamation in 1964. The CVP Settlement Contract is based on NCMWC's pre-existing licenses and permit to divert water. The purpose of the Settlement Contract is to change the timing and pattern of those diversions to accommodate the Bureau of Reclamation's operation of the Central Valley Project. However, NCMWC's water rights exist independently of the Settlement Contract.

The nature of water diversions under the Bureau's "settlement contract" provides an enhanced right to divert during dry years. While "normal, dry and multiple dry years" are typically utilized to determine the reliability of a community's water supply, in areas where the water supply is subject to a Bureau "settlement contract", it is customary to measure water supply reliability in terms of Normal and Critical Years. According to the "settlement" contract, the maximum 25% reduction in the NCMWC water supply will only occur in "critical years". Therefore, these rights are considered very reliable during dry years assuring the community of a highly dependable water supply, which will minimize the need to institute severe water conservation measures during drought events.

Due to the lower magnitude of groundwater pumping, neither of these two water supply programs are capable of serving the total annual demands of the non-shareholder lands solely with groundwater. Accordingly, these programs envision that some of the water diverted by NCMWC pursuant to the Bureau of Reclamation Settlement Contract will be delivered to non-shareholder lands. For this reason, the above described approvals will or may be required for Alternate "A" and "B" Water Supply Programs. As stated earlier, obtaining these approvals are not anticipated to be problematic since it can be conclusively proven that they will not increase above historic levels the amount of water diverted under the Bureau of Reclamation Contract or impact the ability of NCMWC to serve their existing shareholders amount of water equal to or greater than they have received in the past.

Table 1: SWRCB Permits/Licenses Summary

License/ Permit[8]	Place of Use	Purpose of Use	Period of Diversion	Diversion Amount (CFS)	Diversion Limit (AFY)
License 1050	Bureau of Reclamation Settlement Contract Service Area ("Project Water") and NCMWC Place of Use Boundary ("Base Supply" and SWRCB Licenses / Permits Place of Use (See Appendix E)	Agricultural Irrigation Purposes	April 1 - October 1	42	Limited to 120,200 by Bureau of Reclamation Settlement Contract (See Appendix E)
License 2814			March 15 - October 15	38	
License 3109			May 1 - October 31	160[9]	
License 3110			May 1 - October 1	120[10]	
License 9794			April 1 - June 30	131[11]	
License 9989			March 1 - June 30 & September 1 - October 31	14[12]	
Permit 19400	Sacramento International Airport & Metro Air Park (See Exhibits 6 & 7, Appendix A)	Domestic, Municipal and Industrial Purposes	October 1 - April 1	168	10,000

Annual water deliveries from the Bureau are determined on the basis of the natural inflow to Shasta Lake (the Shasta Index). In a normal Year[13], when there is ample water in the CVP system, CVP Settlement Contractors receive 100% of their Settlement Contract entitlements. During a "critical year", when the forecasted full natural inflow to Shasta Lake for the current Water Year is projected to be equal to or less than 3.2 million acre-feet, the CVP Settlement

[8] In July 1990, the State Water Resources Control Board issued an order allowing a change in the purpose of use to include M&I and domestic uses for these licenses and permit. The point of diversion for these uses is limited to the existing Elkhorn Diversion and restricted to a place of use that includes only the Sacramento International Airport and the Sacramento Airport Special Planning Area (Metro Air Park).
[9] The actual right under L3110 is 160 CFS, however the maximum amount diverted under L3109 & L3110 is limited to 270 CFS.
[10] The actual right under L3110 is 120 CFS, however the maximum amount diverted under L3109 & L3110 is limited to 270 CFS.
[11] The maximum amount of use under L9794 is limited to 11,846 AFA.
[12] The maximum amount of use under L9989 is limited to 2,627 AFA.
[13] A "Year" shall mean a calendar year.

Contractors receive 75% of their entitlement, resulting in a "cutback" of 25% of water deliveries. In "multiple dry year" events, when the total accumulated deficiencies are below 4 million acre-feet in the immediately prior Water Year[14] or series of successive prior Water Years each of which had inflows of less than 4 million acre-feet, together with the forecasted deficiency of the current Water Year, exceed 800,000 acre-feet, CVP Settlement Contractors receive 75% of their entitlement, resulting in a "cutback" of 25% of water deliveries.[15] In the occurrence of a single and multiple dry years, the Shasta Index is used to determine the magnitude of "cutbacks" in CVP water delivered to CVP Settlement Contractors.

Critical Years occur relatively infrequently. Over the last 85 years of record (1921 – 2006), the Shasta Index has been (or would have been) triggered only nine times (1924, 1931, 1932, 1933, 1934, 1977, 1991, 1992, and 1994).[16] This yields a recurrence interval of once every nine (9) years, or so, on average. Accordingly, these rights are very reliable during dry years thereby assuring the community of a highly dependable water supply, which will minimize the need to institute severe water conservation measures during drought events.

3.4 NCMWC Historic Diversions

NCMWC does not divert surface water from the Sacramento River for use by its shareholders for agricultural irrigation, on an acre-foot-by-acre-foot basis. Bureau of Reclamation records indicate the actual quantity of surface water diverted by NCMWC is in the magnitude of 88,000± AFY.[17] However, NCMWC historically has delivered approximately 30,000± AFY to the shareholder lands

[14] A" Water Year" shall mean the period commencing with October 1 of one year and extending through Septembers 30 of the next as described in the Contract between the United States and Natomas Central Mutual Water Company, Contract No. 14-06-200-885A-R-1.

[15] The Shasta Index, Single Dry Year & Multiple Dry Years definitions were taken from the Contract between the United States and Natomas Central Mutual Water Company, Contract No. 14-06-200-885A-R-1.

[16] Historical data for critical dry year events in which the Shasta Index has been triggered were obtain from the U.S. Department of Interior, Bureau of Reclamation.

[17] Source: Bureau of Reclamation records of deliveries and transfers of Sacramento River Water under USBR's Settlement Contract (14-06-200-885A) with NCMWC. The 88,000 AFY represents an average of 42 years of data (1965 – 2006).

within the planning area.[18] This indicates that the shareholder lands within the planning area have received an equivalent of approximately 34.09%± of the historic diversions.

These shareholder lands represent about 15.83%± of all shareholder lands within the service area of NCMWC.[19] This difference (34.09%± v. 15.83%±) clearly proves that NCMWC delivers varying quantities of surface water to different shareholder areas. NCMWC staff, however, indicates that during most recent irrigation years, if those years had been Critical Years wherein the Bureau would have instituted the 25% cutback provision of the Settlement Contract, there would have still been sufficient surface water available to meet 100% of its shareholder's water needs.[20]

3.5 Sutter Pointe Historical Use

Of the total 7527.6± acres that make up the Sutter Pointe Specific Plan area, only approximately 67%± (5009.3± acres) are shareholder lands lying within NCMWC's current service area or corporate boundary. As stated earlier, the SPSP planning area represents approximately one-quarter (25%±) of the NCMWC's overall irrigation demand[21], but only 15.83%± of the total 31,652± acres of shareholder lands within NCMWC.[22] Accordingly, assuming SPSP represents 25%± of the irrigation demand of NCMWC, the planning area has

[18] Cited from personal conversation with Dee E. Swearingen, General Manager, Natomas Central Mutual Water Company, June 13, 2007. Amount of water delivered to the Shareholder Land within the NCMWC service area is cited from personal conversation with Dee E. Swearingen, General Manager, Natomas Central Mutual Water Company, June 13, 2007. This figure has been substantiated in Table A of Appendix B.
[19] SPSP % share of NCMWC Service Area calculated as follows: (5,009.3)/(31,652)*100%
[20] Cited from personal conversation with Dee E. Swearingen, General Manager, Natomas Central Mutual Water Company, June 13, 2007.
[21] Cited from personal conversation with Dee E. Swearingen, General Manager, Natomas Central Mutual Water Company, June 13, 2007.
[22] The NCMWC Service area size is cited from personal conversation with Dee E. Swearingen, General Manager, Natomas Central Mutual Water Company, June 13, 2007.

access to approximately 30,050± AFY during normal years, and approximately 22,538± AFY during critically dry years. [23]

The difference between the shareholder lands within the planning area representing one-quarter of the NCMWC's irrigation demand, but only comprising 15.83%± of the shareholder acreage can be explained by the fact that, among others, some shareholders use more water than others. Historically, however, NCMWC has delivered approximately 30,000± AFY to the shareholder lands within the planning area. Non-shareholder lands within the planning area (2518.3± acres) are served by groundwater pumping, currently estimated to be in the magnitude of 8,367± AFY.[24]

3.6 Sutter Pointe Surface Water "Supplies"

If agricultural irrigation demands were uniform throughout the NCMWC service area, the volume of diverted surface water delivered to shareholder lands lying within the planning area would be in the magnitude of 13,930± AFY during normal years (10,450± AFY during critically dry years), based on these lands being 15.83%± of the shareholder area within NCMWC. This obviously is not the case as some 30,000± AFY have been delivered to SPSP shareholder lands. This difference gives rise to the need to estimate the SPSP's surface water "supplies" vis-à-vis NCMWC's diversion rights under the Bureau Settlement Contract. Three different approaches were developed to estimate the SPSP "supplies" amount:

1. **Historical Usage**: As stated earlier, the shareholder lands within the SPSP planning area have used a certain quantity of water to irrigate their 5009.3± acres of irrigated area historically served by NCMWC. Under this approach, the shareholder lands with the planning area enjoy unrestricted access to approximately 30,000± AFY. In this case the SPSP

[23] If one assumes the planning area represents 34.09%± of the historical diversions, the SPSP planning area has access to approximately 40,980± AFY during normal years and approximately 30,730± AFY in critically dry years.

[24] Source: Ludhorff & Scalmanini Consulting Engineers.

"supplies" is estimated at approximately 34.09%± of the historical diversions under the Settlement Contract (88,000 AFY).

2. **Historical Diversions**: Assuming the shareholder lands within the SPSP planning area represent one-quarter (25%) of the irrigation demand, they should enjoy a similar share of the actual amount of water that has been historically diverted under the Bureau Settlement Contract. Under this approach, the shareholder lands within the planning area enjoy unrestricted access to approximately one-quarter of 88,000± AFY, or approximately 22,000± AFY. In this case the SPSP "supplies" is estimated at approximately 25.00%± of the historical diversions under the Settlement Contract (88,000 AFY).

3. **NCMWC Shares**: Focusing on simply shares of stock in the NCMWC, the shareholders within the planning area, who control approximately 15.83%± of the company's shares, should have access to NCMWC's water rights pro-rata to their share portion. In this case the SPSP "supplies" are estimated at approximately 15.83%± of the historical diversions under the Settlement Contract. Under this approach, the SPSP "supplies" is estimated at approximately 13,930± AFY under the Settlement Contract (88,000± AFY). [25]

This "supplies" analysis can be summarized as follows:

[25] Based on the Settlement Contract diversion right of 122,200 AFY, this entitlement would be approximately 19,020 AFY.

Surface Water "Supplies" Estimates[26]

Settlement Contract Diversion Rights

Approach	Settlement Contract Historical Diversions	"Supplies" Percentage	"Supplies" Quantity
Historical Usage	88,000 AFY	34.09%±	30,000± AFY
Historical Diversions	88,000 AFY	25.00%±	22,000± AFY
NCMWC Shares	88,000 AFY	15.83%±	13,930± AFY

In any event, whether one looks at Historical Usage, Historical Diversions, or NCMWC Shares, the shareholder lands within the planning area have the privilege to use surface water from the Sacramento River in sufficient quantities to meet the M&I water demands for the SPSP area. [27, 28 , 29, 30, 31]

[26] A fourth approach could be developed predicated on the pro-rata share of waters historically delivered to SPSP shareholder lands (30,000± AFY) expressed as a percentage of the historical diversions (88,000± AFY), or 34.09%±. If one assumes the planning area represents 34.09%± of the historical diversions, the SPSP planning area "supplies" could also be determined to be approximately 40,980± AFY during normal years and approximately 30,730± AFY in critically dry years.

[27] Refer to Table C in Appendix B for calculations that verify the ability for the Proposed, Alternate "A" and Alternate "B" Water Supply Programs to serve the water demands of the project during both normal and critically dry years.

[28] The volume of Settlement Contract surface water needed to meet M&I demands within the SPSP area during normal and critical dry years is estimated in this report to be 12,128 AFY (normal year) and 9,099 AFY (critical dry year) for the Proposed Water Supply Program, 15,638 AFY (normal year) and 9,616 AFY (critical dry year) for the Alternate "A" Revised Water Supply Program, and to be 13,126 AFY (normal year) and 8,590 AFY (critical dry year) for the Alternate "B" Winter Diversion Water Supply Program. Alternate "B" requires the procurement of new winter diversion right (6,000 AFY).

[29] On December 13, 2007, NCMWC announced that it entered into an agreement to sell up to 10,000 AFY (consisting of an initial purchase of 8,000 AFY purchase with an option to purchase an additional 2,000 AFY) of its Bureau of Reclamation Settlement Contract "Project Water" to the City of Folsom (the" Folsom Agreement"). NCMWC commissioned Wagner & Bonsignore Consulting Civil Engineers, Inc. ("Wagner & Bonsignore"), to evaluate the impacts to its shareholders of transferring up to 10,000 acre feet of Project Water. In making its decision, the NCMWC Board of Directors evaluated the impact of the proposed sale on the ability of the Water Company to meet the existing irrigation demands of its shareholder members during the peak of the irrigation season. The Wagner & Bonsignore report (entitled "Water Supply Evaluation of the Potential Transfer of 10,000 acre-feet of Project Water from USBR Contract" dated October 31, 2007 – the "Wagner & Bonsignore Report") found that NCMWC had a surplus supply during the months of July and August, even during critical dry years. Accordingly, the Wagner & Bonsignore Report concluded "the transfer of 10,000 acre-feet of project water should not impair NCMWC's ability to continue to provide sufficient water for irrigation" of shareholders lands. A check of the analysis contained in this Master Plan revealed that the proposed sale of 10,000 acre-feet per

3.7Sutter Pointe Reserves

This Master Plan estimated the SPSP "supplies" to NCMWC surface water rights under the Settlement Contract and the projected demands thereof for the Proposed Water Supply Program, Alternate "A" Water Supply Program, and Alternate "B" Water Supply Program. Based on these estimates and projected

year (3,723 acre-feet in July and 6,727 acre-feet in August (during normal years)) would reduce the SPSP pro-rata share of NCMWC's remaining diversion rights under the Bureau Settlement Contract below the level of surface water demands required to serve this project in July and August during both normal and critical dry years – refer to Table C-3 in Appendix C. However, while the magnitude of the monthly shortfall is relatively small, on an annual basis, there still exists a surplus of surface water available to help meet the M&I demands of SPSP. The monthly surface water shortfalls in July and August can easily be eliminated by adjusting the mix between ground water pumping and surface water diversions throughout the year. That is, increased surface water diversions during months of surplus surface water supplies with corresponding decreases in monthly ground water pumping during the same periods, and increased ground water pumping in July and August when shortfalls in surface water supplies occur. The net result would have a zero sum effect on the overall water supply picture over a year's time since the total annual surface water diversions and ground water pumping would not change.
Accordingly, the findings and conclusions contained in this Master Plan are not affected by the Folsom Agreement (assuming that it is consummated). In summary, the shareholder lands within the SPSP area have a right to the same quantities of water they enjoyed prior to NCMWC entering into the Folsom Agreement.

[30] It is recognized that crop planting and associated water demands may change in the future and differ from historical usages. Additionally, the adequacy of meeting current irrigation demands needs to be compared to future M&I needs on a month-by-month basis rather than a comparison of annual demands. Further, these comparisons need to be made within the context of the monthly diversion limits contained within the Bureau Settlement Contract. With regards to changing irrigation practices over time, NCMWC, as a part of their evaluation of the potential impacts of the Folsom Agreement, commissioned Wagner & Bonsignore Consulting Civil Engineers, Inc. ("Wagner & Bonsignore") to evaluate the potential impacts to its shareholders of transferring up to 10,000 acre feet of Project Water to the City of Folsom (the "Folsom Agreement"). The Wagner & Bonsignore Report evaluated historical crop patterns and the potential for future changes that might increase the overall agricultural irrigation demands within the NCMWC service area. That report found that the most recent years of record represented a reasonable approximation of the maximum irrigation demands that may occur in the future given all the various land use and development trends within the Natomas Basin. Evaluations of differences between agricultural irrigation and M&I demands on a month-by-month basis (including evaluation of monthly diversion limits in the Settlement Contract) have been included elsewhere in this master plan.

[31] Assuming pumping of an additional 1,708 acre feet of groundwater pumping during a normal year under Alternate "A" Water Supply Program is justified given the results of the Groundwater Supply Assessment prepared for the project. The Proposed Water Supply Program has a groundwater demand of 13,071 AFY in normal years. The Sutter Pointe Groundwater Supply Assessment prepared by Luhdorff & Scalmanini Consulting Engineers found this magnitude of groundwater demand was sustainable on a long term basis. Therefore, an increase of 1,708 AFY over and above the projected groundwater demand under Alternate "A" Water Supply Program (9,563 AFY) would result in a total demand of 11,269 AFY for Alternate "A" Water Supply Program which is lower than the level of groundwater pumping under the Proposed Water Supply Program, which is less than the sustainable level of the aquifer. Accordingly, this additional demand under the Alternate "A" Water Supply Program would also be sustainable.

demands for M&I water during normal and critical dry years, the estimated reserve of Settlement Contract water is as follows:

Reserves of Settlement Contract Water
Using Various Surface Water "Supplies" Approaches

Water Supply Program /Water Year	Contract Water Demand (AFY)	Historical Usage (AFY)		Historical Diversions (AFY)		NCMWC Shares (AFY)	
		Supply	Surplus	Supply	Surplus	Supply	Surplus
Proposed Water Supply Program							
Normal Year	12,128	30,000	17,872	22,000	9,872	13,930	1,802
Critical Dry Year	9,099	22,500	13,401	16,500	7,401	10,450	1,347
Alternate "A" Water Supply Program							
Normal Year	15,638	30,000	14,362	22,000	6,362	13,930	<1,708>[32]
Critical Dry Year	9,616	22,500	12,884	16,500	6,884	10,450	830
Alternate "B" Water Supply Program							
Normal Year	13,126	30,000	16,874	22,000	8,874	13,930	804
Critical Dry Year	8,591	22,500	13,909	16,500	7,909	10,448	1,857

[32] Since Alternate "A" Water Program has a groundwater pumping requirement that is 3,510 AFY less than the Proposed Water Supply Program groundwater pumping requirement during a normal year (9,561 AFY v.13,071 AFY). The apparent "shortfall" of 1,708 AFY could easily be eliminated by additional groundwater pumping during the Settlement Contract diversion period to make up 1,708 Acre-Feet shortage for Alternate "A" Water Supply Program during a normal year.

4.0 Municipal & Industrial Water Demands

The current development proposal for the Sutter Pointe Specific Plan area is to convert approx. 7527.6± acres of land, within the project area, to various urban land uses. The Land Use Plan (Figure 2) shows the proposed land use designations of the SPSP area.

Anticipated municipal and industrial (M&I) water demands for the Sutter Pointe Specific Plan Area were estimated using generally accepted average annual and peak water demand rates for similar land uses within the greater Sacramento metropolitan area. Based on these demands, ultimate build out of the planning area will result in the following M&I demands (Normal Year):

Table 2: M&I Demand (Normal Year)

M&I Demand	Approximate Demand
Average Annual Demand	25,199± Acre Feet per Year (AFY)
Average Day Demand (ADD)	15,622± gallons per minute (GPM) / 22.5± Million Gallons per Day (MGD)
Maximum Day Demand (MDD)	28,902± gallons per minute (GPM) / 41.6± Million Gallons per Day (MGD)
Peak Hour Demand	55,202± gallons per minute (GPM) / 79.5± Million Gallons per Day (MGD)

Peaking factors are used to simulate system-operation scenarios for the design and analysis of the water distribution facilities. Maximum Day Demand (MDD) is established by applying a peaking factor to Average Day Demand (ADD). MDD estimates and Fire Flows (FF) are typically used to size transmission pipelines, pumps, and storage facilities and to determine water supply rates. The ADD was multiplied by a peaking factor of 1.85 to obtain the MDD.

Peak Hour Flow (PHF) is established by applying a peaking factor to the MDD. Typically this demand scenario occurs during a hot summer day and represents the diurnal peaks in water usage. The PHF estimates are typically used to verify adequate sizing of the water distribution system. The MDD was multiplied by a peaking factor of 1.91 to obtain the PHF (see Appendix B, Table C).

An allowance for system losses of 7.5% has been included in this analysis. This level of loss is normally used in the planning of water systems constructed to current standards with modern materials and methods of construction. This estimate includes system leakage, unmetered services, filter backflushing, construction water, and fire hydrant flows.

A system of transmission pipelines, storage reservoirs, booster pump stations and distribution pipelines will deliver treated water to all future M&I customers within the planning area (see Appendix A, Exhibit 1). Over time, as the public potable water system is developed within the planning area, existing domestic water users within the planning area will be provided the opportunity to connect to the public system in lieu of continuing their use of private groundwater wells.

Based upon the Shasta Index, cutbacks in supply and conservation efforts will be enacted during Critical Years. During a Critical Year, as determined by the inflow into to Shasta Lake, the Bureau will mandate a 25% cutback in deliveries of surface water to CVP Settlement Contractors. The community will then need to institute water conservation measures to balance the water supply / demand equation. Due to the availability of groundwater during the summer months, the severity of the Bureau's 25% cutback can be significantly mitigated by conservation and additional groundwater pumping to meet the maximum day demands within the community.

A responsible water conservation program, one that future customers would find acceptable in severity, will be developed to yield a net reduction in demands of 12.5% and will balance the supply of water with the M&I demands within the community. A 12.5% conservation program, technically achievable and politically acceptable, would consist of a combination of varying reductions in usage by the

various M&I customer classes, brought about by public education and awareness efforts, rate structure incentives, and water use enforcement. The water conservation program would be nearly identical for the Proposed Water Supply Program, the Alternate "A" Revised Water Supply Program, the Alternate "B" Winter Diversion Water Supply Program, but for the corresponding changes in the mix of water supply between the three programs. The water conservation program will be developed and submitted to the County prior to the approval of the first project Tentative Map.

5.0 Water Supply Programs

5.1 The Proposed Water Supply Program

The Proposed Water Supply Program is a conjunctive use water supply program that uses both surface and ground water to meet the M&I demand of the community at ultimate build out. Groundwater will be developed from the aquifers lying below the community utilizing the overlaying groundwater rights of the lands within the planning area.

Converting the existing surface water rights, currently being used for agricultural irrigation within the planning area, will be required to allow the use of surface water from the Sacramento River to meet M&I demands. The conversion of these rights is explained below:

> The NCMWC holds two types of rights to divert water from the Sacramento River – appropriative rights acquired under State law and contract rights pursuant to a settlement agreement with the U.S. Bureau of Reclamation for water from the CVP. The State water rights are also affected by the CVP settlement contract, as it defines and limits the monthly and annual maximum diversion amounts. In the Settlement Contract the State rights are called “base supply” and the CVP water is called “project water.”
>
> The base supply may be diverted from the Sacramento River during the agricultural growing season for irrigation purposes only. Approval by the State Water Resources Control Board will be necessary to obtain before the base supply can be used for urban (M&I) uses. Additionally, State Board approval will be necessary to include all SPSP lands within the place of use of these water rights. The process of obtaining these approvals from the State Board includes submittal of a petition to change the place and the purpose of use. This application will be reviewed by the staff of the State Board, and by the general public via a public review

period, before proceeding to a public hearing before the Board for final consideration. The State Board would be a responsible agency under CEQA with respect to the Sutter Pointe Specific Plan EIR.

The CVP project water, by contract, is currently limited to use for irrigation during the growing season (April through October). However, the CVP water rights permits issued to the Bureau by the State Board include M&I as a permitted use. Therefore, while the Bureau must contractually approve the right to convert the project water to M&I uses, there are no discretionary acts required of any local or state agency to allow such use to take place.

Since surface water is available only in the summer months, the proposed water supply program includes a ground water element that will augment this supply to meet the water demands of the community. Not only will ground water meet the year around needs of the non-shareholder lands within the planning area, it will also meet the wintertime demands of the entire community when surface water is not available. The two basic elements of the Proposed Water Supply Program are described below:

5.1.1 Ground Water Element

A ground water well field system will be developed to yield up to 13,073± AFY in normal years and 12,949± AFY in Critical Years. The long-term average annual groundwater demand is approximately 13,057± AFY.[33] This groundwater supply system will provide the initial water supply for the planning area serving the first several years of development (approximately 51.9%± of the ultimate build out of the planning area).

This well field system would consist of approximately fourteen (14) operational groundwater wells, raw water transmission pipelines, and two (2) standby wells. Each of these wells will be capable of producing approximately 1,800± gallons

[33] Long-term average annual groundwater demand is determined by a weighted average of the normal year occurring eight out of nine years and the critical year occurring once in nine years.

per minute from the groundwater basin that underlies the planning area. Two well fields will be developed, one west of SR 99/70, and one east of SR 99/70. These two well fields will be constructed in phases as development within the planning area occurs. The proposed well fields will be capable of producing both the total water needs of the initial phases of development within the planning area, approximately 51.9%± of the total water needs of the community at ultimate build out. The remaining 48.1%± of the demand generated by the community at ultimate build out will be served from the surface water program, further described below.

In addition to the two well fields, the groundwater program will include two groundwater treatment plants, one westerly and one easterly of SR 99/70, the Western and Eastern Groundwater Treatment Plants, respectively. Each well field could contain up to 9 wells each so as to provide flexibility during development of the SPSP area, depending on the preferred water supply scenario that is chosen, for a maximum total of 18 wells. Each groundwater treatment plant, one east and one west, will be built in four phases of approximately 3.1± MGD each and yielding an ultimate capacity of 25.0± MGD.

Over time, as development within the planning area occurs, and as the surface water program is phased in, the ground water element will transition from a year-round supply, for the entire community, to a conjunctive use water supply program capable of meeting the demands of the development at full build out.

During the early period of development within the planning area, as water demands are being created, the majority of the agricultural lands lying within the planning area that are irrigated from existing groundwater sources will remain in agricultural production. Currently the existing irrigation demand from these agricultural lands is approximately 8,367 ± AFY.[34]

As a result, the net demand on groundwater pumping, within the SPSP area, will increase initially. Then, over time, the groundwater pumping will decrease and

[34] Source: Ludhorff & Scalamini Consulting Engineers.

approach current levels at full build out of the project. This is largely due to the continuation of agricultural groundwater pumping continuing on non-Shareholder lands to supply the remaining agricultural lands with irrigation water until such time that they are developed. Basically the groundwater extraction will increase initially within the early stages of the development, and diminish over time, eventually returning towards pre-development levels of pumping at the completion of the project. Thereafter, the net demand for ground water within the planning area will decrease to a point, at full build out, that the need for pumping to groundwater to irrigate agricultural lands will be effectively eliminated. This phenomenon will be evaluated further and included as part of the groundwater study.

It is proposed that the western well field will consist of a total of 9 wells (eight production wells at 1,800± gpm per well plus one standby well at 1,800± gpm) connected to a centralized ground water treatment plant by a series of raw groundwater transmission pipelines. Similarly, the eastern well field will consist of 7 wells (six production wells at 1,800± gpm per well plus one standby well at 1,800± gpm) connected to a second centralized ground water treatment plant by another series of raw groundwater transmission pipelines. Each well site, spaced no closer than every 3,000± feet on center, will be situated on a site approximately one-quarter acre in size. The centralized groundwater treatment plants will be situated on sites approximately five acres in size.

In order to provide time for the surface water element to develop, it is assumed that the groundwater elements, two well fields, will be built out in their entirety. With this assumption in place, the groundwater element will be able to serve the project water demands through nearly the end of Phase 2+B (11.5± years), at which time the surface water element will need to come on line. All proposed wells will be designed and constructed in accordance with the requirements of Bulletin 74-81 “Water Well Standards: State of California”.

5.1.2 Surface Water Element

The surface water supply will be developed to serve the remaining 48.1%± of the water demands of the development. The surface water needed to serve the community is estimated to be 12,128± AFY in normal years and 9,099± AFY in Critical Years.

The facilities required to implement the surface water element of the Proposed Water Supply Program will consist of a Sutter Pointe Raw Water Turnout from NCMWC's existing Bennett Pumping Plant (244± CFS), located on the Natomas Cross Canal approximately 1.1± miles easterly (upstream) of the Sacramento River (see Appendix A, Exhibit 7). The Bennett Pumping Plant is an existing agricultural diversion facility that may not have the reliability that is normal and customary for a municipal water diversion facility and it may need to be substantially upgraded to accommodate the demands of the project.[35]

Depending on the timing of NCMWC's efforts to replace the Bennett Pumping Plant with the proposed Sankey Diversion Facility, surface water may not actually be provided from the Bennett Pumping Plant. Accordingly, while a detailed evaluation for upgrading of the Bennett Pumping Plant was deemed beyond the scope of this master plan, Chapter 6 includes a discussion of the types of improvements that would be required to upgrade this facility to M&I standards. Further study will be needed, during the design phases of the SPSP project, to determine the extent of retrofit and/or expansion of the existing Bennett Pumping Plant, if any.

Some of the water diverted from the Sacramento River by the Bennett Pumping Plant will be delivered to the proposed Sutter Pointe Raw Water Booster Pump Station through a raw water turnout located on the landside of the levee at the

[35] This older agricultural facility probably does not have redundancy of pumps, backup of electrical power, proper intake screens, and appropriate controls. Additionally, it has been reported that once every few years the level of the Sacramento River falls below the flowline of the cross canal requiring the installation of a temporary dam at the mouth of the canal and pumping of water from the river up into the canal to supply the Bennett Pumping Plant with sufficient water.

head works of the NCMWC's existing high-line ditch system. The booster pump station, with a capacity of approximately 29.3± million gallons per day, will pressurize the flows prior to discharge into the Sutter Pointe Raw Water Transmission Pipeline for conveyance to surface water treatment plant located in the westerly portion of the planning area. The pipeline will be approximately 42-inches in diameter.[36] This surface water element will need to begin development near the end of Phase 2+B and will operate in conjunction with the two proposed groundwater well fields in order to meet the water demands of the Sutter Pointe planning area at ultimate build out.

The Sutter Pointe Raw Water Transmission Pipeline will extend due south from the location of the Bennett Pumping Plant, along a local farm road, to Sankey Road. The pipeline would then head easterly along Sankey Road to Powerline Road, then southerly along Powerline Road to Riego Road, then easterly along Riego Road, and finally southerly to the location of a proposed Sutter Pointe Surface Water Treatment Plant (SWTP) located southerly of Riego Road and westerly of SR 99/70 (see Appendix A, Exhibit 1).

The proposed Sutter Pointe SWTP will be located in a joint treatment plant site that would also contain one of the two proposed groundwater treatment plants. The space requirements for this combined facility will be in the range of 10 ± to 15± acres.

Surface water treatment processes, facilities and chemicals used are discussed in Section 5.4 of this report. The SWTP will be constructed in four phases of approximately 7.3± million gallons per day (MGD) yielding an ultimate capacity of 29.3± MGD. The SWTP would operate at various flow rates throughout the year. Staffing levels and operator qualification would comply with applicable regulatory requirements.

[36] Instead of a single transmission pipeline, the phased installation of a dual raw water transmission pipelines is also envisioned. Dual 33-inch diameter pipelines could be substituted for the proposed 42-inch diameter transmission pipeline without any significant implications.

5.2 Alternate "A" Revised Water Supply Program

The Alternate "A" Revised Water Supply Program consists of a base supply of surface water in summer and a base supply of groundwater in winter to meet the M&I demand of the community at ultimate build out. Groundwater will be developed from the aquifers below the community utilizing the overlaying groundwater rights of the lands within the planning area. Converting the existing surface water rights, currently being used for agricultural irrigation within the planning area and as described above, will be required to allow the use of surface water from the Sacramento River to meet M&I demands within the non-shareholder lands described above (a change in the place of use).

Since surface water is available only in the summer months, the Alternate "A" Revised Water Supply Program includes a ground water element that will supply the water demands of the community in the winter months, when surface water is not available. The two basic elements of the Alternate "A" Revised Water Supply Program are described below.

5.2.1 Ground Water Element

A ground water well field system will be developed to yield up to 9,563± AFY in normal years[37], and 12,432± AFY in Critical Years. The long-term average annual groundwater demand is approximately 9,880± AFY. This groundwater supply system will provide the initial water supply for the planning area serving the first several years of development (approximately 37.9%± of the ultimate build out of the planning area).

This well field system would consist of approximately fourteen (14) operational groundwater wells, raw water transmission pipelines, and two (2) standby wells. Each of these wells will be capable of producing approximately 1,800± gallons per minute from the groundwater basin that underlies the planning area. Two

[37] Depending on the final scenario used to estimate the SPSP "supplies" to NCMWC surface water rights under the Settlement Contract, an additional 1,708 AFY could be needed for Alternate "A" Water Supply Program during a normal year. Refer to Footnotes 30 and 31 above.

well fields will be developed, one west of SR 99/70, and one east of SR 99/70.[38] These two well fields will be capable of producing both the total water needs of the initial phases of development within the planning area, and also capable of serving approximately 37.9%± of the total water needs of the community at ultimate build out. The remaining 62.1%± of the demand generated by the community, at ultimate build out, will be served from the surface water element of the Alternate "A" Revised Water Supply Program, which is further described below.

In addition to the two well fields, the groundwater program will include two groundwater treatment plants, one westerly and one easterly of SR 99/70, the Western and Eastern Groundwater Treatment Plants, respectively. Each well field could contain up to 9 wells each so as to provide flexibility during development of the SPSP area, depending on the preferred water supply scenario that is chosen, for a maximum total of 18 wells. Each groundwater treatment plant, one east and one west, will be built in four phases of approximately 3.1± MGD each and yielding an ultimate capacity of 25.0± MGD.

Over time, as development within the planning area occurs, and as the surface water program is phased in, the groundwater program will transition from a year-round supply to principally a wintertime supply to meet the demands of the development when the NCMWC surface water diversions are not available. While the groundwater supply will be capable of meeting the equivalent annual water demands of the non-shareholder lands within the planning area, i.e., approximately 2518.3± acres of the 7527.6± acres in the planning area, changes in the existing surface water rights and settlement contract will be required to serve CVP water to the non-shareholder lands.

It is proposed that the western well field will consist of a total of eight (8) production wells plus one (1) standby well at 1,800± gpm per well connected to a centralized ground water treatment plant by a series of raw groundwater

[38] Final design consideration and further engineering studies will need to be performed in order to determine which well field should be constructed first, the east or the west.

transmission pipelines. Similarly, the eastern well field will consist of six (6) production wells plus one (1) standby well at 1,800± gpm per well connected to a second centralized ground water treatment plant by another series of raw groundwater transmission pipelines.[39] Each well site, spaced no closer than every 3,000± feet on center, will be situated on a site approximately one-quarter acre in size. The centralized groundwater treatment plants will be situated on sites approximately 5± acres in size. Similar to the Proposed Water Supply Program it is assume that both well field will be built in their entirety and serve the water demands until the surface water element is constructed near the end of Phase 2+B.

5.2.2 Surface Water Element

The surface water supply will be developed to serve the remaining 62.1%± of the water demands of the development. The surface water needed to serve the community is estimated to be 15,638± AFY in normal years, and 9,616± AFY in Critical Years.

The facilities required to implement the surface water element of the Alternate "A" Revised Water Supply Program will consist of a Sutter Pointe Raw Water Turnout from NCMWC's existing Bennett Pumping Plant (150± CFS), located on the Natomas Cross Canal approximately 1.1± miles easterly (upstream) of the Sacramento River (See Appendix A, Exhibit 6). Some of the water diverted from the Sacramento River by the Bennett Pumping Plant will be delivered to the proposed Sutter Pointe Raw Water Booster Pump Station through a raw water turnout located on the landside of the levee at the head works of the NCMWC's existing high-line ditch system. The booster pump station, with a capacity of approximately 35.1± million gallons per day, will pressurize the flows prior to

[39] Final design studies will confirm the actual number of wells in each well field such that the minimum number of wells needed (14) is provided, and determine if it is more economical to develop a larger number of smaller groundwater treatment plants clustered with several smaller groups of wells rather than the centralized approach discussed herein. Likewise, individual wellhead treatment will be evaluated during final design to determine if this alternative approach is more economical than the centralized or clustered approach.

discharge into the Sutter Pointe Raw Water Transmission Pipeline for conveyance to the proposed Sutter Pointe Surface Water Treatment Plant located in the westerly portion of the planning area. The pipeline will be approximately 42-inches in diameter.[40] Similar to the Proposed Water Supply Program, the surface water element will need to begin development near the end of Phase 2+B and will operate in conjunction with the proposed groundwater system to meet the water demands of the Sutter Pointe planning area at ultimate build out.

The Sutter Pointe Raw Water Transmission Pipeline would extend due south from the location of the Bennett Pumping Plant, along a local farm road, to Sankey Road. The pipeline would then head easterly along Sankey Road to Powerline Road, then southerly along Powerline Road to Riego Road, then easterly along Riego Road, and finally southerly to the location of a proposed Sutter Pointe Surface Water Treatment Plant located southerly of Riego Road and westerly of SR 99/70 (See Appendix A, Exhibit 1).

The proposed Sutter Pointe Surface Water Treatment Plant will be located in a joint treatment plant site that would also contain the proposed Western Groundwater Treatment Plant (See Appendix A, Exhibit 1). The space requirements for this combined facility will be in the range of 10±-15± acres.

Surface water treatment processes, facilities and chemicals used are discussed in Section 5.4 of this report. The SWTP will be constructed in four phases of approximately 8.8± million gallons per day (MGD) yielding an ultimate capacity of 35.1± MGD. The SWTP would operate continuously at various flow rates throughout the year. Staffing levels and operator qualification would comply with applicable regulatory requirements.

[40] Instead of a single transmission pipeline, the phased installation of a dual raw water transmission pipelines is also envisioned. Dual 33-inch diameter pipelines could be substituted for the proposed 42-inch diameter transmission pipeline without any significant implications.

5.3 Alternate "B" Winter Diversion Water Supply Program

The Alternate "B" Winter Diversion Water Supply Program is a traditional conjunctive use water supply program that assumes a wintertime diversion, from the Sacramento River, will be obtained to serve the planning area. This winter time diversion, together with summer surface water made available from NCMWC, would provide year round surface water to help meet the M&I needs of the community thereby reducing the dependency of the community on groundwater during normal water years.

As is the case with the Proposed Water Supply Program, the Alternate "B" Winter Diversion Water Supply Program will still require the development of a groundwater system to augment flows from the surface water system during Critical Years, when the Bureau institute a 25% cutback in surface water deliveries to the community. Also, the same conversion of the existing surface water rights, permits, licenses, and the settlement contract currently being used for agricultural irrigation will be needed to allow the use of surface water to meet M&I demands for the community.

The substantive difference between the Proposed Water Supply Program and the Alternate "B" Winter Diversion Water Supply Program is the acquisition of a new water right for diversion of approximately 6,000± acre feet per year from the Sacramento River during the winter (October 1 – March 31).[41] While the process of obtaining new water rights is very time consuming, it is probable that these additional water rights could be obtained since it is generally known that there is un-appropriated water in the Sacramento River during the winter.

The two basic elements of the Alternate "B" Winter Diversion Water Supply Program are described below:

[41] The identification of the entity that will have responsibility to procure the new water right, identification of the permittee, and timing of when the permit application should be filed should be addressed in the SPSP Development Agreement between the County and the developers.

5.3.1 Ground Water Element

A ground water well field system will be developed to yield up to 6,579± AFY in normal years, and 9,276± AFY in Critical Years. The long-term average annual groundwater demand is approximately 6,877± AFY. This groundwater supply system will provide the initial water supply for the planning area serving the first several years of development (approximately 26.1%± of the ultimate build out of the planning area).

This well field system would consist of approximately eight (8) operational groundwater wells and one (1) standby well. Each of these wells will be capable of producing approximately 1,800± gallons per minute from the groundwater basin that underlies the planning area. Depending on the on-going ground water modeling efforts, this well field will be located either westerly or easterly of SR 99/70. This well field will be capable of producing both the total water needs of the initial phases of development within the planning area, and also capable of serving approximately 26.1%± of the total water needs of the community at ultimate build out. The well field could contain up to 9 wells each so as to provide flexibility during development of the SPSP area, depending on the preferred water supply scenario that is chosen. The remaining 73.9%± of the demand generated by the community at ultimate build out will be served from the surface water program, further described below.

In addition to the well field, the groundwater program will include a series of raw groundwater transmission pipelines connecting the wells to a centralized groundwater treatment plant. These treatment plants will be constructed in four phases of approximately 3.8± MGD each and yielding an ultimate capacity of 15.1± MGD.[42]

Over time, as development within the planning area occurs, and as the surface water program is phased in, near the beginning of Phase 2+B, the groundwater

[42] Ground Water Treatment Plant incremental phasing may not coincide with the Sutter Pointe development phasing or Phasing Plan.

program will transition from a year-round supply to principally a peak flow augmentation supply to meet the demands of the development during summer peak demand periods. As is the case with the Proposed Water Supply Program, changes to the existing water rights licenses and the settlement contract will be required to serve CVP water to the non-shareholder lands.

Wells will be spaced no closer than every 3,000± feet on center and will be situated on a site approximately one-quarter acre in size. The centralized groundwater treatment plant will be situated on site approximately 5± acres in size.

The proposed treatment process for groundwater under the Alternate "B" Winter Diversion Water Supply Program would be nearly identical to the treatment process described for the Proposed Water Supply Program except for minor changes in groundwater availability and/or quality that may exist easterly and westerly of SR 99/70.[43]

5.3.2 Surface Water Element

The surface water supply will be developed to serve the remaining 73.9%± of the water demands of the development. The Settlement Contract surface water needed to serve the community is estimated to be 13,126± AFY in normal years, and 8,590± AFY in Critical Years. Additionally, a new winter diversion would be needed to provide 5,496± AFY in Normal Years and 4,182± AFY in Critical Years (a new winter time 6,000 AFY water rights permit and license will be sought).

The facilities required to implement the surface water element of the Alternate "B" Winter Diversion Water Supply Program will be nearly identical to those described above for the Proposed Water Supply Program. The Raw Water Turnout and Raw Water Booster Pump Station, with a capacity of approximately 33.1± million gallons per day, will pressurize the flows prior to discharge into the Sutter Pointe Raw Water Transmission Pipeline for conveyance to the Surface

[43] The final determination whether to use centralized, clustered, or individual well head treatment approaches will be determined during final design.

Water Treatment Plant (proposed to be located either in the eastern or western portion of the planning area and coming online near the beginning of Phase 2+B). The pipeline, approximately 42-inches in diameter, would follow the same routes (proposed and alternative routes) described above.[44] The proposed surface water treatment plant would be located in the same common water treatment plant site containing the proposed groundwater treatment plant. The space requirements for this combined facility will remain approximately 10± - 15± acres.

Surface water treatment processes, facilities and chemicals used are discussed in Section 5.4 of this report. The SWTP will be constructed in four phases of approximately 8.3± million gallons per day (MGD) yielding an ultimate capacity of 33.1± MGD. The SWTP would operate continuously at various flow rates throughout the year. Staffing levels and operator qualification would comply with applicable regulatory requirements.

5.4 Water Conservation Measures

During Critical Years, when the Bureau mandates a 25% cutback in deliveries of surface water to CVP Settlement Contractors, the community will need to institute water conservation measures to balance the water supply demand equation. Due to the availability of groundwater during the summer months, the severity of the Bureau's 25% cutback can be significantly mitigated by additional groundwater pumping to meet the maximum day demands within the community. The proposed water conservation program, described earlier, would yield a net reduction in demands of 12.5% as measured against normal demands and would consist of a combination of varying reductions in usage by the various M&I customer classes, brought about by public education and awareness, rate structure incentives, and water use enforcement.

[44] Instead of a single transmission pipeline, the phased installation of a dual raw water transmission pipelines is also envisioned. Dual 33-inch diameter pipelines could be substituted for the proposed 42-inch diameter transmission pipeline without any significant implications.

It is widely understood that customer demands typically increase during dry years, principally to compensate for lower precipitation levels, and the resulting increase in irrigation demands. While it is beyond the scope of this master plan to estimate the magnitude of these increased demands, experience has shown that this increase in demand occurs and is manageable. To be clear, water conservation levels will have to be higher among certain customer classes in order to achieve an overall net reduction of 12.5% as measured against normal year demands.

More importantly, it is essential to develop strategies to balance the overall supply/demand equation to achieve greater levels of conservation in certain customer classes (e.g., irrigation customers) to achieve an overall conservation goal. This will be the case for Sutter Pointe, as it is for most communities in the region.

In addition to conservation measures, water rates should be structured to promote conservation during normal years as well as penalize excess water use during periods of drought. Carefully designed quantity- based water rates will establish economic incentives to future customers to use water efficiently. These water rate structures will likely conform to the 2007 requirements of Best Management Practice 11 from the California Urban Water Conservation MOU (or later edition if applicable).

Table G in Appendix B includes an analysis of the levels of conservation by the various water supply elements that make up three water supply programs described in this master plan. These calculations demonstrate the magnitude of conservation that can be reasonably expected for each element, and the flexibility available to the operator to adjust the degree of conservation applied to each element in meeting the challenges of any particular dry year event.

Reductions in dry-year demands of 12.5 percent are reasonable compared to what other water purveyors have achieved through either requests for voluntary reductions or enforced demand management measures. Below are summaries

of dry-year demand reductions that have either been achieved or assumed for some water purveyors throughout central and northern California:

- *City of Stockton Municipal Utility District*: Between 1993-1999, the City of Stockton Municipal Utility District (COSMUD) utilized a program calling for a voluntary 10 percent reduction in water use through conservation, and achieved actual savings between 12 and 19 percent.[45] COSMUD's significant demand reductions that resulted after its request for voluntary demand management measures indicate that even without implementation of mandatory demand management measures, significant demand reductions can be achieved.
- *City of Folsom:* The City of Folsom – located in a similar climate to Sutter Pointe – anticipates a savings of greater than 7% of its overall demand based on implementation of its demand management measures under its municipal code in dry years. These demand management measures include mandatory water reduction measures associated with outdoor irrigation, water waste (including runoff from property and sidewalk or driveway cleaning), and bans on refilling swimming pools.
- *City of Clovis*: The City of Clovis – located in a climate that is generally hotter and drier than the Sutter Pointe – anticipates a demand reduction savings between 18 percent and 35 percent by reducing outdoor irrigation to two or one days per week.[46] These savings are anticipated through calculations of reduced water application and consumption through outdoor irrigation.
- *City of Modesto:* The City of Modesto – located in a warmer and drier climate than Sutter Pointe – anticipates achieving a 10 to 20 percent conservation savings by implementing its Stage 1 actions as part of its demand management measures.

[45] Draft 2005 City of Stockton Urban Water Management Plan, p. 7-3.
[46] City of Clovis 2005 Urban Water Management Plan at Table 35, p. 49.

- *East Bay Municipal Utility District:* During the 1976-1977 drought – one of the most severe single drought years in the State's hydrologic record – EBMUD measured demand reductions at 39 percent of its overall demand.[47] EBMUD used numerous demand management measures including enforcing bans on outdoor irrigation and encouraging water supply efficiency with indoor uses.
- *City of San Francisco:* During the 1987-1992 drought, the City of San Francisco achieved a 25 percent reduction in overall demand by targeting a 10 percent reduction in indoor use and a 60 percent reduction in outdoor use. Because the City of San Francisco has relatively low landscape demands due to its climate and high level of urbanization, a lower level of conservation may be more realistic for Sutter Pointe. However, a 12.5 percent reduction in normal-year water demands is still reasonable during dry years.
- *Zone 7 Water Agency*: In 2007, Zone 7 Water Agency's retail agencies – located in the Bay Area – were successful in reducing short-term water demand by almost 20 percent by asking residents to undertake "voluntary demand reduction measures" during the state curtailments of State Water Project water supplies. [48]
- *City of Napa:* The City of Napa, located in a climatic region that is wetter and cooler than Sutter Pointe, anticipates being able to achieve 10 percent conservation through a public awareness campaign, which is analogous to a voluntary conservation request.[49] This public awareness campaign operates as Stage 1 of the City of Napa's conservation plan, and thus the City anticipates relying upon more restrictive measures to achieve even greater conservation savings.

[47] East Bay Municipal Utility District's 2005 Urban Water Management Plan at p. 3-2 and Table 6-1 on p. 6-2.
[48] Telephone Call with Karla Nemeth Environmental and Public Affairs Manager with Zone 7 Water Agency on July 16, 2007.
[49] City of Napa, Urban Water Management Plan: 2005 Update, p. 7-4.

Although a 12.5% reduction in normal-year demands within Sutter Pointe is reasonably attainable, Sutter County currently has no ordinance giving it authority to implement either a water shortage contingency plan or temporary demand management measures within Sutter Pointe. This is largely due to the fact that Sutter County supplies only small amounts of water to service areas and therefore has not been required to prepare an Urban Water Management Plan.

Because this authority will be necessary, the County plans to adopt a water shortage contingency plan applicable to Sutter Pointe prior to issuance of a written verification of sufficient water supply pursuant to the requirements of SB 221. This water shortage contingency plan will include mandate reductions during dry years through staged measures that may include the following:

- Prohibition on water waste;
- Limitations on outdoor use; and
- Prohibitions on some types of water uses.

5.5 Treatment Processes

Ground water and surface water treatment will be essential in providing a reliable and safe potable water system for the SPSP area. The proposed treatment plants, for both the ground water and surface water elements, will be capable of producing potable drinking water meeting the requirements of the California Department of Health Services and the United States of America Environmental Protection Agency (EPA).

5.5.1 Groundwater Treatment

Ground water will be treated at the Eastern and/or Western Groundwater Treatment Plants to meet the regulations of both the State of California, and the EPA. The capacity of the groundwater treatment plants will vary depending upon which of the water supply programs is actually implemented.

Additionally, the capacity of these plants will depend upon whether centralized, clustered or individual well treatment scenarios are determined to be most cost effective. The final decision on which of these scenarios is most cost effective is premature at this time and beyond the scope of this WSMP and will be made during final design of the facilities.

The treatment process, however, will be essentially the same for each of these scenarios with the only significant difference being one of scale. That is, the centralized approach would concentrate the treatment process into only one or two locations, while the clustered and individual well approaches would reduce the size but increase the number of treatment facilities spread throughout the project area.

A search of California Department of Water Resources literature indicates the presence of iron, manganese and arsenic in the groundwater in the vicinity of the SPSP planning area with some variation in levels depending location (lower levels generally occurring farthest from the river). Preliminary groundwater quality testing confirms the existence of the presence of elevated levels of iron, manganese and arsenic, all in treatable concentrations. With those constituents present in levels approaching or exceeding current drinking standards, treatment for those contaminants will be required.

The treatment process for removal of these constituents involves the oxidation of the soluble form of each constituent into an insoluble form for subsequent removal, of the precipitates, by filtration. A typical layout of a groundwater treatment plant is shown in Appendix A, Exhibit 8.

Typically, ferric chloride and chlorine are introduced to form the precipitates then conveyed to a filter containing a mixed media usually consisting of graded sands, gravels and a bed of anthracite. Depending on the contaminant level of manganese, a manganese greensand media is often utilized.

After several hours of service duty, the filters will require backwashing to remove the precipitated constituents. Treated water from storage is utilized to backwash

the filters, as with all backwash water, it will be pumped to an on-site containment storage tank. The backwash water will either be sent to waste through the public sewer system or recycled to the filtration system to conserve water. This is accomplished by allowing the solids within the backwash water to settle out, then pumping the decanted water back through the treatment process.

The remaining solids from the treatment process will be disposed in accordance with commonly acceptable practices, including discharge to the public sewer system, transportation and disposal at a landfill, and/or other suitable methods of disposal. If discharge to the public sewer system is determined to be unacceptable by local sewer authority, then these solids will be handled in one of two ways:

1. Storage of the decanted sludge would occur in the bottom of the on-site containment storage tank for periodic “dead” pumping and trucking to a landfill as a low water content sludge (3% - 4% water content), or
2. Periodically transferring the low water content sludge to sludge drying beds and then harvesting the dried sludge and trucking to a landfill.

This approach to groundwater treatment is relatively common in the greater Sacramento metropolitan area, especially in areas where these types of constituents are found in the ground water. Regulatory agencies have accepted these treatment processes because they have reliably produced safe, aesthetically acceptable water supplies that meet the drinking water quality objectives specified in Title 22 of the California Code of Regulations.

These treatment plants, depending on their scale, will include an administration / operations building, maintenance buildings, chemical buildings, electrical buildings, and a treated water pump station. Emergency backup power is also provided from an on-site diesel generator. These treatment plants would operate continuously at various flow rates with ongoing operations and maintenance activities. Staffing levels and operator qualifications would comply with applicable regulatory requirements.

5.5.2 Surface Water Treatment

Surface water will be treated at the Sutter Pointe Surface Water Treatment Plant (SWTP) to meet the surface water treatment regulations of both the State of California, and the Untied States Environmental Protection Agency (EPA). The SWTP will be constructed in four phases of approximately 7.3± MGD each and yielding an ultimate capacity of 29.3± MGD.[50]

The SWTP would use conventional or advanced filtration technologies that have been successfully used to treatment M&I water supplies from the Sacramento River by other urban water users. Regulatory agencies have accepted these processes because they have reliably produced safe, aesthetically acceptable water supplies that meet the drinking water quality objectives specified in Title 22 of the California Code of Regulations. These regulations specify drinking water quality standards for bacteriological quality, disinfection by-products, lead, copper, radioactivity, and maximum contaminant levels for specific inorganic and organic chemicals.

The following components are typically used at local water treatment plants that treat surface water diverted from the Sacramento River:

- Chemical addition and rapid mixing
- Coagulation/flocculation and clarification
- Filtration
- Disinfection

The SWTP facilities will include grit basins, flow splitters, flocculation and sedimentation basins, filters, equalization basins, backwash clarification, and above ground potable water storage reservoirs. Membrane filtration may also be considered as an alternative to the conventional treatment process. An

[50] Treatment Plant capacities provided in text are for the Proposed Water Supply Program. The capacities for Alternate "A" are approximately 7.9± MG for each of the four phases yielding an ultimate capacity of 31.5± MG. The capacities for Alternate "B" are approximately 3.8± MG for each of the four phases yielding an ultimate capacity of 15.1± MG.

administration/operations building, maintenance building, chemical building, electrical building and a treated water pump station will be provided. Emergency backup power will also be provided from an on-site diesel generator.

The SWTP would operate at various flow rates with ongoing operations and maintenance activities. Staffing levels and operator qualifications would comply with applicable regulatory requirements.

The anticipated chemicals to be stored and used at the SWTP include aluminum sulfate (Alum), cationic polymer, sodium hydroxide, anionic polymer, activated carbon, sodium hypochlorite, citric acid, sodium bisulfate, and oxygen. Waste from the SWTP would include grit from the grit basins, sludge removed from the sedimentations basins, filter backwash water, filter-to-waste water, sampling water, and sludge drying decant water. These wastes would be disposed in accordance with commonly acceptable practices, including discharge to the public sewer system, transportation and disposal at a landfill, and/or other suitable methods of disposal.

Since surface water diverted from the Sacramento River, a short distance down stream of the SPSP area, has been the source for M&I water for a long period of time, the acceptability of surface water from the Sacramento River for domestic consumption is not in question. Special attention, however, will need to be given to the quality of Sacramento River water diverted by the Bennett Pumping Plant through the Natomas Cross Canal for M&I use to account for any changes in the quality of surface water that may occur by conveyance through the Natomas Cross Canal.

5.6 Alternative Point of Surface Water Supply & Treatment Plant Location

5.6.1 Alternative Point of Surface Water Supply

NCMWC is proposing to consolidate its five existing pumping plants into two new facilities with fish screens. If NCMWC is successful in gaining the necessary entitlements, permits and funding to consolidate its existing pumping plants, the

Bennett Pumping Plant, along with other pumping facilities serving their Northern and Central Service Areas, would be abandoned once NCMWC's proposed Sankey Diversion Facility (435± CFS) is operational. NCMWC proposes to construct this new facility along the Sacramento River, at the foot of Sankey Road, immediately downstream of the confluence of the river with the Natomas Cross Canal.

While it is uncertain when NCMWC will actually construct the Sankey Diversion Facility, NCMWC has completed a joint EIR/EIS for which a Record of Decision was completed in July 2008.Construction of the new diversion facility could begin as early as the spring of 2009. If construction starts in the spring of 2009, then this facility could be completed and ready for operation in the fall of 2010. NCMWC is in the process of securing funding for the facility at this time. This timeline suggests that it is reasonably foreseeable that the Sankey Diversion Facility will be operational in time for delivery of surface water to the SPSP planning area by 2018. In all likelihood, the point of delivery of raw surface water for M&I uses within the planning area will occur at the new point of diversion, not at the location of the Bennett Pumping Plant.

Should the Sankey Diversion Facility actually be constructed, the raw water turnout and booster pump station described above will be located at the site of the proposed Sankey Diversion Facility, and the route of the raw water transmission pipeline would vary slightly from that described above. The pipeline route would head easterly from the location of the proposed Sankey Diversion Facility along Sankey Road to the point where the pipeline would have been extended southerly to Sankey Road from the location of the Bennett Pumping Plant. The remainder of the pipeline route would be identical to that described above.

5.6.2 Alternative Location of Surface Water Treatment Plant

While it is assumed that the Western Well Field and Groundwater Treatment Plant will be constructed first, it may be that the Eastern Well Field and

Groundwater Treatment Plant may actually be constructed prior to the western facilities. If this were the case, and assuming that the Alternate "B" Winter Diversion Water Supply Program were to become a reality, it may be preferable to locate the surface water treatment plant in a common site adjacent to the Eastern Groundwater Treatment Plant, see Appendix A, Exhibit 2. As a result, the alignment of the raw surface water transmission pipeline would change slightly as described below.

5.6.3 Alternative Surface Water Transmission Pipeline Alignment

The route and size of the Raw Surface Water Transmission Pipeline will be slightly different than described above, if the alternative SWTP location is utilized. In lieu of the transmission pipeline turning southerly on Powerline Road from Sankey Road, the pipeline would continue easterly along Sankey Road, crossing under SR 99/70, to the realigned Pacific Avenue, where it will head southerly to the alternative location of the Surface Water Treatment Plant. (See Appendix A, Exhibit 2).

5.7 Annual Water Supply Schedule

The water demands of any community vary annually, with higher demands experienced during summer months and lower demand periods in winter. Using generally accepted industry standards, the average annual demand, average day demand, maximum day demand, and peak hour demands were tabulated based on the proposed land use designations and unit demands factors for the SPSP area.

The Tables 3.1 through 3.3 show the project water demands for normal and critically dry years and summarizes how the demands will be met for the Proposed Water Supply Program, Alternate "A" and Alternate "B" Water Supply Programs. Tables 4 - 13 show the detailed demand calculations and variations for normal year and critical dry year conditions envisioned for the SPSP area.

Table 3.1: Proposed Water Supply Program (all values in AFY)

	Normal Year				Critical Dry Year			
Phase	**Average Annual Demand**	**Total Demand**	**Ground Water Supply**	**Surface Water Supply**	**Average Annual Demand**	**Total Demand**	**Ground Water Supply**	**Surface Water Supply**
1+A	8,442	8,442	8,442	0	7,387	7,387	7,387	0
2+B	7,343	15,785	10,918	4,867	6,423	13,810	9,591	4, 219
3+C	4,683	20,468	11,486	8,982	4,097	17,907	10,088	7, 819
4+D	4,731	**25,199**	13,071	12,128	4,141	**22,048**	12,949	9,099

Table 3.2: Alternate "A" Revised Water Supply Program (all values in AFY)

	Normal Year				Critical Dry Year			
Phase	**Average Annual Demand**	**Total Demand**	**Ground Water Supply**	**Surface Water Supply**	**Average Annual Demand**	**Total Demand**	**Ground Water Supply**	**Surface Water Supply**
1+A	8,442	8,442	8,442	0	7,387	7,387	7,387	0
2+B	7,343	15,785	4,976	10,809	6,423	13,810	6,913	6,897
3+C	4,683	20,468	6,544	13,924	4,097	17,907	9,605	8,302
4+D	4,731	**25,199**	9,561	15,638	4,141	**22,048**	12,432	9,616

Note: Numbers may not add due to rounding.

Table 3.3: Alternate "B" Winter Diversion Water Supply Program (all values in AFY)

	Normal Year				Critical Dry Year			
Phase	**Average Annual Demand**	**Total Demand**	**Ground Water Supply**	**Surface Water Supply**	**Average Annual Demand**	**Total Demand**	**Ground Water Supply**	**Surface Water Supply**
1+A	8,442	8,442	8,442	0	7,387	7,387	7,387	0
2+B	7,343	15,785	6,536	9,249	6,423	13,810	9,239	4,571
3+C	4,683	20,468	6,270	14,198	4,097	17,907	9,007	8,900
4+D	4,731	**25,199**	6,577	18,622	4,141	**22,048**	9,276	12,772

Note: Numbers may not add due to rounding.

Table 4

Project# 7900-00

Date: 02/27/08

Sutter Pointe - Total Water Demand Calculations - Normal Year (Ultimate Buildout)

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=c*d	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	512.8	1,882	1,167	2,159	4,123
	Medium Density (MDR)	4.17	1,950.3	8,133	5,042	9,328	17,816
	High Density (HDR)	4.67	187.7	877	544	1,006	1,921
	Residential Roads	0.20	244.2	49	30	56	107
	Res. Total		***2,895.0***	***10,941***	***6,783***	***12,549***	***23,968***
Public Facilities	Community Parks	4.08	431.9	1,762	1,092	2,021	3,860
	Open Space - High	4.08	166.4	679	421	779	1,487
	Open Space - Medium	2.34	132.3	310	192	356	679
	Open Space - Low	0.60	96.1	58	36	67	127
	K-8 School	3.67	121.7	447	277	513	979
	High School	3.67	52.9	194	120	223	425
	Public Total		***1,001.3***	***3,450***	***2,139***	***3,957***	***7,558***
Industrial	Employment 1	3.00	580.4	1,741	1,079	1,997	3,814
	Employment 2	3.00	1,990.5	5,972	3,702	6,849	13,082
	Employment Roads	0.20	303.8	61	38	70	134
	Commercial Retail	3.00	178.2	535	332	614	1,172
	Mixed Use	3.00	164.1	492	305	564	1,078
	Industrial Drainage Basins	0.60	414.3	249	154	286	545
	Indus. Total		***3,631.3***	***9,050***	***5,611***	***10,380***	***19,825***
	Subtotal		**7,527.6**	**23,441**	***14,533***	***26,885***	***51,351***
	7.5% System Loss		-	1,758	1,090	2,016	3,851
	Totals		**7,527.6**	**25,199**	**15,622**	**28,902**	**55,202**
	Totals (mgd)				**22.5**	**41.6**	**79.5**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.

[2] Areas were determined from the land use plan prepared by EDAW dated 02-08-08.

Table 5

Project# 7900-00
Date: 02/28/08
Sutter Pointe -Water Demand Calculations Normal Year - Phase 1+A

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=c*d	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	121.0	444	275	509	973
	Medium Density (MDR)	4.17	874.8	3,648	2,262	4,184	7,991
	High Density (HDR)	4.67	91.4	427	265	490	935
	Residential Roads	0.20	127.2	25	15	29	55
	Res. Total		***1,214.4***	***4,544***	***2,817***	***5,212***	***9,954***
Public Facilities	Community Parks	4.08	99.4	406	252	466	889
	Open Space - High	4.08	47.3	193	120	221	423
	Open Space - Medium	2.34	47.4	111	69	127	243
	Open Space - Low	0.60	21.1	13	8	15	28
	K-8 School	3.67	61.1	224	139	257	491
	High School	3.67	52.9	194	120	223	425
	Public Total		***329.2***	***1,141***	***707***	***1,309***	***2,500***
Industrial	Employment 1 (E1)	3.00	96.8	290	180	333	635
	Employment 2 (E2)	3.00	380.3	1,141	707	1,309	2,500
	Employment Roads	0.20	73.9	15	9	17	33
	Commercial Retail (CR)	3.00	129.9	390	242	447	854
	Mixed Use (MU)	3.00	100.8	302	187	346	662
	Industrial Drainage Basins (IDB)	0.60	50.6	30	19	34	66
	Indus. Total		***832.3***	***2,168***	***1,344***	***2,487***	***4,749***
	Subtotal		**2,375.9**	**7,853**	***4,869***	***9,007***	***17,203***
	7.5% System Loss		-	589	365	676	1,290
	Totals		**2,375.9**	**8,442**	**5,234**	**9,682**	**18,493**
	Totals (mgd)				**7.5**	**13.9**	**26.6**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

Table 6

Project# 7900-00
Date: 02/28/08
Sutter Pointe -Water Demand Calculations Normal Year - Phase 2+B

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=c*d	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	316.3	1,161	720	1,332	2,543
	Medium Density (MDR)	4.17	491.9	2,051	1,272	2,352	4,493
	High Density (HDR)	4.67	-	-	-	-	-
	Residential Roads	0.20	48.4	10	6	11	22
	Res. Total		***856.6***	***3,222***	***1,998***	***3,695***	***7,058***
Public Facilities	Community Parks	4.08	181.8	742	460	851	1,625
	Open Space - High	4.08	119.1	486	301	557	1,065
	Open Space - Medium	2.34	26.1	61	38	70	134
	Open Space - Low	0.60	38.3	23	14	26	50
	K-8 School	3.67	20.9	77	48	88	169
	High School	3.67	-	-	-	-	-
	Public Total		***386.2***	***1,389***	***861***	***1,593***	***3,043***
Industrial	Employment 1 (E1)	3.00	100.9	303	188	348	664
	Employment 2 (E2)	3.00	611.4	1,834	1,137	2,103	4,018
	Employment Roads	0.20	63.1	13	8	15	28
	Commercial Retail (CR)	3.00	-	-	-	-	-
	Mixed Use (MU)	3.00	-	-	-	-	-
	Industrial Drainage Basins (IDB)	0.60	116.3	70	43	80	153
	Indus. Total		***891.7***	***2,220***	***1,376***	***2,546***	***4,863***
	Subtotal		**2,134.5**	**6,831**	***4,235***	***7,835***	***14,964***
	7.5% System Loss		-	512	318	588	1,122
	Totals		**2,134.5**	**7,343**	**4,553**	**8,422**	**16,087**
	Totals (mgd)				**6.6**	**12.1**	**23.2**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

Table 7

Project# 7900-00
Date: 02/28/08
Sutter Pointe -Water Demand Calculations Normal Year - Phase 3+C

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=c*d	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	-	-	-	-	-
	Medium Density (MDR)	4.17	331.3	1,382	857	1,585	3,027
	High Density (HDR)	4.67	57.8	270	167	310	591
	Residential Roads	0.20	40.1	8	5	9	18
	Res. Total		***429.2***	***1,660***	***1,029***	***1,904***	***3,636***
Public Facilities	Community Parks	4.08	67.0	273	169	313	598
	Open Space - High	4.08	-	-	-	-	-
	Open Space - Medium	2.34	37.5	88	55	101	193
	Open Space - Low	0.60	13.9	8	5	9	18
	K-8 School	3.67	21.0	77	48	88	169
	High School	3.67	-	-	-	-	-
	Public Total		***139.4***	***446***	***277***	***512***	***977***
Industrial	Employment 1 (E1)	3.00	188.5	566	351	649	1,240
	Employment 2 (E2)	3.00	506.2	1,519	942	1,742	3,328
	Employment Roads	0.20	67.3	13	8	15	28
	Commercial Retail (CR)	3.00	21.8	65	40	75	142
	Mixed Use (MU)	3.00	-	-	-	-	-
	Industrial Drainage Basins (IDB)	0.60	145.0	87	54	100	191
	Indus. Total		***928.8***	***2,250***	***1,395***	***2,581***	***4,929***
	Subtotal		**1,497.4**	**4,356**	***2,701***	***4,996***	***9,542***
	7.5% System Loss		-	327	203	375	716
	Totals		**1,497.4**	**4,683**	**2,903**	**5,371**	**10,258**
	Totals (mgd)				**4.2**	**7.7**	**14.8**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

Table 8

Project# 7900-00
Date: 02/28/08
Sutter Pointe -Water Demand Calculations Normal Year - Phase 4+D

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=c*d	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	75.5	277	172	318	607
	Medium Density (MDR)	4.17	252.3	1,052	652	1,207	2,305
	High Density (HDR)	4.67	38.5	180	112	206	394
	Residential Roads	0.20	28.5	6	4	7	13
	Res. Total		***394.8***	***1,515***	***939***	***1,738***	***3,319***
Public Facilities	Community Parks	4.08	83.7	341	211	391	747
	Open Space - High	4.08	-	-	-	-	-
	Open Space - Medium	2.34	21.3	50	31	57	110
	Open Space - Low	0.60	22.8	14	9	16	31
	K-8 School	3.67	18.7	69	43	79	151
	High School	3.67	-	-	-	-	-
	Public Total		***146.5***	***474***	***294***	***544***	***1,038***
Industrial	Employment 1 (E1)	3.00	194.2	583	361	669	1,277
	Employment 2 (E2)	3.00	492.6	1,478	916	1,695	3,238
	Employment Roads	0.20	99.5	20	12	23	44
	Commercial Retail (CR)	3.00	26.5	80	50	92	175
	Mixed Use (MU)	3.00	63.3	190	118	218	416
	Industrial Drainage Basins (IDB)	0.60	102.4	61	38	70	134
	Indus. Total		***978.5***	***2,412***	***1,495***	***2,766***	***5,284***
	Subtotal		**1,519.8**	**4,401**	***2,728***	***5,048***	***9,641***
	7.5% System Loss		-	330	205	379	723
	Totals		**1,519.8**	**4,731**	**2,933**	**5,426**	**10,364**
	Totals (mgd)				**4.2**	**7.8**	**14.9**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

Table 9

Project# 7900-00

Date: 02/27/08

Sutter Pointe - Total Water Demand Calculations - Critical Dry Year (Ultimate Buildout)

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=(c*d)*0.875	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	512.8	1,647	1,021	1,889	3,608
	Medium Density (MDR)	4.17	1,950.3	7,116	4,412	8,162	15,589
	High Density (HDR)	4.67	187.7	767	476	880	1,680
	Residential Roads	0.20	244.2	43	27	49	94
	Res. Total		***2,895.0***	***9,573***	***5,935***	***10,980***	***20,971***
Public Facilities	Community Parks	4.08	431.9	1,542	956	1,769	3,378
	Open Space - High	4.08	166.4	594	368	681	1,301
	Open Space - Medium	2.34	132.3	271	168	311	594
	Open Space - Low	0.60	96.1	50	31	57	110
	K-8 School	3.67	121.7	391	242	448	857
	High School	3.67	52.9	170	105	195	372
	Public Total		***1,001.3***	***3,018***	***1,871***	***3,461***	***6,611***
Industrial	Employment 1	3.00	580.4	1,524	945	1,748	3,339
	Employment 2	3.00	1,990.5	5,225	3,239	5,993	11,446
	Employment Roads	0.20	303.8	53	33	61	116
	Commercial Retail	3.00	178.2	468	290	537	1,025
	Mixed Use	3.00	164.1	431	267	494	944
	Industrial Drainage Basins	0.60	414.3	218	135	250	478
	Indus. Total		***3,631.3***	***7,919***	***4,909***	***9,083***	***17,348***
	Subtotal		**7,527.6**	**20,510**	***12,715***	***23,523***	***44,930***
	7.5% System Loss		-	1,538	954	1,764	3,370
	Totals		**7,527.6**	**22,048**	**13,669**	**25,288**	**48,300**
	Totals (mgd)				**19.7**	**36.4**	**69.6**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.

[2] Areas were determined from the land use plan prepared by EDAW dated 02-08-08.

Table 10

Project# 7900-00
Date: 02/28/08
Sutter Pointe -Water Demand Calculations Critical Dry Year - Phase 1+A

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=(c*d)*0.875	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	121.0	389	241	446	852
	Medium Density (MDR)	4.17	874.8	3,192	1,979	3,661	6,992
	High Density (HDR)	4.67	91.4	373	231	428	817
	Residential Roads	0.20	127.2	22	14	25	48
	Res. Total		***1,214.4***	***3,976***	***2,465***	***4,560***	***8,710***
Public Facilities	Community Parks	4.08	99.4	355	220	407	778
	Open Space - High	4.08	47.3	169	105	194	370
	Open Space - Medium	2.34	47.4	97	60	111	212
	Open Space - Low	0.60	21.1	11	7	13	24
	K-8 School	3.67	61.1	196	122	225	429
	High School	3.67	52.9	170	105	195	372
	Public Total		***329.2***	***998***	***619***	***1,145***	***2,186***
Industrial	Employment 1 (E1)	3.00	96.8	254	157	291	556
	Employment 2 (E2)	3.00	380.3	998	619	1,145	2,186
	Employment Roads	0.20	73.9	13	8	15	28
	Commercial Retail (CR)	3.00	129.9	341	211	391	747
	Mixed Use (MU)	3.00	100.8	265	164	304	581
	Industrial Drainage Basins (IDB)	0.60	50.6	27	17	31	59
	Indus. Total		***832.3***	***1,898***	***1,177***	***2,177***	***4,158***
	Subtotal		**2,375.9**	**6,872**	***4,260***	***7,882***	***15,054***
	7.5% System Loss		-	515	320	591	1,129
	Totals		**2,375.9**	**7,387**	**4,580**	**8,473**	**16,183**
	Totals (mgd)				**6.6**	**12.2**	**23.3**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

Table 11

Project# 7900-00

Date: 02/28/08

Sutter Pointe -Water Demand Calculations Critical Dry Year - Phase 2+B

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=(c*d)*0.875	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	316.3	1,016	630	1,165	2,226
	Medium Density (MDR)	4.17	491.9	1,795	1,113	2,059	3,932
	High Density (HDR)	4.67	-	-	-	-	-
	Residential Roads	0.20	48.4	8	5	9	18
	Res. Total		***856.6***	***2,819***	***1,748***	***3,233***	***6,175***
Public Facilities	Community Parks	4.08	181.8	649	402	744	1,422
	Open Space - High	4.08	119.1	425	263	487	931
	Open Space - Medium	2.34	26.1	53	33	61	116
	Open Space - Low	0.60	38.3	20	12	23	44
	K-8 School	3.67	20.9	67	42	77	147
	High School	3.67	-	-	-	-	-
	Public Total		***386.2***	***1,214***	***753***	***1,392***	***2,659***
Industrial	Employment 1 (E1)	3.00	100.9	265	164	304	581
	Employment 2 (E2)	3.00	611.4	1,605	995	1,841	3,516
	Employment Roads	0.20	63.1	11	7	13	24
	Commercial Retail (CR)	3.00	-	-	-	-	-
	Mixed Use (MU)	3.00	-	-	-	-	-
	Industrial Drainage Basins (IDB)	0.60	116.3	61	38	70	134
	Indus. Total		***891.7***	***1,942***	***1,204***	***2,227***	***4,254***
	Subtotal		**2,134.5**	**5,975**	***3,704***	***6,853***	***13,089***
	7.5% System Loss		-	448	278	514	982
	Totals		**2,134.5**	**6,423**	**3,982**	**7,367**	**14,071**
	Totals (mgd)				**5.7**	**10.6**	**20.3**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.

[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

Table 12

Project# 7900-00
Date: 02/28/08
Sutter Pointe -Water Demand Calculations Critical Dry Year - Phase 3+C

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=(c*d)*0.875	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	-	-	-	-	-
	Medium Density (MDR)	4.17	331.3	1,209	750	1,387	2,648
	High Density (HDR)	4.67	57.8	236	146	271	517
	Residential Roads	0.20	40.1	7	4	8	15
	Res. Total		***429.2***	***1,452***	***900***	***1,665***	***3,181***
Public Facilities	Community Parks	4.08	67.0	239	148	274	524
	Open Space - High	4.08	-	-	-	-	-
	Open Space - Medium	2.34	37.5	77	48	88	169
	Open Space - Low	0.60	13.9	7	4	8	15
	K-8 School	3.67	21.0	67	42	77	147
	High School	3.67	-	-	-	-	-
	Public Total		***139.4***	***390***	***242***	***447***	***854***
Industrial	Employment 1 (E1)	3.00	188.5	495	307	568	1,084
	Employment 2 (E2)	3.00	506.2	1,329	824	1,524	2,911
	Employment Roads	0.20	67.3	12	7	14	26
	Commercial Retail (CR)	3.00	21.8	57	35	65	125
	Mixed Use (MU)	3.00	-	-	-	-	-
	Industrial Drainage Basins (IDB)	0.60	145.0	76	47	87	166
	Indus. Total		***928.8***	***1,969***	***1,221***	***2,258***	***4,313***
	Subtotal		**1,497.4**	**3,811**	***2,363***	***4,371***	***8,348***
	7.5% System Loss		-	286	177	328	626
	Totals		**1,497.4**	**4,097**	**2,540**	**4,699**	**8,975**
	Totals (mgd)				**3.7**	**6.8**	**12.9**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

Table 13

Project# 7900-00
Date: 02/28/08
Sutter Pointe -Water Demand Calculations Critical Dry Year - Phase 4+D

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=(c*d)*0.875	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	75.5	243	151	279	532
	Medium Density (MDR)	4.17	252.3	921	571	1,056	2,018
	High Density (HDR)	4.67	38.5	157	97	180	344
	Residential Roads	0.20	28.5	5	3	6	11
	Res. Total		***394.8***	***1,326***	***822***	***1,521***	***2,905***
Public Facilities	Community Parks	4.08	83.7	299	185	343	655
	Open Space - High	4.08	-	-	-	-	-
	Open Space - Medium	2.34	21.3	44	27	50	96
	Open Space - Low	0.60	22.8	12	7	14	26
	K-8 School	3.67	18.7	60	37	69	131
	High School	3.67	-	-	-	-	-
	Public Total		***146.5***	***415***	***257***	***476***	***909***
Industrial	Employment 1 (E1)	3.00	194.2	510	316	585	1,117
	Employment 2 (E2)	3.00	492.6	1,293	802	1,483	2,832
	Employment Roads	0.20	99.5	18	11	21	39
	Commercial Retail (CR)	3.00	26.5	70	43	80	153
	Mixed Use (MU)	3.00	63.3	166	103	190	364
	Industrial Drainage Basins (IDB)	0.60	102.4	54	33	62	118
	Indus. Total		***978.5***	***2,111***	***1,309***	***2,421***	***4,624***
	Subtotal		**1,519.8**	**3,852**	***2,388***	***4,418***	***8,438***
	7.5% System Loss		-	289	179	331	633
	Totals		**1,519.8**	**4,141**	**2,567**	**4,749**	**9,071**
	Totals (mgd)				**3.7**	**6.8**	**13.1**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW, dated 02/08/08.

5.8 NCMWC Non-Shareholder Area

The area of non-shareholder land (2518.3± acres) is irrigated by existing ground water wells. The non-shareholder area is expected to have an average annual water demand of 8,817± AFY at ultimate build-out. Detailed demand calculations for the non-shareholder area are presented in Tables 15 & 16.

5.9 M&I / Agricultural Water Demand Comparison

The amount of CVP Settlement Contract water available to meet the irrigation needs of the shareholder lands within the planning area has been estimated to be 30,000± AFY during Normal Years (22,500± AFY during Critical Years assuming 25% cutback). In comparison, the amount of surface water needed to meet the M&I demand of the planning area during Normal and Critical Dry Years in the Proposed Water Supply Program, the Alternate "A" Revised Water Supply Program and the Alternate "B" Winter Diversion Water Supply Program are significantly lower. Accordingly, the conversion of land uses within the planning area from agricultural to urban will result in the creation of surplus surface water in the magnitudes summarized below:

Table 14: Summary of Surplus Surface Water

Scenario	Description	Normal Year	Critical Year
Proposed Water Supply Program	CVP Settlement Contract Water	30,000 AFY	22,500 AFY
	Winter Diversion Right	0 AFY	0 AFY
	Total Surface Water	30,000 AFY	22,500 AFY
	Less M&I Demand	<12,128AFY>	<9,099 AFY>
	Surplus Water	**17,872 AFY**	**13,401 AFY**
Alternate "A" Revised Water Supply Program	CVP Settlement Contract Water	30,000 AFY	22,500 AFY
	Winter Diversion Right	0 AFY	0 AFY
	Total Surface Water	30,000 AFY	22,500 AFY
	Less M&I Demand	<15,638AFY>	<9,616 AFY>
	Surplus Water	**14,362 AFY**	**12,884AFY**
Alternate "B" Winter Diversion Water Supply Program	CVP Settlement Contract Water	30,000 AFY	22,500 AFY
	Winter Diversion Right	6,000 AFY	6,000 AFY
	Total Surface Water	36,000 AFY	28,500 AFY
	Less M&I Demand	<13,126 AFY>	<8,590 AFY>
	Surplus Water	**22,874 AFY**	**19,910 AFY**

Note: Numbering may not add due to rounding.

The projected reduction in surface water usage within the planning area resulting from urbanization provides a unique opportunity for water banking and subsequent transfer of these surplus waters to other water purveyors in the need of highly reliable surface water during Normal and Critical Years.

Table 15

Project# 7900-00

Date: 02/29/08

Sutter Pointe - (Non NCMWC Shareholder Area) Total Water Demand Calculations - Normal Year (Ultimate Buildout)

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=c*d	g=f*0.62	h=g*1.85	I=h*1.91
Residential	Low Density (LDR)	3.67	178.2	654	405	750	1,433
	Medium Density (MDR)	4.17	827.6	3,452	2,140	3,959	7,562
	High Density (HDR)	4.67	48.6	227	141	260	497
	Residential Roads	0.20	82.5	17	11	19	37
	Res. Total		***1,136.9***	***4,350***	***2,697***	***4,989***	***9,529***
Public Facilities	Community Parks	4.08	92.9	379	235	435	830
	Open Space - High	4.08	166.4	679	421	779	1,487
	Open Space - Medium	2.34	28.1	66	41	76	145
	Open Space - Low	0.60	-	-	-	-	-
							-
	K-8 School	3.67	40.3	148	92	170	324
	High School	3.67	-	-	-	-	-
	Public Total		***327.7***	***1,272***	***789***	***1,459***	***2,786***
Industrial	Employment 1	3.00	385.3	1,156	717	1,326	2,532
	Employment 2	3.00	379.4	1,138	706	1,305	2,493
	Employment Roads	0.20	94.6	20	12	23	44
	Commercial Retail	3.00	62.4	187	116	214	410
	Mixed Use	3.00	-	-	-	-	-
	Industrial Drainage Basins	0.60	132.0	79	49	91	173
	Indus. Total		***1,053.7***	***2,580***	***1,599***	***2,959***	***5,652***
	Subtotal		**2,518.3**	**8,202**	***5,085***	***9,407***	***17,968***
	7.5% System Loss		-	615	381	706	1,348
	Totals		**2,518.3**	**8,817**	**5,466**	**10,113**	**19,315**
	Totals (mgd)				**7.9**	**14.6**	**27.8**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.

[2] Areas were determined from the land use plan prepared by EDAW dated 02-08-08.

Table 16

Project# 7900-00

Date: 02/29/08

Sutter Pointe - (Non NCMWC Shareholder Area) Total Water Demand Calculations - Critical Dry Year (Ultimate Buildout)

	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
a	b	c	d	f=(c*d)*0.875	g=f*0.62	h=g*1.85	I=h*1.5
Residential	Low Density (LDR)	3.67	178.2	572	355	656	984
	Medium Density (MDR)	4.17	827.6	3,020	1,872	3,464	5,196
	High Density (HDR)	4.67	48.6	199	123	228	342
	Residential Roads	0.20	82.5	14	9	16	24
	Res. Total		***1,136.9***	***3,805***	***2,359***	***4,364***	***6,546***
Public Facilities	Community Parks	4.08	92.9	332	206	381	571
	Open Space - High	4.08	166.4	594	368	681	1,022
	Open Space - Medium	2.34	28.1	58	36	67	100
	Open Space - Low	0.60	-	-	-	-	-
	K-8 School	3.67	40.3	129	80	148	222
	High School	3.67	-	-	-	-	-
	Public Total		***327.7***	***1,113***	***690***	***1,277***	***1,915***
Industrial	Employment 1	3.00	385.3	1,011	627	1,160	1,739
	Employment 2	3.00	379.4	996	617	1,142	1,714
	Employment Roads	0.20	94.6	17	11	19	29
	Commercial Retail	3.00	62.4	164	102	188	282
	Mixed Use	3.00	-	-	-	-	-
	Industrial Drainage Basins	0.60	132.0	69	43	79	119
	Indus. Total		***1,053.7***	***2,257***	***1,399***	***2,589***	***3,883***
	Subtotal		**2,518.3**	**7,175**	***4,448***	***8,229***	***12,344***
	7.5% System Loss		-	538	334	617	926
	Totals		**2,518.3**	**7,713**	**4,782**	**8,846**	**13,270**
	Totals (mgd)				**6.9**	**12.7**	**19.1**

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.

[2] Areas were determined from the land use plan prepared by EDAW dated 02-08-08.

5.10 Operational Considerations

Several considerations guided the development of the three water supply scenarios described in this master plan. These considerations guided initial allocation of water utilization between surface and ground water for planning purposes, and are sufficient for the current level of planning. There are a number of different ways to allocate water between these two sources, and in some cases not all available surface water was used based on several of the operational considerations listed below.

A more definitive operations plan will be defined as the project is developed beyond Phase 1+A, and as surface water supplies are secured for the project through a combination of contract and separate water rights. The allocation rules will also be guided by the goals of the eventual operating entity for the water supply system. Here are the major considerations in developing the water supply scenarios:

1. Water conservation during single and multiple dry years (12.5% goal for demand reduction).
2. Development of the second well field prior to working out the details of the preferred surface water supply program.
3. Reliance on the first well field for the initial stages of development.
4. Balancing of ground wand surface water supplies in an effort to make more effective use of both resources.
5. Preservation of existing rights to surface water under the Bureau of Reclamation Settlement Contract.
6. Availability of Bureau water during irrigation season.

7. Compliance with monthly and annual diversion limits under the Settlement Contract during normal and critically dry years when cutback in diversions is mandatory.[51]
8. Flexibility to adjust the final mix of surface and ground water to optimize the overall operation of the system.
9. Flexibility to use each water supply to the maximum extent possible when the other supply is in limited availability.
10. Minimizing the likelihood of a binary water supply system (the "Proposed Water Supply Program") and the resulting over building of combined surface and ground treatment capacities needed to meet projected demands.
11. Enhancing the likelihood of a more effective conjunctive water supply program (the Alternate "B" Water Supply Program) with resulting water quality and resource conservation benefits.
12. Creating adequate reserves of ground and surface water to provide appropriate levels of operational flexibility and system redundancy to react to unforeseen events.
13. Balancing the need for adequate ground and surface water reserves with the creation of excess infrastructure capacity that is rarely, if ever, used.
14. Minimize the capital and operational costs of the system during the early stages of the development.
15. Reduction in total water supply costs to the future residents of the project.

Given the above range of considerations that must be evaluated in selecting the mix of the three surface water supplies in any particular period, it is clear that considerable judgment must be used in striking the right balance between numerous completing interests. Accordingly, a trial and error approach is

[51] Table C-1 in Appendix B demonstrates the ability of the Project to meet the monthly and annual diversion caps under the Settlement Contract during both normal and critically dry water years.

needed where small changes in the water supply mix are made on an incremental basis until a balance point is found.

Over time, this balance point may shift depending on changing circumstances and constraints. Obviously not a formulaic exercise that can be quantitatively documented, the determination of each balance point must be evaluated with in the context of the regulatory, environmental, economic and political realities of the times.

While the Proposed Water Supply Program has been designed to address the above considerations, it is clear that progressing to the Alternate "A" Water Supply Program allows greater satisfaction of the above considerations. Likewise, if a wintertime diversion can be secured; further progression to the Alternate "B" Water Supply Program provides an opportunity to satisfy these considerations to an even greater degree.

Apportionment of surface and ground water resources will vary between normal and critically dry years. While this apportionment differs in each of the three water supply programs described in this master plan, the following considerations will guide the operator in adjusting the water supply mix when dealing with a dry year scenario:

a) Greater reliance on groundwater during dry years.

b) Decreased use of surface water during dry years.

c) Reliance on wintertime diversions, either through the procurement of a new wintertime water right or restructuring of the Bureau diversion schedule, to help balance the supply/demand equation.

d) Use of ground and surface water reserves.

Finally, it is envisioned that final design of the system, subsequent to approval of the Sutter Pointe Specific Plan, will include considerable thought regarding how best to address these considerations to optimize the water supply system and to maximize the benefits for the future residents of the community. This effort was determined to be beyond the scope of this master plan.

5.11 SB 610 & SB 221

SB 610 (Water Supply Assessment)

A companion to this water master plan is a Water Supply Assessment (WSA) prepared in compliance with the requirements of SB 610 (Water Code, § 10910 et seq.). The WSA demonstrates that the proposed water supply is sufficient to meet the anticipated water demands of the project.

Compliance with the requirements of SB 610 requires the demonstration either of "existing" water supplies for a proposed project or a plan for how to obtain "anticipated" or "potential" supplies that can serve the project. In ascertaining whether a particular water supply qualifies as an "existing" supply, there are several threshold issues that must be considered.

This master plan has provided the necessary data to prepare the SB 610 Water Supply Assessment for this project. The threshold criteria that must be evaluated in the SB 610 are generally summarized as follows:

1. One must differentiate between water that is "wet" and "paper" water. It is clear that the water needed to serve the project exists and, in the case of the surface water supply, has historically been diverted and delivered to the project area as agricultural irrigation water. The groundwater required to serve the project has been adequately determined to be available in sustainable quantities. It is clear from a physical perspective the ground and surface waters needed to serve the project are "wet".
2. One must demonstrate the "firmness" of the water supply. That is, the reliability of the supply in normal water years, as well as in single and multiple dry years. It is clear the ground and surface water supplies for Sutter Pointe are adequate to serve the demands of the project in both normal and critically dry years (single and multiple years). Accordingly, from a physical perspective, the ground and surface waters needed to serve the project are "firm".

3. One must demonstrate the "legal" right to the water. In structuring SB 610, the Legislature seems to have reasonably concluded that acquiring the legal entitlement to a water supply is the hardest part of the process, while building conveyance and delivery infrastructure is relatively easy, so much so that its accomplishment can be safely assumed. It is clear that the legal right to both ground and surface waters exists vis-à-vis both the underlying groundwater rights and the shares of NCMWC stock held by the owners of land within the SPSP planning area.
4. One must differentiate between "existing" and "potential" water supplies. A determination of the existence of an "existing" water supply ("wet" water) can be made even though regulatory approvals are still required for the conveyance and delivery infrastructure. In the case of Sutter Pointe it is clear that the "legal" right to the water exists for both surface and ground water since there are no major discretionary approvals required to secure a reliable water supply for the project. Notwithstanding the need for future improvement of the existing Bennett Pumping Plant to meet M&I reliability standards, or the potential need to make minor modifications to the proposed Sankey Diversion Facility to deliver M&I water to Sutter Pointe, it is clear that the approvals needed for these conveyance and delivery infrastructure projects are relatively minor in nature by comparison to those required to gain land use entitlements for the SPSP.

With regard to the proposed winter diversion incorporated into Alternate "B" Water Supply Program, it is a common understanding that there is an abundance of un-appropriated wintertime water rights in the Sacramento River. While procurement of this additional water right will require a new water right permit from the State water Resources Control Board, one can only make a conclusion that this water is simply a "potential" supply within the framework of SB 610. The WSA can envision this future water supply as a potential water supply and fulfill the requirements of SB 610 for this water supply at this time should this water supply be successfully procured.

A similar wintertime water diversion program could be developed as a subset of Alternate "A" Water Supply Program. The data presented in this master plan indicates there may be adequate Project Water available under the existing Bureau Settlement Contract to meet a major portion of the wintertime surface water demands of the project.

Subject to the approval of the Bureau, restructuring of the diversion schedule for Project Water contained in the existing Bureau Settlement Contract could decrease the demands on this resource during the summertime by permitting wintertime diversions when Project Water is more plentiful and in less demand. Such a restructuring could result in many of the same benefits that are inherent with Alternate "B" Water Supply Program. This restructuring is perhaps less difficult to secure than a new wintertime water right and, therefore, more "reasonably likely to occur" within the context of the requirements of SB 610. Likewise, the WSA can envision this future supply as a potential water supply and fulfill the requirements of SB 610 for this water supply at this time should this restructuring be approved by the Bureau.

With regards to the surface water, it is clear that the NCMWC shareholder lands within the SPSP planning area have a legal right to the beneficial use to their prorata share of the existing surface waters held by NCMWC. After all, the NCMWC shareholder lands within the SPSP planning area are the real parties that benefit from the water rights held by NCMWC. While it may take some time to finalize an agreement between NCMWC and Sutter County, the development can progress using groundwater for several years (to nearly 52%± build out, if required) before surface water is actually needed.[52] Sufficient time exists to finalize an agreement with NCMWC since the underlying right to the water is not in question.

[52] This can be accomplished by constructing both well fields under all three water scenarios are constructed prior to the time when surface water becomes available.

SB 221 (Written Verification of Water Supply)

Prior to approval of final small-lot subdivision maps containing more than 500 lots, the local water purveyor must comply with the requirements of SB 221. The requirements of SB 221 require the local water purveyor to demonstrate the availability of water to serve the subdivision at issue before the final map is approved.

In the case of Sutter Pointe, this master plan lays out a "road map" of the steps that are required to develop the groundwater supply and one of the two herein identified water supplies – either the existing Bennett Pumping Plant or the proposed Sankey Diversion Facility. Once all the necessary approvals are secured for the selected surface water supply are secured, the local water purveyor can then comply with the requirements of SB 221. This will occur after the Sutter Pointe Specific Plan, and accompanying entitlements, are approved by Sutter County, in conjunction the discrete subdivision triggering the need for either ground or surface water.

6.0 Proposed Water System Improvements

The SPSP development will require an extensive network of water supply and distribution facilities, consisting of transmission pipelines, distribution pipelines, storage reservoirs, boosters pump stations, treatment facilities, and groundwater wells. It is envisioned that water will be diverted from the Sacramento River and delivered to the site through the facilities described in the previous sections. In addition to diverted surface water, a well field will be constructed to supply ground water to the community as previously described. The various elements of the proposed water supply system design are discussed in following sections.

6.1 On Site Improvements

In addition to the ground and surface water supply and treatment facilities previously described above, an on-site water transmission and distribution system will be required to serve the planning area. The water system has been laid out in a looping network following major street alignments. Future development will draw connections from these pipelines (see Appendix A, Exhibit 5). Dual Tanks will provide redundancy in design, will provide flexibility during routine maintenance activities to rotate each tank out of service, and will allow rotation of the tanks during low demand periods (winter time, for instance) to decrease the chances of the stored water supply becoming stagnant.

Depending on the final location of the water treatment facilities, this water system will consist of a series of interconnected water transmission and distribution pipelines (varying in size from 12” to 42” in diameter), plus water storage reservoirs and booster pump stations. The transmission and distribution pipelines will deliver treated water to storage reservoir sites strategically located throughout the community.

As is typical in the water industry, these above ground water storage reservoirs will provide for fire, peak hour equalization and emergency storage to adequately serve the community. A total of approximately 34± MG of storage will be required to serve full build out of the planning area. At each reservoir site, dual

water tanks will be constructed, each having a capacity of approximately 2.5± to 3± MG and combined storage totaling 5± - 6± MG. The use of dual tanks will increase the turnover of the stored water stored, facilitate ease of maintenance, and provide redundancy in the proposed system. Booster pump stations, each equipped with an emergency auxiliary electrical generator, will provide the required operational pressures of the water distribution system at each reservoir site.

6.2 Off Site Improvements

As described earlier, the off-site water facilities needed to serve this development consists of a raw water turnout, a raw water booster pump station, and a raw water transmission pipeline.[53] These facilities will be required to help support the development of the SPSP planning area subsequent to development of Phase 1+A.

Additionally, a reliable diversion facility will be required to deliver surface water to the project. It is envisioned that either the Bennett Pumping Plant will be improved to meet M&I reliability standards or the proposed NCMWC Sankey Diversion Facility will need to be constructed to accomplish this objective. As previously mentioned, the proposed Sankey Diversion Facility will be a state-of-the-art screened diversion facility that would meet M&I reliability standards. The Bennett Pumping Plant, however, will probably need significant upgrades to meet these standards.

The Bennett Pumping Plant, in addition to being an aged and unscreened agricultural diversion facility, draws from the relatively shallow Natomas Cross Canal. As mentioned above, during some water years the level of the Sacramento River falls below the flowline of the cross canal requiring the installation of a temporary dam at the mouth of the canal and pumping of water

[53] The County of Sutter would prefer pipeline and canal/ditch rights-of-way to be conveyed in fee for single purpose facilities (easements may be acceptable/desirable for multi-use corridors). The County, however, is willing to accept these rights-of-way as easements so long as the easement contains sufficient restrictive language on the allowable uses the underlying fee owner may exercise over these lands subsequent to installation of the pertinent facility.

from the river up into the canal to supply the Bennett Pumping Plant with sufficient water. It is envisioned that this practice will continue after upgrading the Bennett Pumping Plant to M&I standards.

In addition to the lack of fish screens, there are concerns that predation is occurring in the deep scour holes below the existing pump intakes where larger fish forage on smaller fish (especially juvenile Anadromous Salmonids and other endangered and threatened fish species). Additionally, due to the shallow nature of the Cross Canal, concerns have been raised about the practicality of installing fish screens and keeping adequate submergence over the pump bowls.

Reconstruction of the existing Bennett Pumping Plant will need to address these design challenges. It is envisioned that a sunken and screened intake structure could be constructed that would provide the required submergence for proper operation of the pump intakes. This intake structure would include a self-cleaning trash rack that would be designed to allow sufficient flow to the screened pumps while keeping trash, debris and predatory fish out of the pump forebay. Such an intake structure, along with redundant pumps, backup electrical power, and appropriate controls, would provide a modern and reliable diversion facility that would replace the existing Bennett Pumping Plant.

Regulatory approvals required for this facility will be required from various local, state and federal agencies, including, but not limited to Reclamation District No. 1000, Sacramento Area Flood Control Authority (SAFCA), U.S. Army Corps of Engineers (COE), California Department of Fish and Game (DFG), U.S. Natural Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (FWS). Fish screens would have to meet all the NMFS and DFG Fish Screening Criteria.

Notwithstanding the above discussion, as mentioned earlier in this report, the proposed upgrading of the Bennett Pumping Facility may not actually be necessary. In all likelihood, the proposed Sankey Diversion Facility will be operational by the time surface water diversions are necessary to meet the potable M&I water demands in the SPSP area. Nonetheless, on a programmatic

basis, such upgrading of the existing Bennett Pumping Plant has been included in the proposed system improvements for the project. [54]

6.3 Water System Design Methodology

As a part of the Sutter Pointe Specific Plan, new backbone water system facilities will need to be developed to meet the estimated demands for the proposed land uses. This report section focuses on the water distribution pipelines and the water storage requirements to serve the Plan Area.

The water distribution and storage facilities are laid out based on the backbone street plan proposed for the SPSP area. These facilities have been analyzed using a water system computer model (H2ONET®) to determine appropriate sizing of the system components.

6.4 Water Demands and Hydraulic Criteria

The water system modeling criteria is based on criteria established from best engineering practices and meeting State and Federal regulations. System demands based on land use were established using typical urban water demand factors for the Sacramento Region. The standards used were compared to existing Sutter County standards and were found to meet or exceed these standards. In order to be conservative the higher of these standards were used.

6.4.1 System Demands:

1. Fire flow is defined as the minimum design flow requirement that will provide sufficient water to control a major fire at a specific structure. The fire flow for areas (Low and Medium Density Residential) is 1,800 gpm and 2,500 GPM for High Density Residential areas. Commercial

[54] The total cost of upgrading of the Bennett Pumping Plant is estimated to be approximately $39.2 million and would be shared with NCMWC, with the M&I customers contributing approximately 19%± - 22%± of the total cost to upgrade the facility depending upon which water supply program is actually implemented (M&I demand expressed as a percentage of the total pumping requirements of this facility (244± cfs)). NCMWC agricultural shareholders would be responsible for the remaining costs of upgrade. The equivalent costs associated with upgrading of the existing Bennett Pumping Plant are presumed representative of the M&I share of the costs of the proposed Sankey Diversion Facility.

Districts have a minimum fire flow of 3,000 GPM, with schools requiring a fire flow of 4,000 GPM.

2. Average day flow (ADF) was estimated based on the type of land use. The maximum daily flow (MDF) was determined by multiplying the average daily flow (ADF) by a factor of 1.85. Peak Hour was found by multiplying MDF by 1.91.

Tables 4-13, in Section 5, provide a summary of the design demands used for this study.

6.4.2 Distribution System Criteria:

Sutter County design criteria for water systems will be used for design of the system. Generally, for the sake of conservatism, the intent of this master plan is not to push the "limit" of the County's design criteria. Instead, a concerted effort has been made in this master plan to leave a comfortable margin between the backbone water system performance characteristics and the County's minimum design criteria. This will allow for extension of the system to the farthest corners of the development while still meeting the County's minimum criteria.

The proposed system provides the backbone elements of the water system. By providing greater residual pressures and minimum pressures the additional head loss through the future smaller delivery pipes will not reduce the pressures below the minimum residual pressure requirements in the outer limits of the distribution system. This is a more conservative approach to the sizing of the backbone pipelines, resulting in slightly larger backbone pipelines and assuring that adequate pressures will be achievable at full build out of the community.

6.5 Water Storage Requirements:

Water storage is required to supply fire flow, operational water and emergency storage in the system. Storage requirements will consist of the following components:

1. Operational = ¼ Maximum Day Demand
2. Fire = Highest fire flow demand in service area multiplied by the required duration assuming two simultaneous fires (one in a commercial area at 4,000 gpm and one in a residential area at 2,500 gpm).
3. Emergency = Average Day Demand

Water storage requirement for the SPSP area calculated below:

Operational	= ¼ x 28,901 GPM x 1,440 minutes/day	= 10.40 MG
Fire #1	= 4,000 GPM x 4 hr.	= 0.96 MG
Fire #2	= 2,500 GPM x 3 hr.	= 0.45 MG
Emergency	= 15,622 GPM x 1,440 minutes/day	= 22.50 MG
	Total Storage Requirement	= 34.31 MG

For the Specific Plan Area the total water storage requirement is approximately 34.3± MG.

6.6 Water Distribution System Model

The proposed water distribution system was modeled using H2ONET® (version 6.0) to determine the minimum pipe sizes necessary to meet the criteria as stated above.

The MDF was applied at nodes throughout the entire grid based on the proposed land use plan. Appendix A, Exhibit 5 shows the H2ONET® model (Proposed Water System Composite). At the same time, the potential fire flow was calculated at each node, while maintaining minimum residual design pressures. The model utilizes the Hazen-Williams pipe flow equations. All pipes were assigned a Hazen-Williams friction factor (C-factor) of 130. It is assumed that the water treatment plant will supply water to the system at a maximum pressure of 70 PSI. Detailed model input and results are presented in Appendix C of this report.

The required storage was divided between several water storage tanks (with booster stations) located throughout the site. Proposed locations of storage tanks can be found in Appendix A, Exhibit 1. The tanks were modeled as approximately 6± million gallons each. However, in order to create more turnover in the system and for purposes of redundancy, two 3± MG tanks at each storage location can be used. In addition, the tanks located at the far end of the system may have additional volume, as they will see the lowest pressures in the system and operate more frequently.

The system was sized to deliver maximum day demand with the tanks off-line. Tanks were brought on-line during peak hour demands and fire flow analysis. The main line pipes were sized for a residual pressure of greater than 45 PSI during a fire flow analysis. This will allow adequate pressures in the smaller pipes within the streets (not shown at this time) during a fire flow scenario. The overall proposed layout of the pipe network is also shown in Appendix A, Exhibit 1.

6.7 Water System Modeling Scenarios

As discussed above, the location of the ground and surface water treatment plants have yet to be determined: eastern or western well fields (or both), centralized or decentralized groundwater treatment facilities, western or eastern surface water treatment plant locations. To simulate these various combinations and permutations, three "point of water supply" scenarios were developed to model the proposed on-site water transmission and distribution system.

The scenarios are summarized as follows:

1. Proposed System Scenario

   This scenario assumes the existence of both the eastern and western well fields and the existence of the surface water treatment plant adjacent to the western groundwater treatment plant. This scenario is consistent with the Proposed Water Supply Program and Alternate "A" Revised Water Supply Program. In the summer,

when only surface water is available, all demands will be met from the western "point of water supply" via the surface water treatment plant. In the winter, when surface water isn't available, all demands will be met from both the western and eastern "points of water supply" via the groundwater treatment plants, more or less in equal amounts. The on-site transmission system was modeled under both conditions to be sure the system could perform adequately during the different periods of the year.

2. Alternative System Scenario

This scenario consists of two sub-scenarios:

A. Western Well Field and Surface Water Treatment Plant

This scenario assumes the existence of both the western well field, and the surface water treatment plant adjacent to the western groundwater treatment plant. This scenario is consistent with the first permutation of the Alternate "B" Winter Diversion Water Supply Program. All demands will be met from the western "point of water supply" via the western groundwater treatment plant, and from the western surface water treatment plant location.

B. Eastern Well Field and Surface Water Treatment Plant

This scenario assumes the existence of both the western well field, and the surface water treatment plant adjacent to the eastern groundwater treatment plant. This scenario is consistent with the second permutation of the Alternate "B" Winter Diversion Water Supply Program. All demands will be met from the eastern "point of water supply" via the eastern groundwater treatment plants, and from the eastern surface water treatment plant location.

6.8 Model Results

Several scenarios were run using the model to size the facilities and analyze the proposed systems. The following scenarios were run:

1. Maximum Day demands without storage tanks.
2. Peak Day Demand with storage tanks.
3. Max Day plus Fire flow with storage tanks.
4. Additional Max Day plus fire flow scenarios were run with various tanks offline and with two fires occurring at the same time.

Results from each of these runs showed that the proposed layouts meet the criteria described above. The model results for each of the first three scenarios are provided in the attachments to this report. Additional scenarios were run to confirm the adequacy of the layout; however results are not included in this report.

The lowest residual pressure found in the system during a fire flow simulation was over 45psi. This occurs in the northeast corner of the system. Currently there is a storage tank planned near this location. The tanks are currently set to output between 48 and 60psi. The pressures were set to allow the tanks to provide water during the fire flow and peak hour scenarios, but not during a max day scenario. This pressure setting could be increased if higher residual pressures are desired. Results for each of the modeling scenarios can be found in the appendix of this report.

The Sutter Pointe Specific Plan water distribution system and storage facilities were sized using criteria based on industry standards, which meet or exceed Sutter County standards. The system was then analyzed using an H2ONET® water model. The model found that the proposed system layouts under each scenario described, would meet the current standards and criteria laid out in this report. Additional refinements to the proposed distribution system layout and storage areas will take place during the design phase of the project in order to further optimize the system.

7.0 Wastewater Recycling

It is possible that reclaimed wastewater may be available within the planning area at some point in the future. Accordingly, the estimated M&I demands discussed above could be reduced to some degree over time. While the likelihood of reclamation becoming a reality within the planning area is thought to be small at this time, it is appropriate to consider what impacts reclamation could have on the projected water demands within the planning area.

The land use plan for the SPSP indicates several large open space and park areas will likely be developed within the planning area. It is estimated that approximately 823.3± acres of large open space and park areas could be developed during build out of the planning area and approximately 414.9 ± acres of detention basins.

Based on an average of 4.08 acre-feet per acre per year irrigation demand, the annual demands for the planning area could be reduced up to 5,100± AFY from those shown herein, depending on the area and number of detention basins that are actually being used for recycling. Conversion of these areas from potable to reclaimed water supplies could have a direct and significant impact on the final configuration of the community water supply program. A reduced potable water demand in the magnitude of 5,100 ± AFY could lower the total demands, under normal year conditions, by approximately one-fifth (20%±). The corresponding reduction in demand for potable water could be used to either lessen the amount of groundwater pumping and/or decrease the demand for surface water deliveries.

Certainly, the availability of wastewater flows, in significant quantities, is required to achieve a meaningful reclamation program. Accordingly, the integration of a wastewater reclamation program into the water supply program for the SPSP area could only occur after a significant level of development has been realized. Furthermore, detailed studies on a wastewater reclamation program for the SPSP area will be required before a final decision on the engineering and

economic feasibility can be made. Conversion of these areas will have a direct, although less significant, impact on the average, maximum and peak hour water demands of the community since irrigation of large open space and park areas typically happens at off-peak times.

It is recommended that these park and open space areas be plumbed with "purple" pipe but connected initially to the potable water system. If a reclaimed wastewater system ever becomes available within the planning area overtime, then the irrigation service points for each of these parks and open spaces could be converted over to the reclaimed wastewater system and irrigation of these areas with reclaimed wastewater could occur without significant trouble. All irrigation and reclaimed wastewater system facilities will be designed in accordance with the Department of Public Health standards.

8.0 Water Service Timing

A groundwater program will be relatively straightforward to implement. Groundwater studies have been performed to confirm the adequacy of the groundwater supply and quality for M&I use. Additionally, land use and environmental entitlements and permits will need to be obtained, along with the design and construction of well fields and treatment plants. It is estimated that these efforts will take 2± - 3± years to complete. In order to provide water service in time to serve the initial phase of development within the planning area, it is necessary that these efforts be initiated in parallel with land use entitlement processing of the SPSP.

Furthermore, the development of the surface water program is anticipated to take several years, perhaps 5± - 10± years in total duration. Assuming the existence of a robust real estate market at the time the SPSP is approved and permitted, it would be reasonable to anticipate that the build out of the initial phase of the SPSP area, which can be served with ground water, would occur in approximately 7± - 8± years for the Proposed, Alternate “B”, and Alternate “A” Water Supply Programs.

Presuming the SPSP is approved and permitted within the next couple of years, the maximum capacity of the groundwater program could theoretically be reached by approximately 2017±. Accordingly, in order to continue uninterrupted development of the planning area before the capacity of the groundwater system is reached, work needs to start in the very near future in order that the surface water system become operational in time to meet the growing demands of the community. This time frame can be significantly extended for all three water supply scenarios described in this master plan if both well fields are constructed prior to the time when surface water is actually available.

9.0 Operation & Maintenance

It is the intent of Sutter County to own, operate and maintain the public water system under the authority of a dependent or independent special district (a County Service Area, Community Services District or some other County agency). It is also the intent of the County to enter into an agreement with NCMWC to act as the M&I wholesale distributor of surface water at cost. The County would then deliver the water at cost (plus processing and delivery costs) to the end users. It is also the intent of the County to develop the organizational structure, management and technical staff, rates, fees, plant and equipment to manage the water service function.

10.0 NCMWC Agricultural Irrigation

Currently, NCMWC operates and maintains an existing irrigation system for conveying irrigation waters to and through the Sutter Pointe Specific Plan (SPSP) area. The facilities consist of canals, laterals, underground pipes, turnouts, check gates, and pump stations. It is the intent of the SPSP to maintain the operation of this system during the development of the project.

East of State Route 99, the NCMWC owns and operates the "Northern Main" Irrigation Canal that conveys irrigation waters from north to south through the project area. This is a major feature of the NCMWC system. This ditch feeds laterals to the east and west through turnouts, check gates, and/or pumps. The shape of the ditch and laterals varies widely throughout the project area. Since the existing flow must be maintained through the project area, the existing high line ditch will be replaced with a new earthen lined high line canal located along a relocated alignment compatible with the 2008 Land Use Plan.

For the most part, the existing laterals within the SPSP area do not serve lands outside of the project area. In those cases where a lateral serves lands outside of the project area, the lateral will be relocated as needed to accommodate development and continue to serve the irrigation needs. Laterals that serve only areas within the SPSP will be abandoned over time as the development builds out.

For conceptual design purposes the new high line canal has been sized to convey the maximum flow capacity of the Northern Pumping Plant, with a design capacity of 244± cfs. In addition, all proposed interim and permanent laterals have been sized to convey this flow rate. The proposed canal would have a trapezoidal cross section with a bottom width of 10 feet, a maximum water depth of 6 feet, and 1 foot of freeboard. The side slopes of the proposed canal are designed at 2:1 or flatter. The proposed longitudinal slope of this new canal is dictated by the existing fall across the project area (approximately 0.000375 feet/feet as determined from elevations ranging from 21± feet at the northern

boundary of the plan area to 15± feet at the southern boundary (approximately 6'± of fall) across a distance of 16,000± feet). The proposed canal has been designed to include a 15' foot access road on both sides of the canal and an overall right-of-way width of approximately 70 feet or wider, depending on the final side slope used.

While the Bureau of Reclamation Settlement Contract does not set monthly limits on diversions from any particular diversion facility, it is important that the monthly M&I diversions not exceed the historical schedule to the shareholder lands within the SPSP area. Nearly all of the shareholder lands within the SPSP area are currently served by the Northern Main Channel, which is principally feed from the Bennett Pumping Plant. Since the monthly M&I demands for these lands are less than the corresponding monthly agricultural irrigation rate for the same lands, the monthly water deliveries contained in this report should not conflict with the ability of NCMWC to deliver water to shareholder lands outside of the SPSP area under nearly all, if not all, cases. Should a conflict in delivery schedules arise, the system operator could adjust the mix of ground water pumping and surface water diversions to accommodate the irrigation needs of the neighboring farmers.

Where the new alignment of the proposed irrigation canal conflicts with proposed roadways and/or drainage ditches, inverted siphons will be constructed to convey the irrigation flows underneath the conflicting facility. These siphons will consist of a headwall and drop structure at both ends with a reinforced concrete box culvert in between, estimated to be 8'± x 10'± in size.

Where the proposed laterals connect to the new canal, new turnouts and check gates will be installed. Also, existing pumps will be relocated during the four phases of development to serve interim and permanent laterals and canals.

It may be possible that the irrigation of major parks and open spaces could be served directly from the "Northern Main" Irrigation Canal, thereby saving the cost of M&I treatment of these waters. Challenges to be addressed in serving these

areas with raw water include the absence of year around availability, diversion, filtration, pressurization, and conveyance.

Exhibit 10 and Exhibits 11-1 thru 11-4 (in Appendix A) show the extent of the existing system within the project area, the proposed system after full development, and the incremental changes in the system on a phased basis throughout the development of the SPSP area.

Issues to be addressed during the design of the relocated irrigation facilities include: (1) control of seepage from the elevated irrigation canals and laterals, (2) stability and erosion potential of 2:1 side slopes (they may need to be flatter), (3) the need for fencing, (4) potential for silt buildup in inverted siphons, (5) the use of bridges in lieu of inverted siphons at road crossings, (6) potential undergrounding of the canal and laterals, (7) the compatibility of the final alignment of the canal and laterals with surrounding land uses, and (8) other attractive nuisance and public safety concerns associate with open irrigation channels in suburban settings.

APPENDICIES

Appendix A. Exhibits

Exhibit 1 Backbone Water Plan

Exhibit 2 Off-site Water Plan

Exhibit 3 NCMWC Non-Shareholder Service Area

Exhibit 4 Conceptual Phasing Plan

Exhibit 5 H2ONET® Model (Proposed Water System Composite)

Exhibit 6 NCMWC Corporate Boundary Map

Exhibit 7 NCMWC Facilities Map

Exhibit 8 Natomas Basin and Natomas Central Mutual Water Company Service Area

Exhibit 9 Typical Ground Water Treatment Plant Layout

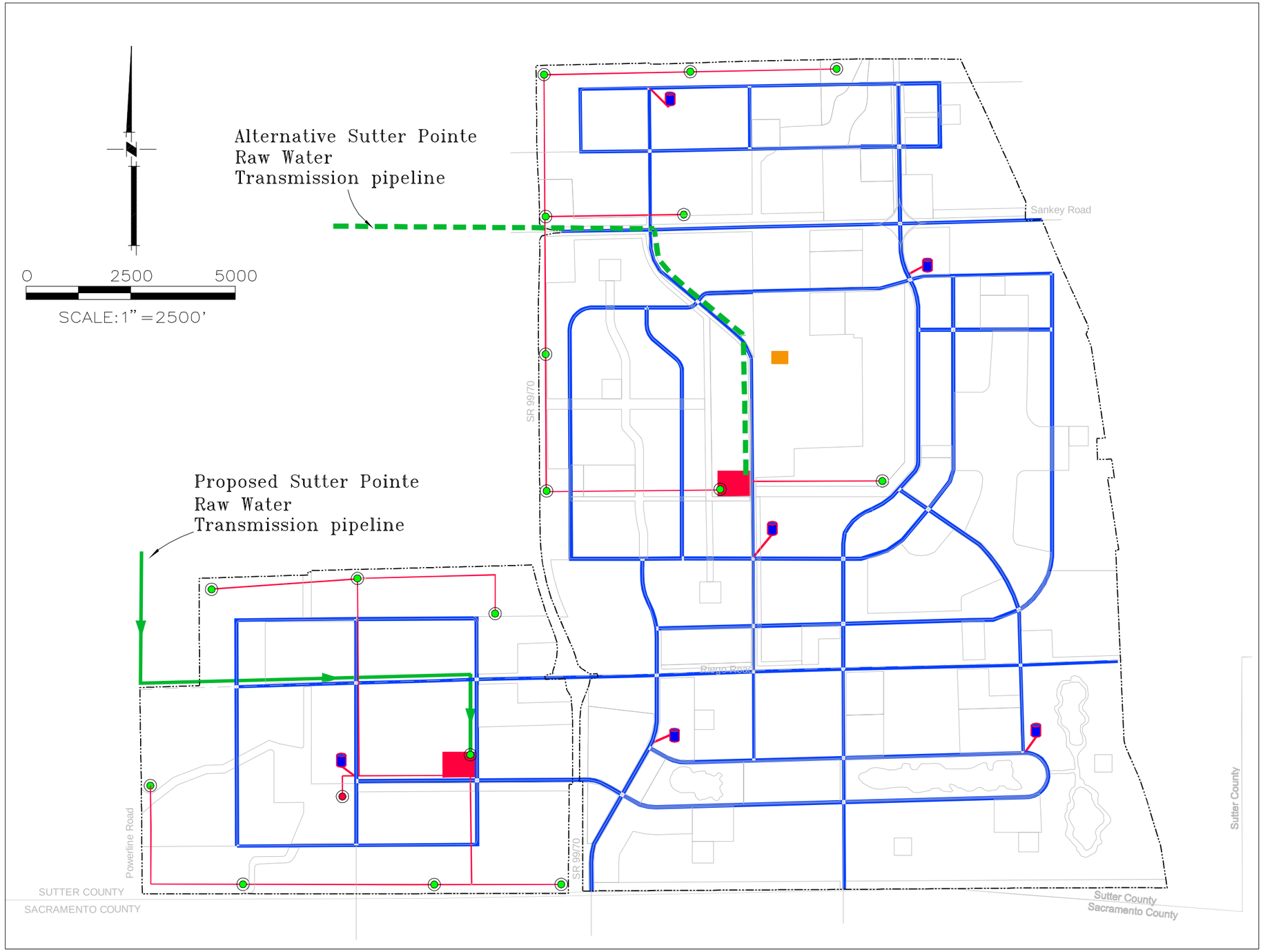
Exhibit 10 NCMWC Irrigation Canal Crossings

Exhibit 11-1 NCMWC Irrigation Canal Improvements – Phase 1

Exhibit 11-2 NCMWC Irrigation Canal Improvements – Phase 2

Exhibit 11-3 NCMWC Irrigation Canal Improvements – Phase 3

Exhibit 11-4 NCMWC Irrigation Canal Improvements – Phase 4



L E G E N D

- Raw Water Line
- Alternate Raw Water Line
- Potable Water Line
- Well Line
- Existing Well
- Holt of California
- Proposed Groundwater Well
- 6-mg Storage Tank
- Water Treatment Plant
- Sutter Pointe Specific Plan Boundary

11-14-2008 13:16:12 mmudd L:\Sacramento\79001\001\Exhibits\Master Plan Exhibits\Water\Onsite_Backbone_WaterPlan_11-14-08.dwg
[1] L:\Sacramento\79001\001\Exhibits\Areas-Land Use Plan_April2007(with roads).dwg

SUTTER POINTE

MEASURE "M" GROUP

Exhibit 1

Backbone Water Plan

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS

November 14, 2008

NATOMAS CROSSING CANAL

Proposed Raw Water Diversion Facility

Proposed Highline Ditch Diversion (NCMWC)

Proposed Sutter Pointe Raw Water Turnout

Proposed Sutter Pointe Raw Water Booster Pump Station

Proposed Highline Ditch (NCMWC)

SANKEY ROAD

SANKEY ROAD

HIGHWAY 99/ 70

Proposed Ground Water Treatment Plant (Ultimate Buildout)

NATOMAS ROAD

RIEGO ROAD

POWERLINE ROAD

Proposed Ground & Surface Water Treatment Plant (Ultimate Buildout)

SUTTER COUNTY

SACRAMENTO COUNTY

0' 600' 1200' 2400'

SCALE:1" =1200'

LEGEND

- PROPOSED SUTTER POINTE RAW WATER TRANSMISSION PIPELINE
- PROPOSED SUTTER POINTE RAW WATER BOOSTER PUMP STATION
- PROPOSED HIGHLINE DITCH DIVERSION (NCMWC)
- PROPOSED RAW WATER DIVERSION FACILITY
- PROPOSED RAW WATER TURNOUT
- PROPOSED WATER TREATMENT PLANT
- SUTTER POINTE SPECIFIC PLAN BOUNDARY
- ALTERNATE SPSP RAW WATER TRANSMISSION
- ALTERNATE RAW WATER TURNOUT
- ALTERNATE SANKEY DIVERSION
- ALTERNATE RAW WATER BOOSTER PUMP STATION
- ALTERNATE SANKEY RAW WATER TRANSMISSION

11-14-2008 13:18:53 mmudd L:\Sacramento\7900\00\Master Plans\Infrastructure Booklet\13-Offsite Water Improvements.dwg
[1] L:\Sacramento\7900\00\Master Plans\South\Sheridge\Exhibits\Sanitary Sewer\Vicinity Map-7-11-07.dwg [3] L:\Sacramento\7900\00\Exhibits\Master Plan Exhibits\Water Plan Exhibit.dwg [2] L:\Sacramento\7900\00\Master Plans\Infrastructure Booklet\7900 Base.dwg

Exhibit 2

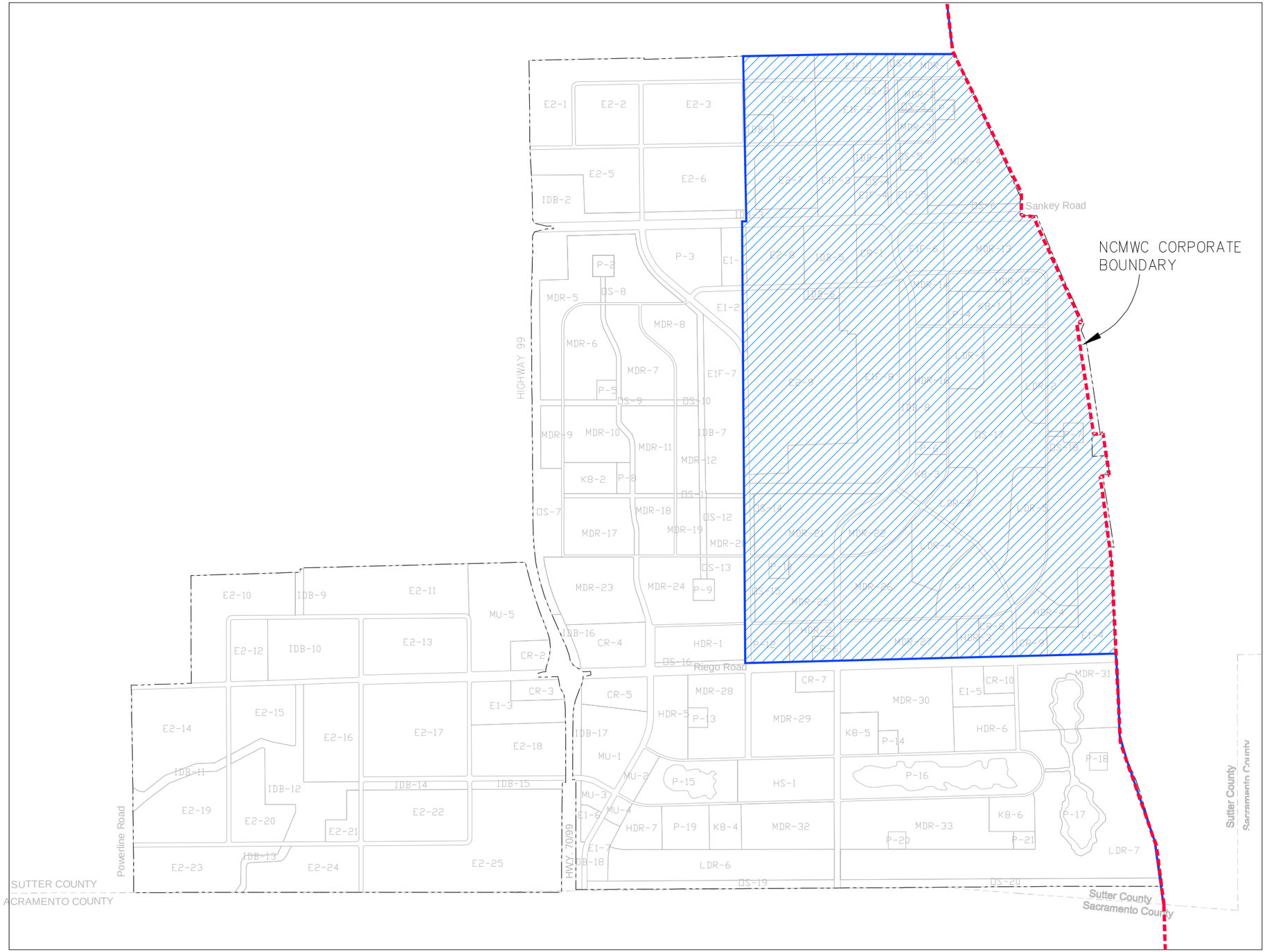
SUTTER POINTE

MEASURE "M" GROUP

Off-Site Water Improvements

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1771 Tribute Road, Suite E, Sacramento, CA 95815 (916) 929-3002

November 13, 2008



L E G E N D

- NCMWC Corporate Boundary
- NCMWC Shareholder Area Boundary
- Non NCMWC Shareholder Area
- Sutter Pointe Specific Plan Boundary

11-14-2008 14:34:44 mmudd [1] L:\Sacramento\79001\00\Exhibits\MS-Land Use Plan_Feb08B.dwg
L:\Sacramento\79001\00\Exhibits\Master Plan Exhibits\Master Non - NCMWC_Service_Addm_08.dwg

SUTTER POINTE

MEASURE "M" GROUP

Exhibit 3

NCMWC Service Area

0 2500' 5000'

MacKAY & SOMPS ENGINEERS PLANNERS SURVEYORS

November 14, 2008

Land Use Summary Phase 1-4
Residential Mixed Use Community

LDR ~ LOW DENSITY RESIDENTIAL (ac)

Phase	1	2	3	4	Total
LDR-1	-	37.7	-	-	37.7
LDR-2	-	39.6	-	-	39.6
LDR-3	22.7	-	-	-	22.7
LDR-4	38.2	-	-	-	38.2
LDR-5	60.1	-	-	-	60.1
LDR-6	-	15.6	-	75.6	91.0
LDR-7	-	343.6	-	-	343.6
Subtotal	121.0	315.3	-	75.6	512.0

MDR ~ MEDIUM RESIDENTIAL (ac)

Phase	1	2	3	4	Total
MDR-1	-	-	-	20.0	20.0
MDR-2	-	-	-	13.8	13.8
MDR-3	-	-	-	13.2	13.2
MDR-4	-	-	109.3	-	109.3
MDR-5	-	-	103.9	-	103.9
MDR-6	-	-	91.7	-	91.7
MDR-7	-	-	63.7	-	63.7
MDR-8	-	-	43.7	-	43.7
MDR-9	-	17.1	-	-	17.1
MDR-10	-	44.0	-	-	44.0
MDR-11	-	49.3	-	-	49.3
MDR-12	-	35.6	-	-	35.6
MDR-13	65.0	119.8	17.0	65.6	297.5
MDR14	-	-	21.4	-	21.4
MDR-15	-	-	39.1	-	39.1
MDR-16	-	49.3	-	-	49.3
MDR-17	51.1	-	-	-	51.1
MDR-18	27.8	-	-	-	27.8
MDR-19	17.4	-	-	-	17.4
MDR-20	28.1	-	-	-	28.1
MDR-21	73.3	-	-	-	73.3
MDR-22	57.5	-	-	-	57.5
MDR-23	73.7	-	-	-	73.7
MDR-24	53.2	-	-	-	53.2
MDR-25	65.0	-	-	-	65.0
MDR-26	76.4	-	-	-	76.4
MDR-27	68.0	-	-	-	68.0
MDR-28	57.8	-	-	-	57.8
MDR-29	65.0	-	-	-	65.0
MDR-30	57.8	-	-	-	57.8
MDR-31	55.2	-	-	-	55.2
MDR-32	68.1	-	-	-	68.1
MDR-33	68.1	-	-	-	68.1
Subtotal	874.9	491.8	331.3	392.3	1990.3

HDR ~ HIGH DENSITY RESIDENTIAL (ac)

Phase	1	2	3	4	Total
HDR-1	41.4	-	-	-	41.4
HDR-2	16.5	-	-	-	16.5
HDR-3	11.1	-	-	-	11.1
HDR-4	-	-	22.0	-	22.0
HDR-5	28.4	14.9	-	-	27.8
HDR-6	-	-	35.8	-	35.8
HDR-7	-	-	-	34.0	34.0
Subtotal	91.4	14.9	57.9	34.0	197.7

MU ~ MIXED USE (ac)

Phase	1	2	3	4	Total
MU-1	18.5	37.3	-	-	55.8
MU-2	-	11.8	-	-	11.8
MU-5	-	8.2	-	-	8.2
MU-6	-	6.0	-	-	6.0
Subtotal	18.5	63.3	-	-	81.8

CR ~ COMMERCIAL RETAIL (ac)

Phase	1	2	3	4	Total
CR-1	-	-	-	39.6	39.6
CR-2	-	-	-	-	-
CR-3	-	-	-	-	-
CR-4	45.8	-	-	-	45.8
CR-5	39.6	-	-	-	39.6
CR-6	7.2	-	-	-	7.2
CR-7	13.5	-	-	-	13.5
CR-8	17.5	-	-	-	17.5
CR-9	-	-	18.8	-	18.8
CR-10	-	-	19.8	-	19.8
Subtotal	131.9	-	21.3	39.6	192.2

P ~ PARKS (ac)

Phase	1	2	3	4	Total
P-1	-	-	-	5.5	5.5
P-2	-	-	6.5	-	6.5
P-3	-	-	60.0	-	60.0
P-4	-	-	5.0	-	5.0
P-5	-	-	5.0	-	5.0
P-6	5.0	-	-	-	5.0
P-7	-	5.0	-	-	5.0
P-8	5.0	-	-	-	5.0
P-9	6.0	-	-	-	6.0
P-10	5.5	-	-	-	5.5
P-11	40.8	-	-	-	40.8
P-12	19.8	-	-	-	19.8
P-13	5.0	-	-	-	5.0
P-14	6.0	-	-	-	6.0
P-15	-	-	-	51.6	51.6
P-16	-	107.9	-	-	107.9
P-17	-	68.0	-	-	68.0
P-18	-	4.0	-	-	4.0
P-19	-	-	-	27.1	27.1
P-20	-	4.0	-	-	4.0
P-21	-	8.0	-	-	8.0
Subtotal	99.4	191.9	97.0	83.7	491.9

OS ~ OPEN SPACE (ac)

Phase	1	2	3	4	Total
OS-1	-	-	-	1.8	1.8
OS-2	-	-	-	3.3	3.3
OS-3	-	-	-	3.3	3.3
OS-4	-	-	-	2.4	2.4
OS-5	-	-	-	1.8	1.8
OS-6	-	-	-	10.0	10.0
OS-7	39.5	8.8	43.9	-	92.3
OS-8	-	-	1.5	-	1.5
OS-9	9.5	14.5	5.5	-	29.0
OS-10	-	1.7	-	-	1.7
OS-11	1.3	-	-	-	1.3
OS-12	4.7	-	-	-	4.7
OS-13	1.6	-	-	-	1.6
OS-14	3.3	-	-	-	3.3
OS-15	3.8	-	-	-	3.8
OS-16	4.8	-	-	-	4.8
OS-17	47.3	119.1	-	-	166.4
OS-18	-	1.8	-	-	1.8
OS-19	-	4.3	-	22.8	27.1
OS-20	-	34.0	-	-	34.0
Subtotal	115.8	183.3	51.4	44.1	394.6

HS/K-8 ~ SCHOOLS (ac)

Phase	1	2	3	4	Total
High School-1	52.8	-	-	-	52.8
K-8 School-1	-	-	21.0	-	21.0
K-8 School-2	21.2	-	-	-	21.2
K-8 School-3	19.3	-	-	-	19.3
K-8 School-4	-	-	-	18.7	18.7
K-8 School-5	20.8	-	-	-	20.8
K-8 School-6	-	20.8	-	-	20.8
Subtotal	114.0	20.8	21.0	18.7	174.5

E1~EMPLOYMENT 1(ac)

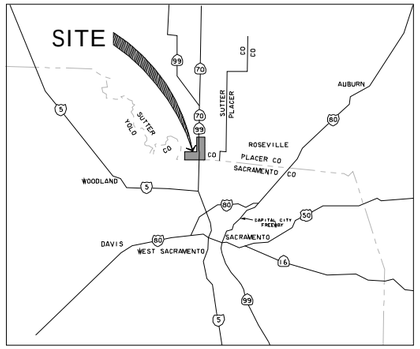
Phase	1	2	3	4	Total
E1-4	-	-	68.8	-	68.8
E1-6	-	-	31.4	-	31.4
E1-8	-	-	-	6.0	6.0
E1-7	-	-	-	16.8	16.8
Subtotal	-	-	72.8	22.8	94.9

E1F ~ INTERIM FLOOD ZONE (ac)

Phase	1	2	3	4	Total
E1F-4	-	-	-	16.8	16.8
E1F-8	-	-	-	26.8	26.8
Subtotal	-	-	-	43.7	43.7

IDB~ INDUSTRIAL DETENTION BASIN

Phase	1	2	3	4	Total
IDB-16	6.2	-	-	-	6.2
IDB-17	3.4	6.3	-	-	9.7
IDB-18	-	1.6	6.3	7.9	7.9
Subtotal	9.6	6.9	-	6.3	22.9



VICINITY MAP
NTS

Legend

RESIDENTIAL

- LDR Low Density Residential
- MDR Medium Density Residential
- HDR High Density Residential

EMPLOYMENT

- E1 Employment 1
- E1F E1 Interim Flood Zone
- E2 Employment 2
- CR Commercial Retail
- IDB Industrial Drainage Basin
- MU Mixed Use

COMMUNITY FACILITIES

- POS Parks & Open Space
- NP Neighborhood Parks
- K-8 K-8 School
- HS High School
- Ⓣ Transit Center
- Ⓒ Civic Center
- Ⓕ Fire Station
- Pedestrain Enhanced Intersections
- Phase 1 / Phase A
- Phase 2 / Phase B
- Phase 3 / Phase C
- Phase 4 / Phase D

Land Use Summary Phase A-D
Industrial

E1 ~ EMPLOYMENT 1 (ac)

Phase	A	B	C	D	Total
E1-1	-	-	18.8	-	18.8
E1-2	-	21.0	-	-	21.0
E1-3	36.4	-	-	-	36.4
Subtotal	36.4	21.0	18.8	-	76.3

E2 ~ EMPLOYMENT 2 (ac)

Phase	A	B	C	D	Total
E2-1	-	-	-	118.8	118.8
E2-2	-	-	-	80.1	80.1
E2-3	-	-	-	76.1	76.1
E2-4	-	-	-	44.7	44.7
E2-5	-	-	-	84.8	84.8
E2-6	-	-	-	85.1	85.1
E2-7	-	-	-	85.1	85.1
E2-8	-	-	43.4	-	43.4
E2-9	-	219.4	-	-	219.4
E2-10	-	-	88.7	-	88.7
E2-11	23.3	81.0	-	-	104.3
E2-12	-	-	38.8	-	38.8
E2-13	25.8	51.0	-	-	76.1
E2-14	-	-	104.1	-	104.1
E2-15	-	-	48.8	-	48.8
E2-16	-	71.1	-	-	71.1
E2-17	78.0	47.8	-	-	125.8
E2-18	54.0	-	-	-	54.0
E2-19	-	-	72.9	-	72.9
E2-20	-	-	51.4	-	51.4
E2-21	-	14.3	-	-	14.3
E2-22	35.0	34.8	-	-	69.8
E2-23	-	-	67.9	-	67.9
E2-24	-	88.8	-	-	88.8
E2-25	109.4	31.8	-	-	187.2
Subtotal	325.3	611.4	626.2	492.6	1955.5

MU ~ MIXED USE (ac)

Phase	A	B	C	D	Total
MU-4	84.3	-	-	-	84.3
Subtotal	84.3	-	-	-	84.3

E1F ~ INTERIM FLOOD ZONE (ac)

Phase	A	B	C	D	Total
E1F-1	-	-	-	22.8	22.8
E1F-2	-	-	-	56.3	56.3
E1F-3	-	-	-	34.8	34.8
E1F-4	-	-	-	16.8	16.8
E1F-7	-	79.8	-	-	79.8
E1F-8	-	56.4	97.3	-	153.7
Subtotal	-	136.3	97.3	130.6	364.1

IDB ~ INDUSTRIAL DRAINAGE BASIN (ac)

Phase	A	B	C	D	Total
IDB-1	-	-	-	10.2	10.2
IDB-2	-	-	-	37.8	37.8
IDB-3	-	-	-	37.1	37.1
IDB-4	-	-	-	14.0	14.0
IDB-5	-	-	38.8	-	38.8
IDB-6	-	4.8	-	-	4.8
IDB-7	-	18.1	-	-	18.1
IDB-8	-	28.3	21.5	-	49.8
IDB-9	-	-	4.8	-	4.8
IDB-10	-	42.8	28.3	-	71.2
IDB-11	-	-	12.4	-	12.4
IDB-12	-	37.5	36.4	-	73.8
IDB-13	-	7.2	-	-	7.2
IDB-14	5.7	5.7	-	-	11.4
IDB-15	10.0	-	-	-	10.0
Subtotal	15.7	141.8	149.0	99.2	391.8

CR~COMMERCIAL RETAIL(ac)

Phase	A	B	C	D	Total
CR-3	14.7	-	-	-	14.7
CR-9	13.3	-	-	-	13.3
Subtotal	28.0	-	-	-	28.0

SUMMARY

Residential	
Land Use	Acres
LDR	512.8
MDR	1,990.3
HDR	197.7
Residential Roads	364.2
Subtotal Residential	2,865.0
Measure M	3,000
Employment	
Land Use	Acres
Employment 1	172.8
EIF Interim Flood Zone	407.8
Employment 2	1,955.5
Commercial Retail	178.3
Industrial Drainage Basins	414.5
Mixed Use	184.1
Employment Roads	309.8
Subtotal Employment	3,891.3
Measure M	3,400
Community Facilities	
Land Use	Acres
Parks	491.9
Open Space	394.6
K-8 Schools	121.7
High School	52.8
Subtotal Community	1061.3
Measure M	1,000

Grand Total = 7,827.6
Measure M Grand Total = 7,500

SPECIFIC PLAN COMMUNITY ~RESIDENTIAL, MIXED USE ,COMMERCIAL RETAIL, EMPLOYMENT 1, SCHOOLS, NP, POS, EIF & ROADS

PHASE	LDR		MDR		HDR		MIXED USE		LDR + MDR + HDR + MU				E1	CR	E1+CR		P	OS	SCHOOLS	DETENTION		ROADS	PHASE 1-4
	ACRES	UNITS	ACRES	UNITS	ACRES	UNITS	ACRES	UNITS	TOTAL ACRES	% ACRES	TOTAL UNITS	% UNITS	ACRES	ACRES	TOTAL ACRES	% ACRES	ACRES	ACRES	ACRES	INTERIM(E1F) Acres	PERMANENT (CDS)Acres	ACRES	TOTAL ACRES
1	121.0	348	874.5	6,388	91.4	1,269	18.8	69	1,105.7	46.4	7,483	49.4	-	101.8	101.8	41.7	88.4	116.8	114.8	-	8.8	188.3	1,703.7
2	315.3	881	491.8	3,591	14.9	285	63.3	231	885.2	33.4	4,427	29.8	-	-	-	-	191.9	183.3	20.8	-	8.8	88.8	1,398.7
3	-	-	331.3	2,541	57.9	1,066	-	-	389.1	14.2	3,606	18.0	72.8	21.8	94.1	38.5	97.0	51.4	21.0	-	51.8	674.5	
4	76.8	218	392.5	1,834	34.8	426	-	-	391.8	12.9	2,257	12.8	22.8	39.6	62.4	16.8	83.7	44.1	18.7	43.7	9.3	96.8	662.7
TOTAL	512.8	1,491	1,990.3	13,214	197.7	3,437	79.8	291	2,780.8	100.0	17,183	100.0	94.3	163.2	244.5	100.0	461.0	394.5	174.8	43.7	22.8	328.7	4,388.8

SPECIFIC PLAN INDUSTRIAL ~ EMPLOYMENT 1 AND 2, COMMERCIAL RETAIL, DETENTION & ROADS

PHASE	MIXED USE		E1	E2	CR	E1 + E2 + CR		DETENTION		ROADS	PHASE A-D
	Acres	Units	ACRES	ACRES	ACRES	TOTAL ACRES	% ACRES	INTERIM (E1F) Acres	PERMANENT (CDS) Acres	ACRES	TOTAL ACRES
A	84.3	338	36.4	388.8	25.8	449.7	21.3	-	10.7	41.8	598.3
B	-	-	21.0	611.4	-	632.4	30.2	136.3	141.8	66.3	976.8
C	-	-	18.8	609.3	-	628.1	30.0	97.3	149.0	99.6	973.9
D	-	-	-	492.6	-	492.6	23.5	130.6	99.2	66.8	771.2
TOTAL	84.3	338	76.3	1,996.5	25.8	2,098.8	100.0	364.1	391.8	234.3	3,191.0

BUILDING UNIT MULTIPLIERS
LDR: DU = Area X 2.93
MDR: DU = Area X 6.19
HDR: DU = Area X 18.28
MIXED USE: DU= (50% of Area) X 18.28

Exhibit 4

Sutter Pointe Specific Plan

Conceptual Phasing Plan

Sutter County, California
June 27, 2008

MacKAY & SOMPS
CIVIL ENGINEERS, INC.
SACRAMENTO, CALIFORNIA (916) 929-8092

7900-00

Alternative Sutter Pointe
Raw Water
Transmission pipeline (42")

Proposed Sutter Pointe
Raw Water
Transmission pipeline (42")

Sankey Road

SR 99/70

Powerline Road

SUTTER COUNTY

SACRAMENTO COUNTY

Sutter County

Sacramento County

L E G E N D

- Raw Water Line
- Alternate Raw Water Line
- Potable Water Line
- Well Line
- Ground Water Well
- 6mg Storage Tank
- Water Treatment Plant
- Sutter Pointe Specific Plan Boundary
- 18" — Pipe Size
- J28 — H20 Net Element Name

SUTTER POINTE

MEASURE "M" GROUP

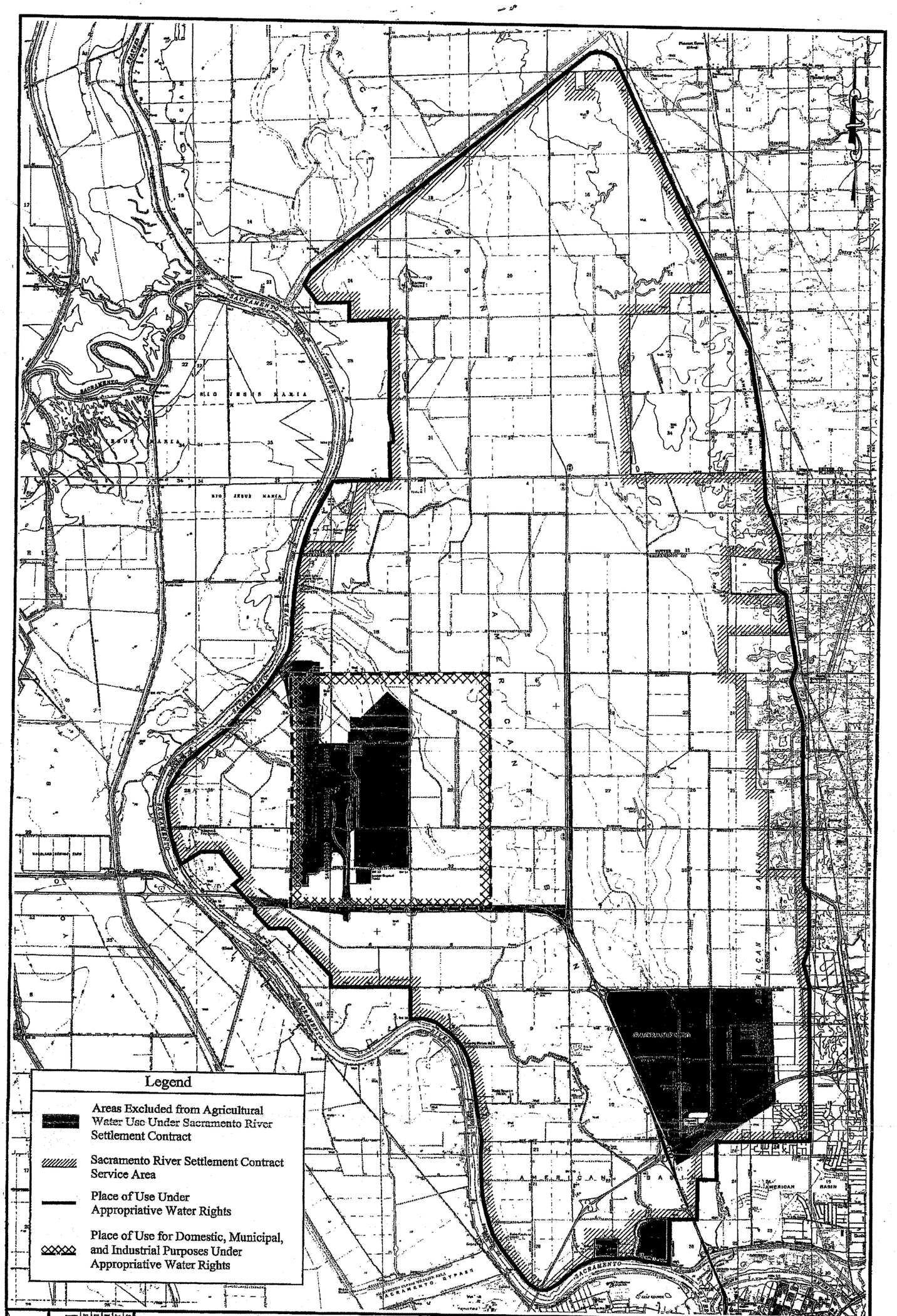
Exhibit 5
H2O Net Model (Proposed Water System Composite)

0 2,500 5,000

MACKAY & SOMPS
CIVIL ENGINEERS, INC.
SACRAMENTO, CALIFORNIA (916) 929-6092

November 13, 2008

11-17-2008 11:26:10 mmudd L:\Sacramento\7900\100\Exhibits\Water Plan Exhibits\Water\Wetternet Schematic_Proposed Project_032108.dwg
L:\Sacramento\7900\100\Exhibits\Areas-Land Use Plans_April2007(with roads).dwg



SHEET 1 OF 1 SHEETS

Bar Length On Original Drawing Equals One Inch, Adjust Scale Accordingly

SCALE: 1" = 6000'

JOB NUMBER: 3525

REQUESTED BY: DC

DRAWN BY: JR

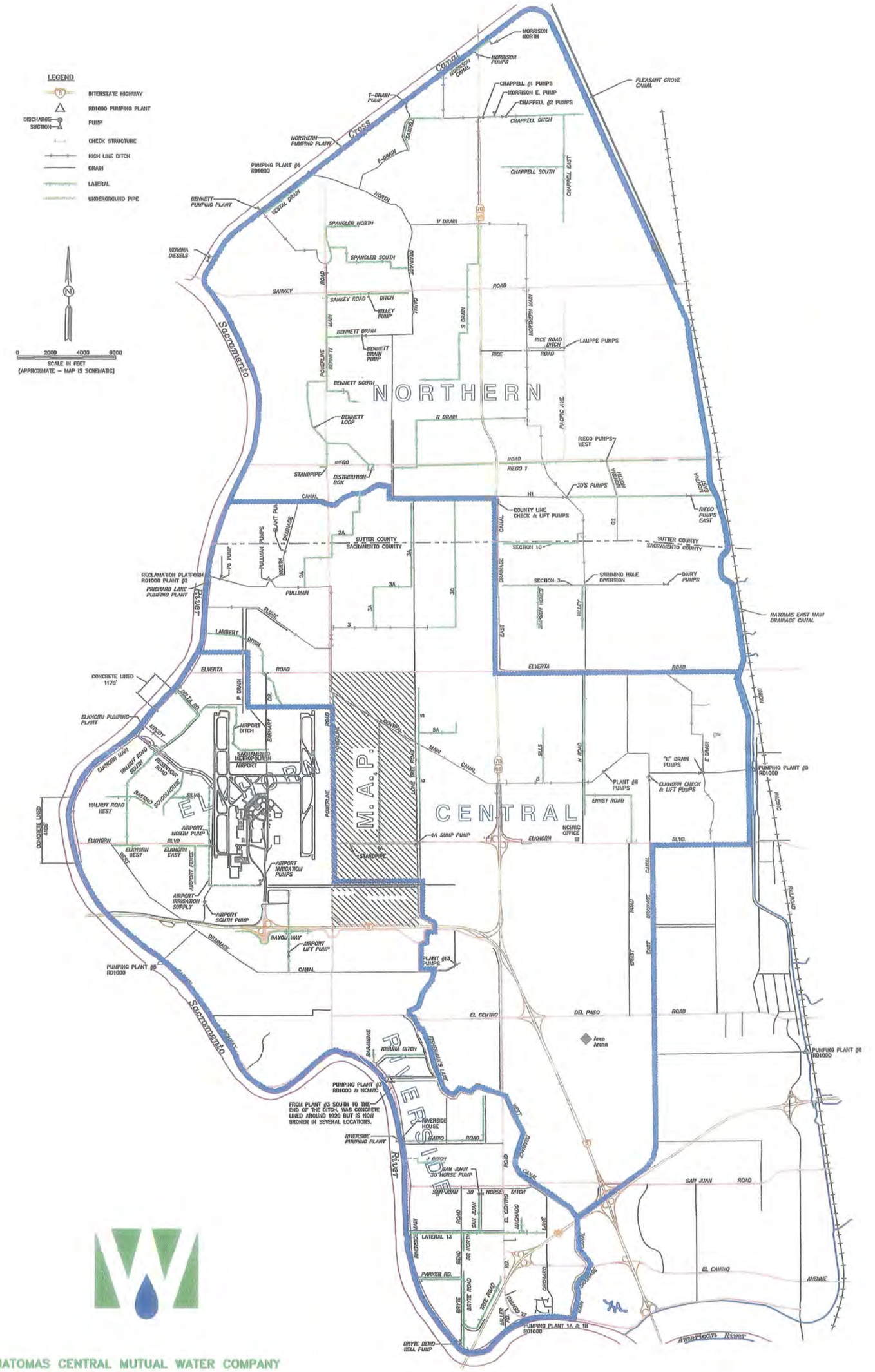
DATE: July 2003

Boundary Map

Natomas Central Mutual Water Company

No.	DATE	APPROVED	REVISION

MBK ENGINEERS
2450 Alhambra Boulevard, 2nd Floor
Sacramento, California 95817
Phone: (916) 456-4400 • Fax: (916) 456-0253



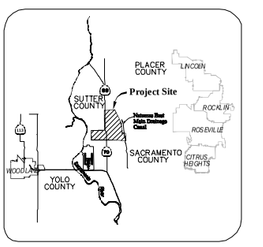
NATOMAS CENTRAL MUTUAL WATER COMPANY

FACILITIES MAP

LAST REVISED: AUGUST 26, 2005

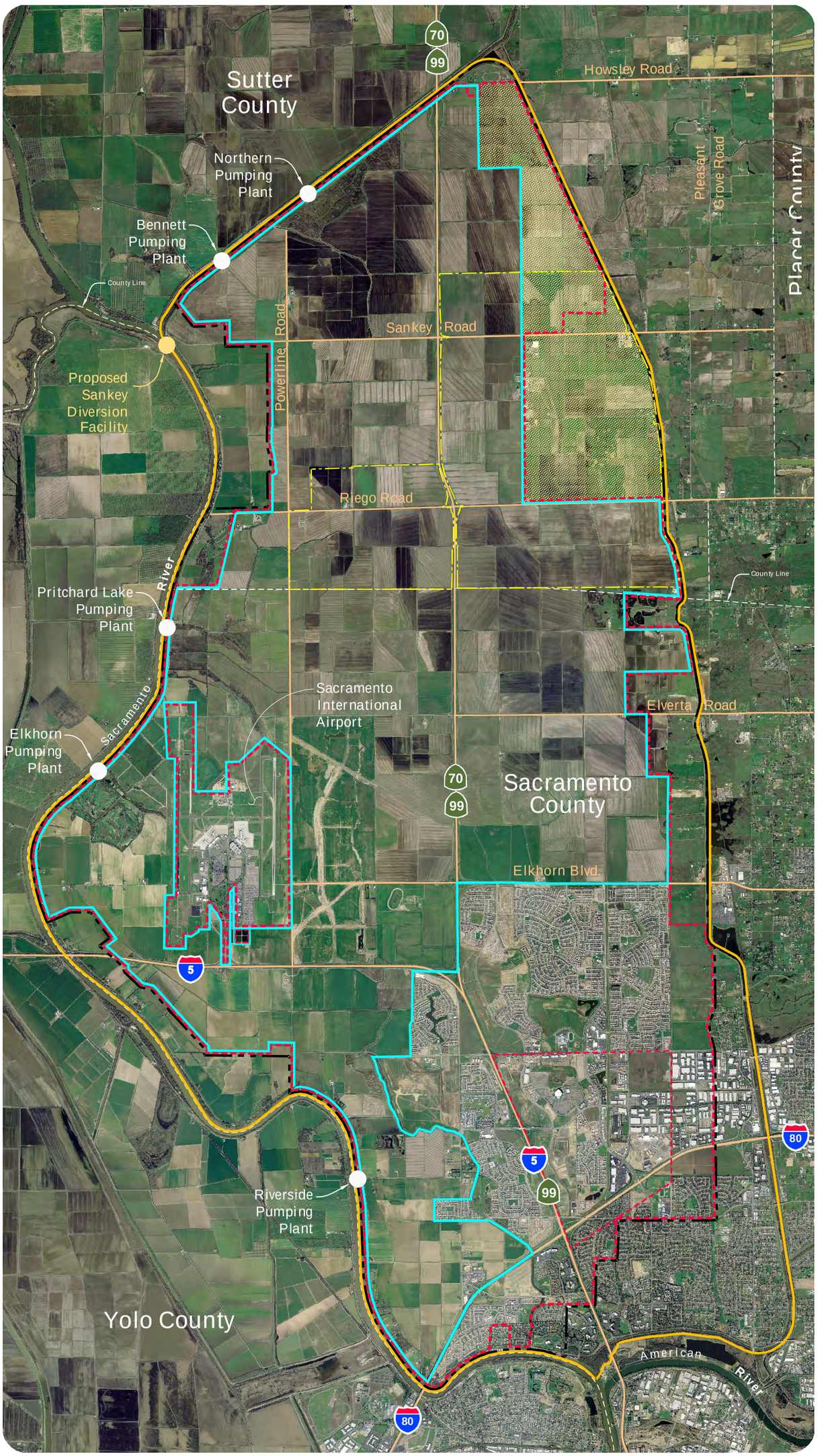
MEAD & HUNT ENGINEERS ARCHITECTS SCIENTISTS PLANNERS
3327 Longview Drive Sacramento, California 95821
Phone: (916) 971-3961 Fax: (916) 971-0536

Natomas Basin and Natomas Central Mutual Water Company Service Area



Vicinity Map

Not to Scale

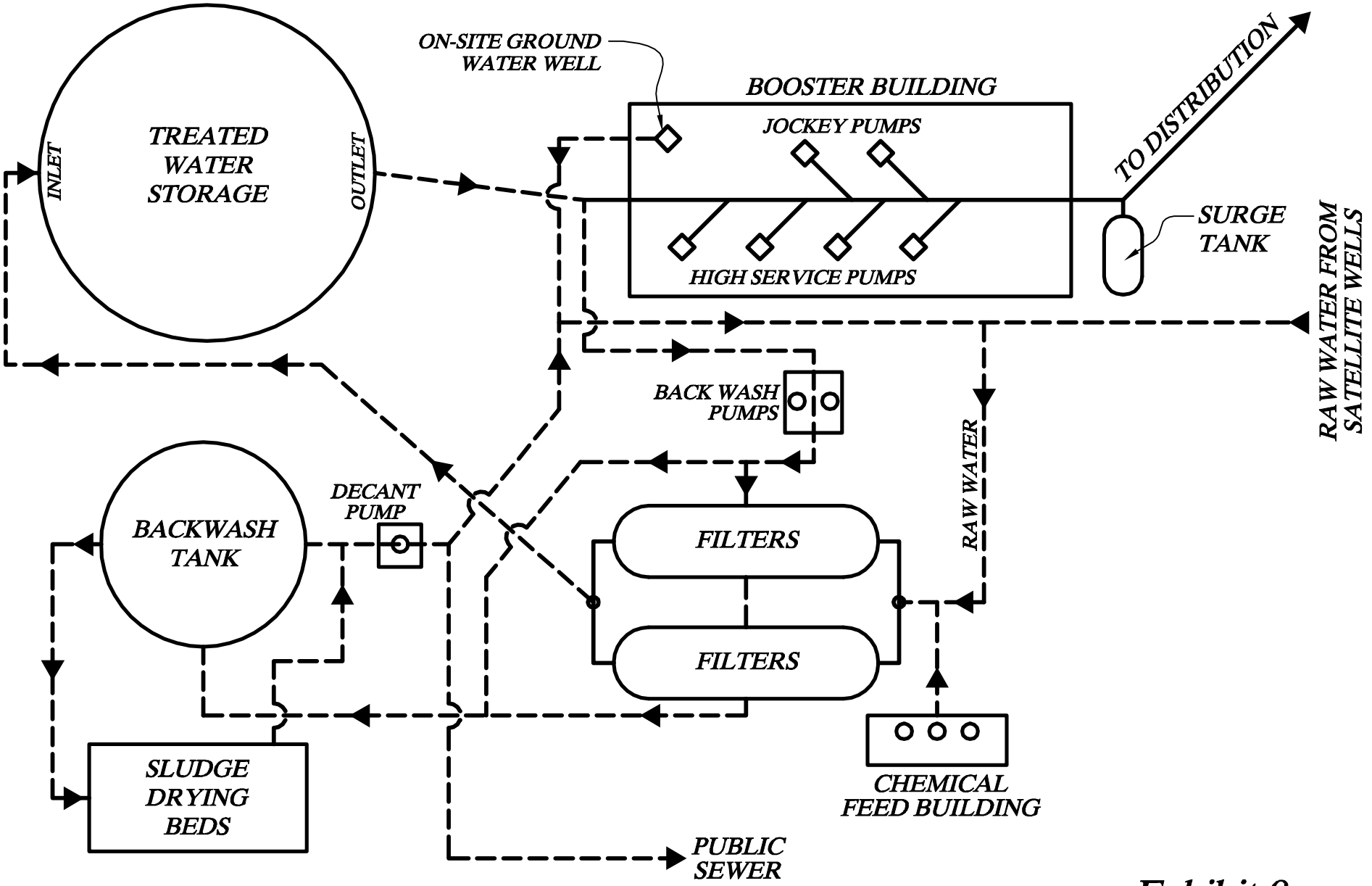


L E G E N D

- Sutter Pointe Specific Plan Area Boundary
- Natomas Basin & RD 1000 ≈ 55,439 Acres±
- NCMWC Place of Use Boundary for "Base Supply" under State Water Rights ≈ 49,361 Acres±
- NCMWC Corporate Boundary or Place of Use Boundary for "Project Water" U.S.B.R. Contract ≈ 30,967 Acres±
- NCMWC Current Water Users Area / Shareholder Lands ≈ 31,653 Acres±
- NCMWC Non-Shareholder Lands ≈ 2,518 Acres± (Currently Served by Groundwater)

MacKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1771 Tribute Road, Suite E, Sacramento, CA 95815 (916) 929-6092

Scale: Not to Scale *Date: 11-14-2008*



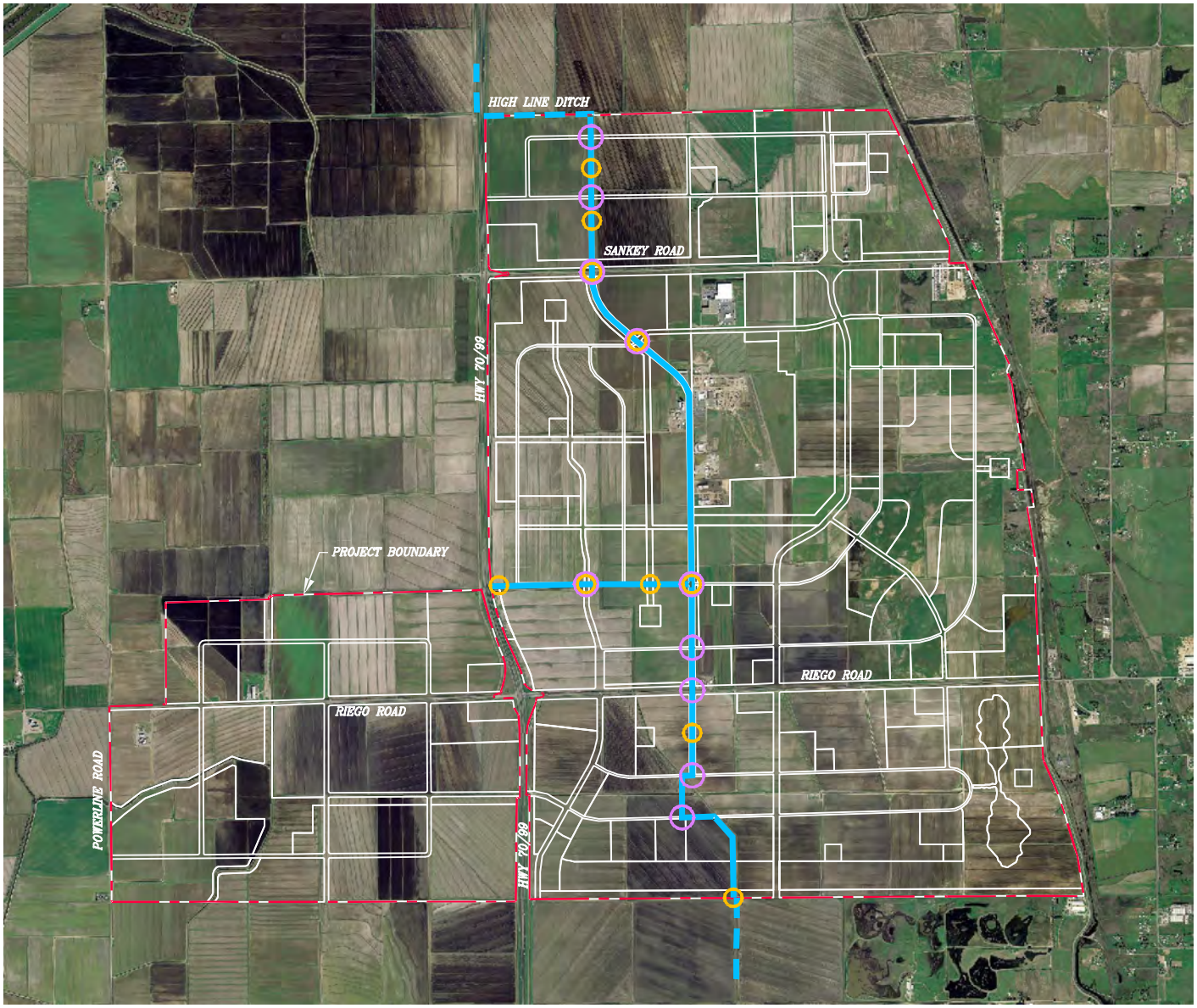
Typical Ground Water Treatment Plant Layout

Exhibit 9
Sutter Pointe

Sacramento, California
Not to Scale
November 14, 2008

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
7900-00

11-17-2008 14:45:41 mmudd L:\Sacramento\7900\00\Exhibits\Ground Water Treatment Plant Layout.dwg
There are no xreferences in this drawing.



LEGEND

- Existing Canal
- Proposed Canal
- Roadway Crossing
- Drainage Crossing

0' 2,500' 5,000'

SCALE: 1" = 2,500'

EXHIBIT 10

IRRIGATION CANAL CROSSINGS

SUTTER POINTE

MEASURE "M" GROUP

NCMWC Agricultural Irrigation
November 14, 2008

MacKay & Somps
ENGINEERS PLANNERS SURVEYORS
1771 Tribute Road, Suite E, Sacramento, CA 95815 (916) 929-6092

11-17-2008 14:43:30 mmudd [1] L:\Sacramento\7900\00\Exhibits\MS-Land Use Plan_Feb0808.dwg L:\Sacramento\7900\00\Exhibits\Master Plan Exhibits\Water\Irrigation 11-7-08\NCMWC Ag Irrigation Crossings 11-14-08.dwg

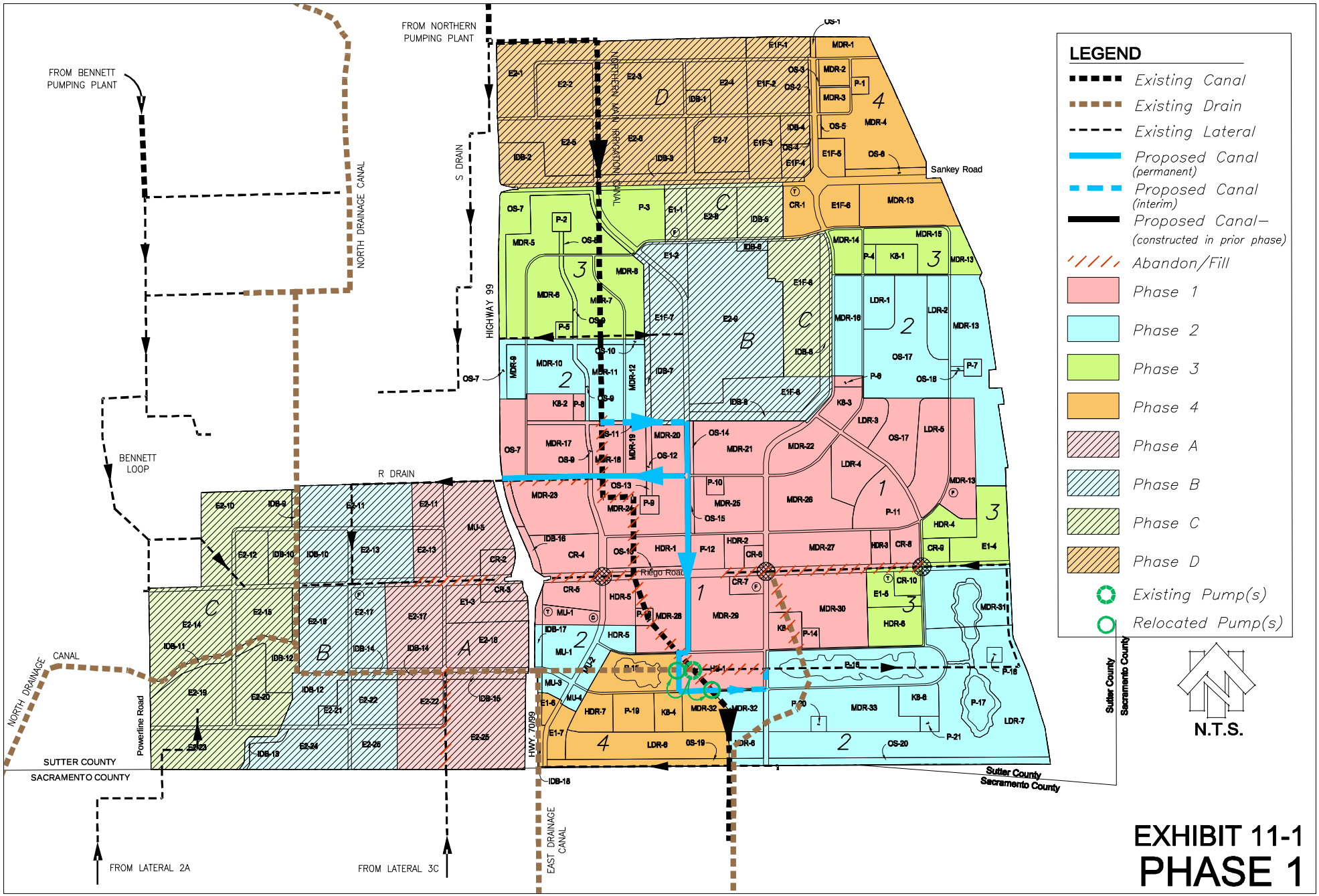


EXHIBIT 11-1
PHASE 1

SUTTER POINTE
MEASURE "M" GROUP

NCMWC Agricultural Irrigation
November 14, 2008

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1771 Tribute Road, Suite E, Sacramento, CA 95815 (916) 929-6092

11-14-2008 08:55:23 mmudd L:\Sacramento\79001\00\Exhibits\Master Plan Exhibits\Water\Irrigation 11-7-08\NCMWC Ag Irrigation 11-7-08.dwg
[1] L:\Sacramento\79001\00\Exhibits\MS-Land Use Plan_Feb2008.dwg [2] L:\Sacramento\79001\00\Exhibits\CPP-Shading_Feb2008.dwg [3] L:\Sacramento\79001\00\Exhibits\Conceptual_Phasing_Plan_0229208.dwg

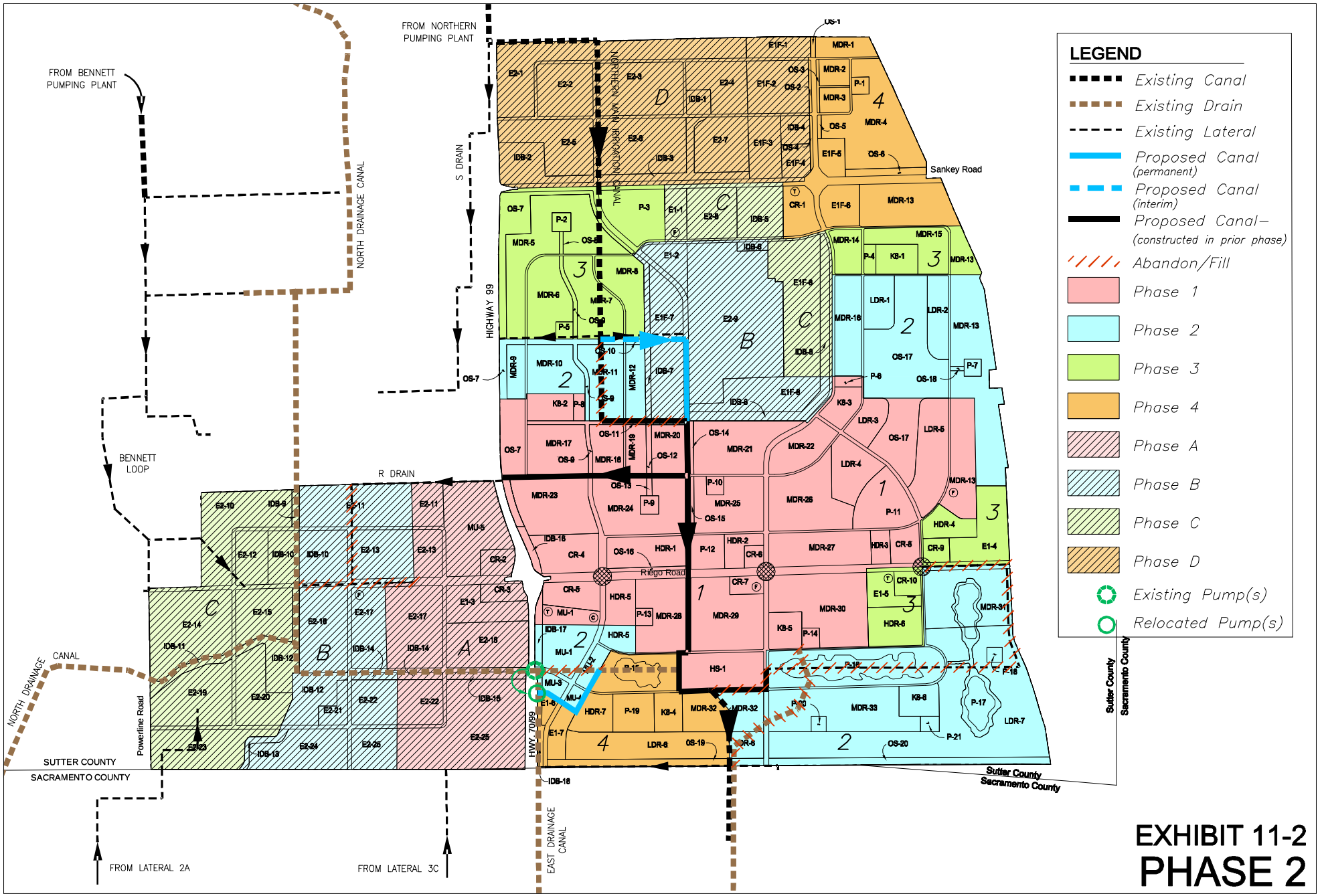


EXHIBIT 11-2
PHASE 2

SUTTER POINTE
MEASURE "M" GROUP

NCMWC Agricultural Irrigation
Nov. 14, 2008

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1771 Tribute Road, Suite E, Sacramento, CA 95815 (916) 929-6092

11-14-2008 08:55:23 mmudd
[1] L:\Sacramento\79000\00\Exhibits\MXD—Land Use Plan_Feb0808.dwg [2] L:\Sacramento\79000\00\Exhibits\Master Plan Exhibits\Master Plan Exhibits\Irrigation 11-7-08\NCMWC Ag Irrigation 11-7-08.dwg
[3] L:\Sacramento\79000\00\Exhibits\Conceptual_Phasing_Plan_022608.dwg

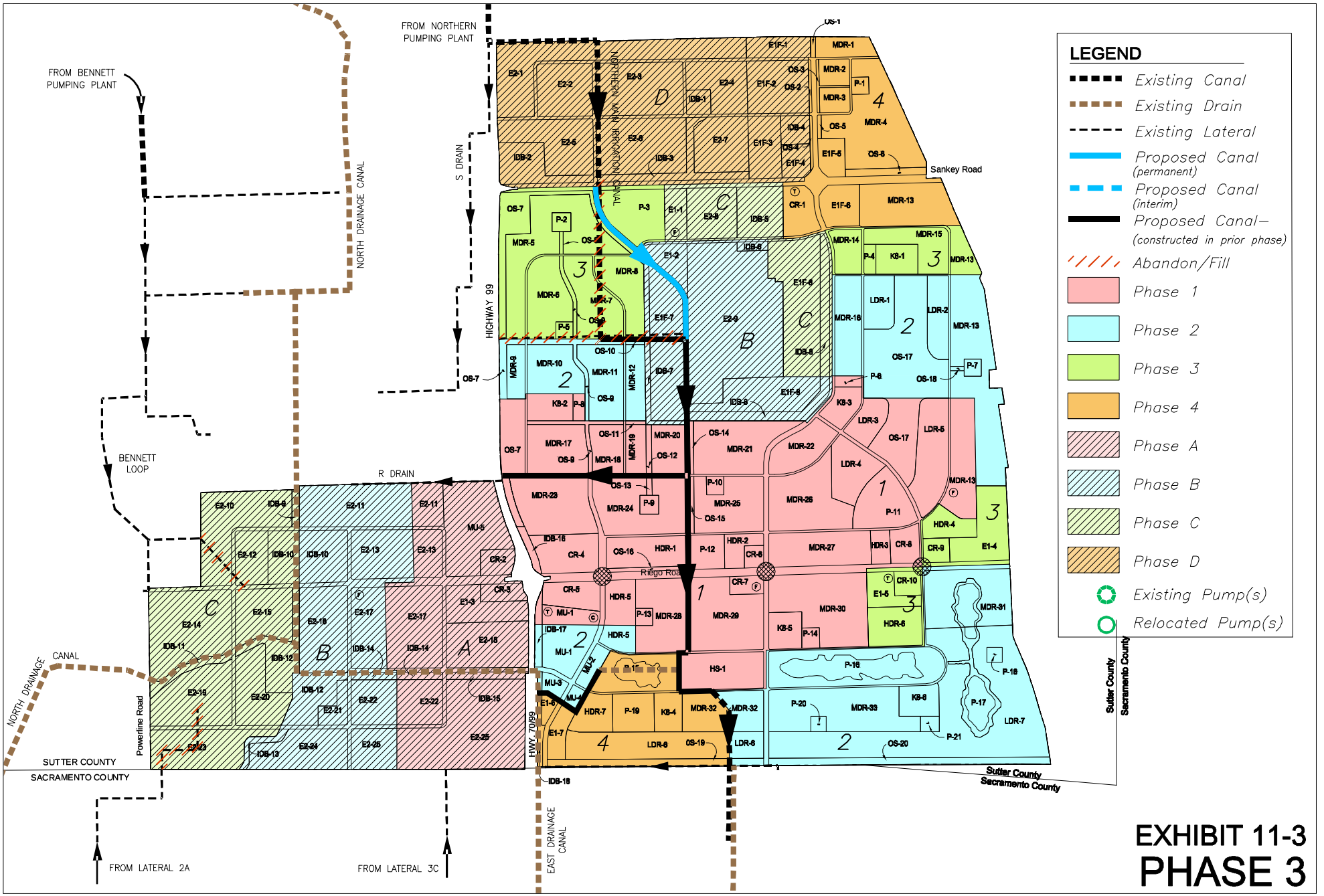


EXHIBIT 11-3
PHASE 3

SUTTER POINTE
MEASURE "M" GROUP

NCMWC Agricultural Irrigation
Nov. 14, 2008

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1771 Tribute Road, Suite E, Sacramento, CA 95815 (916) 929-6092

11-14-2008 08:55:23 mmudd
[1] L:\Sacramento\79001\00\Exhibits\MS-Land Use Plan_Feb08b08.dwg [2] L:\Sacramento\79001\00\Exhibits\Master Plan Exhibits\Water\Irrigation 11-7-08\NCMWC Ag Irrigation 11-7-08.dwg
[3] L:\Sacramento\79001\00\Exhibits\CPP-Shading_Feb08b08.dwg [4] L:\Sacramento\79001\00\Exhibits\Conceptual_Phasing_Plan_022608.dwg

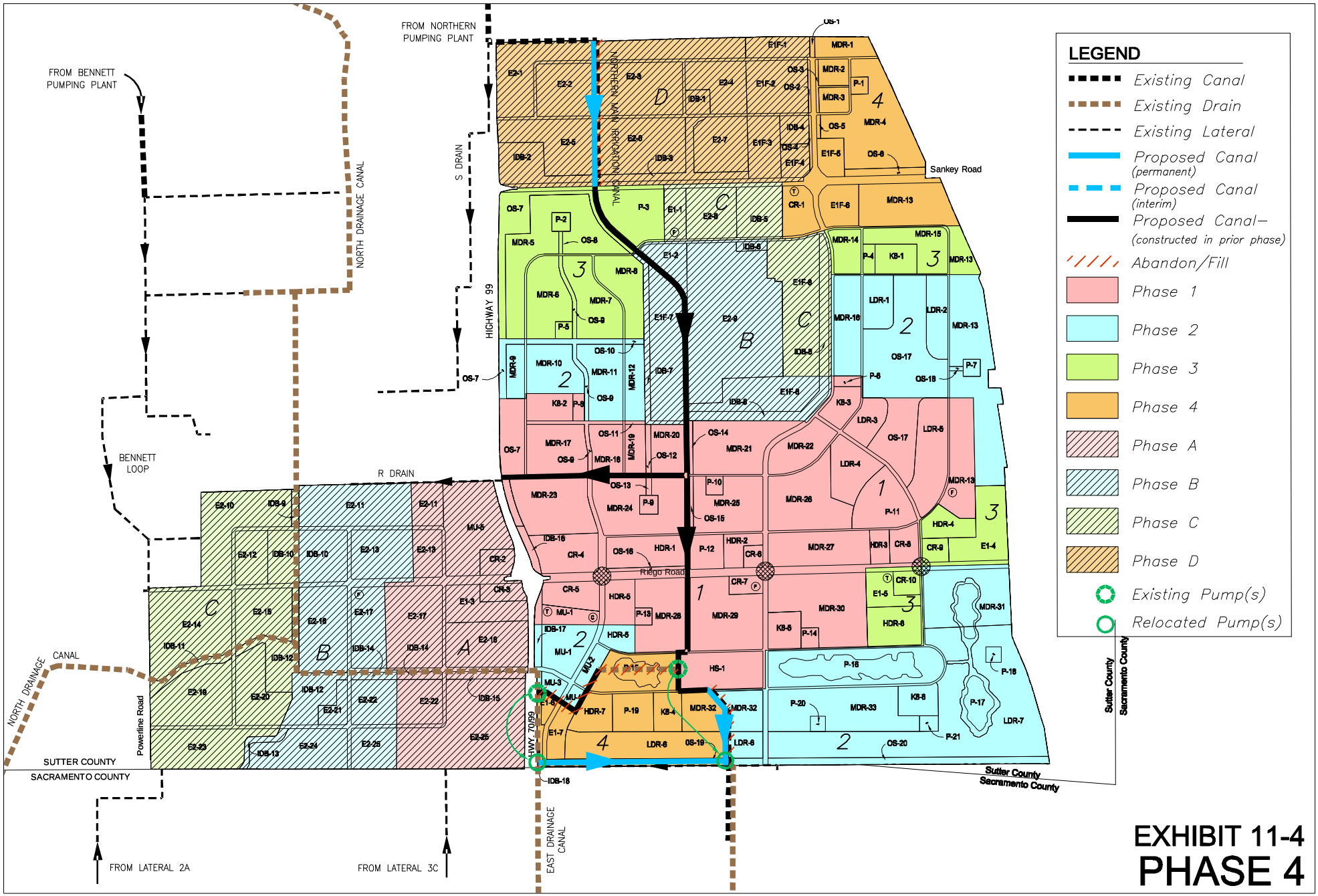


EXHIBIT 11-4
PHASE 4

SUTTER POINTE
MEASURE "M" GROUP

NCMWC Agricultural Irrigation
Nov. 14, 2008

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1771 Tribute Road, Suite E, Sacramento, CA 95815 (916) 929-6092

11-14-2008 08:55:23 mmudd
[1] L:\Sacramento\79000\001\Exhibits\MS-Land Use Plan_Feb08.dwg [2] L:\Sacramento\79000\001\Exhibits\CPP-Shading_Feb08.dwg [3] L:\Sacramento\79000\001\Exhibits\Conceptual_Phasing_Plan_022608.dwg
L:\Sacramento\79000\001\Exhibits\Master Plan Exhibits\Water Irrigation 11-7-08\NCMWC Ag Irrigation 11-7-08.dwg

Appendix B. Water Supply Comparison Tables

Table A: NCMWC Shareholder Irrigation Estimates

Table B: Sutter Pointe Specific Plan Area Peaking Factor Estimate

Table C-1: Sutter Pointe B.O.R. Contract Monthly Supply Calculations (Assuming 120,200 AFY Settlement Contract)

Table C-2: Monthly Surface Water Diversions & Alternate "B" Settlement Contract versus Winter Diversion

Table C-3 Sutter Pointe B.O.R. Contract Monthly Supply Calculations (Assuming Folsom Agreement - 110,200 AFY)

Monthly Water Budgets:

Tables D-1 thru D-4: Proposed Water Supply Program (Phases 1+A thru 4+D)

Tables E-1 thru E-4: Alternate "A" Revised Water Supply Program (Phases 1+A thru 4+D)

Tables F-1 thru F-4: Alternate "B" Winter Diversion Water Supply Program (Phases 1+A thru 4+D)

Table G: Water Conservation Calculation

Supplemental Data:

Table H: Current to Future Land Use for Irrigated Agriculture in Project Area

Table J-1: Current & Projected Indoor/Outdoor Water Demands (Normal Year)

Table J-2: Current & Projected Indoor/Outdoor Water Demands (Critical Year)

Table K: Sutter Pointe – Ultimate Build-Out Water Demand & EDU Calculations (NY)

Table L: Water Demand Factor & Peaking Factor Comparison by Land Use Category

Water Demands vs. Time Comparison Chart

Table - A
NCMWC Shareholder Irrigation Estimates
(Estimate of Historical Usage)

1. Evapotransporation Method					
		Acre	AFY		
Rice		5001			
Non Irrigated		179			
Ditches and Roads		400			
Total (acre)		**5580**			
Evapotranspiration Rate (ac-ft/ac)	(1)	3.47			
10% Tailwater Loss		0.35			
Subtotal (ac-ft/ac)		3.82			
20% System Loss		0.76			
Subtotal (ac-ft/ac)		**4.58**	22,905	AFY	for Rice Acreage = 5001 acres
Fall Flooding Applied Acreage (ac)	(2)	4001			
Flooding Water Applied (ac-ft)	(3)	1.5	6,002	AFY	
Estimated Total Useage			28,907	AFY	

2. DWR Applied Water Method				
Rice		5001	Acre	
Typical Applied Water Rate	(1)	5.71	ac-ft/ac	
Estimated Total Useage		28,556	AFY	

3. NCMWC Applied Water Method				
Rice		5001	Acre	
Typical Applied Water Rate	(4)	6.7	ac-ft/ac	
Estimated Total Useage		33,507	AFY	

Average:			
1. Evapotransporation Method	28,907	AFY	
2. DWR Applied Water Method	28,556	AFY	
3. NCMWC Applied Water Method	33,507	AFY	
	90,969	AFY	
Divide By 3 =			
Average Estimated Total Useage	30,300	AFY	v. 30,000 AFY Cited by Dee Swearingen on June 13, 2007

Estiamte of Historical Usage = 30,000+/- AFY

(1) Obtained from the Department of Water Resource's Annual Water Data 2001 for Rice Detailed Analysis Unit #172 (Placer).
(2) Assumes fall flooding is applied to 80% total rice acreage.
(3) Assumes fall flooding acreage is filled to a depth of 1.5 ft for rice stubble decomposition.
(4) Personal communication from Dee Swearingen, General Manage NCMWC, June 13, 2007.
(5) Amount of ground water available for use in NCMWC service area
(7) Rice irrigation and fall flooding assumptions based on telephone discussions with Cass Mutters at the University of California Agriculture and Natural Resources Cooperative Extension (Butte County) on 8/5/2005 and 8/24/2005; and Luhdorff & Scalamini Consulting Engineers on July 13, 2007.

Table - B

Sutter Pointe Specific Plan Area Peaking Factor Estimate

Month	Evapotranspiration Rate (%)	MDD Peaking Factor [1]
January	4.40%	0.59
February	4.00%	0.54
March	4.80%	0.65
April	6.80%	0.92
May	9.50%	1.28
June	11.40%	1.54
July	13.70%	1.85
August	13.60%	1.84
September	11.50%	1.55
October	9.50%	1.28
November	6.00%	0.81
December	4.80%	0.65
SUM	100.00%	

Adjusted Oct. (x 15%)
1.50

[1] Max Day Demand (MDD) rate to be applied for the given month

Calculation: $\left(\frac{\text{Monthly Evap -Trans \%}}{\text{July Evap -Trans \%}}\right)$ x 1.85

Table C-1

Sutter Pointe Monthly Bureau of Reclamation Settlement Contract Surface Water Supply Calculation

(Assumes Full Bureau of Reclamation Settlement Contract Right of 120,200 AFY (98,200 AFY Base Supply + 22,000 AFY Project Water))

HISTORICAL USAGE — NCMWC Shareholder Irrigation Estimate (Table A) = **30,000** Acre-Feet Per Year

Month	Bureau of Reclamation Settlement Contract Monthly Cap (AF)	Monthly %	Normal Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B	Critical Dry Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B
April	14,000	11.65%	3,494	Refer to Table C-2	2,285	1,780	2,229	2,621	Refer to Table C-2	1,814	2,002	2,160
May	27,700	23.04%	6,913		5,225	4,519	5,218	5,185		3,958	3,970	4,138
June	23,000	19.13%	5,740		3,714	2,867	3,566	4,305		2,756	2,672	2,850
July	18,700	15.56%	4,667		2,233	1,750	1,914	3,500		1,620	1,359	1,545
August	18,700	15.56%	4,667		2,251	1,750	1,939	3,500		1,635	1,381	1,559
September	16,100	13.39%	4,018		1,975	1,507	1,819	3,014		1,476	1,358	1,516
October	2,000	1.66%	499		187	187	187	374		140	140	140
Total	**120,200**	**100.00%**	**30,000**		**17,872**	**14,362**	**16,874**	**22,500**		**13,400**	**12,883**	**13,909**
			100%	**Allocation**				**25%**	**Cutback**			

ACTUAL DIVERSIONS — 88,000 Acre-Feet Per Year (Avg.) x 25% Customer Base = **22,000** Acre-Feet Per Year

Month	Bureau of Reclamation Settlement Contract Monthly Cap (AF)	Monthly %	Normal Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B	Critical Dry Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B
April	14,000	11.65%	2,562	Refer to Table C-2	1,353	848	1,297	1,922	Refer to Table C-2	1,115	1,303	1,461
May	27,700	23.04%	5,070		3,382	2,676	3,375	3,802		2,575	2,587	2,755
June	23,000	19.13%	4,210		2,184	1,337	2,036	3,157		1,608	1,524	1,702
July	18,700	15.56%	3,423		989	506	670	2,567		687	426	612
August	18,700	15.56%	3,423		1,007	506	695	2,567		702	448	626
September	16,100	13.39%	2,947		904	436	748	2,210		672	554	712
October	2,000	1.66%	366		54	54	1,424	275		41	41	891
Total	**120,200**	**100.00%**	**22,000**		**9,872**	**6,362**	**10,244**	**16,500**		**7,400**	**6,883**	**8,759**
			100%	**Allocation**				**25%**	**Cutback**			

NCMWC SHARES — 120,200 Acre-Feet Per Year x 15.83% Est. NCMWC Shares = **19,020** Acre-Feet Per Year

Month	Bureau of Reclamation Settlement Contract Monthly Cap (AF)	Monthly %	Normal Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B	Critical Dry Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B
April	14,000	11.65%	2,215	Refer to Table C-2	1,006	501	950	1,661	Refer to Table C-2	854	1,042	1,200
May	27,700	23.04%	4,383		2,695	1,989	2,688	3,287		2,060	2,072	2,240
June	23,000	19.13%	3,639		1,613	766	1,465	2,730		1,181	1,097	1,275
July	18,700	15.56%	2,959		525	42	206	2,219		339	78	264
August	18,700	15.56%	2,959		543	42	231	2,219		354	100	278
September	16,100	13.39%	2,548		505	37	349	1,911		373	255	413
October	2,000	1.66%	316		4	4	4	237		3	3	3
Total	**120,200**	**100.00%**	**19,020**		**6,892**	**3,382**	**5,894**	**14,265**		**5,165**	**4,648**	**5,674**
			100%	**Allocation**				**25%**	**Cutback**			

Table C-2

SURFACE WATER DIVERSIONS

SURFACE WATER DIVERSIONS BY WATER SUPPLY PROGRAM

Proposed Water Supply Project

Normal Year (Acre Feet)

Phase / Year / Month	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January	-	-	-	-	-	-	-
Februray	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April	-	-	-	181	301	887	1,209
May	-	-	-	306	510	1,238	1,688
June	-	-	-	465	775	1,486	2,026
July	-	-	-	658	1,097	1,786	2,434
August	-	-	-	655	1,091	1,773	2,416
September	-	-	-	469	781	1,499	2,043
October	-	-	-	187	312	312	312
November	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-
Total	-	-	-	2,920	4,867	8,981	12,128

Critical Dry Year (Acre-Feet)

Phase / Year / Month	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January	-	-	-	-	-	-	-
Februray	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April	-	-	-	159	265	776	807
May	-	-	-	268	446	1,083	1,227
June	-	-	-	407	678	1,301	1,549
July	-	-	-	575	959	1,563	1,880
August	-	-	-	572	954	1,550	1,865
September	-	-	-	410	683	1,311	1,538
October	-	-	-	140	234	234	234
November	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-
Total	-	-	-	2,531	4,219	7,818	9,100

Alternate A Water Supply Project

Normal Year (Acre Feet)

Phase / Year / Month	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January	-	-	-	-	-	-	-
Februray	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April	-	-	-	644	1,073	1,392	1,714
May	-	-	-	900	1,500	1,944	2,394
June	-	-	-	1,079	1,799	2,333	2,873
July	-	-	-	1,298	2,163	2,804	2,917
August	-	-	-	1,288	2,147	2,784	2,917
September	-	-	-	1,089	1,815	2,354	2,511
October	-	-	-	187	312	312	312
November	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-
Total	-	-	-	6,485	10,809	13,923	15,638

Critical Dry Year (Acre-Feet)

Phase / Year / Month	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January	-	-	-	-	-	-	-
Februray	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April	-	-	-	311	519	578	619
May	-	-	-	535	892	1,061	1,215
June	-	-	-	692	1,154	1,401	1,633
July	-	-	-	883	1,472	1,813	2,141
August	-	-	-	875	1,458	1,795	2,119
September	-	-	-	701	1,168	1,419	1,656
October	-	-	-	140	234	234	234
November	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-
Total	-	-	-	4,138	6,897	8,301	9,617

Alternate B Water Supply Project

Normal Year (Acre Feet)

Phase / Year / Month	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January	-	-	-	240	400	650	836
Februray	-	-	-	240	400	600	738
March	-	-	-	240	400	600	933
April	-	-	-	344	573	1,084	1,265
May	-	-	-	510	850	1,537	1,695
June	-	-	-	671	1,119	1,726	2,174
July	-	-	-	848	1,413	1,998	2,753
August	-	-	-	850	1,417	1,993	2,728
September	-	-	-	699	1,165	1,747	2,199
October	-	-	-	427	712	962	1,141
November	-	-	-	240	400	650	1,227
December	-	-	-	240	400	650	933
Total	-	-	-	5,549	9,249	14,197	18,622

Critical Dry Year (Acre-Feet)

Phase / Year / Month	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January	-	-	-	120	200	325	741
Februray	-	-	-	120	200	300	656
March	-	-	-	120	200	300	627
April	-	-	-	65	109	605	461
May	-	-	-	181	302	1,002	1,047
June	-	-	-	318	530	1,167	1,455
July	-	-	-	496	826	1,406	1,955
August	-	-	-	493	822	1,400	1,941
September	-	-	-	329	548	1,185	1,498
October	-	-	-	260	434	559	882
November	-	-	-	120	200	325	683
December	-	-	-	120	200	325	827
Total	-	-	-	2,743	4,571	8,899	12,773

Alternate B Breakdown (Settlement Contract v. Winter Diversion)

Normal Year (Acre-Feet)

Month /	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	240	400	650	836
Sub-Total	-	-	-	240	400	650	836
Februray							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	240	400	650	738
Sub-Total	-	-	-	240	400	650	738
March							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	240	400	650	933
Sub-Total	-	-	-	240	400	650	933
April							
Contract	-	-	-	344	573	1,084	1,265
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	344	573	1,084	1,265
May							
Contract	-	-	-	510	850	1,537	1,695
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	510	850	1,537	1,695
June							
Contract	-	-	-	671	1,119	1,726	2,174
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	671	1,119	1,726	2,174
July							
Contract	-	-	-	848	1,413	1,998	2,753
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	848	1,413	1,998	2,753
August							
Contract	-	-	-	850	1,417	1,993	2,728
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	850	1,417	1,993	2,728
September							
Contract	-	-	-	699	1,165	1,747	2,199
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	699	1,165	1,747	2,199
October							
Contract	-	-	-	187	312	312	312
Winter Diversion	-	-	-	240	400	650	829
Sub-Total	-	-	-	427	712	962	1,141
November							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	240	400	650	1,227
Sub-Total	-	-	-	240	400	650	1,227
December							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	240	400	650	933
Sub-Total	-	-	-	240	400	650	933
Total	-	-	-	5,549	9,249	14,297	18,622

Critical Dry Year (Acre-Feet)

Month /	2010	2015	1+A 2017	2020	2+B 2022	3+C 2025	4+D 2030
January							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	120	200	325	741
Sub-Total	-	-	-	120	200	325	741
Februray							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	120	200	300	656
Sub-Total	-	-	-	120	200	300	656
March							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	120	200	300	627
Sub-Total	-	-	-	120	200	300	627
April							
Contract	-	-	-	65	109	605	461
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	65	109	605	461
May							
Contract	-	-	-	181	302	1,002	1,047
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	181	302	1,002	1,047
June							
Contract	-	-	-	318	530	1,167	1,455
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	318	530	1,167	1,455
July							
Contract	-	-	-	496	826	1,406	1,955
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	496	826	1,406	1,955
August							
Contract	-	-	-	493	822	1,400	1,941
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	493	822	1,400	1,941
September							
Contract	-	-	-	329	548	1,185	1,498
Winter Diversion	-	-	-	-	-	-	-
Sub-Total	-	-	-	329	548	1,185	1,498
October							
Contract	-	-	-	140	234	234	234
Winter Diversion	-	-	-	120	200	325	648
Sub-Total	-	-	-	260	434	559	882
November							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	120	200	325	683
Sub-Total	-	-	-	120	200	325	683
December							
Contract	-	-	-	-	-	-	-
Winter Diversion	-	-	-	120	200	325	827
Sub-Total	-	-	-	120	200	325	827
Total	-	-	-	2,743	4,571	8,899	12,773

Table C-3
Sutter Pointe Monthly Bureau of Reclamation Settlement Contract Surface Water Supply Calculation
(Assuming City of Folsom Sale of 10,000 Acre-Feet of Project Water)

HISTORICAL USAGE — NCMWC Shareholder Irrigation Estimate (Table A) = 30,000 Acre-Feet Per Year

Month	Bureau of Reclamation Settlement Contract Monthly Cap (AF)	Monthly %	Normal Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B	Critical Dry Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B
April	14,000	12.70%	3,811	Refer to Table C-2	2,602	2,097	2,546	2,858	Refer to Table C-2	2,051	2,239	2,397
May	27,700	25.14%	7,541		5,853	5,147	5,846	5,656		4,429	4,441	4,609
June	23,000	20.87%	6,261		4,235	3,388	4,087	4,696		3,147	3,063	3,241
July	15,427	14.00%	4,200		1,766	1,283	1,447	3,150		1,270	1,009	1,195
August	11,973	10.86%	3,259		843	342	531	2,445		580	326	504
September	16,100	14.61%	4,383		2,340	1,872	2,184	3,287		1,749	1,631	1,789
October	2,000	1.81%	544		232	232	232	408		174	174	174
Total	**110,200**	**100.00%**	**30,000**		**17,872**	**14,362**	**16,874**	**22,500**		**13,400**	**12,883**	**13,909**
			100% Allocation					**25% Cutback**				

ACTUAL DIVERSIONS — 88,000 Acre-Feet Per Year (Avg.) x 25% Customer Base = 22,000 Acre-Feet Per Year

Month	Bureau of Reclamation Settlement Contract Monthly Cap (AF)	Monthly %	Normal Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B	Critical Dry Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B
April	14,000	12.70%	2,795	Refer to Table C-2	1,586	1,081	1,530	2,096	Refer to Table C-2	1,289	1,477	1,635
May	27,700	25.14%	5,530		3,842	3,136	3,835	4,147		2,920	2,932	3,100
June	23,000	20.87%	4,592		2,566	1,719	2,418	3,444		1,895	1,811	1,989
July	15,427	14.00%	3,080		646	163	327	2,310		430	169	355
August	11,973	10.86%	2,390		(26)	(527)	(338)	1,793		(72)	(326)	(148)
September	16,100	14.61%	3,214		1,171	703	1,015	2,411		873	755	913
October	2,000	1.81%	399		87	87	1,457	299		65	65	915
Total	**110,200**	**100.00%**	**22,000**		**9,872**	**6,362**	**10,244**	**16,500**		**7,400**	**6,883**	**8,759**
			100% Allocation					**25% Cutback**				

NCMWC SHARES — 110,200 Acre-Feet Per Year x 15.83% Est. NCMWC Shares = 17,440 Acre-Feet Per Year

Month	Bureau of Reclamation Settlement Contract Monthly Cap (AF)	Monthly %	Normal Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B	Critical Dry Year (Acre-Feet) SPSP Monthly Cap	SPSP Demand	SPSP Settlement Contract Reserve Proposed	Alternate A	Alternate B
April	14,000	12.70%	2,216	Refer to Table C-2	1,007	502	951	1,662	Refer to Table C-2	855	1,043	1,201
May	27,700	25.14%	4,384		2,696	1,990	2,689	3,288		2,061	2,073	2,241
June	23,000	20.87%	3,640		1,614	767	1,466	2,730		1,181	1,097	1,275
July	15,427	14.00%	2,441		7	(476)	(312)	1,831		(49)	(310)	(124)
August	11,973	10.86%	1,895		(521)	(1,022)	(833)	1,421		(444)	(698)	(520)
September	16,100	14.61%	2,548		505	37	349	1,911		373	255	413
October	2,000	1.81%	317		5	5	5	237		3	3	3
Total	**110,200**	**100.00%**	**17,440**		**5,312**	**1,802**	**4,314**	**13,080**		**3,980**	**3,463**	**4,489**
			100% Allocation					**25% Cutback**				

Note: While it appears that a sufficient quantity of surface water may not exist in July and/or August in one or more of the three approaches to determining the Sutter Pointe share of monthly Bureau of Reclamation Settlement Contract rights (assuming the Folsom Agreement is implemented), it is important to note that there is an annual reserve (surplus) of surface water in all scenarios. This indcates that the mix of surface water diversions and ground water pumping can be adjusted slightly month-to-month throughout the year to cover the potential shortage of surface water by pumping slightly more ground water during July and/or August and pumping slightly less during the remainder of the year when surface water supplies are more abundant. Such an adjustment would have a zero sum effect on the overall water supply picture (surface water diversions and ground water pumping) over a year's time.

Table D-1: Proposed Water Supply Program

Proposed Water Supply Program - Phase 1 + A

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	371	371	-	-	-	371
February	4.00%	338	338	-	-	-	338
March	4.80%	405	405	-	-	-	405
April	6.80%	574	574	-	-	-	574
May	9.50%	802	802	-	-	-	802
June	11.40%	962	962	-	-	-	962
July	13.70%	1,157	1,157	-	-	-	1,157
August	13.60%	1,148	1,148	-	-	-	1,148
September	11.50%	971	971	-	-	-	971
October	9.50%	802	802	-	-	-	802
November	6.00%	507	507	-	-	-	507
December	4.80%	405	405	-	-	-	405
	100.00%	**8,442**	8,442	-	-	-	**8,442**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	325	325	-	-	-	325
February	4.00%	295	295	-	-	-	295
March	4.80%	355	355	-	-	-	355
April	6.80%	502	502	-	-	-	502
May	9.50%	702	702	-	-	-	702
June	11.40%	842	842	-	-	-	842
July	13.70%	1,012	1,012	-	-	-	1,012
August	13.60%	1,005	1,005	-	-	-	1,005
September	11.50%	849	849	-	-	-	849
October	9.50%	702	702	-	-	-	702
November	6.00%	443	443	-	-	-	443
December	4.80%	355	355	-	-	-	355
	100.00%	**7,387**	7,387	-	-	-	**7,387**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 1+A (NY)		**Use**	
Number Supply Wells	7.24	7	
Number Standby Wells		1	
Total		**8**	

		Use	
Number Supply Wells (Max Day)	5.38	5	**Max Day =9,682 gpm / 13.9 MGD**
Number Standby Wells		1	
Total		**6**	

Phase 1+A (CDY)		**Use**	
Number Supply Wells	6.33	6	
Number Standby Wells		1	
Total		**7**	

		Use	
Number Supply Wells (Max Day)	4.71	5	**Max Day = 8,473 gpm / 12.2 MGD**
Number Standby Wells		1	
Total		**6**	

ONE WELL FIELD REQUIRED

Table D-2: Proposed Water Supply Program

Proposed Water Supply Program - Phase 2+B

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	694	694	-	-	-	694
February	4.00%	631	631	-	-	-	631
March	4.80%	758	758	-	-	-	758
April	6.80%	1,073	772	301	-	-	1,073
May	9.50%	1,500	990	510	-	-	1,500
June	11.40%	1,799	1,024	775	-	-	1,799
July	13.70%	2,163	1,066	1,097	-	-	2,163
August	13.60%	2,147	1,056	1,091	-	-	2,147
September	11.50%	1,815	1,034	781	-	-	1,815
October	9.50%	1,500	1,188	312	-	-	1,500
November	6.00%	947	947	-	-	-	947
December	4.80%	758	758	-	-	-	758
	100.00%	**15,785**	10,918	4,867	-	-	**15,785**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	608	608	-	-	-	608
February	4.00%	552	552	-	-	-	552
March	4.80%	663	663	-	-	-	663
April	6.80%	939	675	265	-	-	939
May	9.50%	1,312	866	446	-	-	1,312
June	11.40%	1,574	896	678	-	-	1,574
July	13.70%	1,892	933	959	-	-	1,892
August	13.60%	1,878	924	954	-	-	1,878
September	11.50%	1,588	905	683	-	-	1,588
October	9.50%	1,312	1,078	234	-	-	1,312
November	6.00%	829	829	-	-	-	829
December	4.80%	663	663	-	-	-	663
	100.00%	**13,810**	9,591	4,219	-	-	**13,810**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 2+B (NY)		**Use**
Number Supply Wells	7.43	7
Number Standby Wells		1
Total		**8**

		Use	
Number Supply Wells (Max Day)	7.97	8	**Max Day =18,104 gpm / 26.0 MGD**
Number Standby Wells		1	
Total		**9**	

Phase 2+B (CDY)		**Use**
Number Supply Wells	6.74	7
Number Standby Wells		1
Total		**8**

		Use	
Number Supply Wells (Max Day)	7.23	7	**Max Day = 15,840 gpm / 22.8 MGD**
Number Standby Wells		1	
Total		**8**	

ONE WELL FIELD REQUIRED

Table D-3: Proposed Water Supply Program

Proposed Water Supply Program - Phase 3+C

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	901	901	-	-	-	901
February	4.00%	819	819	-	-	-	819
March	4.80%	982	982	-	-	-	982
April	6.80%	1,392	505	887	-	-	1,392
May	9.50%	1,944	706	1,238	-	-	1,944
June	11.40%	2,334	847	1,487	-	-	2,334
July	13.70%	2,804	1,018	1,786	-	-	2,804
August	13.60%	2,784	1,011	1,773	-	-	2,784
September	11.50%	2,354	855	1,499	-	-	2,354
October	9.50%	1,944	1,632	312	-	-	1,944
November	6.00%	1,228	1,228	-	-	-	1,228
December	4.80%	982	982	-	-	-	982
	100.00%	**20,468**	11,486	8,982	-	-	**20,468**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	788	788	-	-	-	788
February	4.00%	716	716	-	-	-	716
March	4.80%	860	860	-	-	-	860
April	6.80%	1,218	442	776	-	-	1,218
May	9.50%	1,701	618	1,083	-	-	1,701
June	11.40%	2,042	741	1,301	-	-	2,042
July	13.70%	2,453	890	1,563	-	-	2,453
August	13.60%	2,435	885	1,550	-	-	2,435
September	11.50%	2,059	748	1,311	-	-	2,059
October	9.50%	1,701	1,467	234	-	-	1,701
November	6.00%	1,074	1,074	-	-	-	1,074
December	4.80%	860	860	-	-	-	860
	100.00%	**17,907**	10,088	7,819	-	-	**17,907**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 3+C (NY)		**Use**	
Number Supply Wells	10.21	10	
Number Standby Wells		2	
Total		**12**	

		Use	
Number Supply Wells (Max Day)	10.95	11	**Max Day = 23,475 gpm / 33.7 MGD**
Number Standby Wells		2	
Total		**13**	

Phase 3+C (CDY)		**Use**	
Number Supply Wells	9.17	9	
Number Standby Wells		2	
Total		**11**	

		Use	
Number Supply Wells (Max Day)	9.84	10	**Max Day = 20,539 gpm / 29.6 MGD**
Number Standby Wells		2	
Total		**12**	

TWO WELL FIELDS REQUIRED

Table D-4: Proposed Water Supply Program

Proposed Water Supply Program - Phase 4+D

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total	Treatment Plant Capacity (MGD)[1]	
								Ground	Surface
January	4.40%	1,109	1,109	-	-	-	1,109	13.3	0.0
February	4.00%	1,008	1,008	-	-	-	1,008	12.1	0.0
March	4.80%	1,209	1,209	-	-	-	1,209	14.5	0.0
April	6.80%	1,714	505	1,209	-	-	1,714	6.1	14.5
May	9.50%	2,394	706	1,688	-	-	2,394	8.5	20.3
June	11.40%	2,873	847	2,026	-	-	2,873	10.2	24.4
July	13.70%	3,452	1,018	2,434	-	-	3,452	12.2	29.3
August	13.60%	3,427	1,011	2,416	-	-	3,427	12.1	29.0
September	11.50%	2,898	855	2,043	-	-	2,898	10.3	24.6
October	9.50%	2,394	2,082	312	-	-	2,394	25.0	3.8
November	6.00%	1,512	1,512	-	-	-	1,512	18.2	0.0
December	4.80%	1,209	1,209	-	-	-	1,209	14.5	0.0
	100.00%	**25,199**	13,071	12,128	-	-	**25,199**		

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total	Treatment Plant Capacity (MGD)[1]	
								Ground	Surface
January	4.40%	970	970	-	-	-	970	11.7	0.0
February	4.00%	882	882	-	-	-	882	10.6	0.0
March	4.80%	1,058	1,058	-	-	-	1,058	12.8	0.0
April	6.80%	1,499	692	807	-	-	1,499	8.3	9.7
May	9.50%	2,095	868	1,227	-	-	2,095	10.5	14.8
June	11.40%	2,513	964	1,549	-	-	2,513	11.6	18.7
July	13.70%	3,021	1,141	1,880	-	-	3,021	13.7	22.7
August	13.60%	2,999	1,134	1,865	-	-	2,999	13.7	22.5
September	11.50%	2,535	998	1,537	-	-	2,535	12.0	18.5
October	9.50%	2,095	1,861	234	-	-	2,095	22.4	2.8
November	6.00%	1,323	1,323	-	-	-	1,323	15.9	0.0
December	4.80%	1,058	1,058	-	-	-	1,058	12.8	0.0
	100.00%	**22,048**	12,949	9,099	-	-	**22,048**		

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 4+D (NY)		**Use**
Number Supply Wells	13.02	13
Number Standby Wells		2
Total		**15**

		Use	
Number Supply Wells (Max Day)	13.96	14	**Max Day = 28,901 gpm / 41.5 MGD**
Number Standby Wells		2	
Total		**16**	

Phase 4+D (CDY)		**Use**
Number Supply Wells	11.64	12
Number Standby Wells		2
Total		**14**

		Use	
Number Supply Wells (Max Day)	12.48	12	**Max Day = 25,288 gpm / 36.4 MGD**
Number Standby Wells		2	
Total		**14**	

TWO WELL FIELDS REQUIRED

[1] The Treatment Plant Capacity is determined by the ratio of ground or surface water to the total monthly demand times the maximum day demand for the month. The maximum day demand for the month is determined by the ratio of the demand for the month to the demand in July times the maximum day demand in July.

Treatment Plant Capacity = (ground or surface water demand for given month)/(total demand for given month) x (max day demand for given month)

Max Day Demand (for given month) = (total demand for given month)/(total demand for July) x (max day demand for July)

Table E-1: Alternate "A" Revised Water Supply Program

Alternate A - Revised Water Supply Program - Phase 1 + A

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	371	371	-	-	-	371
February	4.00%	338	338	-	-	-	338
March	4.80%	405	405	-	-	-	405
April	6.80%	574	574	-	-	-	574
May	9.50%	802	802	-	-	-	802
June	11.40%	962	962	-	-	-	962
July	13.70%	1,157	1,157	-	-	-	1,157
August	13.60%	1,148	1,148	-	-	-	1,148
September	11.50%	971	971	-	-	-	971
October	9.50%	802	802	-	-	-	802
November	6.00%	507	507	-	-	-	507
December	4.80%	405	405	-	-	-	405
	100.00%	**8,442**	8,442	-	-	-	**8,442**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	325	325	-	-	-	325
February	4.00%	295	295	-	-	-	295
March	4.80%	355	355	-	-	-	355
April	6.80%	502	502	-	-	-	502
May	9.50%	702	702	-	-	-	702
June	11.40%	842	842	-	-	-	842
July	13.70%	1,012	1,012	-	-	-	1,012
August	13.60%	1,005	1,005	-	-	-	1,005
September	11.50%	849	849	-	-	-	849
October	9.50%	702	702	-	-	-	702
November	6.00%	443	443	-	-	-	443
December	4.80%	355	355	-	-	-	355
	100.00%	**7,387**	7,387	-	-	-	**7,387**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 1+A (NY)		**Use**	
Number Supply Wells	7.24	7	
Number Standby Wells		1	
Total		**8**	

		Use	
Number Supply Wells (Max Day)	5.38	5	**Max Day =9,682 gpm / 13.9 MGD**
Number Standby Wells		1	
Total		**6**	

Phase 1+A (CDY)		**Use**	
Number Supply Wells	6.33	6	
Number Standby Wells		1	
Total		**7**	

		Use	
Number Supply Wells (Max Day)	4.71	5	**Max Day = 8,473 gpm / 12.2 MGD**
Number Standby Wells		1	
Total		**6**	

ONE WELL FIELD REQUIRED

Table E-2: Alternate "A" Revised Water Supply Program

Alternate A - Revised Water Supply Program - Phase 2+B

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	694	694	-	-	-	694
February	4.00%	631	631	-	-	-	631
March	4.80%	758	758	-	-	-	758
April	6.80%	1,073	-	1,073	-	-	1,073
May	9.50%	1,500	-	1,500	-	-	1,500
June	11.40%	1,799	-	1,799	-	-	1,799
July	13.70%	2,163	-	2,163	-	-	2,163
August	13.60%	2,147	-	2,147	-	-	2,147
September	11.50%	1,815	-	1,815	-	-	1,815
October	9.50%	1,500	1,188	312	-	-	1,500
November	6.00%	947	947	-	-	-	947
December	4.80%	758	758	-	-	-	758
	100.00%	**15,785**	4,976	10,809	-	-	**15,785**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	608	608	-	-	-	608
February	4.00%	552	552	-	-	-	552
March	4.80%	663	663	-	-	-	663
April	6.80%	939	420	519	-	-	939
May	9.50%	1,312	420	892	-	-	1,312
June	11.40%	1,574	420	1,154	-	-	1,574
July	13.70%	1,892	420	1,472	-	-	1,892
August	13.60%	1,878	420	1,458	-	-	1,878
September	11.50%	1,588	420	1,168	-	-	1,588
October	9.50%	1,312	1,078	234	-	-	1,312
November	6.00%	829	829	-	-	-	829
December	4.80%	663	663	-	-	-	663
	100.00%	**13,810**	6,913	6,897	-	-	**13,810**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 2+B (NY)		**Use**
Number Supply Wells	7.43	7
Number Standby Wells		1
Total		**8**

		Use	
Number Supply Wells (Max Day)	7.97	8	**Max Day =18,104 gpm / 26.0 MGD**
Number Standby Wells		1	
Total		**9**	

Phase 2+B (CDY)		**Use**
Number Supply Wells	6.74	7
Number Standby Wells		1
Total		**8**

		Use	
Number Supply Wells (Max Day)	7.23	7	**Max Day = 15,840 gpm / 22.8 MGD**
Number Standby Wells		1	
Total		**8**	

ONE WELL FIELD REQUIRED

Table E-3: Alternate "A" Revised Water Supply Program

Alternate A - Revised Water Supply Program - Phase 3+C

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	901	901	-	-	-	901
February	4.00%	819	819	-	-	-	819
March	4.80%	982	982	-	-	-	982
April	6.80%	1,392	-	1,392	-	-	1,392
May	9.50%	1,944	-	1,944	-	-	1,944
June	11.40%	2,334	-	2,334	-	-	2,334
July	13.70%	2,804	-	2,804	-	-	2,804
August	13.60%	2,784	-	2,784	-	-	2,784
September	11.50%	2,354	-	2,354	-	-	2,354
October	9.50%	1,944	1,632	312	-	-	1,944
November	6.00%	1,228	1,228	-	-	-	1,228
December	4.80%	982	982	-	-	-	982
	100.00%	**20,468**	6,544	13,924	-	-	**20,468**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	788	788	-	-	-	788
February	4.00%	716	716	-	-	-	716
March	4.80%	860	860	-	-	-	860
April	6.80%	1,218	640	578	-	-	1,218
May	9.50%	1,701	640	1,061	-	-	1,701
June	11.40%	2,042	640	1,402	-	-	2,042
July	13.70%	2,453	640	1,813	-	-	2,453
August	13.60%	2,435	640	1,795	-	-	2,435
September	11.50%	2,059	640	1,419	-	-	2,059
October	9.50%	1,701	1,467	234	-	-	1,701
November	6.00%	1,074	1,074	-	-	-	1,074
December	4.80%	860	860	-	-	-	860
	100.00%	**17,907**	9,605	8,302	-	-	**17,907**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 3+C (NY)		**Use**	
Number Supply Wells	10.21	10	
Number Standby Wells		2	
Total		**12**	

		Use	
Number Supply Wells (Max Day)	10.95	11	**Max Day = 23,475 gpm / 33.7 MGD**
Number Standby Wells		2	
Total		**13**	

Phase 3+C (CDY)		**Use**	
Number Supply Wells	9.17	9	
Number Standby Wells		2	
Total		**11**	

		Use	
Number Supply Wells (Max Day)	9.84	10	**Max Day = 20,539 gpm / 29.6 MGD**
Number Standby Wells		2	
Total		**12**	

TWO WELL FIELDS REQUIRED

Table E-4: Alternate "A" Revised Water Supply Program

Alternate A - Revised Water Supply Program - Phase 4+D

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total	Treatment Plant Capacity (MGD)[1]	
								Ground	Surface
January	4.40%	1,109	1,109	-	-	-	1,109	13.3	0.0
February	4.00%	1,008	1,008	-	-	-	1,008	12.1	0.0
March	4.80%	1,209	1,209	-	-	-	1,209	14.5	0.0
April	6.80%	1,714	-	1,714	-	-	1,714	0.0	20.6
May	9.50%	2,394	-	2,394	-	-	2,394	0.0	28.8
June	11.40%	2,873	-	2,873	-	-	2,873	0.0	34.5
July	13.70%	3,452	535	2,917	-	-	3,452	6.4	35.1
August	13.60%	3,427	510	2,917	-	-	3,427	6.1	35.1
September	11.50%	2,898	387	2,511	-	-	2,898	4.7	30.2
October	9.50%	2,394	2,082	312	-	-	2,394	25.0	3.8
November	6.00%	1,512	1,512	-	-	-	1,512	18.2	0.0
December	4.80%	1,209	1,209	-	-	-	1,209	14.5	0.0
	100.00%	**25,199**	9,561	15,638	-	-	**25,199**		

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total	Treatment Plant Capacity (MGD)[1]	
								Ground	Surface
January	4.40%	970	970	-	-	-	970	11.7	0.0
February	4.00%	882	882	-	-	-	882	10.6	0.0
March	4.80%	1,058	1,058	-	-	-	1,058	12.8	0.0
April	6.80%	1,499	880	619	-	-	1,499	10.6	7.5
May	9.50%	2,095	880	1,215	-	-	2,095	10.6	14.6
June	11.40%	2,513	880	1,633	-	-	2,513	10.6	19.7
July	13.70%	3,021	880	2,141	-	-	3,021	10.6	25.8
August	13.60%	2,999	880	2,119	-	-	2,999	10.6	25.5
September	11.50%	2,535	880	1,655	-	-	2,535	10.6	19.9
October	9.50%	2,095	1,861	234	-	-	2,095	22.4	2.8
November	6.00%	1,323	1,323	-	-	-	1,323	15.9	0.0
December	4.80%	1,058	1,058	-	-	-	1,058	12.8	0.0
	100.00%	**22,048**	12,432	9,616	-	-	**22,048**		

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 4+D (NY)		**Use**
Number Supply Wells	13.02	13
Number Standby Wells		2
Total		**15**

		Use	
Number Supply Wells (Max D	13.96	14	**Max Day = 28,901 gpm / 41.5 MGD**
Number Standby Wells		2	
Total		**16**	

Phase 4+D (CDY)		**Use**
Number Supply Wells	11.64	12
Number Standby Wells		2
Total		**14**

		Use	
Number Supply Wells (Max D	12.48	12	**Max Day = 25,288 gpm / 36.4 MGD**
Number Standby Wells		2	
Total		**14**	

TWO WELL FIELDS REQUIRED

[1] The Treatment Plant Capacity is determined by the ratio of ground or surface water to the total monthly demand times the maximum day demand for the month. The maximum day demand for the month is determined by the ratio of the demand for the month to the demand in July times the maximum day demand in July.

Treatment Plant Capacity = (ground or surface water demand for given month)/(total demand for given month) x (max day demand for given month)

Max Day Demand (for given month) = (total demand for given month)/(total demand for July) x (max day demand for July)

Table F-1: Alternate "B" Winter Diversion Water Supply Program

Alternate B - Winter Diversion Water Supply Program - Phase 1 + A

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	371	371	-	-	-	371
February	4.00%	338	338	-	-	-	338
March	4.80%	405	405	-	-	-	405
April	6.80%	574	574	-	-	-	574
May	9.50%	802	802	-	-	-	802
June	11.40%	962	962	-	-	-	962
July	13.70%	1,157	1,157	-	-	-	1,157
August	13.60%	1,148	1,148	-	-	-	1,148
September	11.50%	971	971	-	-	-	971
October	9.50%	802	802	-	-	-	802
November	6.00%	507	507	-	-	-	507
December	4.80%	405	405	-	-	-	405
	100.00%	**8,442**	8,442	-	-	-	**8,442**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	325	325	-	-	-	325
February	4.00%	295	295	-	-	-	295
March	4.80%	355	355	-	-	-	355
April	6.80%	502	502	-	-	-	502
May	9.50%	702	702	-	-	-	702
June	11.40%	842	842	-	-	-	842
July	13.70%	1,012	1,012	-	-	-	1,012
August	13.60%	1,005	1,005	-	-	-	1,005
September	11.50%	849	849	-	-	-	849
October	9.50%	702	702	-	-	-	702
November	6.00%	443	443	-	-	-	443
December	4.80%	355	355	-	-	-	355
	100.00%	**7,387**	7,387	-	-	-	**7,387**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 1+A (NY)		**Use**
Number Supply Wells	7.24	7
Number Standby Wells		1
Total		**8**

		Use	
Number Supply Wells (Max Day)	5.38	5	**Max Day =9,682 gpm / 13.9 MGD**
Number Standby Wells		1	
Total		**6**	

Phase 1+A (CDY)		**Use**
Number Supply Wells	6.33	6
Number Standby Wells		1
Total		**7**

		Use	
Number Supply Wells (Max Day)	4.71	5	**Max Day = 8,473 gpm / 12.2 MGD**
Number Standby Wells		1	
Total		**6**	

ONE WELL FIELD REQUIRED

Table F-2: Alternate "B" Winter Diversion Water Supply Program

Alternate B - Winter Diversion Water Supply Program - Phase 2+B

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	694	294	-	-	400	694
February	4.00%	631	231	-	-	400	631
March	4.80%	758	358	-	-	400	758
April	6.80%	1,073	500	573	-	-	1,073
May	9.50%	1,500	650	850	-	-	1,500
June	11.40%	1,799	680	1,119	-	-	1,799
July	13.70%	2,163	750	1,413	-	-	2,163
August	13.60%	2,147	730	1,417	-	-	2,147
September	11.50%	1,815	650	1,165	-	-	1,815
October	9.50%	1,500	788	312	-	400	1,500
November	6.00%	947	547	-	-	400	947
December	4.80%	758	358	-	-	400	758
	100.00%	**15,785**	6,536	6,849	-	2,400	**15,785**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	608	408	-	-	200	608
February	4.00%	552	352	-	-	200	552
March	4.80%	663	463	-	-	200	663
April	6.80%	939	830	109	-	-	939
May	9.50%	1,312	1,010	302	-	-	1,312
June	11.40%	1,574	1,044	530	-	-	1,574
July	13.70%	1,892	1,066	826	-	-	1,892
August	13.60%	1,878	1,056	822	-	-	1,878
September	11.50%	1,588	1,040	548	-	-	1,588
October	9.50%	1,312	878	234	-	200	1,312
November	6.00%	829	629	-	-	200	829
December	4.80%	663	463	-	-	200	663
	100.00%	**13,810**	9,239	3,371	-	1,200	**13,810**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 2+B (NY)		**Use**
Number Supply Wells	4.93	5
Number Standby Wells		1
Total		**6**

		Use	
Number Supply Wells (Max Day)	5.28	5	**Max Day =18,104 gpm / 26.0 MGD**
Number Standby Wells		1	
Total		**6**	

Phase 2+B (CDY)		**Use**
Number Supply Wells	6.67	7
Number Standby Wells		1
Total		**8**

		Use	
Number Supply Wells (Max Day)	4.96	5	**Max Day = 15,840 gpm / 22.8 MGD**
Number Standby Wells		1	
Total		**6**	

ONE WELL FIELD REQUIRED

Table F-3: Alternate "B" Winter Diversion Water Supply Program

Alternate B - Winter Diversion Water Supply Program - Phase 3+C

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	901	251	-	-	650	901
February	4.00%	819	219	-	-	600	819
March	4.80%	982	382	-	-	600	982
April	6.80%	1,392	308	1,084	-	-	1,392
May	9.50%	1,944	407	1,537	-	-	1,944
June	11.40%	2,334	607	1,727	-	-	2,334
July	13.70%	2,804	806	1,998	-	-	2,804
August	13.60%	2,784	791	1,993	-	-	2,784
September	11.50%	2,354	607	1,747	-	-	2,354
October	9.50%	1,944	982	312	-	650	1,944
November	6.00%	1,228	578	-	-	650	1,228
December	4.80%	982	332	-	-	650	982
	100.00%	**20,468**	6,270	10,398	-	3,800	**20,468**

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total
January	4.40%	788	463	-	-	325	788
February	4.00%	716	416	-	-	300	716
March	4.80%	860	560	-	-	300	860
April	6.80%	1,218	613	605	-	-	1,218
May	9.50%	1,701	699	1,002	-	-	1,701
June	11.40%	2,042	874	1,168	-	-	2,042
July	13.70%	2,453	1,047	1,406	-	-	2,453
August	13.60%	2,435	1,035	1,400	-	-	2,435
September	11.50%	2,059	874	1,185	-	-	2,059
October	9.50%	1,701	1,142	234	-	325	1,701
November	6.00%	1,074	749	-	-	325	1,074
December	4.80%	860	535	-	-	325	860
	100.00%	**17,907**	9,007	7,000	-	1,900	**17,907**

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 3+C (NY)		**Use**
Number Supply Wells	6.14	6
Number Standby Wells		1
Total		**7**

		Use	
Number Supply Wells (Max Day)	6.59	7	**Max Day = 23,475 gpm / 33.7 MGD**
Number Standby Wells		1	
Total		**8**	

Phase 3+C (CDY)		**Use**
Number Supply Wells	7.14	7
Number Standby Wells		1
Total		**8**

		Use	
Number Supply Wells (Max Day)	7.66	8	**Max Day = 20,539 gpm / 29.6 MGD**
Number Standby Wells		1	
Total		**9**	

ONE WELL FIELD REQUIRED

Table F-4: Alternate "B" Winter Diversion Water Supply Program

Alternate B - Winter Diversion Water Supply Program - Phase 4+D

Normal Year

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total	Treatment Plant Capacity (MGD)[1] Ground	Surface
January	4.40%	1,109	273	-	-	836	1,109	3.3	0.0
February	4.00%	1,008	270	-	-	738	1,008	3.2	0.0
March	4.80%	1,209	276	-	-	933	1,209	3.3	0.0
April	6.80%	1,714	449	1,265	-	-	1,714	5.4	15.2
May	9.50%	2,394	699	1,695	-	-	2,394	8.4	20.4
June	11.40%	2,873	699	2,174	-	-	2,873	8.4	26.1
July	13.70%	3,452	699	2,753	-	-	3,452	8.4	33.1
August	13.60%	3,427	699	2,728	-	-	3,427	8.4	32.8
September	11.50%	2,898	699	2,199	-	-	2,898	8.4	26.4
October	9.50%	2,394	1,253	312	-	829	2,394	15.1	3.8
November	6.00%	1,512	285	-	-	1,227	1,512	3.4	0.0
December	4.80%	1,209	276	-	-	933	1,209	3.3	0.0
	100.00%	**25,199**	6,577	13,126	-	5,496	**25,199**		

Critical Dry Year (12.5% Conservation)

		Demand	Ground	Contract	Winter (E)	Winter (N)	Total	Treatment Plant Capacity (MGD)[1] Ground	Surface
January	4.40%	970	229	-	-	741	970	2.8	0.0
February	4.00%	882	226	-	-	656	882	2.7	0.0
March	4.80%	1,058	431	-	-	627	1,058	5.2	0.0
April	6.80%	1,499	1,038	461	-	-	1,499	12.5	5.6
May	9.50%	2,095	1,048	1,047	-	-	2,095	12.6	12.6
June	11.40%	2,513	1,058	1,455	-	-	2,513	12.8	17.5
July	13.70%	3,021	1,066	1,955	-	-	3,021	12.8	23.6
August	13.60%	2,999	1,058	1,941	-	-	2,999	12.7	23.4
September	11.50%	2,535	1,038	1,497	-	-	2,535	12.5	18.0
October	9.50%	2,095	1,213	234	-	648	2,095	14.6	2.8
November	6.00%	1,323	640	-	-	683	1,323	7.7	0.0
December	4.80%	1,058	231	-	-	827	1,058	2.8	0.0
	100.00%	**22,048**	9,276	8,590	-	4,182	**22,048**		

(Gal/Min)/Well	Min/Day	Days/Month	Gal/Ft3	ft3/ac-ft	Duty Factor	Supply ((ac-ft/mo)/well)
1800	1440	30	7.48	43560	0.67	159.90

Phase 4+D (NY)		**Use**
Number Supply Wells	7.84	8
Number Standby Wells		1
Total		**9**

		Use	
Number Supply Wells (Max Day)	8.40	8	**Max Day = 28,901 gpm / 41.5 MGD**
Number Standby Wells		1	
Total		**9**	

Phase 4+D (CDY)		**Use**
Number Supply Wells	7.59	8
Number Standby Wells		1
Total		**9**

		Use	
Number Supply Wells (Max Day)	8.13	8	**Max Day = 25,288 gpm / 36.4 MGD**
Number Standby Wells		1	
Total		**9**	

ONE WELL FIELD REQUIRED

[1] The Treatment Plant Capacity is determined by the ratio of ground or surface water to the total monthly demand times the maximum day demand for the month. The maximum day demand for the month is determined by the ratio of the demand for the month to the demand in July times the maximum day demand in July.

Treatment Plant Capacity = (ground or surface water demand for given month)/(total demand for given month) x (max day demand for given month)

Max Day Demand (for given month) = (total demand for given month)/(total demand for July) x (max day demand for July)

Table G
Water Conservation Calculation

Proposed Water Supply Program

	Groundwater Supply			Surface Water Supply						Total Water Supply		
				Settlement Contract			Winter Diversion					
Month	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction
January	1,109	970	12.5%	-	-	-	-	-	n/a	1,109	970	12.5%
February	1,008	882	12.5%	-	-	-	-	-	n/a	1,008	882	12.5%
March	1,209	1,058	12.5%	-	-	-	-	-	n/a	1,209	1,058	12.5%
April	505	692	-37.0%	1,209	807	33.3%	-	-	n/a	1,714	1,499	12.5%
May	706	868	-22.9%	1,688	1,227	27.3%	-	-	n/a	2,394	2,095	12.5%
June	847	964	-13.8%	2,026	1,549	23.5%	-	-	n/a	2,873	2,513	12.5%
July	1,018	1,141	-12.1%	2,434	1,880	22.8%	-	-	n/a	3,452	3,021	12.5%
August	1,011	1,134	-12.2%	2,416	1,865	22.8%	-	-	n/a	3,427	2,999	12.5%
September	855	998	-16.7%	2,043	1,537	24.8%	-	-	n/a	2,898	2,535	12.5%
October	2,082	1,861	10.6%	312	234	25.0%	-	-	n/a	2,394	2,095	12.5%
November	1,512	1,323	12.5%	-	-	-	-	-	n/a	1,512	1,323	12.5%
December	1,209	1,058	12.5%	-	-	-	-	-	n/a	1,209	1,058	12.5%
Total	**13,071**	**12,949**	**0.9%**	**12,128**	**9,099**	**25.0%**	**-**	**-**	**n/a**	**25,199**	**22,048**	**12.5%**

Alternate "A" Water Supply Program

	Groundwater			Surface Water Supply						Total Water Supply		
				Settlement Contract			Winter Diversion					
Month	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction
January	1,109	970	12.5%	-	-	-	-	-	n/a	1,109	970	12.5%
February	1,008	882	12.5%	-	-	-	-	-	n/a	1,008	882	12.5%
March	1,209	1,058	12.5%	-	-	-	-	-	n/a	1,209	1,058	12.5%
April	-	880	n/a	1,714	619	63.9%	-	-	n/a	1,714	1,499	12.5%
May	-	880	n/a	2,394	1,215	49.2%	-	-	n/a	2,394	2,095	12.5%
June	-	880	n/a	2,873	1,633	43.2%	-	-	n/a	2,873	2,513	12.5%
July	535	880	-64.5%	2,917	2,141	26.6%	-	-	n/a	3,452	3,021	12.5%
August	510	880	-72.5%	2,917	2,119	27.4%	-	-	n/a	3,427	2,999	12.5%
September	387	880	-127.4%	2,511	1,655	34.1%	-	-	n/a	2,898	2,535	12.5%
October	2,082	1,861	10.6%	312	234	25.0%	-	-	n/a	2,394	2,095	12.5%
November	1,512	1,323	12.5%	-	-	-	-	-	n/a	1,512	1,323	12.5%
December	1,209	1,058	12.5%	-	-	-	-	-	n/a	1,209	1,058	12.5%
Total	**9,561**	**12,432**	**-30.0%**	**15,638**	**9,616**	**38.5%**	**-**	**-**	**n/a**	**25,199**	**22,048**	**12.5%**

Table G (continued)
Water Conservation Calculation

Alternate "B" Water Supply Program

	Groundwater			Surface Water Supply						Total Water Supply		
				Settlement Contract			Winter Diversion					
Month	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction	Normal Year	Critically Dry Year	Reduction
January	273	229	16.1%	-	-	-	836	741	11.4%	1,109	970	12.5%
February	270	226	16.3%	-	-	-	738	656	11.1%	1,008	882	12.5%
March	276	431	-56.2%	-	-	-	933	627	32.8%	1,209	1,058	12.5%
April	449	1,038	-131.2%	1,265	461	63.6%	-	-	n/a	1,714	1,499	12.5%
May	699	1,048	-49.9%	1,695	1,047	38.2%	-	-	n/a	2,394	2,095	12.5%
June	699	1,058	-51.4%	2,174	1,455	33.1%	-	-	n/a	2,873	2,513	12.5%
July	699	1,066	-52.5%	2,753	1,955	29.0%	-	-	n/a	3,452	3,021	12.5%
August	699	1,058	-51.4%	2,728	1,941	28.8%	-	-	n/a	3,427	2,999	12.5%
September	699	1,038	-48.5%	2,199	1,497	31.9%	-	-	n/a	2,898	2,535	12.5%
October	1,253	1,213	3.2%	312	234	25.0%	829	648	21.8%	2,394	2,095	12.5%
November	285	640	-124.6%	-	-	-	1,227	683	44.3%	1,512	1,323	12.5%
December	276	231	16.3%	-	-	-	933	827	11.4%	1,209	1,058	12.5%
Total	**6,577**	**9,276**	**-41.0%**	**13,126**	**8,590**	**34.6%**	**5,496**	**4,182**	**23.9%**	**25,199**	**22,048**	**12.5%**

Table H
Current to Future Land Use for Irrigated Agriculture in Project Area

Phase	Development Type	Irrigated Lands	Irrigated Lands (acres by years from start of project)						
			Current	5	7[1]	10	12[2]	15[3]	20[4]
Phase 1+A	Residential	shareholders	990	283	0	0	0	0	0
		non-shareholders	563	161	0	0	0	0	0
	Industrial	shareholders	601	172	0	0	0	0	0
		non-shareholders	88	25	0	0	0	0	0
Phase 2+B	Residential	shareholders	1,187	1,187	1,187	475	0	0	0
		non-shareholders	223	223	223	89	0	0	0
	Industrial	shareholders	598	598	598	239	0	0	0
		non-shareholders	268	268	268	107	0	0	0
Phase 3+C	Residential	shareholders	425	425	425	425	425	0	0
		non-shareholders	427	427	427	427	427	0	0
	Industrial	shareholders	708	708	708	708	708	0	0
		non-shareholders	186	186	186	186	186	0	0
Phase 4+D	Residential	shareholders	129	129	129	129	129	129	0
		non-shareholders	363	363	363	363	363	363	0
	Industrial	shareholders	746	746	746	746	746	746	0
		non-shareholders	23	23	23	23	23	23	0
Total Irrigated Acres[5]			**7,525**	**5,924**	**5,283**	**3,917**	**3,007**	**1,261**	**0**

(1) Anticipated Phase 1+A build out.
(2) Anticipated Phase 2+B build out.
(3) Anticipated Phase 3+C build out.
(4) Anticipated Phase 4+D build out.
(5) The totals represented in this table exclude non-irrigated lands that are currently part of the existing large businesses within the plan area, approximately 250 Acres+\-.
(6) This table reflects 2007 land use absorption assumptions. These numbers may differ slightly from the 2008 Land Use Plan, but probably not significantly.

Table I

Intentionally Blank

Table J-1
Current and Projected Water Demands in Sutter Pointe Service Area
Normal Year Condition

Sutter Pointe Demand Scenarios		Project Demands (ac-ft by 5-Yr Increments)						
		Current	5	7[(1)]	10	12[(2)]	15[(3)]	20[(4)]
Proposed WSP Phase 1+A	Indoor Demands	0	3,794	5,312	5,312	5,312	5,312	5,312
	Outdoor Demands	0	2,236	3,130	3,130	3,130	3,130	3,130
Proposed WSP Ultimate	Indoor Demands	0	3,794	5,312	7,798	9,455	12,722	16,002
	Outdoor Demands	0	2,236	3,130	5,050	6,330	7,746	9,197
Alternate A WSP Phase 1+A	Indoor Demands	0	3,794	5,312	5,312	5,312	5,312	5,312
	Outdoor Demands	0	2,236	3,130	3,130	3,130	3,130	3,130
Alternate A WSP Ultimate	Indoor Demands	0	3,794	5,312	7,798	9,455	12,722	16,002
	Outdoor Demands	0	2,236	3,130	5,050	6,330	7,746	9,197
Alternate B WSP Phase 1+A	Indoor Demands	0	3,794	5,312	5,312	5,312	5,312	5,312
	Outdoor Demands	0	2,236	3,130	3,130	3,130	3,130	3,130
Alternate B WSP Ultimate	Indoor Demands	0	3,794	5,312	7,798	9,455	12,722	16,002
	Outdoor Demands	0	2,236	3,130	5,050	6,330	7,746	9,197

(1) Anticipated Phase 1+A build out.

(2) Anticipated Phase 2+B build out.

(3) Anticipated Phase 3+C build out.

(4) Anticipated Phase 4+D build out.

Table J-2
Current and Projected Water Demands in Sutter Pointe Service Area
Critical Dry Year Condition

Sutter Pointe Demand Scenarios		Project Demands (ac-ft by 5-Yr Increments)						
		Current	5	7[(1)]	10	12[(2)]	15[(3)]	20[(4)]
Proposed WSP Phase 1+A	Indoor Demands	0	3,320	4,648	4,648	4,648	4,648	4,648
	Outdoor Demands	0	1,956	2,739	2,739	2,739	2,739	2,739
Proposed WSP Ultimate	Indoor Demands	0	3,320	4,648	6,822	8,271	11,129	14,000
	Outdoor Demands	0	1,956	2,739	4,419	5,539	6,778	8,048
Alternate A WSP Phase 1+A	Indoor Demands	0	3,320	4,648	4,648	4,648	4,648	4,648
	Outdoor Demands	0	1,956	2,739	2,739	2,739	2,739	2,739
Alternate A WSP Ultimate	Indoor Demands	0	3,320	4,648	6,822	8,271	11,129	14,000
	Outdoor Demands	0	1,956	2,739	4,419	5,539	6,778	8,048
Alternate B WSP Phase 1+A	Indoor Demands	0	3,320	4,648	4,648	4,648	4,648	4,648
	Outdoor Demands	0	1,956	2,739	2,739	2,739	2,739	2,739
Alternate B WSP Ultimate	Indoor Demands	0	3,320	4,648	6,822	8,271	11,129	14,000
	Outdoor Demands	0	1,956	2,739	4,419	5,539	6,778	8,048

(1) Anticipated Phase 1+A build out.

(2) Anticipated Phase 2+B build out.

(3) Anticipated Phase 3+C build out.

(4) Anticipated Phase 4+D build out.

Table K

Project# 7900-00
Date: 05/16/08
Sutter Pointe - Total Water Demand & EDU Calculations - Normal Year (Ultimate Buildout)

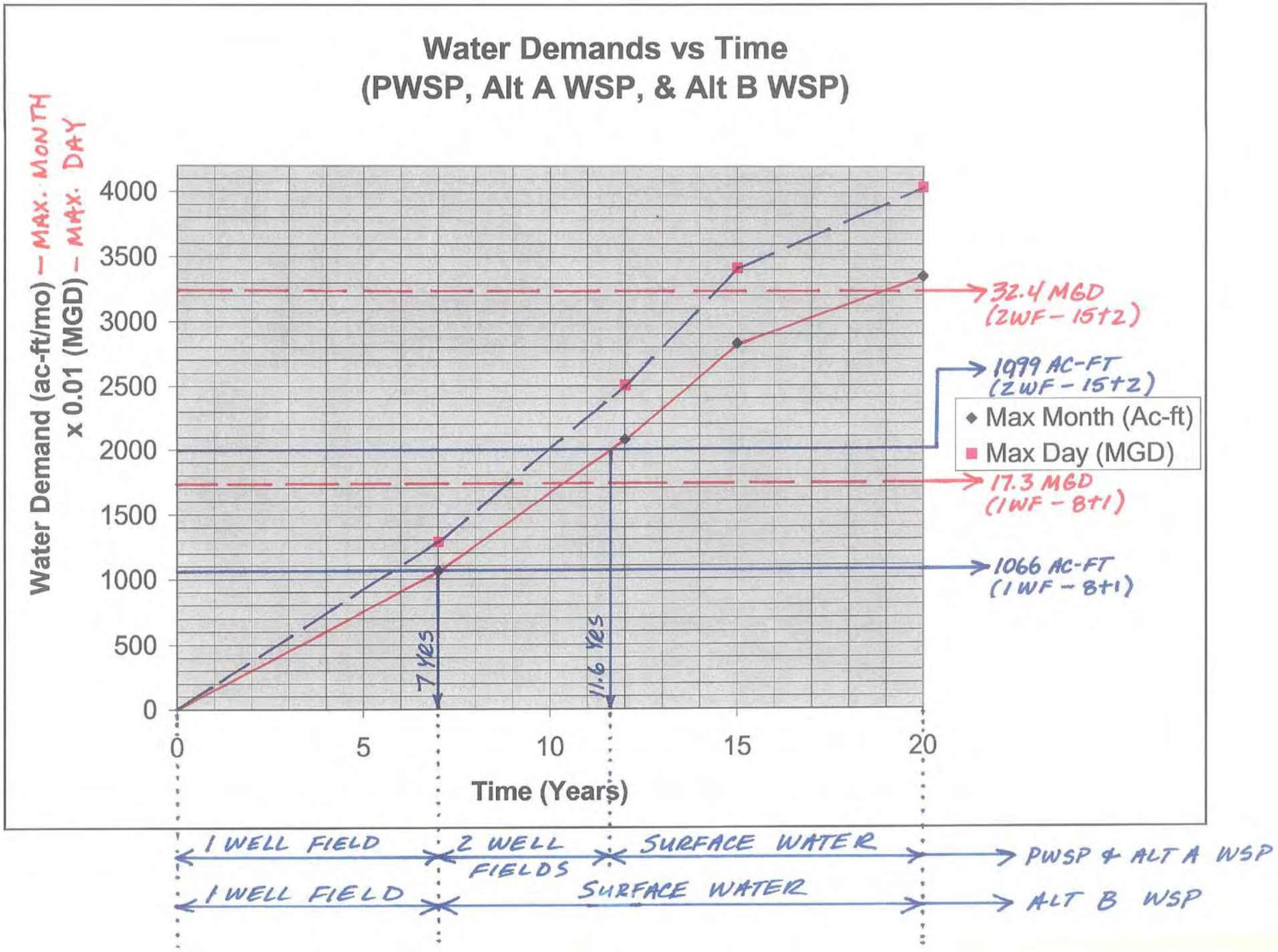
	Land Use	Rate [1] (ac-ft/ac/yr)	Area [2] (acre)	Avg. Annual Demand (ac-ft/yr)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)	Proposed Units	Proposed Area (acres)	EDU's [3]	EDU Ratio (EDU/DU)	EDU Ratio (EDU/acre)
a	b	c	d	f=c*d	g=f*0.62	h=g*1.85	I=h*1.91					
Residential	Low Density (LDR)	3.67	512.8	1,882	1,167	2,159	4,123	1,461	-	2,780	1.90	-
	Medium Density (MDR)	4.17	1,950.3	8,133	5,042	9,328	17,816	12,014	-	12,014	1.00	-
	High Density (HDR)	4.67	187.7	877	544	1,006	1,921	3,378	-	1,296	0.38	-
	Residential Roads	0.20	244.2	49	30	56	107	-	244	72	-	0.30
	Res. Total		***2,895.0***	***10,941***	***6,783***	***12,549***	***23,968***			***16,162***		
Public Facilities	Community Parks	4.08	431.9	1,762	1,092	2,021	3,860	-	432	2,603	-	6.03
	Open Space - High	4.08	166.4	679	421	779	1,487	-	166	1,003	-	6.03
	Open Space - Medium	2.34	132.3	310	192	356	679	-	132	458	-	3.46
	Open Space - Low	0.60	96.1	58	36	67	127	-	96	86	-	0.89
												-
	K-8 School	3.67	121.7	447	277	513	979	-	122	660	-	5.42
	High School	3.67	52.9	194	120	223	425	-	53	287	-	5.42
	Public Total		***1,001.3***	***3,450***	***2,139***	***3,957***	***7,558***			***5,096***		
Industrial	Employment 1	3.00	580.4	1,741	1,079	1,997	3,814	-	580	2,572	-	4.43
	Employment 2	3.00	1,990.5	5,972	3,702	6,849	13,082	-	1,991	8,822	-	4.43
	Employment Roads	0.20	303.8	61	38	70	134	-	304	90	-	0.30
	Commercial Retail	3.00	178.2	535	332	614	1,172	-	178	790	-	4.43
	Mixed Use	3.00	164.1	492	305	564	1,078	-	164	727	-	4.43
	Industrial Drainage Basins	0.60	414.3	249	154	286	545	-	414	368	-	0.89
	Indus. Total		***3,631.3***	***9,050***	***5,611***	***10,380***	***19,825***			***13,369***		
	Subtotal		**7,527.6**	**23,441**	***14,533***	***26,885***	***51,351***			***34,627***		
	7.5% System Loss		-	1,758	1,090	2,016	3,851			2,597		
	Totals		**7,527.6**	**25,199**	**15,622**	**28,902**	**55,202**			***37,224***		
	Totals (mgd)				**22.5**	**41.6**	**79.5**					

[1] Unit Water Demands based on typical urban water demand factors for the Sacramento Region.
[2] Areas were determined from the land use plan prepared by EDAW dated 02-08-08.
[3] 1 EDU is equivalent to 0.6769 ac-ft/yr/DU.

Table L: Water Demand Factor and Peaking Factor Comparison

5/15/2008

Land Use Category	*Sutter Pointe Water Master Plan*			*City of Sacramento - Panhandle Project*			*SCWA Zone 40 Water Master Plan*			*NCMWC-Integrated Water Resources Management Plan*			*Arden Cordova - Westborough Project*		
	Unit Water Demand Factor (ac-ft/ac/yr)	*Max. Day Demand PF*	*Peak Hour Demand PF*	*Unit Water Demand Factor* (ac-ft/ac/yr)	*Max. Day Demand PF*	*Peak Hour Demand PF*	*Unit Water Demand Factor* (ac-ft/ac/yr)	*Max. Day Demand PF*	*Peak Hour Demand PF*	*Unit Water Demand Factor* (ac-ft/ac/yr)	*Max. Day Demand PF*	*Peak Hour Demand PF*	*Unit Water Demand Factor* (ac-ft/ac/yr)	*Max. Day Demand PF*	*Peak Hour Demand PF*
Residential															
LDR	3.67	1.85	1.91	2.81	1.80	1.30	2.89	2.00	2.00	3.60	1.24	-	3.67	1.85	1.50
MDR	4.17	1.85	1.91	3.60	1.80	1.30	3.70	2.00	2.00	3.60	1.24	-	3.67	1.85	1.50
HDR	4.67	1.85	1.91	3.60	1.80	1.30	4.12	2.00	2.00	3.60	1.24	-	4.67	1.85	1.50
Public Facilities															
Parks/Recreational	4.08	1.85	1.91	4.20	1.80	1.30	3.46	2.00	2.00	-	1.24	-	4.08	1.85	1.50
Open Space (Non-Irrigated)	0.60	1.85	1.91	-	1.80	1.30	-	2.00	2.00	-	1.24	-	0.00	1.85	1.50
Schools	3.67	1.85	1.91	2.50	1.80	1.30	3.46	2.00	2.00	-	1.24	-	3.67	1.85	1.50
Industrial															
Commercial Retail	3.00	1.85	1.91	3.00	1.80	1.30	2.75	2.00	2.00	-	1.24	-	3.00	1.85	1.50
Mixed Use	3.00	1.85	1.91	3.00	1.80	1.30	2.51	2.00	2.00	-	1.24	-	3.00	1.85	1.50
Industrial/Employment	3.00	1.85	1.91	4.00	1.80	1.30	2.71	2.00	2.00	-	1.24	-	3.00	1.85	1.50
Drainage Basins/Channels	0.60	1.85	1.91	-	1.80	1.30	-	2.00	2.00	-	1.24	-	0.40	1.85	1.50
Develeoped Land Use															
Roadways	0.20	1.85	1.91	0.00	1.80	1.30	0.21	2.00	2.00	-	1.24	-	0.00	1.85	1.50


Water Demands vs Time
(PWSP, Alt A WSP, & Alt B WSP)
Water Demand (ac-ft/mo) – MAX. MONTH
x 0.01 (MGD) – MAX. DAY
4000
3500
3000
2500
2000
1500
1000
500
0
0
5
10
15
20
Time (Years)
32.4 MGD
(2WF – 15+2)
1099 AC-FT
(2WF – 15+2)
Max Month (Ac-ft)
Max Day (MGD)
17.3 MGD
(1WF – 8+1)
1066 AC-FT
(1WF – 8+1)
7 YRS
11.6 YRS
1 WELL FIELD
2 WELL FIELDS
SURFACE WATER
PWSP & ALT A WSP
1 WELL FIELD
SURFACE WATER
ALT B WSP

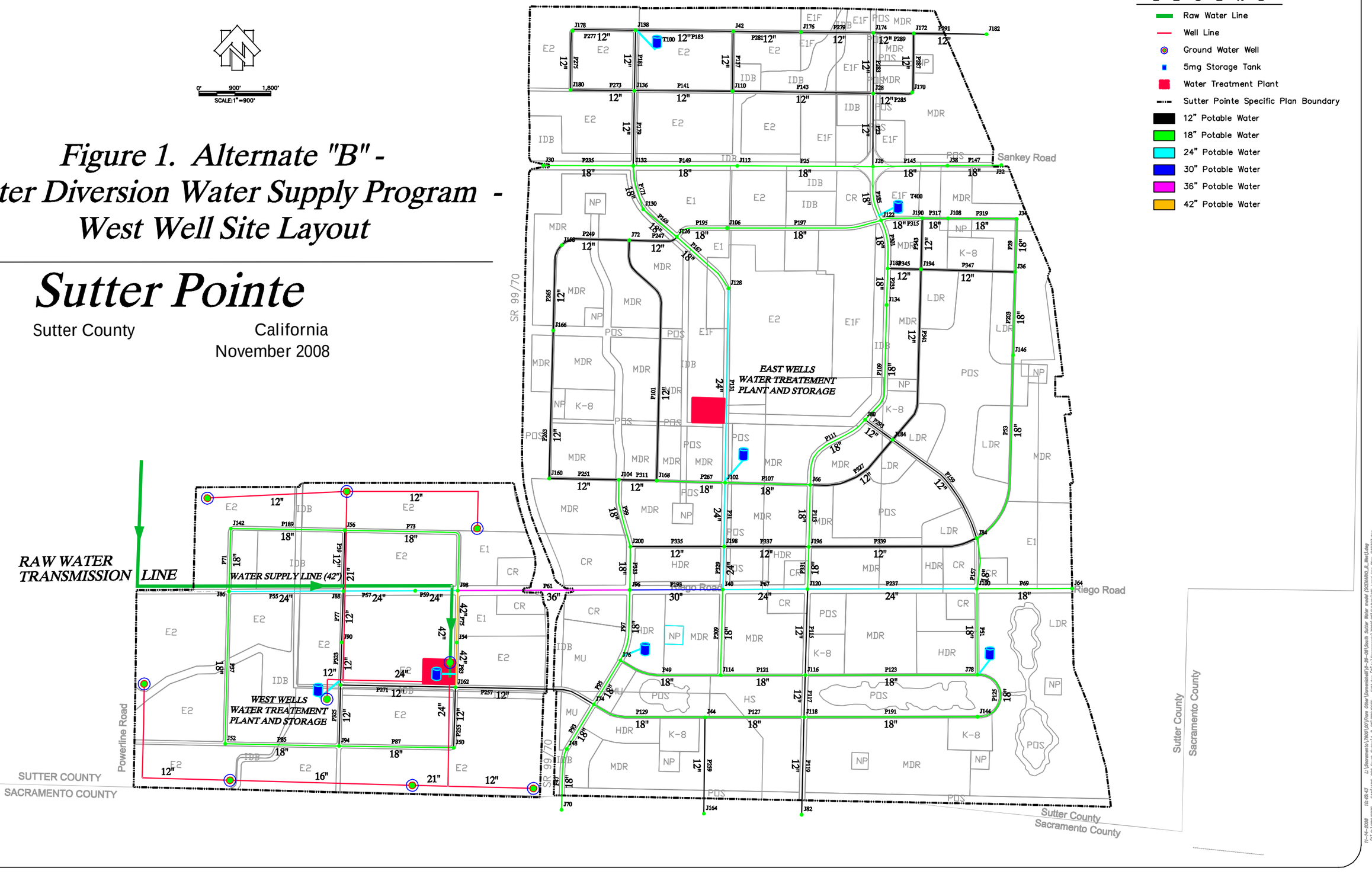
Appendix C. H2ONET® Model Results

0' 900' 1,800'
SCALE:1" = 900'

Figure 1. Alternate "B" - Winter Diversion Water Supply Program - West Well Site Layout

Sutter Pointe

Sutter County California
November 2008



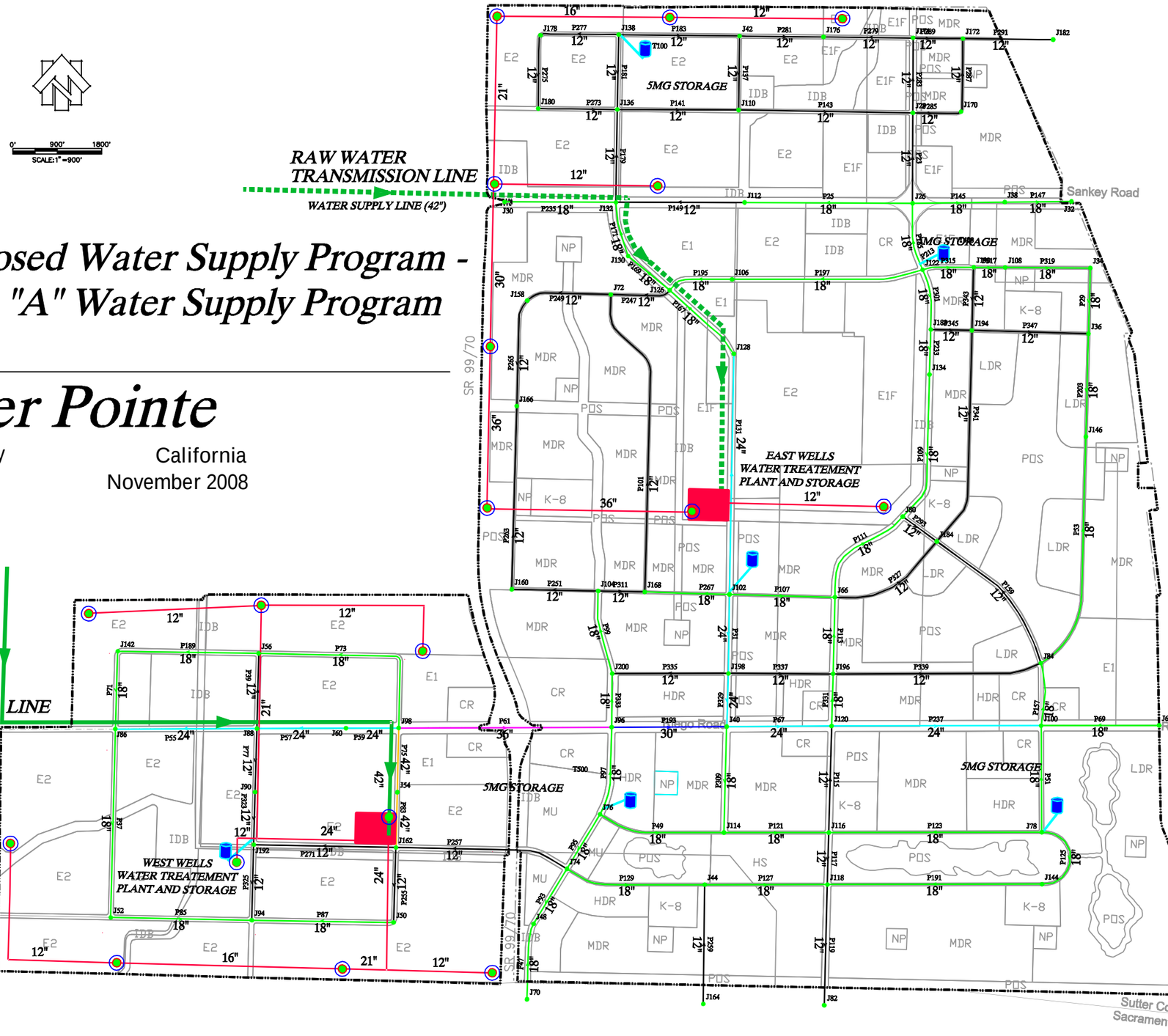


Figure 2. Proposed Water Supply Program - and Alternate "A" Water Supply Program

Sutter Pointe

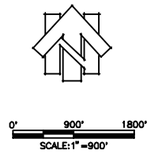
Sutter County California

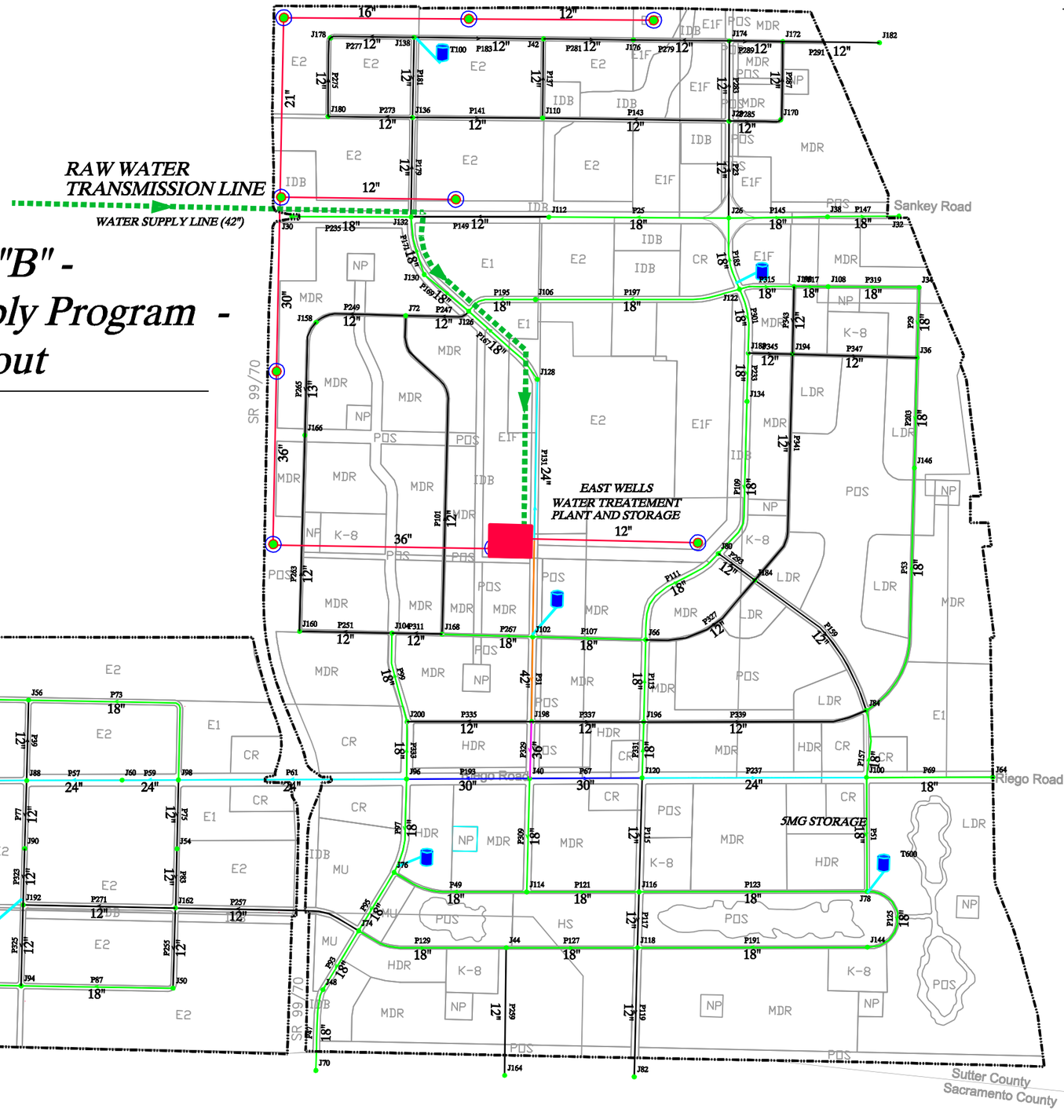
November 2008

Figure 3. Alternate "B" - Winter Diversion Water Supply Program - East Well Site Layout

Sutter Pointe

Sutter County California
November 2008





L E G E N D

- Alternate Raw Water Line
- Well Line
- Ground Water Well
- 5mg Storage Tank
- Water Treatment Plant
- Sutter Pointe Specific Plan Boundary
- 12" Potable Water
- 18" Potable Water
- 24" Potable Water
- 30" Potable Water
- 36" Potable Water
- 42" Potable Water

ALTERNATE A FIREFLOW MAX DAY JUNCTION REPORT

ID	Elevation (ft)	Demand (gpm)	Head (ft)	Pressure (psi)
J-SOURCE1	16.00	3,000.00	16.00	-0.00000
J-SOURCE2	14.50	0.00	166.15	65.71
J100	22.30	694.20	162.86	60.90
J102	24.50	861.60	164.19	60.53
J104	18.00	0.00	163.45	63.02
J106	25.80	210.60	164.93	60.28
J108	31.60	0.00	166.89	58.62
J110	24.00	265.80	159.43	58.68
J112	24.00	171.50	165.47	61.30
J114	20.00	308.80	163.76	62.29
J116	22.50	367.90	162.37	60.60
J118	18.00	664.80	160.70	61.83
J120	21.00	290.70	163.54	61.76
J122	30.50	178.90	169.10	60.05
J126	22.50	396.70	163.77	61.21
J128	33.00	730.70	163.81	56.68
J130	22.30	330.40	163.57	61.21
J132	17.00	0.00	163.51	63.48
J134	31.00	409.10	165.67	58.35
J136	21.00	571.50	159.60	60.06
J138	21.00	0.00	159.60	60.06
J142	19.50	401.80	164.64	62.89
J144	22.30	1,664.80	160.52	59.89
J146	30.10	1,080.80	163.27	57.70
J158	19.00	367.20	158.12	60.28
J160	16.50	0.00	161.11	62.66
J162	14.00	0.00	162.94	64.53
J164	14.50	0.00	161.13	63.53
J166	19.00	1,282.20	156.14	59.42
J168	18.50	1,628.30	163.00	62.61
J170	31.00	0.00	160.06	55.92
J172	31.00	178.00	159.85	55.83
J174	29.00	0.00	159.85	56.70
J176	28.00	261.70	159.33	56.91
J178	20.00	412.60	159.31	60.36
J180	19.50	0.00	159.45	60.64
J182	31.00	0.00	159.85	55.83
J184	22.30	723.40	163.39	61.14
J188	32.00	246.30	166.66	58.35
J190	32.20	0.00	167.45	58.61
J192	16.00	27.50	162.87	63.64
J194	22.30	100.00	166.18	62.34
J196	21.50	150.00	163.56	61.55
J198	24.50	150.00	164.16	60.52
J200	16.50	100.00	164.18	63.99
J202	24.50	0.00	24.50	0.00
J204	24.50	0.00	164.19	60.53
J26	31.00	277.30	166.07	58.53
J28	29.00	387.00	160.19	56.85
J30	20.00	0.00	163.51	62.18
J32	33.00	580.30	165.66	57.48
J34	37.70	319.30	165.37	55.32
J36	36.00	397.60	164.58	55.71
J38	35.80	0.00	165.83	56.34
J40	21.00	538.10	164.16	62.03
J42	25.00	375.30	159.32	58.20
J44	15.00	694.60	161.13	63.32
J48	22.30	453.70	162.84	60.90
J50	14.00	367.30	162.46	64.33
J52	14.80	878.80	162.62	64.05
J54	20.00	512.20	163.36	62.12
J56	14.50	383.50	165.01	65.22

ALTERNATE A FIREFLOW MAX DAY JUNCTION REPORT

ID	Elevation (ft)	Demand (gpm)	Head (ft)	Pressure (psi)
J60	15.00	292.30	166.15	65.49
J64	32.00	0.00	162.86	56.70
J66	26.50	509.40	163.60	59.40
J70	14.50	0.00	162.84	64.28
J72	20.00	0.00	162.06	61.55
J74	15.00	182.50	162.95	64.11
J76	14.50	507.10	164.65	65.06
J78	23.00	865.80	161.60	60.06
J80	26.00	1,130.30	163.60	59.62
J82	15.50	475.40	159.14	62.24
J84	22.30	100.00	163.04	60.98
J86	22.00	550.30	164.62	61.80
J88	16.00	0.00	165.22	64.66
J90	16.00	564.10	163.06	63.72
J92	23.00	0.00	166.15	62.03
J94	16.50	590.50	162.47	63.25
J96	15.00	520.40	164.75	64.89
J98	15.00	347.90	165.91	65.39

ALTERNATE A FIREFLOW MAX DAY PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
P101	6,331.65	12.00	130.00	-216.38	0.61	0.94	0.15
P107	2,136.18	18.00	130.00	879.92	1.11	0.59	0.28
P109	3,054.53	18.00	130.00	-1,427.53	1.80	2.08	0.68
P111	2,316.24	18.00	130.00	17.72	0.02	0.000	0.000
P113	1,552.25	18.00	130.00	231.99	0.29	0.04	0.02
P115	2,156.25	12.00	130.00	436.30	1.24	1.18	0.55
P117	1,054.31	12.00	130.00	774.62	2.20	1.67	1.58
P119	2,443.09	12.00	130.00	475.40	1.35	1.56	0.64
P121	2,123.48	18.00	130.00	1,398.15	1.76	1.39	0.65
P123	4,311.44	18.00	130.00	691.93	0.87	0.77	0.18
P125	1,761.32	18.00	130.00	-1,349.35	1.70	1.08	0.61
P127	2,484.66	18.00	130.00	-681.02	0.86	0.43	0.17
P129	2,865.08	18.00	130.00	1,375.62	1.73	1.82	0.63
P131	4,870.25	24.00	130.00	943.78	0.67	0.38	0.08
P137	1,498.08	12.00	130.00	144.60	0.41	0.11	0.07
P141	2,459.06	12.00	130.00	-144.70	0.41	0.17	0.07
P143	3,525.87	12.00	130.00	-265.70	0.75	0.77	0.22
P145	1,865.59	18.00	130.00	580.30	0.73	0.24	0.13
P147	1,352.28	18.00	130.00	580.30	0.73	0.17	0.13
P149	2,605.51	12.00	130.00	519.46	1.47	1.96	0.75
P157	1,279.39	18.00	130.00	-612.29	0.77	0.18	0.14
P159	3,333.64	12.00	130.00	-179.88	0.51	0.35	0.11
P167	1,837.39	18.00	130.00	213.08	0.27	0.04	0.02
P169	1,089.65	18.00	130.00	708.97	0.89	0.20	0.19
P171	1,121.28	18.00	130.00	378.57	0.48	0.07	0.06
P179	1,880.34	12.00	130.00	898.03	2.55	3.91	2.08
P181	1,515.06	12.00	130.00	11.99	0.03	0.00	0.000
P183	2,447.51	12.00	130.00	187.12	0.53	0.28	0.11
P185	1,381.61	18.00	130.00	2,684.54	3.38	3.03	2.19
P189	2,854.02	18.00	130.00	-581.40	0.73	0.37	0.13
P191	4,344.57	18.00	130.00	-315.45	0.40	0.18	0.04
P193	2,329.93	30.00	130.00	3,204.15	1.45	0.59	0.25
P195	1,344.13	18.00	130.00	-1,617.30	2.04	1.15	0.86
P197	3,882.51	18.00	130.00	-1,827.90	2.30	4.17	1.07
P199	1.00	99.00	199.00	13,234.81	0.55	0.00000	0.00
P203	2,085.61	18.00	135.00	-1,418.45	1.79	1.31	0.63
P205	694.77	99.00	199.00	417.88	0.02	0.00000	0.00000
P207	1,564.32	99.00	199.00	0.00	0.00	0.00	0.00
P209	1.00	99.00	199.00	10,234.81	0.43	0.00000	0.00
P211	1.00	99.00	199.00	10,234.81	0.43	0.00000	0.00
P213	642.66	99.00	199.00	9,477.14	0.40	0.00	0.00
P215	2,964.56	99.00	199.00	0.00	0.00	0.00	0.00
P217	986.47	99.00	199.00	3,161.64	0.13	0.000	0.000
P223	1.00	99.00	199.00	10,234.81	0.43	0.00000	0.00
P225	632.69	99.00	199.00	207.75	0.01	0.000000	0.00000
P23	1,831.28	12.00	130.00	1,135.99	3.22	5.88	3.21
P233	911.23	18.00	130.00	-1,836.63	2.32	0.99	1.08
P235	2,254.24	18.00	130.00	0.00	0.00	0.00	0.00
P237	4,243.68	24.00	130.00	1,397.39	0.99	0.68	0.16
P247	1,228.92	12.00	130.00	-724.71	2.06	1.72	1.40
P249	1,737.12	12.00	130.00	941.09	2.67	3.93	2.26
P25	3,401.10	18.00	130.00	-690.96	0.87	0.60	0.18
P251	1,747.43	12.00	130.00	708.31	2.01	2.34	1.34
P255	1,700.86	12.00	130.00	304.14	0.86	0.48	0.28
P257	3,304.33	12.00	130.00	-28.27	0.08	0.01	0.00
P259	2,414.57	12.00	130.00	0.00	0.00	0.00	0.00
P263	3,708.14	12.00	130.00	708.31	2.01	4.96	1.34
P265	2,183.83	12.00	130.00	-573.89	1.63	1.98	0.91
P267	1,717.02	18.00	130.00	1,441.82	1.82	1.19	0.69
P271	2,880.31	12.00	130.00	82.23	0.23	0.07	0.02
P273	1,600.32	12.00	130.00	169.85	0.48	0.15	0.10
P275	1,492.48	12.00	130.00	-169.85	0.48	0.14	0.10
P277	1,590.41	12.00	130.00	242.75	0.69	0.29	0.18

ALTERNATE A FIREFLOW MAX DAY PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
P279	1,814.31	12.00	130.00	305.29	0.87	0.51	0.28
P281	1,699.00	12.00	130.00	43.59	0.12	0.01	0.01
P283	1,515.07	12.00	130.00	274.12	0.78	0.35	0.23
P285	985.39	12.00	130.00	209.17	0.59	0.14	0.14
P287	1,484.84	12.00	130.00	209.17	0.59	0.21	0.14
P289	1,009.71	12.00	130.00	-31.17	0.09	0.00	0.00
P29	1,329.63	18.00	130.00	-1,326.03	1.67	0.79	0.59
P291	1,826.74	12.00	130.00	0.00	0.00	0.00	0.00
P293	853.55	12.00	130.00	-279.51	0.79	0.20	0.24
P301	1,236.58	18.00	130.00	-2,535.31	3.20	2.44	1.97
P309	2,146.04	18.00	130.00	-717.86	0.91	0.41	0.19
P31	1,599.98	24.00	130.00	402.47	0.29	0.03	0.02
P311	944.65	12.00	130.00	402.86	1.14	0.44	0.47
P315	1,040.74	18.00	130.00	2,250.49	2.84	1.64	1.58
P317	640.25	18.00	130.00	1,645.33	2.07	0.57	0.88
P319	1,720.14	18.00	130.00	1,645.33	2.07	1.52	0.88
P323	1,067.48	12.00	130.00	237.79	0.67	0.19	0.18
P325	1,530.14	12.00	130.00	292.52	0.83	0.40	0.26
P327	2,500.36	12.00	130.00	156.25	0.44	0.20	0.08
P329	1,076.73	24.00	130.00	18.21	0.01	0.0000	0.0000
P331	1,057.49	18.00	130.00	-194.41	0.25	0.02	0.02
P333	1,085.58	18.00	130.00	1,247.69	1.57	0.58	0.53
P335	2,353.95	12.00	130.00	36.51	0.10	0.01	0.01
P337	2,119.20	12.00	130.00	307.18	0.87	0.60	0.28
P339	4,242.25	12.00	130.00	194.76	0.55	0.52	0.12
P341	4,487.30	12.00	130.00	-467.52	1.33	2.78	0.62
P343	1,278.99	12.00	130.00	-605.16	1.72	1.28	1.00
P345	834.90	12.00	130.00	452.37	1.28	0.49	0.58
P347	2,361.88	12.00	130.00	490.01	1.39	1.60	0.68
P349	1.00	99.00	199.00	4,529.58	0.19	0.000000	0.000
P351	1.00	99.00	199.00	4,529.58	0.19	0.000000	0.000
P353	1.00	99.00	199.00	4,529.58	0.19	0.000000	0.000
P355	1.00	99.00	199.00	4,529.58	0.19	0.000000	0.000
P37	3,816.18	18.00	130.00	1,239.93	1.56	2.00	0.52
P39	1,521.24	12.00	130.00	-207.71	0.59	0.21	0.14
P41	1.00	99.00	199.00	-10,234.81	0.43	0.00000	0.00
P47	1,542.01	18.00	130.00	0.00	0.00	0.00	0.00
P49	2,593.59	18.00	130.00	989.09	1.25	0.89	0.34
P51	2,155.63	18.00	130.00	-1,315.48	1.66	1.26	0.58
P53	4,888.13	18.00	130.00	-337.65	0.43	0.23	0.05
P55	2,868.44	24.00	130.00	-1,610.63	1.14	0.60	0.21
P57	1,803.44	24.00	130.00	-2,620.23	1.86	0.93	0.52
P59	1,065.98	42.00	130.00	7,322.28	1.70	0.24	0.23
P61	4,312.06	36.00	130.00	5,346.88	1.69	1.16	0.27
P67	2,123.48	24.00	130.00	1,929.98	1.37	0.62	0.29
P69	2,388.21	18.00	130.00	0.00	0.00	0.00	0.00
P71	1,575.50	18.00	130.00	-179.60	0.23	0.02	0.01
P73	4,275.78	18.00	130.00	757.19	0.95	0.90	0.21
P75	1,299.46	12.00	130.00	870.31	2.47	2.55	1.96
P77	1,285.28	12.00	130.00	801.89	2.27	2.16	1.68
P83	1,120.85	12.00	130.00	358.11	1.02	0.42	0.38
P85	2,854.95	18.00	130.00	361.13	0.46	0.15	0.05
P87	2,872.76	18.00	130.00	63.16	0.08	0.01	0.00
P93	1,302.22	18.00	130.00	453.70	0.57	0.11	0.08
P95	1,290.95	18.00	130.00	2,040.09	2.57	1.70	1.32
P97	1,801.16	18.00	130.00	374.65	0.47	0.10	0.06
P99	1,711.96	18.00	130.00	1,111.18	1.40	0.73	0.43

Scenario A Max Day (No Tanks) Junction Report

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-SOURCE1	0.00	16.00	16.00	-0.00000
J-SOURCE2	0.00	14.50	166.15	65.71
J100	694.20	22.30	155.88	57.88
J102	861.60	24.50	164.19	60.53
J104	0.00	18.00	161.70	62.27
J106	210.60	25.80	151.36	54.41
J108	0.00	31.60	150.22	51.40
J110	265.80	24.00	141.73	51.01
J112	171.50	24.00	148.72	54.04
J114	308.80	20.00	159.54	60.46
J116	367.90	22.50	157.25	58.39
J118	664.80	18.00	155.30	59.49
J120	290.70	21.00	158.80	59.71
J122	178.90	30.50	150.19	51.86
J126	396.70	22.50	151.95	56.09
J128	730.70	33.00	158.28	54.28
J130	330.40	22.30	150.62	55.60
J132	0.00	17.00	149.64	57.47
J134	409.10	31.00	150.91	51.96
J136	571.50	21.00	142.02	52.44
J138	0.00	21.00	141.64	52.27
J142	401.80	19.50	164.27	62.73
J144	1,664.80	22.30	154.69	57.36
J146	1,080.80	30.10	150.52	52.18
J158	367.20	19.00	149.73	56.64
J160	0.00	16.50	157.64	61.16
J162	0.00	14.00	161.17	63.77
J164	0.00	14.50	156.02	61.32
J166	1,282.20	19.00	149.03	56.34
J168	1,628.30	18.50	161.59	62.00
J170	0.00	31.00	142.38	48.26
J172	178.00	31.00	142.15	48.16
J174	0.00	29.00	142.15	49.03
J176	261.70	28.00	141.57	49.21
J178	412.60	20.00	141.48	52.64
J180	0.00	19.50	141.74	52.97
J182	0.00	31.00	142.15	48.16
J184	723.40	22.30	153.32	56.77
J188	246.30	32.00	150.50	51.35
J190	0.00	32.20	150.22	51.14
J192	27.50	16.00	161.38	62.99
J194	100.00	22.30	150.49	55.55
J196	150.00	21.50	158.58	59.40
J198	150.00	24.50	162.54	59.81
J200	100.00	16.50	162.47	63.25
J202	0.00	24.50	24.50	-0.00000
J204	0.00	24.50	164.19	60.53
J26	277.30	31.00	148.67	50.99
J28	387.00	29.00	142.53	49.19
J30	0.00	20.00	149.64	56.17
J32	580.30	33.00	148.26	49.94
J34	319.30	37.70	150.22	48.76
J36	397.60	36.00	150.28	49.52
J38	0.00	35.80	148.43	48.80
J40	538.10	21.00	161.95	61.07
J42	375.30	25.00	141.54	50.50
J44	694.60	15.00	156.02	61.10
J48	453.70	22.30	158.31	58.93
J50	367.30	14.00	161.06	63.72
J52	878.80	14.80	161.50	63.57
J54	512.20	20.00	162.07	61.56
J56	383.50	14.50	164.71	65.08

Scenario A Max Day (No Tanks) Junction Report

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J60	292.30	15.00	166.15	65.49
J64	0.00	32.00	155.88	53.68
J66	509.40	26.50	158.13	57.04
J70	0.00	14.50	158.31	62.31
J72	0.00	20.00	151.97	57.18
J74	182.50	15.00	158.42	62.14
J76	507.10	14.50	159.62	62.88
J78	865.80	23.00	155.37	57.36
J80	1,130.30	26.00	153.31	55.16
J82	475.40	15.50	153.73	59.90
J84	100.00	22.30	154.83	57.43
J86	550.30	22.00	164.24	61.63
J88	0.00	16.00	164.96	64.55
J90	564.10	16.00	161.89	63.21
J92	0.00	23.00	166.15	62.03
J94	590.50	16.50	161.12	62.67
J96	520.40	15.00	162.97	64.11
J98	347.90	15.00	165.67	65.28

ALTERNATE A MAX DAY (NO TANKS) PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
P101	6,331.65	12.00	130.00	-758.54	2.15	9.62	1.52
P107	2,136.18	18.00	130.00	3,086.61	3.89	6.06	2.84
P109	3,054.53	18.00	130.00	1,544.07	1.95	2.40	0.79
P111	2,316.24	18.00	130.00	-2,612.64	3.29	4.82	2.08
P113	1,552.25	18.00	130.00	-897.20	1.13	0.45	0.29
P115	2,156.25	12.00	130.00	506.81	1.44	1.55	0.72
P117	1,054.31	12.00	130.00	845.05	2.40	1.96	1.86
P119	2,443.09	12.00	130.00	475.40	1.35	1.56	0.64
P121	2,123.48	18.00	130.00	1,828.75	2.31	2.28	1.08
P123	4,311.44	18.00	130.00	1,122.61	1.42	1.88	0.44
P125	1,761.32	18.00	130.00	-1,056.71	1.33	0.69	0.39
P127	2,484.66	18.00	130.00	-903.24	1.14	0.72	0.29
P129	2,865.08	18.00	130.00	1,597.84	2.01	2.40	0.84
P131	4,870.25	24.00	130.00	4,158.53	2.95	5.91	1.21
P137	1,498.08	12.00	130.00	198.71	0.56	0.19	0.13
P141	2,459.06	12.00	130.00	-192.99	0.55	0.30	0.12
P143	3,525.87	12.00	130.00	-271.52	0.77	0.80	0.23
P145	1,865.59	18.00	130.00	580.30	0.73	0.24	0.13
P147	1,352.28	18.00	130.00	580.30	0.73	0.17	0.13
P149	2,605.51	12.00	130.00	-344.84	0.98	0.92	0.35
P157	1,279.39	18.00	130.00	1,573.11	1.98	1.04	0.81
P159	3,333.64	12.00	130.00	395.09	1.12	1.51	0.45
P167	1,837.39	18.00	130.00	3,427.83	4.32	6.33	3.44
P169	1,089.65	18.00	130.00	1,963.30	2.48	1.34	1.23
P171	1,121.28	18.00	130.00	1,632.90	2.06	0.98	0.87
P179	1,880.34	12.00	130.00	1,288.06	3.65	7.62	4.05
P181	1,515.06	12.00	130.00	287.12	0.81	0.38	0.25
P183	2,447.51	12.00	130.00	110.97	0.31	0.11	0.04
P185	1,381.61	18.00	130.00	1,848.10	2.33	1.52	1.10
P189	2,854.02	18.00	130.00	-634.54	0.80	0.43	0.15
P191	4,344.57	18.00	130.00	-608.09	0.77	0.61	0.14
P193	2,329.93	30.00	130.00	4,319.30	1.96	1.02	0.44
P195	1,344.13	18.00	130.00	1,131.11	1.43	0.59	0.44
P197	3,882.51	18.00	130.00	920.51	1.16	1.17	0.30
P199	1.00	99.00	199.00	13,915.55	0.58	0.00000	0.00
P203	2,085.61	18.00	135.00	562.99	0.71	0.24	0.11
P209	1.00	99.00	199.00	13,915.55	0.58	0.00000	0.01
P211	1.00	99.00	199.00	13,915.55	0.58	0.00	0.00
P223	1.00	99.00	199.00	13,915.55	0.58	0.0000	0.02
P23	1,831.28	12.00	130.00	1,163.84	3.30	6.15	3.36
P233	911.23	18.00	130.00	1,134.97	1.43	0.41	0.44
P235	2,254.24	18.00	130.00	0.00	0.00	0.00	0.00
P237	4,243.68	24.00	130.00	3,067.21	2.18	2.93	0.69
P247	1,228.92	12.00	130.00	63.28	0.18	0.02	0.02
P249	1,737.12	12.00	130.00	695.26	1.97	2.25	1.29
P25	3,401.10	18.00	130.00	173.34	0.22	0.05	0.01
P251	1,747.43	12.00	130.00	954.14	2.71	4.06	2.32
P255	1,700.86	12.00	130.00	137.66	0.39	0.11	0.06
P257	3,304.33	12.00	130.00	547.67	1.55	2.75	0.83
P259	2,414.57	12.00	130.00	0.00	0.00	0.00	0.00
P263	3,708.14	12.00	130.00	954.14	2.71	8.62	2.32
P265	2,183.83	12.00	130.00	-328.06	0.93	0.70	0.32
P267	1,717.02	18.00	130.00	2,198.40	2.77	2.60	1.51
P271	2,880.31	12.00	130.00	-147.94	0.42	0.21	0.07
P273	1,600.32	12.00	130.00	236.45	0.67	0.28	0.18
P275	1,492.48	12.00	130.00	-236.45	0.67	0.26	0.18
P277	1,590.41	12.00	130.00	176.15	0.50	0.16	0.10
P279	1,814.31	12.00	130.00	327.32	0.93	0.58	0.32
P281	1,699.00	12.00	130.00	65.62	0.19	0.03	0.02
P283	1,515.07	12.00	130.00	287.00	0.81	0.38	0.25
P285	985.39	12.00	130.00	218.32	0.62	0.15	0.15
P287	1,484.84	12.00	130.00	218.32	0.62	0.22	0.15
P289	1,009.71	12.00	130.00	-40.32	0.11	0.01	0.01

ALTERNATE A MAX DAY (NO TANKS) PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
P29	1,329.63	18.00	130.00	329.18	0.42	0.06	0.04
P291	1,826.74	12.00	130.00	0.00	0.00	0.00	0.00
P293	853.55	12.00	130.00	61.74	0.18	0.01	0.01
P301	1,236.58	18.00	130.00	835.40	1.05	0.31	0.25
P309	2,146.04	18.00	130.00	-1,871.64	2.36	2.41	1.12
P31	1,599.98	24.00	130.00	3,808.11	2.70	1.65	1.03
P311	944.65	12.00	130.00	188.44	0.53	0.11	0.12
P315	1,040.74	18.00	130.00	-271.09	0.34	0.03	0.03
P317	640.25	18.00	130.00	-9.88	0.01	0.0000	0.0000
P319	1,720.14	18.00	130.00	-9.88	0.01	0.000	0.0000
P323	1,067.48	12.00	130.00	405.57	1.15	0.51	0.48
P325	1,530.14	12.00	130.00	230.13	0.65	0.26	0.17
P327	2,500.36	12.00	130.00	861.77	2.44	4.81	1.92
P329	1,076.73	24.00	130.00	-2,719.59	1.93	0.59	0.55
P331	1,057.49	18.00	130.00	764.44	0.96	0.23	0.21
P333	1,085.58	18.00	130.00	1,152.60	1.45	0.50	0.46
P335	2,353.95	12.00	130.00	-89.98	0.26	0.07	0.03
P337	2,119.20	12.00	130.00	848.53	2.41	3.96	1.87
P339	4,242.25	12.00	130.00	565.77	1.60	3.74	0.88
P341	4,487.30	12.00	130.00	471.73	1.34	2.83	0.63
P343	1,278.99	12.00	130.00	261.21	0.74	0.27	0.21
P345	834.90	12.00	130.00	53.27	0.15	0.01	0.01
P347	2,361.88	12.00	130.00	163.79	0.46	0.21	0.09
P349	1.00	99.00	199.00	14,113.25	0.59	0.00000	0.01
P351	1.00	99.00	199.00	14,113.25	0.59	0.00000	0.01
P353	1.00	99.00	199.00	14,113.25	0.59	0.00	0.00
P355	1.00	99.00	199.00	14,113.25	0.59	0.0000	0.02
P37	3,816.18	18.00	130.00	1,468.81	1.85	2.74	0.72
P39	1,521.24	12.00	130.00	-232.22	0.66	0.26	0.17
P41	1.00	99.00	199.00	-13,915.55	0.58	0.00	0.00
P47	1,542.01	18.00	130.00	0.00	0.00	0.00	0.00
P49	2,593.59	18.00	130.00	265.91	0.34	0.08	0.03
P51	2,155.63	18.00	130.00	-799.90	1.01	0.50	0.23
P53	4,888.13	18.00	130.00	1,643.79	2.07	4.32	0.88
P55	2,868.44	24.00	130.00	-1,786.38	1.27	0.73	0.25
P57	1,803.44	24.00	130.00	-2,988.26	2.12	1.19	0.66
P59	1,065.98	42.00	130.00	10,634.99	2.46	0.48	0.45
P61	4,312.06	36.00	130.00	8,451.68	2.66	2.70	0.63
P67	2,123.48	24.00	130.00	4,629.15	3.28	3.14	1.48
P69	2,388.21	18.00	130.00	0.00	0.00	0.00	0.00
P71	1,575.50	18.00	130.00	-232.74	0.29	0.04	0.02
P73	4,275.78	18.00	130.00	785.82	0.99	0.96	0.23
P75	1,299.46	12.00	130.00	1,049.59	2.98	3.60	2.77
P77	1,285.28	12.00	130.00	969.67	2.75	3.08	2.39
P83	1,120.85	12.00	130.00	537.39	1.52	0.90	0.80
P85	2,854.95	18.00	130.00	590.01	0.74	0.38	0.13
P87	2,872.76	18.00	130.00	229.64	0.29	0.07	0.02
P93	1,302.22	18.00	130.00	453.70	0.57	0.11	0.08
P95	1,290.95	18.00	130.00	1,686.37	2.13	1.20	0.93
P97	1,801.16	18.00	130.00	2,459.38	3.10	3.35	1.86
P99	1,711.96	18.00	130.00	1,142.58	1.44	0.77	0.45

ALTERNATE A PEAK HOUR DEMAND WITH TANKS JUNCTION REPORT

	ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
1	J-SOURCE1	0.00	16.00	16.00	-0.00000
2	J-SOURCE2	0.00	14.50	166.15	65.71
3	J100	1,325.92	22.30	161.38	60.27
4	J102	1,645.66	24.50	164.19	60.53
5	J104	0.00	18.00	160.86	61.90
6	J106	402.25	25.80	162.59	59.27
7	J108	0.00	31.60	165.41	57.98
8	J110	507.68	24.00	154.87	56.71
9	J112	327.57	24.00	162.41	59.97
10	J114	589.81	20.00	163.08	61.99
11	J116	702.69	22.50	161.44	60.20
12	J118	1,269.77	18.00	155.98	59.79
13	J120	555.24	21.00	162.18	61.18
14	J122	341.70	30.50	169.10	60.05
15	J126	757.70	22.50	161.01	60.01
16	J128	1,395.64	33.00	161.83	55.82
17	J130	631.06	22.30	160.63	59.94
18	J132	0.00	17.00	160.58	62.21
19	J134	781.38	31.00	163.52	57.42
20	J136	1,091.56	21.00	157.03	58.94
21	J138	0.00	21.00	159.60	60.06
22	J142	767.44	19.50	161.60	61.57
23	J144	3,179.77	22.30	156.00	57.93
24	J146	2,064.33	30.10	160.43	56.47
25	J158	701.35	19.00	142.87	53.67
26	J160	0.00	16.50	153.02	59.15
27	J162	0.00	14.00	157.66	62.25
28	J164	0.00	14.50	156.32	61.45
29	J166	2,449.00	19.00	136.39	50.87

ALTERNATE A PEAK HOUR DEMAND WITH TANKS JUNCTION REPORT

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
30		J168	3,110.05	18.50	159.77	61.21
31		J170	0.00	31.00	154.79	53.64
32		J172	339.98	31.00	154.52	53.52
33		J174	0.00	29.00	154.55	54.40
34		J176	499.85	28.00	154.32	54.73
35		J178	788.07	20.00	157.03	59.37
36		J180	0.00	19.50	157.03	59.59
37		J182	0.00	31.00	154.52	53.52
38		J184	1,381.69	22.30	160.89	60.05
39		J188	470.43	32.00	165.04	57.64
40		J190	0.00	32.20	166.36	58.13
41		J192	52.53	16.00	156.85	61.03
42		J194	191.00	22.30	164.31	61.53
43		J196	286.50	21.50	162.07	60.91
44		J198	286.50	24.50	163.64	60.29
45		J200	191.00	16.50	163.06	63.50
46		J202	0.00	24.50	24.50	-0.00000
47		J204	0.00	24.50	164.19	60.53
48		J26	529.64	31.00	163.25	57.30
49		J28	739.17	29.00	154.97	54.58
50		J30	0.00	20.00	160.58	60.91
51		J32	1,108.37	33.00	161.88	55.84
52		J34	609.86	37.70	162.85	54.23
53		J36	759.42	36.00	161.77	54.50
54		J38	0.00	35.80	162.45	54.88
55		J40	1,027.77	21.00	163.55	61.77
56		J42	716.82	25.00	154.77	56.23
57		J44	1,326.69	15.00	156.32	61.24
58		J48	866.57	22.30	159.39	59.40

ALTERNATE A PEAK HOUR DEMAND WITH TANKS JUNCTION REPORT

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
59		J50	701.54	14.00	155.39	61.26
60		J52	1,678.51	14.80	155.70	61.05
61		J54	978.30	20.00	158.58	60.05
62		J56	732.48	14.50	162.77	64.24
63		J60	558.29	15.00	166.15	65.49
64		J64	0.00	32.00	161.38	56.06
65		J66	972.95	26.50	161.92	58.68
66		J70	0.00	14.50	159.39	62.78
67		J72	0.00	20.00	155.80	58.84
68		J74	348.58	15.00	159.74	62.71
69		J76	968.56	14.50	164.65	65.06
70		J78	1,653.68	23.00	161.60	60.06
71		J80	2,158.87	26.00	161.17	58.57
72		J82	908.01	15.50	150.80	58.63
73		J84	191.00	22.30	161.15	60.16
74		J86	1,051.07	22.00	161.54	60.46
75		J88	0.00	16.00	163.38	63.86
76		J90	1,077.43	16.00	157.20	61.18
77		J92	0.00	23.00	166.15	62.03
78		J94	1,127.85	16.50	155.39	60.18
79		J96	993.96	15.00	164.33	64.71
80		J98	664.49	15.00	165.75	65.32

ALTERNATE A PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
1		P101	J72	J168	6,331.65	12.00	130.00	-470.40	1.33	3.97	0.63
2		P107	J102	J66	2,136.18	18.00	130.00	1,815.72	2.29	2.27	1.06
3		P109	J80	J134	3,054.53	18.00	130.00	-1,528.71	1.93	2.36	0.77
4		P111	J80	J66	2,316.24	18.00	130.00	-960.47	1.21	0.76	0.33
5		P113	J66	J196	1,552.25	18.00	130.00	-493.43	0.62	0.15	0.10
6		P115	J120	J116	2,156.25	12.00	130.00	342.11	0.97	0.75	0.35
7		P117	J116	J118	1,054.31	12.00	130.00	1,470.09	4.17	5.45	5.17
8		P119	J118	J82	2,443.09	12.00	130.00	908.01	2.58	5.18	2.12
9		P121	J114	J116	2,123.48	18.00	130.00	1,529.40	1.93	1.64	0.77
10		P123	J116	J78	4,311.44	18.00	130.00	-301.27	0.38	0.16	0.04
11		P125	J144	J78	1,761.32	18.00	130.00	-3,282.22	4.14	5.60	3.18
12		P127	J118	J44	2,484.66	18.00	130.00	-605.24	0.76	0.34	0.14
13		P129	J74	J44	2,865.08	18.00	130.00	1,931.92	2.44	3.41	1.19
14		P131	J102	J128	4,870.25	24.00	130.00	2,534.97	1.80	2.36	0.49
15		P137	J110	J42	1,498.08	12.00	130.00	141.32	0.40	0.10	0.07
16		P141	J110	J136	2,459.06	12.00	130.00	-563.35	1.60	2.15	0.88
17		P143	J110	J28	3,525.87	12.00	130.00	-85.64	0.24	0.09	0.03
18		P145	J26	J38	1,865.59	18.00	130.00	1,108.37	1.40	0.79	0.43
19		P147	J38	J32	1,352.28	18.00	130.00	1,108.37	1.40	0.58	0.43
20		P149	J112	J132	2,605.51	12.00	130.00	499.97	1.42	1.83	0.70
21		P157	J100	J84	1,279.39	18.00	130.00	703.65	0.89	0.23	0.18
22		P159	J84	J184	3,333.64	12.00	130.00	152.93	0.43	0.26	0.08
23		P167	J128	J126	1,837.39	18.00	130.00	1,139.33	1.44	0.82	0.45
24		P169	J126	J130	1,089.65	18.00	130.00	983.89	1.24	0.37	0.34
25		P171	J130	J132	1,121.28	18.00	130.00	352.82	0.44	0.06	0.05
26		P179	J132	J136	1,880.34	12.00	130.00	852.79	2.42	3.55	1.89
27		P181	J136	J138	1,515.06	12.00	130.00	-805.50	2.29	2.57	1.70
28		P183	J138	J42	2,447.51	12.00	130.00	873.34	2.48	4.83	1.97
29		P185	J122	J26	1,381.61	18.00	130.00	3,832.36	4.83	5.85	4.23
30		P189	J142	J56	2,854.02	18.00	130.00	-1,083.56	1.37	1.16	0.41
31		P191	J144	J118	4,344.57	18.00	130.00	102.45	0.13	0.02	0.01
32		P193	J96	J40	2,329.93	30.00	130.00	3,744.17	1.70	0.78	0.34
33		P195	J126	J106	1,344.13	18.00	130.00	-1,921.40	2.42	1.58	1.18
34		P197	J106	J122	3,882.51	18.00	130.00	-2,323.64	2.93	6.51	1.68

ALTERNATE A PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
35		P199	WEST_WELLS	J-SOURCE1	1.00	99.00	199.00	14,889.28	0.62	0.00000	0.01
36		P203	J146	J36	2,085.61	18.00	135.00	-1,439.35	1.81	1.34	0.64
37		P205	T100	J138	694.77	99.00	199.00	2,463.52	0.10	0.000	0.000
38		P207	T200	J92	1,564.32	99.00	199.00	0.00	0.00	0.00	0.00
39		P209	J-SOURCE1	U7000	1.00	99.00	199.00	14,889.28	0.62	0.00000	0.01
40		P211	U7000	J-SOURCE2	1.00	99.00	199.00	14,889.28	0.62	0.00	0.00
41		P213	T400	J122	642.66	99.00	199.00	12,800.60	0.53	0.00	0.00
42		P215	T300	J102	2,964.56	99.00	199.00	0.00	0.00	0.00	0.00
43		P217	T500	J76	986.47	99.00	199.00	6,614.94	0.28	0.00	0.00
44		P223	J-SOURCE2	J92	1.00	99.00	199.00	14,889.28	0.62	0.00	0.00
45		P225	T600	J78	632.69	99.00	199.00	5,744.10	0.24	0.000	0.00
46		P23	J26	J28	1,831.28	12.00	130.00	1,366.81	3.88	8.28	4.52
47		P233	J134	J188	911.23	18.00	130.00	-2,310.10	2.91	1.51	1.66
48		P235	J132	J30	2,254.24	18.00	130.00	0.00	0.00	0.00	0.00
49		P237	J120	J100	4,243.68	24.00	130.00	1,522.64	1.08	0.80	0.19
50		P247	J72	J126	1,228.92	12.00	130.00	-1,319.14	3.74	5.20	4.23
51		P249	J72	J158	1,737.12	12.00	130.00	1,789.55	5.08	12.94	7.45
52		P25	J112	J26	3,401.10	18.00	130.00	-827.54	1.04	0.84	0.25
53		P251	J104	J160	1,747.43	12.00	130.00	1,360.81	3.86	7.84	4.48
54		P255	J162	J50	1,700.86	12.00	130.00	707.68	2.01	2.27	1.34
55		P257	J162	J74	3,304.33	12.00	130.00	-470.61	1.34	2.07	0.63
56		P259	J44	J164	2,414.57	12.00	130.00	0.00	0.00	0.00	0.00
57		P263	J160	J166	3,708.14	12.00	130.00	1,360.81	3.86	16.63	4.48
58		P265	J166	J158	2,183.83	12.00	130.00	-1,088.19	3.09	6.47	2.96
59		P267	J102	J168	1,717.02	18.00	130.00	2,928.34	3.69	4.42	2.57
60		P271	J162	J192	2,880.31	12.00	130.00	306.59	0.87	0.82	0.28
61		P273	J136	J180	1,600.32	12.00	130.00	3.37	0.01	0.000	0.0000
62		P275	J178	J180	1,492.48	12.00	130.00	-3.37	0.01	0.000	0.0000
63		P277	J138	J178	1,590.41	12.00	130.00	784.69	2.23	2.57	1.62
64		P279	J174	J176	1,814.31	12.00	130.00	202.02	0.57	0.24	0.13
65		P281	J176	J42	1,699.00	12.00	130.00	-297.83	0.84	0.46	0.27
66		P283	J28	J174	1,515.07	12.00	130.00	300.70	0.85	0.41	0.27
67		P285	J28	J170	985.39	12.00	130.00	241.30	0.68	0.18	0.18
68		P287	J170	J172	1,484.84	12.00	130.00	241.30	0.68	0.27	0.18

ALTERNATE A PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
69		P289	J174	J172	1,009.71	12.00	130.00	98.68	0.28	0.04	0.03
70		P29	J36	J34	1,329.63	18.00	130.00	-1,569.68	1.98	1.08	0.81
71		P291	J172	J182	1,826.74	12.00	130.00	0.00	0.00	0.00	0.00
72		P293	J184	J80	853.55	12.00	130.00	-330.31	0.94	0.28	0.33
73		P301	J188	J122	1,236.58	18.00	130.00	-3,341.62	4.21	4.06	3.28
74		P309	J114	J40	2,146.04	18.00	130.00	-776.96	0.98	0.47	0.22
75		P31	J102	J198	1,599.98	24.00	130.00	2,097.90	1.49	0.55	0.34
76		P311	J104	J168	944.65	12.00	130.00	652.12	1.85	1.08	1.15
77		P315	J122	J190	1,040.74	18.00	130.00	2,961.27	3.73	2.73	2.63
78		P317	J190	J108	640.25	18.00	130.00	2,179.55	2.75	0.95	1.49
79		P319	J108	J34	1,720.14	18.00	130.00	2,179.55	2.75	2.56	1.49
80		P323	J90	J192	1,067.48	12.00	130.00	334.90	0.95	0.36	0.33
81		P325	J192	J94	1,530.14	12.00	130.00	588.97	1.67	1.45	0.95
82		P327	J66	J184	2,500.36	12.00	130.00	375.72	1.07	1.03	0.41
83		P329	J40	J198	1,076.73	24.00	130.00	-1,010.41	0.72	0.10	0.09
84		P331	J120	J196	1,057.49	18.00	130.00	529.86	0.67	0.11	0.11
85		P333	J96	J200	1,085.58	18.00	130.00	1,918.26	2.42	1.28	1.18
86		P335	J200	J198	2,353.95	12.00	130.00	-285.66	0.81	0.59	0.25
87		P337	J198	J196	2,119.20	12.00	130.00	515.32	1.46	1.57	0.74
88		P339	J196	J84	4,242.25	12.00	130.00	265.26	0.75	0.92	0.22
89		P341	J184	J194	4,487.30	12.00	130.00	-522.74	1.48	3.42	0.76
90		P343	J194	J190	1,278.99	12.00	130.00	-781.73	2.22	2.05	1.61
91		P345	J188	J194	834.90	12.00	130.00	561.09	1.59	0.73	0.87
92		P347	J194	J36	2,361.88	12.00	130.00	629.08	1.78	2.54	1.07
93		P349	EAST_WELLS	J202	1.00	99.00	199.00	11,022.58	0.46	0.00000	0.00
94		P351	J202	EAST_PMP	1.00	99.00	199.00	11,022.58	0.46	0.00000	0.00
95		P353	EAST_PMP	J204	1.00	99.00	199.00	11,022.58	0.46	0.0000	0.02
96		P355	J204	J102	1.00	99.00	199.00	11,022.58	0.46	0.00	0.00
97		P37	J86	J52	3,816.18	18.00	130.00	2,211.26	2.79	5.84	1.53
98		P39	J56	J88	1,521.24	12.00	130.00	-368.71	1.05	0.61	0.40
99		P41	J60	J92	1.00	99.00	199.00	-14,889.28	0.62	0.0000	0.02
100		P47	J48	J70	1,542.01	18.00	130.00	0.00	0.00	0.00	0.00
101		P49	J76	J114	2,593.59	18.00	130.00	1,342.25	1.69	1.57	0.61
102		P51	J78	J100	2,155.63	18.00	130.00	506.93	0.64	0.22	0.10

ALTERNATE A PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
103		P53	J84	J146	4,888.13	18.00	130.00	624.98	0.79	0.72	0.15
104		P55	J86	J88	2,868.44	24.00	130.00	-2,946.20	2.09	1.84	0.64
105		P57	J88	J60	1,803.44	24.00	130.00	-4,727.25	3.35	2.77	1.54
106		P59	J60	J98	1,065.98	42.00	130.00	9,603.74	2.22	0.40	0.37
107		P61	J98	J96	4,312.06	36.00	130.00	5,969.95	1.88	1.42	0.33
108		P67	J40	J120	2,123.48	24.00	130.00	2,949.85	2.09	1.36	0.64
109		P69	J100	J64	2,388.21	18.00	130.00	0.00	0.00	0.00	0.00
110		P71	J86	J142	1,575.50	18.00	130.00	-316.13	0.40	0.07	0.04
111		P73	J98	J56	4,275.78	18.00	130.00	1,447.34	1.82	2.98	0.70
112		P75	J98	J54	1,299.46	12.00	130.00	1,521.97	4.32	7.17	5.52
113		P77	J88	J90	1,285.28	12.00	130.00	1,412.33	4.01	6.17	4.80
114		P83	J54	J162	1,120.85	12.00	130.00	543.66	1.54	0.92	0.82
115		P85	J52	J94	2,854.95	18.00	130.00	532.75	0.67	0.31	0.11
116		P87	J94	J50	2,872.76	18.00	130.00	-6.14	0.01	0.0000	0.0000
117		P93	J74	J48	1,302.22	18.00	130.00	866.57	1.09	0.35	0.27
118		P95	J76	J74	1,290.95	18.00	130.00	3,617.67	4.56	4.91	3.81
119		P97	J96	J76	1,801.16	18.00	130.00	-686.45	0.87	0.32	0.18
120		P99	J200	J104	1,711.96	18.00	130.00	2,012.92	2.54	2.20	1.28

ALTERNATE B EAST FIREFLOW MAX DAY JUNCTION REPORT

ID	Elevation (ft)	Demand (gpm)	Head (ft)	Pressure (psi)
J100	22.30	3,694.20	165.25	61.94
J102	24.50	861.60	174.60	65.04
J104	18.00	0.00	169.41	65.61
J106	25.80	210.60	168.67	61.90
J108	31.60	0.00	167.89	59.05
J110	24.00	265.80	159.70	58.80
J112	24.00	171.50	167.02	61.97
J114	20.00	308.80	167.17	63.77
J116	22.50	367.90	165.65	62.03
J118	18.00	664.80	163.09	62.87
J120	21.00	290.70	169.99	64.56
J122	30.50	178.90	169.10	60.06
J126	22.50	396.70	168.61	63.31
J128	33.00	730.70	171.45	59.99
J130	22.30	330.40	167.67	62.99
J132	17.00	0.00	167.04	65.01
J134	31.00	409.10	168.35	59.51
J136	21.00	571.50	159.94	60.20
J138	21.00	0.00	159.60	60.06
J142	19.50	401.80	162.14	61.81
J144	22.30	1,664.80	162.96	60.95
J146	30.10	1,080.80	165.67	58.74
J26	31.00	277.30	167.05	58.95
J28	29.00	387.00	160.59	57.02
J30	20.00	0.00	167.04	63.71
J32	33.00	580.30	166.63	57.90
J34	37.70	319.30	166.90	55.98
J36	36.00	397.60	166.44	56.52
J38	35.80	0.00	166.81	56.76
J40	21.00	538.10	171.25	65.10
J42	25.00	375.30	159.51	58.28
J44	15.00	694.60	163.28	64.25
J48	22.30	453.70	164.43	61.59
J50	14.00	367.30	160.67	63.55
J52	14.80	878.80	160.68	63.21
J54	20.00	512.20	161.92	61.49
J56	14.50	383.50	162.52	64.14
J60	15.00	292.30	163.22	64.22
J64	32.00	0.00	165.25	57.74
J66	26.50	509.40	170.00	62.18
J70	14.50	0.00	164.43	64.97
J72	20.00	0.00	167.61	63.96
J74	15.00	182.50	164.54	64.80
J76	14.50	507.10	166.69	65.94
J78	23.00	865.80	164.10	61.14
J80	26.00	1,130.30	168.32	61.67
J82	15.50	475.40	161.53	63.27
J84	22.30	100.00	165.67	62.12
J86	22.00	550.30	162.11	60.71
J88	16.00	0.00	162.58	63.51
J90	16.00	564.10	161.14	62.89
J92	23.00	0.00	163.22	60.76
J94	16.50	590.50	160.65	62.46
J96	15.00	520.40	169.22	66.83
J98	15.00	347.90	163.67	64.42

ALTERNATE B EAST FIREFLOW MAX DAY PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
P101	6,331.65	12.00	130.00	-408.83	1.16	3.06	0.48
P107	2,136.18	18.00	130.00	2,658.19	3.35	4.59	2.15
P109	3,054.53	18.00	130.00	-140.74	0.18	0.03	0.01
P111	2,316.24	18.00	130.00	-1,480.64	1.87	1.69	0.73
P113	1,552.25	18.00	130.00	94.44	0.12	0.01	0.00
P115	2,156.25	12.00	130.00	883.62	2.51	4.35	2.02
P117	1,054.31	12.00	130.00	976.09	2.77	2.56	2.42
P119	2,443.09	12.00	130.00	475.40	1.35	1.56	0.64
P121	2,123.48	18.00	130.00	1,470.15	1.85	1.52	0.72
P123	4,311.44	18.00	130.00	1,009.78	1.27	1.54	0.36
P125	1,761.32	18.00	130.00	-1,394.47	1.76	1.15	0.65
P127	2,484.66	18.00	130.00	-434.44	0.55	0.19	0.08
P129	2,865.08	18.00	130.00	1,129.04	1.42	1.26	0.44
P131	4,870.25	24.00	130.00	2,957.74	2.10	3.14	0.65
P137	1,498.08	12.00	130.00	194.53	0.55	0.18	0.12
P141	2,459.06	12.00	130.00	-172.31	0.49	0.24	0.10
P143	3,525.87	12.00	130.00	-288.02	0.82	0.89	0.25
P145	1,865.59	18.00	130.00	580.30	0.73	0.24	0.13
P147	1,352.28	18.00	130.00	580.30	0.73	0.17	0.13
P149	2,605.51	12.00	130.00	-46.65	0.13	0.02	0.01
P157	1,279.39	18.00	130.00	-965.99	1.22	0.42	0.33
P159	3,333.64	12.00	130.00	-467.41	1.33	2.07	0.62
P167	1,837.39	18.00	130.00	2,227.04	2.81	2.85	1.55
P169	1,089.65	18.00	130.00	1,617.89	2.04	0.93	0.86
P171	1,121.28	18.00	130.00	1,287.49	1.62	0.63	0.56
P179	1,880.34	12.00	130.00	1,240.84	3.52	7.11	3.78
P181	1,515.06	12.00	130.00	268.20	0.76	0.34	0.22
P183	2,447.51	12.00	130.00	100.18	0.28	0.09	0.04
P185	1,381.61	18.00	130.00	2,177.76	2.75	2.05	1.49
P189	2,854.02	18.00	130.00	-589.79	0.74	0.38	0.13
P191	4,344.57	18.00	130.00	-270.33	0.34	0.14	0.03
P193	2,329.93	30.00	130.00	-6,253.62	2.84	2.03	0.87
P195	1,344.13	18.00	130.00	-327.21	0.41	0.06	0.04
P197	3,882.51	18.00	130.00	-537.81	0.68	0.43	0.11
P203	2,085.61	18.00	135.00	-1,067.92	1.35	0.77	0.37
P205	694.77	99.00	199.00	15.76	0.000	0.00	0.00
P207	1,564.32	99.00	199.00	72.24	0.00	0.00	0.00
P213	642.66	99.00	199.00	5,701.44	0.24	0.000	0.000
P215	2,964.56	99.00	199.00	0.00	0.00	0.00	0.00
P217	986.47	99.00	199.00	0.00	0.00	0.00	0.00
P23	1,831.28	12.00	130.00	1,195.31	3.39	6.46	3.53
P25	3,401.10	18.00	130.00	-124.85	0.16	0.03	0.01
P29	1,329.63	18.00	130.00	-985.21	1.24	0.45	0.34
P31	1,599.98	42.00	130.00	16,015.62	3.71	1.54	0.97
P37	3,816.18	18.00	130.00	1,036.15	1.31	1.43	0.38
P39	1,521.24	12.00	130.00	-105.38	0.30	0.06	0.04
P41	1,272.63	24.00	130.00	-72.24	0.05	0.000	0.000
P47	1,542.01	18.00	130.00	0.00	0.00	0.00	0.00
P49	2,593.59	18.00	130.00	-708.59	0.89	0.48	0.19
P51	2,155.63	18.00	130.00	-1,250.49	1.58	1.15	0.53
P53	4,888.13	18.00	130.00	12.88	0.02	0.000	0.000
P55	2,868.44	24.00	130.00	-1,398.45	0.99	0.46	0.16
P57	1,803.44	24.00	130.00	-2,145.43	1.52	0.64	0.36
P59	1,065.98	24.00	130.00	-2,365.50	1.68	0.45	0.43
P61	4,312.06	24.00	130.00	-4,293.81	3.05	5.55	1.29
P67	2,123.48	30.00	130.00	5,082.54	2.31	1.26	0.59
P69	2,388.21	18.00	130.00	0.00	0.00	0.00	0.00
P71	1,575.50	18.00	130.00	-187.99	0.24	0.03	0.02
P73	4,275.78	18.00	130.00	867.91	1.09	1.16	0.27
P75	1,299.46	12.00	130.00	712.50	2.02	1.76	1.35
P77	1,285.28	12.00	130.00	641.60	1.82	1.43	1.11
P83	1,120.85	12.00	130.00	200.30	0.57	0.14	0.13
P85	2,854.95	18.00	130.00	157.35	0.20	0.03	0.01

ALTERNATE B EAST FIREFLOW MAX DAY PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
P87	2,872.76	18.00	130.00	-112.22	0.14	0.02	0.01
P93	1,302.22	18.00	130.00	453.70	0.57	0.11	0.08
P95	1,290.95	18.00	130.00	2,315.39	2.92	2.15	1.67
P97	1,801.16	18.00	130.00	2,113.90	2.67	2.53	1.41
P99	1,711.96	18.00	130.00	-8.18	0.01	0.0000	0.0000

ALTERNATE B WEST FIREFLOW MAX DAY JUNCTION REPORT

ID	Elevation (ft)	Demand (gpm)	Head (ft)	Pressure (psi)
J-SOURCE1	16.00	3,000.00	16.00	-0.00000
J-SOURCE2	14.50	0.00	166.15	65.71
J100	22.30	694.20	162.43	60.72
J102	24.50	861.60	163.10	60.06
J104	18.00	0.00	162.79	62.74
J106	25.80	210.60	164.42	60.07
J108	31.60	0.00	166.75	58.56
J110	24.00	265.80	159.34	58.64
J112	24.00	171.50	163.88	60.61
J114	20.00	308.80	163.36	62.12
J116	22.50	367.90	162.13	60.50
J118	18.00	664.80	160.63	61.80
J120	21.00	290.70	162.92	61.49
J122	30.50	178.90	169.10	60.06
J126	22.50	396.70	163.11	60.93
J128	33.00	730.70	163.03	56.34
J130	22.30	330.40	163.09	61.00
J132	17.00	0.00	163.09	63.30
J134	31.00	409.10	165.34	58.21
J136	21.00	571.50	159.58	60.05
J138	21.00	0.00	159.60	60.06
J142	19.50	401.80	164.63	62.89
J144	22.30	1,664.80	160.48	59.87
J146	30.10	1,080.80	162.90	57.54
J158	19.00	367.20	157.40	59.97
J160	16.50	0.00	160.43	62.37
J162	14.00	0.00	162.92	64.53
J164	14.50	0.00	161.07	63.51
J166	19.00	1,282.20	155.44	59.12
J168	18.50	1,628.30	162.10	62.22
J170	31.00	0.00	159.84	55.83
J172	31.00	178.00	159.66	55.75
J174	29.00	0.00	159.66	56.61
J176	28.00	261.70	159.23	56.86
J178	20.00	412.60	159.30	60.36
J180	19.50	0.00	159.43	60.63
J182	31.00	0.00	159.66	55.75
J184	22.30	723.40	162.80	60.88
J188	32.00	246.30	166.45	58.26
J190	32.20	0.00	167.35	58.56
J192	16.00	27.50	162.85	63.63
J194	22.30	100.00	165.94	62.24
J196	21.50	150.00	162.92	61.28
J198	24.50	150.00	163.32	60.15
J200	16.50	100.00	163.66	63.76
J26	31.00	277.30	165.31	58.19
J28	29.00	387.00	159.97	56.75
J30	20.00	0.00	163.09	62.00
J32	33.00	580.30	164.89	57.15
J34	37.70	319.30	165.14	55.22
J36	36.00	397.60	164.30	55.59
J38	35.80	0.00	165.07	56.01
J40	21.00	538.10	163.50	61.75
J42	25.00	375.30	159.23	58.16
J44	15.00	694.60	161.07	63.29
J48	22.30	453.70	162.82	60.89
J50	14.00	367.30	162.45	64.32
J52	14.80	878.80	162.61	64.04
J54	20.00	512.20	163.34	62.11
J56	14.50	383.50	164.99	65.21
J60	15.00	292.30	166.15	65.49
J64	32.00	0.00	162.43	56.52

ALTERNATE B WEST FIREFLOW MAX DAY JUNCTION REPORT

ID	Elevation (ft)	Demand (gpm)	Head (ft)	Pressure (psi)
J66	26.50	509.40	162.92	59.11
J70	14.50	0.00	162.82	64.27
J72	20.00	0.00	161.32	61.23
J74	15.00	182.50	162.93	64.10
J76	14.50	507.10	164.65	65.06
J78	23.00	865.80	161.60	60.06
J80	26.00	1,130.30	162.95	59.34
J82	15.50	475.40	159.07	62.21
J84	22.30	100.00	162.59	60.79
J86	22.00	550.30	164.61	61.79
J88	16.00	0.00	165.21	64.65
J90	16.00	564.10	163.04	63.71
J92	23.00	0.00	166.15	62.03
J94	16.50	590.50	162.45	63.24
J96	15.00	520.40	164.50	64.78
J98	15.00	347.90	165.88	65.37

ALTERNATE B WEST FIREFLOW MAX DAY PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
P101	6,331.65	12.00	130.00	-195.55	0.55	0.78	0.12
P107	2,136.18	18.00	130.00	462.35	0.58	0.18	0.08
P109	3,054.53	18.00	130.00	-1,540.35	1.94	2.39	0.78
P111	2,316.24	18.00	130.00	170.93	0.22	0.03	0.01
P113	1,552.25	18.00	130.00	5.41	0.01	0.0000	0.0000
P115	2,156.25	12.00	130.00	353.33	1.00	0.80	0.37
P117	1,054.31	12.00	130.00	731.29	2.07	1.50	1.42
P119	2,443.09	12.00	130.00	475.40	1.35	1.56	0.64
P121	2,123.48	18.00	130.00	1,310.22	1.65	1.23	0.58
P123	4,311.44	18.00	130.00	564.35	0.71	0.53	0.12
P125	1,761.32	18.00	130.00	-1,378.27	1.74	1.12	0.64
P127	2,484.66	18.00	130.00	-695.44	0.88	0.45	0.18
P129	2,865.08	18.00	130.00	1,390.04	1.75	1.85	0.65
P131	4,870.25	24.00	130.00	389.22	0.28	0.07	0.02
P137	1,498.08	12.00	130.00	144.50	0.41	0.11	0.07
P141	2,459.06	12.00	130.00	-172.06	0.49	0.24	0.10
P143	3,525.87	12.00	130.00	-238.24	0.68	0.63	0.18
P145	1,865.59	18.00	130.00	580.30	0.73	0.24	0.13
P147	1,352.28	18.00	130.00	580.30	0.73	0.17	0.13
P149	2,605.51	18.00	130.00	926.20	1.17	0.80	0.31
P157	1,279.39	18.00	130.00	-577.85	0.73	0.16	0.13
P159	3,333.64	12.00	130.00	-133.68	0.38	0.20	0.06
P167	1,837.39	18.00	130.00	-341.48	0.43	0.09	0.05
P169	1,089.65	18.00	130.00	252.02	0.32	0.03	0.03
P171	1,121.28	18.00	130.00	-78.38	0.10	0.00	0.00
P179	1,880.34	12.00	130.00	847.82	2.41	3.51	1.87
P181	1,515.06	12.00	130.00	-61.36	0.17	0.02	0.01
P183	2,447.51	12.00	130.00	217.20	0.62	0.37	0.15
P185	1,381.61	18.00	130.00	3,033.84	3.83	3.79	2.75
P189	2,854.02	18.00	130.00	-577.97	0.73	0.36	0.13
P191	4,344.57	18.00	130.00	-286.53	0.36	0.15	0.03
P193	2,329.93	30.00	130.00	4,267.00	1.94	1.00	0.43
P195	1,344.13	18.00	130.00	-1,733.25	2.19	1.31	0.97
P197	3,882.51	18.00	130.00	-1,943.85	2.45	4.68	1.20
P199	1.00	99.00	199.00	13,756.53	0.57	0.00000	0.01
P203	2,085.61	18.00	135.00	-1,473.72	1.86	1.40	0.67
P205	1.00	99.00	199.00	525.54	0.02	0.00	0.0000
P207	1.00	99.00	199.00	0.00	0.00	0.00	0.00
P209	1.00	99.00	199.00	10,756.53	0.45	0.00000	0.00
P211	1.00	99.00	199.00	10,756.53	0.45	0.00000	0.00
P213	1.00	99.00	199.00	10,142.45	0.42	0.00000	0.00
P215	1.00	99.00	199.00	1,753.62	0.07	0.00	0.000
P217	1.00	99.00	199.00	4,222.21	0.18	0.000000	0.000
P223	1.00	99.00	199.00	10,756.53	0.45	0.00000	0.00
P225	1.00	99.00	199.00	628.44	0.03	0.00	0.0000
P23	1,831.28	12.00	130.00	1,078.54	3.06	5.34	2.92
P233	911.23	18.00	130.00	-1,949.45	2.46	1.10	1.21
P235	2,254.24	18.00	130.00	0.00	0.00	0.00	0.00
P237	4,243.68	24.00	130.00	1,167.63	0.83	0.49	0.12
P247	1,228.92	12.00	130.00	-743.05	2.11	1.80	1.46
P249	1,737.12	12.00	130.00	938.59	2.66	3.92	2.25
P25	3,401.10	18.00	130.00	-1,097.70	1.38	1.42	0.42
P251	1,747.43	12.00	130.00	710.81	2.02	2.35	1.35
P255	1,700.86	12.00	130.00	303.01	0.86	0.47	0.28
P257	3,304.33	12.00	130.00	-27.12	0.08	0.01	0.00
P259	2,414.57	12.00	130.00	0.00	0.00	0.00	0.00
P263	3,708.14	12.00	130.00	710.81	2.02	4.99	1.35
P265	2,183.83	12.00	130.00	-571.39	1.62	1.96	0.90
P267	1,717.02	18.00	130.00	1,313.66	1.66	1.00	0.58
P271	2,880.31	12.00	130.00	80.50	0.23	0.07	0.02
P273	1,600.32	12.00	130.00	165.62	0.47	0.15	0.09
P275	1,492.48	12.00	130.00	-165.62	0.47	0.14	0.09
P277	1,590.41	12.00	130.00	246.98	0.70	0.30	0.19

ALTERNATE B WEST FIREFLOW MAX DAY PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
P279	1,814.31	12.00	130.00	275.30	0.78	0.42	0.23
P281	1,699.00	12.00	130.00	13.60	0.04	0.00	0.000
P283	1,515.07	12.00	130.00	256.70	0.73	0.31	0.20
P285	985.39	12.00	130.00	196.60	0.56	0.12	0.12
P287	1,484.84	12.00	130.00	196.60	0.56	0.19	0.12
P289	1,009.71	12.00	130.00	-18.60	0.05	0.00	0.00
P29	1,329.63	18.00	130.00	-1,374.20	1.73	0.84	0.63
P291	1,826.74	12.00	130.00	0.00	0.00	0.00	0.00
P293	853.55	12.00	130.00	-239.12	0.68	0.15	0.18
P301	1,236.58	18.00	130.00	-2,655.89	3.35	2.65	2.15
P309	2,146.04	18.00	130.00	-411.90	0.52	0.15	0.07
P31	1,599.98	24.00	130.00	-1,273.20	0.90	0.22	0.14
P311	944.65	12.00	130.00	510.19	1.45	0.69	0.73
P315	1,040.74	18.00	130.00	2,329.98	2.94	1.75	1.68
P317	640.25	18.00	130.00	1,693.50	2.14	0.60	0.93
P319	1,720.14	18.00	130.00	1,693.50	2.14	1.60	0.93
P323	1,067.48	12.00	130.00	239.24	0.68	0.19	0.18
P325	1,530.14	12.00	130.00	292.24	0.83	0.40	0.26
P327	2,500.36	12.00	130.00	118.47	0.34	0.12	0.05
P329	1,076.73	24.00	130.00	1,454.44	1.03	0.19	0.17
P331	1,057.49	18.00	130.00	50.91	0.06	0.00	0.00
P333	1,085.58	18.00	130.00	1,534.69	1.93	0.84	0.78
P335	2,353.95	12.00	130.00	213.69	0.61	0.34	0.15
P337	2,119.20	12.00	130.00	244.93	0.69	0.40	0.19
P339	4,242.25	12.00	130.00	151.25	0.43	0.33	0.08
P341	4,487.30	12.00	130.00	-499.50	1.42	3.14	0.70
P343	1,278.99	12.00	130.00	-636.48	1.81	1.40	1.10
P345	834.90	12.00	130.00	460.13	1.31	0.50	0.60
P347	2,361.88	12.00	130.00	497.12	1.41	1.64	0.69
P37	3,816.18	18.00	130.00	1,241.34	1.57	2.00	0.52
P39	1,521.24	12.00	130.00	-212.04	0.60	0.22	0.14
P41	1.00	99.00	130.00	-10,756.53	0.45	0.00000	0.01
P47	1,542.01	18.00	130.00	0.00	0.00	0.00	0.00
P49	2,593.59	18.00	130.00	1,207.12	1.52	1.29	0.50
P51	2,155.63	18.00	130.00	-1,051.28	1.33	0.83	0.39
P53	4,888.13	18.00	130.00	-392.92	0.50	0.30	0.06
P55	2,868.44	24.00	130.00	-1,615.47	1.15	0.60	0.21
P57	1,803.44	24.00	130.00	-2,630.85	1.87	0.94	0.52
P59	1,065.98	42.00	130.00	7,833.38	1.81	0.27	0.26
P61	4,312.06	36.00	130.00	5,867.45	1.85	1.37	0.32
P67	2,123.48	24.00	130.00	1,862.56	1.32	0.58	0.27
P69	2,388.21	18.00	130.00	0.00	0.00	0.00	0.00
P71	1,575.50	18.00	130.00	-176.17	0.22	0.02	0.01
P73	4,275.78	18.00	130.00	749.43	0.94	0.88	0.21
P75	1,299.46	12.00	130.00	868.60	2.46	2.54	1.95
P77	1,285.28	12.00	130.00	803.34	2.28	2.17	1.69
P83	1,120.85	12.00	130.00	356.40	1.01	0.42	0.38
P85	2,854.95	18.00	130.00	362.54	0.46	0.15	0.05
P87	2,872.76	18.00	130.00	64.29	0.08	0.01	0.00
P93	1,302.22	18.00	130.00	453.70	0.57	0.11	0.08
P95	1,290.95	18.00	130.00	2,053.36	2.59	1.72	1.33
P97	1,801.16	18.00	130.00	-454.64	0.57	0.15	0.08
P99	1,711.96	18.00	130.00	1,220.99	1.54	0.87	0.51

ALTERNATE B WEST MAX DAY (NO TANKS) JUNCTION REPORT

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-SOURCE1	0.00	16.00	16.00	-0.000000
J-SOURCE2	0.00	14.50	166.15	65.71
J100	694.20	22.30	162.43	60.72
J102	861.60	24.50	163.10	60.06
J104	0.00	18.00	162.79	62.74
J106	210.60	25.80	164.42	60.07
J108	0.00	31.60	166.75	58.56
J110	265.80	24.00	159.34	58.64
J112	171.50	24.00	163.88	60.61
J114	308.80	20.00	163.36	62.12
J116	367.90	22.50	162.13	60.50
J118	664.80	18.00	160.63	61.80
J120	290.70	21.00	162.92	61.49
J122	178.90	30.50	169.10	60.06
J126	396.70	22.50	163.11	60.93
J128	730.70	33.00	163.03	56.34
J130	330.40	22.30	163.09	61.00
J132	0.00	17.00	163.09	63.30
J134	409.10	31.00	165.34	58.21
J136	571.50	21.00	159.58	60.05
J138	0.00	21.00	159.60	60.06
J142	401.80	19.50	164.63	62.89
J144	1,664.80	22.30	160.48	59.87
J146	1,080.80	30.10	162.90	57.54
J158	367.20	19.00	157.40	59.97
J160	0.00	16.50	160.43	62.37
J162	0.00	14.00	162.92	64.53
J164	0.00	14.50	161.07	63.51
J166	1,282.20	19.00	155.44	59.12
J168	1,628.30	18.50	162.10	62.22
J170	0.00	31.00	159.84	55.83
J172	178.00	31.00	159.66	55.75
J174	0.00	29.00	159.66	56.61
J176	261.70	28.00	159.23	56.86
J178	412.60	20.00	159.30	60.36
J180	0.00	19.50	159.43	60.63
J182	0.00	31.00	159.66	55.75
J184	723.40	22.30	162.80	60.88
J188	246.30	32.00	166.45	58.26
J190	0.00	32.20	167.35	58.56
J192	27.50	16.00	162.85	63.63
J194	100.00	22.30	165.94	62.24
J196	150.00	21.50	162.92	61.28
J198	150.00	24.50	163.32	60.15
J200	100.00	16.50	163.66	63.76
J26	277.30	31.00	165.31	58.19
J28	387.00	29.00	159.97	56.75
J30	0.00	20.00	163.09	62.00
J32	580.30	33.00	164.89	57.15
J34	319.30	37.70	165.14	55.22
J36	397.60	36.00	164.30	55.59
J38	0.00	35.80	165.07	56.01
J40	538.10	21.00	163.50	61.75
J42	375.30	25.00	159.23	58.16
J44	694.60	15.00	161.07	63.29
J48	453.70	22.30	162.82	60.89
J50	367.30	14.00	162.45	64.32
J52	878.80	14.80	162.61	64.04
J54	512.20	20.00	163.34	62.11
J56	383.50	14.50	164.99	65.21
J60	292.30	15.00	166.15	65.49
J64	0.00	32.00	162.43	56.52

ALTERNATE B WEST MAX DAY (NO TANKS) JUNCTION REPORT

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J66	509.40	26.50	162.92	59.11
J70	0.00	14.50	162.82	64.27
J72	0.00	20.00	161.32	61.23
J74	182.50	15.00	162.93	64.10
J76	507.10	14.50	164.65	65.06
J78	865.80	23.00	161.60	60.06
J80	1,130.30	26.00	162.95	59.34
J82	475.40	15.50	159.07	62.21
J84	100.00	22.30	162.59	60.79
J86	550.30	22.00	164.61	61.79
J88	0.00	16.00	165.21	64.65
J90	564.10	16.00	163.04	63.71
J92	0.00	23.00	166.15	62.03
J94	590.50	16.50	162.45	63.24
J96	520.40	15.00	164.50	64.78
J98	347.90	15.00	165.88	65.37

ALTERNATE B WEST MAX DAY (NO TANKS) PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
P101	6,331.65	12.00	130.00	-195.55	0.55	0.78	0.12
P107	2,136.18	18.00	130.00	462.35	0.58	0.18	0.08
P109	3,054.53	18.00	130.00	-1,540.35	1.94	2.39	0.78
P111	2,316.24	18.00	130.00	170.93	0.22	0.03	0.01
P113	1,552.25	18.00	130.00	5.41	0.01	0.0000	0.0000
P115	2,156.25	12.00	130.00	353.33	1.00	0.80	0.37
P117	1,054.31	12.00	130.00	731.29	2.07	1.50	1.42
P119	2,443.09	12.00	130.00	475.40	1.35	1.56	0.64
P121	2,123.48	18.00	130.00	1,310.22	1.65	1.23	0.58
P123	4,311.44	18.00	130.00	564.35	0.71	0.53	0.12
P125	1,761.32	18.00	130.00	-1,378.27	1.74	1.12	0.64
P127	2,484.66	18.00	130.00	-695.44	0.88	0.45	0.18
P129	2,865.08	18.00	130.00	1,390.04	1.75	1.85	0.65
P131	4,870.25	24.00	130.00	389.22	0.28	0.07	0.02
P137	1,498.08	12.00	130.00	144.50	0.41	0.11	0.07
P141	2,459.06	12.00	130.00	-172.06	0.49	0.24	0.10
P143	3,525.87	12.00	130.00	-238.24	0.68	0.63	0.18
P145	1,865.59	18.00	130.00	580.30	0.73	0.24	0.13
P147	1,352.28	18.00	130.00	580.30	0.73	0.17	0.13
P149	2,605.51	18.00	130.00	926.20	1.17	0.80	0.31
P157	1,279.39	18.00	130.00	-577.85	0.73	0.16	0.13
P159	3,333.64	12.00	130.00	-133.68	0.38	0.20	0.06
P167	1,837.39	18.00	130.00	-341.48	0.43	0.09	0.05
P169	1,089.65	18.00	130.00	252.02	0.32	0.03	0.03
P171	1,121.28	18.00	130.00	-78.38	0.10	0.00	0.00
P179	1,880.34	12.00	130.00	847.82	2.41	3.51	1.87
P181	1,515.06	12.00	130.00	-61.36	0.17	0.02	0.01
P183	2,447.51	12.00	130.00	217.20	0.62	0.37	0.15
P185	1,381.61	18.00	130.00	3,033.84	3.83	3.79	2.75
P189	2,854.02	18.00	130.00	-577.97	0.73	0.36	0.13
P191	4,344.57	18.00	130.00	-286.53	0.36	0.15	0.03
P193	2,329.93	30.00	130.00	4,267.00	1.94	1.00	0.43
P195	1,344.13	18.00	130.00	-1,733.25	2.19	1.31	0.97
P197	3,882.51	18.00	130.00	-1,943.85	2.45	4.68	1.20
P199	1.00	99.00	199.00	10,756.53	0.45	0.00000	0.00
P203	2,085.61	18.00	135.00	-1,473.72	1.86	1.40	0.67
P205	1.00	99.00	199.00	525.54	0.02	0.00	0.00
P207	1.00	99.00	199.00	0.00	0.00	0.00	0.00
P209	1.00	99.00	199.00	10,756.53	0.45	0.00000	0.00
P211	1.00	99.00	199.00	10,756.53	0.45	0.00	0.00
P213	1.00	99.00	199.00	10,142.45	0.42	0.00	0.00
P215	1.00	99.00	199.00	1,753.62	0.07	0.00	0.00
P217	1.00	99.00	199.00	4,222.21	0.18	0.00	0.00
P223	1.00	99.00	199.00	10,756.53	0.45	0.00	0.00
P225	1.00	99.00	199.00	628.44	0.03	0.00	0.00
P23	1,831.28	12.00	130.00	1,078.54	3.06	5.34	2.92
P233	911.23	18.00	130.00	-1,949.45	2.46	1.10	1.21
P235	2,254.24	18.00	130.00	0.00	0.00	0.00	0.00
P237	4,243.68	24.00	130.00	1,167.63	0.83	0.49	0.12
P247	1,228.92	12.00	130.00	-743.05	2.11	1.80	1.46
P249	1,737.12	12.00	130.00	938.59	2.66	3.92	2.25
P25	3,401.10	18.00	130.00	-1,097.70	1.38	1.42	0.42
P251	1,747.43	12.00	130.00	710.81	2.02	2.35	1.35
P255	1,700.86	12.00	130.00	303.01	0.86	0.47	0.28
P257	3,304.33	12.00	130.00	-27.12	0.08	0.01	0.00
P259	2,414.57	12.00	130.00	0.00	0.00	0.00	0.00
P263	3,708.14	12.00	130.00	710.81	2.02	4.99	1.35
P265	2,183.83	12.00	130.00	-571.39	1.62	1.96	0.90
P267	1,717.02	18.00	130.00	1,313.66	1.66	1.00	0.58
P271	2,880.31	12.00	130.00	80.50	0.23	0.07	0.02
P273	1,600.32	12.00	130.00	165.62	0.47	0.15	0.09
P275	1,492.48	12.00	130.00	-165.62	0.47	0.14	0.09
P277	1,590.41	12.00	130.00	246.98	0.70	0.30	0.19

ALTERNATE B WEST MAX DAY (NO TANKS) PIPE REPORT

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
P279	1,814.31	12.00	130.00	275.30	0.78	0.42	0.23
P281	1,699.00	12.00	130.00	13.60	0.04	0.00	0.000
P283	1,515.07	12.00	130.00	256.70	0.73	0.31	0.20
P285	985.39	12.00	130.00	196.60	0.56	0.12	0.12
P287	1,484.84	12.00	130.00	196.60	0.56	0.19	0.12
P289	1,009.71	12.00	130.00	-18.60	0.05	0.00	0.00
P29	1,329.63	18.00	130.00	-1,374.20	1.73	0.84	0.63
P291	1,826.74	12.00	130.00	0.00	0.00	0.00	0.00
P293	853.55	12.00	130.00	-239.12	0.68	0.15	0.18
P301	1,236.58	18.00	130.00	-2,655.89	3.35	2.65	2.15
P309	2,146.04	18.00	130.00	-411.90	0.52	0.15	0.07
P31	1,599.98	24.00	130.00	-1,273.20	0.90	0.22	0.14
P311	944.65	12.00	130.00	510.19	1.45	0.69	0.73
P315	1,040.74	18.00	130.00	2,329.98	2.94	1.75	1.68
P317	640.25	18.00	130.00	1,693.50	2.14	0.60	0.93
P319	1,720.14	18.00	130.00	1,693.50	2.14	1.60	0.93
P323	1,067.48	12.00	130.00	239.24	0.68	0.19	0.18
P325	1,530.14	12.00	130.00	292.24	0.83	0.40	0.26
P327	2,500.36	12.00	130.00	118.47	0.34	0.12	0.05
P329	1,076.73	24.00	130.00	1,454.44	1.03	0.19	0.17
P331	1,057.49	18.00	130.00	50.91	0.06	0.00	0.00
P333	1,085.58	18.00	130.00	1,534.69	1.93	0.84	0.78
P335	2,353.95	12.00	130.00	213.69	0.61	0.34	0.15
P337	2,119.20	12.00	130.00	244.93	0.69	0.40	0.19
P339	4,242.25	12.00	130.00	151.25	0.43	0.33	0.08
P341	4,487.30	12.00	130.00	-499.50	1.42	3.14	0.70
P343	1,278.99	12.00	130.00	-636.48	1.81	1.40	1.10
P345	834.90	12.00	130.00	460.13	1.31	0.50	0.60
P347	2,361.88	12.00	130.00	497.12	1.41	1.64	0.69
P37	3,816.18	18.00	130.00	1,241.34	1.57	2.00	0.52
P39	1,521.24	12.00	130.00	-212.04	0.60	0.22	0.14
P41	1.00	99.00	130.00	-10,756.53	0.45	0.0000	0.02
P47	1,542.01	18.00	130.00	0.00	0.00	0.00	0.00
P49	2,593.59	18.00	130.00	1,207.12	1.52	1.29	0.50
P51	2,155.63	18.00	130.00	-1,051.28	1.33	0.83	0.39
P53	4,888.13	18.00	130.00	-392.92	0.50	0.30	0.06
P55	2,868.44	24.00	130.00	-1,615.47	1.15	0.60	0.21
P57	1,803.44	24.00	130.00	-2,630.85	1.87	0.94	0.52
P59	1,065.98	42.00	130.00	7,833.38	1.81	0.27	0.26
P61	4,312.06	36.00	130.00	5,867.45	1.85	1.37	0.32
P67	2,123.48	24.00	130.00	1,862.56	1.32	0.58	0.27
P69	2,388.21	18.00	130.00	0.00	0.00	0.00	0.00
P71	1,575.50	18.00	130.00	-176.17	0.22	0.02	0.01
P73	4,275.78	18.00	130.00	749.43	0.94	0.88	0.21
P75	1,299.46	12.00	130.00	868.60	2.46	2.54	1.95
P77	1,285.28	12.00	130.00	803.34	2.28	2.17	1.69
P83	1,120.85	12.00	130.00	356.40	1.01	0.42	0.38
P85	2,854.95	18.00	130.00	362.54	0.46	0.15	0.05
P87	2,872.76	18.00	130.00	64.29	0.08	0.01	0.00
P93	1,302.22	18.00	130.00	453.70	0.57	0.11	0.08
P95	1,290.95	18.00	130.00	2,053.36	2.59	1.72	1.33
P97	1,801.16	18.00	130.00	-454.64	0.57	0.15	0.08
P99	1,711.96	18.00	130.00	1,220.99	1.54	0.87	0.51

ALTERNATE B WEST PEAK HOUR DEMAND WITH TANKS JUNCTION REPORT

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
1		J-SOURCE1	0.00	16.00	16.00	-0.00000
2		J-SOURCE2	0.00	14.50	166.15	65.71
3		J100	1,325.92	22.30	161.14	60.16
4		J102	1,645.66	24.50	163.10	60.06
5		J104	0.00	18.00	160.26	61.64
6		J106	402.25	25.80	162.38	59.18
7		J108	0.00	31.60	165.32	57.94
8		J110	507.68	24.00	154.67	56.62
9		J112	327.57	24.00	161.11	59.41
10		J114	589.81	20.00	162.74	61.85
11		J116	702.69	22.50	161.27	60.13
12		J118	1,269.77	18.00	155.94	59.77
13		J120	555.24	21.00	161.75	60.99
14		J122	341.70	30.50	169.10	60.06
15		J126	757.70	22.50	160.74	59.90
16		J128	1,395.64	33.00	161.22	55.56
17		J130	631.06	22.30	160.54	59.90
18		J132	0.00	17.00	160.53	62.19
19		J134	781.38	31.00	163.29	57.32
20		J136	1,091.56	21.00	156.97	58.92
21		J138	0.00	21.00	159.60	60.06
22		J142	767.44	19.50	161.59	61.57
23		J144	3,179.77	22.30	155.96	57.92
24		J146	2,064.33	30.10	160.21	56.38
25		J158	701.35	19.00	142.38	53.46
26		J160	0.00	16.50	152.45	58.91
27		J162	0.00	14.00	157.64	62.24
28		J164	0.00	14.50	156.29	61.44
29		J166	2,449.00	19.00	135.88	50.64

ALTERNATE B WEST PEAK HOUR DEMAND WITH TANKS JUNCTION REPORT

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
30		J168	3,110.05	18.50	158.95	60.86
31		J170	0.00	31.00	154.54	53.53
32		J172	339.98	31.00	154.27	53.41
33		J174	0.00	29.00	154.31	54.30
34		J176	499.85	28.00	154.09	54.64
35		J178	788.07	20.00	156.97	59.35
36		J180	0.00	19.50	156.97	59.57
37		J182	0.00	31.00	154.27	53.41
38		J184	1,381.69	22.30	160.49	59.88
39		J188	470.43	32.00	164.88	57.58
40		J190	0.00	32.20	166.29	58.10
41		J192	52.53	16.00	156.83	61.02
42		J194	191.00	22.30	164.15	61.46
43		J196	286.50	21.50	161.59	60.70
44		J198	286.50	24.50	162.98	60.00
45		J200	191.00	16.50	162.61	63.31
46		J26	529.64	31.00	162.55	57.00
47		J28	739.17	29.00	154.71	54.47
48		J30	0.00	20.00	160.53	60.89
49		J32	1,108.37	33.00	161.19	55.54
50		J34	609.86	37.70	162.71	54.17
51		J36	759.42	36.00	161.60	54.42
52		J38	0.00	35.80	161.76	54.58
53		J40	1,027.77	21.00	162.98	61.52
54		J42	716.82	25.00	154.58	56.15
55		J44	1,326.69	15.00	156.29	61.22
56		J48	866.57	22.30	159.37	59.39
57		J50	701.54	14.00	155.37	61.26
58		J52	1,678.51	14.80	155.69	61.05

ALTERNATE B WEST PEAK HOUR DEMAND WITH TANKS JUNCTION REPORT

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
59		J54	978.30	20.00	158.56	60.04
60		J56	732.48	14.50	162.75	64.24
61		J60	558.29	15.00	166.15	65.49
62		J64	0.00	32.00	161.14	55.96
63		J66	972.95	26.50	161.36	58.44
64		J70	0.00	14.50	159.37	62.77
65		J72	0.00	20.00	155.34	58.64
66		J74	348.58	15.00	159.72	62.71
67		J76	968.56	14.50	164.65	65.06
68		J78	1,653.68	23.00	161.60	60.06
69		J80	2,158.87	26.00	160.73	58.38
70		J82	908.01	15.50	150.76	58.61
71		J84	191.00	22.30	160.88	60.05
72		J86	1,051.07	22.00	161.52	60.46
73		J88	0.00	16.00	163.37	63.85
74		J90	1,077.43	16.00	157.19	61.18
75		J92	0.00	23.00	166.15	62.03
76		J94	1,127.85	16.50	155.37	60.17
77		J96	993.96	15.00	164.05	64.58
78		J98	664.49	15.00	165.71	65.30

ALTERNATE B WEST PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
1		P101	J72	J168	6,331.65	12.00	130.00	-446.48	1.27	3.60	0.57
2		P107	J102	J66	2,136.18	18.00	130.00	1,571.87	1.98	1.74	0.81
3		P109	J80	J134	3,054.53	18.00	130.00	-1,595.81	2.01	2.55	0.84
4		P111	J80	J66	2,316.24	18.00	130.00	-870.41	1.10	0.63	0.27
5		P113	J66	J196	1,552.25	18.00	130.00	-614.45	0.77	0.22	0.14
6		P115	J120	J116	2,156.25	12.00	130.00	270.56	0.77	0.49	0.23
7		P117	J116	J118	1,054.31	12.00	130.00	1,451.73	4.12	5.33	5.05
8		P119	J118	J82	2,443.09	12.00	130.00	908.01	2.58	5.18	2.12
9		P121	J114	J116	2,123.48	18.00	130.00	1,442.46	1.82	1.47	0.69
10		P123	J116	J78	4,311.44	18.00	130.00	-441.39	0.56	0.33	0.08
11		P125	J144	J78	1,761.32	18.00	130.00	-3,294.35	4.15	5.64	3.20
12		P127	J118	J44	2,484.66	18.00	130.00	-611.48	0.77	0.35	0.14
13		P129	J74	J44	2,865.08	18.00	130.00	1,938.16	2.44	3.43	1.20
14		P131	J102	J128	4,870.25	24.00	130.00	2,244.08	1.59	1.88	0.39
15		P137	J110	J42	1,498.08	12.00	130.00	132.20	0.38	0.09	0.06
16		P141	J110	J136	2,459.06	12.00	130.00	-584.00	1.66	2.30	0.94
17		P143	J110	J28	3,525.87	12.00	130.00	-55.88	0.16	0.04	0.01
18		P145	J26	J38	1,865.59	18.00	130.00	1,108.37	1.40	0.79	0.43
19		P147	J38	J32	1,352.28	18.00	130.00	1,108.37	1.40	0.58	0.43
20		P149	J112	J132	2,605.51	18.00	130.00	779.17	0.98	0.58	0.22
21		P157	J100	J84	1,279.39	18.00	130.00	749.79	0.95	0.26	0.21
22		P159	J84	J184	3,333.64	12.00	130.00	189.40	0.54	0.39	0.12
23		P167	J128	J126	1,837.39	18.00	130.00	848.44	1.07	0.48	0.26
24		P169	J126	J130	1,089.65	18.00	130.00	706.58	0.89	0.20	0.18
25		P171	J130	J132	1,121.28	18.00	130.00	75.52	0.10	0.00	0.00
26		P179	J132	J136	1,880.34	12.00	130.00	854.69	2.42	3.56	1.90
27		P181	J136	J138	1,515.06	12.00	130.00	-815.06	2.31	2.63	1.74
28		P183	J138	J42	2,447.51	12.00	130.00	892.07	2.53	5.02	2.05
29		P185	J122	J26	1,381.61	18.00	130.00	4,072.18	5.13	6.55	4.74
30		P189	J142	J56	2,854.02	18.00	130.00	-1,080.88	1.36	1.16	0.41
31		P191	J144	J118	4,344.57	18.00	130.00	114.58	0.14	0.03	0.01
32		P193	J96	J40	2,329.93	30.00	130.00	4,424.74	2.01	1.07	0.46
33		P195	J126	J106	1,344.13	18.00	130.00	-1,961.22	2.47	1.65	1.22
34		P197	J106	J122	3,882.51	18.00	130.00	-2,363.46	2.98	6.72	1.73

ALTERNATE B WEST PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
35		P199	WEST_WELLS	J-SOURCE1	1.00	99.00	199.00	15,416.05	0.64	0.00000	0.01
36		P203	J146	J36	2,085.61	18.00	135.00	-1,464.93	1.85	1.39	0.67
37		P205	T100	J138	1.00	99.00	199.00	2,501.01	0.10	0.00	0.00
38		P207	T200	J92	1.00	99.00	199.00	0.00	0.00	0.00	0.00
39		P209	J-SOURCE1	U7000	1.00	99.00	199.00	15,416.05	0.64	0.00000	0.01
40		P211	U7000	J-SOURCE2	1.00	99.00	199.00	15,416.05	0.64	0.0000	0.02
41		P213	T400	J122	1.00	99.00	199.00	13,192.16	0.55	0.00	0.00
42		P215	T300	J102	1.00	99.00	199.00	9,219.50	0.38	0.00	0.00
43		P217	T500	J76	1.00	99.00	199.00	7,055.41	0.29	0.00	0.00
44		P223	J-SOURCE2	J92	1.00	99.00	199.00	15,416.05	0.64	0.00	0.00
45		P225	T600	J78	1.00	99.00	199.00	6,150.87	0.26	0.00	0.00
46		P23	J26	J28	1,831.28	12.00	130.00	1,327.43	3.77	7.84	4.28
47		P233	J134	J188	911.23	18.00	130.00	-2,377.19	3.00	1.59	1.75
48		P235	J132	J30	2,254.24	18.00	130.00	0.00	0.00	0.00	0.00
49		P237	J120	J100	4,243.68	24.00	130.00	1,314.25	0.93	0.61	0.14
50		P247	J72	J126	1,228.92	12.00	130.00	-1,345.38	3.82	5.40	4.39
51		P249	J72	J158	1,737.12	12.00	130.00	1,791.86	5.08	12.97	7.46
52		P25	J112	J26	3,401.10	18.00	130.00	-1,106.74	1.40	1.44	0.42
53		P251	J104	J160	1,747.43	12.00	130.00	1,358.49	3.85	7.81	4.47
54		P255	J162	J50	1,700.86	12.00	130.00	707.09	2.01	2.27	1.33
55		P257	J162	J74	3,304.33	12.00	130.00	-471.18	1.34	2.08	0.63
56		P259	J44	J164	2,414.57	12.00	130.00	0.00	0.00	0.00	0.00
57		P263	J160	J166	3,708.14	12.00	130.00	1,358.49	3.85	16.58	4.47
58		P265	J166	J158	2,183.83	12.00	130.00	-1,090.51	3.09	6.50	2.98
59		P267	J102	J168	1,717.02	18.00	130.00	2,832.38	3.57	4.15	2.42
60		P271	J162	J192	2,880.31	12.00	130.00	305.88	0.87	0.81	0.28
61		P273	J136	J180	1,600.32	12.00	130.00	-5.82	0.02	0.000	0.000
62		P275	J178	J180	1,492.48	12.00	130.00	5.82	0.02	0.000	0.000
63		P277	J138	J178	1,590.41	12.00	130.00	793.88	2.25	2.63	1.65
64		P279	J174	J176	1,814.31	12.00	130.00	192.40	0.55	0.22	0.12
65		P281	J176	J42	1,699.00	12.00	130.00	-307.45	0.87	0.48	0.29
66		P283	J28	J174	1,515.07	12.00	130.00	294.75	0.84	0.40	0.26
67		P285	J28	J170	985.39	12.00	130.00	237.62	0.67	0.17	0.18
68		P287	J170	J172	1,484.84	12.00	130.00	237.62	0.67	0.26	0.18

ALTERNATE B WEST PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
69		P289	J174	J172	1,009.71	12.00	130.00	102.36	0.29	0.04	0.04
70		P29	J36	J34	1,329.63	18.00	130.00	-1,593.66	2.01	1.11	0.83
71		P291	J172	J182	1,826.74	12.00	130.00	0.00	0.00	0.00	0.00
72		P293	J184	J80	853.55	12.00	130.00	-307.35	0.87	0.24	0.29
73		P301	J188	J122	1,236.58	18.00	130.00	-3,411.12	4.30	4.22	3.41
74		P309	J114	J40	2,146.04	18.00	130.00	-541.21	0.68	0.24	0.11
75		P31	J102	J198	1,599.98	24.00	130.00	925.51	0.66	0.12	0.08
76		P311	J104	J168	944.65	12.00	130.00	724.15	2.05	1.32	1.39
77		P315	J122	J190	1,040.74	18.00	130.00	3,003.70	3.79	2.81	2.70
78		P317	J190	J108	640.25	18.00	130.00	2,203.53	2.78	0.97	1.52
79		P319	J108	J34	1,720.14	18.00	130.00	2,203.53	2.78	2.61	1.52
80		P323	J90	J192	1,067.48	12.00	130.00	335.62	0.95	0.36	0.34
81		P325	J192	J94	1,530.14	12.00	130.00	588.97	1.67	1.45	0.95
82		P327	J66	J184	2,500.36	12.00	130.00	342.96	0.97	0.87	0.35
83		P329	J40	J198	1,076.73	24.00	130.00	67.54	0.05	0.000	0.000
84		P331	J120	J196	1,057.49	18.00	130.00	648.16	0.82	0.17	0.16
85		P333	J96	J200	1,085.58	18.00	130.00	2,049.90	2.58	1.44	1.33
86		P335	J200	J198	2,353.95	12.00	130.00	-223.75	0.63	0.37	0.16
87		P337	J198	J196	2,119.20	12.00	130.00	482.80	1.37	1.39	0.66
88		P339	J196	J84	4,242.25	12.00	130.00	230.01	0.65	0.71	0.17
89		P341	J184	J194	4,487.30	12.00	130.00	-541.99	1.54	3.66	0.82
90		P343	J194	J190	1,278.99	12.00	130.00	-800.17	2.27	2.15	1.68
91		P345	J188	J194	834.90	12.00	130.00	563.50	1.60	0.73	0.88
92		P347	J194	J36	2,361.88	12.00	130.00	630.68	1.79	2.55	1.08
93		P37	J86	J52	3,816.18	18.00	130.00	2,211.84	2.79	5.84	1.53
94		P39	J56	J88	1,521.24	12.00	130.00	-372.02	1.06	0.62	0.41
95		P41	J60	J92	1.00	99.00	130.00	-15,416.05	0.64	0.0000	0.02
96		P47	J48	J70	1,542.01	18.00	130.00	0.00	0.00	0.00	0.00
97		P49	J76	J114	2,593.59	18.00	130.00	1,491.06	1.88	1.91	0.74
98		P51	J78	J100	2,155.63	18.00	130.00	761.46	0.96	0.46	0.21
99		P53	J84	J146	4,888.13	18.00	130.00	599.40	0.76	0.67	0.14
100		P55	J86	J88	2,868.44	24.00	130.00	-2,949.47	2.09	1.84	0.64
101		P57	J88	J60	1,803.44	24.00	130.00	-4,734.54	3.36	2.78	1.54
102		P59	J60	J98	1,065.98	42.00	130.00	10,123.22	2.34	0.44	0.41

ALTERNATE B WEST PEAK HOUR DEMAND WITH TANKS PIPE REPORT

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)
103		P61	J98	J96	4,312.06	36.00	130.00	6,497.29	2.05	1.66	0.38
104		P67	J40	J120	2,123.48	24.00	130.00	2,788.22	1.98	1.23	0.58
105		P69	J100	J64	2,388.21	18.00	130.00	0.00	0.00	0.00	0.00
106		P71	J86	J142	1,575.50	18.00	130.00	-313.44	0.40	0.06	0.04
107		P73	J98	J56	4,275.78	18.00	130.00	1,441.34	1.82	2.96	0.69
108		P75	J98	J54	1,299.46	12.00	130.00	1,520.09	4.31	7.15	5.50
109		P77	J88	J90	1,285.28	12.00	130.00	1,413.05	4.01	6.18	4.81
110		P83	J54	J162	1,120.85	12.00	130.00	541.79	1.54	0.91	0.81
111		P85	J52	J94	2,854.95	18.00	130.00	533.33	0.67	0.31	0.11
112		P87	J94	J50	2,872.76	18.00	130.00	-5.55	0.01	0.0000	0.0000
113		P93	J74	J48	1,302.22	18.00	130.00	866.57	1.09	0.35	0.27
114		P95	J76	J74	1,290.95	18.00	130.00	3,624.48	4.57	4.93	3.82
115		P97	J96	J76	1,801.16	18.00	130.00	-971.31	1.22	0.60	0.33
116		P99	J200	J104	1,711.96	18.00	130.00	2,082.65	2.63	2.34	1.37

Appendix D. Engineer's Opinion of Costs

PRELIMINARY COST ESTIMATE

WATER MASTER PLAN

SUTTER POINTE

Sutter County, California

November 14, 2008

MacKay & Somps
CIVIL ENGINEERS, INC.
SACRAMENTO, CALIFORNIA (916) 929-6092

1. This estimate is prepared as a guide only and is subject to possible change. It has been prepared to a standard of accuracy which, to the best of our knowledge and judgment, is sufficient to satisfy our understanding of the purpose of this estimate. MacKay & Somps makes no warranty, either expressed or implied, as to the accuracy of this estimate.

2. This estimate assumes that the demands for the initial phases of developement will be served by groudwater sources. Surface water will then be brought on to meet the demands of the developement as the community builds out.

3. This estimate assumes the Sutter Pointe Specific Plan would be successful in converting a portion of their agricultural water rights to municipal and industrial uses for the Specific Plan Area.

4. This estimate assumes that the primary source for raw surface water will be from the Bennet Pumping Plant (BPP), and the alternate location would be NCMWC's proposed Sankey Water Diversion Project (SWDP). The developement costs include the turnout, booster pump and raw water transmission line as one line item, and an estimated fair share cost for a proposed diversion as another item (see fair share calculation at rear of estimate). Estimate assumes that fair share cost is the same whether Bennet, or Sankey Diversion option is chosen.

5. The proposed primary route for raw water transmission will be from the BPP then southerly to Sankey Road, easterly to Powerline Road, then southerly to Riego Road, easterly on Riego Road, and southerly to a to a proposed raw water treatment plant. Alternatively, a raw surface water treatment plant could be placed on the eastern portion of the project, whereas the alignment for raw surface water transmission would be from the BPP then southerly to Sankey Road, then easterly (crossing HWY 99) to within the project boundary and south easterly to a proposed raw water treatment site. Both alignment options can utilize a potential tie in to a possible booster pump from a Sankey Diversion Project, thereby reducing the transmission length by +/- 2,400 LF. The alternative costs are shown in the estimate and reflected as potential cost deductions.

6. This estimate does not include any fees by a retail water purveyor providing services in the South Sutter Specific Plan Area. This estimate does, however, include the full cost of the water system, and no fees or credits are applicable.

7. This estimate does not consider the following:

a. Cost associated with environmental (wetland) mitigations or biological surveys
b. Phased construction or out-of-regular-sequence construction
c. Costs associated with ground water or inclement weather conditions
d. Financial Charges
e. Bonds
f. Land costs, acquisition of right of way, easements, and/or rights of entry
g. Assessments from assessment, lighting & landscaping, Mello-Roos districts or the like

8. Costs presented herein represent an opinion based on historical information. No provision has been made for inflation.

9. Costs have been been tabulated and extracted for Phase as well as annual costs according the SPSP Conceptual Phasing Plan dated March, 2008.

10. The "cash flow" situation may be different than the fees, credits, and reimbursements itemized in this estimate.

11. Interim improvements may be required depending on development timing of individual units.

12. This cost estimate is based only on the quantities as shown on the exhibits provided in the Sutter Pointe Specific Plan Water Master Plan Report, which includes backbone onsite and offsite utilities.

13. 4 Cost esimtates have been included for the 3 water supply scenarios options shown below:

1. Proposed - Water Supply Program: Includes both east and west well fields, and surface water treatment plant adjacent to the western ground water treatment plant. Proposed surface water transmission is from Bennet to West Treatment Plant site with a 42" transmission line sized for 29.3 MGD flows. Assumes ground water well and pump facilities will be completed in the initial phases.

2. Alt. "A" Revised - Water Supply Program: Includes both east and west well fields, and surface water treatment plant adjacent to the western ground water treatment plant. Proposed surface water transmission is from Bennet to the West Treatment site with a 42" transmission line sized for 35.1 MGD flows. Assumed ground water well and pump facilities will be completed in the initial phases.

3. Alt "B" Winter Diversion - Water Supply Program (West Well Field): Includes west well field, and surface water treatment plant adjacent to the western ground water treatment plant. Proposed surface water transmission is from Bennet to the West Treatment site with a 42" transmission line sized for 33.1 MGD flows.

4. Alt "B" Winter Diversion - Water Supply Program (East Well Field): Includes east well field, and surface water treatment plant adjacent to the eastern ground water treatment plant. Proposed surface water transmission is from Bennet to the EastTreatment site with a 42" transmission line sized for 33.1 MGD flows.

ENGINEER'S PRELIMINARY OPINION OF COSTS

Sutter County

Based on the Sutter Pointe Water System Model for Proposed Water Supply Program (PWSP)

CONSTRUCTION COSTS (PWSP)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
A. WATER TRANSMISSION																													
1.	12" T-Main incl. pipe and fittings, DIP	$64.00	26,500	LF	$1,696,000	11,000	LF	$704,000	9,500	LF	$608,000	6,800	LF	$435,200	9,800	LF	$627,200	0	LF	$0	11,400	LF	$729,600	21,400	LF	$1,369,600	96,400	LF	$6,169,600
1.a	12" T-Main (parallel on 4 lane ROW and larger)	$94.00	26,500	LF	$2,491,000	3,300	LF	$310,200	6,000	LF	$564,000	10,400		$977,600	7,500	LF	$705,000	5,700		$535,800	9,000	LF	$846,000	0	LF	$0	68,400	LF	$6,429,600
2.	18" T-Main incl. pipe and fittings, DIP	$94.00	26,400	LF	$2,481,600	5,200	LF	$488,800	20,000	LF	$1,880,000	9,900	LF	$930,600	11,000	LF	$1,034,000	15,000	LF	$1,410,000	19,000	LF	$1,786,000	0	LF	$0	106,500	LF	$10,011,000
3.	24" T-Main incl. pipe and fittings, DIP	$135.00	4,400	LF	$594,000	1,000	LF	$135,000	0	LF	$0	7,800	LF	$1,053,000	0	LF	$0	1,800	LF	$243,000	0	LF	$0	0	LF	$0	15,000	LF	$2,025,000
4.	30" T-Main incl. pipe and fittings, DIP	$170.00	4,700	LF	$799,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$799,000
5.	36" T-Main incl. pipe and fittings, DIP	$205.00	2,500	LF	$512,500	2,200	LF	$451,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$963,500
6.	42" T-Main incl. pipe and fittings, DIP	$240.00	5,400	LF	$1,296,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	5,400	LF	$1,296,000
7.	48" T-Main incl. pipe and fittings, DIP	$275.00	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0
8.	12" Butterfly Valve Assembly	$2,500.00	13	EA	$32,500	8	EA	$20,000	5	EA	$12,500	3	EA	$7,500	8	EA	$20,000	0	EA	$0	9	EA	$22,500	14	EA	$35,000	60	EA	$150,000
9.	18" Butterfly Valve Assembly	$4,000.00	13	EA	$52,000	4	EA	$16,000	12	EA	$48,000	2	EA	$8,000	9	EA	$36,000	11	EA	$44,000	11	EA	$44,000	0	EA	$0	62	EA	$248,000
2.	24" Butterfly Valve Assembly	$7,200.00	3	EA	$21,600	2	EA	$14,400	0	EA	$0	3	EA	$21,600	0	EA	$0	1	EA	$7,200	0	EA	$0	0	EA	$0	9	EA	$64,800
3.	30" Line Valve	$28,000.00	4	EA	$112,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$112,000
4.	36" Line Valve	$35,000.00	2	EA	$70,000	2	EA	$70,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$140,000
5.	42" Line Valve	$40,000.00	2	EA	$80,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	2	EA	$80,000
6.	48" Line Valve	$50,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0
7.	Fire Hydrant Assembly (assumed 1000" spacing)	$5,000.00	96	EA	$482,000	23	EA	$113,500	36	EA	$177,500	35	EA	$174,500	28	EA	$141,500	23	EA	$112,500	39	EA	$197,000	21	EA	$107,000	301	EA	$1,505,500
8.	Bore and Jack under HWY 99/70 (54" Casing)	$1,000.00	600	LF	$600,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$600,000
9.	Bore and Jack under HWY 99/70 (24" Casing)	$500.00	600	LF	$300,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$300,000
	TOTAL WATER TRANSMISSION				**$11,620,200**			**$2,322,900**			**$3,290,000**			**$3,608,000**			**$2,563,700**			**$2,352,500**			**$3,625,100**			**$1,511,600**			**$30,894,000**
B. WATER STORAGE TANKS																													
1.	Treatment Plant Storage Tank (4MG) (Includes booster pump station and hydromatic tank)	$5,000,000.00	0	EA	$0	1	EA	$5,000,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$5,000,000
2.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
3.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
4.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
5.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	1	EA	$7,500,000
6.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	1	EA	$7,500,000
	TOTAL WATER STORAGE				**$7,500,000**			**$5,000,000**			**$7,500,000**			**$7,500,000**			**$0**			**$0**			**$7,500,000**			**$7,500,000**			**$42,500,000**

CONSTRUCTION COSTS (PWSP)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
C. SURFACE WATER TREATMENT PLANT																													
1.	Surface Water Treatment Plant (29.3 mgd)	$1,250,000.00	0	mgd	$0	INC	mgd	INC	14.7	mgd	$18,375,000	INC	mgd	INC	14.6	mgd	$18,250,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	29.3	mgd	$36,625,000
	TOTAL SURFACE WATER TREATMENT PLANT				**$0**			**INC**			**$18,375,000**			**INC**			**$18,250,000**			**INC**			**$0**			**INC**			**$36,625,000**
D. GROUND WATER TREATMENT PLANT																													
1.	West Ground Water Treatment Plant (12.5 mgd)	$1,250,000.00	12.5	mgd	$15,625,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	12.5	mgd	$15,625,000
2	East Ground Water Treatment Plant (12.5 mgd)	$1,250,000.00	0	mgd	$0	INC	mgd	INC	12.5	mgd	$15,625,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	12.5	mgd	$15,625,000
	TOTAL GROUND WATER TREATMENT PLANT				**$15,625,000**			**INC**			**$15,625,000**			**INC**			**$0**			**INC**			**$0**			**INC**			**$31,250,000**
E. GROUND WATER WELL FIELDS																													
E.1 - EAST WELL AND PUMP FACILITY																													
1.	Well & Pump Facility	$1,000,000.00	0	EA	$0	0	EA		7	EA	$7,000,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		7	EA	$7,000,000
2.	12" Raw Water incl. Fittings, DIP	$85.00	0	LF	$0	0	LF		10,100	LF	$858,500	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		10,100	LF	$858,500
3.	16" Raw Water incl. Fittings, DIP	$120.00	0	LF	$0	0	LF		3,500	LF	$420,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		3,500	LF	$420,000
4.	21" Raw Water incl. Fittings, DIP	$160.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
5.	24" Raw Water incl. Fittings, DIP	$180.00	0	LF	$0	0	LF		3,400	LF	$612,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		3,400	LF	$612,000
6.	30" Raw Water incl. Fittings, DIP	$225.00	0	LF	$0	0	LF		3,300	LF	$742,500	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		3,300	LF	$742,500
7.	36" Raw Water incl. Fittings, DIP	$270.00	0	LF	$0	0	LF		7,500	LF	$2,025,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		7,500	LF	$2,025,000
8.	12" Butterfly Valve Assembly	$2,500.00	0	EA	$0	0	EA		1	EA	$2,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$2,500
9.	16" Butterfly Valve Assembly	$3,500.00	0	EA	$0	0	EA		2	EA	$7,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		2	EA	$7,000
10.	21" Butterfly Valve Assembly	$4,600.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
11.	24" Butterfly Valve Assembly	$7,300.00	0	EA	$0	0	EA		4	EA	$29,200	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		4	EA	$29,200
12.	30" Butterfly Valve Assembly	$14,000.00	0	EA	$0	0	EA		1	EA	$14,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$14,000
13.	36" Butterfly Valve Assembly	$17,000.00	0	EA	$0	0	EA		1	EA	$17,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$17,000
	SUBTOTAL EAST WELL AND PUMP FACILITY				**$0**			**INC.**			**$11,727,700**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$11,727,700**
E.2- WEST WELL AND PUMP FACILITY																													
2.	Well & Pump Facility	$1,000,000.00	9	EA	$9,000,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		9	EA	$9,000,000
3.	12" Raw Water incl. Fittings, DIP	$85.00	14,850	LF	$1,262,250	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		14,850	LF	$1,262,250
4.	16" Raw Water incl. Fittings, DIP	$120.00	4,500	LF	$540,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		4,500	LF	$540,000
5.	21" Raw Water incl. Fittings, DIP	$160.00	6,300	LF	$1,008,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		6,300	LF	$1,008,000
6.	24" Raw Water incl. Fittings, DIP	$180.00	5,850	LF	$1,053,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		5,850	LF	$1,053,000
7.	30" Raw Water incl. Fittings, DIP	$225.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
8.	36" Raw Water incl. Fittings, DIP	$270.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
9.	12" Butterfly Valve Assembly	$2,500.00	5	EA	$12,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		5	EA	$12,500
10.	16" Butterfly Valve Assembly	$3,500.00	1	EA	$3,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$3,500
11.	21" Butterfly Valve Assembly	$4,600.00	1	EA	$4,600	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$4,600
12.	24" Butterfly Valve Assembly	$7,300.00	1	EA	$7,300	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$7,300
13.	30" Butterfly Valve Assembly	$14,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
14.	36" Butterfly Valve Assembly	$17,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
	SUBTOTAL WEST WELL AND PUMP FACILITY				$12,891,150			INC.			$0			INC.			$0			INC.			$0			INC.			$12,891,150
	TOTAL GROUND WATER WELL FIELDS				**$12,891,150**			**INC.**			**$11,727,700**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$24,618,850**

CONSTRUCTION COSTS (PWSP)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT	
F. RAW WATER PUMP STATION																														
1.	Raw Water Booster Pump Station (Bennet or Sankey)	$2,200,000.00	0	EA	$0	0	EA	$0	1	EA	$2,200,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$2,200,000	
2.	Raw Water Diversoin Facility (Fair Share Cost)	$7,278,078.00	0	EA	$0	0	EA	$0	1	EA	$7,278,078	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,278,078	
	TOTAL RAW WATER PUMP STATION				**$0**			**$0**			**$9,478,078**			**$0**			**$0**			**$0**			**$0**			**$0**			**$9,478,078**	
G. SURFACE RAW-WATER SUPPLY (BENNET TO WEST TREATMENT SITE)																														
1.	42" Steel Cylinder Pipe (CMCL, D.I.P. or Equal) incl. fittin	$350.00	0	LF	$0	0	LF	$0	29,500	LF	$10,325,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	29,500	LF	$10,325,000	
2.	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000	
	TOTAL SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$10,685,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**$10,685,000**	
G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO WEST TREATMENT SITE)																														
1.A	42" Steel Cylinder Pipe (CMCL, D.I.P., or Equal) incl. fittir	$350.00	0	LF	$0	0	LF	$0	27,200	LF	$9,520,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	27,200	LF	$9,520,000	
2.A	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000	
	TOTAL (ALT-1) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$9,880,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**(ALT-1)**	**$9,880,000**
****G. (ALT-2) SURFACE RAW-WATER SUPPLY (BENNET TO EAST TREATMENT SITE)****																														
1.B	42" Steel Cylinder Pipe (CMCL, D.I.P., or Equal) incl. fittir	$350.00	0	LF	$0	0	LF	$0	28,500	LF	$9,975,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	28,500	LF	$9,975,000	
2.B	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000	
3.B	Bore and Jack under HWY 99/70 (60" Casing)	$1,100.00	0	LF	$0	0	LF	$0	600	LF	$660,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$660,000	
	TOTAL (ALT-2) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$10,995,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**(ALT-2)**	**$10,995,000**
*****G. (ALT-3) SURFACE RAW-WATER SUPPLY (SANKEY TO EAST TREATMENT SITE)*****																														
1.C	42" Steel Cylinder Pipe (CMCL) incl. fittings	$400.00	0	LF	$0	0	LF	$0	26,100	LF	$10,440,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	26,100	LF	$10,440,000	
2.C	42" Line Valves	$80,000.00	0	EA	$0	0	EA	$0	6	EA	$480,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$480,000	
3.C	Bore and Jack under HWY 99/70 (60" Casing)	$1,100.00	0	LF	$0	0	LF	$0	600	LF	$660,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$660,000	
	TOTAL (ALT-3) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$11,580,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**(ALT-3)**	**$11,580,000**

CONSTRUCTION COSTS (PWSP)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
	CONSTRUCTION COST ESTIMATE SUMMARY																												
	A. WATER TRANSMISSION				$11,620,200			$2,322,900			$3,290,000			$3,608,000			$2,563,700			$2,352,500			$3,625,100			$1,511,600			$30,894,000
	B. WATER STORAGE TANKS				$7,500,000			$5,000,000			$7,500,000			$7,500,000			$0			$0			$7,500,000			$7,500,000			$42,500,000
	C. SURFACE WATER TREATMENT PLANT				$0			INC			$18,375,000			INC			$18,250,000			INC			$0			INC			$36,625,000
	D. GROUND WATER TREATMENT PLANT				$15,625,000			INC			$15,625,000			INC			$0			INC			$0			INC			$31,250,000
	E. GROUND WATER WELL FIELD				$12,891,150			INC.			$11,727,700			INC.			$0			INC.			$0			INC.			$24,618,850
	F. RAW WATER PUMP STATION				$0			$0			$9,478,078			$0			$0			$0			$0			$0			$9,478,078
	G. SURFACE RAW-WATER SUPPLY				$0			$0			$10,685,000			$0			$0			$0			$0			$0			$10,685,000
	Subtotal Construction Costs (A-G)				$47,636,350			$7,322,900			$76,680,778			$11,108,000			$20,813,700			$2,352,500			$11,125,100			$9,011,600			$186,050,928
	15% Engineering/Inspection				$7,145,453			$1,098,435			$11,502,117			$1,666,200			$3,122,055			$352,875			$1,668,765			$1,351,740			$27,907,639
	20% Contingency				$9,527,270			$1,464,580			$15,336,156			$2,221,600			$4,162,740			$470,500			$2,225,020			$1,802,320			$37,210,186
	GRAND TOTAL CONSTRUCTION COST				$64,309,073			$9,885,915			$103,519,050			$14,995,800			$28,098,495			$3,175,875			$15,018,885			$12,165,660			$251,168,753

ALTERNATIVES FOR SURFACE RAW-WATER SUPPLY (Refer to section "G")

G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO WEST TREATMENT SITE)
(Adjust from Proposed Proposed Water Supply Project if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,685,000
Alternative 1 Total	$9,880,000
Difference From Proposed Surface Raw-Water Supply	($805,000)
15% Engineering/Inspection	($120,750)
20% Contingency	($161,000)
Total Adjustment for Alt-1	($1,086,750)

****G. (ALT-2) SURFACE RAW-WATER SUPPLY (BENNET TO EAST TREATMENT SITE)****
(Adjust from Proposed Proposed Water Supply Project if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,685,000
Alternative 2 Subtotal	$10,995,000
Difference From Proposed Surface Raw-Water Supply	$310,000
15% Engineering/Inspection	$46,500
20% Contingency	$62,000
Total Adjustment for Alt-2	$418,500

*****G. (ALT-3) SURFACE RAW-WATER SUPPLY (SANKEY TO EAST TREATMENT SITE)*****
(Adjust from Proposed Proposed Water Supply Project if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,685,000
Alternative 3 Subtotal	$11,580,000
Difference From Proposed Surface Raw-Water Supply	$895,000
15% Engineering/Inspection	$134,250
20% Contingency	$179,000
Total Adjustment for Alt-3	$1,208,250

ENGINEER'S PRELIMINARY OPINION OF ANNUAL COSTS

Sutter County

Based on the Sutter Pointe Water System Model for Proposed Project Water Supply Program (PWSP)

RESIDENTIAL FACILITIES / YEAR	PHASE 1 (million $)							PHASE 2 (million $)					PHASE 3 (million $)			PHASE 4 (million $)		(RESIDENTIAL COMPLETED) (million $)																												TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Percent of Total Phase Cost	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	25%	18.75%	18.75%	18.75%	18.75%	40%	30%	30%	50%	50%																										
A. WATER TRANSMISSION	2.91	1.45	1.45	1.45	1.45	1.45	1.45	0.82	0.62	0.62	0.62	0.62	1.03	0.77	0.77	1.81	1.81																										**21.10**
B. WATER STORAGE TANKS	1.88	0.94	0.94	0.94	0.94	0.94	0.94	1.88	1.41	1.41	1.41	1.41				3.75	3.75																										**22.50**
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%																										
C. SURFACE WATER TREATMENT PLANT											18.38				18.25																										**36.63**
	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%																										
D. GROUND WATER TREATMENT PLANT	15.63							15.63																																		**31.25**
	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	25%	25%	25%	25%	0%	0%	0%	0%	0%	0%																										
E. GROUND WATER WELL FIELD	3.22	1.61	1.61	1.61	1.61	1.61	1.61	2.93	2.93	2.93	2.93	0.00																														**24.62**
	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%																										
F. RAW WATER PUMP STATION								9.48																																		**9.48**
G. SURFACE RAW-WATER SUPPLY								10.69																																		**10.69**
Subtotal	23.63	4.00	4.00	4.00	4.00	4.00	4.00	41.42	4.96	4.96	23.33	2.02	1.03	0.77	19.02	5.56	5.56																										**156.26**
15% Engineering/Inspection	3.54	0.60	0.60	0.60	0.60	0.60	0.60	6.21	0.74	0.74	3.50	0.30	0.15	0.12	2.85	0.83	0.83																										**23.44**
20% Contingency	4.73	0.80	0.80	0.80	0.80	0.80	0.80	8.28	0.99	0.99	4.67	0.40	0.21	0.15	3.80	1.11	1.11																										**31.25**
YEAR TOTAL	**31.90**	**5.40**	**5.40**	**5.40**	**5.40**	**5.40**	**5.40**	**55.91**	**6.69**	**6.69**	**31.50**	**2.73**	**1.38**	**1.04**	**25.68**	**7.51**	**7.51**																										**210.95**
CUMULATIVE TOTAL	**31.90**	**37.30**	**42.70**	**48.10**	**53.51**	**58.91**	**64.31**	**120.22**	**126.91**	**133.60**	**165.10**	**167.83**	**169.21**	**170.25**	**195.93**	**203.44**	**210.95**																										

EMPLOYMENT FACILITIES / YEAR	PHASE A (million $)										PHASE B (million $)										PHASE C (million $)										PHASE D (million $)										TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	
A. WATER TRANSMISSION	1.16				1.16						1.80				1.80						1.18				1.18						0.76				0.76						**9.80**
B. WATER STORAGE TANKS	2.50				2.50						3.75				3.75																3.75				3.75						**20.00**
C. SURFACE WATER TREATMENT PLANT																																									
D. GROUND WATER TREATMENT PLANT																																									
E. GROUND WATER WELL FIELD																																									
F. RAW WATER PUMP STATION																																									
G. SURFACE RAW-WATER SUPPLY																																									
Subtotal	3.66				3.66						5.55				5.55						1.18				1.18						4.51				4.51						**29.80**
15% Engineering/Inspection	0.55				0.55						0.83				0.83						0.18				0.18						0.68				0.68						**4.47**
20% Contingency	0.73				0.73						1.11				1.11						0.24				0.24						0.90				0.90						**5.96**
YEAR TOTAL	**4.94**				**4.94**						**7.50**				**7.50**						**1.59**				**1.59**						**6.08**				**6.08**						**40.22**
CUMULATIVE TOTAL	**4.94**				**9.89**						**17.38**				**24.88**						**26.47**				**28.06**						**34.14**				**40.22**						
GRAND YEAR TOTAL	**36.84**	**5.40**	**5.40**	**5.40**	**10.34**	**5.40**	**5.40**	**55.91**	**6.69**	**6.69**	**38.99**	**2.73**	**1.38**	**1.04**	**33.17**	**7.51**	**7.51**				**1.59**				**1.59**						**6.08**				**6.08**						**251.17**
GRAND CUMULATIVE TOTAL	**36.84**	**42.24**	**47.64**	**53.05**	**63.39**	**68.79**	**74.19**	**130.11**	**136.80**	**143.49**	**182.48**	**185.21**	**186.60**	**187.63**	**220.81**	**228.32**	**235.83**				**237.42**				**239.00**						**245.09**				**251.17**						

NOTE: *ANNUAL COST TABULATIONS DO NOT TAKE INTO ACCOUNT ADJUSTMENTS RESULTING FROM CHOOSING ANOTHER ALTERNATE FOR SURFACE WATER RAW-WATER SUPPLY (IE. ALT-1 THROUGH ALT-3)*

ENGINEER'S PRELIMINARY OPINION OF COSTS

Sutter County

Quantities based on the Sutter Pointe Water System Model for Alternate "A" Revised Water Supply Program

CONSTRUCTION COSTS (Alt "A")

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
A. WATER TRANSMISSION																													
1.	12" T-Main incl. pipe and fittings, DIP	$64.00	26,500	LF	$1,696,000	11,000	LF	$704,000	9,500	LF	$608,000	6,800	LF	$435,200	9,800	LF	$627,200	0	LF	$0	11,400	LF	$729,600	21,400	LF	$1,369,600	96,400	LF	$6,169,600
1a.	12" T-Main (Parallel on 4 lane ROW and larger)	$94.00	26,500	LF	$2,491,000	3,300	LF	$310,200	6,000	LF	$564,000	10,400		$977,600	7,500	LF	$705,000	5,700		$535,800	9,000	LF	$846,000	0	LF	$0	68,400		$6,429,600
2.	18" T-Main incl. pipe and fittings, DIP	$94.00	26,400	LF	$2,481,600	5,200	LF	$488,800	20,000	LF	$1,880,000	9,900	LF	$930,600	11,000	LF	$1,034,000	15,000	LF	$1,410,000	19,000	LF	$1,786,000	0	LF	$0	106,500	LF	$10,011,000
3.	24" T-Main incl. pipe and fittings, DIP	$135.00	4,400	LF	$594,000	1,000	LF	$135,000	0	LF	$0	7,800	LF	$1,053,000	0	LF	$0	1,800	LF	$243,000	0	LF	$0	0	LF	$0	15,000	LF	$2,025,000
4.	30" T-Main incl. pipe and fittings, DIP	$170.00	4,700	LF	$799,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$799,000
5.	36" T-Main incl. pipe and fittings, DIP	$205.00	2,500	LF	$512,500	2,200	LF	$451,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$963,500
6.	42" T-Main incl. pipe and fittings, DIP	$240.00	5,400	LF	$1,296,000		LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	5,400	LF	$1,296,000
7.	48" T-Main incl. pipe and fittings, DIP	$275.00	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0
8.	12" Butterfly Valve Assembly	$2,500.00	13	EA	$32,500	8	EA	$20,000	5	EA	$12,500	3	EA	$7,500	8	EA	$20,000	0	EA	$0	9	EA	$22,500	14	EA	$35,000	60	EA	$150,000
9.	18" Butterfly Valve Assembly	$4,000.00	13	EA	$52,000	4	EA	$16,000	12	EA	$48,000	2	EA	$8,000	9	EA	$36,000	11	EA	$44,000	11	EA	$44,000	0	EA	$0	62	EA	$248,000
2.	24" Butterfly Valve Assembly	$7,200.00	3	EA	$21,600	2	EA	$14,400	0	EA	$0	3	EA	$21,600	0	EA	$0	1	EA	$7,200	0	EA	$0	0	EA	$0	9	EA	$64,800
3.	30" Line Valve	$28,000.00	4	EA	$112,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$112,000
4.	36" Line Valve	$35,000.00	2	EA	$70,000	2	EA	$70,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$140,000
5.	42" Line Valve	$40,000.00	2	EA	$80,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	2	EA	$80,000
6.	48" Line Valve	$50,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0
7.	Fire Hydrant Assembly (Assumed 1000' spacing)	$5,000.00	96	EA	$482,000	23	EA	$113,500	36	EA	$177,500	35	EA	$174,500	28	EA	$141,500	23	EA	$112,500	39	EA	$197,000	21	EA	$107,000	301		$1,505,500
8.	Bore and Jack under HWY 99/70 (54" Casing)	$1,000.00	600	LF	$600,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$600,000
9.	Bore and Jack under HWY 99/70 (24" Casing)	$500.00	600	LF	$300,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$300,000
	TOTAL WATER TRANSMISSION				**$11,620,200**			**$2,322,900**			**$3,290,000**			**$3,608,000**			**$2,563,700**			**$2,352,500**			**$3,625,100**			**$1,511,600**			**$30,894,000**
B. WATER STORAGE TANKS																													
1.	Treatment Plant Storage Tank (4MG) (Includes booster pump station and hydromatic tank)	$5,000,000.00	0	EA	$0	1	EA	$5,000,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$5,000,000
2.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
3.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
4.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
5.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	1	EA	$7,500,000
6.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	1	EA	$7,500,000
	TOTAL WATER STORAGE				**$7,500,000**			**$5,000,000**			**$7,500,000**			**$7,500,000**			**$0**			**$0**			**$7,500,000**			**$7,500,000**			**$42,500,000**

CONSTRUCTION COSTS (Alt "A")

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
C. SURFACE WATER TREATMENT PLANT																													
1.	Surface Water Treatment Plant (35.1 mgd)	$1,250,000.00	0	mgd	$0	INC	mgd	INC	17.6	mgd	$22,000,000	INC	mgd	INC	17.5	mgd	$21,875,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	35.1	mgd	$43,875,000
	TOTAL SURFACE WATER TREATMENT PLANT				**$0**			**INC**			**$22,000,000**			**INC**			**$21,875,000**			**INC**			**$0**			**INC**			**$43,875,000**
D. GROUND WATER TREATMENT PLANT																													
1.	West Ground Water Treatment Plant (12.5 mgd)	$1,250,000.00	12.5	mgd	$15,625,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	12.5	EA	$15,625,000
2	East Ground Water Treatment Plant (12.5 mgd)	$1,250,000.00	0	mgd	$0	0	mgd	$0	12.5	mgd	$15,625,000	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	12.5	EA	$15,625,000
	TOTAL GROUND WATER TREATMENT PLANT				**$15,625,000**			**$0**			**$15,625,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**$31,250,000**
E. GROUND WATER WELL FIELDS																													
E.1 - EAST WELL AND PUMP FACILITY																													
1.	Well & Pump Facility	$1,000,000.00	0	EA	$0	0	EA		7	EA	$7,000,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		7	EA	$7,000,000
2.	12" Raw Water incl. Fittings, DIP	$85.00	0	LF	$0	0	LF		10,100	LF	$858,500	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		10,100	LF	$858,500
3.	16" Raw Water incl. Fittings, DIP	$120.00	0	LF	$0	0	LF		3,500	LF	$420,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		3,500	LF	$420,000
4.	21" Raw Water incl. Fittings, DIP	$160.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
5.	24" Raw Water incl. Fittings, DIP	$180.00	0	LF	$0	0	LF		3,400	LF	$612,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		3,400	LF	$612,000
6.	30" Raw Water incl. Fittings, DIP	$225.00	0	LF	$0	0	LF		3,300	LF	$742,500	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		3,300	LF	$742,500
7.	36" Raw Water incl. Fittings, DIP	$270.00	0	LF	$0	0	LF		7,500	LF	$2,025,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		7,500	LF	$2,025,000
8.	12" Butterfly Valve Assembly	$2,500.00	0	EA	$0	0	EA		1	EA	$2,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$2,500
9.	16" Butterfly Valve Assembly	$3,500.00	0	EA	$0	0	EA		2	EA	$7,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		2	EA	$7,000
10.	21" Butterfly Valve Assembly	$4,600.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
11.	24" Butterfly Valve Assembly	$7,300.00	0	EA	$0	0	EA		4	EA	$29,200	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		4	EA	$29,200
12.	30" Butterfly Valve Assembly	$14,000.00	0	EA	$0	0	EA		1	EA	$14,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$14,000
13.	36" Butterfly Valve Assembly	$17,000.00	0	EA	$0	0	EA		1	EA	$17,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$17,000
	SUBTOTAL EAST WELL AND PUMP FACILITY				**$0**			**INC.**			**$11,727,700**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$11,727,700**
E.2- WEST WELL AND PUMP FACILITY																													
1.	Well & Pump Facility	$1,000,000.00	9	EA	$9,000,000	0	EA		0	EA	$0	0	EA	$0	0	EA	$0	0	EA		0	EA	$0	0	EA		9	EA	$9,000,000
3.	12" Raw Water incl. Fittings, DIP	$85.00	14,850	LF	$1,262,250	0	LF		0	LF	$0	0	LF	$0	0	LF	$0	0	LF		0	LF	$0	0	LF		14,850	LF	$1,262,250
4.	16" Raw Water incl. Fittings, DIP	$120.00	4,500	LF	$540,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		4,500	LF	$540,000
5.	21" Raw Water incl. Fittings, DIP	$160.00	6,300	LF	$1,008,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		6,300	LF	$1,008,000
6.	24" Raw Water incl. Fittings, DIP	$180.00	5,850	LF	$1,053,000	0	LF		0	LF	$0	0	LF	$0	0	LF	$0	0	LF		0	LF	$0	0	LF		5,850	LF	$1,053,000
7.	30" Raw Water incl. Fittings, DIP	$225.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
8.	36" Raw Water incl. Fittings, DIP	$270.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
9.	12" Butterfly Valve Assembly	$2,500.00	5	EA	$12,500	0	EA		0	EA	$0	0	EA	$0	0	EA	$0	0	EA		0	EA	$0	0	EA		5	EA	$12,500
10.	16" Butterfly Valve Assembly	$3,500.00	1	EA	$3,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$3,500
11.	21" Butterfly Valve Assembly	$4,600.00	1	EA	$4,600	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$4,600
12.	24" Butterfly Valve Assembly	$7,300.00	1	EA	$7,300	0	EA		0	EA	$0	0	EA	$0	0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$7,300
13.	30" Butterfly Valve Assembly	$14,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
14.	36" Butterfly Valve Assembly	$17,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
	SUBTOTAL WEST WELL AND PUMP FACILITY				**$12,891,150**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$12,891,150**
	TOTAL GROUND WATER WELL FIELDS				**$12,891,150**			**$0**			**$11,727,700**			**$0**			**$0**			**$0**			**$0**			**$0**			**$24,618,850**

CONSTRUCTION COSTS (Alt "A")

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT	
F. RAW WATER PUMP STATION																														
1.	Raw Water Booster Pump Station (Bennet or Sankey)	$2,600,000.00	0	EA	$0	0	EA	$0	1	EA	$2,600,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$2,600,000	
2.	Raw Water Diversion Facility (Fair Share Cost)	$8,804,386.00	0	EA	$0	0	EA	$0	1	EA	$8,804,386	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$8,804,386	
	TOTAL RAW WATER PUMP STATION				**$0**			**$0**			**$11,404,386**			**$0**			**$0**			**$0**			**$0**			**$0**			**$11,404,386**	
G. SURFACE RAW-WATER SUPPLY (BENNET TO WEST TREATMENT SITE)																														
1.	42" Steel Cylinder Pipe (CMCL, D.I.P. or Equal) incl. fittin	$350.00	0	LF	$0	0	LF	$0	29,500	LF	$10,325,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	29,500	LF	$10,325,000	
2.	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000	
	TOTAL SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$10,685,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**$10,685,000**	
G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO WEST TREATMENT SITE)																														
1.A	42" Steel Cylinder Pipe (CMCL, D.I.P., or Equal) incl. fittir	$350.00	0	LF	$0	0	LF	$0	27,200	LF	$9,520,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	27,200	LF	$9,520,000	
2.A	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000	
	TOTAL (ALT-1) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$9,880,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**(ALT-1)**	**$9,880,000**
****G. (ALT-2) SURFACE RAW-WATER SUPPLY (BENNET TO EAST TREATMENT SITE)****																														
1.B	42" Steel Cylinder Pipe (CMCL, D.I.P., or Equal) incl. fittir	$350.00	0	LF	$0	0	LF	$0	28,500	LF	$9,975,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	28,500	LF	$9,975,000	
2.B	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000	
3.B	Bore and Jack under HWY 99/70 (60" Casing)	$1,100.00	0	LF	$0	0	LF	$0	600	LF	$660,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$660,000	
	TOTAL (ALT-1) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$10,995,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**(ALT-2)**	**$10,995,000**
*****G. (ALT-3) SURFACE RAW-WATER SUPPLY (SANKEY TO EAST TREATMENT SITE)*****																														
1.C	42" Steel Cylinder Pipe (CMCL) incl. fittings	$400.00	0	LF	$0	0	LF	$0	26,100	LF	$10,440,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	26,100	LF	$10,440,000	
2.C	42" Line Valves	$80,000.00	0	EA	$0	0	EA	$0	6	EA	$480,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$480,000	
3.C	Bore and Jack under HWY 99/70 (60" Casing)	$1,100.00	0	LF	$0	0	LF	$0	600	LF	$660,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$660,000	
	TOTAL (ALT-1) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$11,580,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**(ALT-3)**	**$11,580,000**

CONSTRUCTION COSTS (Alt "A")

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
	CONSTRUCTION COST ESTIMATE SUMMARY																												
	A. WATER TRANSMISSION				$11,620,200			$2,322,900			$3,290,000			$3,608,000			$2,563,700			$2,352,500			$3,625,100			$1,511,600			$30,894,000
	B. WATER STORAGE TANKS				$7,500,000			$5,000,000			$7,500,000			$7,500,000			$0			$0			$7,500,000			$7,500,000			$42,500,000
	C. SURFACE WATER TREATMENT PLANT				$0			INC			$22,000,000			INC			$21,875,000			INC			$0			INC			$43,875,000
	D. GROUND WATER TREATMENT PLANT				$15,625,000			$0			$15,625,000			$0			$0			$0			$0			$0			$31,250,000
	E. GROUND WATER WELL FIELD				$12,891,150			$0			$11,727,700			$0			$0			$0			$0			$0			$24,618,850
	F. RAW WATER PUMP STATION				$0			$0			$11,404,386			$0			$0			$0			$0			$0			$11,404,386
	G. SURFACE RAW-WATER SUPPLY				$0			$0			$10,685,000			$0			$0			$0			$0			$0			$10,685,000
	Subtotal Construction Costs (A-G)				$47,636,350			$7,322,900			$82,232,086			$11,108,000			$24,438,700			$2,352,500			$11,125,100			$9,011,600			$195,227,236
	15% Engineering/Inspection				$7,145,453			$1,098,435			$12,334,813			$1,666,200			$3,665,805			$352,875			$1,668,765			$1,351,740			$29,284,085
	20% Contingency				$9,527,270			$1,464,580			$16,446,417			$2,221,600			$4,887,740			$470,500			$2,225,020			$1,802,320			$39,045,447
	GRAND TOTAL CONSTRUCTION COST				$64,309,073			$9,885,915			$111,013,316			$14,995,800			$32,992,245			$3,175,875			$15,018,885			$12,165,660			$263,556,769

ALTERNATIVES FOR SURFACE RAW-WATER SUPPLY (Refer to section "G")

G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO WEST TREATMENT SITE)
(Adjust from Alternate "A" Water Supply Project if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,685,000
Alternative 1 Total	$9,880,000
Difference From Proposed Surface Raw-Water Supply	($805,000)
15% Engineering/Inspection	($120,750)
20% Contingency	($161,000)
Total Adjustment for Alt-1	($1,086,750)

****G. (ALT-2) SURFACE RAW-WATER SUPPLY (BENNET TO EAST TREATMENT SITE)****
(Adjust from Alternate "A" Water Supply Project if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,685,000
Alternative 2 Subtotal	$10,995,000
Difference From Proposed Surface Raw-Water Supply	$310,000
15% Engineering/Inspection	$46,500
20% Contingency	$62,000
Total Adjustment for Alt-2	$418,500

*****G. (ALT-3) SURFACE RAW-WATER SUPPLY (SANKEY TO EAST TREATMENT SITE)*****
(Adjust from Alternate "A" Water Supply Project if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,685,000
Alternative 3 Subtotal	$11,580,000
Difference From Proposed Surface Raw-Water Supply	$895,000
15% Engineering/Inspection	$134,250
20% Contingency	$179,000
Total Adjustment for Alt-3	$1,208,250

ENGINEER'S PRELIMINARY OPINION OF ANNUAL COSTS

Sutter County

Based on the South Sutter Water System Model for Alternate "A" Revised Water Supply Program

RESIDENTIAL FACILITIES / YEAR	PHASE 1 (million $)							PHASE 2 (million $)					PHASE 3 (million $)			PHASE 4 (million $)		(RESIDENTIAL COMPLETED) (million $)	TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	
Percent of Total Phase Cost	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	25%	18.75%	18.75%	18.75%	18.75%	40%	30%	30%	50%	50%		
A. WATER TRANSMISSION	2.91	1.45	1.45	1.45	1.45	1.45	1.45	0.82	0.62	0.62	0.62	0.62	1.03	0.77	0.77	1.81	1.81		**21.10**
B. WATER STORAGE TANKS	1.88	0.94	0.94	0.94	0.94	0.94	0.94	1.88	1.41	1.41	1.41	1.41				3.75	3.75		**22.50**
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%		
C. SURFACE WATER TREATMENT PLANT											22.00				21.88				**43.88**
	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
D. GROUND WATER TREATMENT PLANT	15.63							15.63											**31.25**
	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	25.00%	25.00%	25.00%	25.00%	0.00%	0%	0%	0%	0%	0%		
E. GROUND WATER WELL FIELD	3.22	1.61	1.61	1.61	1.61	1.61	1.61	2.93	2.93	2.93	2.93	0.00							**24.62**
	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
F. RAW WATER PUMP STATION								11.40											**11.40**
G. SURFACE RAW-WATER SUPPLY								10.69											**10.69**
Subtotal	23.63	4.00	4.00	4.00	4.00	4.00	4.00	43.34	4.96	4.96	26.96	2.02	1.03	0.77	22.64	5.56	5.56		**165.43**
15% Engineering/Inspection	3.54	0.60	0.60	0.60	0.60	0.60	0.60	6.50	0.74	0.74	4.04	0.30	0.15	0.12	3.40	0.83	0.83		**24.81**
20% Contingency	4.73	0.80	0.80	0.80	0.80	0.80	0.80	8.67	0.99	0.99	5.39	0.40	0.21	0.15	4.53	1.11	1.11		**33.09**
YEAR TOTAL	**31.90**	**5.40**	**5.40**	**5.40**	**5.40**	**5.40**	**5.40**	**58.51**	**6.69**	**6.69**	**36.39**	**2.73**	**1.38**	**1.04**	**30.57**	**7.51**	**7.51**		**223.33**
CUMULATIVE TOTAL	**31.90**	**37.30**	**42.70**	**48.10**	**53.51**	**58.91**	**64.31**	**122.82**	**129.51**	**136.20**	**172.59**	**175.32**	**176.71**	**177.75**	**208.31**	**215.82**	**223.33**		

EMPLOYMENT FACILITIES / YEAR	PHASE A (million $)										PHASE B (million $)										PHASE C (million $)										PHASE D (million $)										TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	
A. WATER TRANSMISSION	1.16				1.16						1.80				1.80						1.18				1.18						0.76				0.76						**9.80**
B. WATER STORAGE TANKS	2.50				2.50						3.75				3.75																3.75				3.75						**20.00**
C. SURFACE WATER TREATMENT PLANT																																									
D. GROUND WATER TREATMENT PLANT																																									
E. GROUND WATER WELL FIELD																																									
F. RAW WATER PUMP STATION																																									
G. SURFACE RAW-WATER SUPPLY																																									
Subtotal	3.66				3.66						5.55				5.55						1.18				1.18						4.51				4.51						**29.80**
15% Engineering/Inspection	0.55				0.55						0.83				0.83						0.18				0.18						0.68				0.68						**4.47**
20% Contingency	0.73				0.73						1.11				1.11						0.24				0.24						0.90				0.90						**5.96**
YEAR TOTAL	**4.94**				**4.94**						**7.50**				**7.50**						**1.59**				**1.59**						**6.08**				**6.08**						**40.22**
CUMULATIVE TOTAL	**4.94**				**9.89**						**17.38**				**24.88**						**26.47**				**28.06**						**34.14**				**40.22**						
GRAND YEAR TOTAL	**36.84**	**5.40**	**5.40**	**5.40**	**10.34**	**5.40**	**5.40**	**58.51**	**6.69**	**6.69**	**43.89**	**2.73**	**1.38**	**1.04**	**38.07**	**7.51**	**7.51**				**1.59**				**1.59**						**6.08**				**6.08**						**263.56**
GRAND CUMULATIVE TOTAL	**36.84**	**42.24**	**47.64**	**53.05**	**63.39**	**68.79**	**74.19**	**132.71**	**139.40**	**146.09**	**189.97**	**192.71**	**194.09**	**195.13**	**233.20**	**240.71**	**248.22**				**249.80**				**251.39**						**257.47**				**263.56**						

NOTE: ***ANNUAL COST TABULATIONS DO NOT TAKE INTO ACCOUNT ADJUSTMENTS RESULTING FROM CHOOSING ANOTHER ALTERNATE FOR SURFACE WATER RAW-WATER SUPPLY (IE. ALT-1 THROUGH ALT-3)***

ENGINEER'S PRELIMINARY OPINION OF COSTS

Sutter County

Based on the Sutter Pointe Water System Model for Alternate "B" Winter Diversion Water Supply Program (West Well Field)

CONSTRUCTION COSTS (Alt "B" west well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
A. WATER TRANSMISSION																													
1.	12" T-Main incl. pipe and fittings, DIP	$64.00	26,500	LF	$1,696,000	11,000	LF	$704,000	9,500	LF	$608,000	6,800	LF	$435,200	9,800	LF	$627,200	0	LF	$0	11,400	LF	$729,600	21,400	LF	$1,369,600	96,400	LF	$6,169,600
1a.	12" T-Main (Parallel on 4 lane ROW and larger)	$94.00	26,500	LF	$2,491,000	3,300	LF	$310,200	6,000	LF	$564,000	10,400		$977,600	7,500	LF	$705,000	5,700		$535,800	9,000	LF	$846,000	0	LF	$0	68,400	LF	$6,429,600
2.	18" T-Main incl. pipe and fittings, DIP	$94.00	26,400	LF	$2,481,600	5,200	LF	$488,800	20,000	LF	$1,880,000	9,900	LF	$930,600	11,000	LF	$1,034,000	15,000	LF	$1,410,000	19,000	LF	$1,786,000	0	LF	$0	106,500	LF	$10,011,000
4.	24" T-Main incl. pipe and fittings, DIP	$135.00	4,400	LF	$594,000	1,000	LF	$135,000	0	LF	$0	7,800	LF	$1,053,000	0	LF	$0	1,800	LF	$243,000	0	LF	$0	0	LF	$0	15,000	LF	$2,025,000
5.	30" T-Main incl. pipe and fittings, DIP	$170.00	4,700	LF	$799,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$799,000
6.	36" T-Main incl. pipe and fittings, DIP	$205.00	2,500	LF	$512,500	2,200	LF	$451,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$963,500
7.	42" T-Main incl. pipe and fittings, DIP	$240.00	5,400	LF	$1,296,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	5,400	LF	$1,296,000
8.	48" T-Main incl. pipe and fittings, DIP	$275.00	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0
9.	12" Butterfly Valve Assembly	$2,500.00	13	EA	$32,500	8	EA	$20,000	5	EA	$12,500	3	EA	$7,500	8	EA	$20,000	0	EA	$0	9	EA	$22,500	14	EA	$35,000	60	EA	$150,000
10.	18" Butterfly Valve Assembly	$4,000.00	13	EA	$52,000	4	EA	$16,000	12	EA	$48,000	2	EA	$8,000	9	EA	$36,000	11	EA	$44,000	11	EA	$44,000	0	EA	$0	62	EA	$248,000
12.	24" Butterfly Valve Assembly	$7,200.00	3	EA	$21,600	2	EA	$14,400	0	EA	$0	3	EA	$21,600	0	EA	$0	1	EA	$7,200	0	EA	$0	0	EA	$0	9	EA	$64,800
13.	30" Line Valve	$28,000.00	4	EA	$112,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$112,000
14.	36" Line Valve	$35,000.00	2	EA	$70,000	2	EA	$70,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$140,000
15.	42" Line Valve	$40,000.00	2	EA	$80,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	2	EA	$80,000
16.	48" Line Valve	$50,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0
17.	Fire Hydrant Assembly (Assumed 1000' spacing)	$5,000.00	96	EA	$482,000	23	EA	$113,500	36	EA	$177,500	35	EA	$174,500	28	EA	$141,500	23	EA	$112,500	39	EA	$197,000	21	EA	$107,000	301		$1,505,500
18.	Bore and Jack under HWY 99/70 (54" Casing)	$1,000.00	600	LF	$600,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$600,000
19.	Bore and Jack under HWY 99/70 (24" Casing)	$500.00	600	LF	$300,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$300,000
	TOTAL WATER TRANSMISSION				**$11,620,200**			**$2,322,900**			**$3,290,000**			**$3,608,000**			**$2,563,700**			**$2,352,500**			**$3,625,100**			**$1,511,600**			**$30,894,000**
B. WATER STORAGE TANKS																													
1.	Treatment Plant Storage Tank (4MG) (Includes booster pump station and hydromatic tank)	$5,000,000.00	0	EA	$0	1	EA	$5,000,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$5,000,000
2.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
3.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
4.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
5.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	1	EA	$7,500,000
6.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	1	EA	$7,500,000
	TOTAL WATER STORAGE				**$7,500,000**			**$5,000,000**			**$7,500,000**			**$7,500,000**			**$0**			**$0**			**$7,500,000**			**$7,500,000**			**$42,500,000**

CONSTRUCTION COSTS (Alt "B" west well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
C. SURFACE WATER TREATMENT PLANT																													
1.	Surface Water Treatment Plant (33.1 mgd)	$1,250,000.00	0	mgd	$0	INC	mgd	INC	16.6	mgd	$20,750,000	INC	mgd	INC	16.5	mgd	$20,625,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	33.1	mgd	$41,375,000
	TOTAL SURFACE WATER TREATMENT PLANT				**$0**			**INC**			**$20,750,000**			**INC**			**$20,625,000**			**INC**			**$0**			**INC**			**$41,375,000**
D. GROUND WATER TREATMENT PLANT																													
1.	West Ground Water Treatment Plant (15.1 mgd)	$1,250,000.00	15.1	mgd	$18,875,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	15.1	mgd	$18,875,000
2	East Ground Water Treatment Plant (0 mgd)	$1,250,000.00	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0
	TOTAL GROUND WATER TREATMENT PLANT				**$18,875,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$18,875,000**
E. GROUND WATER WELL FIELDS																													
E.1 - EAST WELL AND PUMP FACILITY																													
1.	Well & Pump Facility	$1,000,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
2.	12" Raw Water incl. Fittings, DIP	$85.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
3.	16" Raw Water incl. Fittings, DIP	$120.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
4.	21" Raw Water incl. Fittings, DIP	$160.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
5.	24" Raw Water incl. Fittings, DIP	$180.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
6.	30" Raw Water incl. Fittings, DIP	$225.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
7.	36" Raw Water incl. Fittings, DIP	$270.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
8.	12" Butterfly Valve Assembly	$2,500.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
9.	16" Butterfly Valve Assembly	$3,500.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
10.	21" Butterfly Valve Assembly	$4,600.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
11.	24" Butterfly Valve Assembly	$7,300.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
12.	30" Butterfly Valve Assembly	$14,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
13.	36" Butterfly Valve Assembly	$17,000.00	0	EA	$0	0	EA			EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
	SUBTOTAL EAST WELL AND PUMP FACILITY				**$0**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$0**
E.2- WEST WELL AND PUMP FACILITY																													
2.	Well & Pump Facility	$1,000,000.00	9	EA	$9,000,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		9	EA	$9,000,000
3.	12" Raw Water incl. Fittings, DIP	$85.00	14,850	LF	$1,262,250	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		14,850	LF	$1,262,250
4.	16" Raw Water incl. Fittings, DIP	$120.00	4,500	LF	$540,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		4,500	LF	$540,000
5.	21" Raw Water incl. Fittings, DIP	$160.00	6,300	LF	$1,008,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		6,300	LF	$1,008,000
6.	24" Raw Water incl. Fittings, DIP	$180.00	5,850	LF	$1,053,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		5,850	LF	$1,053,000
7.	30" Raw Water incl. Fittings, DIP	$225.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
8.	36" Raw Water incl. Fittings, DIP	$270.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
9.	12" Butterfly Valve Assembly	$2,500.00	5	EA	$12,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		5	EA	$12,500
10.	16" Butterfly Valve Assembly	$3,500.00	1	EA	$3,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$3,500
11.	21" Butterfly Valve Assembly	$4,600.00	1	EA	$4,600	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$4,600
12.	24" Butterfly Valve Assembly	$7,300.00	1	EA	$7,300	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		1	EA	$7,300
13.	30" Butterfly Valve Assembly	$14,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
14.	36" Butterfly Valve Assembly	$17,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
	SUBTOTAL WEST WELL AND PUMP FACILITY				**$12,891,150**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$12,891,150**
	TOTAL GROUND WATER WELL FIELDS				**$12,891,150**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$12,891,150**

CONSTRUCTION COSTS (Alt "B" west well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
F. RAW WATER PUMP STATION																													
1.	Raw Water Booster Pump Station (Bennet or Sankey)	$2,500,000.00	0	EA	$0	0	EA	$0	1	EA	$2,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$2,500,000
2.	Raw Water Diversion Facility (Fair Share Cost)	$8,225,996.00	0	EA	$0	0	EA	$0	1	EA	$8,225,996	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$8,225,996
	TOTAL RAW WATER PUMP STATION				**$0**			**$0**			**$10,725,996**			**$0**			**$0**			**$0**			**$0**			**$0**			**$10,725,996**
G. SURFACE RAW-WATER SUPPLY (BENNET TO WEST TREATMENT SITE)																													
1.	42" Steel Cylinder Pipe (CMCL, D.I.P. or Equal) incl. fittings	$350.00	0	LF	$0	0	LF	$0	29,500	LF	$10,325,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	29,500	LF	$10,325,000
2.	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000
	TOTAL SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$10,685,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**$10,685,000**
G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO WEST TREATMENT SITE)																													
1.A	42" Steel Cylinder Pipe (CMCL, D.I.P. or Equal) incl. fittings	$350.00	0	LF	$0	0	LF	$0	27,200	LF	$9,520,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	27,200	LF	$9,520,000
2.A	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000
	TOTAL (ALT-1) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$9,880,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**(ALT-1)**	**$9,880,000**

CONSTRUCTION COSTS (Alt "B" west well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
	CONSTRUCTION COST ESTIMATE SUMMARY																												
	A. WATER TRANSMISSION				$11,620,200			$2,322,900			$3,290,000			$3,608,000			$2,563,700			$2,352,500			$3,625,100			$1,511,600			$30,894,000
	B. WATER STORAGE TANKS				$7,500,000			$5,000,000			$7,500,000			$7,500,000			$0			$0			$7,500,000			$7,500,000			$42,500,000
	C. SURFACE WATER TREATMENT PLANT				$0			INC			$20,750,000			INC			$20,625,000			INC			$0			INC			$41,375,000
	D. GROUND WATER TREATMENT PLANT				$18,875,000			$0			$0			$0			$0			$0			$0			$0			$18,875,000
	E. GROUND WATER WELL FIELD				$12,891,150			$0			$0			$0			$0			$0			$0			$0			$12,891,150
	F. RAW WATER PUMP STATION				$0			$0			$10,725,996			$0			$0			$0			$0			$0			$10,725,996
	G. SURFACE RAW-WATER SUPPLY				$0			$0			$10,685,000			$0			$0			$0			$0			$0			$10,685,000
	Subtotal Construction Costs (A-G)				$50,886,350			$7,322,900			$52,950,996			$11,108,000			$23,188,700			$2,352,500			$11,125,100			$9,011,600			$167,946,146
	15% Engineering/Inspection				$7,632,953			$1,098,435			$7,942,649			$1,666,200			$3,478,305			$352,875			$1,668,765			$1,351,740			$25,191,922
	20% Contingency				$10,177,270			$1,464,580			$10,590,199			$2,221,600			$4,637,740			$470,500			$2,225,020			$1,802,320			$33,589,229
	GRAND TOTAL CONSTRUCTION COST				$68,696,573			$9,885,915			$71,483,845			$14,995,800			$31,304,745			$3,175,875			$15,018,885			$12,165,660			$226,727,297

ALTERNATIVES FOR SURFACE RAW-WATER SUPPLY (Refer to section "G")

G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO WEST TREATMENT SITE)
(Adjust from Alternate B Water Supply Program if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,685,000
Alternative 1 Total	$9,880,000
Difference From Proposed Surface Raw-Water Supply	($805,000)
15% Engineering/Inspection	($120,750)
20% Contingency	($161,000)
Total Adjustment for Alt-1	($1,086,750)

ENGINEER'S PRELIMINARY OPINION OF ANNUAL COSTS

Sutter County

Based on the Sutter Pointe Water System Model for Alternate "B" Winter Diversion Water Supply Program (West Well Field)

RESIDENTIAL FACILITIES / YEAR	PHASE 1 (million $)							PHASE 2 (million $)					PHASE 3 (million $)			PHASE 4 (million $)		(RESIDENTIAL COMPLETED) (million $)	TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	
Percent of Total Phase Cost	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	25%	18.75%	18.75%	18.75%	18.75%	40%	30%	30%	50%	50%		
A. WATER TRANSMISSION	2.91	1.45	1.45	1.45	1.45	1.45	1.45	0.82	0.62	0.62	0.62	0.62	1.03	0.77	0.77	1.81	1.81		21.10
B. WATER STORAGE TANKS	1.88	0.94	0.94	0.94	0.94	0.94	0.94	1.88	1.41	1.41	1.41	1.41				3.75	3.75		22.50
	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%	0%	0%	0%	0%		
C. SURFACE WATER TREATMENT PLANT								20.75					20.63						41.38
	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
D. GROUND WATER TREATMENT PLANT	18.88																		18.88
	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
E. GROUND WATER WELL FIELD	3.22	1.61	1.61	1.61	1.61	1.61	1.61												12.89
	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
F. RAW WATER PUMP STATION								10.73											10.73
G. SURFACE RAW-WATER SUPPLY								10.69											10.69
Subtotal	26.88	4.00	4.00	4.00	4.00	4.00	4.00	44.86	2.02	2.02	2.02	2.02	21.65	0.77	0.77	5.56	5.56		138.15
15% Engineering/Inspection	4.03	0.60	0.60	0.60	0.60	0.60	0.60	6.73	0.30	0.30	0.30	0.30	3.25	0.12	0.12	0.83	0.83		20.72
20% Contingency	5.38	0.80	0.80	0.80	0.80	0.80	0.80	8.97	0.40	0.40	0.40	0.40	4.33	0.15	0.15	1.11	1.11		27.63
YEAR TOTAL	36.29	5.40	5.40	5.40	5.40	5.40	5.40	60.56	2.73	2.73	2.73	2.73	29.23	1.04	1.04	7.51	7.51		186.50
CUMULATIVE TOTAL	36.29	41.69	47.09	52.49	57.89	63.29	68.70	129.26	131.99	134.72	137.45	140.18	169.41	170.45	171.49	178.99	186.50		

EMPLOYMENT FACILITIES / YEAR	PHASE A (million $)										PHASE B (million $)										PHASE C (million $)										PHASE D (million $)										TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	
A. WATER TRANSMISSION	1.16				1.16						1.80				1.80						1.18				1.18						0.76				0.76						9.80
B. WATER STORAGE TANKS	2.50				2.50						3.75				3.75																3.75				3.75						20.00
C. SURFACE WATER TREATMENT PLANT																																									
D. GROUND WATER TREATMENT PLANT																																									
E. GROUND WATER WELL FIELD																																									
F. RAW WATER PUMP STATION																																									
G. SURFACE RAW-WATER SUPPLY																																									
Subtotal	3.66				3.66						5.55				5.55						1.18				1.18						4.51				4.51						29.80
15% Engineering/Inspection	0.55				0.55						0.83				0.83						0.18				0.18						0.68				0.68						4.47
20% Contingency	0.73				0.73						1.11				1.11						0.24				0.24						0.90				0.90						5.96
YEAR TOTAL	4.94				4.94						7.50				7.50						1.59				1.59						6.08				6.08						40.22
CUMULATIVE TOTAL	4.94				9.89						17.38				24.88						26.47				28.06						34.14				40.22						
GRAND YEAR TOTAL	41.23	5.40	5.40	5.40	10.34	5.40	5.40	60.56	2.73	2.73	10.23	2.73	29.23	1.04	8.54	7.51	7.51				1.59				1.59						6.08				6.08						226.73
GRAND CUMULATIVE TOTAL	41.23	46.63	52.03	57.43	67.78	73.18	78.58	139.14	141.87	144.60	154.83	157.56	186.79	187.83	196.37	203.88	211.39				212.97				214.56						220.64				226.73						

NOTE: *ANNUAL COST TABULATIONS DO NOT TAKE INTO ACCOUNT ADJUSTMENTS RESULTING FROM CHOOSING ANOTHER ALTERNATE FOR SURFACE WATER RAW-WATER SUPPLY (IE. ALT-1 THROUGH ALT-3)*

ENGINEER'S PRELIMINARY OPINION OF COSTS

Sutter County

Based on the Sutter Pointe Water System Model for Alternate "B" Winter Diversion Water Supply Program (East Well Field)

CONSTRUCTION COSTS (Alt "B" east well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
A. WATER TRANSMISSION																													
1.	12" T-Main incl. pipe and fittings, DIP	$64.00	28,500	LF	$1,824,000	11,000	LF	$704,000	9,500	LF	$608,000	6,800	LF	$435,200	9,800	LF	$627,200	0	LF	$0	11,400	LF	$729,600	21,400	LF	$1,369,600	98,400	LF	$6,297,600
1a.	12" T-Main (Parallel on 4 lane ROW and larger)	$94.00	26,500	LF	$2,491,000	3,300	LF	$310,200	6,000	LF	$564,000	10,400		$977,600	7,500	LF	$705,000	5,700		$535,800	9,000	LF	$846,000	0	LF	$0	68,400		$6,429,600
2.	18" T-Main incl. pipe and fittings, DIP	$94.00	26,400	LF	$2,481,600	5,200	LF	$488,800	20,000	LF	$1,880,000	9,900	LF	$930,600	11,000	LF	$1,034,000	15,000	LF	$1,410,000	19,000	LF	$1,786,000	0	LF	$0	106,500	LF	$10,011,000
3.	24" T-Main incl. pipe and fittings, DIP	$135.00	4,400	LF	$594,000	1,000	LF	$135,000	0	LF	$0	7,800	LF	$1,053,000	0	LF	$0	1,800	LF	$243,000	0	LF	$0	0	LF	$0	15,000	LF	$2,025,000
4.	30" T-Main incl. pipe and fittings, DIP	$170.00	4,700	LF	$799,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$799,000
5.	36" T-Main incl. pipe and fittings, DIP	$205.00	2,500	LF	$512,500	2,200	LF	$451,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	4,700	LF	$963,500
6.	42" T-Main incl. pipe and fittings, DIP	$240.00	3,200	LF	$768,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	3,200	LF	$768,000
7.	48" T-Main incl. pipe and fittings, DIP	$275.00	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0
8.	12" Butterfly Valve Assembly	$2,500.00	13	EA	$32,500	8	EA	$20,000	5	EA	$12,500	3	EA	$7,500	8	EA	$20,000	0	EA	$0	9	EA	$22,500	14	EA	$35,000	60	EA	$150,000
9.	18" Butterfly Valve Assembly	$4,000.00	13	EA	$52,000	4	EA	$16,000	12	EA	$48,000	2	EA	$8,000	9	EA	$36,000	11	EA	$44,000	11	EA	$44,000	0	EA	$0	62	EA	$248,000
2.	24" Butterfly Valve Assembly	$7,200.00	3	EA	$21,600	2	EA	$14,400	0	EA	$0	3	EA	$21,600	0	EA	$0	1	EA	$7,200	0	EA	$0	0	EA	$0	9	EA	$64,800
3.	30" Line Valve	$28,000.00	4	EA	$112,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$112,000
4.	36" Line Valve	$35,000.00	2	EA	$70,000	2	EA	$70,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	4	EA	$140,000
5.	42" Line Valve	$40,000.00	2	EA	$80,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	2	EA	$80,000
6.	48" Line Valve	$50,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0
7.	Fire Hydrant Assembly (Assumed 1000' spacing)	$5,000.00	96	EA	$481,000	23	EA	$113,500	36	EA	$177,500	35	EA	$174,500	28	EA	$141,500	23	EA	$112,500	39	EA	$197,000	21	EA	$107,000	301		$1,504,500
8.	Bore and Jack under HWY 99/70 (54" Casing)	$1,000.00	600	LF	$600,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$600,000
9.	Bore and Jack under HWY 99/70 (24" Casing)	$500.00	600	LF	$300,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$300,000
	TOTAL WATER TRANSMISSION				**$11,219,200**			**$2,322,900**			**$3,290,000**			**$3,608,000**			**$2,563,700**			**$2,352,500**			**$3,625,100**			**$1,511,600**			**$30,493,000**
B. WATER STORAGE TANKS																													
1.	Treatment Plant Storage Tank (4MG) (Includes booster pump station and hydromatic tank)	$5,000,000.00	0	EA	$0	1	EA	$5,000,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$5,000,000
2.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
3.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
4.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000
5.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	0	EA	$0	1	EA	$7,500,000
6.	Storage Tank (6MG) (Includes booster pump station and hydromatic tank)	$7,500,000.00	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$7,500,000	1	EA	$7,500,000
	TOTAL WATER STORAGE				**$7,500,000**			**$5,000,000**			**$7,500,000**			**$7,500,000**			**$0**			**$0**			**$7,500,000**			**$7,500,000**			**$42,500,000**

CONSTRUCTION COSTS (Alt "B" east well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
C. SURFACE WATER TREATMENT PLANT																													
1.	Surface Water Treatment Plant (33.1 mgd)	$1,250,000.00	0	mgd	$0	INC	mgd	INC	16.6	mgd	$20,750,000	INC	mgd	INC	16.5	mgd	$20,625,000	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	33.1	mgd	$41,375,000
	TOTAL SURFACE WATER TREATMENT PLANT				**$0**			**INC**			**$20,750,000**			**INC**			**$20,625,000**			**INC**			**$0**			**INC**			**$41,375,000**
D. GROUND WATER TREATMENT PLANT																													
1.	West Ground Water Treatment Plant (0 mgd)	$1,250,000.00	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0	INC	mgd	INC	0	mgd	$0
2	East Ground Water Treatment Plant (15.1 mgd)	$1,250,000.00	15.1	mgd	$18,875,000	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	0	mgd	$0	15.1	mgd	$18,875,000
	TOTAL GROUND WATER TREATMENT PLANT				**$18,875,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$18,875,000**
E. GROUND WATER WELL FIELDS																													
E.1 - EAST WELL AND PUMP FACILITY																													
1.	Well & Pump Facility	$1,000,000.00	9	EA	$9,000,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$9,000,000
2.	12" Raw Water incl. Fittings, DIP	$85.00	10,100	LF	$858,500	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$858,500
3.	16" Raw Water incl. Fittings, DIP	$120.00	3,500	LF	$420,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$420,000
4.	21" Raw Water incl. Fittings, DIP	$160.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
5.	24" Raw Water incl. Fittings, DIP	$180.00	3,400	LF	$612,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$612,000
6.	30" Raw Water incl. Fittings, DIP	$225.00	3,300	LF	$742,500	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$742,500
7.	36" Raw Water incl. Fittings, DIP	$270.00	7,500	LF	$2,025,000	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$2,025,000
8.	12" Butterfly Valve Assembly	$2,500.00	1	EA	$2,500	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$2,500
9.	16" Butterfly Valve Assembly	$3,500.00	2	EA	$7,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$7,000
10.	21" Butterfly Valve Assembly	$4,600.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
11.	24" Butterfly Valve Assembly	$7,300.00	4	EA	$29,200	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$29,200
12.	30" Butterfly Valve Assembly	$14,000.00	1	EA	$14,000	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$14,000
13.	36" Butterfly Valve Assembly	$17,000.00	1	EA	$17,000	0	EA			EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$17,000
	SUBTOTAL EAST WELL AND PUMP FACILITY				**$13,727,700**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$13,727,700**
E.2- WEST WELL AND PUMP FACILITY																													
2.	Well & Pump Facility	$1,000,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
3.	12" Raw Water incl. Fittings, DIP	$85.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
4.	16" Raw Water incl. Fittings, DIP	$120.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
5.	21" Raw Water incl. Fittings, DIP	$160.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
6.	24" Raw Water incl. Fittings, DIP	$180.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
7.	30" Raw Water incl. Fittings, DIP	$225.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
8.	36" Raw Water incl. Fittings, DIP	$270.00	0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0	0	LF		0	LF	$0
9.	12" Butterfly Valve Assembly	$2,500.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
10.	16" Butterfly Valve Assembly	$3,500.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
11.	21" Butterfly Valve Assembly	$4,600.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
12.	24" Butterfly Valve Assembly	$7,300.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
13.	30" Butterfly Valve Assembly	$14,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
14.	36" Butterfly Valve Assembly	$17,000.00	0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0	0	EA		0	EA	$0
	SUBTOTAL WEST WELL AND PUMP FACILITY				**$0**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$0**			**INC.**			**$0**
	TOTAL GROUND WATER WELL FIELDS				**$13,727,700**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$0**			**$13,727,700**

CONSTRUCTION COSTS (Alt "B" east well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
F. RAW WATER PUMP STATION																													
1.	Raw Water Booster Pump Station (Bennet or Sankey)	$2,500,000.00	0	EA	$0	0	EA	$0	1	EA	$2,500,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$2,500,000
2.	Raw Water Diversion Facility (Fair Share Cost)	$8,225,996.00	0	EA	$0	0	EA	$0	1	EA	$8,225,996	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$8,225,996
	TOTAL RAW WATER PUMP STATION				**$0**			**$0**			**$10,725,996**			**$0**			**$0**			**$0**			**$0**			**$0**			**$10,725,996**
G. SURFACE RAW-WATER SUPPLY (BENNET TO EAST TREATMENT SITE)**																													
1.	42" Steel Cylinder Pipe (CMCL, D.I.P., or Equal) incl. fittings	$350.00	0	LF	$0	0	LF	$0	28,500	LF	$9,975,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	28,500	LF	$9,975,000
2.	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000
3	Bore and Jack under HWY 99/70 (60" Casing)	$1,100.00	0	LF	$0	0	LF	$0	600	LF	$660,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$660,000
	TOTAL (ALT-1) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$10,995,000**			**$0**			**$0**			**$0**			**$0**			**$0**			**$10,995,000**
G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO EAST TREATMENT SITE)																													
1.A	42" Steel Cylinder Pipe (CMCL, D.I.P., or Equal) incl. fittings	$350.00	0	LF	$0	0	LF	$0	26,100	LF	$9,135,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	26,100	LF	$9,135,000
2.B	42" Line Valves	$60,000.00	0	EA	$0	0	EA	$0	6	EA	$360,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	6	EA	$360,000
3.B	Bore and Jack under HWY 99/70 (60" Casing)	$1,100.00	0	LF	$0	0	LF	$0	600	LF	$660,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	600	LF	$660,000
	TOTAL (ALT-1) SURFACE RAW-WATER SUPPLY				**$0**			**$0**			**$10,155,000**			**$0**			**$0**			**$0**			**$0**			**$0**		**ALT**	**$10,155,000**

CONSTRUCTION COSTS (Alt "B" east well field)

ITEM No.	DESCRIPTION	UNIT PRICE	PHASE 1 QTY	PHASE 1 UNIT	PHASE 1 AMOUNT	PHASE A QTY	PHASE A UNIT	PHASE A AMOUNT	PHASE 2 QTY	PHASE 2 UNIT	PHASE 2 AMOUNT	PHASE B QTY	PHASE B UNIT	PHASE B AMOUNT	PHASE 3 QTY	PHASE 3 UNIT	PHASE 3 AMOUNT	PHASE C QTY	PHASE C UNIT	PHASE C AMOUNT	PHASE 4 QTY	PHASE 4 UNIT	PHASE 4 AMOUNT	PHASE D QTY	PHASE D UNIT	PHASE D AMOUNT	TOTAL QTY	TOTAL UNIT	TOTAL AMOUNT
	CONSTRUCTION COST ESTIMATE SUMMARY																												
	A. WATER TRANSMISSION				$11,219,200			$2,322,900			$3,290,000			$3,608,000			$2,563,700			$2,352,500			$3,625,100			$1,511,600			$30,493,000
	B. WATER STORAGE TANKS				$7,500,000			$5,000,000			$7,500,000			$7,500,000			$0			$0			$7,500,000			$7,500,000			$42,500,000
	C. SURFACE WATER TREATMENT PLANT				$0			INC			$20,750,000			INC			$20,625,000			INC			$0			INC			$41,375,000
	D. GROUND WATER TREATMENT PLANT				$18,875,000			$0			$0			$0			$0			$0			$0			$0			$18,875,000
	E. GROUND WATER WELL FIELD				$13,727,700			$0			$0			$0			$0			$0			$0			$0			$13,727,700
	F. RAW WATER PUMP STATION				$0			$0			$10,725,996			$0			$0			$0			$0			$0			$10,725,996
	G. SURFACE RAW-WATER SUPPLY				$0			$0			$10,995,000			$0			$0			$0			$0			$0			$10,995,000
	Subtotal Construction Costs (A-G)				$51,321,900			$7,322,900			$53,260,996			$11,108,000			$23,188,700			$2,352,500			$11,125,100			$9,011,600			$168,691,696
	15% Engineering/Inspection				$7,698,285			$1,098,435			$7,989,149			$1,666,200			$3,478,305			$352,875			$1,668,765			$1,351,740			$25,303,754
	20% Contingency				$10,264,380			$1,464,580			$10,652,199			$2,221,600			$4,637,740			$470,500			$2,225,020			$1,802,320			$33,738,339
	GRAND TOTAL CONSTRUCTION COST				$69,284,565			$9,885,915			$71,902,345			$14,995,800			$31,304,745			$3,175,875			$15,018,885			$12,165,660			$227,733,790

ALTERNATIVES FOR SURFACE RAW-WATER SUPPLY (Refer to section "G")

G. (ALT-1) SURFACE RAW-WATER SUPPLY (SANKEY TO EAST TREATMENT SITE)
(Adjust from Alternate B Water Supply Program if used)

Proposed Surface Raw-Water Supply (Item 'G') Total	$10,995,000
Alternative 1 Total	$10,155,000
Difference From Proposed Surface Raw-Water Supply	($840,000)
15% Engineering/Inspection	($126,000)
20% Contingency	($168,000)
Total Adjustment for Alt-1	($1,134,000)

ENGINEER'S PRELIMINARY OPINION OF ANNUAL COSTS

Sutter County

Based on the Sutter Pointe Water System Model for Alternate "B" Winter Diversion Water Supply Program (east well field)

RESIDENTIAL FACILITIES / YEAR	PHASE 1 (million $)							PHASE 2 (million $)					PHASE 3 (million $)			PHASE 4 (million $)		(RESIDENTIAL COMPLETED) (million $)	TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	
Percent of Total Phase Cost	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	25%	18.75%	18.75%	18.75%	18.75%	40%	30%	30%	50%	50%		
A. WATER TRANSMISSION	2.80	1.40	1.40	1.40	1.40	1.40	1.40	0.82	0.62	0.62	0.62	0.62	1.03	0.77	0.77	1.81	1.81		**20.70**
B. WATER STORAGE TANKS	1.88	0.94	0.94	0.94	0.94	0.94	0.94	1.88	1.41	1.41	1.41	1.41				3.75	3.75		**22.50**
	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%	0%	0%	0%	0%		
C. SURFACE WATER TREATMENT PLANT								20.75					20.63						**41.38**
	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
D. GROUND WATER TREATMENT PLANT	18.88																		**18.88**
	25%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
E. GROUND WATER WELL FIELD	3.43	1.72	1.72	1.72	1.72	1.72	1.72												**13.73**
	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
F. RAW WATER PUMP STATION								10.73											**10.73**
G. SURFACE RAW-WATER SUPPLY								11.00											**11.00**
Subtotal	26.99	4.06	4.06	4.06	4.06	4.06	4.06	45.17	2.02	2.02	2.02	2.02	21.65	0.77	0.77	5.56	5.56		**138.90**
15% Engineering/Inspection	4.05	0.61	0.61	0.61	0.61	0.61	0.61	6.78	0.30	0.30	0.30	0.30	3.25	0.12	0.12	0.83	0.83		**20.83**
20% Contingency	5.40	0.81	0.81	0.81	0.81	0.81	0.81	9.03	0.40	0.40	0.40	0.40	4.33	0.15	0.15	1.11	1.11		**27.78**
YEAR TOTAL	**36.43**	**5.48**	**5.48**	**5.48**	**5.48**	**5.48**	**5.48**	**60.98**	**2.73**	**2.73**	**2.73**	**2.73**	**29.23**	**1.04**	**1.04**	**7.51**	**7.51**		**187.51**
CUMULATIVE TOTAL	**36.43**	**41.91**	**47.38**	**52.86**	**58.33**	**63.81**	**69.28**	**130.26**	**132.99**	**135.72**	**138.46**	**141.19**	**170.42**	**171.45**	**172.49**	**180.00**	**187.51**		

EMPLOYMENT FACILITIES / YEAR	PHASE A (million $)										PHASE B (million $)										PHASE C (million $)										PHASE D (million $)										TOTAL (million $)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	0%	0%	0%	0%	
A. WATER TRANSMISSION	1.16				1.16						1.80				1.80						1.18				1.18						0.76				0.76						**9.80**
B. WATER STORAGE TANKS	2.50				2.50						3.75				3.75																3.75				3.75						**20.00**
C. SURFACE WATER TREATMENT PLANT																																									
D. GROUND WATER TREATMENT PLANT																																									
E. GROUND WATER WELL FIELD																																									
F. RAW WATER PUMP STATION																																									
G. SURFACE RAW-WATER SUPPLY																																									
Subtotal	3.66				3.66						5.55				5.55						1.18				1.18						4.51				4.51						**29.80**
15% Engineering/Inspection	0.55				0.55						0.83				0.83						0.18				0.18						0.68				0.68						**4.47**
20% Contingency	0.73				0.73						1.11				1.11						0.24				0.24						0.90				0.90						**5.96**
YEAR TOTAL	**4.94**				**4.94**						**7.50**				**7.50**						**1.59**				**1.59**						**6.08**				**6.08**						**40.22**
CUMULATIVE TOTAL	**4.94**				**9.89**						**17.38**				**24.88**						**26.47**				**28.06**						**34.14**				**40.22**						
GRAND YEAR TOTAL	**41.38**	**5.48**	**5.48**	**5.48**	**10.42**	**5.48**	**5.48**	**60.98**	**2.73**	**2.73**	**10.23**	**2.73**	**29.23**	**1.04**	**8.54**	**7.51**	**7.51**				**1.59**				**1.59**						**6.08**				**6.08**						**227.73**
GRAND CUMULATIVE TOTAL	**41.38**	**46.85**	**52.33**	**57.80**	**68.22**	**73.70**	**79.17**	**140.15**	**142.88**	**145.61**	**155.84**	**158.57**	**187.80**	**188.84**	**197.37**	**204.88**	**212.39**				**213.98**				**215.57**						**221.65**				**227.73**						

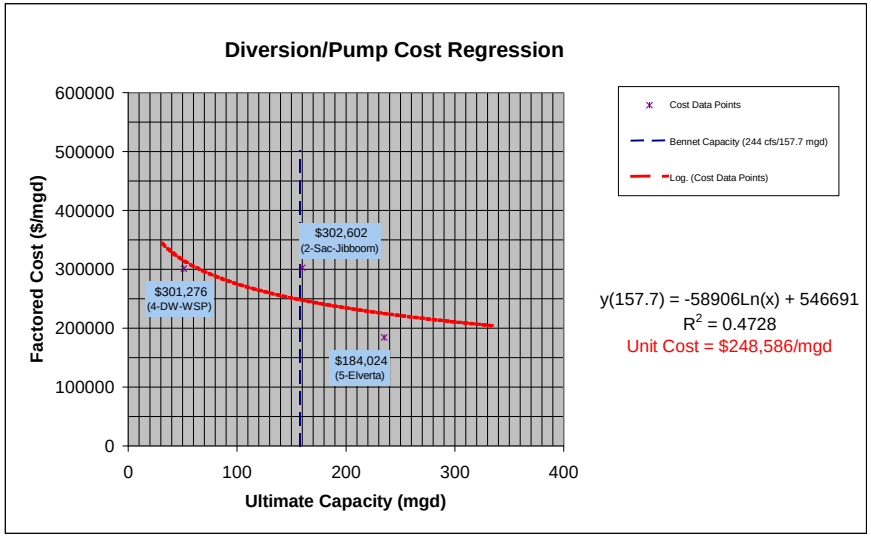
NOTE: *ANNUAL COST TABULATIONS DO NOT TAKE INTO ACCOUNT ADJUSTMENTS RESULTING FROM CHOOSING ANOTHER ALTERNATE FOR SURFACE WATER RAW-WATER SUPPLY (IE. ALT-1 THROUGH ALT-3)*

Raw Water Diversion Facility - Backup Cost Data

NO.	PROJECT	DIVERSION TYPE (Bank/In River)	STATUS (Pro/Ex?)	CONSTRUCTION COST				CAPACITY			UNIT COST			CONTACT		
				COST	YEAR (estimated)	*CCCI	Cost & Index now	(mgd)	(cfs)	(AFA)	Per mgd	Per AFA	SOURCE/DOCUMENT	Name	Company/Agency	Number
							5194									
1	SANKEY DIVERSION	ank (for agg only	Pro	$ 25,000,000	2008		$ 25,000,000	278	430	311,360	$ 89,928	$ 80	CH2MHILL - Verbal (rough est.)	Becky Chelonis/Wane C	CH2MHill	(530) 243-5831/ (530) 229-3374
2	SACTO. (JIBOOM)	In River	Ex - built 200	$ 36,000,000	2001	3862	$ 48,416,365	160	248	179,200	$ 302,602	$ 270	City of Sacto. - Verbal from past bid info.	Dan Sherry	Sac. Utilities Dep	(916) 808-1419
3	FREEPORT	Bank	In Const.	$ 120,587,000	2007	4842	$ 129,353,341	185	286	207,200	$ 699,207	$ 624	Bid (original) copy from contractor	Robert Yoshimira	Parsons	(916) 226-8300
4	DAVIS-WOODLAND W	In River	Pro	$ 12,750,000	Oct 2004	4310	$ 15,365,081	51	79	57,120	$ 301,276	$ 269	Technical Memo attachment to DEIR (2004)			WEBSITE: http://daviswoodlandwatersupply.org/pdfs/wsr/2004_Technical_Memorandum_Davis-UCDavis-Woodland_Joint_Water_Supply_Project.pdf
5	ELVERTA SRWRS	In River	Pro	$ 38,300,000	2006	4600	$ 43,245,696	235	364	263,200	$ 184,024	$ 164	SRWRS Elverta Reliability Study (2006)	Einer Maisch / Anna Foc	PCWA / MWH	(530) 823-4850 /(916) 924-8844 (website: http://www.usbr.gov/mp/srwrs/docs/arps_elverta_11-2006.pdf)
6	LOW OUTLIER - not used STOCKTON WSP	In River	Pro	$ 20,000,000	2003	3988	$ 26,048,144	160	248	179,200	$ 162,801	$ 145	Capacity Analysis Memo (2005)	Anna Fock	MWH	(916) 924-8844

*Escalations based on the California Construction Cost Index (CCCI), produced by ENR

*Soft Costs, including Engineering & Inspection are included



Raw Water Diversion Facility- Fair Share Cost Calculation

		157.7 mgd
	X	**$ 248,586 /mgd**
Bennet P.S. Estimated Upgrade Cost =		**$ 39,202,012**

Water Supply Scenario	**Raw Surface Water: Design Capacity**		**Percent of Bennet PS (244 cfs)**	**Fair Share Cost ($)**
	(mgd)	**(cfs)**		
Proposed Water Supply Program	29.3	45.3	19%	$ 7,278,078
Alt. A - Water Supply Program	35.1	54.8	22%	$ 8,804,386
Alt. B - Water Supply Program (West Well Field)	33.1	51.2	21%	$ 8,225,996
Alt. B - Water Supply Program (East Well Field)	33.1	51.2	21%	$ 8,225,996

PRELIMINARY COST ESTIMATE

NCMWC Agricultural Irrigation

SUTTER POINTE

Sutter County, California

November 10, 2008

MacKay & Somps
CIVIL ENGINEERS, INC.
SACRAMENTO, CALIFORNIA (916) 929-6092

NOTES

SUTTER POINTE SPECIFIC PLAN

NCMWC Agricultural Irrigation

Sutter County California

1. This estimate is prepared as a guide only and is subject to possible change. It has been prepared to a standard of accuracy which, to the best of our knowledge and judgment, is sufficient to satisfy our understanding of the purpose of this estimate. MacKay & Somps makes no warranty, either expressed or implied, as to the accuracy of this estimate.

2. This estimate is based on the Conceptual Plan for Natomas Central Mutual Water Company (NCMWC) Agricultural Irrigation for Sutter Pointe Specific Plan, dated March 21, 2008 by MacKay & Somps. The Conceptual Plan has not been reviewed or approved by NCMWC. Minor adjustments have been made to individual phases, subsequent to March, 2008.

3. The Conceptual Irrigation Plan is predicated on keeping as much agricultural land irrigated as possible as development progresses.

4. The Conceptual Irrigation Plan is not the result of detailed engineering studies and is schematic in nature.

5. The interim and permanent canal facilities have been designed to convey the maximum capacity of the Northern Pumping Plant (240 cfs). The prelim. canal design is trapezoidal with a 10-foot bottom width, 2:1 side slopes, maximum depth of 6 feet, and 1-foot freeboard. There will be a 15-foot wide access road and 6-foot chain link fence on both sides. The approximate corridor width is 70 feet.

6. This estimate does not consider the following:

   a. Cost associated with environmental (wetland) mitigations or biological surveys
   b. Phased construction or out-of-regular-sequence construction
   c. Financial Charges
   d. Bonds
   e. Land costs, acquisition of right of way, easements, and/or rights of entry
   f. Assessments from assessment, lighting & landscaping, Mello-Roos districts or the like

7. Costs presented herein represent an opinion based on historical information. No provision has been made for inflation.

8. Costs have been been tabulated and extracted for Phase as well as annual costs according the SPSP Conceptual Phasing Plan
dated March 10, 2008.

9. The "cash flow" situation may be different than the fees, credits, and reimbursements itemized in this estimate.

10. Interim improvements may be required depending on development timing of individual units.

PRELIMINARY COST ESTIMATE

Sutter Pointe - NCMWC Agricultural Irrigation

Sutter County

Dated: November 10, 2008

CONSTRUCTION COSTS			PHASE 1			PHASE A			PHASE 2			PHASE B			PHASE 3			PHASE C			PHASE 4			PHASE D			TOTAL		
ITEM No.	DESCRIPTION	UNIT PRICE	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT	QTY	UNIT	AMOUNT
1.0 - IRRIGATION CANAL																												
1.A PERMANENT CANAL																												
1.	Excavation (6.2 CY per LF of canal)	$25.00 LF	12,520	LF	$313,000	0	LF	$0	0	LF	$0	5,150	LF	$128,750	2,010	LF	$50,250	0	LF	$0	2,080	LF	$52,000	3,540	LF	$88,500	25,300	LF	$632,500
2.	Access Road (15' wide - 6"AB section)	$30.00 LF	25,040	LF	$751,200	0	LF	$0	0	LF	$0	10,300	LF	$309,000	4,020	LF	$120,600	0	LF	$0	4,160	LF	$124,800	7,080	LF	$212,400	50,600	LF	$1,518,000
3.	6' Chain Link Fence	$16.00 LF	25,040	LF	$400,640	0	LF	$0	0	LF	$0	10,300	LF	$164,800	4,020	LF	$64,320	0	LF	$0	4,160	LF	$66,560	7,080	LF	$113,280	50,600	LF	$809,600
4.	Turnout (Headwall w/Gate)	$65,000.00 EA	1	EA	$65,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$65,000
	TOTAL PERMANENT CANAL				**$1,529,840**			**$0**			**$0**			**$602,550**			**$235,170**			**$0**			**$243,360**			**$414,180**			**$3,025,100**
1.B INTERIM CANAL																												
1.	Excavation (6.2 CY per LF of canal)	$25.00 LF	4,360	LF	$109,000	0	LF	$0	1,200	LF	$30,000	1,120	LF	$28,000	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	6,680	LF	$167,000
2.	Access Road (15' wide - 6"AB section)	$30.00 LF	8,720	LF	$261,600	0	LF	$0	2,400	LF	$72,000	2,240	LF	$67,200	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	13,360	LF	$400,800
3.	6' Chain Link Fence	$16.00 LF	8,720	LF	$139,520	0	LF	$0	2,400	LF	$38,400	2,240	LF	$35,840	0	LF	$0	0	LF	$0	0	LF	$0	0	LF	$0	13,360	LF	$213,760
4.	Turnout (Headwall w/Gate)	$65,000.00 EA	1	EA	$65,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$65,000
5.	Relocate Existing Pump	$50,000.00 EA	1	EA	$50,000	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	0	EA	$0	1	EA	$50,000
	TOTAL INTERIM CANAL				**$625,120**			**$0**			**$140,400**			**$131,040**			**$0**			**$0**			**$0**			**$0**			**$896,560**
1.C CROSSINGS																												
1.	Headwall/Drop Structure	$40,000.00 EA	18	EA	$720,000	0	EA	$0	0	EA	$0	1	EA	$40,000	2	EA	$80,000	0	EA	$0	2	EA	$80,000	9	EA	$360,000	32	EA	$1,280,000
2.	8' x 10' Culvert/Crossing	$650.00 LF	1,100	LF	$715,000	0	LF	$0	0	LF	$0	50	LF	$32,500	180	LF	$117,000	0	LF	$0	100	LF	$65,000	440	LF	$286,000	1,870	LF	$1,215,500
	TOTAL CROSSINGS				**$1,435,000**			**$0**			**$0**			**$72,500**			**$197,000**			**$0**			**$145,000**			**$646,000**			**$2,495,500**
2.0 - OTHER																												
2A. OTHER																												
1.	Abandon Existing Irrigation Canal (12.5 CY per LF)	$40.00 LF	8920	LF	$356,800	0	LF	$0	2230	LF	$89,200	0	LF	$0	4160	LF	$166,400	0	LF	$0	2230	LF	$89,200	3980	LF	$159,200	21,520	LF	$860,800
2.	Abandon Interim Irrigation Canal (6.2 CY per LF)	$20.00 LF	0	LF	$0	0	LF	$0	2120	LF	$42,400	2240	LF	$44,800	1200	LF	$24,000	1120	LF	$22,400	0	LF	$0	0	LF	$0	6,680	LF	$133,600
	TOTAL OTHER				**$356,800**			**$0**			**$131,600**			**$44,800**			**$190,400**			**$22,400**			**$89,200**			**$159,200**			**$994,400**

CONSTRUCTION COST ESTIMATE SUMMARY

1.0 - IRRIGATION CANAL																												
1A. PERMANENT CANAL					**$1,529,840**			**$0**			**$0**			**$602,550**			**$235,170**			**$0**			**$243,360**			**$414,180**			**$3,025,100**
1B. INTERIM CANAL					**$625,120**			**$0**			**$140,400**			**$131,040**			**$0**			**$0**			**$0**			**$0**			**$896,560**
1C. CROSSINGS					**$1,435,000**			**$0**			**$0**			**$72,500**			**$197,000**			**$0**			**$145,000**			**$646,000**			**$2,495,500**
2.0 - OTHER																												
2A. OTHER					**$356,800**			**$0**			**$131,600**			**$44,800**			**$190,400**			**$22,400**			**$89,200**			**$159,200**			**$994,400**
	Subtotal Construction Costs				**$3,946,760**			**$0**			**$272,000**			**$850,890**			**$622,570**			**$22,400**			**$477,560**			**$1,219,380**			**$7,411,560**
	15% Engineering/Inspection				**$592,014**			**$0**			**$40,800**			**$127,634**			**$93,386**			**$3,360**			**$71,634**			**$182,907**			**$1,111,734**
	20% Contingency				**$789,352**			**$0**			**$54,400**			**$170,178**			**$124,514**			**$4,480**			**$95,512**			**$243,876**			**$1,482,312**
	GRAND TOTAL CONSTRUCTION COST				**$5,328,126**			**$0**			**$367,200**			**$1,148,702**			**$840,470**			**$30,240**			**$644,706**			**$1,646,163**			**$10,005,606**

Appendix E. B.O.R. Settlement Contract

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT BETWEEN THE UNITED STATES AND NATOMAS CENTRAL MUTUAL WATER COMPANY, DIVERTER OF WATER FROM SACRAMENTO RIVER SOURCES, SETTLING WATER RIGHTS DISPUTES AND PROVIDING FOR PROJECT WATER

Table of Contents

Table of Contents - continued

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT BETWEEN THE UNITED STATES AND NATOMAS CENTRAL MUTUAL WATER COMPANY, DIVERTER OF WATER FROM SACRAMENTO RIVER SOURCES, SETTLING WATER RIGHTS DISPUTES AND PROVIDING FOR PROJECT WATER

THIS CONTRACT, hereinafter referred to as "Settlement Contract," is entered into by THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, made this 10th day of May, 2005, pursuant to the applicable authority granted to it generally in the Act of June 17, 1902 (32 Stat. 388), and acts amendatory or supplementary thereto, including, but not limited to, the Acts of August 26, 1937 (50 Stat. 844), as amended and supplemented, August 4, 1939 (53 Stat. 1187), as amended and supplemented, including, but not limited to, Sections 9 and 14 thereto, July 2, 1956 (70 Stat. 483), June 21, 1963 (77 Stat. 68), October 12, 1982 (96 Stat. 1263), October 27, 1986 (100 Stat. 3050), as amended, and Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706), all collectively hereinafter referred to as Federal Reclamation law, and NATOMAS CENTRAL MUTUAL WATER COMPANY, hereinafter referred to as the Contractor, a corporation, acting pursuant to Sections 12003 and 12004 of the California Water Code, with its principal place of business in California;

WITNESSETH, that:

EXPLANATORY RECITALS

[1st] WHEREAS, the United States has constructed and is operating the Central Valley Project, California, for multiple purposes pursuant to its statutory authority; and

[2nd] WHEREAS, the Contractor has rights to divert, is diverting, and will continue to divert for reasonable beneficial use, water from the natural flow of the Sacramento River and tributaries thereto, that would have been flowing therein if the Central Valley Project were not in existence;

[3rd] WHEREAS, the construction and operation of the integrated and coordinated Central Valley Project has changed and will further change the regimen of the Sacramento, American, San Joaquin, and Trinity Rivers and the Sacramento-San Joaquin Delta from unregulated flow to regulated flow; and

[4th] WHEREAS, the United States has rights to divert, is diverting, and will continue to divert waters from said Rivers and said Delta in connection with the operation of said Central Valley Project; and

[5th] WHEREAS, the Contractor and the United States had a dispute over the respective rights of the parties to divert and use water from the regulated flow of the Sacramento River which threatened to result in litigation, and as a means to settle that dispute entered into Contract No. 14-06-200-885A, as revised, hereinafter referred to as the Existing Contract, which established terms for the delivery to the Contractor of Central Valley Project Water, and the quantities of Base Supply the United States and the Contractor agreed may be diverted by the Contractor from the Sacramento River pursuant to such contract; and

[6th] WHEREAS, the United States and the Contractor disagree with respect to the authority of the United States to change the quantities of Base Supply and/or Project Water

specified as available for diversion in this Settlement Contract from the quantities specified in the Existing Contract, and other issues related thereto. That dispute was the subject of litigation in a lawsuit entitled *Glenn-Colusa Irrigation District, et al. v. United States, et al.* [Civ. No. S-01-1816 GEB/JFM (E.D. Cal.)], but that litigation was dismissed, without prejudice, pursuant to a stipulation of dismissal filed by the parties thereto on August 29, 2002. Notwithstanding that dismissal, the Contractor and the United States enter into this Settlement Contract to renew the Existing Contract, pursuant to the terms of the Existing Contract, Federal Reclamation law, and the laws of the State of California; and

[7th] WHEREAS, to assure the Contractor of the enjoyment and use of the regulated flow of the said Rivers and the Delta, and to provide for the economical operation of the Central Valley Project by, and the reimbursement to, the United States for expenditures made for said Project.

NOW, THEREFORE, in consideration of the performance of the herein contained provisions, conditions, and covenants, it is agreed as follows:

DEFINITIONS

1. When used herein, unless otherwise expressed or incompatible with the intent hereof, the term:

(a) "Base Supply" shall mean the quantity of Surface Water established in Articles 3 and 5 which may be diverted by the Contractor from the Sacramento River each month during the period April through October of each Year without payment to the United States for such quantities diverted;

(b) "Basin-Wide Water Management Plan" shall mean the mutually agreeable Sacramento River Basinwide Water Management Plan, dated October 11, 2004, developed by

Glenn-Colusa Irrigation District, Maxwell Irrigation District, Natomas Central Mutual Water Company, Pelger Mutual Water Company, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, Reclamation District 108, Sutter Mutual Water Company, Anderson-Cottonwood Irrigation District, Meridian Farms Water Company, Reclamation District 1004, and the U.S. Bureau of Reclamation;

(c) "Charges" shall mean the payments for Project Water that the Contractor is required to pay to the United States in addition to the "Rates" specified in this Settlement Contract. The Contracting Officer will, on an annual basis, determine the extent of these Charges. The type and amount of each Charge shall be specified in Exhibit D;

(d) "Contract Total" shall mean the sum of the Base Supply and Project Water available for diversion by the Contractor for the period April 1 through October 31;

(e) "Critical Year" shall mean any Year in which either of the following eventualities exists:

(1) The forecasted full natural inflow to Shasta Lake for the current Water Year, as such forecast is made by the United States on or before February 15 and reviewed as frequently thereafter as conditions and information warrant, is equal to or less than 3.2 million acre-feet; or

(2) The total accumulated actual deficiencies below 4 million acre-feet in the immediately prior Water Year or series of successive prior Water Years each of which had inflows of less than 4 million acre-feet, together with the forecasted deficiency for the current Water Year, exceed 800,000 acre-feet.

For the purpose of determining a Critical Year, the computation of inflow to Shasta Lake shall be performed in a manner that considers the extent of upstream development

above Shasta Lake during the year in question, and shall be used as the full natural flow to Shasta Lake. In the event that major construction has occurred or occurs above Shasta Lake after September 1, 1963, and which has materially altered or alters the regimen of the stream systems contributing to Shasta Lake, the computed inflow to Shasta Lake used to define a Critical Year will be adjusted to eliminate the effect of such material alterations. After consultation with the State of California, the National Weather Service, and other recognized forecasting agencies, the Contracting Officer will select the forecast to be used and will make the details of it available to the Contractor. The same forecasts used by the United States for the operation of the Project shall be used to make the forecasts hereunder;

(f) "CVPIA" shall mean the Central Valley Project Improvement Act, Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706);

(g) "Eligible Lands" shall mean all lands to which Project Water may be delivered in accordance with Section 204 of the Reclamation Reform Act of October 12, 1982 (96 Stat. 1263), as amended, hereinafter referred to as RRA;

(h) "Excess Lands" shall mean all lands in excess of the limitations contained in Section 204 of the RRA, other than those lands exempt from acreage limitation under Federal Reclamation law;

(i) "Full Cost Rate" shall mean that water rate described in Sections 205(a)(3) or 202(3) of the RRA, whichever is applicable;

(j) "Ineligible Lands" shall mean all lands to which Project Water may not be delivered in accordance with Section 204 of the RRA;

(k) "Landholder" shall mean a party that directly or indirectly owns or leases nonexempt land, as provided in 43 CFR 426.2;

(l) "Project" shall mean the Central Valley Project owned by the United States and managed by the Department of the Interior, Bureau of Reclamation;

(m) "Project Water" shall mean all Surface Water diverted or scheduled to be diverted each month during the period April through October of each Year by the Contractor from the Sacramento River which is in excess of the Base Supply. The United States recognizes the right of the Contractor to make arrangements for acquisition of water from projects of others than the United States for delivery through the Sacramento River and tributaries subject to written agreement between Contractor and the United States as to identification of such water which water when so identified shall not be deemed Project Water under this Settlement Contract;

(n) "Rates" shall mean the payments for Project Water determined annually by the Contracting Officer in accordance with the then current applicable water ratesetting policies for the Project, as described in subdivision (a) of Article 8 of this Settlement Contract;

(o) "Secretary" or "Contracting Officer" shall mean the Secretary of the Interior, a duly appointed successor, or an authorized representative acting pursuant to any authority of the Secretary and through any agency of the Department of the Interior;

(p) "Surface Water" shall mean only those waters that are considered as surface water under California law;

(q) "Water Year" shall mean the period commencing with October 1 of one year and extending through September 30 of the next; and

(r) "Year" shall mean a calendar year.

TERM OF SETTLEMENT CONTRACT

2. (a) This Settlement Contract shall become effective April 1, 2005, and shall remain in effect until and including March 31, 2045; Provided, that under terms and conditions mutually agreeable to the parties hereto, renewals may be made for successive periods not to exceed 40 years each. The terms and conditions of each renewal shall be agreed upon not later than one year prior to the expiration of the then existing Settlement Contract.

(b) With respect to Project Water and the portions of this Settlement Contract pertaining thereto, upon written request by the Contractor of the Secretary made not later than one year prior to the expiration of this Settlement Contract, whenever, account being taken of the amount then credited to the costs of construction of water supply works, the remaining amount of construction costs of water supply work which is properly assignable for ultimate return by the Contractor as established by the Secretary of the Interior pursuant to (3) of Section 1 of Public Law 643 (70 Stat. 483), probably can be repaid to the United States within the term of a contract under subsection 9(d) of the 1939 Reclamation Project Act (53 Stat. 1187), the relevant portions of this Settlement Contract may be converted to a contract under said subsection 9(d) upon terms and conditions mutually agreeable to the United States and the Contractor. The Secretary shall make a determination ten years after the date of execution of this Settlement Contract, and every five years thereafter, of whether a conversion to a contract under said subsection 9(d) can be accomplished pursuant to Public Law 643. Notwithstanding any provision of this Settlement Contract, the Contractor reserves and shall have all rights and benefits under Public Law 643.

WATER TO BE FURNISHED TO CONTRACTOR

3. (a) Subject to the conditions, limitations, and provisions hereinafter expressed, the Contractor is hereby entitled and authorized to divert from the Sacramento River

at the locations shown in Exhibit A, for beneficial use within the area delineated on Exhibit B, (both Exhibits are attached hereto and made a part hereof), the Contract Total designated in Exhibit A, or any revision thereof, in accordance with the monthly operating schedule required by Article 3(c) of this Settlement Contract. The quantity of any water diverted under this Settlement Contract from the Sacramento River, during the period April through October, for use on any lands delineated on Exhibit B, by the owner of such lands or otherwise shall constitute a part of the Contract Total as shown on Exhibit A and shall be subject to all the provisions of this Settlement Contract relating to such Contract Total as if such diversion were made by the Contractor.

(b) The Contractor may have acquired rights to divert water from the Sacramento River during the period April through October, that were obtained after the date of execution of the Existing Contract, or the Contractor may acquire such rights in the future. All diversions made from the Sacramento River, pursuant to such rights, during the period April through October, shall not be considered a part of the quantity of Base Supply and Project Water specified in Exhibit A; Provided, that the quantities diverted pursuant to the above rights shall be identified on the schedule submitted pursuant to Article 3(c) below, and shall not be substituted for any Base Supply or Project Water; Provided, further, that any such identified quantities of other acquired rights may be diverted by the Contractor before incurring any fee pursuant to Article 3(c)(1), below.

(c) Before April 1 and before the first day of each month thereafter when a revision is needed, the Contractor shall submit a written schedule to the Contracting Officer indicating the Contract Total to be diverted by the Contractor for agricultural and municipal and industrial purposes during each month under this Settlement Contract. The United States shall

furnish water to the Contractor in accordance with the monthly operating schedule or any revisions thereof. However, the United States recognizes the need of the Contractor to change from time to time its monthly diversions of water from the quantities shown in Exhibit A; the Contractor may make such changes, provided:

(1) that for the quantity of Base Supply diverted in excess of the monthly quantity shown in Exhibit A, and as may be reduced in accordance with Article 5(a), during June, July, August, September, or October of any Water Year, the Contractor shall be charged a rescheduling fee equal to 50 percent of the sum of the storage operations and maintenance rate and the storage capital rate components of the Project ratesetting policy.

(2) that in no event shall the total quantity scheduled for diversion by the Contractor from the Sacramento River:

(i) During the period April through October exceed the aggregate of the Contract Total for that period shown in Exhibit A or any revision thereof;

(ii) During the period July through September exceed the aggregate of the Contract Total for that period shown in Exhibit A or any revision thereof.

(d) In the event conditions warrant, the Contracting Officer reserves the right to require the Contractor to submit, at least 72 hours prior to the beginning of each weekly period, its estimate of daily diversion requirements for each such period from the Sacramento River; Provided, however, that changes during any such period may be made upon the giving of 72 hours' notice thereof to the Contracting Officer.

(e) No sale, transfer, exchange, or other disposal of any of the Contract Total designated in Exhibit A or the right to the use thereof for use on land other than that shown on Exhibit B shall be made by the Contractor without first obtaining the written consent of the Contracting Officer. Such consent will not be unreasonably withheld and a decision will be rendered in a timely manner. For short-term actions that will occur within one year or less, the decision will be rendered within 30 days after receipt of a complete written proposal. For long-term actions that will occur in a period longer than one year, the decision will be rendered within 90 days after receipt of a complete written proposal. For a proposal to be deemed complete by the Contracting Officer, it must comply with all provisions required by State and Federal law, including information sufficient to enable the Contracting Officer to comply with the National Environmental Policy Act, the Endangered Species Act, and applicable rules or regulations then in effect; Provided, that such consent does not authorize the use of Federal facilities to facilitate or effectuate the sale, transfer, exchange, or other disposal of Base Supply. Such use of Federal facilities will be the subject of a separate agreement to be entered into between the Contractor and Reclamation.

(f) For the purpose of determining whether Section 3405(a)(1)(M) of the CVPIA applies to the Contractor as a transferor or transferee of Project Water, the Contracting Officer acknowledges that the Contractor is within a county, watershed, or other area of origin, as those terms are utilized under California law.

(g) Nothing herein contained shall prevent the Contractor from diverting water during the months of November through March for beneficial use on the land shown on Exhibit B or elsewhere to the extent authorized under the laws of the State of California.

(h) The United States assumes no responsibility for and neither it nor its officers, agents, or employees shall have any liability for or on account of:

(1) The quality of water to be diverted by the Contractor;

(2) The control, carriage, handling, use, disposal, or distribution of water diverted by the Contractor outside the facilities constructed and then being operated and maintained by or on behalf of the United States;

(3) Claims of damage of any nature whatsoever, including but not limited to, property loss or damage, personal injury, or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of said water outside of the hereinabove referred to facilities; and

(4) Any damage whether direct or indirect arising out of or in any manner caused by a shortage of water whether such shortage be on account of errors in operation, drought, or unavoidable causes.

(i) In addition to the provisions of subdivision (h) of Article 3 of this Contract, if there is a shortage of Project Water because of actions taken by the Contracting Officer to meet legal obligations then, except as provided in subdivision (a) of Article 30 of this Contract, no liability shall accrue against the United States or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom.

RETURN FLOW

4. Nothing herein shall be construed as an abandonment or a relinquishment by the United States of any right it may have to the use of waste, seepage, and return flow water derived from water diverted by the Contractor hereunder and which escapes or is discharged beyond the boundaries of the lands shown on Exhibit B; Provided, that this shall not be construed as

claiming for the United States any right to such water which is recovered by the Contractor pursuant to California law from within the boundaries of the lands shown on Exhibit B, and which is being used pursuant to this Settlement Contract for surface irrigation or underground storage for the benefit of the lands shown on Exhibit B by the Contractor.

CONSTRAINTS ON THE AVAILABILITY OF WATER

5. (a) In a Critical Year, the Contractor's Base Supply and Project Water agreed to be diverted during the period April through October of the Year in which the principal portion of the Critical Year occurs and, each monthly quantity of said period shall be reduced by 25 percent.

(b) The amount of any overpayment by the Contractor shall, at its option, be refunded or credited upon amounts to become due to the United States from the Contractor under the provisions hereof in the ensuing Year. To the extent of such deficiency such adjustment of overpayment shall constitute the sole remedy of the Contractor.

INTEGRATED WATER MANAGEMENT AND PARTNERSHIPS

6. The Contractor and United States desire to work together to maximize the reasonable beneficial use of water for their mutual benefit. As a consequence, the United States and the Contractor will work in partnership and with others within the Sacramento Valley, including other contractors, to facilitate the better integration within the Sacramento Valley of all water supplies including, but not limited to, the better management and integration of surface water and groundwater, the development and better utilization of surface water storage, the effective utilization of waste, seepage and return flow water, and other operational and management options that may be identified in the future.

USE OF WATER FURNISHED TO CONTRACTOR

7. (a) The parties anticipate that, during the term of this Settlement Contract, a gradual change in the purpose of use of water will occur within the place of water use shown in Exhibit B from predominantly agricultural purposes to a mixture of municipal and industrial, wildlife habitat and agricultural purposes, and the parties agree to work cooperatively to accommodate and facilitate such change. Project Water furnished to the Contractor pursuant to this Settlement Contract may be delivered or furnished by the Contractor for agricultural or municipal and industrial purposes; Provided, however, that the Contractor shall not deliver or furnish Project Water for municipal and industrial purposes outside those areas delineated on Exhibit B, as approved for such purposes by the Contracting Officer, without the written consent of the Contracting Officer. Such consent will not be unreasonably withheld and a decision will be provided in a timely manner following completion of any environmental review required under applicable law. For purposes of this Settlement Contract, "agricultural purposes" includes, but is not restricted to, the irrigation of crops, the watering of livestock, incidental domestic use including related landscape irrigation, and underground water replenishment; and "municipal and industrial purposes" includes, but is not limited to, the watering of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment or water delivered to landholdings operated in units of less than five acres unless the Contractor establishes to the satisfaction of the Contracting Officer that the use of Project Water is for agricultural purposes.

(b) The Contractor shall comply with requirements applicable to the Contractor in biological opinion(s) prepared as a result of a consultation regarding the execution of this Settlement Contract undertaken pursuant to Section 7 of the Endangered Species Act of 1973, as amended, that are within the Contractor's legal authority to implement. The Existing

Contract, which evidences in excess of 40 years of diversions, for agricultural uses, of the quantities of water provided for in Article 3, and the underlying water rights of the Contractor will be considered in developing an appropriate base-line for the Biological Assessment prepared pursuant to the Endangered Species Act, and in any other needed environmental review. Nothing herein shall be construed to prevent the Contractor from challenging or seeking judicial relief in a court of competent jurisdiction with respect to any biological opinion or other environmental documentation referred to in this Article.

RATE AND METHOD OF PAYMENT FOR WATER

8. (a) The Contractor shall make payments to the United States as provided in this Article for all Project Water shown in Exhibit A as follows:

(1) 75 percent of the amount shown as Project Water shall be paid for by the Contractor in each Year; and in addition

(2) the Contractor shall pay for Project Water actually diverted in excess of 75 percent of the amount shown as Project Water.

Such payments shall be at Rates and Charges established in accordance with: (i) the Secretary's then-current ratesetting policies for the Project; and (ii) applicable Reclamation law and associated rules and regulations, or policies; Provided, that if the Contractor desires to use Project Water for other than agricultural purposes the Rates and Charges set forth above will be adjusted by the Contracting Officer to the applicable Rates and Charges for such purposes; Provided, further, that to enable the Contracting Officer to compute the applicable Rates and Charges for Project Water diverted by the Contractor for other than agricultural use, including, but not limited to diversions for municipal and industrial uses and diversions for direct application to wildlife habitat (not including re-use of tailwater for habitat purposes), prior to

initiating any such diversions, the Contractor shall provide the Contracting Officer with an estimate of the annual quantities of Project Water to be diverted or furnished for such purposes through the end of the CVP repayment period as identified in the then-current ratesetting policies. The Rates and Charges applicable to the Contractor upon execution of this Settlement Contract are set forth in Exhibit D, as may be revised annually. The Secretary's ratesetting policies for the Project shall be amended, modified, or superseded only through a public notice and comment procedure. The Contracting Officer shall adjust the amount of Project Water for which payment is required to the extent of any reduction in diversions of Project Water made in accordance with the water conservation provisions of Article 29(e).

(b) The Contracting Officer shall notify the Contractor of the Rates and Charges as follows:

(1) Prior to July 1 of each Year, the Contracting Officer shall provide the Contractor an estimate of the Charges for Project Water that will be applied to the period October 1, of the current Year, through September 30, of the following Year, and the basis for such estimate. The Contractor shall be allowed not less than two months to review and comment on such estimates. On or before September 15 of each Year, the Contracting Officer shall notify the Contractor in writing of the Charges to be in effect during the period October 1 of the current Year, through September 30, of the following Year, and such notification shall revise Exhibit D.

(2) Prior to October 1 of each Year, the Contracting Officer shall make available to the Contractor an estimate of the Rates for Project Water for the following Year and the computations and cost allocations upon which those Rates are based. The Contractor shall be allowed not less than two months to review and comment on such computations and cost allocations. By December 31 of each Year, the Contracting Officer shall provide the Contractor

with the final Rates to be in effect for the upcoming Year, and such notification shall revise Exhibit D.

(c) The Contractor shall pay the United States for Project Water in the following manner:

(1) With respect to Rates, prior to May 1 of each Year, the Contractor shall pay the United States one-half the total amount payable pursuant to subdivision (a) of this Article and the remainder shall be paid prior to July 1 or such later date or dates as may be specified by the United States in a written notice to the Contractor; Provided, however, that if at any time during the Year the amount of Project Water diverted by the Contractor shall equal the amount for which payment has been made, the Contractor shall pay for the remaining amount of such water as shown in Exhibit A in advance of any further diversion of Project Water.

(2) With respect to Charges, the Contractor shall also make a payment to the United States, in addition to the Rate(s) in subdivision (c)(1) of this Article, at the Charges then in effect, before the end of the month following the month of delivery or transfer. The payments shall be consistent with the quantities of Project Water delivered or transferred. Adjustment for overpayment or underpayment of Charges shall be made through the adjustment of payments due to the United States for Charges for the next month. Any amount to be paid for past due payment of Charges shall be computed pursuant to Article 13 of this Settlement Contract.

(d) Payments to be made by the Contractor to the United States under this Settlement Contract may be paid from any revenues available to the Contractor. All revenues received by the United States from the Contractor relating to the delivery of Project Water or the delivery of non-Project Water through Project facilities shall be allocated and applied in

accordance with Federal Reclamation law and the associated rules or regulations, and the then current Project ratesetting policies for irrigation water.

(e) The Contracting Officer shall keep its accounts pertaining to the administration of the financial terms and conditions of its long-term water service and Settlement Contracts, in accordance with applicable Federal standards, so as to reflect the application of Project costs and revenues. The Contracting Officer shall, each Year upon request of the Contractor, provide to the Contractor a detailed accounting of all Project and Contractor expense allocations, the disposition of all Project and Contractor revenues, and a summary of all water delivery information. The Contracting Officer and the Contractor shall enter into good faith negotiations to resolve any discrepancies or disputes relating to accountings, reports, or information.

(f) The parties acknowledge and agree that the efficient administration of this Settlement Contract is their mutual goal. Recognizing that experience has demonstrated that mechanisms, policies, and procedures used for establishing Rates and Charges and/or for making and allocating payments, other than those set forth in this Article may be in the mutual best interest of the parties, it is expressly agreed that the parties may enter into agreements to modify the mechanisms, policies, and procedures for any of those purposes while this Settlement Contract is in effect without amendment of this Settlement Contract.

(g) For the term of this Settlement Contract, Rates under the respective ratesetting policies for the Project will be established to recover only reimbursable operation and maintenance (including any deficits) and capital costs of the Project, as those terms are used in the then current Project ratesetting policies, and interest, where appropriate, except in instances where a minimum Rate is applicable in accordance with the relevant Project ratesetting policy.

Proposed changes of significance in practices which implement the ratesetting policies for the Project will not be implemented until the Contracting Officer has provided the Contractor an opportunity to discuss the nature, need, and impact of the proposed change. The Contractor retains all rights to challenge the validity of Rates and Charges imposed pursuant to this Settlement Contract, including but not limited to operation and maintenance expenses and operation and maintenance deficits, in an appropriate administrative or judicial proceeding.

(h) Except as provided in subsection 3405(a)(1)(B) of the CVPIA, the Rates for Project Water transferred, exchanged, or otherwise disposed of, by the Contractor shall be the Contractor's Rates adjusted upward or downward to reflect the changed costs of delivery (if any) of the transferred, exchanged, or otherwise disposed of Project Water to the transferee's point of delivery in accordance with the then-current ratesetting policies for the Project. Except as provided in subsection 3407(d)(2)(A) of the CVPIA, the Charges for Project Water transferred, exchanged, or otherwise disposed of, by the Contractor shall be the Contractor's Charges specified in Exhibit D. If the Contractor is receiving lower Rates and Charges because of inability to pay and is transferring, exchanging, or otherwise disposing of Project Water to another entity whose Rates and Charges are not adjusted due to inability to pay, the Rates and Charges for transferred, exchanged, or otherwise disposed of Project Water shall be the Contractor's Rates and Charges unadjusted for ability to pay.

(i) Pursuant to the Act of October 27, 1986 (100 Stat. 3050), the Contracting Officer is authorized to adjust determinations of ability to pay every five years.

(j) Each payment to be made pursuant to subdivisions (a) and (c) of this Article shall be made at the office of the Bureau of Reclamation, MP Region: Mid-Pacific,

P.O. Box 894242, Los Angeles, CA 90189-4242, or at such other place as the United States may designate in a written notice to the said Contractor. Payments shall be made by cash transaction, wire, or any other mechanism as may be agreed to in writing by the Contractor and the Contracting Officer. In the event there should be a default in the payment of the amount due, the delinquent payment provisions of Article 13 shall apply. The Contractor shall not be relieved of the whole or any part of its said obligation by, on account of, or notwithstanding, as the case may be:

(1) Its failure, refusal, or neglect to divert 75 percent of the quantity of Project Water shown on Exhibit A;

(2) The default in payment to it by any water user of assessments, tolls, or other charges levied by or owing to said Contractor;

(3) Any judicial determination that any assessment, toll, or other charge referred to in subsection 8(c)(2) of this Settlement Contract is irregular, void, or ineffectual; or

(4) Any injunctive process enjoining or restraining the Contractor from making or collecting any such assessment, toll, or other charge referred to in subsection 8(c)(2) of this Settlement Contract.

AGREEMENT ON WATER QUANTITIES

9. (a) During the term of this Settlement Contract and any renewals thereof:

(1) It shall constitute full agreement as between the United States and the Contractor as to the quantities of water and the allocation thereof between Base Supply and Project Water which may be diverted by the Contractor from the Sacramento River for beneficial use on the land shown on Exhibit B from April 1 through October 31, which said diversion, use,

and allocation shall not be disturbed so long as the Contractor shall fulfill all of its obligations hereunder;

(2) Neither party shall claim any right against the other in conflict with the provisions of Article 9(a)(1) hereof.

(b) Nothing herein contained is intended to or does limit rights of the Contractor against others than the United States or of the United States against any person other than the Contractor; Provided, however, that in the event the Contractor, the United States, or any other person shall become a party to a general adjudication of rights to the use of water of the Sacramento River system, this Settlement Contract shall not jeopardize the rights or position of either party hereto or of any other person and the rights of all such persons in respect to the use of such water shall be determined in such proceedings the same as if this Settlement Contract had not been entered into, and if final judgment in any such general adjudication shall determine that the rights of the parties hereto are different from the rights as assumed herein, the parties shall negotiate an amendment to give effect to such judgment. In the event the parties are unable to agree on an appropriate amendment they shall, within 60 days of determining that there is an impasse, employ the services of a neutral mediator, experienced in resolving water rights disputes, to assist in resolving the impasse. The cost of the mediation will be shared equally. A failure to reach agreement on an amendment within 60 days of the end of mediation will cause the immediate termination of this Settlement Contract.

(c) In the event that the California State Water Resources Control Board or a court of competent jurisdiction issues a final decision or order modifying the terms and conditions of the water rights of either party to this Settlement Contract in order to impose Bay-Delta water quality obligations, the Contractor and the United States shall promptly meet to

455 determine whether or not to modify any of the terms of this Settlement Contract to comply with
456 the final decision or order, including, but not limited to, the applicability of the rescheduling
457 charge in Article 3(c)(1) of this Settlement Contract. If within 60 days of the date of the issuance
458 of the final decision or order the parties are not able to reach agreement regarding either the need
459 to modify this Settlement Contract or the manner in which this Settlement Contract is to be
460 modified, the parties shall promptly retain a neutral mediator, experienced in resolving water
461 right disputes, to assist the parties in resolving their dispute. The cost of the mediator shall be
462 shared equally. In the event that either of the parties to this Settlement Contract determines that
463 the parties will not be able to develop mutually-agreeable modification(s) to this Settlement
464 Contract even with the assistance of a mediator, either of the parties to this Settlement Contract
465 may attempt to resolve the impasse by seeking appropriate judicial relief including, but not
466 limited to, filing a general adjudication of the rights to the use of water in the Sacramento River
467 system. The foregoing provisions of this sub-article shall only apply to the incremental
468 obligations contained within a final decision or order of the State Water Resources Control
469 Board that reflects a modification to the obligations imposed in State Water Resources Control
470 Board Revised Water Rights Decision 1641 dated March 15, 2000, and its associated 1995 Water
471 Quality Control Plan which, taken together, will be considered the baseline for the application of
472 the provisions of this sub-article.

473 (d) In the event this Settlement Contract terminates, the rights of the parties to
474 thereafter divert and use water shall exist as if this Settlement Contract had not been entered into;
475 and the fact that as a compromise settlement of a controversy as to the respective rights of the
476 parties to divert and use water and the yield of such rights during the term hereof, this Settlement
477 Contract places a limit on the Contract Total to be diverted annually by the Contractor during the

Settlement Contract term and segregates it into Base Supply and Project Water shall not jeopardize the rights or position of either party with respect to its water rights or the yield thereof at all times after the Settlement Contract terminates. It is further agreed that the Contractor at all times will first use water to the use of which it is entitled by virtue of its own water rights, and neither the provisions of this Settlement Contract, action taken thereunder, nor payments made thereunder to the United States by the Contractor shall be construed as an admission that any part of the water used by the Contractor during the term of this Settlement Contract was in fact water to which it would not have been entitled under water rights owned by it nor shall receipt of payments thereunder by the United States from the Contractor be construed as an admission that any part of the water used by the Contractor during the term of this Settlement Contract was in fact water to which it would have been entitled under water rights owned by it.

MEASUREMENT OF WATER

10. (a) All water diverted by the Contractor from the Sacramento River will be diverted at the existing point or points of diversion shown on Exhibit A or at such other points as may be mutually agreed upon in writing by the Contracting Officer and the Contractor.

(b) All water diverted from the Sacramento River pursuant to this Settlement Contract will be measured or caused to be measured by the United States at each point of diversion with existing equipment or equipment to be installed, operated, and maintained by the United States, and/or others, under contract with and at the option of the United States. The equipment and methods used to make such measurement shall be in accordance with sound engineering practices. Upon request of the Contractor, the accuracy of such measurements will be investigated by the Contracting Officer and any errors appearing therein will be corrected.

(c) The right of ingress to and egress from all points of diversion is hereby granted to all authorized employees of the United States. The Contractor also hereby grants to the United States the right to install, operate, maintain, and replace such equipment on diversion or carriage facilities at each point of diversion as the Contracting Officer deems necessary.

(d) The Contractor shall not modify, alter, remove, or replace diversion facilities or do any other act which would alter the effectiveness or accuracy of the measuring equipment installed by the United States or its representatives unless and until the Contracting Officer has been notified with due diligence and has been given an opportunity to modify such measuring equipment in such manner as may be necessary or appropriate. In the event of an emergency the Contractor shall notify the United States within a reasonable time thereafter as to the existence of the emergency and the nature and extent of such modification, alteration, removal, or replacement of diversion facilities.

(e) The Contractor shall pay the United States for the costs to repair, relocate, or replace measurement equipment when the Contractor modifies, alters, removes, or replaces diversion or carriage facilities.

(f) Contractor and Contracting Officer shall develop a mutually agreeable surface water delivery water measurement program which shall be implemented by the Contractor, and such measurement program shall be consistent with the conservation and efficiency criteria for evaluating water conservation plans as provided in Article 29(a).

(g) All new surface water delivery systems installed within the lands delineated on Exhibit B after the effective date of this Settlement Contract shall also comply with the measurement provisions described in this Article.

(h) The Contractor shall inform the Contracting Officer on or before the 10th calendar day of each month of the quantity of Contract Total diverted or furnished for agricultural and municipal and industrial purposes during the preceding month.

RULES AND REGULATIONS

11. The parties agree that the delivery of Project Water for irrigation use or use of Federal facilities pursuant to this Settlement Contract is subject to Federal Reclamation law, including but not limited to, the Reclamation Reform Act of 1982 (43 U.S.C. 390aa et seq.), as amended and supplemented, and the rules and regulations promulgated by the Secretary of the Interior under Federal Reclamation law.

GENERAL OBLIGATION--BENEFITS CONDITIONED UPON PAYMENT

12. (a) The obligation of the Contractor to pay the United States as provided in this Settlement Contract is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligations to the Contractor.

(b) The payment of Charges becoming due hereunder is a condition precedent to receiving benefits under this Settlement Contract. The United States shall not make water available to the Contractor through Project facilities during any period in which the Contractor may be in arrears in the advance payment of water Rates due the United States. The Contractor shall not furnish water made available pursuant to this Settlement Contract for lands or parties which are in arrears in the advance payment of water rates levied or established by the Contractor.

(c) With respect to subdivision (b) of this Article, the Contractor shall have no obligation to require advance payment for water Rates which it levies.

CHARGES FOR DELINQUENT PAYMENTS

13. (a) The Contractor shall be subject to interest, administrative and penalty charges on delinquent installments or payments. When a payment is not received by the due date, the Contractor shall pay an interest charge for each day the payment is delinquent beyond the due date. When a payment becomes 60 days delinquent, the Contractor shall pay an administrative charge to cover additional costs of billing and processing the delinquent payment. When a payment is delinquent 90 days or more, the Contractor shall pay an additional penalty charge of six percent per year for each day the payment is delinquent beyond the due date.

Further, the Contractor shall pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest charge rate shall be the greater of the rate prescribed quarterly in the Federal Register by the Department of the Treasury for application to overdue payments, or the interest rate of one-half of one percent per month prescribed by Section 6 of the Reclamation Project Act of 1939 (Public Law 76-260). The interest charge rate shall be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied, first to the penalty, second to the administrative charges, third to the accrued interest, and finally to the overdue payment.

QUALITY OF WATER

14. The operation and maintenance of Project facilities shall be performed in such manner as is practicable to maintain the quality of raw water made available through such facilities at the highest level reasonably attainable as determined by the Contracting Officer. The United States does not warrant the quality of water and is under no obligation to construct or furnish water treatment facilities to maintain or better the quality of water.

WATER AND AIR POLLUTION CONTROL

15. The Contractor, in carrying out this Settlement Contract, shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California, and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities.

EQUAL OPPORTUNITY

16. During the performance of this Settlement Contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates of payment or other

forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, as amended, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Settlement Contract or with any of the said rules, regulations, or orders, this Settlement Contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND REGULATIONS

17. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), Section 504 of the Rehabilitation Act of 1975 (P.L. 93-112, as amended), the Age Discrimination Act of 1975 (42 U.S.C. 6101, et seq.) and any other applicable civil rights laws, as well as with their respective implementing regulations and guidelines imposed by the U.S. Department of the Interior and/or Bureau of Reclamation.

(b) These statutes require that no person in the United States shall, on the grounds of race, color, national origin, handicap, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving financial assistance from the Bureau of Reclamation. By executing this Settlement Contract, the Contractor agrees to immediately take any measures necessary to implement this obligation, including permitting officials of the United States to inspect premises, programs, and documents.

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts, or other Federal financial assistance extended after the date hereof to the Contractor by the Bureau of Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this Article, and that the United States reserves the right to seek judicial enforcement thereof.

MINGLING OF CONTRACTOR'S PROJECT AND NON-PROJECT WATER

18. (a) Project Water must of necessity be transported by the Contractor to its water users by means of the same works and channels used for the transport of its non-Project Water including Base Supply. Notwithstanding such mingling of water, the provisions of Article 11 hereof shall be applicable only to Project Water, and such mingling of water shall not in any manner subject to the provisions of Article 11 hereof the Contractor's non-Project Water including Base Supply.

(b) If required in accordance with subdivision (c) of this Article, the Contractor shall install and maintain such measuring equipment and distribution facilities and maintain such records as may be necessary to determine the amounts of water delivered to Excess Lands served by the Contractor. The Contractor shall not within any month deliver to

Ineligible Lands water in excess of the non-Project Water, including Base Supply, for that month. The Contracting Officer or authorized representative shall have the right at all reasonable times to inspect such records and measuring equipment.

(c) The Contractor will not be considered in violation of the requirement that Project Water be delivered only to Eligible Lands during any month of the irrigation season that the water requirement for beneficial use on Eligible Lands for that month is equal to or in excess of the Project Water for that month as shown on Exhibit A or any revision thereof pursuant to subdivision (c) of Article 3. The water requirement for beneficial use on Eligible Lands will be determined by multiplying:

(1) the number of irrigable acres of the particular types of crops grown in that year on the acreage designated as eligible by

(2) the Unit Duties as set forth in Exhibit C attached hereto and made a part hereof, or by such other Unit Duties mutually agreed upon by the Contractor and the Contracting Officer. In order to make the computation of the water requirement for Eligible Lands, on April 1 of each Year and concurrently with its order for water for the irrigation season, the Contractor shall designate the acreage of and type of crops to be grown on its Eligible Lands that irrigation season. During any month the water requirement as above determined for crops growing on Eligible Lands during such month is equal to or in excess of the Project Water for that month as provided herein the Contractor shall not be required to measure the water delivered to Excess Lands. Any month the said water requirement is less than the amount of Project Water as provided herein, the Contractor will be required to measure water delivered to excess land in accordance with subdivision (b) hereof.

BOOKS, RECORDS, AND REPORTS

19. The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this Settlement Contract, including: the Contractor's financial transactions, water supply data, and Project land and right-of-way agreements; the water users' land-use (crop census), land ownership, land-leasing and water use data; and other matters that the Contracting Officer may require. Reports thereon shall be furnished to the Contracting Officer in such form and on such date or dates as the Contracting Officer may require. Subject to applicable Federal laws and regulations, each party to this Settlement Contract shall have the right during office hours to examine and make copies of each other's books and official records relating to matters covered by this Settlement Contract.

CHANGE OF PLACE OF USE OR ORGANIZATION

20. (a) Unless the written consent of the United States is first obtained no change shall be made in the place of water use shown on Exhibit B.

(b) While this Settlement Contract is in effect, no change shall be made in the area of the Contractor as shown on its Exhibit B, by inclusion, exclusion, annexation, or detachment of lands, by dissolution, consolidation, or merger or otherwise, except upon the Contracting Officer's written consent thereto. Such consent will not be unreasonably withheld and a decision will be provided in a timely manner.

(c) In the event lands are annexed to or detached from the area of the Contractor, as provided herein, the quantity of Project Water to be diverted may be increased or decreased, as may be appropriate, pursuant to a supplemental agreement to be executed in respect thereto.

CONSOLIDATION OF CONTRACTING ENTITIES

21. Consolidation of Contractors may be approved by the Contracting Officer provided: (i) the Contracting Officer approves the form and organization of the resulting entity and the utilization by it of the Contract Total; and (ii) the obligations of the Contractors are assumed by such entity.

No such consolidation shall be valid unless and until approved by the Contracting Officer.

NOTICES

22. Any notice, demand, or request authorized or required by this Settlement Contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Area Manager, Northern California Area Office, Bureau of Reclamation, 16349 Shasta Dam Boulevard, Shasta Lake, California 96019, and on behalf of the United States, when mailed, postage prepaid, or delivered to the Board of Directors of the Natomas Central Mutual Water Company, 2601 West Elkhorn Boulevard, Rio Linda, California 95673. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this Article for other notices.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

23. (a) The provisions of this Settlement Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Settlement Contract or any right or interest therein shall be valid until approved in writing by the Contracting Officer.

(b) The assignment of any right or interest in this Settlement Contract by either party shall not interfere with the rights or obligations of the other party to this Settlement Contract absent the written concurrence of said other party.

(c) The Contracting Officer shall not unreasonably condition or withhold his approval of any proposed assignment.

OFFICIALS NOT TO BENEFIT

24. (a) No Member of or Delegate to Congress, Resident Commissioner, or official of the Contractor shall benefit from this Settlement Contract other than as a water user or landowner in the same manner as other water users or landowners.

(b) No officer or member of the governing board of the Contractor shall receive any benefit that may arise by reason of this Settlement Contract other than as a landowner within the Contractor's Service Area and in the same manner as other landowners within the said service area.

CONTINGENT UPON APPROPRIATION OR ALLOTMENT OF FUNDS

25. The expenditure or advance of any money or the performance of any obligation of the United States under this Settlement Contract shall be contingent upon appropriation or allotment of funds. Absence of appropriation or allotment of funds shall not relieve the Contractor from any obligations under this Settlement Contract. No liability shall accrue to the United States in case funds are not appropriated or allotted.

CONFIRMATION OF SETTLEMENT CONTRACT

26. The Contractor, after the execution of this Settlement Contract, shall promptly seek to secure a decree of a court of competent jurisdiction of the State of California, if appropriate, confirming the execution of this Settlement Contract. The Contractor shall furnish the United States a certified copy of the final decree, the validation proceedings, and all pertinent supporting records of the court approving and confirming this Settlement Contract, and decreeing and adjudging it to be lawful, valid, and binding on the Contractor. This Settlement Contract shall not be binding on the United States until such final decree has been secured.

UNAVOIDABLE GROUNDWATER PERCOLATION

27. To the extent applicable, the Contractor shall not be deemed to have delivered Project Water to Excess Lands or Ineligible Lands if such lands are irrigated with groundwater that reaches the underground strata as an unavoidable result of the delivery of Project Water by the Contractor to Eligible Lands.

PRIVACY ACT COMPLIANCE

28. (a) The Contractor shall comply with the Privacy Act of 1974 (5 U.S.C. 552a) (the Act) and the Department of the Interior rules and regulations under the Act (43 CFR 2.45 et seq.) in maintaining Landholder acreage certification and reporting records, required to be submitted to the Contractor for compliance with Sections 206 and 228 of the Reclamation Reform Act of 1982 (96 Stat. 1266), and pursuant to 43 CFR 426.18.

(b) With respect to the application and administration of the criminal penalty provisions of the Act (5 U.S.C. 552a(i)), the Contractor and the Contractor's employees responsible for maintaining the certification and reporting records referenced in (a) above are considered to be employees of the Department of the Interior. See 5 U.S.C. 552a(m).

(c) The Contracting Officer or a designated representative shall provide the Contractor with current copies of the Interior Department Privacy Act regulations and the Bureau of Reclamation Federal Register Privacy Act System of Records Notice (Acreage Limitation--Interior, Reclamation-31) which govern the maintenance, safeguarding, and disclosure of information contained in the Landholder's certification and reporting records.

(d) The Contracting Officer shall designate a full-time employee of the Bureau of Reclamation to be the System Manager who shall be responsible for making decisions on denials pursuant to 43 CFR 2.61 and 2.64 amendment requests pursuant to 43 CFR 2.72. The Contractor is authorized to grant requests by individuals for access to their own records.

(e) The Contractor shall forward promptly to the System Manager each proposed denial of access under 43 CFR 2.64; and each request for amendment of records filed under 43 CFR 2.71; notify the requester accordingly of such referral; and provide the System Manager with information and records necessary to prepare an appropriate response to the requester. These requirements do not apply to individuals seeking access to their own certification and reporting forms filed with the Contractor pursuant to 43 CFR 426.18, unless the requester elects to cite the Privacy Act as a basis for the request.

WATER CONSERVATION

29. (a) Prior to the diversion of Project Water, the Contractor shall be implementing an effective water conservation and efficiency program based on the Basin-Wide Water Management Plan and/or Contractor's water conservation plan that has been determined by the Contracting Officer to meet the conservation and efficiency criteria for evaluating water conservation plans established under Federal law. The water conservation and efficiency program shall contain definite water conservation objectives, appropriate economically feasible water conservation measures, and time schedules for meeting those objectives. Continued diversion of Project Water pursuant to this Settlement Contract shall be contingent upon the Contractor's continued implementation of such water conservation program. In the event the Contractor's water conservation plan or any revised water conservation plan completed pursuant to subdivision (c) of Article 29 of this Settlement Contract have not yet been determined by the Contracting Officer to meet such criteria, due to circumstances which the Contracting Officer determines are beyond the control of the Contractor, Project Water deliveries shall be made under this Settlement Contract so long as the Contractor diligently works with the Contracting Officer to obtain such determination at the earliest practicable date, and thereafter the Contractor

immediately begins implementing its water conservation and efficiency program in accordance with the time schedules therein.

(b) The Contractor shall submit to the Contracting Officer a report on the status of its implementation of the water conservation plan on the reporting dates specified in the then existing conservation and efficiency criteria established under Federal law.

(c) At five-year intervals, the Contractor shall revise its water conservation plan to reflect the then current conservation and efficiency criteria for evaluating water conservation plans established under Federal law and submit such revised water management plan to the Contracting Officer for review and evaluation. The Contracting Officer will then determine if the water conservation plan meets Reclamation's then current conservation and efficiency criteria for evaluating water conservation plans established under Federal law.

(d) If the Contractor is engaged in direct groundwater recharge, such activity shall be described in the Contractor's water conservation plan.

(e) In order to provide incentives for water conservation, the Contractor may reduce the amount of Project Water for which payment is required under Article 8(a) in accordance with the provisions of this Article 29(e).

(1) On or before February 15 of any Water Year, the Contractor may file with Reclamation an offer to reduce Project Water use, hereinafter referred to as Offer. The Offer shall specify the maximum quantity of Project Water to be diverted by the Contractor for each month that Project Water is available for that Water Year under this Settlement Contract. The Contracting Officer shall provide the Contractor with a decision, in writing, to the Offer on or before March 15 of that Water Year. The dates specified in this Article 29(e)(1) can be changed if mutually agreed to, in writing, by the Contractor and Contracting Officer.

(2) If Reclamation accepts the Offer, the Contractor's payment obligation under Article 8(a)(1) shall be reduced to the maximum quantity of Project Water to be diverted by the Contractor as specified in the Offer. The Contractor shall not divert Project Water in excess of the quantities set forth in the Offer; Provided, however, if the Contractor's diversions of Project Water exceed the quantities set forth in the Offer, the Contractor shall pay to Reclamation the applicable Rates and Charges plus an amount equal to the applicable Rates and Charges, unadjusted for ability to pay, for each acre-foot of Project Water diverted in excess of the quantities set forth in the Offer.

(3) If Reclamation decides not to accept the Offer, the Contractor's payment obligation will remain as specified in Article 8(a)(1).

(4) The provisions of this Article 29(e) shall be in addition to and shall not affect the provisions of Article 3(e) pertaining to the sale, transfer, exchange, or other disposal of the Contract Total designated in Exhibit A.

OPINIONS AND DETERMINATIONS

30. (a) Where the terms of this Settlement Contract provide for actions to be based upon the opinion or determination of either party to this Settlement Contract, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. Both parties, notwithstanding any other provisions of this Settlement Contract, expressly reserve the right to seek relief from and appropriate adjustment for any such arbitrary, capricious, or unreasonable opinion or determination. Each opinion or determination by either party shall be provided in a timely manner. Nothing in subdivision (a) of Article 30 of this Settlement Contract is intended to or shall affect or alter the

standard of judicial review applicable under Federal law to any opinion or determination implementing a specific provision of Federal law embodied in statute or regulation.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Settlement Contract that are consistent with the provisions of this Settlement Contract, the laws of the United States and of the State of California, and the rules and regulations promulgated by the Secretary of the Interior. Such determinations shall be made in consultation with the Contractor to the extent reasonably practicable.

CONTRACTOR TO PAY CERTAIN MISCELLANEOUS COSTS

31. (a) In addition to all other payments to be made by the Contractor pursuant to this Settlement Contract, the Contractor shall pay to the United States, within 60 days after receipt of a bill and detailed statement submitted by the Contracting Officer to the Contractor for such specific items of direct cost incurred by the United States for work requested by the Contractor associated with this Settlement Contract plus indirect costs in accordance with applicable Bureau of Reclamation policies and procedures. All such amounts referred to in this Article shall not exceed the amount agreed to in writing in advance by the Contractor. This Article shall not apply to costs for routine contract administration.

(b) All advances for miscellaneous costs incurred for work requested by the Contractor pursuant to Article 31 of this Settlement Contract shall be adjusted to reflect the actual costs when the work has been completed. If the advances exceed the actual costs incurred, the difference will be refunded to the Contractor. If the actual costs exceed the Contractor's advances, the Contractor will be billed for the additional costs pursuant to Article 31 of this Settlement Contract.

WAIVER OF DEFAULT

32. The waiver by either party to this Settlement Contract as to any default shall not be construed as a waiver of any other default or as authority of the other party to continue such default or to make, do, or perform, or not to make, do, or perform, as the case may be, any act or thing which would constitute a default.

IN WITNESS WHEREOF, the parties hereto have executed this Settlement Contract as of the day and year first hereinabove written.

THE UNITED STATES OF AMERICA

APPROVED AS TO LEGAL FORM AND SUFFICIENCY
OFFICE OF REGIONAL SOLICITOR
DEPARTMENT OF THE INTERIOR

By: _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

(SEAL)

NATOMAS CENTRAL MUTUAL WATER COMPANY

By: _____
President

ATTEST:

_____
Secretary

(H:\public\Sac River Final LTRC's\2005-01-31 Natomas Central MWC Final Draft Contract with exhibits.doc)

Exhibit A

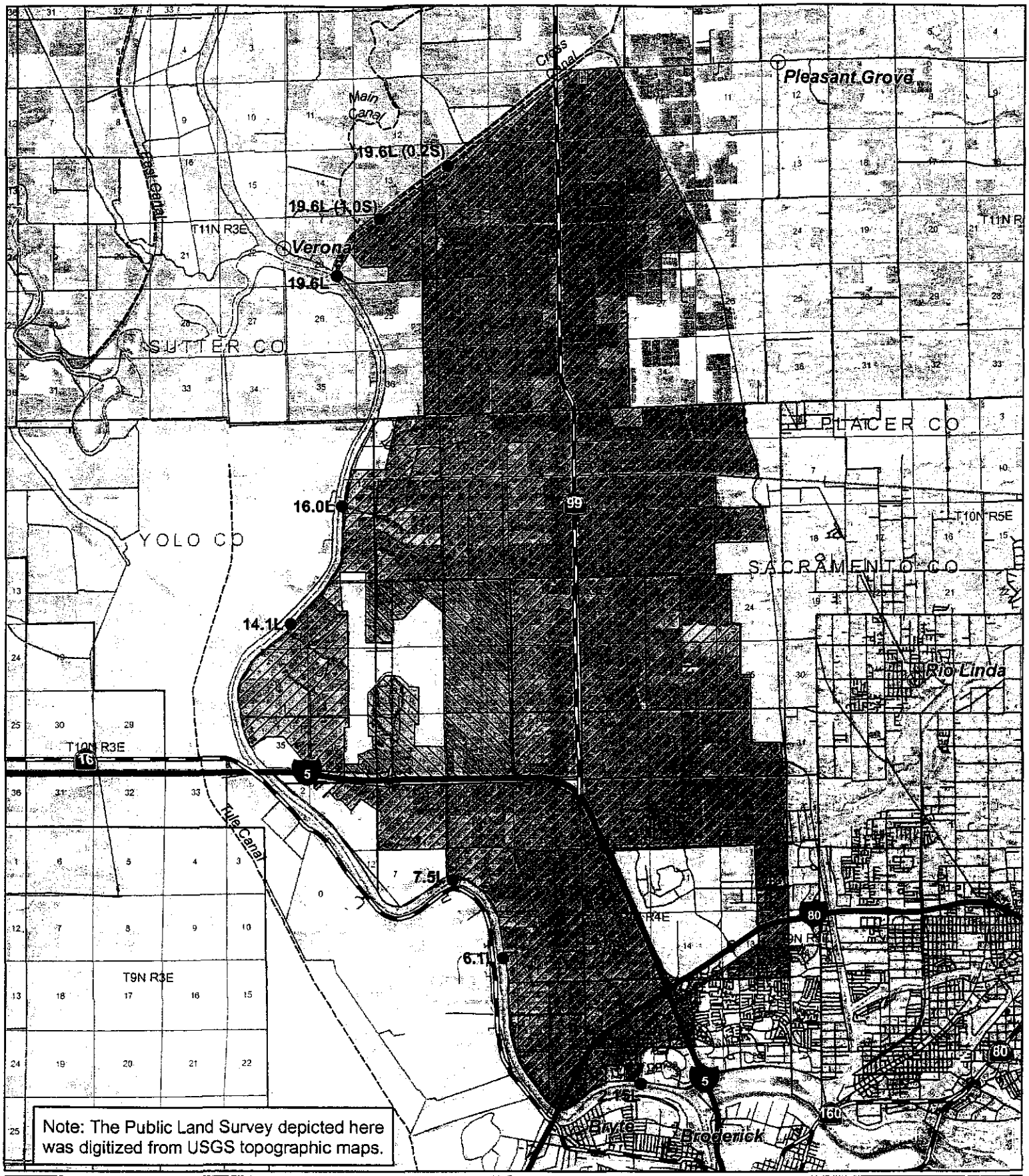
NATOMAS CENTRAL MUTUAL WATER COMPANY
Sacramento River

SCHEDULE OF MONTHLY DIVERSIONS OF WATER

	Base Supply (acre-feet)	Project Water (acre-feet)	Contract Total (acre-feet)
April	14,000	0	14,000
May	27,700	0	27,700
June	23,000	0	23,000
July	11,500	7,200	18,700
August	3,900	14,800	18,700
September	16,100	0	16,100
October	2,000	0	2,000
Total	98,200	22,000	120,200

Points of Diversion: 2.15L, 6.1L, 7.5L, 14.1L, 16.0L, 19.6L (Cross Canal 1.0S & 2.0S)

Dated: 01-31-2005



Natomas Central Mutual Water Co.

Contract No. 14-06-200-885A-R-1

Exhibit B

Contractor's Service Area - Ag Only
Contractor's Service Area - Ag and/or M&I
District Boundary
Point of Diversion

N

Miles
0 0.5 1 2 3

Date: 3/7/05, Revised 4/11/05
File Name: N:\districts\contracts\natomas_central\natomas_central.mxd

725-202-35

Exhibit C

NATOMAS CENTRAL MUTUAL WATER COMPANY
Sacramento River

UNIT DUTY

(In Acre-Feet Per Acre)

	Rice	Alfalfa and Irrigated Pasture	General Crops
June	1.70	0.80	0.60
July	1.80	1.00	0.70
August	1.70	0.80	0.70
September	0.50	0.60	0.40

Dated: 01-31-2005

Exhibit D

NATOMAS CENTRAL MUTUAL WATER COMPANY
Sacramento River
2005 Water Rates and Charges per Acre-Foot

	Cost of Service		Calculated Payment Capacity 1/
	Irrigation	M&I	Irrigation
COST OF SERVICE RATES:			
Capital Rate			
Storage	$4.57	$9.70	$0.00
O&M Rates:			
Water Marketing	$6.61	$3.89	$6.61
Storage	$5.93	$6.67	$5.93
Deficit Rates:			
Interest Bearing	$0.00	$0.00	$0.00
CFO/PFR Adjustment Rate 2/	$0.00	$0.00	$0.00
TOTAL	$17.11	$20.26	$12.54
RESCHEDULING FEE:	$5.59	$8.19	$5.59
FULL-COST RATES:			
Section 202(3) Rate is applicable to a Qualified Recipient or to a Limited Recipient receiving irrigation water on or before October 1, 1981.	$21.47	N/A	$21.47
Section 205(a)(3) Rate is applicable to a Limited Recipient that did not receive irrigation water on or before October 1, 1981.	$23.82	N/A	$23.82
CHARGES UNDER P.L. 102-575 TO THE RESTORATION FUND 3/			
Restoration Payments (3407(d)(2)(A))	$7.93	$15.87	$0.00

1/ Established pursuant to the Sutter, Natomas and Pelger MWC Payment Capacity Analysis dated October, 2001.

2/ Chief Financial Officer (CFO) adjustment and Provision for Replacement (PFR) expense is being distributed over a 5-year period beginning in FY 2003 for those contractors that requested those costs be deferred.

3/ These surcharges are payments in addition to the water rates and are determined pursuant to Title XXXIV of P.L. 102-575. Restoration Fund surcharges under P.L. 102-575 are on a fiscal year basis (10/1 -9/30). Contractors with ability to pay relief do not pay Restoration Fund charges for agricultural water.

BOARD OF DIRECTORS

NATOMAS CENTRAL MUTUAL WATER COMPANY

RESOLUTION NO. 2005-03-02

RESOLUTION APPROVING LONG-TERM RENEWAL OF CONTRACT BETWEEN THE UNITED STATES AND NATOMAS CENTRAL MUTUAL WATER COMPANY, DIVERTER OF WATER FROM SACRAMENTO RIVER SOURCES, SETTLING WATER RIGHTS DISPUTES AND PROVIDING FOR PROJECT WATER

WHEREAS Natomas Central Mutual Water Company (the "Company") has, since 1964, held a settlement contract with the United States Department of the Interior, Bureau of Reclamation ("Reclamation") bearing Contract No. 14-06-200-885A (the "Original Contract").

WHEREAS the Original Contract would have expired on March 31, 2004.

WHEREAS in advance of that expiration, the Company and Reclamation entered into negotiations for a long-term renewal of the Original Contract.

WHEREAS by Act of Congress, the Original Contract was extended for a period of two years, because the negotiations and related procedures had not been completed by March 31, 2004.

WHEREAS the negotiations and related procedures have now been completed, and Reclamation has presented to the Company the agreed-upon final form of renewal contract bearing Contract No. 14-06-200-885A-R1 (the "Renewal Contract").

WHEREAS the Board of Directors of the Company finds and determines that it is in the best interest of the Company to approve the Renewal Contract and to authorize the General Manager and staff of the Company to carry out any actions necessary to implement the Renewal Contract.

NOW, THEREFORE, BE IT RESOLVED that:

1. The Board of Directors of the Company hereby approves the Renewal Contract between Reclamation and the Company with the correction of Exhibit B to include the 428 acres of airport land into Natomas' contractual service area.

2. The General Manager and staff of the Company are authorized and directed to take any other action necessary to implement the terms of the Renewal Contract.

PASSED AND ADOPTED by unanimous written consent of the Board of Directors on April 21, 2005.

By _____
Dan F. Spangler
President, Board of Directors

By _____
Herb Niederberger, Jr.
Vice President, Board of Directors

By _____
Mark Enes
Secretary, Board of Directors

By _____
Jim Sopwith
Board of Directors

By _____
Doug Ose
Board of Directors

By _____
Michael George
Board of Directors

By _____
Rod Rosa
Board of Directors