TO: BOARD OF DIRECTORS

FROM: BRUCE BUEL

DATE: DECEMBER 7, 2007

**AGENDA ITEM**
**E-2**
**DEC. 12, 2007**

# EMERGENCY WATER SUPPLY REGULATIONS

## ITEM

Review revised emergency water supply regulations and set community workshop to consider adoption [PROVIDE POLICY GUIDANCE].

## BACKGROUND

The Water Conservation Committee has been working with District Legal Counsel and SAIC to produce regulations that would replace the current Emergency Water Supply Ordinance adopted in 1992. Attached is the most recent edition of the text of an ordinance that omits the trigger mechanisms to determine the appropriate stage of water conservation.

Also attached is a draft Technical Memorandum from SAIC predicting future water storage volumes above sea level in the Nipomo Mesa Groundwater Management Area assuming different climatic regimes. This Technical Memoranda also evaluates the retention of storage with enactment of Emergency Water Shortage regulations for municipal customers, however, more work needs to be done before staff is prepared to propose a specific set of triggers.

The Water Conservation Committee has scheduled a meeting on December 19, 2007 to continue its review of this matter and staff expects that the full Board will consider preparing a proposed set of regulations at your January 9, 2008 Board meeting.

District Council Jon Seitz and Brad Newton from SAIC are scheduled to present their respective work products at the Board Meeting.

## RECOMMENDATION

Staff recommends that your Honorable Board discuss the ordinance text and the technical memoranda and then set a Community Workshop for 6:30pm on Wednesday 1/30/08 at the Forum at Nipomo High School to receive community feedback and to consider adoption of a revised set of regulations.

## ATTACHMENTS

- Draft Text of Emergency Water Supply Regulations
- Draft SAIC Technical Memorandum

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# TECHNICAL MEMORANDUM

**TO:** Bruce Buel, General Manager, Nipomo Community Services District

**FROM:** Alex Pappas, Joel Degner

**RE:** Predicted Groundwater in Storage from year 2007 through year 2039, 01-0236-9100

**DATE:** December 5, 2007

## INTRODUCTION

Nipomo Community Services District (NCSD) requested SAIC estimate the groundwater in storage above sea level (GWS) within the Phase III boundary from year 2007 through year 2039 based on the year 2007 estimated consumptive use and four scenarios of annual consumptive use escalation from year 2007 to year 2039. The scenarios are as listed in the following table:

| Scenario | Annual Escalation Rate |
|---|---|
| S1 | 0% |
| S2 | 1% |
| S3 | 2.3% |
| S4 | 4% |

The four scenarios are evaluated with four conditions: 1) a repetition of historic hydrological conditions from year 1975 to year 2007, 2) a dry hydrologic condition, 3) a wet hydrologic condition, and 4) a 50% reduction of urban water consumptive use.

Hydrologic conditions are defined by segmenting the historic record into wet periods and dry periods, holding the annual sequence within each period constant, and varying the order of wet and dry periods. Two hypothetical hydrologic conditions are presented as follows.

| | Calendar Year Order |
|---|---|
| **DRY** | YR1985 - YR1992, YR1975 - YR1977, YR1977 - YR1982, YR1994 - YR2001 |
| **WET** | YR1994 - YR2001, YR1977 - YR1982, YR1975 - YR1977, YR1985 - YR1992 |

These two hypothetical hydrologic conditions are 24 years long and shorter than the previous analyses for 32 years, however, 24 years of prediction are sufficient to understand the impact of dry condition and wet conditions on GWS.

This technical memorandum presents the groundwater in storage estimates under the above scenarios from year 2007 through year 2039 and describes the methodology supporting these estimates.



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## RESULTS

The estimated GWS from year 2007 through year 2039 is based on the year 2007 consumptive use (CU), estimated from the land use classification of a June 2007 1-foot resolution aerial photograph (Figure 1). The total CU in 2007 within the Phase III boundary for the Nipomo Mesa is approximately 10,650 acre feet per year (AFY). The long-term (year 1975 – year 2000) average recharge from rainfall to the GWS is 5,430 AFY (SAIC Phase III Hydrologic Inventory, Oct 2002). Year 2007 CU exceeds long-term average recharge from rainfall by 5,220 AFY. A long-term average annual groundwater supply shortfall of 5,220 AFY accumulating over 32 years is 167,040 acre-feet (AF) of GWS depletion. Based on these long-term averages, the year 2007 GWS of 93,000 AF would be consumed in 17.8 years.

The following tables summarize the results of the evaluating the four scenarios and four conditions.

| Scenario | Consumptive Use (AFY) | Annual Escalation Rate | Total GWS Depletion by 2039 (AFY) | # of Years Until Groundwater is Depleted | Supplemental Water Requirement (AFY) |
|---|---|---|---|---|---|
| **32 year analysis** | | | | | |
| S1 | 10,630 | 0% | 152,230 | 12 | 4760 |
| S2 | | 1% | 214,735 | 12 | 6710 |
| S3 | | 2.3% | 318,395 | 12 | 9950 |
| S4 | | 4% | 505,911 | 11 | 15810 |
| S1 w/conservation | 8,360 | 0% | 78,950 | 14 | 2470 |
| S2 w/conservation | | 1% | 128,015 | 14 | 4000 |
| S3 w/conservation | | 2.3% | 209,385 | 14 | 6540 |
| S4 w/conservation | | 4% | 356,582 | 12 | 11140 |
| **21 year analysis** | | | | | |
| S1 dry | 10,360 | 0% | 71,680 | 8 | 3410 |
| S2 dry | | 1% | 98,002 | 8 | 4670 |
| S3 dry | | 2.3% | 137,971 | 8 | 6570 |
| S4 dry | | 4% | 202,121 | 8 | 9630 |
| S1 wet | 10,360 | 0% | 71,680 | > 21 | 3410 |
| S2 wet | | 1% | 98,002 | 21 | 4670 |
| S3 wet | | 2.3% | 137,971 | 18 | 6570 |
| S4 wet | | 4% | 202,121 | 16 | 9630 |

The predicted GWS from year 2007 to year 2039 is based on current CU and the historic (year 1975 to year 2007) climatic conditions. In year 2039, the total S1 GWS is depleted by 152,230 AF (sum of Column I, Table 1), and the GWS is zero in 12 years (year 2019, blue line crosses zero abscissa, Figure 2). Augmenting CU by escalation rates of 1%, 2.3%, and 4% decreases the amount of time before the GWS is zero. The total S2 (1% escalation) GWS depletion is 214,735 AF (sum of Column M, Table 1), the total S3 (2.3% escalation) GWS depletion is 318,395 AF (sum of Column Q, Table 1), and the total S4 (4% escalation) GWS depletion is 505,911 AF (sum of Column U, Table 1) over the 32 year prediction period, respectively. The GWS above sea level is fully depleted by year 2019 under all scenarios (all predictions cross zero abscissa, Figure 2). On average, a minimum of 4,700 AFY of supplemental water is required to meet current consumptive use demand, and depending on growth, the amount may be as high as 15,000 AFY, as determined from this simplified analysis.

The year 2007 total CU is 8,360 AFY (Table 2) after reducing the urban CU for year 2007 by 50%, and it is 2,290 AFY less than the current estimated CU for 2007 without the impact of Stage IV Conservation measures. The estimated CU with conservation exceeds long-term average recharge to the GWS from rainfall by 3,140 AFY, and the GWS is fully depleted by year 2021 under all scenarios (all predictions cross zero abscissa, Figure 3). However, it is important to note that in S1 the GWS dips only slightly below sea level (in 2021) and rebounds above sea level within six years (2027). With conservation, the amount of supplemental water required to meet CU ranges from 2,460 AFY to 11,140 AFY. Important to note, the reduction in urban CU by imposing Stage IV Conservation measures will extend the time until GWS is below sea level by only one to two years. Notably, the historic hydrologic condition ends in a drying trend. If this drying trend was followed by a wet series of years, it is possible that the groundwater in storage would be above sea level for the 0% escalation rate.

*Dry and Wet conditions*

A dry hydrologic condition was imposed on the analysis for 21 years by altering the order of the historic record. Two drier than normal periods were lumped together followed by two wetter than normal periods to simulate a dry hydrologic condition. Using the same procedure as presented above and with the year 2007 CU estimate of 10,680 AF, the GWS is depleted in eight years (2015) for all four levels of annual escalation rates (Table 3, Figure 4).

A wet hydrologic condition was imposed on the analysis for 21 years, and following the same procedure and with the year 2007 CU of 10,680 AF, the GWS is not depleted under a 0% annual escalation in CU during the 21 year cycle, however it trends monotonically downward (Table 4). GWS is depleted in 21 years for Scenario 2, is depleted in 18 years for Scenario 3, and is depleted in 17 years for Scenario 4 (Figure 5).

## ASSUMPTIONS

The evaluation presented herein is based on the following assumptions:

1. The urban applied demand factor (0.63 AF/acre) is the same in year 2007 as it was in year 2000. Future hydrologic inventories should differentiate between ranchettes and tract housing to improve the accuracy of urban consumptive use.
2. The agricultural land use classification in year 2007 has the same ratio of crop types detailed in the year 1996 survey. Future hydrologic inventories should re-evaluate agricultural crop type ratios by visiting agricultural land in the field.
3. The golf course consumptive use factor is the same in year 2007 as in year 2000. Future hydrologic inventories should re-evaluate the golf course consumptive use factor by compiling meter records and evaluating irrigation area and practices.
4. The impact of the change in land use from native to agriculture and urban in the amount of future rainfall that recharges GWS is not accounted for in this analysis.

5. Subsurface inflow to the GWS is equal to the subsurface outflow. Variations in subsurface flow as a function of the change in groundwater surface elevation are not considered in the GWS calculations.

## METHODOLOGY

The predicted GWS from year 2007 through year 2039 is based on year 2007 CU and the historic (year 1975 to year 2007) hydrologic conditions. Year 2007 CU is estimated from the land use classification of a June 2007 1-foot resolution aerial photograph (Figure 1) and a CU factor for each land use classification. The following sections provides a detailed description of 1) the classification of the aerial photography and estimate of land use, 2) the conversion of land use to CU for urban, agriculture, and golf course, and 3) the estimation of future CU and total GWS.

### 2007 Aerial Photo Land Use Classification

#### *Agricultural Land*

Agricultural land was classified into orchard, pasture and row crops using the 2007 aerial photography and digitized in ArcGIS. Field visits would be required to determine the crop type at each field. The DWR performed a land use survey in 1996 which included classifying the crop type based on field visits. The same proportion of crop type in 1996 was used to estimate the area of crop types in 2007. No field visits were made.

#### *Urban Land*

Urban land was classified using aerial photo interpretation into San Luis County General Plan land use categories. The urban land use categories were combined into one urban land use classification and multiplied by an urban unit production to estimate urban groundwater production. The San Luis Obispo general plan land use category of Residential-Rural was included in this single urban land use category. The urban unit production factor is based on urban production in 2000 for water purveyors on the Nipomo Mesa and may over-estimate the unit production for Residential-Rural land use which generally contains rural home sites.

### *Golf Course*

Golf courses were classified as a separate category. The irrigated golf course acreage was previously estimated for Black Lake and Cypress Ridge Golf Course for the Phase III Trial Hydrologic Inventory. The additional irrigated Woodlands golf course acreage was estimated based on the 2007 aerial photo interpretation. The Woodlands golf course began irrigation in 2006.

| LAND USE | 2007 Area (Acres) |
|---|---|
| AGRICULTURAL | 2,590 |
| URBAN | 9,670 |
| GOLF COURSE | 630 |
| NATIVE VEGETATION | 6,520 |
| **TOTAL** | **19,410** |

## Consumptive Use Calculation

### *Urban Water Consumptive Use*

The urban applied water demands are calculated by multiplying the estimated urban acreage in the Phase III boundary by the unit production of 0.63 acre-feet per acre. The unit production is a weighted average based on Nipomo Mesa water purveyors' 2000 groundwater production within the Phase III boundary (See table below).

| Urban Use | Approximate Area in 2000 (Acres) | Production in 2000 (AF) | Unit Production (AF/Acre) |
|---|---|---|---|
| NCSD | 3,506 | 1,830 | 0.52 |
| Cal Cities Water | 1,332 | 1,300 | 0.98 |
| Rural Water Co. | 855 | 500 | 0.58 |
| Other Urban | 407 | 189 | 0.46 |
| **Total Area =** | **6,100** | **Weighted Avg Unit Production (AF/A) =** | **0.63** |

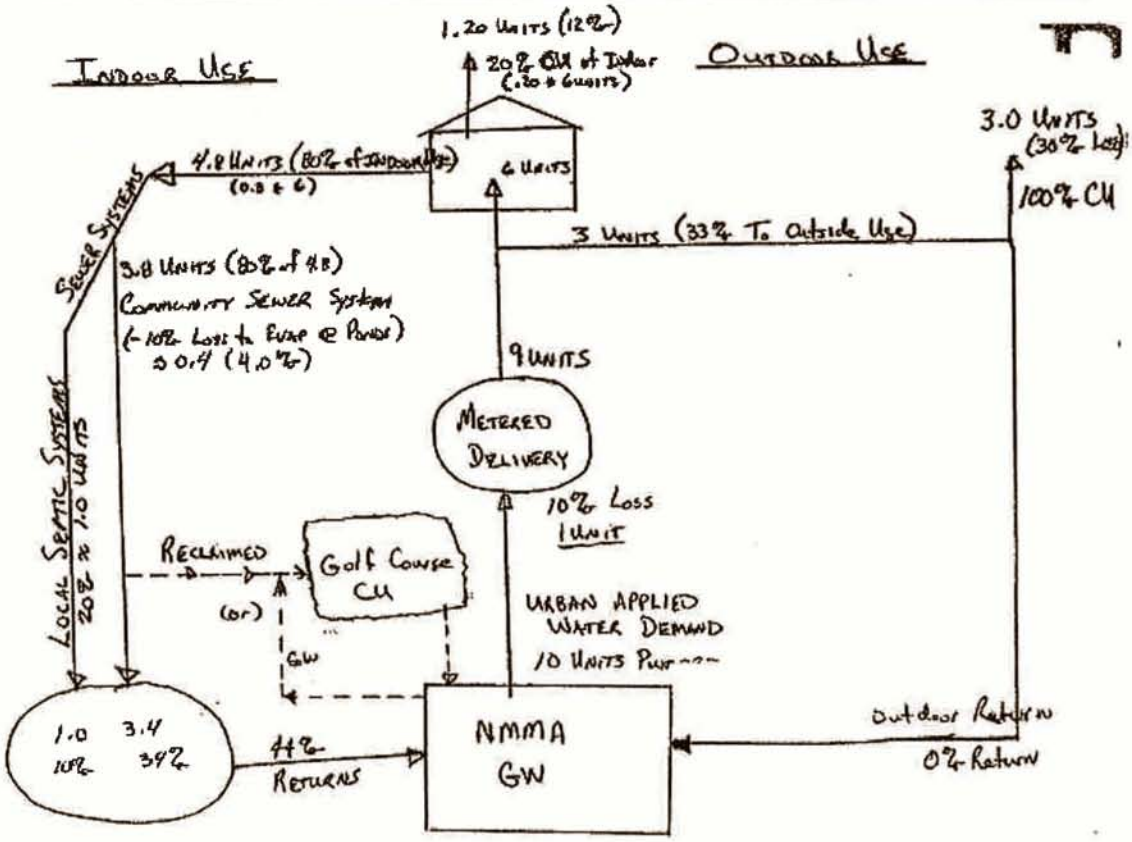
This unit production factor does not include the Conoco-Phillips refinery water demands or the rural home sites in the Phase III boundary. The Conoco-Phillips refinery land use was placed in its own urban industrial category and its production is estimated to be 1,370 AF/year. There are no return flows from the Conoco-Phillips production.

The urban acreages were linearly interpolated between the years when the data were collected. Urban land use acreage was estimated based on DWR surveys in 1977, 1985, and 1996, and by aerial photo interpretation by SAIC in 2007.

The urban CU is calculated as 56 percent of the urban applied water demands based on a return flow of 44 percent (See table and schematic below).

**Estimated Returns and Depletions for Urban Applied Water Demands.**

| Returns to Groundwater<br>44% of Urban Applied Water Demand<br>*Sum of the following:* | Depletions from Groundwater<br>56% of Urban Applied Water Demands<br>*Sum of the following:* |
|---|---|
| Septic System Leaching (10%) | Delivery Loss (10%) |
| Outdoor Returns (0%) | Outdoor CU (30%) |
| Community Sewer Leaching (34%) | Indoor CU (12%) |
| | Evaporation from Sewer Ponds (4%) |




Delivery Losses were estimated by reviewing Nipomo Community Services District ground water pumping and metered delivery records. Annual delivery losses ranged from 4 percent to 19 percent, with an average of 10 percent, which was used for this estimate. The wide range of losses was influenced by construction activities and growth in the area.

Urban delivered water use was estimated as 66.7 percent indoor and 33.3 percent outdoor. This was the same outdoor and indoor use factor as assigned in the DWR study. The CU of

indoor water was estimated as 20 percent, whereas, 100 percent of outdoor water use was estimated as CU. Of the indoor water use, 80 percent was estimated to exit to a local septic or community sewer system. The percentage of wastewater returns going to a community sewage system was estimated to be 80 percent with the remaining 20 percent going to a local septic system. All of the community wastewater in the Phase III Boundary was delivered to leaching ponds or becomes reclaimed (supply) water to golf courses. An evaporation loss of 10 percent was estimated for the wastewater leaching ponds.

Reclaimed water consumed by golf courses was accounted for in the hydrologic inventory by assigning a separate land use category for golf course grasses. Since all supply water to the golf course land use originates as local groundwater, the net change did not affect the urban water use schematic and the urban returns estimated for the hydrologic inventory.

### *Golf Course Consumptive Use*

The annual CU by the golf course grasses was estimated using a weighted annual crop evapotranspiration ($ET_c$) of 2.3 acre-feet per acre (AF/acre) that represents fairway, green, rough and fringe areas and was based on the 1994 report "Water Resources Management Study for Cypress Ridge" by Cleath and Associates.

The $ET_c$ of the golf courses is met by precipitation and irrigation. The effective precipitation, the estimated amount of rainfall that meets part of the $ET_c$, is 40%, based on Cleath and Associates 1994. Therefore the evapotranspiration of applied water by the golf course ($ET_{AW}$) is equal to the annual CU of the golf courses grasses less the effective precipitation.

$$\text{Evapotranspiration of Applied Water } (ET_{AW}) = ET_c - (40\% * \text{Annual Precipitation})$$

To estimate the total golf course CU of groundwater, the $ET_{AW}$ was multiplied by the total irrigated golf course acreage within the Phase III boundary. There are three golf courses on the Nipomo Mesa: Cypress Ridge, Black Lake, and Woodlands golf courses. All the golf courses meet some of their irrigation demands with recycled water.

Golf course CU is dependent upon the precipitation. In wet years, golf courses require less irrigation and in dry years more irrigation is required. In 2007, the precipitation was 6.92 inches, the driest year on record. The golf course consumptive in 2007 is therefore higher than it would be in a year with average precipitation.

### *Agricultural Consumptive Use*

The evapotranspiration of applied water for an agricultural crop ($ET_{AW}$) is equal to the seasonal crop evapotranspiration ($ET_c$) less the effective precipitation.

$$ET_{AW} = ET_c - \text{Effective Precipitation}$$

For each year in the hydrologic inventory, a lookup table was used to select the $ET_{AW}$ for a crop based on the annual precipitation. Effective precipitation was estimated as the difference between assumed constant $ET_c$ and assigned $ET_{AW}$ for each year.

$ET_c$ and $ET_{AW}$ values for vegetative crops in a coastal climate like that of the Nipomo Area were found in Tables 14 and 15 of the DWR report "Vegetative Water Use in California," 1974, Bulletin 113-3, April 1975 (Table 14: Estimated Growing Season Evapotranspiration for Principal Crops – Central Coast, Coastal Valleys and Plains, and Table 15: Estimated Evapotranspiration of Applied Water for Principal Crops - Central Coast, Costal Valleys and Plans). For this hydrologic inventory of the Phase III Boundary, the representative $ET_{AW}$ value for each crop type was adjusted based on the average annual precipitation and the $ET_c$ value is held constant for all years. $ET_c$ and $ET_{AW}$ values were obtained using Tables 14 and 15 for the general agricultural crop classes of grain (G), pasture (P), truck (T) and deciduous (D). Since these tables did not contain representative values for $ET_c$ and $ET_{AW}$ for the general agricultural crop class of citrus and subtropical (C), values from Table 21 "Estimated Evapotranspiration of Applied Water for Principal Crops - South Coast, Coastal Valleys and Plains" of the 1975 DWR Bulletin 113-3 were used.

$ET_c$ and $ET_{AW}$ values were assigned for the multi-use and triple-crop land use categories by adjusting the water requirements of single crops to represent water requirements for a growing season that raised up to three crops. An upward limit of two times a single season water requirement value for $ET_c$ and $ET_{AW}$ was used because the farming methods used in the intensive triple-cropping are not representative of three full growing seasons. A similar adjustment is used in Agricultural Demand section of the San Luis Obispo County, Master Water Plan, Water Planning Area #6 - Nipomo Mesa report (page 6-4 of the SLO report).

In addition, a CU value was assigned to the Land Use Categories Fallow Agriculture, Un-Irrigated Agriculture, and Semi-Agriculture as shown in the table below. These categories represent a small amount of area within the Phase III Boundary and the values assigned were similar to values used by DWR for CU on urban areas or representative of similar non-irrigated agricultural crops and ET of fallow land as reported by the California Polytechnic State University.

**$ET_c$ Values Assigned to Land Use Codes**

| Land Use Class Code | $ET_c$ (AF/acre) |
|---|---|
| Citrus and Subtropical | 2.5 |
| Deciduous | 2.4 |
| Grain | 1.3 |
| Field Crops, Truck, Nursery and Berry | 1.2 |
| Pasture | 2.8 |
| Grain Multi Crop | 2.2 |
| Field Crops Multi Crop | 2.4 |
| Semi Agricultural | 1.0 |
| Idle, Un-Irrigated and Fallow Agriculture | 0.5 |

Agricultural CU depends on precipitation. In wet years, the agricultural lands require less irrigation, and in dry years the agricultural lands require more irrigation. In 2007, the precipitation was 6.92 inches, the driest year on record. The agricultural CU in 2007 is therefore higher than it would be in a year with average precipitation.

## Future Consumptive Use and Total Groundwater in Storage (Table 1)

*General concept*

Future consumptive use is defined as the product of year 2007 consumptive use and the escalation rate, as follows:

$$Future\ Consumptive\ Use = 2007\ consumptive\ use * (1 + escalation\ rate)^{index}.$$

A repeat of the hydrology from year 1975 to year 2007 was used to predict the future groundwater in storage. The change in GWS from year 1975 to year 1976 ($\Delta GWS_{1976,1975}$) and the change in the consumptive use from year 1976 to year 2008 ($\Delta CU_{1976,2008}$) was computed and summed. This sum was added to the year 2007 GWS to predict the year 2008 GWS (Table 1), as follows:

$$2008\ GWS = 2007\ GWS + \left(\Delta GWS_{1976,1975} + \Delta CU_{1976,2008}\right).$$

This calculation was repeated for each year for 39 years. The section below describes the equations embedded in Table 1 that compute the estimate of future GWS.

***Predicted Groundwater in Storage Above Sea Level in Acre Feet***

For Table 1 the following describes the model used to estimate GWS.

*Column A – Index Year*

*Column B - Historic Year of Interest*

*Column C - Estimated total GWS (SAIC 2007, technical memorandum on GWS)*

*Column D - Change in storage*

This is defined as the current year's total GWS minus the previous year's total GWS.

*Column E - CU*

This value is based on estimates from previously discussed methodology

*Column F - Year*

This column represents the future year of interest for estimated future values.

*Column G - Predicted CU based on a 0% annual escalation rate.*

This value is the equivalent of the estimated CU for the year 2007 repeated until the year 2039 (index 32). The following equation was used to generate the values in this column:

$$Furture\ consumptive\ use\ (column\ G) = 2007\ CU * (1 + escalation\ rate)\text{^}(column\ A)$$

*Column H – Change in CU*

This value is the estimated future CU for a given year (column G) minus the historic CU (column E).

*Column I – Change in Storage (predicted)*

The change in storage (predicted) has been calculated as the historic change in storage (column D) minus the predicted change in CU (column H).

This creates an estimate of predicted change in storage accounting for the historic precipitation.

*Column J – Cumulative Storage*

This column calculates the total GWS for a given future year. It takes the volume of GWS of the previous year and adds to it the current year's change in storage (column I).

The methodology used to arrive at Column J is repeated changing the CU annual escalation rate. The 1% escalation rate is presented in columns K through N. The 2.3%

escalation rate is presented in columns O through R and the 4% escalation rate is presented in columns S through V.

*Predicted Groundwater in Storage Above Sea Level in Acre Feet with Urban Conservation (Table 2)*

The purpose of this analysis is to understand the impact of urban conservation on the estimate of GWS. The urban conservation is based on achieving a 50% reduction in water consumption by applying the Stage IV Conservation measures presented in Draft Ordinance Chapter 3.24 Emergency Water Shortage Regulations dated April 10, 2007. Annual GWS was estimated by the same procedure described for Table 1 and the lesser CU based on the urban conservation (Table 2 and Figure 3). The water demand for agriculture and for native vegetation was not reduced.

*Predicted Groundwater in Storage Above Sea Level in Acre Feet During Dry and Wet Hydrologic Conditions (Table 3 and 4)*

To understand the impact of climate variations in the predicted GWS within the Phase III boundary from year 2007 through year 2039 for the four scenarios, the historic climatical conditions were separated into wet periods and dry periods, holding the annual sequence within each period constant, and varying the order of wet and dry periods. Specifically, the historical GWS (Column C, Table 1) describes a dry period from year 1975 to year 1977 (D1), a wet period from year 1977 to year 1982 (W1), a dry period from year 1985 to year 1992 (D2), and a wet period from year 1994 to year 2001 (W2). Two alternative hypothetical climate conditions modeled are 1) a dry climate defined as D2 followed by D1 followed by W1 followed by W2, and 2) a wet climate defined as W2 followed by W1 followed by D1 followed by D2. These two hypothetical climate conditions are 21 years long and shorter than the previous analyses for 32 years, however, 21 years of prediction are sufficient to understand the impact of dry climate and wet climate conditions on GWS and future CU.

Annual GWS was estimated by the same procedure described for Table 1 and based on the simulated climatic conditions. Note that the change in storage (column C) follows with the reordering of the calendar year to simulate a given climatic condition.

Results are presented in Table 3 for dry hydrologic conditions and are presented in Table 4 for wet hydrologic conditions.

## REFERENCES

AirPhotoUSA, Nipomo Mesa Area, Flown June 2007.

California Department of Water Resources (DWR), 1993. Standard Land Use Legend, Land and Water Use Section. http://www.landwateruse.water.ca.gov/ .

1 California Department of Water Resources (DWR), 2000. Metadata for the 1996 South Central
2 Coast Land Use Survey Data. http://www.landwateruse.water.ca.gov/ .
3 California Department of Water Resources (DWR), Bulletin 160-93, The California Water Plan
4 Update, October 1994 .
5 SACI, Evaluation of Groundwater in Storage for Triggering Conservation Stages, October 2007
6 SAIC, Phase III Hydrologic Inventory, October 2002

## 2007 Nipomo Mesa Land Use Classification

- Phase III NMMA Boundary
- Agriculture
- Urban
- Native

0 0.25 0.5 1 1.5 2

Miles

N

***NOTES:***

Base Map: June 2007 IK Curtis 1ft-res air photo
Coordinate System: UTM Zone 10N
Horizontal Datum: NAD 83

SAIC
*From Science to Solutions*

FIGURE: 1

DATE: 11/20/07 | BY: A Pappas

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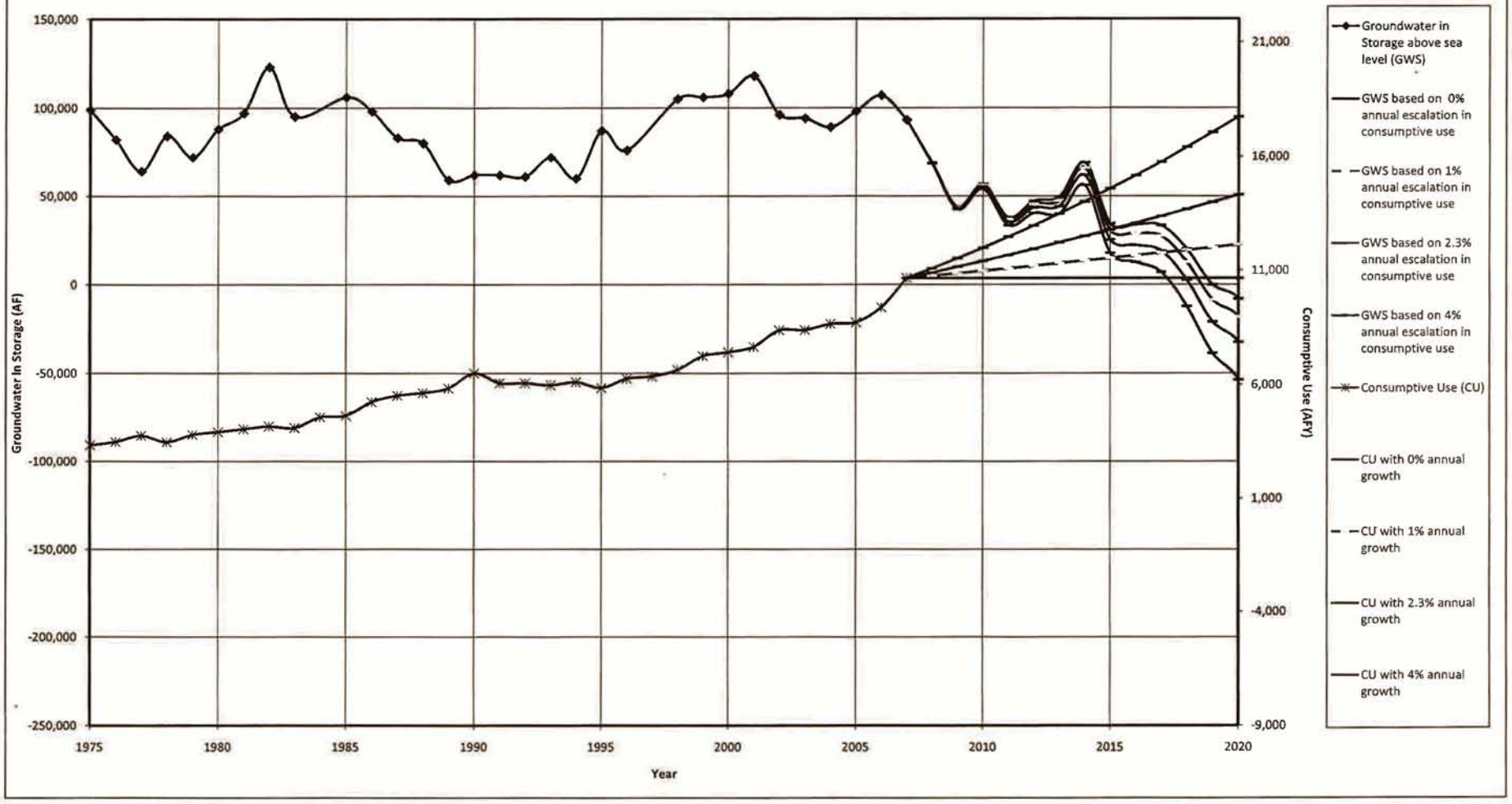
## Figure 2
## Cumulative Groundwater in Storage and Consumptive Use

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2007-12-4rounded.PredictedConsumptiveUse3.xls
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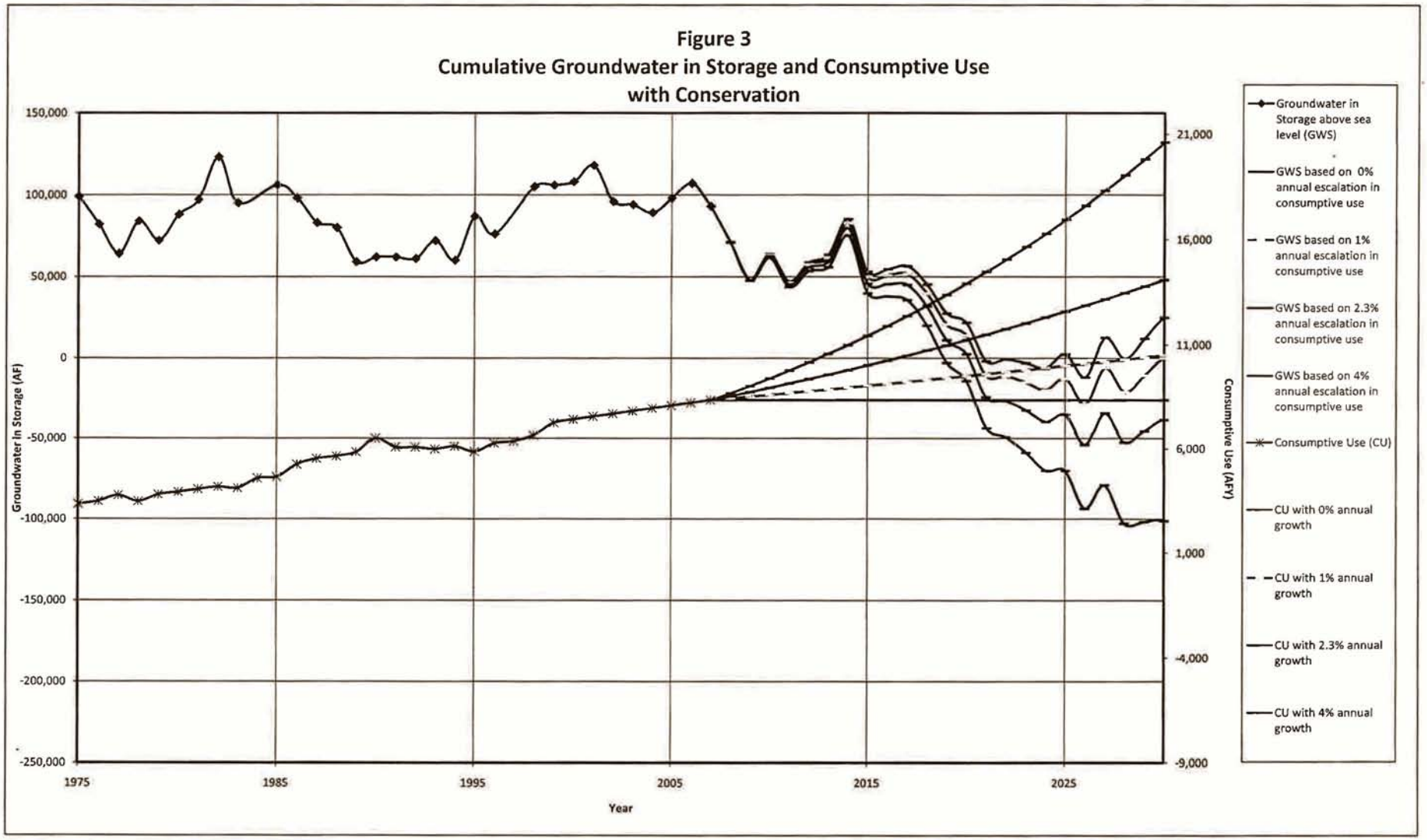
## Figure 3
## Cumulative Groundwater in Storage and Consumptive Use with Conservation

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2007-12-4rounded.PredictedConsumptiveUse3.xls
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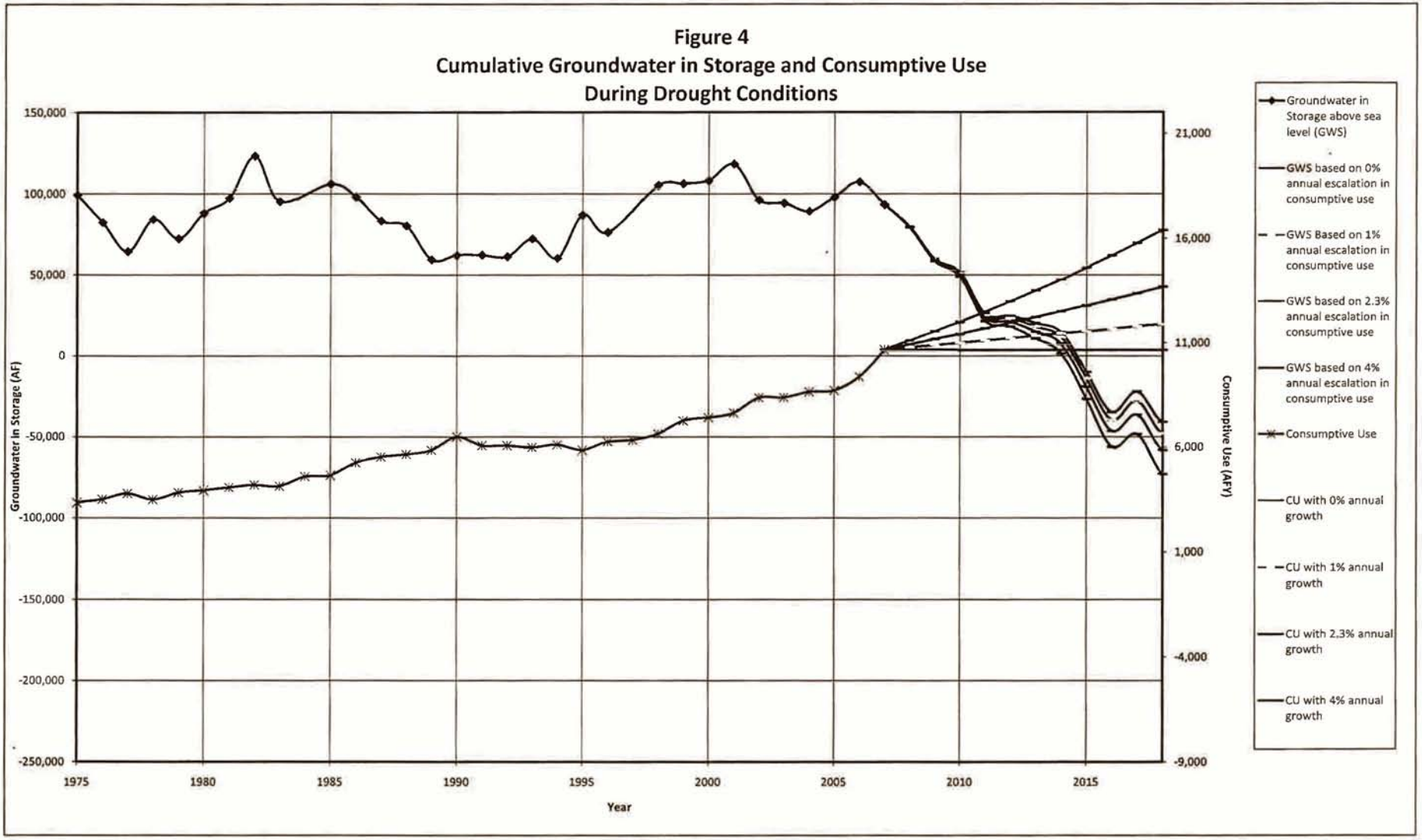
## Figure 4
## Cumulative Groundwater in Storage and Consumptive Use During Drought Conditions

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2007-12-4rounded.PredictedConsumptiveUse3.xls
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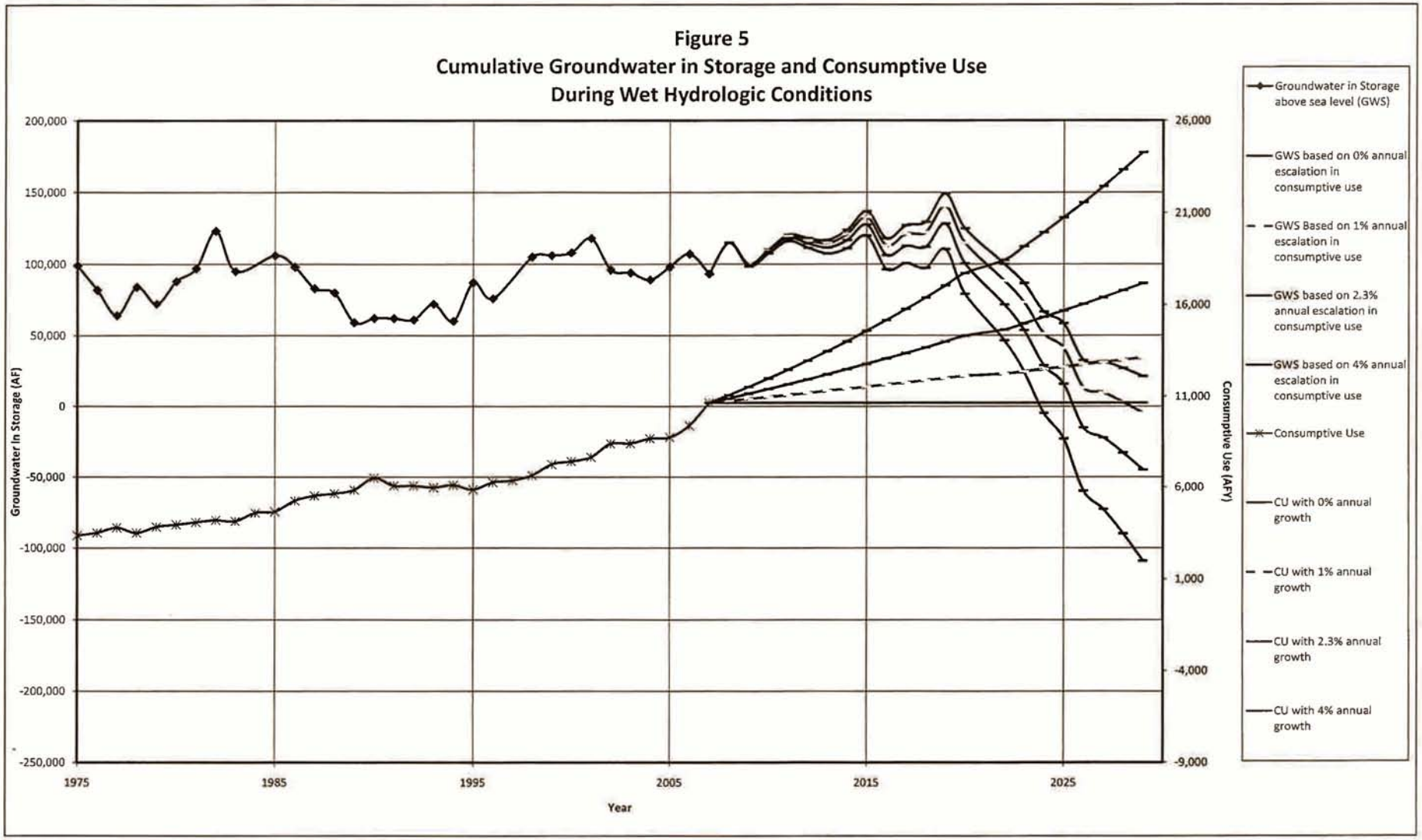
## Figure 5
## Cumulative Groundwater in Storage and Consumptive Use During Wet Hydrologic Conditions

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2007-12-4rounded.PredictedConsumptiveUse3.xls
Printed: 12/5/2007

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Table 1

Predicted Groundwater in Storage Above Sea Level in Acre Feet

| | Historic Data | | | | Scenario 1 | | | | | Scenario 2 | | | | Scenario 3 | | | | Scenario 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V |
| Index | Year | Storage | Change in Storage | Consumptive Use | Year | Consumptive Use 0% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 1% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 2.3% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 4% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage |
| | | Oct. 3, 2007 Memo | [C] - [C(prev)] | Hydro Inv updated 2007 | | 2007 Consumptive Use | [G] - [E] | [D] - [H] | [J(prev)] + [I] | 10,650*(1+.01)^[A] | [K] - [E] | [D] - [L] | [N(prev)] + [M] | 10,650*(1+.023)^[A] | [O] - [E] | [D] - [P] | [R(prev)] +[Q] | 10,650*(1+.023)^[A] | [S] - [E] | [D] - [T] | [V(prev)] +[U] |
| 0 | 1975 | 99,000 | | 3,340 | 2007 | 10,650 | 7,310 | | 93,000 | 10,650 | 7,310 | | 93,000 | 10,650 | 7,310 | | 93,000 | 10,650 | 7,310 | | 93,000 |
| 1 | 1976 | 82,000 | -17,000 | 3,480 | 2008 | 10,650 | 7,170 | -24,170 | 68,830 | 10,760 | 7,280 | -24,280 | 68,720 | 10,890 | 7,410 | -24,410 | 68,590 | 11,080 | 7,600 | -24,600 | 68,400 |
| 2 | 1977 | 64,000 | -18,000 | 3,760 | 2009 | 10,650 | 6,890 | -24,890 | 43,940 | 10,860 | 7,100 | -25,100 | 43,620 | 11,150 | 7,390 | -25,390 | 43,200 | 11,520 | 7,760 | -25,760 | 42,640 |
| 3 | 1978 | 84,000 | 20,000 | 3,470 | 2010 | 10,650 | 7,180 | 12,820 | 56,760 | 10,970 | 7,500 | 12,500 | 56,120 | 11,400 | 7,930 | 12,070 | 55,270 | 11,980 | 8,510 | 11,490 | 54,130 |
| 4 | 1979 | 72,000 | -12,000 | 3,800 | 2011 | 10,650 | 6,850 | -18,850 | 37,910 | 11,080 | 7,280 | -19,280 | 36,840 | 11,660 | 7,860 | -19,860 | 35,410 | 12,460 | 8,660 | -20,660 | 33,470 |
| 5 | 1980 | 88,000 | 16,000 | 3,920 | 2012 | 10,650 | 6,730 | 9,270 | 47,180 | 11,190 | 7,270 | 8,730 | 45,570 | 11,930 | 8,010 | 7,990 | 43,400 | 12,960 | 9,040 | 6,960 | 40,430 |
| 6 | 1981 | 97,000 | 9,000 | 4,050 | 2013 | 10,650 | 6,600 | 2,400 | 49,580 | 11,310 | 7,260 | 1,740 | 47,310 | 12,210 | 8,160 | 840 | 44,240 | 13,480 | 9,430 | -430 | 40,000 |
| 7 | 1982 | 123,000 | 26,000 | 4,170 | 2014 | 10,650 | 6,480 | 19,520 | 69,100 | 11,420 | 7,250 | 18,750 | 66,060 | 12,490 | 8,320 | 17,680 | 61,920 | 14,010 | 9,840 | 16,160 | 56,160 |
| 8 | 1983 | 95,000 | -28,000 | 4,110 | 2015 | 10,650 | 6,540 | -34,540 | 34,560 | 11,530 | 7,420 | -35,420 | 30,640 | 12,770 | 8,660 | -36,660 | 25,260 | 14,580 | 10,470 | -38,470 | 17,690 |
| 9 | 1984 | N/A | [redacted] | 4,570 | 2016 | 10,650 | 6,080 | -580 | 33,980 | 11,650 | 7,080 | -1,580 | 29,060 | 13,070 | 8,500 | -3,000 | 22,260 | 15,160 | 10,590 | -5,090 | 12,600 |
| 10 | 1985 | 106,000 | [redacted] | 4,640 | 2017 | 10,650 | 6,010 | -510 | 33,470 | 11,760 | 7,120 | -1,620 | 27,440 | 13,370 | 8,730 | -3,230 | 19,030 | 15,760 | 11,120 | -5,620 | 6,980 |
| 11 | 1986 | 98,000 | -8,000 | 5,240 | 2018 | 10,650 | 5,410 | -13,410 | 20,060 | 11,880 | 6,640 | -14,640 | 12,800 | 13,680 | 8,440 | -16,440 | 2,590 | 16,400 | 11,160 | -19,160 | -12,180 |
| 12 | 1987 | 83,000 | -15,000 | 5,520 | 2019 | 10,650 | 5,130 | -20,130 | -70 | 12,000 | 6,480 | -21,480 | -8,680 | 13,990 | 8,470 | -23,470 | -20,880 | 17,050 | 11,530 | -26,530 | -38,710 |
| 13 | 1988 | 80,000 | -3,000 | 5,640 | 2020 | 10,650 | 5,010 | -8,010 | -8,080 | 12,120 | 6,480 | -9,480 | -18,160 | 14,310 | 8,670 | -11,670 | -32,550 | 17,730 | 12,090 | -15,090 | -53,800 |
| 14 | 1989 | 59,000 | -21,000 | 5,840 | 2021 | 10,650 | 4,810 | -25,810 | -33,890 | 12,240 | 6,400 | -27,400 | -45,560 | 14,640 | 8,800 | -29,800 | -62,350 | 18,440 | 12,600 | -33,600 | -87,400 |
| 15 | 1990 | 62,000 | 3,000 | 6,500 | 2022 | 10,650 | 4,150 | -1,150 | -35,040 | 12,360 | 5,860 | -2,860 | -48,420 | 14,980 | 8,480 | -5,480 | -67,830 | 19,180 | 12,680 | -9,680 | -97,080 |
| 16 | 1991 | 62,000 | 0 | 6,070 | 2023 | 10,650 | 4,580 | -4,580 | -39,620 | 12,490 | 6,420 | -6,420 | -54,840 | 15,320 | 9,250 | -9,250 | -77,080 | 19,950 | 13,880 | -13,880 | -110,960 |
| 17 | 1992 | 61,000 | -1,000 | 6,070 | 2024 | 10,650 | 4,580 | -5,580 | -45,200 | 12,610 | 6,540 | -7,540 | -62,380 | 15,680 | 9,610 | -10,610 | -87,690 | 20,750 | 14,680 | -15,680 | -126,640 |
| 18 | 1993 | 72,000 | 11,000 | 5,980 | 2025 | 10,650 | 4,670 | 6,330 | -38,870 | 12,740 | 6,760 | 4,240 | -58,140 | 16,040 | 10,060 | 940 | -86,750 | 21,570 | 15,590 | -4,590 | -131,230 |
| 19 | 1994 | 60,000 | -12,000 | 6,110 | 2026 | 10,650 | 4,540 | -16,540 | -55,410 | 12,870 | 6,760 | -18,760 | -76,900 | 16,410 | 10,300 | -22,300 | -109,050 | 22,440 | 16,330 | -28,330 | -159,560 |
| 20 | 1995 | 87,000 | 27,000 | 5,860 | 2027 | 10,650 | 4,790 | 22,210 | -33,200 | 13,000 | 7,140 | 19,860 | -57,040 | 16,780 | 10,920 | 16,080 | -92,970 | 23,340 | 17,480 | 9,520 | -150,040 |
| 21 | 1996 | 76,000 | -11,000 | 6,260 | 2028 | 10,650 | 4,390 | -15,390 | -48,590 | 13,120 | 6,860 | -17,860 | -74,900 | 17,170 | 10,910 | -21,910 | -114,880 | 24,270 | 18,010 | -29,010 | -179,050 |
| 22 | 1997 | N/A | [redacted] | 6,360 | 2029 | 10,650 | 4,290 | 10,210 | -38,380 | 13,260 | 6,900 | 7,600 | -67,300 | 17,560 | 11,200 | 3,300 | -111,580 | 25,240 | 18,880 | -4,380 | -183,430 |
| 23 | 1998 | 105,000 | [redacted] | 6,640 | 2030 | 10,650 | 4,010 | 10,490 | -27,890 | 13,390 | 6,750 | 7,750 | -59,550 | 17,970 | 11,330 | 3,170 | -108,410 | 26,250 | 19,610 | -5,110 | -188,540 |
| 24 | 1999 | 106,000 | 1,000 | 7,250 | 2031 | 10,650 | 3,400 | -2,400 | -30,290 | 13,520 | 6,270 | -5,270 | -64,820 | 18,380 | 11,130 | -10,130 | -118,540 | 27,300 | 20,050 | -19,050 | -207,590 |
| 25 | 2000 | 108,000 | 2,000 | 7,420 | 2032 | 10,650 | 3,230 | -1,230 | -31,520 | 13,660 | 6,240 | -4,240 | -69,060 | 18,800 | 11,380 | -9,380 | -127,920 | 28,390 | 20,970 | -18,970 | -226,560 |
| 26 | 2001 | 118,000 | 10,000 | 7,650 | 2033 | 10,650 | 3,000 | 7,000 | -24,520 | 13,790 | 6,140 | 3,860 | -65,200 | 19,240 | 11,590 | -1,590 | -129,510 | 29,530 | 21,880 | -11,880 | -238,440 |
| 27 | 2002 | 96,000 | -22,000 | 8,380 | 2034 | 10,650 | 2,270 | -24,270 | -48,790 | 13,930 | 5,550 | -27,550 | -92,750 | 19,680 | 11,300 | -33,300 | -162,810 | 30,710 | 22,330 | -44,330 | -282,770 |
| 28 | 2003 | 94,000 | -2,000 | 8,390 | 2035 | 10,650 | 2,260 | -4,260 | -53,050 | 14,070 | 5,680 | -7,680 | -100,430 | 20,130 | 11,740 | -13,740 | -176,550 | 31,940 | 23,550 | -25,550 | -308,320 |
| 29 | 2004 | 89,000 | -5,000 | 8,660 | 2036 | 10,650 | 1,990 | -6,990 | -60,040 | 14,210 | 5,550 | -10,550 | -110,980 | 20,590 | 11,930 | -16,930 | -193,480 | 33,210 | 24,550 | -29,550 | -337,870 |
| 30 | 2005 | 98,000 | 9,000 | 8,730 | 2037 | 10,650 | 1,920 | 7,080 | -52,960 | 14,350 | 5,620 | 3,380 | -107,600 | 21,070 | 12,340 | -3,340 | -196,820 | 34,540 | 25,810 | -16,810 | -354,680 |
| 31 | 2006 | 107,000 | 9,000 | 9,380 | 2038 | 10,650 | 1,270 | 7,730 | -45,230 | 14,500 | 5,120 | 3,880 | -103,720 | 21,550 | 12,170 | -3,170 | -199,990 | 35,920 | 26,540 | -17,540 | -372,220 |
| 32 | 2007 | 93,000 | -14,000 | 10,650 | 2039 | 10,650 | 0 | -14,000 | -59,230 | 14,640 | 3,990 | -17,990 | -121,710 | 22,050 | 11,400 | -25,400 | -225,390 | 37,360 | 26,710 | -40,710 | -412,930 |
| Total | | | -6,000 | 197,910 | | 351,450 | 153,540 | -152,230 | | 413,930 | 216,020 | -214,710 | | 517,610 | 319,700 | -318,390 | | 705,150 | 507,240 | -505,930 | |
| Average | | | -190 | 6,000 | | 10,650 | 4,650 | -4,760 | | 12,540 | 6,550 | -6,710 | | 15,690 | 9,690 | -9,950 | | 21,370 | 15,370 | -15,810 | |

Notes:

[redacted] Due to lack of available data, the change in groundwater storage was averaged between known values and split equally to the unknown values.

N/A Data unavailable.

**bold** Indicates first year in which the groundwater in storage is below sea level.

All numbers have been rounded to the nearest 10.

## Table 2
## Predicted Groundwater in StorageAbove Sea Level in Acre Feet
## With the Effects of Urban Conservation

| | Historic Data | | | | Scenario 1 | | | | | Scenario 2 | | | | Scenario 3 | | | | Scenario 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V |
| Index | Year | Storage | Change in Storage | Consumptive Use | Year | Consumptive Use 0% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 1% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 2.3% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 4% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage |
| | | Oct. 1, 2007 Memo | [C] - [C[prev]] | Hydro Inv updated 2007 | | 2007 Consumptive Use | [G] - [E] | [D] - [H] | [I[prev]] + [I] | 10,650*(1+.01)^[A] | [K] - [E] | [D] - [L] | [N[prev]] + [M] | 10,650*(1+.023)^[A] | [O] - [E] | [D] - [P] | [R[prev]] +[Q] | 10,650*(1+.023)^[A] | [S] - [E] | [D] - [T] | [V[prev]] +[U] |
| 0 | 1975 | 99,000 | | 3,340 | 2007 | 8,360 | 5,020 | | 93,000 | 8,360 | 5,020 | | 93,000 | 8,360 | 5,020 | | 93,000 | 8,360 | 5,020 | | 93,000 |
| 1 | 1976 | 82,000 | -17,000 | 3,480 | 2008 | 8,360 | 4,880 | -21,880 | 71,120 | 8,440 | 4,960 | -21,960 | 71,040 | 8,550 | 5,070 | -22,070 | 70,930 | 8,690 | 5,210 | -22,210 | 70,790 |
| 2 | 1977 | 64,000 | -18,000 | 3,760 | 2009 | 8,360 | 4,600 | -22,600 | 48,520 | 8,530 | 4,770 | -22,770 | 48,270 | 8,750 | 4,990 | -22,990 | 47,940 | 9,040 | 5,280 | -23,280 | 47,510 |
| 3 | 1978 | 84,000 | 20,000 | 3,470 | 2010 | 8,360 | 4,890 | 15,110 | 63,630 | 8,610 | 5,140 | 14,860 | 63,130 | 8,950 | 5,480 | 14,520 | 62,460 | 9,400 | 5,930 | 14,070 | 61,580 |
| 4 | 1979 | 72,000 | -12,000 | 3,800 | 2011 | 8,360 | 4,560 | -16,560 | 47,070 | 8,700 | 4,900 | -16,900 | 46,230 | 9,160 | 5,360 | -17,360 | 45,100 | 9,780 | 5,980 | -17,980 | 43,600 |
| 5 | 1980 | 88,000 | 16,000 | 3,920 | 2012 | 8,360 | 4,440 | 11,560 | 58,630 | 8,790 | 4,870 | 11,130 | 57,360 | 9,370 | 5,450 | 10,550 | 55,650 | 10,170 | 6,250 | 9,750 | 53,350 |
| 6 | 1981 | 97,000 | 9,000 | 4,050 | 2013 | 8,360 | 4,310 | 4,690 | 63,320 | 8,870 | 4,820 | 4,180 | 61,540 | 9,585 | 5,530 | 3,470 | 59,120 | 10,580 | 6,530 | 2,470 | 55,820 |
| 7 | 1982 | 123,000 | 26,000 | 4,170 | 2014 | 8,360 | 4,190 | 21,810 | 85,130 | 8,960 | 4,790 | 21,210 | 82,750 | 9,800 | 5,630 | 20,370 | 79,490 | 11,000 | 6,830 | 19,170 | 74,990 |
| 8 | 1983 | 95,000 | -28,000 | 4,110 | 2015 | 8,360 | 4,250 | -32,250 | 52,880 | 9,050 | 4,940 | -32,940 | 49,810 | 10,030 | 5,920 | -33,920 | 45,570 | 11,440 | 7,330 | -35,330 | 39,660 |
| 9 | 1984 | N/A | [redacted] | 4,570 | 2016 | 8,360 | 3,790 | 1,710 | 54,590 | 9,140 | 4,570 | 930 | 50,740 | 10,260 | 5,690 | -190 | 45,380 | 11,900 | 7,330 | -1,830 | 37,830 |
| 10 | 1985 | 106,000 | [redacted] | 4,640 | 2017 | 8,360 | 3,720 | 1,780 | 56,370 | 9,230 | 4,590 | 910 | 51,650 | 10,490 | 5,850 | -350 | 45,030 | 12,370 | 7,730 | -2,230 | 35,600 |
| 11 | 1986 | 98,000 | -8,000 | 5,240 | 2018 | 8,360 | 3,120 | -11,120 | 45,250 | 9,330 | 4,090 | -12,090 | 39,560 | 10,740 | 5,500 | -13,500 | 31,530 | 12,870 | 7,630 | -15,630 | 19,970 |
| 12 | 1987 | 83,000 | -15,000 | 5,520 | 2019 | 8,360 | 2,840 | -17,840 | 27,410 | 9,420 | 3,900 | -18,900 | 20,660 | 10,960 | 5,460 | -20,460 | 11,070 | 13,380 | 7,860 | -22,860 | -2,890 |
| 13 | 1988 | 80,000 | -3,000 | 5,640 | 2020 | 8,360 | 2,720 | -5,720 | 21,690 | 9,510 | 3,870 | -6,870 | 13,790 | 11,240 | 5,600 | -8,600 | 2,470 | 13,920 | 8,280 | -11,280 | -14,170 |
| 14 | 1989 | 59,000 | -21,000 | 5,840 | 2021 | 8,360 | 2,520 | -23,520 | -1,830 | 9,610 | 3,770 | -24,770 | -10,980 | 11,490 | 5,650 | -26,650 | -24,180 | 14,480 | 8,640 | -29,640 | -43,810 |
| 15 | 1990 | 62,000 | 3,000 | 5,500 | 2022 | 8,360 | 1,860 | 1,140 | -690 | 9,710 | 3,210 | -210 | -11,190 | 11,760 | 5,260 | -2,260 | -26,440 | 15,060 | 8,560 | -5,560 | -49,370 |
| 16 | 1991 | 62,000 | 0 | 6,070 | 2023 | 8,360 | 2,290 | -2,290 | -2,980 | 9,800 | 3,730 | -3,730 | -14,920 | 12,030 | 5,960 | -5,960 | -32,400 | 15,660 | 9,590 | -9,590 | -58,960 |
| 17 | 1992 | 61,000 | -1,000 | 6,070 | 2024 | 8,360 | 2,290 | -3,290 | -6,270 | 9,900 | 3,830 | -4,830 | -19,750 | 12,310 | 6,240 | -7,240 | -39,640 | 16,280 | 10,210 | -11,210 | -70,170 |
| 18 | 1993 | 72,000 | 11,000 | 5,980 | 2025 | 8,360 | 2,380 | 8,620 | 2,350 | 10,000 | 4,020 | 6,980 | -12,770 | 12,590 | 6,610 | 4,390 | -35,250 | 16,940 | 10,960 | 40 | -70,130 |
| 19 | 1994 | 60,000 | -12,000 | 6,110 | 2026 | 8,360 | 2,250 | -14,250 | -11,900 | 10,100 | 3,990 | -15,990 | -28,760 | 12,880 | 6,770 | -18,770 | -54,020 | 17,610 | 11,500 | -23,500 | -93,630 |
| 20 | 1995 | 87,000 | 27,000 | 5,860 | 2027 | 8,360 | 2,500 | 24,500 | 12,600 | 10,200 | 4,340 | 22,660 | -6,100 | 13,170 | 7,310 | 19,690 | -34,330 | 18,320 | 12,460 | 14,540 | -79,090 |
| 21 | 1996 | 76,000 | -11,000 | 6,260 | 2028 | 8,360 | 2,100 | -13,100 | -500 | 10,300 | 4,040 | -15,040 | -21,140 | 13,480 | 7,220 | -18,220 | -52,550 | 19,050 | 12,790 | -23,790 | -102,880 |
| 22 | 1997 | N/A | [redacted] | 6,360 | 2029 | 8,360 | 2,000 | 12,500 | 12,000 | 10,410 | 4,050 | 10,450 | -10,690 | 13,790 | 7,430 | 7,070 | -45,480 | 19,810 | 13,450 | 1,050 | -101,830 |
| 23 | 1998 | 105,000 | [redacted] | 6,640 | 2030 | 8,360 | 1,720 | 12,780 | 24,780 | 10,510 | 3,870 | 10,630 | -60 | 14,100 | 7,460 | 7,040 | -38,440 | 20,610 | 13,970 | 530 | -101,300 |
| 24 | 1999 | 106,000 | 1,000 | 7,250 | 2031 | 8,360 | 1,110 | -110 | 24,670 | 10,610 | 3,360 | -2,360 | -2,420 | 14,430 | 7,180 | -6,180 | -44,620 | 21,430 | 14,180 | -13,180 | -114,480 |
| 25 | 2000 | 108,000 | 2,000 | 7,420 | 2032 | 8,360 | 940 | 1,060 | 25,730 | 10,720 | 3,300 | -1,300 | -3,720 | 14,760 | 7,340 | -5,340 | -49,960 | 22,290 | 14,870 | -12,870 | -127,350 |
| 26 | 2001 | 118,000 | 10,000 | 7,650 | 2033 | 8,360 | 710 | 9,290 | 35,020 | 10,830 | 3,180 | 6,820 | 3,100 | 15,100 | 7,450 | 2,550 | -47,410 | 23,180 | 15,530 | -5,530 | -132,880 |
| 27 | 2002 | 96,000 | -22,000 | 8,380 | 2034 | 8,360 | -20 | -21,980 | 13,040 | 10,940 | 2,560 | -24,560 | -21,460 | 15,450 | 7,070 | -29,070 | -76,480 | 24,100 | 15,720 | -37,720 | -170,600 |
| 28 | 2003 | 94,000 | -2,000 | 8,390 | 2035 | 8,360 | -30 | -1,970 | 11,070 | 11,050 | 2,660 | -4,660 | -26,120 | 15,800 | 7,410 | -9,410 | -85,890 | 25,070 | 16,680 | -18,680 | -189,280 |
| 29 | 2004 | 89,000 | -5,000 | 8,660 | 2036 | 8,360 | -300 | -4,700 | 6,370 | 11,160 | 2,500 | -7,500 | -33,620 | 16,170 | 7,510 | -12,510 | -98,400 | 26,070 | 17,410 | -22,410 | -211,690 |
| 30 | 2005 | 98,000 | 9,000 | 8,730 | 2037 | 8,360 | -370 | 9,370 | 15,740 | 11,270 | 2,540 | 6,460 | -27,160 | 16,540 | 7,810 | 1,190 | -97,210 | 27,110 | 18,380 | -9,380 | -221,070 |
| 31 | 2006 | 107,000 | 9,000 | 9,380 | 2038 | 8,360 | -1,020 | 10,020 | 25,760 | 11,380 | 2,000 | 7,000 | -20,160 | 16,920 | 7,540 | 1,460 | -95,750 | 28,200 | 18,820 | -9,820 | -230,890 |
| 32 | 2007 | 93,000 | -14,000 | 12,650 | 2039 | 8,360 | -2,290 | -11,710 | 14,050 | 11,490 | 840 | -14,840 | -35,000 | 17,310 | 6,560 | -20,860 | -116,610 | 29,330 | 18,680 | -32,680 | -263,570 |
| Total | | | -6,000 | 197,910 | | 275,880 | 77,970 | -78,950 | | 324,930 | 127,020 | -128,000 | | 406,340 | 208,430 | -209,410 | | 553,500 | 355,590 | -356,570 | |
| Average | | | -190 | 6,000 | | 8,360 | 2,360 | -2,470 | | 9,850 | 3,850 | -4,000 | | 12,310 | 6,320 | -6,540 | | 16,770 | 10,780 | -11,140 | |

Notes:

[redacted] Due to lack of available data, the change in groundwater storage was averaged between known values and split equally to the unknown values.

N/A Data unavailable.

bold Indicates first year in which the groundwater in storage is below sea level.

All numbers have been rounded to the nearest 10.

Table 3
Predicted Groundwater in Storage Above Sea Level in Acre Feet
DROUGHT CONDITION

| | Historic Data | | | | Scenario 1 | | | | | Scenario 2 | | | | Scenario 3 | | | | Scenario 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V |
| Index | Year | Storage | Change in Storage | Consumptive Use | Year | Consumptive Use 0% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 1% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 2.3% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 4% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage |
| | | Oct. 1, 2007 Memo | [C] - [C[prev]] | Hydro Inv updated 2007 | | 2007 Consumptive Use | [G] - [E] | [D] - [H] | [J[prev]] + [I] | 10,650*(1+.01)^[A] | [K] - [E] | [D] - [L] | [N[prev]] + [M] | 10,650*(1+.023)^[A] | [O] - [E] | [D] - [P] | [R[prev]] +[Q] | 10,650*(1+.023)^[A] | [S] - [E] | [D] - [T] | [V[prev]] +[U] |
| 0 | | | | | 2007 | 10,650 | | | 93,000 | 10,650 | | | 93,000 | 10,650 | | | 93,000 | 10,650 | | | 93,000 |
| 1 | 1986 | 98,000 | -8,000 | 5,240 | 2008 | 10,650 | 5,410 | -13,410 | 79,590 | 10,760 | 5,520 | -13,520 | 79,480 | 10,890 | 5,650 | -13,650 | 79,350 | 11,080 | 5,840 | -13,840 | 79,160 |
| 2 | 1987 | 83,000 | -15,000 | 5,520 | 2009 | 10,650 | 5,130 | -20,130 | 59,460 | 10,860 | 5,340 | -20,340 | 59,140 | 11,150 | 5,630 | -20,630 | 58,720 | 11,520 | 6,000 | -21,000 | 58,160 |
| 3 | 1988 | 80,000 | -3,000 | 5,640 | 2010 | 10,650 | 5,010 | -8,010 | 51,450 | 10,970 | 5,330 | -8,330 | 50,810 | 11,400 | 5,760 | -8,760 | 49,960 | 11,960 | 6,340 | -9,340 | 48,820 |
| 4 | 1989 | 59,000 | -21,000 | 5,840 | 2011 | 10,650 | 4,810 | -25,810 | 25,640 | 11,080 | 5,240 | -26,240 | 24,570 | 11,660 | 5,820 | -26,820 | 23,140 | 12,460 | 6,620 | -27,620 | 21,200 |
| 5 | 1990 | 62,000 | 3,000 | 6,500 | 2012 | 10,650 | 4,150 | -1,150 | 24,490 | 11,190 | 4,690 | -1,690 | 22,880 | 11,930 | 5,430 | -2,430 | 20,710 | 12,960 | 6,460 | -3,460 | 17,740 |
| 6 | 1991 | 62,000 | 0 | 6,070 | 2013 | 10,650 | 4,580 | -4,580 | 19,910 | 11,310 | 5,240 | -5,240 | 17,640 | 12,210 | 6,140 | -6,140 | 14,570 | 13,480 | 7,410 | -7,410 | 10,330 |
| 7 | 1992 | 61,000 | -1,000 | 6,070 | 2014 | 10,650 | 4,580 | -5,580 | 14,330 | 11,420 | 5,350 | -6,350 | 11,290 | 12,490 | 6,420 | -7,420 | 7,150 | 14,010 | 7,940 | -8,940 | 1,390 |
| 8 | 1976 | 82,000 | -17,000 | 3,480 | 2015 | 10,650 | 7,170 | -24,170 | -9,840 | 11,530 | 8,050 | -25,050 | -13,760 | 12,770 | 9,290 | -26,290 | -19,140 | 14,580 | 11,100 | -28,100 | -26,710 |
| 9 | 1977 | 64,000 | -18,000 | 3,760 | 2016 | 10,650 | 6,890 | -24,890 | -34,730 | 11,650 | 7,890 | -25,890 | -39,650 | 13,070 | 9,310 | -27,310 | -46,450 | 15,160 | 11,400 | -29,400 | -56,110 |
| 10 | 1978 | 84,000 | 20,000 | 3,470 | 2017 | 10,650 | 7,180 | 12,820 | -21,910 | 11,760 | 8,290 | 11,710 | -27,940 | 13,370 | 9,900 | 10,100 | -36,350 | 15,760 | 12,290 | 7,710 | -48,400 |
| 11 | 1979 | 72,000 | -12,000 | 3,800 | 2018 | 10,650 | 6,850 | -18,850 | -40,760 | 11,880 | 8,080 | -20,080 | -48,020 | 13,680 | 9,880 | -21,880 | -58,230 | 16,400 | 12,600 | -24,600 | -73,000 |
| 12 | 1980 | 68,000 | 16,000 | 3,920 | 2019 | 10,650 | 6,730 | 9,270 | -31,490 | 12,000 | 8,080 | 7,920 | -40,100 | 13,990 | 10,070 | 5,930 | -52,300 | 17,050 | 13,130 | 2,870 | -70,130 |
| 13 | 1981 | 97,000 | 9,000 | 4,050 | 2020 | 10,650 | 6,600 | 2,400 | -29,090 | 12,120 | 8,070 | 930 | -39,170 | 14,310 | 10,260 | -1,260 | -53,560 | 17,730 | 13,680 | -4,680 | -74,810 |
| 14 | 1982 | 123,000 | 26,000 | 4,170 | 2021 | 10,650 | 6,480 | 19,520 | -9,570 | 12,240 | 8,070 | 17,930 | -21,240 | 14,640 | 10,470 | 15,530 | -38,030 | 18,440 | 14,270 | 11,730 | -63,080 |
| 15 | 1995 | 87,000 | 27,000 | 5,860 | 2022 | 10,650 | 4,790 | 22,210 | 12,640 | 12,360 | 6,500 | 20,500 | -740 | 14,980 | 9,120 | 17,880 | -20,150 | 19,180 | 13,320 | 13,680 | -49,400 |
| 16 | 1996 | 76,000 | -11,000 | 6,260 | 2023 | 10,650 | 4,390 | -15,390 | -2,750 | 12,490 | 6,230 | -17,230 | -17,970 | 15,320 | 9,060 | -20,060 | -40,210 | 19,950 | 13,690 | -24,690 | -74,090 |
| 17 | 1997 | NA | 14,500 | 6,360 | 2024 | 10,650 | 4,290 | 10,210 | 7,460 | 12,610 | 6,250 | 8,250 | -9,720 | 15,680 | 9,320 | 5,180 | -35,030 | 20,750 | 14,390 | 110 | -73,980 |
| 18 | 1998 | 105,000 | 14,500 | 6,640 | 2025 | 10,650 | 4,010 | 10,490 | 17,950 | 12,740 | 6,100 | 8,400 | -1,320 | 16,040 | 9,400 | 5,100 | -29,930 | 21,570 | 14,930 | -430 | -74,410 |
| 19 | 1999 | 106,000 | 1,000 | 7,250 | 2026 | 10,650 | 3,400 | -2,400 | 15,550 | 12,870 | 5,520 | -4,520 | -5,840 | 16,410 | 9,160 | -8,160 | -38,090 | 22,440 | 15,190 | -14,190 | -88,600 |
| 20 | 2000 | 108,000 | 2,000 | 7,420 | 2027 | 10,650 | 3,230 | -1,230 | 14,320 | 13,000 | 5,580 | -3,580 | -9,520 | 16,780 | 9,360 | -7,360 | -45,450 | 23,340 | 15,920 | -13,920 | -102,520 |
| 21 | 2001 | 116,000 | 18,000 | 7,650 | 2028 | 10,650 | 3,000 | 7,000 | 21,320 | 13,120 | 5,470 | 4,530 | -4,990 | 17,170 | 9,520 | 480 | -44,970 | 24,270 | 16,620 | -6,620 | -109,140 |
| Total | | | 37,000 | 114,970 | | 223,650 | 108,680 | -71,680 | | 249,960 | 134,990 | -97,990 | | 289,940 | 174,970 | -137,970 | | 354,110 | 239,140 | -202,140 | |
| Average | | | 1,760 | 5,470 | | 10,650 | 5,180 | -3,410 | | 11,850 | 6,430 | -4,670 | | 13,660 | 8,330 | -6,570 | | 16,580 | 11,390 | -9,630 | |

Notes:
N/A Data unavailable.
bold Indicates first year in which the groundwater in storage is below sea level.
All numbers have been rounded to the nearest 10.

Table 4
Predicted Groundwater in Storage Above Sea Level in Acre Feet
WET CONDITION

| | Historic Data | | | | Scenario 1 | | | | | Scenario 2 | | | | Scenario 3 | | | | Scenario 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V |
| Index | Year | Storage | Change in Storage | Consumptive Use | Year | Consumptive Use 0% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 1% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 2.3% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage | Consumptive Use 4% Annual Escalation Rate | Change in Consumptive Use | Change in Storage | Cumulative Storage |
| | | Oct. 3, 2007 Memo | Historic Value | Hydro Inv updated 2007 | | 2007 Consumptive Use | [G] - [E] | [D] - [H] | [J(prev)] + [I] | 10,650*(1+.01)^[A] | [K] - [E] | [D] - [L] | [N(prev)] + [M] | 10,650*(1+.023)^[A] | [O] - [E] | [D] - [P] | [R(prev)] +[Q] | 10,650*(1+.023)^[A] | [S] - [E] | [D] - [T] | [V(prev)] +[U] |
| 0 | | | | | 2007 | 10,650 | | | 93,000 | 10,650 | | | 93,000 | 10,650 | | | 93,000 | 10,650 | | | 93,000 |
| 1 | 1995 | 87,000 | 27,000 | 5,860 | 2008 | 10,650 | 4,790 | 22,210 | 115,210 | 10,760 | 4,900 | 22,100 | 115,100 | 10,890 | 5,030 | 21,970 | 114,970 | 11,080 | 5,220 | 21,780 | 114,780 |
| 2 | 1996 | 76,000 | -11,000 | 6,260 | 2009 | 10,650 | 4,390 | -15,390 | 99,820 | 10,860 | 4,600 | -15,600 | 99,500 | 11,150 | 4,890 | -15,890 | 99,080 | 11,520 | 5,260 | -16,260 | 98,520 |
| 3 | 1997 | N/A | 14,500 | 6,360 | 2010 | 10,650 | 4,290 | 10,210 | 110,030 | 10,970 | 4,610 | 9,890 | 109,390 | 11,400 | 5,040 | 9,460 | 108,540 | 11,980 | 5,620 | 8,880 | 107,400 |
| 4 | 1998 | 105,000 | 14,500 | 6,640 | 2011 | 10,650 | 4,010 | 10,490 | 120,520 | 11,080 | 4,440 | 10,060 | 119,450 | 11,660 | 5,020 | 9,480 | 118,020 | 12,460 | 5,820 | 8,680 | 116,080 |
| 5 | 1999 | 106,000 | 1,000 | 7,250 | 2012 | 10,650 | 3,400 | -2,400 | 118,120 | 11,190 | 3,940 | -2,940 | 116,510 | 11,930 | 4,680 | -3,680 | 114,340 | 12,960 | 5,710 | -4,710 | 111,370 |
| 6 | 2000 | 108,000 | 2,000 | 7,420 | 2013 | 10,650 | 3,230 | -1,230 | 116,890 | 11,310 | 3,890 | -1,890 | 114,620 | 12,210 | 4,790 | -2,790 | 111,550 | 13,480 | 6,060 | -4,060 | 107,310 |
| 7 | 2001 | 118,000 | 10,000 | 7,650 | 2014 | 10,650 | 3,000 | 7,000 | 123,890 | 11,420 | 3,770 | 6,230 | 120,850 | 12,490 | 4,840 | 5,160 | 116,710 | 14,010 | 6,360 | 3,640 | 110,950 |
| 8 | 1978 | 84,000 | 20,000 | 3,470 | 2015 | 10,650 | 7,180 | 12,820 | 136,710 | 11,530 | 8,060 | 11,940 | 132,790 | 12,770 | 9,300 | 10,700 | 127,410 | 14,580 | 11,110 | 8,890 | 119,840 |
| 9 | 1979 | 72,000 | -12,000 | 3,800 | 2016 | 10,650 | 6,850 | -18,850 | 117,860 | 11,650 | 7,850 | -19,850 | 112,940 | 13,070 | 9,270 | -21,270 | 106,140 | 15,160 | 11,360 | -23,360 | 96,480 |
| 10 | 1980 | 68,000 | 16,000 | 3,920 | 2017 | 10,650 | 6,730 | 9,270 | 127,130 | 11,760 | 7,840 | 8,160 | 121,100 | 13,370 | 9,450 | 6,550 | 112,690 | 15,760 | 11,840 | 4,160 | 100,640 |
| 11 | 1981 | 97,000 | 9,000 | 4,050 | 2018 | 10,650 | 6,600 | 2,400 | 129,530 | 11,880 | 7,830 | 1,170 | 122,270 | 13,680 | 9,630 | -630 | 112,060 | 16,400 | 12,350 | -3,350 | 97,290 |
| 12 | 1982 | 123,000 | 26,000 | 4,170 | 2019 | 10,650 | 6,480 | 19,520 | 149,050 | 12,000 | 7,830 | 18,170 | 140,440 | 13,990 | 9,820 | 16,180 | 128,240 | 17,050 | 12,880 | 13,120 | 110,410 |
| 13 | 1976 | 82,000 | -17,000 | 3,480 | 2020 | 10,650 | 7,170 | -24,170 | 124,880 | 12,120 | 8,640 | -25,640 | 114,800 | 14,310 | 10,830 | -27,830 | 100,410 | 17,730 | 14,250 | -31,250 | 79,160 |
| 14 | 1977 | 64,000 | -18,000 | 3,760 | 2022 | 10,650 | 6,890 | -24,890 | 99,990 | 12,240 | 8,480 | -26,480 | 88,320 | 14,640 | 10,880 | -28,880 | 71,530 | 18,440 | 14,680 | -32,680 | 46,480 |
| 15 | 1986 | 98,000 | 8,000 | 5,240 | 2023 | 10,650 | 5,410 | -13,410 | 86,580 | 12,360 | 7,120 | -15,120 | 73,200 | 14,980 | 9,740 | -17,740 | 53,790 | 19,180 | 13,940 | -21,940 | 24,540 |
| 16 | 1987 | 83,000 | -15,000 | 5,520 | 2024 | 10,650 | 5,130 | -20,130 | 66,450 | 12,490 | 6,970 | -21,970 | 51,230 | 15,320 | 9,800 | -24,800 | 28,990 | 19,950 | 14,430 | -29,430 | -4,890 |
| 17 | 1988 | 80,000 | -3,000 | 5,640 | 2025 | 10,650 | 5,010 | -8,010 | 58,440 | 12,610 | 6,970 | -9,970 | 41,260 | 15,680 | 10,040 | -13,040 | 15,950 | 20,750 | 15,110 | -18,110 | -23,000 |
| 18 | 1989 | 59,000 | -21,000 | 5,840 | 2026 | 10,650 | 4,810 | -25,810 | 32,630 | 12,740 | 6,900 | -27,900 | 13,360 | 16,040 | 10,200 | -31,200 | -15,250 | 21,570 | 15,730 | -36,730 | -59,730 |
| 19 | 1990 | 62,000 | 3,000 | 6,500 | 2027 | 10,650 | 4,150 | -1,150 | 31,480 | 12,870 | 6,370 | -3,370 | 9,990 | 16,410 | 9,910 | -6,910 | -22,160 | 22,440 | 15,940 | -12,940 | -72,670 |
| 20 | 1991 | 62,000 | 0 | 6,070 | 2028 | 10,650 | 4,580 | -4,580 | 26,900 | 13,000 | 6,930 | -6,930 | 3,060 | 16,780 | 10,710 | -10,710 | -32,870 | 23,340 | 17,270 | -17,270 | -89,940 |
| 21 | 1992 | 61,000 | -1,000 | 6,070 | 2029 | 10,650 | 4,580 | -5,580 | 21,320 | 13,120 | 7,050 | -8,050 | -4,990 | 17,170 | 11,100 | -12,100 | -44,970 | 24,270 | 18,200 | -19,200 | -109,140 |
| Total | | | 37,000 | 114,970 | | 234,300 | 108,680 | -71,680 | | 260,610 | 134,990 | -97,990 | | 300,590 | 174,970 | -137,970 | | 364,760 | 239,140 | -202,140 | |
| Average | | | 1,760 | 5,470 | | 10,650 | 5,180 | -3,410 | | 11,900 | 6,430 | -4,670 | | 13,810 | 8,330 | -6,570 | | 16,860 | 11,390 | -9,630 | |

Notes:
N/A Data unavailable.
bold Indicates first year in which the groundwater in storage is below sea level.
**All numbers have been rounded to the nearest 10.**

Comments:
Findings K – 3.24.070 reset value may need revision

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Nipomo Community Services District Draft Ordinance
Chapter 3.24
Emergency Water Shortage Regulations

3.24.010 Purpose

It is the purpose and intent of this Chapter to provide rules, regulations and procedures by which the Nipomo Community Services District ("District") Board of Directors can restrict water use upon a determination that there exists, or there is a threat of, a water shortage that affects the District's ability to supply its customers with potable water. The rules, regulations and procedures of this Chapter are in addition to water conservation measures that are adopted by the Board of Directors to avoid water shortage conditions and or conservation measures adopted by the County of San Luis Obispo in response to certification of Severity Level III for the Nipomo Mesa Water Conservation Area.

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3.24.020 Findings

A. The District has been pumping from the underlying groundwater basin since 1965. In 2006 the District's wells extracted approximately 3,000 plus acre feet and supplied approximately 4,000 connections. The District's boundaries are largely within the Nipomo Mesa Water Conservation Area (NMWCA) as referenced in San Luis Obispo County Ordinance 3090.

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B. The District's current water supply is groundwater extracted primarily from the NMWCA. A small proportion of District's water is pumped from groundwater in the Nipomo Valley.

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C. The primary source of recharge of the NMWCA is deep percolation of rainwater, with contributions from agricultural and urban return flows, and sub-surface inflows within the Santa Maria Basin. The dependence on deep percolation as the major source of recharge makes the groundwater supply within the NMWCA vulnerable during prolonged periods of low rainfall.

D. Since July 1997 the Santa Maria Groundwater Basin has been the subject of ongoing litigation between nearly eight hundred parties (800), including the District, with competitive claims to pump groundwater. (Superior Court of the State of California, County of Santa Clara, Case No. 770214).

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E. As part of the Groundwater Adjudication referenced in Finding D, above, a majority of parties, including the District, ConocoPhillips, the Woodlands Mutual Water Company, Golden State Water Company and Rural Water Company have entered into a Stipulation, imposing a physical solution to establish a legal and practical means of assuring the Nipomo Mesa Management Area's (NMMA) longterm sustainability (herein "Stipulation"). The NMMA's boundaries are consistent with the boundaries referred to herein as the NMWCA. The Stipulation contemplates the formation of a NMMA Technical Group to develop a monitoring program for the NMMA. Additionally, the NMMA Technical Group will develop, for Court approval, criteria for declaring Potentially Severe Water Shortage Conditions and Severe Water Shortage Conditions.

F. In November, 2004, the County Board of Supervisors received a Resource Capacity Study ("RCS") prepared by the San Luis Obispo County Planning Department for the NMWCA. The RCS reached the same conclusions as other groundwater reports that pumping from the NMWCA exceeds safe yield and recommended a Severity Level III be adopted pursuant to the County's Resource Management System.

G. On August 22, 2007, Science Applications International Corporation ("SAIC"), issued Technical Memorandum regarding Groundwater in Storage Above Sea Level for the Nipomo Mesa Management Area as of Spring, 2007. That Memorandum summarizes the decline in groundwater storage in the NMWCA from Spring of 2000 through Spring of 2007. The Technical Memorandum concluded that between Spring of 2000 and Spring of 2007, the groundwater in storage declined by 15,000 AF with 14,000 AF decline between Spring of 2006, and Spring of 2007.

H. On June 26, 2007, the County, at the recommendation of the Planning Commission, certified a Severity Level III for water resources of the NMWCA pursuant to the County's Resource Management System. Under the County system, Level III indicates an "Unavoidable Resource Deficiency," defined as follows: "This is the most critical level of concern. Level III occurs when the capacity (maximum safe yield) of a resource has been met or exceeded. At Level III there is a deficiency of sufficient magnitude that drastic actions may be needed to protect public health and safety".

I. The San Luis Obispo County Public Works Department measures groundwater surface elevations in monitoring wells located within the NMWCA in the Spring and Fall of each year ("DPW Reports").

J. Science Applications International Corporation (SAIC), using the DPW Reports and other data has developed a method of calculating groundwater in storage above sea level within the NMWCA.

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K. SAIC Reports have been presented to the District Board of Directors with the most recent report dated August 28, 2007. Using groundwater in storage above sea level within the NMWCA to establish trigger points for imposing emergency water shortage regulations - - -

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L. This Chapter is adopted to conserve a public water supply for the protection of the health, welfare and safety of the residents of the Nipomo Community Services District.

3.24.025 Authority

The District's authority includes, but is not limited, to Government Code §61100 (A) and §§ 71640 et seq. of the Water Code.

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3.24.030 Definitions

**AF** means acre feet of water

**Base Year** means the calendar year immediately prior to the District Board of Directors declaring a Water Conservation Stage.

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**CCF** means 100 cubic feet of water

**Customer** means the owner of property that receives District water service.

**GWS** means groundwater in storage above sea level as reported to the District.

**Irrigation Use** means and includes all uses other than residential use and commercial use and includes water supplied to parks, recreational facilities such as golf courses, landscaping, and water supplied to schools to irrigate turf.

**Multi-family Residential** means (A): a building(s) or portion thereof designed and used as residence for two or more families living independently of each other under a common roof. Such uses shall include but are not limited to: duplexes, triplexes, apartments, planned unit developments, condominiums and townhouses and (B) mobile homes used as residential units within mobile home parks . Multi-family Residential does not include secondary units.

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**Non-Residential Use** means all uses other than residential uses, including commercial use and irrigation use, that receive District water.

**Owner** means one who has title to the property being served, or is legally authorized to represent the title owner.

**Person** includes a natural person, joint venture, joint stock company, partnership, association, club, company corporation, business, trust organizer, or the manager, lessee, agent, servant officer or employee of any of them.

**Reset Value** means when GWS equals or exceeds 95,000 AF as reported to the District Board of Directors.

**Single Family Residence or SF** means a stand-alone building not connected to another dwelling, and designed for residential occupancy by one family regardless of zoning of the property. A single family residence may, or may not, have a secondary unit.

3.24.030 Santa Maria Groundwater Adjudication

With reference to the adjudication of the Santa Maria Groundwater Basin and the formation of the NMMA Technical Group, the following are incorporated, into the most appropriate stage referenced in Section 3.24.040 by reference:

A. The Court approved criteria for declaring a Potentially Severe Water Shortage Condition and Severe Water Shortage Condition.

B. The conservation measures recommended by the NMMA Technical Group to address Potentially Severe Water Shortage Conditions.

C. Water conservation programs approved by the Court for Severe Water Shortage Conditions.

3.24.040 Trigger Points

Water Shortage Conservation Stages I – IV shall be triggered by the following conditions when the GWS is at or below the reset value:

**Stage I Conservation – Weather Watch**
Trigger Condition: _____

**Stage II Conservation – Water Warning**
Trigger Condition: _____

**Stage III Conservation – Water Emergency**
Trigger Condition: _____

**Stage IV Conservation – Extreme Water Emergency**
Trigger Condition: _____

3.24.050 Stage Implementation

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The General Manager shall monitor the groundwater in storage above sea level and demand for water and shall report in writing to the Board, on or before June 1 of each year, the appropriate water conservation stage, if any, referenced in Sections 3.24.040, above. The Board shall, no later than four weeks after receipt of such report, consider the General Manager's report at a public hearing. Notice of the time and place of the public hearing shall be published one time at least seven days prior to the date of the hearing in a newspaper of general circulation within the District. If the Board concurs that any such events have occurred, it shall immediately adopt a resolution implementing a water conservation stage referenced in Section 3.24.060.

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3.24.060 Water Shortage Conservation Stages.

A. Stage I Conservation – Water Watch.

1. Upon a determination by the Board of Directors, that a Stage I condition exists, then the following prohibitions shall take effect:

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(a) All outdoor irrigation of vegetation shall occur only after 8 p.m. and before 9 a.m.

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(b) The use of potable water to wash sidewalks, walkways, driveways, parking lots, open ground and other hard-surface areas by direct application is prohibited.

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(c) The use of non-drinking water fountains, except for those using recirculated water, is prohibited.

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(d) Use of water which results in run-off in gutters or streets is prohibited.

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2. In addition to those measures stated above, the Board of Directors by resolution and/or ordinance may adopt additional water conservation measures.

3. The General Manager shall provide notice to all District customers regarding the Board of Directors declaration of water watch condition and activation of Stage I Water Conservation Program. Such notice shall be mailed within fourteen (14) days of the Board's action.

B. Stage II Conservation – Water Warning.

1. Upon a determination by the Board of Directors that the a Stage II condition exists, then the following prohibitions shall take effect,

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with the goal of achieving a **ten percent (10%)** reduction in water consumption:

(a) The water conservation measures referenced in Stage I.

(b) Water deliveries for residential uses shall be limited as follows:

1. 24ccf of water bi-monthly or 295 gallons per day per multi-family residential unit.
2. 27 ccf of water bi-monthly or 329 gallons per day per single family residential unit on lots <4500 sf .
3. 36 ccf of water bi-monthly or 442 gallons per day per single family residential unit on lots 4.5 – 10 K sf.
4. 64 ccf of water bi-monthly or 787 gallons per day on single family residential lots >10K sf.

(c) Non-residential uses shall be limited to ninety percent (90%) of their water consumption for the same billing cycle during the Base Year.

(d) A surcharge of **two hundred percent (200%)** will be levied on all water use in excess of the maximum water use allotment referenced in subparagraphs (b) and (c), above and shall be assessed to the account of the customer.

(e) Use of water from fire hydrants shall be limited to fire suppression and/or other activities immediately necessary to maintain health, safety and welfare of residents within the boundaries of the Nipomo Community Services District.

(f) The use of District potable water for dust control and compaction for construction projects shall be prohibited.

(g) The washing of automobiles, pickup trucks, horse trailers, boats and other types of mobile equipment not occurring upon the immediate premises of a commercial car wash and/or commercial service station that use recirculated water shall be prohibited. Emergency service vehicles are exempted from the requirements of this subsection (g).

(h) Restaurants may not serve water to their customers except upon specific request.

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(i) Applications for Intent-to-Serve Letters shall be received and placed on a waiting list, but further processing shall be suspended.

(j) The use of potable water to irrigate grass, lawns, ground cover, shrubbery, crops, vegetation, ornamental trees, etc., shall be limited to Mondays and Wednesdays for even numbered addresses and Tuesdays and Thursdays for odd numbered addresses, or as otherwise established by resolution of the Board of Directors.

(j) Water main flushing shall only occur in emergency situations as declared by the District General Manager.

(k) All swimming pools shall be covered when not in use.

2. The General Manager is authorized and directed to pursue a vigorous public information program about water supply conditions and the need to reduce water consumption by such means deemed appropriate by the General Manager.

3. The District will meet with other water purveyors, public school districts, park agencies, and golf courses, that use water sources other than District supplied water, to seek voluntary reduction in irrigation of decorative landscape and reduce irrigation of turf and play areas.

4. In addition to those measures stated above, the Board of Directors, by resolution and/or ordinance, may adopt additional water conservation measures on an urgency basis.

C. Stage III Conservation – Water Emergency.

1. In addition to the water conservation measures established in Stage I and Stage II above, upon a determination of the Board of Directors, that Stage III conditions exist, then the following prohibitions shall take effect, with a goal of achieving a **thirty-five percent (35%)** reduction in water consumption:

(a) Water deliveries for residential uses shall be limited as follows:

1. 17 ccf of water bi-monthly or 214 gallons per day per multi-family residential unit.
2. 19 ccf of water bi-monthly or 238 gallons per day per single family residential units <4500sf.

3. 26 ccf of water bi-monthly or 319 gallons per day per single family residential units 4.5 – 10K sf.
4. 46 ccf of water bi-monthly or 569 gallons per day per single family residential units >10k sf.

(b) Non-Residential Uses shall be limited to **sixty-five percent (65%)** of the their water consumption for the same billing cycle during the Base Year.

(c) A surcharge of **four hundred percent (400%)** will be levied on all water use in excess of the maximum water use allotment reflected in subparagraphs (a) and (b) above, and shall be assessed to the account of the customer.

(e) The setting of new water meters shall be prohibited and Will Serve Letters shall be suspended.

Deleted: (d) All swimming pools shall be covered when not in use. ¶

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(f) The use of potable water to irrigate grass, lawns, ground cover, shrubbery, crops, vegetation, ornamental trees, etc., shall be prohibited; and all irrigation meters within the District shall be locked.

2. In addition to those measures stated above, the Board of Directors, by resolution and/or ordinance, may adopt additional water conservation measures on an urgency basis.

Deleted: (g) District Intent-To-Serve Letters shall be suspended. However the expiration period shall be extended commensurate with the time of suspension.¶

D. Stage IV Conservation – Extreme Water Emergency

1. In addition to the water conservation measures established in Stages I, II, and III above, upon a determination of the Board of Directors that Stage IV conditions exist then, the following prohibition measures shall be take effect, with the goal of achieving a **fifty percent (50%)** reduction in water consumption:

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(a) Water deliveries for residential uses shall be limited as follows:

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1. 14 ccf per of water bi-monthly or 170 gallons per day per multi-family residential unit.
2. 15 ccf of water bi-monthly or 183 gallons per day per single family residential unit <4500 sf lot.
3. 20 ccf of water bi-monthly or 246 gallons per day per single family residential unit 4.5-10K sf lot.

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4. 36 ccf of water bi-monthly or 437 gallons per day per single family residential unit >10K sf lot.

(b) Non-Residential Uses shall be limited to **fifty per cent (50%)** of the water consumption for the same billing cycle during the Base Year.

(c) A surcharge of **five hundred percent (500%)** will be levied on all water use in excess of the maximum water use allotment reflected in subparagraph a and b, above and shall be assessed to the account of the customer.

2. In addition to those measures stated above, the Board of Directors, by resolution and/or ordinance, may adopt additional water conservation measures on an urgency basis.

Deleted: <#>The setting of new water meters shall be prohibited and Will-Serve Letters shall be suspended.¶

3.24.070 Termination of Stages

The Board of Directors may terminate water conservation stages based upon a finding that the groundwater storage above sea level within the NMWCA is at or above ninety-five thousand acre feet (95,000 AF) or the Board of Directors may reduce a water conservation stage to a lower level by Resolution based on a finding that the GWS is in a range of providing sufficient water at a reduced water conservation stage to meet the demands and requirements of the District's water customers.

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3.24.080 Calculation of Multi-Family Water Use

When Multi-Family units are served by a single water meter then the total volume of metered water shall be divided by the number of units to determine compliance with conservation stages.

3.24.090 Enforcement

A. In addition to the water surcharges referenced in Section 3.24.060, the following applies to customers violating the water allotment provisions of this Chapter commencing with Stage II:

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1. First Violation. A Notice of Violation shall be mailed to the customer by first class mail, return receipt requested, and posted by door hanger on the affected property.

2. Second Violation. A Notice of Violation shall be sent to the customer by certified mail, return receipt requested and by door hanger, with an explanation of the gravity of the situation and the penalties for future violations. A delinquent bill, including the

appropriate surcharge, shall be increased by a penalty of ten percent (10%).

3.

3. Third Violation. Water service will be discontinued and the water meter will be removed from the premises of the violator. The District will send notice via certified mail at least seventy-two (72) hours prior to discontinuance of service and will attempt to contact an adult person at the premises by telephone or personal contact at least twenty-four (24) hours prior to discontinuance of service.

The meter will be reinstalled on conditions set by the District and after the payment of District reconnection charges and the payment of all other charges, surcharges and penalties owing.

Deleted: Third Violation. A one-gallon per minute flow restrictor will be installed at the violator's meter and left in place until such time as the customer has entered into a written water conservation plan to reduce consumption consistent with the water allotment adopted by the District and payment of all delinquencies, surcharges and penalties owing.

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B. Violation of Conservation Measures Other Than Water Allotment.

1. First Violation. A Notice of Violation shall be mailed to the customer or person other than the customer, (i.e. tenant), by first class mail, return receipt requested, and posted by door hanger on the affected property.

2. Successive Violations. The second violation and each and every violation thereafter shall be subject to the provisions of Section 3.24.080 C, below.

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C. Violations Unlawful.

1. It is unlawful for any person to violate any provision or fail to comply with any of the requirements of this Chapter. A violation of any of the provisions or failure to comply with any of the requirements shall constitute a misdemeanor punishable by a fine not exceeding six hundred dollars ($600) or by imprisonment in the County Jail for a period not exceeding thirty (30) days or by both such fine and imprisonment.

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2. Notwithstanding subparagraph 1, above, any misdemeanor violation or failure to comply may, in the discretion of District Legal Counsel, be initially charged and subsequently prosecuted as an infraction. Each and every infraction or violation is punishable by a fine not exceeding fifty dollars ($50) for the first violation; a fine not exceeding one hundred dollars ($100) for the second violation of this Chapter within one year; and a fine not exceeding two hundred fifty dollars ($250) for the third violation of this Chapter within one year.

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3. Each person shall be guilty of a separate offense for each and every day during any portion of which any violation of this Chapter is committed, continued, or permitted by such person and shall be punishable accordingly.

D. Injunctive Relief

The District may petition the Superior Court for the issuance of a permanent or temporary injunction, or both, as may be appropriate, in restraining any person or customer from the continued violation of this Chapter.

E. Enforcement Officer.

1. The General Manager, or designee, shall be the Code Enforcement Officer primarily charged with enforcement of this Chapter.

2. For new construction, the General Manager has the authority to establish monthly Base Year water consumption for Non-Residential Use.

F. Collections. Deleted: E

1. Charges, surcharges and penalties authorized by this Chapter shall constitute a lien on the property, and the District Manager is authorized to record a certificate declaring the amount of the charges, surcharges and penalties due pursuant to Government Code § 61115(c).

2. The Board of Directors may order that the charges, surcharges and penalties be collected on the tax roll in the same manner as property taxes pursuant to the procedures of Government Code §61115(b). Deleted: Any such lien referenced in subparagraph D, Deleted:

G. Remedies Cumulative Deleted: F

The remedies available to the District to enforce this Chapter are cumulative and may be pursued consecutively by the District. The District's use of any one of the remedies and/or legal actions prescribed herein shall not bar the use of any other remedies provided in this Chapter, or other District ordinances or by law for the purpose of enforcing the provisions hereof.

3.24.090 Appeals

A. The General Manager may, in his/her discretion, grant exceptions to the water allotments referenced in Section 3.24.060, if he/she finds based on a certification by a California-licensed physician or other California-licensed health care provider that the water allotment restrictions would cause undue hardship or emergency medical conditions. The application for an exception shall be on a District form provided by the General Manager.

B. The terms of any exception shall be set forth in writing, the original to be kept on file with the District and a copy to be furnished to the applicant. All exceptions granted shall be reported to the Board of Directors at a regularly scheduled meeting.

C. An applicant may appeal the General Manager's decision to the Board of Directors. A request for appeal must be submitted to the District in writing not more than ten (10) days after the General Manager's decision. The Board of Directors shall consider the appeal within thirty (30) days of receipt of the request for appeal.

3.24.100 Severability

If any section, subsection, sentence, clause or phrase of this Chapter is for any reason held to be unconstitutional, ineffective or in any manner in conflict with the laws of the United States or the State of California, such decision shall not affect the validity of the remaining portions of this Chapter. The District Board of Directors hereby declares that it would have adopted this Chapter and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsection, sentence, clause or phrase be declared unconstitutional, ineffective, or in any manner in conflict with the laws of the United States or the State of California.