STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

WATER RIGHTS ORDER 2006-0018-DWR In the Matter of Permit 10477 (Application 12842) Regarding Diversion by NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT Source: Mokelumne River County: San Joaquin	**TESTIMONY OF EDWARD M. STEFFANI**

1. My name is Edward M. Steffani, and I am General Manager of the NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT, a special district in San Joaquin County, California, hereinafter referred to as "District." I have been employed by the District since 1999. My primary responsibilities include engineering and design work of projects for the use of surface water available to the District, and managing the day to day operations of the District.

2. On July 3, 1956, District was issued Permit 10477 (Application 12842), which was subsequently amended, that provides for the direct diversion and diversion to storage of 80 cubic feet per second (cfs) of Mokelumne River water during December 1 through July 1. [NSJ-24]. The total quantity of water is not to exceed 20,000 acre feet annually. Water is stored at Camanche Reservoir for use outside of the direct diversion season through contract with East Bay Municipal Utilities District (EBMUD).

3. On December 29, 2000, District filed a Petition for Extension of Time to complete construction and use of water authorized under Permit 10477. On May 5, 2004, District filed a Petition for Change in Point of Diversion and Place of Storage to add a point of diversion and an additional place for storage of water.

4. On December 27, 2000, EBMUD filed a Petition for Extension of Time to complete construction and use authorized under Permit 10478 (Application 13156).

5. On July 14, 2004, the State Water Resources Control Board (State Water Board) noticed the District's Petition for Extension of Time and Petition for Change in Point of Diversion and Place of Storage together in the same notice.

6. District was informed by the State Water Board that no protests were received on the Petition for Extension of Time. The Department of Fish and Game filed a protest on the Petition for Change in Point of Diversion, which was resolved with the addition of standard permit conditions requiring a fish screen on the new point of diversion.

7. On September 14, 2005, District received a letter from the State Water Board requesting additional information on the District's operations and compliance with the terms and conditions of Permit 10477 relating to dates and quantities of District's direct diversion and diversion of stored water, information on compliance with conditions related to fish screen and bypass flows. On October 13, 2005, the District responded to the request for additional information.

8. At no time subsequent to the December 29, 2000 filing of the Petition for Extension of Time has the State Water Board requested additional information regarding actions that District has taken since 2000, which support the Petition for Extension of Time. In fact, I was told by State Water Board staff that the decision of the Petition for Extension of Time would be bifurcated from any decision on the Petition for Change in Point of Diversion and Place of Storage, and would not be acted upon until the State Water Board considered EBMUD's Petition for Extension of Time. [NSJ-25].

9. Additional evidence is available that was not presented to State Water Board staff because it became available subsequent to the submittal of the Petition for Extension of Time in December 2000. Moreover, in the six years since the District filed its Petition for Extension of Time, the District received no request from the State Water Board that additional information was needed to support the pending Petition for Extension of Time.

10. District believes this additional evidence is highly relevant and probative of the District's use of due diligence in developing specific plans and funding mechanisms to put the water authorized under Permit 10477 to full beneficial use. This additional evidence will also provide the State Water Board with information to assist it in making the finding of good cause to extend the time for the District to make full beneficial use of the water authorized under Permit 10477.

11. Since 2001, the District has taken substantial steps in implementing the projects identified in the December 2000 Petition for Extension of Time, as well identifying and implementing additional projects to put the water to beneficial use. Additionally, the District took action to increase revenues available to the District to implement projects to maximize water use.

12. In 2001, the District sought legislation in the 2001-2002 Legislative Session to provide the District with the authority to impose an acreage charge to raise revenues to implement projects to put its water to beneficial use. Assembly Bill No. 2955 (formerly AB 93) was passed by the Legislature and approved by the Governor on August 30, 2002 [See AB 2955, [NSJ-26]. AB 2955 authorized the imposition of an acreage charge ranging from $1 per acre up to $5 per acre depending upon the amount of surface water put to beneficial use in any given year. Justification for the need for the acre charge was to provide the money necessary to implement projects in support of the District's Petition for Extension of Time. The District developed a plan of action identifying specific projects and specific funding sources to utilize the District's water [See North San Joaquin Water Conservation District - AB 93 and Beyond, dated August 2001. [NSJ-27].

13. The Legislation authorizes the imposition of $1 per acre for the years 2003, 2004, 2005 and 2006 unless the amounts of water caused to be deposited on land by the District exceed the amounts shown in the following table.

Acre charge Allowed	Amount of Water Deposited During the Previous Year (acre feet)
$1	0

$2	5,000
$3	8,000
$4	10,000
$5	12,000

For the year 2007 and each subsequent year, the District's authority to levy an acreage charge is limited as shown in the following table:

Acre charge Allowed	Amount of Water Deposited During the Previous Year (acre feet)
$1	3,000
$2	5,000
$3	8,000
$4	10,000
$5	12,000

In 2003, the District Board authorized imposition of the $1 to $5 per acre charge for acreage in the District subject to compliance with the legislation regarding levying the charge based on water use. The District conducted a Proposition 218 public hearing, protest and ballot proceeding which authorized the imposition of the acreage charge [See Manager Report dated December 16, 2002 and Notice of Public Hearing and Ballot Proceeding to Impose an Acreage Charge dated May 28, 2003, NSJ-28].

14. Since 2003, the District has levied the $1 per acre charge generating approximately $45,000 annually. Since imposition of the acreage charge, the District has developed budgets for use of the funds for implementation of projects to put the water authorized under Permit 10477 to full beneficial use [See Memorandum to Directors dated June 21, 2004, December 27, 2004, June 28, 2005, December 6, 2005 and November 24, 2006, NSJ-29].

15. Since 2000, the District has implemented the following pilot conjunctive use projects to determine the best area for conjunctive use of water for a larger scale project:

- Hoffman: Winter time irrigation by farmer of dormant vines. District paid for electricity and repairs to farmer's pump. Approximately 6 acre feet (AF) of water per day was applied on approximately 5 acres of vineyard with infiltration rate of approximately 1.2 feet per day. No evidence of harm to grapes. This demonstration project may be used to convince other farmers to allow winter irrigation. Test project has been implemented in 2004-2006 and approximately 300 acre feet has been used for irrigation.

- Lakso: Winter time irrigation of dormant vines utilizing District water diverted at the north pumping station and conveyed through the north distribution system. Approximately 4 AF of water per day on approximately 4 acres. No evidence of harm to grapes. This demonstration project may be used to convince other farmer to allow winter irrigation. Test project implemented in 2004 and approximately 118 AF was used for irrigation.
- Kautz: A 25 acre area rented for a two year period ending in the fall of 2005. Water was diverted during 2003/2004 from the District' south distribution system. 2,000 feet of 20-inch PVC pipeline was installed to deliver up to 10 AF a day to the southerly 12 acres. Infiltration rate was less than a 1 AF per day and this project was discontinued. This experience showed that Highway 12 – Locust Tree Road is not a good area for conjunctive use project.
- Hammer: A one acre area was tested for recharge in 2004 with water delivered from the District's south distribution system. Results showed potential for excellent infiltration rates. A 15 acre area has been vented and in 2005 and 2006, the District implemented additional tests for several months, but were constrained by the District distribution system. Delivery of up to 2,000 acre feet proposed for 2007.

The following projects were anticipated to be implemented in 2007, but are now on hold since he District received NO WATER ALLOCATION this year:

- Tecklenburg: A 10 acre sand area located north of Kettleman Lane and west of the District's pipeline, but near a pipeline owned by another District farmer. Winter irrigation of the site with installation of temporary pipeline to bring water from District's existing south facilities. Assuming direct diversion water available, estimating 60 days at a rate of 10 AF per day for a total of 600 AF. Proposal under consideration for 2007.
- Micke Grove: One quarter acre sand hole recharge operation at the Micke Grove Park. Water would be delivered from the District's existing south facilities. Assuming water available, estimate that 100 acre feet could be put in the ground in 2007. This small scale project could lead to a larger 3 plus acre project within the Park which could result in 1500 AF per year. [See Draft Technical Memorandum Farmington Groundwater Recharge Program – Preliminary Conceptual In-Lieu Recharge Potential – Micke Grove Park [NSJ-30].
- CALFED: After successful pilot tests on the adjoining Nakagawa and Costa lands, north of the Mokelumne River, near Dustin and Woodbridge roads, the District located the CALFED project on 10 acres. We plan on constructing the project during the summer of 2007 and hope to begin recharge by April 2008. Assuming a rate of 1 AF per day, we should be able to recharge 1,000 acre feet each year.
- Gill Creek: San Joaquin County, the Northeastern San Joaquin County Groundwater Banking Authority and the District are investigating the

feasibility of an irrigation/recharge project north of the Mokelumne River and parallel to Peltier Road. This project proposes 13 drainage detention basins that could recharge 48,000 AF of water annually. [Letter regarding Gill Creek Study dated February 10, 2004 [NSJ-31].

16. Pursuant to the AB 2955 authorization, as the District increases its use of water, additional monies will be available for implementation of projects to utilize the water. By way of example, use of 5,000 acre feet will generate $90,000, use of 8,000 acre feet will generate $135,000, use of 10,000 acre feet will generate $180,000 and use of 12,000 acre feet will generate $225,000. If the State Water Board grants the Petition for Extension of Time, District has both the plans and money in place to achieve full beneficial use of water authorized under Permit 10477.

17. The District has also worked on obtaining outside funding for implementation of projects. In 2000, the District submitted a Proposition 13 application to the Department of Water Resources (DWR) for rehabilitation of District's distribution system, which was supported by the Northeastern San Joaquin County Groundwater Banking Authority. In September 2001, DWR denied the District's Proposition 13 application. In October 2001, District filed an AB 303 grant application with DWR for a recharge project on the Handell property. Around January 2002, DWR denies AB 303 grant application.

18. The District has made requests of the State Water Board to firm up its water supply so as to be able to place the full amount of water to beneficial use. The District sent a letter dated February 2003 to the State Water Board setting forth the injustice that has occurred since the issuance of Decision 858 and requesting that the State Water Board hold a hearing on reallocation of 50,000 acre feet of water from EBMUD to the District. [NSJ-32]. The State Water Board responded that they had no pending complaint before them to address the allocation of water right priorities under Decision 858. "Absent a complaint filed by NSJWCD that is supported by information adequate for the SWRCB to determine that just cause exists to take an action, the SWRCB will not hold a hearing to consider reversing the priorities of the water rights on the Mokelumne River." The State Water Board then directed the District to file a new water right application for the unused water and/or file a water right application for water during

March through June for conjunctive use projects. [See State Water Board letter dated May 14, 2003, NSJ-33].

19. In July 2003, the District sent a follow up letter to the State Water Board clarifying inaccuracies contained in the State Water Board's letter and again requesting a hearing on the changed conditions since Decision 858 was adopted [See District letter dated July 25, 2003, NSJ-34]. The State Water Board has not responded to the July letter.

20. In 2004, the District annexed an additional 100,000 acres to the District to allow irrigation and groundwater recharge with surface water pumped from the Mokelumne River into Coyote Creek on the north side of the river and into Bear Creek on the south side of the river. The two creeks would serve as distribution facilities to thousands of acres adjoining the creeks. Assuming 15 miles of creeks and a quarter mile strip on each side, some 4,800 acres could be irrigated at a minimum of 4,800 AF. Groundwater recharge quantity would be a function of basin area. Assuming 200 acres of spreading basins with a recharge rate of 1 AF per day for 200 days, 40,000 AF could be recharged annually. The District recognizes that in order to implement this project, additional State Water Board approvals will be required. **In fact, the District has taken the first step toward the necessary approvals by filing a Petition to Change the Place of Use, Purpose of Use and Add Underground Storage for Permit 10477,** which will be discussed in detail below.

21. The District participates in the Northeastern San Joaquin County Groundwater Banking Authority (GBA). The GBA member agencies include San Joaquin County, City of Stockton, City of Lodi, Woodbridge Irrigation District, South Delta Water Agency, Central Delta Water Agency, Stockton East Water District, Central San Joaquin Water Conservation District, California Water Service Company and the District. The GBA was established in 2001 to collectively develop locally supported projects to strengthen water supply reliability in Eastern San Joaquin County. Formed as a joint powers authority, GBA members work cooperatively in their efforts to achieve reliable, affordable water supplies for the region. The members of the GBA have made substantial progress in improving water resources reliability through the GBA. Key accomplishments for the GBA include the following:

- Preparation of a funding application for the Peters Pipeline and "In-lieu" Irrigation Incentive Program;
- Participation in the development of the Freeport Interconnect Project;
- Completion of the System Plan Components Inventory;
- Publication of the Beckman Test Final Report evaluating the feasibility of direct injection/extraction methods for recharge of the Northeastern Groundwater Basin.
- Support of North San Joaquin Water Conservation District in development of a grant application for the South Irrigation System Improvement Project;
- Completion and adoption of the Eastern San Joaquin Groundwater Basin Groundwater Management Plan; and
- Initiation of the Integrated Regional Water Management Plan. Received Council of Governments Honorable Mention Regional Excellence Award for Groundwater Management Plan.

The GBA takes the lead or contributes to projects and studies that work to assure San Joaquin County residents will have sustainable water supplies for today and the future. Projects and studies the GBA currently involved in include:

- Integrated Regional Water Management Plan Preparation and Grant Proposal (2005)
- City of Stockton Delta Water Supply Project Prop 50 Implementation Grant (2005)
- 5-year Joint Salinity Program (2004-2008)
- Groundwater Management Plan Presentation (Sept 2004)
- Eastern San Joaquin Groundwater Basin Groundwater Management Plan (2004)
- AB 303 Application (2004)
- SEWD Peters Pipeline Project Prop 13 Application (2003)
- Groundwater Banking Authority System Plan (2002)
- San Joaquin County Groundwater Data Center

The District believes continued participation in the GBA will enable the District to develop additional projects to fully utilize its water authorized under Permit 10477.

22. For the past four plus years, the District has been participating in the Mokelumne River Forum. This group includes EBMUD, Amador, Calaveras and San Joaquin Counties, Stockton East Water District, the Cities of Stockton and Lodi, and the District. The Forum's mission is to develop and agree upon the best way to use unused wet year Mokelumne River water. The Forum is now at the point where it seems possible that Amador and Calaveras Counties' wet year water will be banked in the Eastern San Joaquin County groundwater basin,

with some of the banked water being available to EBMUD in order that Amador and Calaveras Counties might take water from the Mokelumne River at higher elevations.

23. In 2003, the District, along with Stockton East Water District and Central San Joaquin Water Conservation District, entered into a joint powers agreement creating the Eastern Water Alliance. The purpose of the Eastern Water Alliance is to develop and implement water supply projects that will assist in curing the critically overdrafted Eastern San Joaquin County groundwater basin. In 2003, the Eastern Water Alliance was successful in obtaining legislation to facilitate impositions of a plan implementation charge on landowners within its boundaries for the property related services received from improved groundwater management and planning, and for improved groundwater levels and availability provided by the Eastern Water Alliance [See SB 833, NSJ-351]. The Eastern Water Alliance is in the process of developing a Conjunctive Use Master Plan (Master Plan) for the entire Eastern San Joaquin County groundwater basin and will implement a plan implementation charge with implementation of the Master Plan.

24. Since 2005, the District contemplated instituting a groundwater charge for landowner pumping water from the groundwater basin. Overdraft of the Eastern San Joaquin County Groundwater Basin has been common knowledge since the early 1900's when falling levels made use of centrifugal pumps impossible unless pits were dug to keep the suction lift under twenty feet. Continuing decline of water levels led to the invention of the vertical turbine pump. Dangerously low water levels in the Stockton area during the 1970's caused the electorate to vote overwhelming in favor of a Stockton East Water District Treatment Plant to treat surface water from New Hogan Reservoir. The State formally recognized the problem in 1982 when it designated the Basin as being "critically overdrafted."

25. Currently, the accepted figure for current average annual overdraft is 50,000 AFA for the District. It is greater in dry years and lesser in wet years and is projected to increase in the future. I believe that average natural recharge of the Basin is approximately 1 foot per year, from rainfall, irrigation percolation, and streams. This means that approximately 600,000 AFA are naturally recharged during an average year. On average, approximately 800,000 AFA are

currently taken from the Basin, causing a 200,000 AFA overdraft, while the average water level decline is about 1 foot per year. Assuming 2006-2007 (with its very hot summer) and apparently dry winter is a "below normal year," we can say that the overdraft will be greater than average, and probably about 100,000 acre-feet. And, assuming 2007-2008 will be normal, we estimate the overdraft will be 50,000 acre-feet. [See Engineer's Report, NSJ-37]

26. The only realistic way to deal with an average overdraft of 50,000 AFA, is to use 100,000 acre-feet or more during wet years because none is available in dry years. That is why the District felt that it urgently needed an influx of revenue, by way of a groundwater charge, to continue to address the critically overdrafted state of the ground water basin.

27. At the District's December 20, 2006 meeting, it authorized proceeding with the steps necessary to impose a groundwater charge. The District prepared the required Engineer's Report under the Water Code [NSJ-37] and conducted a Proposition 218 protest proceeding for imposition of the new groundwater charge. On May 14, 2007, the District declared the results of Proposition 218 election (only 17% of the landowner protested the groundwater charge) and the groundwater charge was approved by unanimous vote by the Board of Directors. [See Memorandum to Directors dated December 30, 2004, June 1, 2005, Lodi News Sentinel article dated December 20, 2006, Resolution by Board of Directors dated May14, 2007, NSJ-38].

28. Now that the groundwater charge has been authorize and we are proceeding with the imposition this year, the District projects an influx of approximately $820,000 in additional revenue beginning in 2007-2008. With this new revenue stream, the District has prepared a 10-year budget to detail projects that the District intends to pursue each year [NSJ-36]. This budget provides confirmation on how the District intends to make fulfill putting its 20,000 acre feet of surface water to beneficial use.

29. In November 2006, USGS released a new study on the sources of high-chloride water to wells in the Eastern San Joaquin groundwater sub-basin. The study concludes that water levels are declining and chloride concentrations are increasing in water from wells in the Eastern San Joaquin groundwater sub-basin as a result of pumping in excess of recharge [See Sources of High-Cloride water to wells in the Eastern San Joaquin Groundwater Sub-basin dated November

2006, NSJ-18]. The District believes that this information further confirms that which was contained in the 2000 Petition for Extension of Time, namely that the continued use of water authorized under Permit 10477 is in the public interest because it is needed to cure the critically overdrafted Eastern San Joaquin County groundwater basin.

30. On June 1, 2007, the District intends to file a Petition to Change the Place of Use, Purpose of Use, Add Points of Diversion and Rediversion, Add Underground Storage for additional 17,000 acre feet of water and Modify Permit 10477 Term 20 (collectively "Petition") to allow for the construction of additional pumping and storage facilities to be constructed.

31. This project involves changes necessary to allow for an increase in the amount of the District's storage allocation diverted to underground storage from 1,000 acre-feet to 17,000 acre-feet annually. In addition, the changes sought by the Petition involve enlarging the place of use to coincide with the enlarged boundary of the District, and the boundaries of Stockton East Water District, Central San Joaquin Water Conservation District, and additional areas within the spheres of influence of the City of Stockton and City of Lodi. The changes seek to allow water diverted under Permit 10477 to be used for domestic, irrigation, municipal, and industrial uses within the proposed enlarged place of use.

32. This proposed project involves the construction of two new pump stations on the Mokelumne River. The pump station at new Point of Diversion (POD) 5 will divert water for release into Coyote Creek where it will be rediverted to underground storage at several recharge sites along Coyote Creek. The pump station at new POD 6 will divert water for release into Bear Creek where it will be 1) rediverted at the proposed Alliance Canal for conveyance to SEWD and CSJWCD; 2) rediverted to underground storage at several recharge sites along Bear Creek, and 3) rediverted at a proposed water treatment plant to be constructed on Pixley Slough by the City of Stockton. Construction of at least 11,000 feet of new transmission pipelines will be required. In addition, water is proposed to be diverted at the existing Woodbridge Diversion dam (POD 7) for conveyance via the Woodbridge South main Canal to Pixley Slough thence the City of Stockton's proposed treatment plant. Alternatively, if the Department of Health Services will not allow transmission through Woodbridge South Main Canal, then an approximate 5 mile

pipeline may be constructed for delivery from Woodbridge Dam to the City of Stockton's treatment plant.

33. In light of all the information the District has submitted, I believe the State Water Board now has sufficient information to make the required findings that granting the District's Petition for Extension of Time is in the public interest, the District has exercised due diligence and satisfactory progress will be to complete beneficial with the additional 10 years requested by the District.

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of: HEARING TO DETERMINE WHETHER TO RECONSIDER ORDER WR 2006-0018-DWR DENYING NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT'S PETITION FOR EXTENSION OF TIME (Application 12842)	)	**TESTIMONY OF C. MEL LYTLE**

I am C. Mel Lytle, Ph.D., appearing today on behalf of North San Joaquin Water Conservation District ("North San Joaquin"). I have been the Water Resource Coordinator for the County of San Joaquin, Department of Public Works, since February of 2002. I have Bachelor's and Master's degrees in Agronomy and a Ph.D. in Botany. I am a Post-doctoral fellow of the University of California Berkeley.

San Joaquin County's Water Use and Critically Overdrafted Groundwater Basin

In 1980, the groundwater basin underlying the eastern part of the County was identified in the California Department of Water Resources Bulletin 118-80 as one subject to "critical conditions of overdraft." [NSJ-14] The County's historical and continual reliance on groundwater has resulted in significant overdraft of the groundwater basin of up to approximately 150,000 acre-feet annually, and is projected to increase to a deficit of approximately 175,000 acre-feet annually, if nothing is done to correct this problem. Additionally, as a byproduct of the overdraft conditions, salt water has intruded into the groundwater basin from an ancient saline deposit underlying the Delta. Projections indicate that the migration of the saline front is approximately 150 to 250 feet

a year. Continued pumping of groundwater and deterioration of water quality in the basin threaten the long-term viability of groundwater use within the County.

Efforts to obtain supplemental surface water supplies

The County and local water interests have long recognized the need to decrease reliance on groundwater. County entities have attempted to secure reliable surface water supplies for many years. However, these efforts to obtain surface water supplies have been largely fruitless.

In significant part, the County's lack of adequate surface water supply stems from the interplay between several state and federal actions, which collectively directed the County to pursue the American River as the most economically viable source of surface water upon completion of the Folsom South Canal. However, the Folsom South Canal extension into San Joaquin County was never constructed, thus precluding San Joaquin County from receiving American River water as the State and the Federal Bureau of Reclamation intended. Meanwhile valuable opportunities for other water supplies were lost. Based on my review of County files and the historical information setting forth the history of the county water interests efforts to secure a surface water supply it is my understanding that the following State and Federal actions have occurred:

A. Bulletin No. 11 of the State Water Rights Board entitled, "San Joaquin County Investigation," dated June 1955, includes a description of the Folsom South Canal extending southward to provide a water supply of approximately 303,000 acre feet annually to San Joaquin County. Bulletin No. 11 indicates that this water and canal would meet the "probable ultimate supplemental water requirement for the San Joaquin Area." [NSJ- 15, p. 4-7]

B. In Decision 858, issued on July 3, 1956, the State Engineer found that North San Joaquin should receive water from the American River through the Folsom South Canal and that this course would be cheaper and more dependable than Mokelumne River water which flows through North San Joaquin. As a result of these findings, North San Joaquin was granted only a temporary permit to use

water from the Mokelumne River and denied a requested permanent right, in favor of East Bay Municipal Utility District's ("EBMUD") water right application which was junior to North San Joaquin's and which exported water out to the Mokelumne River basin to the EBMUD service area.

C. In the 1950s, four entities within San Joaquin County, consisting of the North San Joaquin Water Conservation District, Stockton and East San Joaquin Water Conservation District (now Stockton East Water District), City of Stockton, and the California Water Service Company, filed to appropriate water from the American River. In Decision 893, adopted on March 18, 1958, the then State Water Rights Board at the request of the Bureau of Reclamation denied those permits. The Board, in granting the permits to the Bureau of Reclamation for the Folsom Project, conditioned the permit to allow time for parties desiring water within Placer, Sacramento, and San Joaquin Counties to negotiate a water supply contract. (San Joaquin County interests did diligently negotiate for contracts, approved those contracts, and signed them, but they were not approved at the Federal level by the Bureau of Reclamation, as noted below.)

D. The June 1960 Bureau of Reclamation report entitled "Folsom South Unit" identified the needs for supplemental water within San Joaquin County and service to the County through the Folsom South Canal. Again, directing San Joaquin County to rely on a water supply from the American River.

E. In 1967 and 1971, the Bureau of Reclamation furnished draft contracts to San Joaquin County and districts within the County to deliver, in part, American River water through the proposed Folsom South Canal to San Joaquin County. [NSJ-15]. Draft contract between the United States of America and San Joaquin County Flood Control and Water Conservation District.) Negotiations regarding these contracts resulted in the Stockton East Water District, the Central San Joaquin Water Conservation District and the North San Joaquin Water Conservation District all approving separate contracts for execution. The contracts were approved by the regional office of the Bureau of Reclamation. Although the contracts were sent to Washington for approval, none were executed by the United States. The contracts were not executed, due to a combination of circumstances and changing policies; not because San Joaquin County did not need the water, nor was it because County entities did not diligently pursue the contracts.

F. In April 1972, following Decision 1400 issued by the State Board modifying permits to the Bureau of Reclamation for American River water from the proposed Auburn Dam, and for delivery of water, in part, to San Joaquin County, San Joaquin County's agencies continued to work with the Bureau of Reclamation to undertake studies of the Auburn-Folsom South Unit.

G. In 1973 at the State Board hearings on Applications 14858, 14859, 19303 and 1904, for Stanislaus River water (which led to Decision 1422 that same year), the

Bureau of Reclamation testified that the portion of San Joaquin County north of the Calaveras River would be served by the Folsom South Canal. Furthermore, at the time of adopting the New Melones Basin Allocation in 1981, the Secretary of Interior noted that the provision of only a small amount of water to San Joaquin County from New Melones was acceptable, as water would be provided to Eastern San Joaquin County from the American River through the Folsom South Canal.

Contrary to these numerous reports, studies, policies, and decisions of both the State and the Federal Bureau of Reclamation, San Joaquin County has not received any water from the American River and the Folsom South Canal, does not extend to the County.

For years since the failure of the Folsom South Canal the County has sought to obtain water from sources other than the American River. The County has expended substantial efforts and resources to secure a reliable source of water from the Stanislaus River. However, due to changes in State and Federal decisions and policies, supplemental water is speculative at best, due to the following circumstances:

A. As a result of State Board Decision 1422 issued in 1973, the Bureau of Reclamation received conditional permits for Stanislaus River water to be diverted at New Melones Dam and Reservoir. In order to receive State permission to appropriate the water from these permits the Bureau was to demonstrate "firm commitments" within the permitted four county service area, which included San Joaquin County. In part, to demonstrate such commitments, the Bureau of Reclamation entered into contracts with both Stockton East Water District and Central San Joaquin Water Conservation District in 1983 for a 155,000 acre-foot annual Stanislaus River water supply.

B. These County districts spent over 65 million dollars on infrastructure to deliver water from New Melones. Despite the completion of these delivery facilities in 1993, the County districts have only received a small portion of their contracted Stanislaus River water. Instead, the Bureau of Reclamation continues to make discretionary releases from New Melones to meet CVPIA requirements, State Board imposed Delta flow and salinity standards, and for fish purposes that directly take water away from these County districts. The State Board's Decision 1641 issued in 2000 indicates that these standards could be met from other sources; however, the Bureau of Reclamation continues to make the discretionary

decision to meet these obligations from New Melones, thus depriving the County contractors of water.

Despite the fact that five major river systems flow through the County (the Mokelumne, Calaveras, San Joaquin, Sacramento and Stanislaus Rivers), much of the water is exported to meet the increasing urban needs of those outside of San Joaquin County. Due to this lack of adequate surface water supply, County water purveyors have had to rely heavily on groundwater to supply both the County's agricultural needs and, more recently, rapidly expanding urban needs. Groundwater currently accounts for about 60 percent of the County's water supply, with some communities, such as Lodi, relying entirely on groundwater for their drinking water supply.

Countywide Water Management Planning

1. DWR Integrated Storage Investigation Program

In an effort to meet the long term County water supply demands, and to respond to the complex water-related issues related to the water supply, the County recognized that a comprehensive water management strategy was necessary in order to successfully manage the limited available water resources, and coordinate the many water agencies within the County. In furtherance of this objective, in April 2000, the County and the Department of Water Resources ("DWR") entered into a Memorandum of Understanding (MOU), whereby the County and DWR agreed to work cooperatively to formulate a conjunctive water management program. The program would identify feasible initiatives, programs, or projects that would effectively manage the surface water and groundwater resources within San Joaquin County. [NSJ-17].

Since 2000, DWR has worked with the County and the Northeastern San Joaquin County Groundwater Banking Authority ("GBA") to provide a consensus-based forum

for local public water interests to work cooperatively with one voice to study, investigate, and plan locally supported conjunctive use projects in the Eastern San Joaquin County. San Joaquin County has made substantial progress related to water resources planning and continues to build on the momentum gained by local achievements in such endeavors through the GBA.

This MOU process commenced the County's ongoing relationship with DWR, which continues today and which includes receipt of financial support from DWR to develop the County's regional water supply and related planning documents. Tasks associated with the MOU signed in 2000 include the following:

- The County established an Advisory Committee that includes representation by all water interests within the County, to provide technical and policy direction regarding viable conjunctive water management programs.
- Provides input to the current groundwater/surface water management planning process.
- Identifies potential conjunctive water management projects in the Eastern San Joaquin Basin that help address local water supply issues and needs, while concurrently helping improve the State's overall dry year water supply reliability, consistent with the San Joaquin County Groundwater Export Ordinance.
- As part of the programmatic feasibility evaluation process, conducts a preliminary environmental review, identifying the impacts of potential

projects of programs, including possible measures that could avoid or mitigate the impacts.

- As part of the programmatic feasibility evaluation process, outline Basin conjunctive water management principles and operating criteria.
- Draft a programmatic basin management evaluation, identifying specific conjunctive water management project and program options for the Basin, and recommending an action plan for future Phases.

Since the establishment of the MOU with DWR in 2000, DWR has provided substantial ongoing support, including financial support, to the water resource planning and project development.

2. Establishment of Northeastern San Joaquin County Groundwater Banking Authority ("GBA")

The Northeastern San Joaquin County Groundwater Banking Authority ("GBA") is a joint powers agency which was formed in 2001 and which includes all of the water agencies within the northeastern portion of San Joaquin County including the following eleven entities: The cities of Stockton and Lodi, California Water Service Company, Central Delta Water Agency, South Delta Water Agency, Central San Joaquin Water Conservation District, Stockton East Water District, North San Joaquin County Water Conservation District, Woodbridge Irrigation District, the County of San Joaquin, and Associate Member San Joaquin Farm Bureau Federation.

County staff serves as staff to the GBA, but the GBA is a separate public entity and the GBA's Board is comprised of officials from each of its member agencies. The GBA Board convenes monthly while the Coordinating Committee meets twice a month

on planning activities with facilitation provided by DWR and the Center for Collaborative Policy. The GBA has been highly successful in developing and approving regional water studies and plans for the County, including in 2004 the Eastern San Joaquin Groundwater Basin Groundwater Management Plan. The GBA is currently preparing an Integrated Regional Water Management Plan.

3. Adoption of Countywide Management Plan

In May 2002, the San Joaquin County Board of Supervisors formally adopted the San Joaquin County Water Management Plan ("County Water Management Plan") which was developed over an 18 month period with the assistance of a steering committee of regional stakeholders from 29 local, State, and Federal organizations and was facilitated through the MOU between the County and DWR's Integrated Storage Investigation Program. The cost to prepare the County Water Management Plan was $650,000.

The County Water Management Plan is a fundamental steering document that sets forth water resource project alternatives designed to meet year 2030 water supply demands for the County. The overall goal of the plan was three-fold: (1) to identify viable water supply and conjunctive use options in order to prevent further overdraft of the Northeastern Groundwater Basin, (2) to retard or eliminate the degradation of groundwater supplies due to saline water intrusion from the Bay-Delta, and (3) to meet future water demand for the entire County.

This stakeholder-driven process identified several water supply and management options that, collectively, could provide additional water supply for municipal, industrial, and agricultural activities. The alternatives could include reallocated water projects, new

water projects, and water management strategies to protect the existing and future quality, and quantity, of water in the County.

4. USGS Salinity Study of the Eastern San Joaquin Groundwater Basin

In 2004, the GBA entered into a joint agreement with the United States Geological Survey ("USGS") and DWR to complete the Groundwater Recharge and Distribution of High-Chloride Groundwater from Wells Study ("Study"). The purpose of this $2.7 million, five-year study is to develop the necessary information to quantify the source and distribution of high saline water that is migrating into the Eastern San Joaquin Groundwater Basin. The information gained from the Study will answer many questions with respect to future water levels, water quality, and storage potential under current and future management practices in the Basin. Historically, high-chloride groundwater along the San Joaquin River boundary of the Eastern San Joaquin Sub-basin (Basin) has been defined by interpolating the 300 mg/L isochlor based on limited groundwater quality data. Samples have measured in excess of 2,000 mg/L chloride. Consequently, the aerial and vertical distribution of high-chloride groundwater is poorly defined and the source of the high-chloride groundwater is unknown.

The total cost of the Study is projected to be $2,732,350. The proposed USGS contribution will be $625,000 over 5 fiscal years as well as an additional $725,000 from the DWR over the first four fiscal years. Member agencies within the Authority will contribute the remaining $1,382,350 over 5 fiscal years. Both San Joaquin County and North San Joaquin, as member agencies of the GBA, are participating in these studies.

A portion of the USGS Study results was released in November 2006 regarding the sources of high-chloride water to wells in the Eastern San Joaquin groundwater sub-

basin. The Study concludes that water levels are declining and chloride concentrations are increasing in water from wells in the Eastern San Joaquin groundwater sub-basin as a result of pumping in excess of recharge See Sources of High Chloride water wells in the Eastern San Joaquin Groundwater Sub-basin dated November 2006, NSJ-18].] This Study is confirming and highlighting the need within the County to develop and utilize surface water supplies in order to cure the critically overdrafted Eastern San Joaquin groundwater basin. This includes the use within the County of the water available to North San Joaquin pursuant to Permit 10477.

5. Adoption of Eastern San Joaquin Groundwater Management Plan by GBA

The 2002 County Water Management Plan identified the need for an Eastern San Joaquin Groundwater Management Plan to meet the requirements of AB 3030 and SB 1938 (Wat. Code §§ 10750 et seq.) The GBA pursued and developed the Eastern San Joaquin Groundwater Management Plan. Preparation of the Groundwater Management Plan began in May of 2003 with a cost of $650,000. In September of 2004 the GBA approved the Eastern San Joaquin Groundwater Basin Groundwater Management Plan ("Groundwater Management Plan"). The adoption of this regional groundwater management plan is significant and included the cooperation and agreement of all eleven members of the GBA which adopted the plan.

The purpose of the Groundwater Management Plan is to "review, enhance, assess and coordinate existing groundwater management policies and programs in eastern San Joaquin County to develop new policies and programs to ensure the long-term sustainability of groundwater resources in eastern San Joaquin County." [See Eastern San Joaquin Groundwater Basin Groundwater Management Plan attached as [NSJ-19, p. 1.]

The Groundwater Management Plan identifies an Integrated Conjunctive Use Program as a key element in fulfilling the purpose of the Plan. Other components of the Groundwater Management Plan include a Groundwater Monitoring Program. Current activities or projects of the Program include semi-annual groundwater measurements of over 300 wells; development of the San Joaquin County Groundwater Data Center accessible to the general public for groundwater data, and the USGS Joint Salinity Study.

6. Integrated Regional Water Management Plan

Following the adoption of the Groundwater Management Plan, the County entities determined the need to prepare a regional management plan. Thus, in May of 2005, the GBA embarked on preparing an Integrated Regional Water Management Plan ("IRWMP"). This included seeking a Proposition 50 funding grant in the amount of $500,000, which was awarded to the GBA in January 2006.

The GBA's IRWMP development has centered on correcting the overdraft condition and preventing further saline intrusion through the incorporation of several water management strategies together with additional new water supply from projects like the City of Stockton's Delta Water Supply Project, SEWD's Farmington Program, the MORE WATER Project. and EBMUD's Freeport Project assigned pipeline capacity.

Since 2005, the GBA has held a variety of public workshops during the development of the IRWMP. Throughout 2005 and 2006 the IRWMP has been continually discussed by the GBA at its monthly Board meetings and at its Coordinating Committee meetings which occur twice a month. The draft IRWMP is being prepared and is scheduled to be presented to the GBA in June of 2007, with anticipated adoption in July of 2007.

7. Mokelumne River Forum

The Mokelumne River Forum ("Forum") was created by Memorandum of Understanding dated June 2005 which is attached hereto as exhibit L. The Forum members include the following 15 parties: Alpine County; Amador County; Amador Water Agency; Calaveras County Water District; Calaveras Public Utilities District; City of Lodi; City of Stockton; East Bay Municipal Utility District; Jackson Valley Irrigation District; North San Joaquin Water Conservation District; San Joaquin County Flood Control & Water Conservation District; Mokelumne River Water and Power Authority; Stockton East Water District; Central San Joaquin Water Conservation District; and Woodbridge Irrigation District. Though not included as signatories to the MOU, several other agencies are participating in the Forum process including the San Joaquin County Farm Bureau Federation, Pacific Gas & Electric Company and the Foothill Conservancy.

In February of 2007, the Mokelumne Inter-Regional Conjunctive Use Project was presented and discussed at a Forum meeting which proposed a joint regional conjunctive use project utilizing the Authorities Application 29835 to provide benefits to Amador, Calaveras and San Joaquin Counties, as well as to EBMUD's service area. This draft proposal was well received by the Forum at its February meeting and is currently being further developed and discussed by the Forum members.

Conclusion

In an effort to address the critically overdrafted groundwater basin, both North San Joaquin and the County have undertaken significant efforts to work collaboratively on a regional basis on the many plans and projects identified above. The County and the county water interests continue to diligently pursue providing surface water supply to our

area. North San Joaquin's surface water supply is important in these efforts. It is vitally important that North San Joaquin retain its water right permit, as it is a crucial component of the long-term solution to resolving the critical status of the groundwater basin.

NSJ 3

C. Mel Lytle, PhD

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Qualified By

Dr. Mel Lytle has worked in Water and Natural Resources consulting, research and teaching for over 12 years. After the completion of a Ph.D. in 1994, Dr. Lytle finished a Postdoctoral Fellowship at the University of California, Berkeley where he conducted a nationwide study of the design and efficiency of constructed wetland systems for wastewaters from mining, industry and agriculture. His project expertise in both the Private and Public Sectors includes water supply development, water resource management planning, conjunctive use, lake, wetland & watershed assessment, restoration & management, treatment wetlands, stormwater and groundwater quality. Dr. Lytle has broad teaching experience, a solid publication history and is a frequent invited lecturer at local, national and international workshops & symposia.

Professional Experience

'02 to Present **San Joaquin County Dept. of Public Works - Water Resource Division** **Stockton, California**
Division Head & Resource Coordinator, Development, design and implementation of water resource, water quality, groundwater banking, conjunctive use and water supply projects and plans to fulfill Countywide water management program directives.

'00 to '02 **Cooper & Lake Environmental, Inc.** **Tracy, California**
Senior Scientist, *Project Focus:* Water quality, lake restoration and management, groundwater contamination, watershed quality assessment, wetland ecology, treatment wetland feasibility evaluation & design.

'98 – '00 **David Evans and Associates, Inc.** **Portland, Oregon**
Senior Scientist, *Project Focus*: Wetland ecology, water & watershed quality monitoring & assessment, wetland delineation/mitigation and restoration, treatment wetland feasibility evaluation & design.

'95 –'98 **Department of Plant and Microbial Biology** **University of California Berkeley**
Postdoctoral Fellow, *Research Focus*: Plant ecophysiology, plant physiology, phytoremediation, wetland system functional analysis, design and construction supervision, biogeochemical processes and x-ray speciation of bioaccumulated trace metals in aquatic species. *Courses Taught*: Environmental Biology

'86 – '94 **Departments of Botany and Agronomy** **Brigham Young University, Utah**
Graduate Research & Teaching Assistant, *Research Focus:* Plant ecophysiology and biogeochemical cycling of trace metals in aquatic plants of Great Basin Wetlands & Watersheds, x-ray speciation of bioaccumulated trace metals in wetland plants and crop nutrient uptake mechanisms *Courses Taught*: Plant Physiology, Plant Physiology Lab, Principles of Biology, Biology for Honors and Soil Science, Soil Fertility, Saline & Sodic Soils Laboratories.

'82 – '86 **R. Bogetti Farms, Inc.** **Elk Grove, California**
Farm Manager, Supervised cultural practices, budgeting and personnel on row-crop farms totaling 2,200 acres in the San Joaquin Valley of California.

Education

Ph.D. Botany (1991-94) - Department of Botany and Range Science, Brigham Young University, Provo, Utah. *Dissertation*—Heavy Metal Bioaccumulation in Great Basin Submersed Aquatic Macrophytes. **Awards & Scholarships:** 1995 Sigma Xi Outstanding Dissertation of the Year; 1994 S. Paul and Hilda F. Stewart Scholarship; 1992 Julia Greenwell Award; 1992-93 Botanical Science Scholarship; 1993 Department of Botany & Range Award.

M.S. Agronomy (1988-90) - Department of Agronomy and Horticulture, Brigham Young University, Provo, Utah. *Thesis*—Iron Deficiency Stress Response of Various C_3 and C_4 Grain Crop Genotypes. **Awards & Scholarships:** Agronomy Dept. Award 1988-90.

B.S. Agronomy (1988) - Ricks College, Rexburg, Idaho and Department of Agronomy and Horticulture, Brigham Young University, Provo, Utah.

Graduate (1977) – Glacier High School, Highline School District, Seattle, Washington

Work Experience

2002 – Present ***San Joaquin County Department of Public Works, Water Resource Division Stockton, California***
The Water Resource Coordinator is responsible for the coordination and management of San Joaquin County's water interests and prepares, administers and evaluates the annual program and budget for the Water Resource Division, the Flood Control and Water Conservation District and other associated local Authorities. Duties and responsibilities include efforts to obtain supplemental surface water supply by maintaining liaison among public jurisdictions, private entities, and the public to encourage cooperation on all water issues and to resolve potential conflicts. Responsibilities also include the management and formulation of coalitions with other agencies, the development of water resource plans, studies & programs and represent the County's interests in federal, state, regional and local governing boards, committees and task forces; testifies when necessary at federal, state, regional and local governing boards to describe and defend the County's interests.

Projects & Programs

Eastern San Joaquin County Integrated Regional Water Management Plan - Provided project management, direction and coordination for the development of an integrated regional water management plan and program environmental documentation for the Eastern San Joaquin Integrated Conjunctive Use Program. A 24-month effort of the Northeastern San Joaquin County Groundwater Banking Authority lead to the collaboration of over 40 stakeholder agencies to develop objectives and plans to better manage groundwater resources in a critically overdrafted basin (Project Budget ~ $850,000).

Mokelumne River Regional Water Storage and Conjunctive Use Project – MORE WATER, Stockton, California – Provided project management, direction and coordination to complete engineering feasibility and environmental documentation for a new surface water storage facility to capture flood flows from the Mokelumne River and regulate water supply to an integrated system of conjunctive use facilities providing additional storage capability, groundwater recharge, banking and water supply reliability for San Joaquin County and the Bay-Delta Region of California (Project Budget ~ $4.5 mil).

USGS Joint Salinity Study, Stockton, California – Provided project management, direction and coordination of a five-year, $2.5 million, jointly-sponsored regional groundwater salinity intrusion study between the Northeastern Groundwater Banking Authority, the California State Department of Water Resources and the US Geological Survey.

Eastern San Joaquin Basin Groundwater Management Plan, Stockton, California - Provided management, direction and coordination for the development of a regional groundwater management plan for the Eastern San Joaquin Basin. An 18-month effort of the Northeastern San Joaquin County Groundwater Banking Authority lead to the collaboration of over 40 stakeholder agencies to develop objectives and plans to better manage groundwater resources in a critically overdrafted basin.

San Joaquin County Flood Control and Water Conservation District Groundwater Monitoring Network Project, Stockton, California – Provided management and coordination of a detailed hydrogeologic investigation conducted over several years and the construction of depth specific monitoring wells at locations along the projected saline front within San Joaquin County to improve the accuracy of groundwater quality data, assess the vertical and lateral extent of saline water migration, determine the source of the saline water and understand the hydrogeologic properties in the area of concern (Project Budget – $550,000).

San Joaquin County Flood Control and Water Conservation District Water Management Plan, Stockton, California - Provided management and coordination for the adoption of the San Joaquin County Water Management Plan. This plan acts as a steering document that sets forth water resource project alternatives designed to meet year 2030 water supply demands. The overall goal of the plan is three-fold: (1) identify viable water supply and conjunctive use options in order to prevent further overdraft of the Northeastern Groundwater Basin, (2) retard or eliminate the degradation of groundwater supplies due to saline water intrusion form the Bay-Delta, and (3) meet future water demand for the entire county. (Project Budget - $650,000).

2000 - 2002 ***Cooper & Lake Environmental Inc., Tracy, California***
Senior Scientist and Project Manager responsible for the development and management of water resource related projects including wetland system, lake, surface water, groundwater and watershed projects for private sector clients and public agencies.

Projects

Phase I Evaluation of the La Oroya Township Treatment Wetlands, Doe Run Peru Mining Company, La Oroya, Peru – Provided reconnaissance-level feasibility assessments & design evaluations for wetland systems to treat municipal wastewater from the Andean Township of La Oroya, Peru (elevation 3,800 m).

Las Virgenes Creek Watershed Investigation, Los Angeles County, California – Performed a review of historic water quality data and reports of the Las Virgenes Creek watershed. Performed a site review of point and non-point sources of pollution including stormwater, municipal wastewater and industrial sources to determine BMPs utilization program. Determine the effectiveness of the existing BMPs based on available analyses for the reduction of listed 303-(d) contaminants for inclusion in watershed restoration program.

Phase I Environmental and Feasibility Assessments for Wetland System Development at the Cuajone Mine, Southern Peru Copper Mining Company, Tacna, Peru – Provided environmental, feasibility & design evaluations for wetland systems to treat potential acid mine drainage from the Cuajone Mine river redirection and overburden projects.

Dos Lagos Lake Quality Monitoring and Analysis, Corona, California – Conducted quantitative lake quality monitoring program including thermal stratification, dissolved oxygen, mixing, water column oxygen (WOD) and sediment oxygen demand (SOD) of two lakes for the development of a Lake Quality Restoration & Management Plan for a large multi-phased development in Southern California.

Feasibility Assessments for Tertiary Treatment of Municipal Wastewater, Vacaville, California – Conducted project regulatory and feasibility assessments for the development of an integrated treatment wetland system to provide tertiary treatment for municipal wastewater discharged within a proposed residential development.

1998 - 2000 ***David Evans and Associates, Inc., Portland, Oregon***

Senior Scientist and Project Manager responsible for water resource related projects for local, national and international clients including wetland systems, water quality and watershed projects.

Projects

Williamson River Delta Restoration Environmental Assessment, Klamath Falls, Oregon - Evaluated potential impacts of the 4,800-acre Williamson River Delta wetland restoration on water, wetland and watershed quality issues to Upper Klamath Lake, Oregon for the U.S. Department of Agriculture Natural Resources Conservation Service in partnership with The Nature Conservancy.

Laguna and Coyote Creek Watershed Quality Monitoring Program, Richland Development Company, Moraga, California - Developed and conducted a quality assurance stormwater monitoring program at the Palos Colorados development to assess the impact of stormwater contaminants in local watersheds, Moraga, California.

Klamath Straits Drain Wetland System Feasibility Analysis and Site Assessments, Klamath Falls, Oregon –Conducted reconnaissance level feasibility analysis and site assessments for an approx. 3,300-acre wetland treatment system to treat agricultural wastewater from the Klamath Straits Drain, Lost River and Lower Klamath Basin near Klamath Falls, Oregon for the U.S. Bureau of Reclamation.

Watershed Quality Investigations of the Klamath and Lost Rivers, Klamath Falls, Oregon - Conducted hydrological, conveyance, wetland and best management practice evaluations for the improvement of water quality in the Lower Klamath and Lost River watersheds, Oregon for the U.S. Bureau of Reclamation.

Treatment Wetland Redesign Assessments, Santa Rosa and Santiago Mines, Buenaventura Mining Company, Peru - Provided design evaluations of a treatment wetland that receives acid-mine water from the Santa Rosa and Santiago gold mines at an elevation of approx.15,000-ft. in the Andes Mountains for the Buenaventura Mining Company, Arequipa, Peru.

1995 -1998 ***Department of Plant and Microbial Biology, University of California, Berkeley***

Post-Doctoral Fellow responsible for the development and implementation of quantitative, multi-year field studies of constructed wetlands located throughout the United States to determine seasonal changes in treatment effectiveness together with other associated plant ecophysiology-related research.

Field Studies:

EPRI Constructed Wetland Research Program

Conducted a two-year quantitative wetland field study, sponsored by the Electrical Power Research Institute (EPRI), to evaluate the function and engineering design of wetland systems for the remediation of acid mine drainage, coal-ash leachate and oil refinery wastewater. This study was conducted at monthly intervals over two-years at several constructed wetland systems including: the Chevron Water Enhancement Wetland, Chevron Oil Refinery (Richmond, California), the Allegheny Power Passive Treatment Wetland (Springdale, Pennsylvania) and the Tennessee Valley Authority Widows Creek Wetland and Coal Mine Wetlands (Flatrock, Alabama).

Tulare Lake Drainage District Wetland System Feasibility Analysis, Design and Construction

Provided technical design criteria, directed construction and planting of a 10-cell wetland system in the Tulare Lake Basin, California. This 5-acre wetland was planted with eight different wetland plant species, which was designed to test the concept that wetland plants may remediate toxic selenium in agricultural tile-drainage water via biological volatilization. This collaborative effort was sponsored by the Tulare Lake Drainage District, J.G. Boswell & Company, UC Salinity Drainage Task Force, and the California State Department of Water Resources.

Tulare Lake Drainage District Wetland System Monitoring Study
Conducted a 12-month quantitative field study, sponsored by the UC Salinity Drainage Task Force and the California State Department of Water Resources, to determine the seasonal fate, cycling and chemical speciation of selenium and other trace elements from contaminated agricultural drainage water in the Tulare Lake Drainage District Flow-Through Constructed Wetland.

1990 - 1994 ***Department of Botany and Range, Brigham Young University, Provo, Utah***

Field Studies:
Trace Metal Bioaccumulation in Great Basin Wetland and Watershed Habitats- Conducted a two-year quantitative field study, sponsored by the Wildlife Society, of the Fish Springs National Wildlife Refuge, Bear River Migratory Bird Refuge, Clear Lake Wildlife Management Area wetlands, the Provo and Sevier River watersheds to determine the extent of heavy metal bioaccumulation among aquatic plant species utilized by waterfowl. This study included the monthly monitoring and speciation of heavy metals within wetland plant tissues, surface water, sediments and wildlife tissues to determine their biogeochemical cycling, fate and environmental impact.

Teaching Experience

2002 – Present ***San Joaquin County Department of Public Works, Water Resource Division Stockton, California***
Invited Lectures:
"San Joaquin County Integrated Regional Water Management Planning" Greater Stockton Chamber of Commerce, September 2005, Stockton, California
"Conjunctive Management Program in San Joaquin County: Value and Benefits" California State Department of Water Resources, January 2005, Sacramento, California
"Groundwater Management Planning for the Eastern San Joaquin Basin" San Joaquin County Farm Bureau Federation, September 2004, Stockton, California
"San Joaquin County Water Resource Management Planning Update" Stockton Area Business Council, August 2004, Stockton, California
"A Consensus-based Approach to Groundwater Management Planning for the Eastern San Joaquin Basin" Association of California Water Agencies Conference, December 2003, San Diego, California
"San Joaquin County Regional Water Supply Projects" San Joaquin Valley Engineers Association, September 2003, Stockton, California
"Future Water Supply for San Joaquin County" American Public Works Association, November 2002, Sacramento, California
"How to Succeed in Groundwater Management" California Water Policy Conference - 12, Los Angeles, California, October 2002
"San Joaquin County Water Management Issues" California State Department of Water Resources – US Geological Survey Joint Technical Workshop, Sacramento, California, September 2002

2000 - 2002 ***Cooper & Lake Environmental Inc., Tracy, California***
Invited Lectures:
"Potential Use of Treatment Wetlands for the Treatment of Domestic Sewage and Industrial Wastewaters at High Altitudes." Doe Run Peru Mining Technical Presentation, La Oroya, Peru, September 2001.

1998 - 2000 ***David Evans and Associates, Inc., Portland, Oregon***
Invited Lectures:
"Use of Constructed Wetland Systems to Treat Mine and Mineral Processing Waters." 5th International Conference on Clean Technologies for the Mining Industry, May 2000, Santiago, Chile.
"Utilizacion de los humedales en el tratamiento de aguas residuals domesticos e industriales." Conferencia: Tecnologias de proteccion ambiental, Universidad Nacional Agraria La Molina, Setiembre 1999, Lima, Peru.
"Sustainable Water Quality Treatment Alternatives Using Watershed Restoration and Preservation." 5th Annual GCOE Environmental Solutions Conference and Trade Show, May 1999, Anaheim, California.

1995 - 1998 ***Department of Plant Biology, University of California, Berkeley***
Invited Lectures:
"Exploiting Constructed Wetland Biogeochemistry for Applied Phytoremediation Purposes." Department of Chemistry, University of Texas at El Paso. October 1998, El Paso, Texas.
"Constructed Wetland Treatment System Biogeochemical Processes." Allegheny Power Company Constructed Wetlands for Industrial Wastewater Treatment Workshop. July 1998. New Kensington, Pennsylvania.
"Plant Establishment, Growth and Biomass Production in Flow-Through Treatment Wetlands." UC Salinity Drainage Program Annual Meeting, April 1998. Sacramento, California.
"Selenium Remediation by Flow-Through Wetlands: Design, Construction and Initial Findings." 10th Annual Agroforestry Conference, Sequential Reuse of Drainage Water for Salt and Selenium Management, October 1997. Hanford, California.
"XAS Analysis of Plant-based Trace Element Detoxification." 24th Annual SSRL User's Conference Workshop, October 1997. Stanford Synchrotron Radiation Laboratory, Stanford, California.
"The Role of Wetland Plants in Trace Element Remediation in Constructed Wetlands." Electric Power Research Institute, Water Toxics Assessment and Watershed Management Business Area Council Meeting, June 1997. Golden, Colorado.

"Potential Use of Soft X-ray Radiation in Phytoremediation Research." Molecular Environmental Research in the Soft X-ray Region Workshop, March 1997. Lawrence Berkeley National Laboratory, Berkeley, California.
"Recent Applications of XAS to the Emerging Science of Phytoremediation." 23rd Annual SSRL User's Conference, October 1996. Stanford Synchrotron Radiation Laboratory, Stanford, California.
"The Potential Use of Flow-through Wetlands for Selenium Remediation." Tulare Lake Drainage District Annual Board of Directors Meeting, December 1995. Corcoran, California.

1990 - 1994 ***Department of Botany and Range Science, Brigham Young University, Provo, Utah***

Lectures:

"Seasonal changes in valence and chemical speciation of bioaccumulated manganese in Potamogeton pectinatus." **14th Missouri Symposium**, April 19-22, 1995. University of Missouri, Columbia, Missouri.
"Chemical speciation of manganese in exhaust, soil and plants impacted by an unleaded fuel additive, MMT." **ASA, SSSA and CSSA 86th Annual Meeting**, November 13-18, 1994. Seattle, Washington.
"X-ray absorption spectroscopy – an analytical tool for element chemical speciation providing enhanced characterization of hazardous wastes." **8th Annual Regional Environmental Business & Management Conference**, October 11-13, 1994. Denver, Colorado.
"Manganese accumulation along Utah roadways: A possible indication of motor vehicle exhaust pollution." **AAAS Pacific Division Annual Meeting**, June 12-16, 1994, San Francisco, California.
"Trace metal accumulation and potential trophic channeling in Great Basin submersed aquatic plants." **Utah State University, Spring Plant Ecology Conference**, May 20-21, 1994. Bear River Lodge, Logan, Utah.
"Manganese and iron accumulation by Potamogeton pectinatus L., A potential trophic channeler in freshwater wetlands." **Ecological Society of America Annual Meeting**, July 31-August 4, 1993. Madison, Wisconsin.
"Metabolic stress induced by organomercurials in a free floating aquatic macrophyte, Lemna minor L." **Ecological Society of America Annual Meeting**, August 9-13, 1992. Honolulu, Hawaii.

Publications

34. Ye, Z.H., S.N. Whiting, J.H. Qian, C.M. Lytle, Z.-Q. Lin, and N. Terry. 2001. Trace element removal from coal ash leachate by a 10-year-old constructed wetland. **Journal of Environmental Quality 30, 1710-1719.**
33. Ye, Z.H. S.N. Whiting, Z.-Q. Lin, C.M. Lytle, J.H. Qian, and N. Terry. 2001. Removal and distribution of Fe, Mn, Co, and Ni within a Pennsylvania constructed wetland treating coal combustion by-product leachate. **Journal of Environmental Quality 30, 1464-1473.**
32. Lytle, CM, BN Smith, MS Hopkin, LD Hansen and RS Criddle (2000) Oxygen-dependence of metabolic heat production in the appendix tissue of the voodoo lily (Sauromatum guttatum Schott). **Thermochimica Acta 5112, 1-6.**
31. de Souza MP, Lytle CM, Mulholland MM, Otte ML, Terry N 2000 Selenium assimilation and volatilization from dimethylselenoniopropionate by Indian mustard. **Plant Physiology 122, 1281-1288.**
30. Lytle, CM FW Lytle, J-H Qian, and N Terry (2000) Manganese removal and detoxification by cattail (Typha latifolia) grown in a constructed treatment wetland system. *In* **Stanford Synchrotron Radiation Laboratory 1999 Activity Report, Stanford University, Stanford, CA.**
29. Lytle, CM and C Jofre (2000) Use of constructed wetland systems to treat mine and mineral processing waters. M.A. Sanchez, F. Vergara and S.H. Castro, University of Concepcion (eds). *In* **Proceedings of the V International Conference on Clean Technologies for the Mining Industry, Volume I, Santiago – Chile, May, 2000, pgs. 161-171.**
28. Jones, AR, CM Lytle, RL Stone, LD Hansen and BN Smith (2000) Methylcyclopentadienyl manganese tricarbonyl (MMT), plant uptake and effects on metabolism. **Thermochimica Acta 5113, 1-6.**
27. Lytle, C. M., 2000. Water Quality Data Review and Wetland Size Estimate for the Treatment of Wastewaters from the Klamath Straits Drain. *In* **U.S. Bureau of Reclamation Technical Memorandum, July 2000.**
26. Pilon-Smits, EAH S Hwang, CM Lytle, Y Zhu, JC Tai, RC Bravo, Y Chen, T Leustek, and N Terry (1999) Overexpression of ATP sulfurylase in Indian Mustard (*Brassica juncea*) leads to increased selenate uptake, reduction and tolerance. **Plant Physiology, 119, 123-132.**
25. Lytle, CM (1999) Treatment Wetlands: Effective Cleanup of Contaminants in Mine/Mineral Processing Waters. **Latin America Mining Record Vol. 6, 22-23.**
24. Lytle, CM FW Lytle, N Yang, J-H Qian, D Hansen, A Zayed and N Terry (1998). Reduction of (CrVI) to (CrIII) by wetland plants: Potential for in situ heavy metal detoxification. **Environmental Science and Technology 32, 3087-3093.**
23. Pilon-Smits, EAH MP De Souza, CM Lytle, C Shang, T Lugo and N Terry (1998) Selenium volatilization and assimilation by hybrid Poplar (*Populus tremula x alba*) **Journal of Experimental Botany 49, 1889-1892.**
22. Lytle, CM FW Lytle and N Terry (1998) X-ray spectroscopy study of a wetland plant-based heavy metal detoxification mechanism. *In* **Stanford Synchrotron Radiation Laboratory 1997 Activity Report**, Stanford University, Stanford, CA. **259-262.**
21. Zayed, A CM Lytle and N Terry (1998) Accumulation and volatilization of different chemical species of selenium by plants. **Planta 206, 284-292.**
20. de Souza, MP EAH Pilon-Smits, CM Lytle, S Hwang, J Tai, T Honma, L Yeh and N Terry (1998) Rate-limiting steps in selenium assimilation and volatilization by Indian mustard. **Plant Physiology 117:1487-1494.**
19. Zayed, A CM Lytle, J-H Qian and N Terry (1998) Chromium accumulation, translocation and speciation in vegetable crops. **Planta 206, 293-299.**

18. Lytle, CM FW Lytle, A Zayed and N Terry (1997) X-ray absorption spectroscopy of bioaccumulated chromium in selected vegetable crops and water hyacinth. *In* **Stanford Synchrotron Radiation Laboratory 1996 Activity Report**, Stanford University, Stanford, CA. **356-357.**

17. Smith, BN and CM Lytle (1997) Air Pollutants. *Invited chapter in:* M.V.N. Prasad (ed.) **Plant Ecophysiology.** Chapter 12. John Wiley & Son, New York. **p. 375-392.**

16. Lytle, CM FW Lytle and BN Smith (1996) Use of XAS to determine the speciation of bioaccumulated manganese in *Potamogeton pectinatus* (Sago pondweed). **Journal of Environmental Quality 25, 311-316.**

15. Lytle, CM FW Lytle, A Zayed and N Terry (1996) Phytoconversion of Cr^{6+} to Cr^{3+} by Water Hyacinth — A Case for Phytoremediation. **Bulletin of the Ecological Society of America 77, 235.**

14. Lytle, CM and BN Smith (1995) Seasonal nutrient cycling in *Potamogeton pectinatus* of the lower Provo river. **Great Basin Naturalist 55, 164-168.**

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Committees, Societies and Organizations

- *Secretary*, San Joaquin County Flood Control and Water Conservation District, Advisory Water Committee
- *Former Chair*, Water Environment Research Foundation Project Subcommittee - *Innovative Metals Removal for Urban Stormwater Treatment* (Project Budget $650,000). Final Report Entitled "Metals Removal Technologies for Urban Stormwater (2003)"
- Association of California Water Agencies
- Groundwater Resources Association of California

Continuing Education

- University of California Davis Extension, Sacramento, California
  - Groundwater Law, Hydrology and Management (2003)
  - Facilitating for Groups in Conflict (2005)
  - Fluvial Geomorphology (2005)
- Groundwater Resources Association of California, Sacramento, California
  - "Artificial Recharge: Nexus of Quantity and Quality in California (2005)

Interests

Outdoor sports, saltwater fishing, hiking, photography, gardening and watercolor painting

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STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

WATER RIGHTS ORDER 2006-0018-DWR In the Matter of Permit 10477 (Application 12842) Regarding Diversion by NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT Source: Mokelumne River County: San Joaquin	**TESTIMONY OF CONRAD WEINZHEIMER**

1. My name is Conrad Weinzheimer and I am the Watermaster for the NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT, a special district in San Joaquin County, California, hereinafter referred to as "District." I have been an employee of the District since 1976.

2. My responsibilities include overseeing the day-to-day operations of the District and managing its diversion and water distribution system when water is available. There are currently four different pumps utilized on the south side pumping facility and three pumps utilized on the north side pumping facility. I ensure that all of pumps are functioning properly. I also inspect the pipeline daily for any leaks or cracks. Since the pipeline is over 40 years old and constructed within its trench, there is no place for expansion or contraction. Therefore, I have replaced several portions of this pipeline with more flexible material, which has proven to be quite costly to the District.

3. I am also in charge of water ordering procedures by which water users make application for deliveries on a scheduled basis. The General Manager usually sends a letter in January or February of each year to East Bay Municipal Utility District ("EBMUD") requesting

storage of a certain amount of water in Camache and/or Pardee in accordance with the District's contracts with EBMUD. [NSJ-20] EBMUD usually responds to our request between March and May of that same year. Surface water users normally apply for water on an annual basis and pay in advance for water deliveries. In non-drought years, our customers provide me with 24-hour notice so that I can make sure water will be available to them. However, often times due to the undependable availability of the District's surface water, I have received many requests for water delivery that must go unfulfilled during drought years. [See Diversion Table and Projected Deliveries Based on EBMUD Model Runs with Joint Settlement Agreement Releases, NSJ-59]

4. Prior to the 1976 drought, approximately 120 landowners within our District relied on our surface water as their only source of water. Many landowners who already had groundwater pumping facilities, locked them off so that they would not be required to pay a standby charge to PG&E. Others relied on our water because either they did not own wells or their wells were too shallow to reach the ever declining groundwater table. Therefore, when the first drought hit in 1976 and no surface water was available, many of our customers worked together and the District made its pipeline available for transfer and wheeling of water among neighboring landowners. The District's customers stuck by us through this difficult time in hopes that the water would be available next year.

5. However, when the drought continued into 1977, I received many frantic telephone calls from desperate landowners asking if water would be available. My initial response was "I don't know" which unfortunately became "no water will be available this year." In order to save their crops, many of our customers had no other choice but to seek an alternative source of water. Some customers had to re-energize groundwater pumps and pay PG&E a fee to put their pumps on standby. Others utilized their existing groundwater wells or dug new ones. While others converted to drip irrigation.

6. Due to two consistent years of drought, when water did become available in 1978, many of our customers felt they could no longer run the risk of depending on an inherently undependable surface water source. Others wanted to use our water, but simply could not afford to run on a dual system of ground water and surface water. Other landowners who had expended

funds to bring their groundwater pumps up to code and back on line with PG&E felt that it would be more cost efficient to use groundwater pumps. It is my understanding that PG&E imposes a monthly standby charge. Therefore, if landowners wanted to wait to hear if surface water would be available any given year, they would also have to pay standby charges to keep their to keep their groundwater pumps energized in case surface water was not available. The only way to avoid paying a standby charge would be to de-energize their groundwater pumps and lock of their meters continuously for 365 days. However, if a landowner, who had locked off his groundwater pump in anticipation of available surface water, found out on the 90th day of the year that surface water would not be available, he would have to pay to get his pump reenergized and 3 months worth of backed up standby charges. Many landowners were not interested in incurring a standby charge for an entire year even if they only used their groundwater pump for 275 days.

7. In the years since 1978, the District has experienced many more years of drought. Between 1987-1992 the District did not receive one drop of Mokelumne River water. Six years without water aided in the steady decline of our surface water usage. Moreover, since 1992 we have experience at least two more years of drought conditions in both 1994 and 2001.

8. Over my 31-year tenure with the District, I can assuredly say that the District has made every effort to put our surface water to beneficial use. However, with a consistently undependable surface water supply it has proven to be a difficult task. Yet, I am very encouraged about the District's imposition of a new groundwater charge that will financially revitalize and improve our pumping facilities and attract more surface water users into the District. I am greatly encouraged with the prospect of finally being able to give our customers what they desperately need, a dependable source of water.

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STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

WATER RIGHTS ORDER 2006-0018-DWR In the Matter of Permit 10477 (Application 12842) Regarding Diversion by NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT Source: Mokelumne River County: San Joaquin	**TESTIMONY OF STEWART C. ADAMS, JR.**

1. My name is Stewart C. Adams, Jr. and I am the former attorney of the NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT, a special district in San Joaquin County, California, hereinafter referred to as "District." I represented the District from 1963 through 1999.

2. For over 40 years, I, along with the District Board and staff have worked tirelessly and diligently to secure a dependable source of surface water and to utilize its temporary supply of Mokelumne River water to enhance and protect the District's groundwater basin. However, despite our diligent efforts, the District has been continually and deliberately frustrated. Instead of having the opportunity to recount District triumphs in securing surface water and putting our temporary water supply to beneficial use, I am faced with recounting a litany of horror stories, upon which we faced obstacle after obstacle trying to secure a permanent surface water source and trying to put the temporary and intermittently available Mokelumne River water to beneficial use.

3. The District was organized November 8, 1948. On December 2, 1949, District filed Application 12842 with the State Water Resources Control Board ("State Water Board") to build

a project to divert Mokelumne River water to lands on both side of the river east of Lodi. On October 18, 1955, State Water Board held a hearing on various applications of the Calaveras County Water District, East Bay Municipal Utility District ("EBMUD"), including District Application No. 12842.

4. On June 3, 1956, the State Water Board rendered Decision D-858 finding that there was insufficient water available in the Mokelumne River basin to approve all applications. [NSJ-70]. The State Water Board approved EBMUD's application (despite the fact that it was submitted *after* the District's application), giving EBMUD priority for use of Mokelumne River water and subordinated the District's water right application. As a consequence of D-858, the District received a "temporary" water supply pursuant to Water Code section 1462. The District's Water Right Permit 10477 authorized a direct diversion of up to 500 cfs of natural flow water between December of each year and July 1 of the succeeding year and authorized storage of up to 50,000 acre-feet. However, Permit 10477 is only temporary in nature and will go away when EBMUD put its water under Water Right Permit 10478 to full beneficial use. Moreover, any water available to the District pursuant to Permit 10477, comes only after EBMUD has appropriated all of its needed water pursuant to Permit 10478.

5. In order to justify its decision to give priority to EBMUD, State Engineer Harvey O. Banks assured the District that it could look to American River water as an alternative, permanent gravity flow source of surface water. In reliance on the State Engineer assurance, the District filed Application No. 12440 to divert and store water from the American River. However, this assurance proved to be a hollow promise when the State Water Board denied the District's application for American River water, in Decision D-893, in favor of the United States Bureau of Reclamation on March 18, 1958. [NSJ-71].

6. The State Water Board told the District to now look to United States Bureau of Reclamation ("USBR") for a water service contract and water delivery from the Folsom South Canal. Despite the fact that its application had been denied in favor of USBR, the District, desperate to firm up a permanent reliable surface water supply, continued to look to the American River for a permanent water source. USBR's plan contemplated construction of the

Folsom South Canal to deliver American river waters to Sacramento and San Joaquin counties. In 1965, the Auburn –Folsom South unit was authorized by the United States Congress to build Folsom South Canal.

7. The District was approached by the Sacramento County Board of Supervisors to throw its hat into the ring and support the development of the first reach of the Folsom South Canal to Rancho Seco ("Reach 1") to aid in the construction of a nuclear power plant by Sacramento Municipal Utility District. Sacramento County Supervisors vigorously promised the District that if it supported Reach 1, Sacramento County would fully support "Reach 2" which would extend Folsom South Canal all the way to Lonetree Creek in San Joaquin County.

8. Relying on these assurances, the District spent considerable time and effort in support of extending "Reach 1" of the Folsom South Canal project to Rancho Seco, and we were successful. However, when it came time to continue the extension of the canal to "Reach 2" from Rancho Seco to Lonetree Creek, Sacramento County Board of Supervisors reneged on their promise. In fact, while presenting briefs on this issue in front of the State Water Board, suddenly the back doors of the auditorium flew open, TV cameras came rolling down the aisle, and Ted Sheedy, a new Sacramento Supervisor, declared "This [the lone tree extension] is the rape of the river!" As a direct consequence, the District's hopes for Reach 2 were demolished.

9. Despite this devastating event, the District pressed forward in its efforts to secure American River water. We participated in hearings and negotiations with the U.S. Army Corps of Engineers and the State Water Board to construct Auburn Dam. Auburn Dam would increase the water supply in the American River so that San Joaquin County could be served by Reach 2 of the Folsom south canal. Clearly, this project would provide enough water so as not to cause a "rape of the river." However, Save the American River Association or "SARA" attacked the Auburn Dam project because they wanted a free-flow of water from the American River to the Sacramento River. Under SARA's pressure, the Auburn Dam project failed, miserably.

10. The District, still relying on the false hope that we could look to the American River for water, came up with yet another plan to address SARA's concerns regarding free-flow of American River water. Our proposal would establish a Hood-Clay pump connection, which

would capture water at the Hood pumping station located on the Sacramento River and deliver it through a pipeline which would be constructed between the Hood station and Clay station in Galt. From Clay station we would pump the water into San Joaquin County. We gained support from San Joaquin County and Galt Irrigation District (which controlled Clay Station.) However, despite our considerable time and effort, Sacramento County, in an effort to hoard American River water, shut the project down.

11. Throughout our many attempts to work with the Sacramento County to procure American River water, the District concurrently attempted to negotiate a water service contract with USBR. The USBR submitted draft after draft of water service contract to the District, each of which the District approved, signed and promptly returned to the USBR. However, the USBR never executed any of these contracts. After eleven different versions of water service contracts were submitted to the District by USBR, signed by the District, but never executed by the USBR, the District declined to proceed further and negotiations failed. This left the District in total frustration after executing each version of the water service contract, acceding fully to the demands of the USBR. In the end, the District had expended considerable time, effort and money with no American River water to show for it.

12. Even while the District attempted to secure American River water, it still negotiated throughout the 1960's with EBMUD to utilize its "temporary" water supply under Permit 10477 for Mokelumne River water. The District was successful in negotiating a contract with EBMUD to utilize the "temporary" Permit 10477 water with EBMUD storing a portion of that water in Pardee or Camanche reservoirs for later diversion during the irrigation season. Under the 1963 contract, EBMUD stores for the District up to a maximum of 20,000 acre feet annually dependent on water availability and projected EBMUD water use from year to year. [NSJ-20].

13. The District then looked to EBMUD, whom it had (and continues to have) a close relationship, for urgently needed assistance. The District worked closely with EBMUD to organize a meeting with the District, EBMUD, Woodbridge Irrigation District, San Joaquin County Board of Supervisors, Mokelumne River Alliance, and the California Sport Fishing Association in hopes of developing a plan to utilize Mokelumne River water that would be

mutually agreeable to all parties. A facilitator was brought in and at least five meetings took place at EBMUD's central district office in Oakland with supervisors, board members, engineers and attorneys. The substance of the agreement was that the District would be allowed, pursuant to the terms of its permit, to withdraw Mokelumne River water directly from EBMUD's pipeline at four to five places within the District to distribute its water entitlement in a very economic and cost effective manner. All parties appeared before the Board of Directors of EBMUD, who were most cooperative and readily approved the proposal. Thereafter, the facilitator drafted the contract and a meeting was set at the EBMUD office for contract execution. The contract was presented and reviewed and without a word spoken by either representative of Mokelumne River Association or the CSPA, they walked out of the meeting knowing full well that they trashed the entire transaction even though they fully participated in the negotiations and registered no objection to the terms of the agreement. All parties around the table were astounded and furious because of this intentional and unreasonable act. However, this is just another example of the District's diligent efforts to utilize Mokelumne River water and those efforts being crushed by those with separate political agendas.

14. After another devastating loss, the District once again refocused its efforts on utilizing its "temporary" intermittently available surface water under Permit 10477 through the 1963 contract with EBMUD. However, as I have said many times already, although a maximum of 20,000 acre feet could be stored for use by the District, this water supply was not dependable. Throughout the years, drought was frequent and the District did not know from one year to the next whether it could supply surface water to meets our customers' irrigation needs. Additionally, since the District spent several years trying to secure American River water, we needed more time to refocus our attention on Mokelumne River water and construct our project facilities and put our water to beneficial use. Thus, on October 26, 1972 the District applied for and received its first extension of time which gave the District until December 1, 1975 to complete construction of project facilities and until December 1, 1980 to put the water under Permit 10477 to beneficial use.

15. During this time period, the North and South pumping systems were expanded. In the 1970's, in an effort to put our water to beneficial use, I drafted an agreement with farmers within our District, whereby the farmers advanced costs to construct an irrigation pipeline in exchange for their use of canal water from the North and South pumping stations. This pipeline extended to Pixley Slough and was successful. We worked diligently to maximize water delivery. Farmers had the option of either pumping water out of Pixley Slough or having it delivered through the pipeline.

16. In my recollection, the State Water Board came out to inspect our facilities most notably in 1981 and three times between 1998-1990. During their 1981 inspection, they determined that the maximum use under permit occurred in 1972-1973 water year when 9,486 acre feet was diverted. However, in many years after 1972-1973 the District received no water pursuant to Permit 10477 and the EBMUD contract. When we did receive water, our surface users were so frustrated that they could not count on a reliable surface water supply that many of them turned to pumping groundwater from the underground basin.

17. In 1983, the District submitted its second petition for extension of time, which requested additional time due to financial problems caused by Proposition 13 and continued uncertainty over the lack of availability of water from the Mokelumne River. This petition was approved January 30, 1984 and construction was to be completed by December 1, 1988 and water to be put to full beneficial use December 1, 1989.

18. However, for the entire period between 1986 and 1992 drought occurred and Mokelumne river water was not available to the District. Our customers called Watermaster Conrad Weitzheimer repeatedly, asking when water would be available. Unfortunately, year after year our only reply was "we don't know" or "no water is available." Without a dependable source of water, many of our customers became desperate and were forced to re-utilize their own wells, and in some instances, construct new groundwater wells. Some customers could not pay for both their groundwater pumping facilities and our undependable surface water. Since PG&E charged them to power their pumps for the year, whether or not they used their groundwater well, many of them had no other choice but to continue to use groundwater even when surface

water became available. Many others who could afford to utilize their wells and surface water became so used to no surface water being available, even when water was available for diversion, they had long since moved on to relying solely on groundwater.

19. Due to an undependable surface water source and subsequent loss of customer revenue, on January 3, 1991, District was forced to file an extension of time to complete construction and to put the water to beneficial use under Permit 10477 by December 31, 2000. This time, protests were submitted by CSPA and the California Department of Fish and Game ("DFG"). DFG opposed District's application for time extension unless the District installed fish screens at the points where Mokelumne River water flows were diverted by District pumps.

20. On August 16, 1991 State Water Board through its agent Katherine Mrowka issued a memorandum stating that the District had not historically been able to put water to full beneficial use. [NSJ-21]. This was a disingenuous statement. Myself, James Sorenson, and the Board of Directors of the District tirelessly sought opportunities to find a permanent water supply despite insurmountable obstacles and false promises by the State Water Board. Furthermore, despite the fact that the District only had a "temporary" permit, it diligently worked towards putting its "temporary" water to beneficial use.

21. The August 16th memorandum also stated that use even if Folsom South Canal were constructed and a canal was extended to the District, use of this supply could not be accomplished under Permit 10477 because the canal delivers water from sources outside of the Mokelumne River watershed under USBR permits. Thus, the sole source of water must come from Mokelumne River. Decision D-893 directed the District to look to USBR for water service contract and water delivery from the Folsom South Canal. However in this memo Mrowka stated that the sole source of water must come from Mokelumne. Such a contradictory statement is yet another instance where the State Water Board directed us to look to alternative sources for a permanent water supply and then pulled the rug out from under us. Based on this memorandum, State Water Board recommends that protests be accepted and matter be scheduled for hearing.

22. On June 30, 1992, the State Water Board held a hearing on the District's petition for extension of time. The State Water Board granted this extension subject to District, CSPA and DFG reaching an agreement for fish life protection or submission to board for further analysis and decision, before Mokelumne River water can be made available to District.

23. In late 1992, State Water Board held a hearing to determine what action should be taken by the State Water Board to protect fishery resources on the lower Mokelumne River. The hearing emphasized what flows were needed for the protection of fishery resources and the public trust, and matters of need, supply, and reallocation of Mokelumne River water. The hearing focused primarily on water rights held by EBMUD and to a lesser extent, water rights of WID and the District. [NSJ-43]. The District filed testimony during these hearings pleading with State Water Board to be granted a priority water right. However, the District was treated how it had always been treated, like an "orphan district."

24. In fact, James Sorenson wrote a letter to the State Water Board on January 21, 1997 pleading with the State Water Board to pay attention to the District's water crisis and requesting the State Water Board's attention and to be treated equitably. [NSJ-22]. The State Water Board responded that there were two activities that could affect water supply of District: (1) the 1992 hearing to review the water rights of EBMUD and FERC's initiation of similar review of EBMUD's hydro power licenses; and (2) Sacramento area water agencies are engaged in extensive effort to evaluate diversion and use of water from American River. [NSJ-23]. As discussed at length above, the 1992 Mokelumne River hearings left the District as it always had been like orphans. And based on its experience trying to utilize American River water, the District already knew that this was not a realistic option for water.

25. The last obstacle I would like to bring to your attention that further impacted the District's ability to utilize surface water was legislation enacted by Gray Davis in the 1990's which effectively withdrew annually tax revenues equal to 35% of property taxes received on 10% of District gross revenues from districts like North San Joaquin. This legislation, in conjunction with Proposition 13 and its drastic limitation on appreciation of property taxes, the District has been handicapped when trying to construct facilities to put its water to beneficial use.

26. The bottom line is that in my 40-year career with the North San Joaquin Water Conservation District I was involved in countless efforts to try to secure a permanent surface water source for our landowners to arrest the critical overdraft of our groundwater basin. However, despite our diligent efforts, at every turn we were faced with obstacle after obstacle that denied us a permanent reliable source of surface water both from the Mokelumne River and the American River. Along with the extensive efforts to gain a permanent supply, the District also aggressively pursued utilizing its temporary water supply under Permit 10477. Now that the District has passed its groundwater charge, I feel that there is clearly light at the end of that dark tunnel. That is why it is so imperative that the State Water Board grant the District's petition for extension of time, so that all of our hard work will not have been in vain.

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STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

WATER RIGHTS ORDER 2006-0018-DWR In the Matter of Permit 10477 (Application 12842) Regarding Diversion by NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT Source: Mokelumne River County: San Joaquin	**TESTIMONY OF FRED WEYBRET**

1. My name is Fred Weybret and I am on the Board of Directors for the NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT, a special district in San Joaquin County, California, hereinafter referred to as "District." I have been a director on the Board of the District for 31 years. I was first appointed on April 6, 1976.

2. In 1976, the landowners within the District were generally aware of the declining water table, but many were optimistic that the overdraft could be corrected with the arrival of American River water via the proposed Folsom South Canal (which we never obtained despite our best efforts). At this time, Ben Schaffer, a former District Director, and Bud Woolworth, former Board President, approached me to discuss the District's pumping facilities. They advised that in order to repair and extend the system in preparation of the intake of American River water, a bond issue would be required, and they asked for the Lodi-News Sentinel's support. At that time there was a vacancy on the board and I joined as a board member that year. Twenty years later, in June 1996, I was elected as board president, succeeding Arlen Van Gaalen.

3. Throughout my tenure on the board the District has acted diligently to put our surface water to beneficial use, despite the fact that we have been faced with several obstacles. For

example, under Governor Gray Davis, the District had its funds pre-empted by the State and it suffered a loss of almost 50% of its previous budget. The deterioration of our pumping facilities and pipeline, which were installed over 40 years ago, are in need of extensive repairs (last year we spent $80,000 out of our $225,000 budget on repairs alone). And the most difficult obstacle: the lack of a reliable surface water supply and the continuous interruptions in water service due to drought which have frustrated our farmers and forced them to utilize groundwater wells.

4. When the state awarded a firm water supply to East Bay Municipal Utility District ("EBMUD"), they granted us a right to surplus, wet year, claiming that the District would get a firm water supply from the American River once the Folsom South Canal was completed. This did not happen, despite our concerted efforts to procure American River water. As a consequence, during periodic years of drought, most notably between 1987-1992, the District was unable to supply any water. With no water available for six years, local farmers were forced to drill wells and install pumps to irrigate their farmland. Others moved on to drip irrigation systems. When water finally became available in 1993, many farmers, frustrated by the intermittent water supply and unable to pay PG&E standby charges on their groundwater pumps, chose to continue to exclusively pump groundwater.

5. Despite these obstacles, the Board has been committed in encouraging surface water use within the District. We held a series of public meetings, and have included information in our mailings to local growers telling them of the importance of using surface water and the long range consequences of continually overdrafting the underground aquifer. There have also been periodic articles in the Lodi News-Sentinal about the local water situation, and recently an extensive series on the subject. There have also been numerous stories on the City of Lodi's purchase of Woodbridge water and its concern for the declining water table.

6. The District has recently moved forward with a proposal to initiate a groundwater use charge. There has been reluctance on the part of the District to impose such a charge, in view of the fact that we did not have a reliable surface water supply, and could not guarantee delivery every year. However, with recent successful recharge experiments, the District believes that with adequate funds, the full wet year entitlement of 20,000 acre feet will be utilized to help

recharge the basin. There was opposition to the imposition of this charge from smaller growers and individual residents, but for the most part, the larger growers (who would be paying the lions's share of the charge) were enthusiastic supporters. All of the urban and municipal users, including the City of Lodi also supported the groundwater charge. They realize that replenishing the overdraft is going to be costly, but they also recognize the importance of recovering surplus water that would otherwise run out to the ocean, is a vital necessity for the long term preservation of the agricultural economy, and that unless they step up to the plate with a financial commitment, they cannot expect assistance from state bond funds or grants. The District has the authorization to impose the charge, after fully complying with Proposition 218 and providing landowners with the opportunity to file written protests. Only 17% of the landowners within our District lodged written protests, failing to meet the 50% plus one protest requirement to defeat the charge. This success indicates a majority support of the District's effort to make full use of our 20,000 acre feet, and the District believes that this influx of revenue will finally assist us in moving forward to supply much needed surface water to the landowners within the District.

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STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

WATER RIGHTS ORDER 2006-0018-DWR In the Matter of Permit 10477 (Application 12842) Regarding Diversion by NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT Source: Mokelumne River County: San Joaquin	**TESTIMONY OF JOHN FERREIRA**

1. My name is John Ferreira and I am on the Board of Directors for the NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT, a special district in San Joaquin County, California, hereinafter referred to as "District."

2. I have been a director on the Board of the District for three and a half years. I have lived in this District all of my life. My family has farmed in this area for 47 years and I have been personally farming on our ranch for the past 20 years.

3. I chose to serve on the board because I am committed to correcting our critically over drafted groundwater basin. If we do not act quickly to address this serious problem and move landowners into utilizing surface water, our community will suffer beyond measure.

4. As a farmer I know that a dependable, available source of water is critical to my operations. I understand that farmers in our area have been forced to use groundwater pumping facilities because surface water has not been available on a consistent basis. Farmers usually require water from March through October to irrigate their crops, and in the past there has simply been insufficient infrastructure in place to convey surface water to the landowners within the District. However, if surface water could be made available on a consistent, reliable basis, I

believe farmers would use it. That is why the District's is setting aside money in a "dual system" fund so that surface water would be utilized in wet years and groundwater in dry years.

5. While I have been on the Board a relatively short time in comparison to some of the Directors, I realized right away that we needed to do something to jump start our efforts to use surface water. I assisted in spearheading the Board and ultimately the community in supporting the imposition of a groundwater charge. This by no means was a popular decision. We had to hold two public hearings where more than 600 people came out to voice support and opposition for the groundwater charge.

6. In the end after successfully completing our Proposition 218 protest proceeding, our Board of Directors did the right thing and voted unanimously to levy the groundwater charge on all groundwater wells within our District.

7. The District's imposition of a groundwater charge has provided life blood back into our community. Revenues generated from this charge will allow us to do the following: (1) create the infrastructure necessary to convey surface water to our users; (2) allow us to apply for state and federal programs that would match our funds to take on projects to help correct our over drafted groundwater basin; and (3) provide incentives that would encourage to farmers put in "dual systems" so that all of the District's surface water may be put to beneficial use.

8. The benefits to using surface water over groundwater is that it sustains our community and benefits all of the consumers of our agricultural product, and 70% of the water goes back into recharging the groundwater basin. If we are stripped of our surface water rights and our groundwater basin continues to decline, I not only fear for the future of our community, but the thousands of people who rely on our food products to feed their families.

NSJ 8

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

WATER RIGHTS ORDER 2006-0018-DWR In the Matter of Permit 10477 (Application 12842) Regarding Diversion by NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT Source: Mokelumne River County: San Joaquin	**TESTIMONY OF LARRY METTLER**

1. My name is Larry Mettler and I am a farmer in the NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT, a special district in San Joaquin County, California, hereinafter referred to as "District." I have lived in the District for 62 years and my family has farmed in North San Joaquin County since before I was born. I currently own 250 acres of farmland and manage an additional 550 acres of farmland within the District's boundaries.

2. I have always used surface water to irrigate my farmland and my family has used surface water since the system was first put in place in 1958. I currently use surface water to irrigate 150 acres of my farmland out of the 250 acres that I own. The only reason that I stopped utilizing surface water to irrigate all of my acreage is because surface water was not always available. Due to the drought that occurred between 1987 and 1992, I was forced to rely on groundwater and utilized our ground water pumping facilities to irrigate my farmland. When water finally became available in 1993, I had not updated my surface water pumps and, at that point, had already converted during the dry years to a drip irrigation system that relied on groundwater.

3. If surface water became available on a consistent basis, I would absolutely utilize it on all of my farmland. Surface water is actually more cost effective than groundwater pumping because it requires less energy. To obtain groundwater, I must utilize a pump with greater horse power, which is more costly. If I pumped from a surface water supply, I would not have to use as much energy. Thus, from an economic standpoint surface water is the better choice. Additionally, due to the fact that our groundwater basin is critically overdrafted, it is just more responsible to use surface water when available.

4. I am an advocate for the use of surface water. I believe that if landowners and the District worked together to build infrastructure so that surface water could be effectively transported and utilized, a drip irrigation system could function very effectively using surface water as its water source.

5. Of course, a dependable surface water supply is vital to our farming operations. However, in my opinion, even an intermittent supply is sufficient. I would rather have an intermittent supply of surface water than no surface water at all. A dual system that utilized groundwater in dry years and surface water in wet years is a viable option, especially if the district provides incentives for land owners to convert to dual systems. As I understand it, the District will be setting aside funds from its groundwater charge to assist in converting to dual systems, and I for one will participate in such a program so I can use even more surface water than I already use.

6. The big picture is that for those of us who have the ability to utilize surface water in the District, it is our responsibility to do so. Not only would this help to recharge the overdrafted groundwater basin, but it would to free up groundwater to be used by those landowners within the District that do not have access to surface water.

7. That is why I supported the groundwater charge recently imposed by the District. The District simply cannot effectively improve its infrastructure and construct recharge projects to fully utilize the District's surface water without an influx of revenue. Although the ground water charge, does not provide all the revenue necessary to improve the District's pumping

facilities, it is a great start. This revenue will help fund more projects to help recharge the over drafted groundwater basin and benefit us all.

8. As a farmer the District's water rights are of great concern to me. I stand behind the District in its efforts to continue to put our surface water to use. It is absolutely vital for the continued survival of our area. The State Board must recognize this need and reconsider its denial of the District's Petition for Extension of Time.

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STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

WATER RIGHTS ORDER 2006-0018-DWR In the Matter of Permit 10477 (Application 12842) Regarding Diversion by NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT Source: Mokelumne River County: San Joaquin	**TESTIMONY OF JOE VALENTE**

1. My name is Joe Valente and I am appearing today on behalf of North San Joaquin Water Conservation District (District). I am wearing two hats today. First, I am the Vineyard and Orchard Manager for Kautz Farms a large landowner and grower in the District. Second, I have the pleasure of serving as the President of the San Joaquin Farm Bureau Federation (Farm Bureau).

2. I have been the Vineyard and Orchard Manager for Kautz Farms for 28 years. Kautz Farms is a unique Central Valley success story. Kautz Farms has been farming in the Central Valley for over 50 years. John Kautz, my boss, took over the farming operation when he was 23 years of age after his father passed away. At the time the family farm consisted of 23 acres of land. Today, Kautz Farms owns over 5,000 acres and has established two wineries - Bear Creek in Lodi and Iron Stone in Murphys.

3. Originally, Kautz Farms focused on growing diversified row crops, such as tomatoes, beans, onions, cucumbers, wheat, bell peppers and similar type crops. Kautz Farms has transitioned into growing cherries and wine grapes exclusively.

4. Kautz Farms owns approximately 2,000 acres within the District and 1,000 of those acres could be irrigated using surface water. Kautz Farms relied on surface water provided by the District for many years irrigating approximately 700 acres. However, after the six-year drought, which occurred between 1987 and 1992, Kautz Farms was forced to turn away from surface water usage and look to its groundwater wells and ultimately a drip irrigation system. We currently have four groundwater wells on our property along Pixley Slough where we took surface water. We have the capability to return to surface water with our existing pumping system with some modifications. We understand that as part of the new groundwater charge a fund will be established by the District to assist us with funding so we can hook back up to surface water.

5. Our groundwater pumps are metered by PG&E, and until recently, we paid both standby and user charges to PG& E (standby charges have since been removed for certain smaller horsepower pumps). We also utilize a drip irrigation system that has worked quite effectively over the years, but this system still continues to deplete the already critically overdrafted groundwater basin.

6. Kautz Farms is a firm believer in using surface water. We would have continued to use surface water to this day had it not been for the six-year drought. However, we are encouraged by the District's efforts to put their surface water to full beneficial use by imposing a groundwater charge and setting aside money in a "dual system" fund. We will fully participate in utilizing a dual system that would use surface water in wet years and groundwater in dry years.

7. Our position is we have used surface water in the past and, if a reliable surface water source is available, Kautz Farms would use it. We fully support the District as they propose to construct necessary infrastructure and improvements to encourage other landowners to utilize surface water as well. It would be a travesty if the District's water rights were stripped from them after such meaningful strides to put its surface water to beneficial use.

8. Now turning to my capacity as President of the Farm Bureau. The Farm Bureau represents over 6,000 members in San Joaquin County. Our members rely on surface water and ground water to grow the food necessary to feed our families in California and beyond.

9. To understand the significance of San Joaquin County agricultural production, the last report produced by the San Joaquin County Agricultural Commissioner estimated the gross value of San Joaquin County **agricultural production at $1.75 billion**. [NSJ-39] Highlights of the 2005 crop year include: (1) Significant increases occurred in Livestock and Poultry and Fruit and Nut Crops values; (2) Milk is the county's most valuable agricultural commodity again in 2005. Even though milk production increased, lower prices caused a net decrease in value of 3%; (3) The value of replacement dairy heifers was included in the agricultural report for the first time this year. This mostly accounts for the 125% increase in value for Cattle & Calves; (4) Wine grape acreage, yields, and prices were up in 2005, contributing to a 53% increase in total grape value from the previous year; (5) Cherries and other stone fruit crops suffered yield losses due to late spring rains and lack of adequate chill hours during the winter months; (6) The price of almonds rose more than 20% from the previous season, keeping almonds the third most valuable agricultural commodity in San Joaquin County.

10. San Joaquin County's Top 10 Crops include (1) Milk $314,565,000; (2) Grapes $289,744,000; (3) Almonds $166,580,000; (4) Tomatoes $103,551,000; (5) Walnuts $ 97,628,000; (6) Cherries $ 91,822,000; (7) Cattle and Calves $ 91,057,000; (8) Hay $ 69,569,000; (9) Ornamental Plants $ 61,945,000 (10) Asparagus $ 59,220,000 with all Other Crops reporting $ 403,432,000. While we do not yet have the results of the 2006 Crop Report, clearly a $1.75 billion economic engine is vital to San Joaquin County and something that must be preserved.

11. San Joaquin County is experiencing a severe overdraft in its groundwater basin. North San Joaquin Water Conservation District ("District") is making every effort to address this crisis by proposing to recharge the groundwater basin with its surface water supply from the Mokelumne River and encourage landowners to utilize surface water under the District's water right.

12. The agriculture community in this area is greatly aware of the critical overdraft conditions, and conservation measures have been implemented, but have not solved the overdrafting problem. The District's inability to fully utilize its surface water from the Mokelumne River is a direct result of its intermittent availability. Our landowners need a consistent source of water and the infrastructure necessary to provide that water to us on a consistent basis. Making sure water is available each year and that it will be provided early enough in the irrigation season is imperative.

13. In its efforts to put its surface water to full beneficial use, the District recently held a Proposition 218 protest proceeding in order to impose a groundwater charge. Initially, the Farm Bureau took a neutral position on the imposition of District's groundwater charge. The Farm Bureau provided information to its members on the proposed groundwater charge, in an effort to assist the District is educating the landowners in the District.

14. Since the groundwater charge has been imposed, the Farm Bureau acknowledges that the District requires an enhanced revenue stream in order to repair its monolithic pipeline and improve necessary infrastructure in order to enhance surface water delivery to our members within the District.

15. The bottom line is that percolation and direct recharge of irrigation water into the groundwater basin in a community benefit. Now that the District has a supplemental revenue source in the groundwater charge, it can make the needed improvements necessary to fully utilize its water. However, if the District's water rights are taken, the groundwater basin will continue to decline and the agricultural community and all those who benefit from it will suffer the consequences.

NSJ 10

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of: HEARING TO DETERMINE WHETHER TO RECONSIDER ORDER WR 2006-0018-DWR DENYING NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT'S PETITION FOR EXTENSION OF TIME (Application 12842)	**TESTIMONY OF KEVIN M. KAUFFMAN**

I am Kevin M. Kauffman, appearing today on behalf of North San Joaquin Water Conservation District ("North San Joaquin"). I have been the General Manager of Stockton East Water District ("Stockton East") since 1999. I am a civil engineer registered in the State of California.

Introduction

Stockton East is a sister agency of North San Joaquin. Our goals are compatible and consistent – to take actions to improve the condition of the Eastern San Joaquin County Groundwater Basin.

For over ten years Stockton East and other local agencies including North San Joaquin have been working together to complete large-scale projects utilizing local surface water supplies. These projects are complex, and have required federal and state legislation, federal and state environmental compliance, feasibility studies, pilot and demonstration project investigations and more. As a region, we have achieved many of our conjunctive management program objectives, and our well on our way to the completion of our project goals. However, achievements such as this take significant local, state, and federal support, which in turn require a lot of time.

Farmington Program

One of the most important programs taking place in San Joaquin County to conjunctively manage local water resources is the Farmington Program. This program was initially authorized by Congress in the Water Resources Development Act of 1996 (Public Law 104-303, §411) that authorized the Corps of Engineers to undertake Farmington Conjunctive Use Study, which was completed in 1997.

Based upon this study, Congress authorized $25 million for groundwater recharge and conjunctive use projects within San Joaquin County in the Water Resources Development Act of 1999 (Public Law 106-53).

Acting on this, and other information, Stockton East took a lead role working with the U.S. Army Corps of Engineers (Corps) to develop a conjunctive use management strategy for Eastern San Joaquin County. Members of the study management team and executive coordinating committee included Stockton East, the Corps, and North San Joaquin, as well as the Central San Joaquin Water Conservation District ("Central"), City of Stockton, San Joaquin County, and California Water Service Company. Program milestones included:

- 1996 – Corps authorized to study modifications to Farmington Dam for conjunctive use
- 1998 – Conjunctive Use Study finds that using Farmington Dam as a conveyance for groundwater recharge projects is the most cost effective alternative
- 1999 – Technical study of groundwater recharge techniques and locations began for the Farmington Program
- 2000 – Congress authorized Farmington Groundwater Recharge & Seasonal Habitat Program – no Federal appropriations were provided in 2000
- 2001 – Technical study completed and defined details of the Program
- 2002 – Federal and local cost-sharing agreement reached to start implementation of the Farmington Groundwater Recharge & Seasonal Habitat Program. First Federal funds provided to kick-off the Program.
- 2003 through 2005 – Federal appropriations provided for Farmington Program and investigations continued.

- 2006 and 2007 – No federal appropriations; focused on state and local funded projects of the Farmington Program

The description of the region that the program covers is generally bound by Jack Tone Road on the east, Highway 99 to the west, the Mokelumne River in the north and Temple Creek in the south. [NSJ-40]. The Study Report formulates a plan that includes a base project that makes use of existing or readily available winter-season water supplies with an average annual yield of 35,000 af/yr. Potential floodwater from the Stanislaus and Calaveras rivers is not included. The base project would recharge up to 25,000 af/yr in Stockton East and Central, and 10,000 af/yr in North San Joaquin. [NSJ-41].

The base project would include the modifications to existing detention basins and conveyance improvements to deliver surface water to recharge areas in the western portion of the study area between Highway 99 and Jack Tone Road. Some of the improvements would also support delivery of surface water in-lieu of groundwater pumping conveyance system. A total of 800 to 1200 acres, distributed in Stockton East, North San Joaquin and Central, will be acquired for field flooding (direct recharge) through purchase of title or easements in a phased program to recharge the excess surface water to establish a salinity intrusion barrier while providing seasonal waterfowl habitat.

Stockton East, as local sponsor, in cooperation with other local agencies including North San Joaquin, has completed tests on numerous potential recharge sites. Full site investigations under the Farmington Program have been completed on 13 sites over the Eastern San Joaquin Basin; three of which were located within the North San Joaquin (Kautz, Hammer, and Micke Grove). The Kautz site is designated probable as an in-lieu recharge location. The Hammer site has been leased and has been operated as a direct recharge facility. The Micke Grove site will be

planned for a combination of in-lieu and direct recharge on land that is currently serving nearly 600 acres of park and vineyard lands with groundwater. In September of 2006 the US Army Corps of Engineers and Stockton East completed a Draft Technical Memorandum for the Farmington Groundwater Recharge Program Preliminary Conceptual In-Lieu Recharge Potential for Micke Grove Park in North San Joaquin. [NSJ-30].

This Technical Memorandum identified water from the Mokelumne River available to North San Joaquin as the feasible water supply for the in-lieu recharge project, and the memorandum concluded: "NSJWCD could provide water in Pixley Slough from April through November in all years except drought years." The Technical Memorandum identified required diversion structures, the in-lieu recharge design layout and developed a cost summary. This project is supported by Stockton East, North San Joaquin, Central, the City of Lodi, Woodbridge Irrigation District and San Joaquin County. The next steps, designing and construction of full-scale in-lieu recharge facilities and executing a long-term performance test, are underway.

Eastern Water Alliance

When they began working on projects such as the Farmington Program, Stockton East, North San Joaquin, and Central recognized the need to work together to utilize reliable supplies to improve the condition of the groundwater basin. Because of differences in laws governing the three districts a need was identified for special legislation. The districts worked with Senator Machado to develop legislation that would expand the districts' authorization and allow them to work together on large-scale regional projects to utilize their collective water supplies.

In 2003 the state legislature adopted SB 833, in which the legislature found:

> (a) The problems associated with providing for the management of the Eastern San Joaquin County Groundwater Basin and the related provision of supplemental water

supplies are peculiar to that area and public agencies overlying that basin have joined together to form the Eastern Water Alliance Joint Powers Agency.

(b) Legislation is needed to supplement the existing authority of member public agencies to allow the Eastern Water Alliance Joint Powers Agency to exercise powers to coordinate efforts to replenish and manage that critically overdrafted basin.

(c) With additional powers granted by the enactment of the act adding this section, the Eastern Water Alliance Joint Powers Agency will be able to do, among other things, all of the following:

(1) Provide opportunity for economic development within San Joaquin County by securing reliable future water supplies.

(2) Protect the natural resources within its boundaries and restore and enhance the environment, including the long-term protection of the basin.

(3) Develop and adopt a master plan designed to balance the use and enhancement of the basin through conjunctive management.

(4) Prepare a joint groundwater management plan for the member public agencies.

(5) Secure new and protect existing surface water rights required by its member public agencies for the implementation of the master plan.

(6) Apply for and obtain financing to proceed with projects identified in the master plan.

(7) Provide assistance to, supervise the construction of, and manage the operation of, facilities identified in the master plan for the benefit of the property owners and residents of member public agencies.

(8) Develop and manage a groundwater bank in accordance with the master plan.

Even before the legislation was passed, the Alliance had its initial meeting and adopted a Joint Powers Agreement. Since that time the Alliance has been developing its master plan and identifying projects and project funding sources. The purpose of the Eastern Water Alliance is to develop and implement water supply projects that will assist in curing the critically overdrafted Eastern San Joaquin County groundwater basin. The 2003 Alliance legislation allows for the imposition of a plan implementation charge on landowners within its boundaries for the property

related services received from improved groundwater management and planning, and for improved groundwater levels and availability provided by the Eastern Water Alliance [NSJ-35]. The Eastern Water Alliance is in the process of developing a Conjunctive Use Master Plan (Master Plan) for the entire Eastern San Joaquin County groundwater basin and will implement a plan implementation charge while managing this Master Plan.