April 14

From: Carole A. Clum, 45638 South Fork Drive, Three Rivers, CA 93271

To: David Bryant, Project Planner, Tulare County Resource Management Agency (RMA), 5961 South Mooney Boulevard, Visalia, CA 93277

Subj: Comments on Tulare County General Plan 2030 Update Draft Environmental Impact Report (DEIR)

Encl: 1 Hydrogeologic Characterization of the Foothill Fractured Terrain for Assessing Water Supply Reliability
2 County of Tulare Impending Water Crisis Legislative Letter
3 Carole Clum's public comment to the Board of Supervisors concerning the Planned Community Zoning Amendment on September 25, 2007
4 California Department of Water Resources SWP Delivery Reliability Report of February 8, 2008
5 General Plan Background Report Table 10-4. Irrigation Districts in Tulare County, page 10-15
6 "California Salmon Population Collapses" from the Fresno Bee, January 30, 2008
7 "Delta Smelt's Numbers Decline" from the Fresno Bee, January 30, 2008
8 General Plan Background Report Table 10-1. California Water Supplies with Existing Facilities and Programs Thousands Acre Feet (taf), page 10-6
9 Table 4-4. General Plan Population Estimates by

Unincorporated Community and Table 4-5 Summary of Domestic Water Supply Conditions for Unincorporated Communities in Tulare County, from Draft EIR

10 Carole Clums Factchecking on Tables 4-4 and 4-5 in Draft EIR

11 California, Income Inequality Grew in California over the Past Two Decades

12 Public Policy Institute of California, California Counts, Population Trends and Profiles, "How Many Californians? A Review of Population Projections for the State, October 1999

My comments address population projections, income inequality, General Plan Framework Value Statements, air quality and water resources. My comments run to pages plus the twelve enclosures.

Carole A. Clum

Carole A. Clum

It is clear that the policies and implementation measures of Tulare County's General Plan Update jeopardize the health and welfare of the residents of Tulare County, the air quality, the water quality and supply, crop yield, agriculture's viability, open space, the existence of natural habitats, native species, and the Tulare Lake hydrologic region.

Tulare County does not exist in a vacuum. It is one of eight counties in the San Joaquin Valley. The air pollution we generate does not stop at our borders. Our depleted and contaminated aquifers extend into neighboring counties. Our failures affect the economy of the entire state of California. The greenhouse gases we generate imperil the earth.

The lack of impact fees on new development places a burden on our poor county to create infrastructure for new development when our existing roads, schools, police coverage, fire coverage, libraries, and social services are underfunded and inadequate. This creates a greater disparity between the rich and the poor and is fundamentally unfair. Unless development impact fees cover <u>all</u> the costs of new infrastructure, the existing residents are penalized.

To ease the growing disparity between low income and upper middle income residents, the County needs to encourage (with monetary incentives and/or lower impact fees) low income housing in the places where low income people work or provide clean convenient, inexpensive transit between places of work and residence for the poor and open libraries five or six days a week for these people so they can access books and computers. They would learn more and

they would get better paying jobs. For more information on growing income inequality, see the California statistics in the Report by the Economic Policy Institute and the Center on Budget and Policy Priorities, published April 8, 2008. See Enclosure 11.

The residents of Tulare County have the lowest per capita income in California. Three of General Plan Framework Value Statements, if applied, would help the poor residents of Tulare County:

- The beauty of the County and the health and safety of its residents will be protected and enhanced.
- The County will create and facilitate opportunities to improve the lives of all County residents.
- Every community will have the opportunity to prosper from economic growth.

I challenge the use of California Department of Finance (DOF) population projections to determine how many people will live in Tulare County in 2030, for the following reasons:

(1) The 20 year projections of population growth made in 1970 overstated growth by 6 million people over the next 20 year period.

(2) Different agencies predict widely varying numbers of people over 30 to 40 year time periods. Most predict fewer Californians than DOF projections. See Enclosure 12.

(3) Current agencies' predictions don't take into consideration that behavior will change significantly over decades, despite much historical evidence showing as immigrant women become better educated, they choose to have smaller families. The economic climate can change dramatically in unexpected ways, impacting migration patterns and rates and places of growth. Many variables are difficult if not impossible to assess.

(4) Metropolitan Water District of Southern California (MWD) has concluded that population projections are accurate for only about 10 years out.

(5) Developed countries in Europe and Japan have shrinking populations.

(6) "Interest is increasing in slowing or preventing growth in many parts of the state. Ballot measures in every election, somewhere in the state, are designed to control or manage growth. Recognition is also increasing that resources are finite and that growth should somehow be tied to resource availability." (from Managing Water: Avoiding Crisis in California by Dorothy Green, 2007). SB610 and SB221 of 2001 require large development show a reliable water supply for the next 20 years and that water supplies be in EIR's and urban management plans.

There is significant variation in population projections by the Census Bureau (CB), California Department of Finance (DOF), United States Bureau of Economic Analysis (BEA), UCLA Anderson Forecast (UCLA), and the Center for Continuing Study of the California Economy (CCSCE). Tulare County decision makers need to consider the level of plausible variation in population projections. See Enclosure 12. Planning and building infrastructure for the wrong population can be costly. The lowest population projections are for a 29% increase from the state's 1999 population for the year 2025 and the highest population projections are for a 64% increase from the state's 1999 population for the year 2025. Why is Tulare County projecting a 72% population increase for the year 2030?

According to the Public Policy Institute of California in October, 1999, "growth rates will be lower than in the past." Now that California is in a recession, there will be less domestic and internation migration to California because of fewer job opportunities. And, with the crackdown on illegal immigration at the border with Mexico and at the workplaces that employ illegal aliens, fewer Mexicans and Central Americans will migrate here for fear of spending time in jail and deportation.

To the Board of Supervisors and Planning Commission at Joint Hearing on February 26, 2008, Addressing General Plan Update Omissions

There are serious omissions in the Value Statements listed on page ES-6 of the Draft Environmental Impact Report of the Tulare County General Plan Update.

Clean air, clean water and sustainable water were top priorities of the citizens of Tulare County during all the public workshops and the Blueprint Process.

I have carefully read the Air Quality and Water Resources elements of the Goals and Policies Report of the Tulare County General Plan. The policies and implementation measures for air quality, water supply and water quality are weak, vague, and unenforceable.

We need clean air. This General Plan Update makes air quality worse. You know that.

A sixth value statement must be added to specifically, directly address air quality, water quality and water supply. And the policies and implementation measures must be made mandatory. Every mitigation must be mandatory and sufficient to offset the adverse impact.

Carole Clum
45638 S Fork Dr.
Three Rivers, CA 93271-9610

Carole Clum

Air Quality Element

The Air Quality Analysis in Appendix D of the Draft Environmental Impact Report consists of two pages of Mobile Emissions, On-Road Emissions for year 2007 and an estimate for year 2030 which predicts an increase of 71% for VMT of on-road mobile emissions. Where are the emissions numbers for off-road mobile vehicles like construction, industrial, commercial, recreational, residential and agriculture vehicles and power generation? There are no emission estimates for stationary sources of air pollution such as (1) industrial emissions, (2) residential emissions, (3) agricultural emissions from diesel engines, cows, pigs, (4) landfills, (5) power plants, and (6) oil and gas production. This is <u>inadequate</u>; There is not enough information to inform decision makers of the environmental consequences of this General Plan Update. There must be a complete, current inventory of all greenhouse gas sources, a total of all GHG emissions in 2008, and a realistic estimate of GHG emissions in 2030 if this General Plan Update is implemented to buildout. The County has failed to meet the requirements of Assembly Bill 32 and Executive Order 5-3-05.

AQ Key Terms Throughout the Air Quality element Implementation Measures must require Best Available Control Technology (BACT) and Best Available Retrofit Control Technology (BARCT).

AQ Existing Conditions Overviews Add to the end of this sentence "Inspite of these improvements the San Joaquin Valley is still identified as having some of the

worst air quality in the nation" and it will get worse because the County predicts in its Air Quality Analysis that VMT by mobile emissions of on-road vehicles will increase by 71% by 2030 because of new land use policies.

AQ Existing Conditions Overview — The largest contributors to ROG are dairies, farming operations, managed burning and disposal. Be sure to mention this in your overview.

AQ Key Terms Global Warming — Contrary to your implication, global warming is not just a natural cyclical cycle, it has man made causes. The earth's surface has warmed 1.5 °F in the last century and is predicted to speed up. Scientists agree the future is grim due to global warming.

Greenhouse Gases — Greenhouse gases (GHG) contribute to global warming. Humans create more and more greenhouse gases every year. We must by law reduce greenhouse gases to 1990 levels by 2020. Attorney General Jerry Brown has stated that the General Plan EIR must adequately analyze the adverse effects of implementation of the General Plan Update on air quality and climate change and adopt feasible mitigation measures to minimize the adverse effects of implementation of the General Plan Update on climate change and air quality.

AQ Existing Conditions Overview — According to a recent report "Health in the Heartland: The Crisis Continues", the age-adjusted rate for avoidable hospitalizations in Tulare County was about 20% higher than the statewide average of California. Diagnoses related to hospitalizations included:

asthma, chronic obstructive pulmonary disease, and congestive heart failure. Poor air quality causes and exacerbates all of these diseases. Poor air quality contributes to cancer and early deaths. It poses one of the greatest threats to public health and is particularly burdensome to children, the elderly, and those with lower incomes. Tulare County has the lowest per capita income in California. Environmental impacts of air pollutants include climate change, smog, acid rain, and ozone depletion.

Insert on page 9.4 after long paragraph on global climate change due to greenhouse gases, just after list of attainment status:

The County has failed to adopt a Greenhouse Gas Emissions Reduction Plan as required by the California Global Warming Solutions Act (AB 32). This plan must include:

- An inventory of all known, or reasonably discoverable, sources of GHG that currently exist in the County
- A baseline inventory of the GHG currently being emitted by the County from all source categories in the inventory
- An inventory of the GHG emitted in the County in 1990 from all source categories in the inventory
- A projected inventory of GHG that can reasonably be expected to be emitted in the year 2020 due to the County's discretionary land use decisions pursuant to the General Plan Update, as well as new GHG emitted by the County's internal government operations
- A target for the reduction of those sources of emissions reasonably attributable to the County's discretionary land use decisions and the County's internal government operations, and feasible GHG emission reduction measures whose purpose shall be to meet

this reduction target by regulating those sources of GHG emissions attributable to the County's discretionary land use decisions and the County's internal government operations.

The following GHG targets have been established by Executive Order S-3-05 by California Governor Arnold Schwarzenegger on June 2005:

by 2010, reduce GHG emissions to 2000 levels
by 2020, reduce GHG emissions to 1990 levels
by 2050, reduce GHG emissions to 20% below 1990 levels

Global Climate Change effects include:

sea level rise
extreme heat waves
less precipitation
earlier snowmelt
increased flooding in Spring
average temperature increases
reduced air quality
extreme meteorological events (flooding, hurricanes, high winds) and sea level rises can displace people, exacerbate wildfires, damage property and agriculture, cause stress on levees, storm wave run up, saltwater intrusion into groundwater and coastal erosion
crop reductions due to heat and larger population of pests
heat induced stress and health related problems (e.g. heat rash, heat stroke, asthma, malaria, dengue fever, yellow fever and encephalitis)
increased demand for water by humans and agriculture due

to higher evaporation rate and heat stress
decreased potable water supply

Attorney General Jerry Brown has said, "We cannot allow one more molecule of greenhouse gas be produced in California." Tulare County is required to reduce its greenhouse gases substantially.

The San Joaquin Valley Air Pollution Control District (SJVAPCD), of which Tulare County is a part, is currently designated as extreme non-attainment for federal and state ozone standards and serious non-attainment for PM_{10} standards at the federal level and non-attainment at the state level. As a result, a series of resolutions have been developed for the SJVAPCD to achieve attainment.

Resolution 2002-0157 requires Tulare County to commit to implementing the Reasonably Available Control Measures (RACMs):

- Increasing transit service to the unincorporated communities of Woodville, Poplar, and Cotton Center
- Purchase of three new buses and installation of additional bicycle racks on buses
- Public outreach
- Providing preferential parking for carpools and van pools
- Removing on-street parking and providing bus pull outs in curbs to improve traffic flow
- Supporting purchase of hybrid vehicles for the County fleet
- Programming $13,264,000 of highway widening projects
- and most importantly, mandating that the General Plan Update implement land use policies supporting public transit and

vehicle trip reduction.

This means no New Towns in remote regions of Tulare County. 95% of all new development must be inside existing city, town, and hamlet development boundaries.

Resolution 2004-067, adopted by the Tulare County Board of Supervisors in 2004, contains additional RACMs as summarized below:

- The development and implementation of recommended procedures, thresholds, and policies related to land use projects to help achieve air quality goals;
- Encouraging land use patterns which support public transit and alternate modes of transportation;
- Exploring concepts of Livable Communities as they address housing incentives and transportation;
- Consideration of incentives to encourage development in unincorporated communities that are sensitive to air quality concerns; and
- Exploring ways to enhance van/carpool incentives, alternate work schedules, and other Transportation Demand Management strategies.

There has been no evaluation of the current efficacy of these RACM programs which have been in place since 2002 and 2004. These programs have not worked. Make them mandatory. "Exploring", "considering", "supporting" and "encouraging" do not work.

Resolution 2002-0812, adopted by the Board of Supervisors in 2002,

Contains Best Available Control Measures (BACMs) to be implemented in order to reduce PM 10 emissions in the County by:

- Paving or stabilizing of unpaved roads and alleys;
- Paving, vegetating, chemically stabilizing unpaved access points onto paved roads;
- Curbing, paving, or stabilizing shoulders of paved roads;
- Frequent routine sweeping or cleaning of paved roads;
- Intensive street cleaning requirements for industrial paved roads and streets providing access to industrial/construction sites; and
- Debris removal after wind and rain run off when blocking roadways

There is not one mention of all the dust raised on unpaved roads, dairy operations or farms. Why not?

The EPA announced tougher air standards for ozone (75 parts per million, 8 hours ozone) in March 2008.

Here are my recommendations for modification:

on page 9-4, left column, last paragraph, after first sentence add the following: "The County will provide training for contractors, architects, building professionals and building owners. The County will provide free technical assistance. The County will evaluate the feasibility of carbon neutrality in all new construction."

on page 9-4, right column, after urban development boundaries or corridors, <u>mandate</u>

smart growth and healthy community principles, require energy efficiency.... construction and renovation, and mandate efficiency in transportation.

on page 9-4, give a new title to State Perspective for 9.1
"Statewide Greenhouse Gas Reduction Plan"
The County shall reduce GHG as required by Assembly Bill 32 and adopt all feasible mitigation measures. The County shall reduce all other air pollutants by all feasible mitigation measures. Targets will be set and met.

AQ-1.3 Cumulative Air Quality Impacts — The County shall require developments to be located, designed, and constructed almost entirely (95%) within urban and hamlet development boundaries in order to reduce cumulative air quality impacts. Developers shall be required to build to LEED-silver standards in order to reduce air emissions and enhance rather than harm the environment. The County must follow CEC energy efficiency standards that apply to newly constructed buildings and additions to and alterations to existing buildings, better than Title 24 standards, if feasible.

AQ-1.5 CEQA Compliance — Developers shall be required to completely mitigate air pollution including GHG, associated with the project.

Implementation Measure.

Developers can pay a mitigation fee to their air district to be used to fund off-site emission reduction projects.

AQ-1.6 Purchase of Low Emission/Alternative Vehicles — The County shall MANDATE all departments to replace existing vehicles with low emission/alternative fuel vehicles when the old vehicles wear out.

AQ-1.7 Support Statewide Global Warming Solutions

The County shall monitor and support the efforts of the CARB, under AB32, to formulate all mitigation strategies, that may be implemented by local government, and further require the County to ultimately mandate any such strategies once they become available. This policy must have an Implementation Measure.

AQ-1.8 Water Use Efficiency

The County shall require the Best Available Technology for increasing water efficiency of water transport and reduction of water use in all new development and redevelopment which would reduce GHG. Approximately 19% of all electricity, 30% of all natural gas, and 88 million gallons of diesel fuel are used to convey, treat, distribute, and use water and wastewater.

Implementation Measure

Use both potable and non-potable water to the maximum extent possible; low flow appliances (i.e., toilets, dishwashers, showerheads, washing machines, etc.), automatic shut off valves for sinks in restrooms, drought resistant landscaping; "Save Water" signs near faucets.

The County should mandate no new water demand and provide incentives for water neutral development.

AQ-2.2 Indirect Source Review

The County shall require all development projects to mitigate air quality impacts associated with the project. The County shall work with SJVAPCD to determine mitigations... Include the following mitigation measures:

- provide walkable shopping into development plans
- provide a bus stop
- provide park and ride location.

A good Implementation Measure would be:

Developers must pay into a mitigation fund to offset the cumulative air quality impacts of their development.

AQ-2.3 Transportation and Air Quality

When developing the regional transportation system, the County shall work with TCAG to comprehensively study and act on methods of transportation which will contribute to a reduction in air pollution and greenhouse gases in Tulare County. Add to possibilities:
"Provide many paved, convenient, and spacious park and ride locations."
There are only two park and ride locations in Tulare County.
"Light Rail between cities in County."

AQ-2.4 Transportation Management Associations

The County shall require commercial, retail, and residential developments to participate in ...

AQ-2.5 Ridesharing

The County shall continue to encourage ridesharing programs, such as employer-based rideshare by offering incentives.

Implementation Measure

The County shall provide rebates, lower taxes and a fine if they don't participate.

AQ-3 Land Use/ Design

To improve air quality and minimize impacts to human health ...
Where are the policies to improve air quality and minimize impacts to human health? Policies that include wording "shall encourage", "shall identify", "shall promote" do NOT ensure air quality or minimize impacts to human health. This is shamefully inadequate and does NOT fulfill CEQA's requirement that local government protect the environment.

AQ-3.1 Location of Support Services

In order to make this policy work the County needs an Implementation Measure that allows it to happen - providing a grant, a tax break, a free location, or a low interest loan for a small business.

AQ-3.2 Infill Near Employment

Smart Land Use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high density residential/commercial development along transit corridors. These strategies reduce vehicle trips and improve air quality.

Implementation Measure.

Lower impact fees shall be levied on infill development with the lowest fees going to mixed use buildings.

AQ-3.3 Street Design

The County shall require street design that provides an environment which encourages transit use, biking and walking, specifically, a small block grid street system.

AQ-3.4 Landscap

The County shall require the use of ecologically based design principles ... landscaped medians, planting many California native shade trees, and landscaping within the development with California native plants, mulch, and drip irrigation.

AQ-3.5 Alternative Energy Design

The County shall require all new development ... green building practices to LEED-silver standards ... water systems; and the highest R-value insulation. Requiring green building has a positive effect on air quality and greatly reduces energy consumption which reduces greenhouse gases and global warming.

AQ-4.1 Air Pollution Control Technology

... These measures shall be applied to all new development approvals and permit modifications.

AQ-4.2 Dust Suppression Measures

... Techniques shall but are not limited to, the following:

- Suspension of grading activities during wind periods greater than 15 miles per hour
- Paved roads in all new projects
- Dust suppression shall be required in agriculture and dairy operations

AQ-4.5 Appliance Energy Efficiency Standards

New buildings shall contain the most energy efficient appliances (i.e. washers, dryers, refrigerators, stoves, water heaters, heating systems). The Implementation Measure shall provide incentives for old construction to convert to the most energy efficient appliances.

AQ-4.7 Cement Manufacturing Reduction of Energy Use and Emissions

The County shall require cost effective reductions to reduce energy consumption and to lower carbon dioxide emissions in the cement industry.

The Implementation Measure shall set a target emission reduction percentage and levy a fine for non-compliance.

AQ-4.8 Enteric Fermentation Reduction

Cattle emit methane from digestive processes. Manure emits methane. Reduce methane emissions, a potent greenhouse gas.

Implementation Measures.

- Change cattle feed
- Capture methane from manure lagoons

AQ-4.9 Solar Initiative

The County shall require 100% of new development to install solar hot water heaters to meet LEED-silver building standards to offset increasing demand for natural gas, propane, and electricity by 2010.

Implementation Measure.

Provide incentives like lower impact fees or rebates.

AQ-4.10 Methane Capture

The County shall require landfills, wastewater treatment plants, and confined animal facilities to capture methane and, if possible, use it as an energy source to clean nitrate contaminated groundwater or just to generate electricity.

AQ-4.11 Urban and Suburban Forestry

Trees must be planted to the maximum extent possible around all new development. Trees near structures act as insulators from weather, thereby decreasing energy requirements. Trees also store carbon and reduce GHG.

AQ-4.12 Afforestation/ Reforestation Projects

Reforestation projects focus on restoring native tree cover on lands that were previously forested and are now covered with other vegetative types. Trees store carbon.

Implementation Measure.

Clustering residential development to preserve forest/woodland resources, increasing housing density, preserving and restoring open space, replanting trees.

AQ-4.13 Agriculture and Open Space Protection

The County will limit development to very low density on sensitive lands, while increasing density of infill sites. The County will restrict land divisions in hazard areas (in foothills and mountains where there is wildfire risk and in low lands where there is flood risk). The

County shall conserve open space and habitats for endangered and threatened species and wildlife corridors like the blue oak woodlands in the foothills. The larger the open space and agricultural land, the greater the carbon sequestration.

AQ-4.14 Energy Audits

The County shall require homeowners and builders provide prospective buyers with an audit scoring of the home's energy efficiency. Homeowners selling their older homes must supply the previous 12 months utility bills to prospective buyers. The energystar.gov site estimates sealing air leaks and adding insulation, for instance, can reduce a homes energy costs by 10%. Less energy used means less air pollution and less GHG.

-4.15 Tiered Impact Fees

Impact fees for new homes and businesses must be tiered according to the distance from large cities (Visalia, Porterville, Tulare) with public transit, services, jobs, shopping, and entertainment. The lowest impact fee should be for development which is infill. The highest impact fee should be levied for the most distant development (sprawl) which creates greater Vehicle Miles Travelled (VMT) during construction and occupation.

Impact fees should also be based on the size of the home. Larger homes require more energy to heat and air condition, longer to build (creating more VMTs), have more electric gadgets which lead to larger carbon dioxide emissions which are the main culprits in global warming. For instance, a 2000 square foot house should have a much lower impact fee than a 4000 square foot house which consumed more construction materials which were manufactured

and delivered and took longer to build, generating more VMTs and using more energy in the manufacturing process.

AQ-4.16 Transportation Refrigeration Units (TRU), Off Road Electrification

The County will mandate strategies to reduce emissions from TRUs, increase off road electrification.

Implementation Measure

In projects where TRUs access the site, the County shall implement measures to reduce emissions, such as, install electrificati in applicable projects (i.e., truck stops, warehouses, etc.)

AQ-4.17 Green Building Initiative

The County shall implement the Green Building Executive Order, S-20-04 (CA 2004) which sets a goal of reducing energy use in publi and private buildings by 20 percent by the year 2015, as compared to 2003 levels.

Implementation Measure

A project could increase its energy efficiency percent beyond Title 24 requirements. In addition, the project could implemen other green building design (i.e., natural daylighting and on site renewable electricity generation.)

AQ-4.18 Greenhouse Gas Emissions Reduction Plan

The County shall develop a Greenhouse Gas Emissions Reduction Plan that identifies greenhouse gas emissions within the County as well as ways to reduce those emissions.

Implementation Measure

- Inventory all known or reasonably discoverable sources of GHG in the County;
- Inventory the GHG level in 1990, the current level, and that projected for the year 2020; and

- Set a target for the reduction of emissions attributable to the County's discretionary land use decisions, water use and efficiency, transportation plans, and its own internal government operations.

Air Quality

9.6 Implementation Measures

Implementation 1. ... The County shall build a sufficient number of park and ride lots.

Implementation 3. The County shall provide financial or other incentives to cities and communities in the County...

Implementation 4. ... and require the preparation of an EIR for all development because development produces GHG and other air pollution.

Implementation 5. ... SJVAPCD shall develop standard mandatory methods for determining and mitigating project, zoning changes, and transportation planning air quality impacts.

Implementation 10. The County shall provide benefits that employers can offer to employees to commute to work by other methods than one person per car.

Implementation 12. The County shall require infill development first and reward it with financial incentives like lower impact fees.

Implementation 13. The County shall mandate LEED-silver and LEED-ND certification in all new construction.

Implementation 14. The County shall work with TCAG in refining and maintaining a current set of RACM and BACM that shall be mandated in reviewing and conditioning all projects. All projects produce GHG and air pollution.

Water Resources General Comments

In Appendix C of the Background Report, the Keller-Wegley report, "Water Resources Update General Plan County of Tulare" (overview of our County's water supply and quality), lays out widespread groundwater overdrafting in all four watersheds, serious groundwater contamination in many areas (salts, nitrates, arsenic, radon, DBCP, dry cleaning solvents, hydrogen sulfide, methane, natural gas, herbicides, pesticides, and fertilizers), the great expense of removing these contaminants, and lastly, the likely direct and indirect loss of a substantial portion of Friant/Kern canal water in the near future due to the judicial decision to restore the habitat of the San Joaquin River for the Chinook salmon. (Since the delta smelt and Chinook salmon populations both crashed in the fall of 2007, further reductions of water can be expected from the Sacramento Delta and the Friant/Kern canal.)

The Keller-Wegley report does not support a 72% population growth by 2030. The conclusions of the Keller-Wegley report, "a major document" commissioned by the County, were not heeded by the Tulare County Board of Supervisors.

Keller and Wegley concluded that in the Deer Creek/White River watershed there is an uncertainty of the availability of water supply, heavy reliance on imported water from the Central Valley Project (CVP) which is absolutely necessary for agriculture; all aquifers exceed arsenic parameters; continued research is needed to determine if an affordable method can be developed to reduce arsenic in water; there is a lack of capability of groundwater recharge on a district wide basis which

will not sustain agriculture or community water systems; and the results of litigation are unknown.

Another problem is no state bond money was made available to Tulare County Integrated Regional Water Management Plan. "The absence of any infusion of state bond money related to water resources in the county will significantly curtail both planning and implementation efforts as the County strives to deal with the demands imposed by increasing population on the available water resources."

Another hurdle is water quality. Standards are being raised on water quality in agriculture, industry, and municipal water supplies. The 20 year agricultural waiver for the Central Valley has been terminated and replaced with a short term waiver. Individuals with both agricultural discharges and stormwater discharges from agricultural lands and confined animal facilities may have trouble surviving the significant modifications proposed to the waiver program. "Water quality sampling, testing and reporting are now all required at identified points on waterways within the County. Current participation levels do not include all potential dischargers and the question remains whether or not the waiver format will survive into the future." There are compliance pitfalls and expensive testing and reporting requirements. There is a trend in California law toward increased testing and reporting.

Legislative and regulatory requirements are also tending to dictate decreasing quantities of allowable contaminants and increased testing and

Reporting requirements in municipal and industrial water. "Compliance brings increased costs related to construction of [contaminant] removal facilities, operation of these facilities, and for compensation for trained and licensed operators qualified to oversee the operations of such removal facilities." This applies to arsenic and DBCP removal. Who will pay for this? The General Plan Update does not say. Dennis Keller's warning: "The planning efforts of the County should recognize the water quality implications related to the parameters noted above [arsenic and DBCP] and the nitrate parameter in planning for the maintenance of an expansion of cities and unincorporated communities which are the topic of this General Plan." In other words, more people and more industry means lower water quality while tightening standards for water quality means greater expense in cleaning drinking water. This will be the result of the General Plan.

As to water quantity requirements, local planning agencies are required to obtain proof of availability of an adequate water supply for any subdivisions which are proposed in excess of 500 homes (SB 221). Keller and Wegley gently suggest all levels of development should pass the water proof of adequate availability test.

In the San Joaquin River restoration case, NRDC v. Rodgers (concerning endangered species Chinook salmon), water deliveries from the Friant/Kern canal to Tulary County will most likely be reduced. A settlement has been reached but a federal law must be passed. Water deliveries will be reduced in all but above-normal years of rainfall. "Impacts on lands within the County will still be experienced, even in above normal years, as the allocations to the

San Joaquin River will result in the reduction in surplus water deliveries to those entities located in the County who traditionally contract for and take delivery of such surplus supplies."

This information should be used to inform decision makers when they make land use planning decisions. From a planning perspective, the Board of Supervisors should understand that "a judgment bringing rise to release of water down the San Joaquin River for anadromous fisheries restoration purpose could bring about a reduction in an average of 450,000 acre feet, plus the elimination of surplus water deliveries to temporary contractors located in the County". This "could move further in an adverse direction with respect to impact over time, if the decision is made by the court to include adaptive management provisions in the restoration program. Such action could eventually require more water to be released for restoration purposes than the initial" decision. This is the worst scenario. Nevertheless, it could reasonably happen and must be planned for. There was an "unprecedented collapse of Chinook salmon" last fall (2007). See Enclosure 6.

The exact outcome of NRDC v. Rodgers is not known. "The potential for the decision to impact development within given population concentration (community) and potentially to completely undermine the existing basis for Tulare County population, allocations and disposal," individual communities most at risk if an adverse ruling prevails are those communities that use the most Friant/Kern canal water. "It is not possible at the current time to determine the ripple effect which such an adverse opinion may have on communities not directly impacted by an adverse decision."

Nowhere in the General Plan Update Goals and Policies Report Water Resources Element, Background Report or DEIR is there mention of the threatened species delta smelt and the judicial decision NRDC v. Kempthorne which has resulted in a ruling in 2007 which imposed tighter pumping limits in the Sacramento Delta in order to leave more water in the delta for protection of the delta smelt and the whole degraded ecosystem. Judge Wanger's decision could cut irrigation deliveries south of the delta by between 20-30% annually. To see which irrigation districts will be affected see Enclosure 5. Last year 2007 there was a "precipitous decline in delta smelt" See Enclosure 7 which will most likely lead to further reductions in irrigation deliveries to Tulare County.

Nowhere in the Water Resources Element, Background Report or DEIR is there mention of the reasonably foreseeable adverse impacts of Global Climate Change on water supply, water quality, and groundwater recharge. Less precipitation means less surface water to recharge groundwater. Less surface water means less water for drinking, for crop irrigation and for blending with contaminated groundwater to achieve safe drinking water standards. We are already seriously overdrafting groundwater. Rising temperatures mean more evaporation. If our population stayed at the current level, by 2030 we would have to practice stringent water conservation, water efficiency, water reuse, water recycling, and rain water harvesting to support our current population.

Because of Global Climate Change water managers will no longer be able to rely on deep snowpack in the Sierras or late snowmelt. We must

capture rain where it falls. Trees capture rainwater, filter and clean huge quantities of rainwater through their massive root systems, and recharge the groundwater system. There is no plan to reforest our cities and hamlets and cleared land.

Nowhere in the Water Resources Element, Background Report, or DEIR is there mention of the low 2007 snow pack level in the Sierra Nevadas or that if we have another dry winter in 2008, MWD would have to reduce supplies of water to local communities.

The California Global Warming Solutions Act of 2006 and California Executive Order S-3-05 of 2005 require all cities and counties in California to reduce greenhouse gas emissions substantially. The Water Resources element does not acknowledge or respond to these laws in its goals, policies, or implementation measures.

The Attorney General of California has issued a list of Global Warming Mitigation Measures. They are mandatory, not discretionary. See the next page.

Water Conservation and Efficiency

- Design and implement a comprehensive water conservation strategy. The strategy may include many of the specific items that follow, plus other innovative measures that are appropriate for the location.
- Require water efficient landscapes.[29] Adopt a strong landscape ordinance with water budgets to assure efficient landscape design, installation, and maintenance in new construction.
- Encourage the use of reclaimed water for landscape irrigation in new developments and on public property. Provide necessary infrastructure to deliver and use reclaimed water.
- Require water efficient design for buildings. This may include strengthening local building codes for new construction and implementing a program to renovate existing buildings to require a higher level of water efficiency.
- Adopt a retrofit ordinance that will require installation of water-efficient fixtures upon the sale of homes.[30]
- Adopt and enforce restrictions on watering methods (*e.g.*, prohibiting systems that apply water to non-vegetated surfaces) and controls on runoff.
- Require water efficiency training and certification for irrigation designers, installers and managers.
- Provide individualized water audits for large water users to identify conservation opportunities. Offer financial incentives for adoption of identified efficiency measures.
- Provide water audits for large landscape accounts. Offer financial incentives for efficient irrigation controls and other efficiency measures.
- Fund incentives and technical assistance for water efficiency.
- Adopt standards that prescribe the maximum allowable effective impervious area for all new development and redevelopment projects. Require preservation of the existing hydrologic character of developed sites to manage storm water and protect the environment. (Retaining storm water runoff onsite can drastically reduce the need for energy-intensive imported water at the site.)
- Adopt conservation pricing to encourage efficient water use.[31]

The Board of Supervisors seems to have forgotten the letter of "impending water crisis" sent to Assemblyman Bill Maze on September 25, 2007. See Enclosure (2). The 20th century was the wettest century in the last 1000 years, according to tree rings that go back over 2000 years. We can't assume we'll get lucky again this century. We need to prepare for a drought, possibly a disastrously long drought. Instead, this General Plan Update assumes an increased supply of water from the Central Valley Project, State Water Project, groundwater, and from unnamed recycling facilities currently under construction. See Enclosure 5, (Background Report Table 10-1.) This is a "blue sky" prediction, essentially imbecilic. These predictions do not coincide with realities on the ground.

In March 2008 scientists announced they had found high concentrations of DDT in two High Sierra lakes in Sequoia National Park, despite the fact that DDT was banned from use in agriculture in the U.S. 36 years ago. Widespread contamination of lakes is suspected.

Dr. Karl Longley of Fresno State and founding member of the "Drinking Water Group," conducted a GAMA study of domestic well water quality in Tulare County in 2006. 181 samples of well water were drawn from valley and foothill wells. 41% of the wells were contaminated with unsafe levels of nitrates, 33% with total coliform bacteria, 8% with fecal coliform, and 13% of the wells were contaminated with both nitrates and total coliform bacteria. This is not a healthy climate for growth. Tulare County must concentrate on cleaning contaminated water

for its vulnerable residents and stopping the contamination of groundwater by septic systems, agriculture, dairies, and waste water treatment plants.

Comments by Carole Clum to the Board of Supervisors at the Hearing on Draft General Plan Update, Feb. 26, 2008

It is impossible to assess and mitigate the impact of new development on water resources when the decision makers do not have a complete, accurate, current description of the existing environment. It is only against this baseline that intelligent decision making can be made. The DEIR analysis of water supply and water quality is fundamentally flawed because:

- Keller-Wegley Report, a major document used to assess water supply and water quality, is incomplete, missing vital figures and community maps assessing adverse impacts on many unincorporated communities due to loss of water from the Friant-Kern canal. Nevertheless, Dennis Keller, notes the uncertainty of the outcome of the NRDC v. Rodgers case concerning the restoration of the San Joaquin River, depending on the successful rebound of the chinook salmon,

- No consideration of the delta smelt decision to restore the Sacramento delta and limit water exported to Tulare County,

- No consideration of Global Climate Change and scientists' consensus that Tulare County will receive increasingly less precipitation and less snowpack and will experience ever warmer average temperatures which will adversely impact water supply, groundwater overdrafting and groundwater contamination and recharge.

- Absolutely no consideration of serious groundwater overdrafting now in Tulare County,

- Inadequate and inaccurate data in Table 4-5, page 4-107 of the DEIR, which purports to show the ability of 21 unincorporated communities to meet population growth demands of the General Plan Update buildout to 2030, See Enclosures 9 and 10

- Most of the water resources data was collected in 2003 or earlier. This DEIR was published in 2008,

- No consideration of the significant adverse impact on hydrology of Global Climate Change as echoed in the State Water Project Delivery Reliability Report of Jan. 22, 2008,

- No consideration of the expense of improving municipal water supply infrastructure and wastewater treatment facilities to accommodate 72% population growth.

- Page 4-130 of the DEIR states, "The majority of domestic water purveyors in unincorporated areas of the County would continue to be dependent upon groundwater to meet their water needs. Until comprehensive assessments of groundwater and groundwater management efforts occur, it is not possible to

conclude that the County's groundwater resources would be capable of meeting future water demands resulting from implementation of the General Plan Update.

- There is widespread contamination of groundwater by nitrates, arsenic, DBCP, radon, etc. Until county-wide, comprehensive groundwater quality monitoring occurs, there is no way to determine if the population can grow by 72%.

- No consideration of the expense of removing contaminants from groundwater and who will pay. Purchasing filtration systems to remove contamination from water is expensive. Maintaining filtration systems is expensive and disposing of the concentrated contaminant (now officially hazardous waste) is extremely expensive. Small municipal water systems cannot afford the expense. This is especially true of disadvantaged communities.

Public Comments by Carole Clum to the Tulare County Water Commission
February 25, 2008

In the past I have commented on water supply. Now I'm addressing water quality.

In the Environmental Impact Report document of the General Plan Update under Air Pollution Control on pages 4-54 through 4-57 are the following paraphrased words: In order to improve air quality by reducing PM-10, PM 2.5 and ROGs (reactive organic gases), the County will require all future dairies and feedlot development projects to adhere to new policies AQ- 4.6 and AQ-4.7.

AQ- 4.6 allows spreading dry manure on nutrient areas when the wind is less than 10 mph. What are these nutrient areas? On what crops can this dry manure be spread?

AQ- 4.7 allows manure water to be either injected subsurface or placed on the surface in thin layers, blending such manure water with irrigation water at a ratio in compliance with a nutrient management plan that shall be required for each dairy and feedlot. In other words, to be determined in the future, on a case by case basis.

Now I ask you, how is injecting manure water into the soil going to be good for groundwater? What is the mitigation for pumping manure water into the ground? How is watering down manure water and spreading it thinly going to halt the evaporation of the liquids and dispersion of solids into the air via the wind and discing?

According to the Environmental Impact Report, the implementation of the above dairy and feedlot policies would ensure that the General Plan Update would not conflict with applicable air quality plans and that this impact would be less-than-significant.

These dairy and feedlot policies conflict directly with the County's following goals:

- Protecting and enhancing the health and safety of the County's residents, page A-1 General Plan Framework in the Goals and Policies Report
- Protecting the quality of groundwater resources, page 11.3 in the Water Quality section of the Goals and Policies Report.

There are at least 300 dairies in Tulare County and 60-70 feedlots.

Vast quantities of cow manure laden with antibiotic resistant bacteria and nitrates being pumped into and spread on the ground is a huge threat to public health.

In the Water Quality Section on page 11-4 in the Goals and Policies Report there are nine policies under the stated goal "to protect the quality of surface water and groundwater resources".

- All nine policies are new policies.

- Only one policy mentions agriculture. WR- 2.7 states the County shall work with agricultural and industrial concerns to ensure that water contaminants and waste products are handled in a manner that protects the long term viability of water resources. This wording is so weak and vague as to be meaningless.
  What are the specific performance standards by which this would be accomplished? What is the time frame in which this would happen? And what measures would be used to ensure it actually happens?
- The wording in three policies is strong.
- The other six policies contain unenforceable wording such as:
  - shall be evaluated
  - if feasible
  - as necessary
  - work with
  - shall continue to promote
  - shall encourage and support the identification of degraded surface and ground water resources—AND THEN WHAT WILL THE COUNTY DO ABOUT IT?!

In policy WR- 2.3 on page 11-5, Best Management Practices and other unnamed mitigation measures shall be continued to be required, if feasible, to protect surface water and groundwater from adverse effects of construction activities and urban runoff in coordination with the Water Quality Control Board. The wording "if feasible" makes this policy very weak. Worse, this policy fails to include other important sources of water contamination such as:

- food processing facilities
- industrial activities
- agricultural activities
- dairies and feedlots
- special uses

It is evident the County doesn't care enough about protecting our water quality to write strong, enforceable policies and implementation measures. Look for yourself in the Goals and Policies Report on pages 11-4 and 11-5.

Water Resources Element

There is no factual basis for the County's capacity to accommodate the General Plan Update's population growth projections.

In the Water Resources element of the DEIR on page 4-106, Table 4-4 General Plan Population Estimates by Unincorporated Community there are 21 communities listed with their domestic water service provider, existing population, and projected range of General Plan Population Estimates. Take Three Rivers, for example, the existing population estimate of 2300 people is from 2003 which is five years out of date. The projected population increase for 2030 is from 920 to 1397 people. The domestic water service provider is listed as CSD and mutual water companies. According to Randy Pares, general manager of CSD on January 21, 2008, CSD controls 75 water connections in Alta Acres where there are only 5 unbuilt lots. The South Kaweah Mutual Water Company, according to Lew Nelson, manager, on January 25, 2008, services 220 water connections in Cherokee Oaks subdivision. There are only 20 unbuilt lots. There are no plans to extend the system. Deer Meadows Mutual Water Company in Cherokee Oaks subdivision, according to Ken Elias, board member on January 23, 2008, has 41 connections and arsenic in its water. There are a total of 35 small, privately owned, volunteer run water systems/companies in Three Rivers. Except for the three largest water companies, there are no water meters. The large majority charge flat rates. Many water companies serve one hotel, or one RV park, or the elementary school, or four or five homes. Most of the approximately

1900 water wells in Three Rivers are private wells serving one household. The water companies have various problems; old water pipes, only one well, arsenic above Federal drinking water standards, reach capacity at times of peak water use, have insufficient water pressure for fire flow, have a moratorium on developing new lots, need an expensive new water storage tank ($35,000), and have applied for grants and loans.

According to Tom Marshall, a 15 year member of the Sequoia Foothills Chamber of Commerce, on January 23, 2008, there are 321 motel rooms, bed and breakfast rooms, and RV spaces. During the summer and especially during the holiday weekends of Memorial Day, 4th of July, and Labor Day, they are fully occupied, reaching peak water use. The consultant who gather data on these service providers did not ask about peak demand on water and how close that came to capacity or the cost of expenditures to drill another well or upgrade infrastructure. Most of the people who live in Three Rivers are outside CSD and all the other mutual water companies. None of the private wells have been evaluated. There has been no study of water quality or quantity in Three Rivers. Drilling a well here is like playing roulette. Some don't produce enough water. Others have unacceptable levels of radon or arsenic. Wells are being drilled deeper of necessity. The only way 900-1400 more people could be accommodated in Three Rivers by 2030 is by a new large development, not on 5 acre ranchettes.

Again, according to Ken Elias, board member of Deer Meadow Estates Water Company in Cherokee Oaks, on January 21, 2008, there is one well that produces 60 gallons a minute and a second inactive well that produces only 3-4 gallons a minute. The water company is considering reactivating this well. There are 27 connections to this water system. The water table for well #1 dropped 30 feet during an earthquake in the 1990's. There is enough water during peak demand. There are expensive repairs upcoming, a sediment ram.

According to Ray Murray, manager of the Sierra King Water Company in Three Rivers on Mineral King Road on January 22, 2008, the water company is a homeowner's association which just deals with water supply. There are 41 connections. Recently they drilled a well which had an unacceptable level of Radon. They drilled a third well which has good water but is not on line yet. There is a moratorium on building on the remaining 41 lots. They are not 100% metered. Funding is a real problem. The water system has problems with pressure, not enough for fire fighting flow. Because of a pinhole in the storage tank, they need to buy a new one. It will cost $35,000.

projects Lemon Cove to grow to 377 to 433 people despite the the fact that Lemon Cove is landlocked by citrus groves in the Williamson Act; its wastewater treatment plant is at 3/4 capacity; it is bisected by Highway 198; and it is assaulted by the noise, dust, vibration, and fumes of heavy diesel trucks hauling crushed granite from the Lemon Cove Granite Pit through town. It is not your ideal town. The Lemon Cove SD has 41 water connections and 60 sewer connections, according to Bill Pensar, board member of Lemon Cove SD, on January 23, 2008. The County does say Lemon Cove has "Significant Concerns", meaning "the provider lacks capacity to serve projected growth and is likely to experience significant difficulties in expanding the system to meet projected demand." They got that right.

I quote from the DEIR, page 4-129

"Impact Analysis

Implementation of the General Plan Update would result in an increased demand on groundwater supplies for urban and rural uses within the unincorporated areas of the County. Due to the lack of comprehensive information regarding the County's groundwater resources, it is uncertain if groundwater supplies would be sufficient to meet the future demand of rural private domestic, small municipal and agricultural wells. This uncertainty combined with the current regulatory approach could result in insufficient groundwater supplies in unincorporated areas of the County. Growth associated with the General Plan Update would require additional groundwater pumping for designated urban development areas of the County where surface water is not available.

In some of the unincorporated urban development areas, there are concerns that adequate water supplies cannot be achieved through sustainable groundwater management, that is, without creating declining groundwater levels, and adversely affecting existing wells. Such concerns are heightened by the fact that most of these areas are presently dependent upon groundwater supplies."

The above impact analysis was based on inadequate, inaccurate data. So, the true impact is most likely worse, creating greater impact on groundwater and existing wells.

Only one small CSD, PUD, ID or JPA in each community was consulted in 2003 in order to analyze each community's ability to meet projected growth. In the case of Three Rivers, the Three Rivers CSD serves 75 water connections. There are approximately 1900 wells in Three Rivers, predominantly one well serving one household. This inadequate analysis was based on less than 5% of the people served by wells in Three Rivers. For a more accurate analysis see Enclosure 10.

In the Background Report under Public Services and Utilities on page 7-35 under "Can't Serve" Special Districts, there are 15 communities listed as under temporary cease and desist orders for water or sewer hook ups as of April 7, 2007.

According to the Background Report, pages 7-41 through 7-43, some of the unincorporated urban areas within Tulare County lack sanitary sewer infrastructure and are served by individual or

community septic systems. These are Allensworth, Alpaugh, Alpine Village - Sequoia Crest, Ducor, East Tulare Villa, Lindcove, Monson, Plainview, Ponderosa, Three Rivers, Waukena, West Goshen and others. Other unincorporated communities within Tulare County have sanitary infrastructure in place, however, in many cases the facilities are several years old and are in need of rehabilitation and/or reconstruction to meet current standards. According to Table 7-2, Summary of Sanitary Service Providers on page 7-43, eleven communities have primary or advanced primary treatment level. The other 15 have secondary treatment level of wastewater. None treat wastewater to tertiary level.

This DEIR did not disclose the extent of groundwater contamination in Tulare County. This draft EIR ignores the extent of water problems in unincorporated communities and assumes a solution to the problem of water supply will be reached in order to fulfill growth projections within the time horizon of the General Plan. Decision makers must, under the law, be presented with sufficient facts to evaluate the pros and cons of supplying the amount of water that the projected growth will need.

The DEIR does not disclose the cost of remediation or identify any source of funding for remediation measures for many of the water companies needing new wells, pipes, storage tanks or water treatment facilities to eliminate contamination by nitrates, arsenic, oil, DBCP, perchlorate, radon. Almost all the water companies are applying for grants and/or loans. There is not enough state or federal money to meet all the needs. It is extremely expensive to remove some

forms of water contamination (arsenic, oil). Many of these unincorporated communities are small and poor. There is a lack of funding for remediation measures. There is great uncertainty that mitigation measures would ever be funded or implemented.

In the DEIR the RMA has abused its discretion by reaching factual conclusions, unsupported by substantial or current evidence.

As a result of projected growth encouraged by the Updated Tulare County General Plan considerably more groundwater would be pumped to serve new housing, retail, dairies, and industry. Since Tulare County is already seriously overdrafting its groundwater, this would result in a significant impact which could be avoided if growth were curbed. 56% of the overdrafting in California occurs in Tulare County.

We need to consider the groundwater impact of every proposed development (new town, slaughterhouse, dairy, ethanol plant, housing development, etc.) Each proposed project must submit realistic estimates for water use, with a firm cap on groundwater use. The impact on existing uses of neighboring properties must be considered. And now that the California Supreme Court decided on February 1, 2007 in the Vineyard Area Citizens for Responsible Growth v. the City of Rancho Cordova that the impact on potential growth for surrounding property owners must be taken into account, we better understand the state of our groundwater. Groundwater depth and contaminant maps should be created and updated every year. There should

be a moratorium on building until the groundwater situation is clearly understood.

Tulare County operates several small water systems, called County Service Areas, in Delft Colony, Traver, Yettem, and Wells Tract which rely on groundwater for potable water deliveries. These water systems are currently unmetered, and customers are billed under a flat rate structure. Water furnished without water metering and volumetric pricing causes waste and unreasonable use of water. After installation of water meters and volumetric pricing, water districts have encountered an immediate decrease in water demand by 20-30%. The decrease in water demand leads to a decrease in operating expenses resulting in energy savings and in some cases reduces operation and maintenance costs by extending the useful life of the system equipment. Why hasn't the County invested in meters in its own County Service Areas?

We need a comprehensive hydrological study of groundwater in Tulare County, especially in the foothills where no monitoring of groundwater has been done, before we can accurately project population capacity. We need baseline facts in order to make intelligent decisions.

According to the California Development Department, Tulare County had 10.9% unemployment in December 2007. Tulare County has the lowest per capita income of the 58 counties in California. Where will the money come from to drill new wells, clean contaminated

water, improve infrastructure at mutual water companies, pay rent, buy a home? How can our unincorporated communities grow as projected in Tulare County's General Plan Update?

Tulare County is in a "critical overdraft condition", overdrafting 820,000 acre feet of groundwater a year. This is 56% of California's overdraft. Subsidence from overdrafted aquifers has already occurred here. Wouldn't the projected 72% population growth exacerbate an already overdrafted groundwater supply? There has been no County-wide hydrological study of groundwater. See the proposed Fresno County Foothill Hydrological Study in Enclosure 1. Semi-annual monitoring of groundwater in Spring and Fall over time would inform the County of the state of overdraft in general and specific areas of critical overdrafting and groundwater contamination.

In Appendix C of the General Plan Background Report, page C-4, Figure 4-8, Average Groundwater Elevations, City of Visalia, the caption reads: "Of particular concern to local agencies of jurisdiction, as well as to the County, is the condition of groundwater beneath the organized communities and cities. Typical of all communities with groundwater as the principal source of supply, conversion of land from agricultural use to urban use has brought about a change in the sources supply from a conjunctive basis of surface supply and groundwater supply to one which is generated exclusively from groundwater. The impacts of such conversion where not offset by groundwater recharge mitigation measures, results in a decline in the volume of water available in the groundwater reservoir and an increase in the distance from which that groundwater needs to be mined."

A serious analysis of surface water available to Tulare County based

Water Resources
Impacts and Mitigation Measures on page 4-119 through 4-136

Impact WR-3

CEQA guidelines require RMA of Tulare County to include a description of the physical environmental conditions in the County, as they exist at the time the Notice of Preparation, from both a local and a regional perspective. The "baseline" environmental conditions for determining this General Plan's significant effects on the physical environment would normally be described in the DEIR as the "environmental setting". In this case the environmental setting is supposed to be contained in the Background Report, "Domestic Water Infrastructure", page 7.2 Background Report, Section 10.2 Water Resources, Existing Conditions, page 10-5; and Appendix C, Water Resources. Instead of analyzing Tulare County's water resources, the County presents Existing Conditions in the Background Report on page 10-6, Table 10-1, California Water Supplies with Existing Facilities and Programs Thousand Acre Feet of 1998 based on 1995 statistics and projected to 2020, amounts of surface water and groundwater available. This data is outdated and inadequate. It excludes groundwater overdraft. According to this table, annual water delivered from the Central Valley Project is expected to increase. And the State Water Project is projected to increase delivery of water to Tulare County. "New water production will result from groundwater". What are the "recycling facilities currently under construction" which will increase our water supply? This "analysis" is fundamentally flawed.

on fact, up to date, and considering reasonably foreseeable reductions in water supply due to Global Climate Change and upcoming judicial decisions concerning the Sacramento Delta and San Joaquin River exports is needed.

The baseline condition for water resources is a factual quantitative measure of the existing acre feet of water in our groundwater basin as of April 25, 2006, the date of the NOP. The water resource projection must factor in the Friant/Kern canal subsidence, the Friant/Kern canal judicial decision, and the delta smelt judicial decision which both reduce water export to Tulare County.

On September 25, 2007, the Tulare County Board of Supervisors voted unanimously to send a legislative letter to Assemblyman Bill Maze warning of "an impending water crisis" in Tulare County as a result of Judge Wanger's decision to restore the habitat of the San Joaquin River for Chinook salmon by limiting the export of water. See Enclosure 2.
At the same session the Board of Supervisors unanimously approved the Planned Community Zoning (New Town "amendment") allowing new towns anywhere in the unincorporated areas of the County. See Enclosure 3.

Without a complete description of the General Plan's environmental setting, the DEIR may never adequately investigate and discuss the environmental consequences of the proposed projected growth. In a recent case the California Court of Appeal rejected a description of the baseline environmental conditions because the EIR did not

far from existing public services, jobs, commercial uses, and public transit, increasing Vehicle Miles Travelled by the future residents, tourists, and workers to this outlying residential community, leading to increased combustion of fossil fuels, which contribute to global warming.)

quantify the size of the groundwater aquifer beneath a proposed project. There must be sufficient baseline information for intelligent decision making.

There is clear precedent for a rigorous global warming baseline analysis. For example, when considering a proposed general plan's use of water, the baseline conditions must be based on actual water currently used.

In determining whether a project's impacts may significantly affect the environment, there must be a "baseline" set of environmental conditions to use as comparison to the anticipated project impacts. One California Court of Appeals decision acknowledged the "baseline determination is the first rather than the last step in the environmental review process". Several judicial opinions have held the impacts of the project must be measured against "real conditions on the ground". In other words, when considering a proposed project's use of water, the baseline conditions must be based on actual water currently used.

Direct environmental impacts, the immediate, perceptible effects of a project, count as environmental impacts under CEQA (more overdrafting of groundwater and consequent lowering of groundwater in neighboring wells. So do indirect impacts, impacts that are one or more steps removed from the project, as long as they are reasonably foreseeable (for instance, greater use of energy to convey and treat water and to treat wastewater, causing higher emissions of CO_2 from power plants and the foreseeable indirect impact of a new residential subdivision

We need to consider the impact on groundwater and surface water of every proposed development – ethanol plant, slaughterhouse, dairy, new town, etc. – in Tulare County. Each proposed project must be required to submit realistic estimates from County-approved experts for water use throughout the life of the development, including a firm cap on the maximum amount of water that will be used. Additionally, the impact on uses on neighboring properties now and in the future must be considered.

The California Supreme Court decision on February 1, 2007 (in the Vineyard Area Citizens for Responsible Growth vs. the City of Rancho Cordova) that the impact of potential growth for surrounding property owners must be taken into account makes it even more urgent that we gain a thorough understanding of the state of our groundwater in Tulare County.

For example, water in the foothills is transient, moving through to the valley floor, where it replenishes the groundwater supply. But construction of a big housing development in the foothills will disrupt the flow of this water to the valley.

Estimates of water consumption of any proposed development must come from qualified, independent, reliable experts. If the estimates aren't accurate, the consequences can be widespread and irremediable. As a case in point: the developers of the corn ethanol plant in Goshen assured County planners and supervisors that there was sufficient CALWater to operate their proposed facility. But when the plant began operating, not enough CALWater was available. So the owners (Bio Phoenix Industries) asked the Board of Supervisors for permission to dig deep wells. The County approved the request (BOS Resolution 8147), the deep wells were drilled, and now the wells on the neighboring properties are going dry.

The Yokohl Ranch developers claim they have enough surface water for their proposed 20-year project. Are these only paper water rights, or is this guaranteed sufficient long-term water, in wet years and in drought? If enough surface water does not materialize, or disappears in dry years, you can bet that Boswell will be applying for permission to dig deep wells, and there will be another Board of Supervisors resolution and consequent betrayal of the neighbors' water rights.

Given the prospect of projected massive growth in Tulare County, it is obvious that a County-wide groundwater evaluation and management plan must be in place before we approve any new development.

A significant effect on the existing environment is defined by the CEQA Guidelines as a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, in this case water resources in the County. The DEIR must identify and focus on the possible significant adverse environmental impacts of a proposed project, in this case, groundwater overdrafting caused by projected population growth in a County already suffering from severe groundwater overdrafting.

The California Legislature has determined that certain specified changes to the environment are significantly adverse by definition. These are often called mandatory findings of significance. As a result of the Legislature's determination, RMA must conclude that a proposed project (updated General Plan) may have a significant effect on the environment if the project does any of the following:

1) Has the potential to degrade substantially the quality of the environment;
2) Has potential environmental effects that are individually insignificant but cumulatively considerable;
3) Has the potential to cause substantial adverse direct and indirect impacts on human beings;
4) Has the potential to reduce substantially the habitat of a fish or wildlife species;
5) Has the potential to cause a fish or wildlife population to drop below self-sustaining levels;
6) Has the potential to threaten or eliminate a plant or animal community or;
7) Has the potential to substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

Using more and more groundwater and surface water for future projected growth would cause all of the above significant effects on the environment.

The cumulative impacts analysis is one of the most essential elements of the DEIR; it assesses the cumulative damage as a whole greater than the sum of its parts. Cumulative impacts are "two or more individual effects, when considered together, are considerable or which compound or increase other environmental impacts." These cumulative impacts can result from individually minor but collectively significant projects taking place over time, as in several small developments requiring groundwater over time. The cumulative impacts are considered significant when considered with the effects of past, current, and foreseeable future projects, thus the project's effects are considered "cumulatively considerable". There is no analysis of cumulative effects in the General Plan or DEIR.

The EIR should include verification of sufficient water supplies for the future including the following:

- Will groundwater be sufficient in the long term for the projected growth?
- What effect will this increased groundwater pumping have on groundwater levels and on water quality?
- How will potential lowering of groundwater levels affect nearby agricultural wells? domestic wells?
- What are the long term competing uses for this groundwater?
- What are the environmental impacts associated with securing and delivering this water?

Recommendations for Changes in Water Resources Element
in Goals and Policies Report

11. Water Resources page 11-1

Remove sentences "The policies in this element... This is a complicated system..." Replace with The County is the land use authority and has regulatory control over land use activities that directly impact water management. And, the County operates a number of water and wastewater systems, which manage water. In the systems the users must have water meters and be charged volumetrically.

Existing Conditions Overview page 11-2 (at end of fourth paragraph) and other factors which include overdevelopment, waste of water by agriculture and residents and Global Climate Change.

(at end of the 5th paragraph) add:
Overdrafting of groundwater occurs in each of these 19 entities.

(at end of the 7th paragraph) add:

In Three Rivers all the mutual water systems are privately owned and run by volunteers.

In foothills water exists only in rock fractures. Drilling a well is like playing roulette. Many drilled wells come up dry, yield little water or are contaminated by radon or arsenic. There is not much groundwater in the foothills and little capability to develop. The foothills are near the top of our watershed where our

water originates.

Our surface waters, small creeks and streams, and ultimately rivers and lakes, are polluted with run-off from non-point sources, contaminants that flow from developed land, roads, and agricultural fields.

Chemically assisted agriculture is the County's largest source of polluted run-off. Nitrogen from fertizers and VOCs from pesticides, particularly soil fumigants contaminate run-off.

The second largest, and fastest growing, source of run-off is sprawl. Impervious surfaces such as buildings, parking lots, driveways and roads cover our soil, speed run-off, and warm the water, washing the contaminants into small streams. Development is covering our vital watersheds keeping rainwater from being captured, filtered, and recharged into our groundwater.

Comprehensive land use reform is essential to protecting our County's water resources. When agriculture or development alters the shape, the soils and the vegetation of a watershed, the impact on nearby rivers and streams is profound. Automobile exhaust from sprawl (from increased Vehicle Miles Travelled) is a primary source of air borne nitrogen, one of the most damaging aquatic pollutants. The damage to water quality will grow dramatically unless sprawl is brought under control.

Growth must be focused in compact, dense towns with minimal impervious surfaces. Watersheds must be protected. Practically,

this means identifying our watersheds that are undeveloped evaluating their biological, recreational, and other public values and maintaining the most important watersheds in an undeveloped state.

Designing compact smart communities that offer a broad array of transportation and housing choices, that integrate work and shopping with housing and have inspiring civic spaces consume less land and dramatically reduce the number and length of automobile trips. This means less airborne nitrogen, less gas and oil run off, and less heavy metals from brakes and tires, all of which benefit water and air quality.

Conservation of rural landscapes help shape regional growth patterns. This means no more loss of agricultural land and open space. When more than 10% of the acreage of a watershed is covered in roads, parking lots, roof tops and other impervious surfaces, the rivers and streams within those watersheds become degraded. By virtually every measure of ecosystem health, the streams, creeks, marshes, and rivers that are surrounded by hardened watersheds are less diverse, less stable, and less productive. The most obvious change caused by development is that rainwater flows faster across the ground and more of it reaches, creeks, rivers, and estuaries in the form of run off. A one acre parking lot produces 16 times the volume of run off that comes from a one acre meadow.

Water temperature rises as run off flows across paved areas. Because warm water contains less dissolved oxygen than cold water, the fish that are sensitive to oxygen levels, like trout

and salmon, decline and disappear. Large undisturbed setbacks are necessary for all streams and rivers. When impervious coverage in the watershed reaches 10%, water quality suffers. Urban runoff transports a vast assemblage of pollutants into the aquatic environment. These include nitrogen, phosphorus, organic carbon, pesticides, petroleum hydrocarbons, and trace metals such as copper, zinc, and lead. The County must minimize impervious ground cover and incorporate small water retention swales into parking lots, curbside, and residential yards in all new development.

More driving and more developed land means more damage to our rivers, streams, and groundwater. Sprawl is at the root of the problem. No new towns shall be allowed. All growth shall be directed into our existing cities' and communities' development boundaries.

WR-1.1 Groundwater Withdrawal (add the following)

... No development shall be allowed in areas where groundwater does not meet SDWA standards or is in serious overdraft unless sufficiently mitigated so it will not contribute to groundwater overdraft, and will not result in an injury to the reasonable and beneficial uses of overlying groundwater users.

WR-1.2 Groundwater Monitoring

The County shall require the collection ... groundwater pollution and overdrafting as part ... development which would add to the County's available water data which is needed to make informed water and land use policy decisions.

WR-1.3 Water Export Outside the County

... The County shall require a "no net loss"... To allow any net loss of water to Tulare County contradicts the WR-1 goal to protect the quantity of surface and groundwater resources.

WR-1.4 Conversion of Agricultural Water Resources

The County shall prohibit the transfer of water used for agricultural purposes (within the prior ten years) for domestic consumption under any circumstances in order to ensure adequate supplies are maintained for existing development and to ensure our County remains agricultural.

WR-1.5 Expand Use of Reclaimed Wastewater

... The County shall use opportunities... recharge efforts like landscape irrigation in new development and on County property. The County shall require new wastewater treatment plants to have tertiary treatment, like a series of ponds that empty into streams or recharge basins.

WR-1.7 Collection of Additional Groundwater Information

The County shall financially support ... basins. The County will develop comprehensive data for all regions of the County on water quality and supply in order to make informed land use decisions, particularly in the foothills where there is almost no data. This information must be developed before making further significant land use decisions that may further impact groundwater quality and supply.

WR-1.8 Groundwater Basin Management

... by surveying our entire four watersheds and identifying all streams, intermittent streams, vernal pools and water retention basins in order to protect them from development and damage of any kind, by setting maximum buffers and by minimizing, to the maximum extent possible, impervious ground cover.

WR-1.9 Collection of Additional Surface Water Information.

The County shall require the collection of comprehensive water... The County shall monitor older development to ensure only reasonable and beneficial extraction of water from rivers and streams occur. The County shall forcefully request California Department of Fish and Game monitor and enforce water withdrawals by ditch owners.

WR-1.10 Channel Modification

Channel Modification shall be prohibited... Mandatory fines shall be levied for channel modification which adversely impacts groundwater recharge, flooding, erosion, rate of sediment transport, aquatic life and riparian habitat. The channel shall be restored at the developer or landowner's expense.

WR-2 ... for the protection of the quality of surface water and groundwater resources. Where are the strong policies to protect water quality? Policies that include the words "shall be evaluated", "shall confer ... as necessary", "shall continue to require the use of feasible ... mitigation measures", "shall continue to promote", "shall encourage and support", "shall work with" do NOT ensure water quality. This is woefully inadequate

and does not fulfill CEQA's requirement that local government protect the environment. So far, Tulare County's policies have failed to protect groundwater since it has become increasingly contaminated with nitrates, etc. Also, the County has ignored the adverse impacts of dairies and agriculture on groundwater.

WR-2.1 Protect Water Quality

All land use and development... Remove "as necessary". It is always necessary.

Add to the end: The County shall minimize, to the maximum extent possible, impervious groundcover in new development. The County shall stop sprawl. The County shall mandate very large undeveloped buffers around creeks, streams, rivers, vernal pools, and natural water retention basins. The County shall require large and small water retention basins in all new development to capture runoff.

WR-2.3 Best Management Practices

The County shall require the use ... construction activities, dairies, industrial activities, food processing facilities, agricultural activities, special use and urban run off. This policy shall incorporate whatever BMP may be developed by the County as part of the Water Commission's Nitrate Subcommittee.

How can this be a new policy and the County is "continuing" to do it?

WR-2.4 Construction Site Sediment Control

... from construction sites and shall require site sediment control on agricultural operations and on dairies.

WR-2.5 Major Drainage Management
The County shall protect each individual drainage basin...

WR-2.6 Degraded Water Resources
The County shall identify and restore degraded surface water and groundwater resources including interim mitigation options. The persons or companies responsible for the degradation shall pay for the restoration. Restoration and mitigation efforts shall be implemented in cooperation with the Regional Water Quality Control Board and the Department of Public Health, as well as other appropriate state and regional agencies.

WR-2.7 Industrial and Agricultural Sources
The County shall require agricultural...

WR-2.8 Point Source Control
The County shall cooperate fully with... and penalize for repeated pollution.

WR-2.8A Establish Critical Water Quality Areas
The County shall designate Critical Water Quality Areas county wide to guide in land use decisions. Specifically, the County needs to identify vulnerable aquifers used for drinking water and then set strict guidelines for land uses, development, and Best Management Practices in those areas to protect water quality.

WR-2.9 Private Wells

... The County shall require testing of private wells for known contaminants and require those results be submitted to the County and kept in a continually updated database. The County shall fine owners/developers for wells abandoned or driven by unlicensed companies. Anyone who sells a parcel of land with a well on it must disclose the water quality analysis to the prospective buyer before escrow. Implementation Measure. Fines shall be levied for wells driven by unlicensed companies and wells not properly abandoned.

WR-2.10 Educational Programs

Public education is needed on water quality. Issues such as well head protection, proper fertilizer application and septic maintenance can be extremely helpful in protecting our County's water supplies and ensuring clean water in the future. The County shall create educational programs for domestic, agricultural, dairy, urban, and rural users.

WR-3 Water Supply

To provide a sustainable long term supply of water resources... Where are the policies that require water conservation, water efficiency, water recycling, water reuse in all new construction and provide incentives for older construction to convert to water saving measures? How does the new policy of allowing extraction and export of groundwater from Tulare County of any amount less than what will substantially increase the groundwater overdraft of Tulare County provide a sustainable water supply? Define "substantial." Implementation Measure 1 does not fulfill CEQA's requirement that local government protect the environment.

WR-3 ... Recreational needs and to require that new development provide proof of a long term water supply.

WR-3.1 Develop Additional Water Sources
The County shall identify and develop additional water sources... groundwater banking, groundwater recharge and infiltration basins, rainwater harvesting and required water conservation programs. The County shall inform and encourage the public to harvest rainwater from roofs into barrels, underground cisterns or basement cisterns for use in irrigation or showers or toilets. This will take the strain off municipal water systems.

WR-3.2 Develop an Integrated Regional Water Master Plan
... The County will establish a County wide well monitoring, water conservation, water efficiency-focused integrated regional water master plan for the entire County. Of primary importance is a system for monitoring water quality and water quantity on a yearly basis.

WR-3.3 Adequate Water Availability
The County shall review new development proposals to require ... Projects must provide evidence of safe drinking water and longterm sustainable water availability or ... The County must ensure the project will not negatively impact water quality or quantity of present or future use of adjoining properties.

WR-3.4A Comprehensive Water Conservation
The County will design and implement a comprehensive water conservation strategy as recommended by the Attorney General to reduce Global

Warming, which will include the following strategies:

- Design and implement a comprehensive water conservation strategy. The strategy may include many of the specific items that follow, plus other innovative measures that are appropriate for the location.
- Require water efficient landscapes.[29] Adopt a strong landscape ordinance with water budgets to assure efficient landscape design, installation, and maintenance in new construction.
- Encourage the use of reclaimed water for landscape irrigation in new developments and on public property. Provide necessary infrastructure to deliver and use reclaimed water.
- Require water efficient design for buildings. This may include strengthening local building codes for new construction and implementing a program to renovate existing buildings to require a higher level of water efficiency.
- Adopt a retrofit ordinance that will require installation of water-efficient fixtures upon the sale of homes.[30]
- Adopt and enforce restrictions on watering methods (*e.g.*, prohibiting systems that apply water to non-vegetated surfaces) and controls on runoff.
- Require water efficiency training and certification for irrigation designers, installers and managers.
- Provide individualized water audits for large water users to identify conservation opportunities. Offer financial incentives for adoption of identified efficiency measures.
- Provide water audits for large landscape accounts. Offer financial incentives for efficient irrigation controls and other efficiency measures.
- Fund incentives and technical assistance for water efficiency.
- Adopt standards that prescribe the maximum allowable effective impervious area for all new development and redevelopment projects. Require preservation of the existing hydrologic character of developed sites to manage storm water and protect the environment. (Retaining storm water runoff onsite can drastically reduce the need for energy-intensive imported water at the site.)
- Adopt conservation pricing to encourage efficient water use.[31]

WR-3.5 Use of Native and Drought Tolerant Landscaping
The County shall <u>require</u> the use . . . and <u>mandate</u> water . . .

WR-3.6 Agriculture Irrigation Efficiency
The County shall <u>create</u> educational . . . There needs to be an Implementation Measure. This is very important. A lot of water waste occurs in agriculture because the water is so cheap.

WR-3.6A Urban Water Use Efficiency

The County shall increase urban water use efficiency by rewarding and requiring the use of water meters and volumetric pricing of water and other BMP conservation practices in existing communities, by obtaining grants and providing incentives.

WR-3.7 Emergency Water Conservation Plan

The implementation measure for this policy is extremely poor and inadequate. What is the use of simply making a list of priorities?

WR-3.8 Education Programs

The County shall develop educational programs in cooperation with other water purveyors...

WR-3.9 Establish Critical Water Supply Areas

... and prohibit development in those critical water supply areas until water supply is adequate for development.

WR-3.10 Diversion of Surface Water

... and where diversion is not reasonable and beneficial or is to the detriment of aquatic or riparian habitat. CEQA prohibits damage to natural resources.

WR-3.12 Joint Water Projects with Neighboring Counties

... and improve availability of clean water, requiring water conservation measures.

WR-3.13 Coordination of Watershed Management on Public Land

This policy has no implementation measure. Implementation Measures 3, 4, and 18 could all reference this policy.

WR-3.14 Coordination of Watershed Management in Unincorporated Areas of County

Watersheds shall be protected and restored, by protecting streams from erosion and by improving groundwater retention and especially by protecting natural water retention basins.

H.5 Implementation Measures

Implementation Measure 1

first bullet ... will not increase the overdraft

third bullet incomprehensible, make clear

sixth bullet Find that the applicant has provided complete mitigation

seventh bullet There will be no net export of water from the County

eigth bullet The County shall include a time limit on groundwater exports so they can be reviewed periodically.

Implementation Measure 3

... balance between urban, rural, ecological, environmental and agricultural demands

Implementation Measure 4

Remove the words "Where feasible"

Implementation Measure 5

The County shall require active participation by local stakeholders and take a lead in developing a program of groundwater monitoring ... developers as a permit requirement for projects identified as potentially impacting groundwater or surface water.

Implementation Measure 6

The County shall prohibit ...

The County shall establish large buffers around streams and rivers and restore stream banks and meandering nature of streams to enhance flood control and increase groundwater recharge.

Implementation Measure 7

The County shall work with federal, state, regional and local agencies such as local Irrigation Districts to improve ...

Implementation Measure 9

Replace with, The County will develop a new ordinance requiring testing of all new wells, both agricultural and domestic. All new wells shall be tested for priority contaminants as determined by Environmental Health before permit approval. The homeowner/seller shall provide water testing results to potential buyers before escrow.

Implementation Measure 10

... The County shall provide incentives and apply for grants to increase urban water efficiency.

Implementation Measure 11

The County shall identify, evaluate and cause to cease and desist conditions...

The point source shall provide mandatory mitigation or be fined by the County for the cost of cleaning up the pollution.

Implementation Measure 12.

... constructed to reduce soil erosion and silt transport to the absolute minimum, using all feasible methods, and to maximize run off retention.

Implementation Measure 13.

... shall involve the least disturbance possible to banks...

Implementation Measure 15.

... lining waterways shall be prohibited and shall allow very wide (300' from high water level) riparian area free of grading and development of any sort. Meandering streams with water retention basins nearby will capture heavy stormwater flows and infiltrate water into aquifer.

Implementation Measure 16.

The County shall expand the role of the ... industrial interests and wastewater treatment plants.

Implementation Measure 16A.

The County shall identify vulnerable aquifers and then restrict land uses and development in those areas, require Best Management Practices in agriculture, dairies, and industry and provide large buffers, particularly when communities rely on that aquifer for drinking water.

Implementation Measure 17.

... The County shall identify and require proper abandonment of unused or "dry" wells. These are known vectors of groundwater contamination.

Implementation Measure 18.

The County will help prepare and maintain Integrated Regional Water Management Plans and abide by their decisions.

Implementation Measure 19.

... to provide assured evidence ... supply capabilities and water quality that meets State Drinking Water Act standards. If groundwater is seriously overdrafted in the area, no new wells will be permitted. Water used for agriculture (in the prior ten years) will not be considered an available water supply. No development will receive approval for more than 10 years after which there will be a review for water availability.

Implementation Measure 20.

The County shall strengthen the Tulare County Water Commission so it can oversee all or some ...

Implementation Measure 21.

The County shall strengthen and implement ... consistent with or better than ... Ordinance for new development and provide incentives for older development to meet the same standards.

Implementation Measure 22.

This is an inadequate mitigation. What exactly are you going to do? Here are some suggestions:

The County shall place caps on water consumption per household and per business. When a certain number of gallons per month is reached, water to that house or business will be shut off. As the water emergency worsens, caps will be lowered. No watering of landscaping will be allowed.

Implementation Measure 23. add the following

... Educational topics should include how to harvest rainwater, how to irrigate agriculture more efficiently. These programs should include outreach and communications in English and Spanish and other languages, where appropriate.

Implementation Measure 24.

... degrading water quality or adversely affecting groundwater supply. In critical groundwater recharge areas, development should be prohibited.

Implementation Measure 25. add to end

... and protect groundwater from contamination.

Implementation Measure 26.

... placing strict limitation on the amount ... zoning techniques with the goal of protecting groundwater quality and quantity.

Implementation Measure 27.

... The County will also identify critical groundwater quality areas and

maintain a continually updated data base.

This must be done now. 2010-2015 is too late.

Implementation Measure 28.

The County will work with the Department of Fish and Game and the State Water Resources Control Board to monitor stream diversions and enforce regulations in order to restore and maintain healthy aquatic ecosystems.

7/01/07

Draft Proposal

Hydrogeologic Characterization of the Foothill Fractured Terrain for Assessing Water Supply Reliability

Scientific Investigators:
California Water Institute, California State University, Fresno[1]
Lawrence Berkeley National Laboratory, University of California

Collaborators:
County of Fresno
Sierra and Foothill Citizens Alliance
Sierra Foothill Conservancy

SUMMARY

California Water Institute (CWI) of California State University, Fresno will team up with Lawrence Berkeley National Laboratory (LBNL) to provide an accurate assessment of hydrogeologic data to address water supply and sustainable development issues in the Sierra Foothills, eastern Fresno County. To facilitate field work and the data gathering process, and to maximize the benefits to the local community, our project partners include the County of Fresno, Sierra and Foothill Citizens Alliance, and the CalFed funded Millerton Area Watershed Program of the Sierra Foothill Conservancy. Our approach's emphasis is on the utilization of cutting-edge technology and the most advanced and up-to-date scientific knowledge in fracture hydrology, which has been developed with years of research experience gained from the multimillion-dollar federally funded Yucca Mountain Project. We propose a comprehensive multidisciplinary field, laboratory, and numerical modeling approach, including hydrogeology, geophysics, isotope hydrology, and computer model analysis. We will integrate the data using robust spatial analysis techniques to provide the much-needed information for assessing water supply reliability, formulating water policy, and managing water resources in fractured rock terrains.

INTRODUCTION

The foothill area of eastern Fresno County poses an unparalleled technical challenge in terms of its water supply policy and sustainable development. Due

[1] For more information, please contact Professor John Suen at the California Water Institute of Fresno State University. (E-mail address: john_suen@csufresno.edu)

Enclosure 1

to the unique combination of its population growth, economic development potential and local geology, the area is facing extremely complex technical and scientific issues that cannot be found anywhere in the country. Fortunately, due to the recent advances in hydrological science, in particular, in the area of fracture hydrology, many of these issues can now be investigated with high tech equipment, state-of-the-art computer models, and innovative field-tested approaches.

Fractured Crystalline Rocks versus Porous Sedimentary Aquifers

Ground water is the sole source of water supply for the foothill area of eastern Fresno County where ground water occurs in a uniquely different geologic environment than in the Valley below. In the Central Valley, ground water mainly resides in the intergranular porous space within the sedimentary aquifers. In contrast, ground water occurs only in fractures (i.e. cracks and fissures) of the crystalline granitic rocks in the foothill and mountain areas where the geology and the hydrologic properties of the granitic rocks dictate the amount of ground water that is available or can be produced. Since the average storage space in the fractures in a given volume of the rock is typically much less compared to the intergranular space in the same volume of sedimentary aquifers, the amount of ground water available from fractured rocks is significantly less than the amount available from the valley floor. The problem is further complicated by the fact that the spatial distribution of fractures in the foothill terrains is strongly uneven, thus making the assessment of water availability highly difficult and uncertain. Conventional well testing methods which were developed primarily for sedimentary porous aquifers may not be valid for analyzing fractured crystalline rocks. Furthermore, the occurrence or density of fractures decreases rapidly with depth. Therefore, drilling deeper wells would not be a solution.

Implication of the Recent Stable Isotope Study

A recent study on the Big Sandy Creek watershed in the Prather-Auberry area of Eastern Fresno County, conducted by the California Water Institute using advanced scientific equipment and techniques ('fingerprinting" by means of stable isotopes), has confirmed that most of the production water from domestic wells is in fact closely related to fresh precipitation and surface runoffs. The results indicate that the water originates from recent rainfall and snowmelt rather than ancient water deposited by glaciers of the last ice age more than 10,000 years ago. The good news is that the current water usage does not seem to have upset the natural balance of the water cycle. However, it also implies that any periods of drought or climate change scenarios may be likely to have a serious impact on the water supply. Compounded by the rate of development in the area, the good news may not last too long.

Necessary Science and Scientific Data

Enclosure 1

To ensure sustainable development, our policy must be based on a strong scientific basis using accurate and reproducible field generated data that are specific to the region and its geology. Because of the fact that conventional hydrogeological methods and models were not developed for fractured terrain, they have limited application for the Sierra foothills. This poses a tremendous challenge because it requires the development of innovative and expensive technology as well as new hydrologic theories and models. No single local community could afford such costly developments, and therefore, the necessary hydrologic data of fractured rocks remained mostly in the uncharted territories of science and technology.

Since about 15 years ago when the U.S. Congress identified Yucca Mountain, near the Nevada Test Site, as the only candidate for our nation's first civilian nuclear disposal site, hundreds of million dollars were appropriated and spent for fracture hydrology development, because fractured rocks underlie Yucca Mountain, the proposed location for the nuclear waste repository. As a result, the U.S. Department of Energy has assembled a large contingent of outstanding scientists and engineers in the national laboratories (D.O.E. labs) who focus their research specifically on the development of sciences and technologies. Among the various national laboratories, the scientists at Lawrence Berkeley National Laboratory (LBNL) of the University of California have amassed a wealth of experience and knowledge about hydrology in fracture rocks. Consequently, LBNL has become the world's leader in fracture hydrology research. Its current annual budget for Yucca Mountain studies amounts to tens of millions.

To answer some critical questions regarding the sustainability of the groundwater resource in the Sierra Foothills area, California Water Institute (CWI) of Fresno State is teaming up with LBNL to apply the valuable knowledge and technical experience obtained from the federally funded Yucca Mountain studies. This proposed study will be an excellent example of technology transfer by which civilian communities can now make use of knowledge derived from federally funded cutting-edge scientific research.

Examples of questions that can be answered by this collaborative project are:

- What is the density of fractures at the surface, and at different depths? At what depth do the fractures disappear?
- How wide are the fractures? What are their lengths? Do they intersect each other?
- What are the dominant orientation (i.e. directions and inclinations)?
- What percentage of the fractures is connected with others forming a network? How many percent is isolated and water cannot flow through?
- Where do they concentrate? Where are the zones of fractures?
- How fast water can flow through fracture networks in the rocks along different directions?
- What is the volume of water contained in the rocks or fracture porosity ?

Enclosure 1

- Can we "x-ray" the rocks below the surface to "see" the fracture network and distribution?
- If we can, then can we use a computer model to predict the behavior of the system?

PROJECT GOALS

CWI and LBNL will conduct a fracture hydrology investigation in the eastern Fresno County area with the collaboration of Fresno County, Sierra and Foothill Citizens Alliance and the Sierra Foothill Conservancy. The local community will be benefited by this scientific study project, the outcome of which will:

- Help improve the fundamental understanding of the local watershed hydrogeology,

- Provide a strong scientific basis for policy makers and regional planners to make sound and informed decisions on watershed management.

- Provide the much needed information for assessing water supply reliability by offering critical hydrogeologic data, and advanced technical tools (for example, ground penetrating radar, coupled surface water-ground water model) as well as cutting-edge technology (borehole pneumatic testing, stable isotope hydrology) for the County Planning Department and other regulatory or non-regulatory agencies, including DWR, the Regional Water Board, and other agencies.

- Enhance watershed stewardship and improve management practices.

- Improve watershed education through our public seminars and presentations; raise the level of public awareness and understanding, and improve reliability and efficient water use.

PROJECT DESCRIPTION

Our study approach emphasizes the utilization of cutting-edge technology and applying the most up-to-date advanced scientific knowledge in fracture hydrology, an area in hydrological science that was overlooked and not developed until about 15 years ago. With a wide range of expertise accessible to us, we propose a comprehensive multidisciplinary field, laboratory, and numerical modeling study, based on hydrogeology, geophysics, isotope hydrology, and computer simulation analysis. We will integrate the data using robust numerical analysis techniques to elucidate one of the most complex problems in hydrological science. Before drilling new wells, we will first make extensive use of existing data that are already available from Fresno County, through the

Enclosure 1

Department of Water Resources, and collected by the Millerton Area Watershed Coalition Program (MAWC). We will avoid any possible duplication and ensure maximum efficiency of research effort. With the help of Fresno County and the Sierra and Foothill Citizens Alliance, we will be able to identify study sites that are representative of the hydrogeological conditions of the Sierra foothills. We will select one or two sites for focused studies, depending on a number of factors, such as the availability of existing data, site access, number of available wells, site geology, etc. Based on what we learn about the site(s), we plan to do the following investigations (Tasks):

1) Perform a thorough review of existing hydrogeological data, including pump tests, water usage, well information, water chemistry, ecological data, etc. Much of these data are available from Fresno County and the San Joaquin Valley District office of the Department of Water Resources and through various consultants' reports submitted to public agencies.

2) To ensure the ease of future access, we plan to enter the data in a Geographic Information System (GIS) and create a database that can be used for water resource management and future reference.

3) Examine aerial photos to determine regional fracture characteristics (e.g., trends and orientations). Fracture zones, geologic faults, and structural lineaments can be identified. These geological features ly and large control the availability of ground water. Based on these datat, we will conduct reconnaissance outcrop mapping to determine important fracture parameters, including length, aperture, roughness, density, orientation, and connectivity. We will identify fracture sets and obtain a statistical description for later use in data and numerical analyses.

4) In addition to surface geological mapping, we plan to use borehole cameras to obtain statistical parameters of fracture density and fracture orientation in relation to depth. The new 360° horizontal looking color TV camera can give a complete view of the subsurface, which can provide accurate information on density and orientation in depth.

5) Carry out a field experiment to test the use of Ground Penetrating Radar (GPR) and high resolution cross-borehole seismic tomography surveys to study fractures in crystalline rocks. GPR is the latest geophysical technology and has the potential to "x-ray" subsurface structures. However, due to the strong attenuation of energy, its applicability may be limited to shallow depths or small intervals between wells. Nevertheless, GPR has not been applied extensively to fractured granite, and it has a high potential to yield great benefits in this case.

6) Collect water samples for isotope analyses and water chemistry study. Water samples will include surface water, ground water and precipitation.

Enclosure 1

The new stable isotope analytical facility at CWI is specially set up to measure isotope ratios (delta O-18, and delta H-2) of water. These isotopic ratios have the potential to distinguish old fossil (ice-age) water from new meteoric water. The age of the water (fossil water vs. recent rainwater) carries a very significant implication of sustainability of the ground water supply. We plan to obtain major minerals concentration data for the samples as well. Together with major minerals data of the water samples, isotopic data can be interpreted and used as environmental tracers. We will be able to trace the path of the meteoric water through the hydrologic cycle and determine the portions of contribution from different possible sources. Based on these data, we can also make estimates regarding infiltration, evapotranspiration, net recharge and discharge rates in the fractured terrain.

7) Since much pump test data are already available, we do not plan to duplicate the effort. Instead, we plan to analyze available pumping test data using powerful numerical models that were specially developed by LBNL scientists for fractured rocks. These models are highly specialized and are generally not available to and cannot be proficiently applied by typical ground water consultants. These analyses can provide important information on connectivity and storage capacity of the fractured aquifer. Nevertheless, if opportunities arise, we will also be able to design and perform tests meeting our own specifications. For example, when there are new wells drilled, landowners may agree to let our research team perform tests on the wells, since pump tests are already required by Fresno County. If possible, *in-situ* tracer tests at selected sites are also performed to identify flow paths and fracture-matrix interaction.

8) In addition to pump test analysis, we plan to carry out pneumatic testing to characterize fracture connectivity and fracture hydraulic properties in the vadose zone. This innovative method of fracture analysis is a proven technique, which is based on the variation of formation air pressure in response to the change in atmosphere pressure using numerical inversion technique developed by LBNL.

9) Develop submodels for the selected test sites. The usefulness of these models and their capability for prediction will be evaluated by comparing modeling results with selected observations. The evaluation will provide basis for developing large-scale groundwater flow models (Task 11).

10) Develop approaches for estimating water recharge (net infiltration) based on eco-hydrology methods. Eco-hydrology is a relatively new branch of hydrology and focuses on interactions between plants, climate and soil. Especially, study will focuses on how the plant type and its spatial patterns affect recharge and its distribution.

Enclosure 1

11) Develop a 3-D regional ground water model by incorporating geological and hydrologic data collected, including fracture parameters, water table, recharge and discharge, and pumpage data. First the model is calibrated to match observed data, such as water table data. Then the model is used for predictive studies under different water usage, recharge or climate scenarios. The primary objective of the ground water model is to provide a quantitative tool for local communities, governments and agency in water resource management and planning.

12) Preliminary results will be reported and made available annually through CWI's website in PDF format. In addition, throughout the project, CWI and LBNL scientists will educate citizens and landowners by offering talks and presentations designed for general public understanding arranged by Sierra and Foothill Citizens Alliance. At the end of the project, we will integrate the findings from all technical areas (geology, geophysics, hydrology, and numerical analysis) and draw overall conclusions regarding the storage capacity and sustainability of the ground water supply. Based on our conclusions and the scientific data obtained from this project, we will be able to make recommendations pertaining to water management practices and development policy in our final report. All data, models, and results will be made available for technical use for public benefit by agencies and watershed management groups in easily accessible digital formats – Adobe, Excel, Access, and ArcInfo/ArcView formats.

The lessons and experience learned from this local study project can be applied state-wide to other areas along the foothills of the Sierra Nevada in California. We plan to extend our study area to other communities and counties in California.

PROJECT DURATION AND BUDGET

The estimated duration of this project is between 3 to 5 years depending on the availability of funds.

A preliminary estimate of the budget required for this study is at about $1,000,000 annually. We expect that the total amount would be from different funding sources, including local, state, and federal funds.

Work Scope and Budget Plan for one five-year Project

Enclosure 1

RESO. # 07-469

BEFORE THE BOARD OF SUPERVISORS
OF THE COUNTY OF FRESNO
STATE OF CALIFORNIA

IN THE MATTER OF FRESNO COUNTY)
DECLARING SUPPORT OF THE)
FOOTHILL/MOUNTAIN WATER CAPACITY STUDY) RESOLUTION

WHEREAS, increased water demand resulting from population growth and the fractured rock geology of the groundwater supply in the foothill/mountain area of eastern Fresno County pose extremely complex technical and scientific issues pertaining to water management; and

WHEREAS, recent advances in hydrological science utilize high-tech equipment, state-of-the-art computer models, and innovative field-tested approaches to investigate fracture hydrology; and

WHEREAS, the Sierra and Foothill Citizens Alliance and the Millerton Area Watershed Coalition Program (CalFed funded) have partnered with the California State University, Fresno (CSUF), Lawrence Berkeley National Laboratory, and the University of California, Merced to provide an assessment of hydrogeologic data in the foothill area of eastern Fresno County; and

WHEREAS; The Foothill/Mountain Water Capacity Study project will be a state-of-the-art scientific investigation to characterize the geology and assess water supply reliability to address the areas critical water supply and sustainable development issues; and

WHEREAS, the outcome of the study will provide the hard scientific data to enable Fresno County to create policies to reasonably assure sustainable landuse and a viable quality of life for those currently living and those desiring to live in the foothills of the Sierra; and

WHEREAS, Fresno County has a vital interest in creating prudent water and land use policies in the foothill/mountain area of eastern Fresno County; and

WHEREAS, the Fresno County Board of Supervisors has in conjunction with the Foothill Water Study expressed support for a data acquisition program to provide information for monitoring of water demands, refinement of water balance amounts and to evaluate long-term sustainability of water supplies in the area.

Enclosure 1

NOW, THEREFORE BE IT RESOLVED, that the County of Fresno Board of Supervisors acknowledges the value of an advanced scientific investigation to address critical water supply and sustainable development issues in the foothill/mountain areas and does hereby support the Foothill/Mountain Water Capacity Study project.

THE FOREGOING RESOLUTION was passed and adopted by the following vote of the Board of Supervisors of the County of Fresno this 28th day of August, 2007, to-wit:

AYES: Supervisors Larson, Case, Anderson, Perea, Waterston

NOES: None

ABSENT: None

CHAIRMAN, Board of Supervisors

ATTEST:

BERNICE E. SEIDEL

Clerk, Board of Supervisors

By: _____

Deputy

AGENDA #: 33

RESOLUTION NO. 07- 469

Enclosure 1

CERTIFICATE OF DELIVERY OF DOCUMENT

I am employed by the County of Fresno as a Deputy Clerk of the Board of Supervisors. On **August 28, 2007** I delivered a copy of **Resolution No. 07-469** **(Item no. 33)** to the Chairman of the Fresno County Board of Supervisors.

Sherrie Evans
Deputy Clerk

Enclosure 1

33

Agenda Item

DATE: August 28, 2007

TO: Board of Supervisors

FROM: Alan Weaver, Director
Department of Public Works and Planning

SUBJECT: Support for the Foothill/Mountain Water Capacity Study

RECOMMENDED ACTION:

Adopt resolution in support of the Foothill/Mountain Water Capacity Study.

Approval of the recommended action will formalize County support of the Study and assist the project partners in their efforts to obtain funding for the project.

FISCAL IMPACT:

There is no County cost associated with the recommended action.

IMPACTS ON JOB CREATION:

The recommended action has no impact on the goals of the Regional Jobs Initiative.

DISCUSSION:

In an effort to assist Fresno County in creating prudent water and land use policies in the foothill/mountain area of eastern Fresno County, the Sierra and Foothill Citizens Alliance and the Millerton Area Watershed Coalition Program (CalFed funded) have partnered with the California State University, Fresno (CSUF), Lawrence Berkeley National Laboratory, and the University of California, Merced (project partners) to provide an assessment of hydrogeologic data in the foothill area of eastern Fresno County.

The foothill area of eastern Fresno County poses a technical challenge in terms of its water supply policy and sustainable development. The increased water demand resulting from development and the fractured rock geology of the groundwater supply pose complex technical and scientific issues pertaining to water management. Recent advances in hydrological science utilize high-tech equipment, computer models, and innovative field-tested approaches to investigate fracture hydrology.

ISTRATIVE OFFICE REVIEW Brandi Orth
ACTION: DATE August 28, 2007 APPROVED AS RECOMMENDED X OTHER
Page 1 of 2

ial Action of
of Supervisors
Deputy

OUS X ANDERSON CASE LARSON PEREA WATERSTON

Enclos

The Foothill/Mountain Water Capacity Study project will be a scientific investigation to characterize the geology and assess water supply reliability to address the areas critical water supply and sustainable development issues.

The project will emphasize the utilization of advanced technology and scientific knowledge in fracture hydrology, which has been developed with years of research experience gained from the multimillion-dollar federally (U.S. Department of Energy) funded Yucca Mountain Nuclear Waste Storage Project in Nevada. In addition, CSUF has also completed a CalFed funded combined field and laboratory study to prove the advanced concept of applying isotope hydrology to study the fractured terrain of the Big Sandy Watershed in eastern Fresno County. Based on the past successes, the scientists propose a comprehensive multidisciplinary field, laboratory, and numerical approach, including hydrogeology, geophysics, isotope hydrology, and computer modeling analysis. They will integrate the data using robust spatial analysis techniques to provide the much needed information for assessing water supply reliability and formulating water policy in fractured rock terrains.

Through the various available tools, expertise and techniques, the outcome of the study will provide the hard scientific data to enable Fresno County to create policies to reasonably assure sustainable land use and a viable quality of life for those currently living and those desiring to live in the foothills of the Sierra. The outcome of this unique investigation will also provide important and invaluable information for other counties, along the western slope of the Sierra, to develop prudent and sustainable water and land use policies. This effort can ultimately be of great benefit to the citizens of the State of California.

The project partners are seeking support and funding to provide an assessment of hydrogeologic data in the foothill area of eastern Fresno County. At this time, they are asking for County support of the Foothill/Mountain Water Capacity Study as they move forward in their efforts to obtain funding for the project.

G:\4360Devs&Pln\ADMIN\BOARD\Board Items\2007\08-28-07\Water Study AI.doc

Enclosure 1

PRESIDENT'S REPORT for August 06, 2007

SIERRA and FOOTHILL CITIZENS ALLIANCE is currently involved in the following activities:

- SAFCA has co-sponsored, along with Sierra Resource Conservation District, a study of groundwater quantity and quality conducted by the Millerton Area Watershed Coalition and the California Water Institute through funding provided by grants from CAL-FED. **Study recently completed.**

- The County's Regional Foothill Ground Water Study was published in late March and presented to the Supervisors on April 18, 2006. The Supervisor's voted to accept the recommendations presented in the report. The Report and the recommendations are available on the Fresno County website. The County also anticipates moving into phase two of the study which will require long term well monitoring to establish more finite trends in well water sustainability. SAFCA played a significant role in getting the County to conduct this important Study. **When the Phase II program is initiated we will be asking for people to volunteer their wells for this long term study.**

- Actively promoting the long overdue update of the Fresno County Sierra North Regional Plan (adopted 1983), particularly in light of potential development land use impacts. **On going effort - part of GP2000 review (see below).**

- Invited by the Supervisors to participant in the formalized review process of the County General Plan 2000. We are actively participating in this process. **Process currently underway.**

- Invited by the Supervisors to participate in the "Fresno County Water Management Group" meetings in order to represent the foothill/mountain areas in future regional water policies. We are actively participating in this process and SAFCA has just recently signed a Memorandum of Understanding (MOU) that establishes guidelines for member participation. **On going effort.**

- A participant in the San Joaquin Valley Blueprint Regional Planning Effort - This effort is sponsored by the Great Valley Center. SAFCA has participated in recent meetings. **On going effort.**

- SAFCA supports and is an active participant in the County Task Force for Open Space Buffers between Cities and Farm Land Preservation. The Board of Supervisors approved proceeding with the task force at their April 25, 2006 meeting. This is a major milestone and opportunity for enlightened future planning policy in Fresno County. **On going effort**

- We are currently working closely with the County of Fresno Planning Department, California Water Institute, the Lawrence/Berkeley National Laboratory and the CSU Merced to promote a first of its kind fractured rock aquifer water capacity study in the eastern foothill/mountain area of Fresno County. This could prove to be a very important and rigorous scientific study to determine and implement prudent land use policies up and down the Sierra. Board of Supervisors to vote on Resolution in support of this study on 28th of August. **Fund raising stage.**

- A recent participant in negotiations between the County and developers regarding the proposed Friant/Millerton Regional Plan. County must do RP in order to satisfy Federal Fish and Wildlife requirement for a regional habitat plan in order for F & W to recommend to B of R the allotment of water to Fresno Co. County will require developers to pay for RP process. Encompasses area from Friant to Auberry Rd and from Little Dry Creek to Millerton Rd. **On going**

continued

Enclosure 1

- SAFCA invited by Supervisor Waterston to participate in Fresno County Strategic Planning Effort. We are participants and attended the meeting the end of June. Some what similar to the SJV Blueprint effort. **On going**

- SAFCA has developed a positive, on going, working relationship with the Fresno County Bd. Of Supervisors, the Public Works and Planning Department Staff, State and other political representatives. This is important in order to allow SAFCA to creditably voice concerns and promote change regarding water and land use issues that more and more confront our foothill and mountain communities.

Those interested in any of the above activities are highly encouraged to volunteer your time and effort toward producing positive outcomes. Please contact Gary Temple at 855-5653 or Jim Macy at 855-5797.

EDUCATION REPRESENTATION WATER RESOURCES LAND USE

Enclosure 1

County of Tulare

inistration Bldg.
2800 West Burrel
Visalia, CA 93291

TEL: (559) 733-6271
FAX: (559) 733-6898

September 25, 2007

Assemblyman Bill Maze
5959 S. Mooney Blvd.
Visalia, CA 93277

Dear Assemblyman Maze:

There is an impending water crisis facing Tulare County and all of California. This is an ongoing problem, and the situation will only worsen in the coming years.

In September of 2006, the Friant Water Users Authority reached an agreement that will restore water flows down the San Joaquin River to help sustain a salmon fishery. This will force a reduction in water to Friant users at an average of 19% and a maximum of 23%. Friant contractors include the City of Lindsay, the City of Orange Cove, and the community of Strathmore, among others. The City of Fresno receives 40% of its water from the Friant system.

In August 2007, Judge Oliver Wanger reached a decision to reduce pumping in the Sacramento-San Joaquin Delta to save an endangered fish; the Delta Smelt. As a result, water supplies to Northern, Central, and Southern California will be reduced by 14-35%. An estimated 25 million people statewide use water from the Delta. The Central Valley, the Bay Area and Los Angeles will be affected by this ruling.

The decreased supply of surface water will lead to more pumping from the underground aquifers. We are currently in an overdraft situation, and the two recent lawsuits will further exacerbate this problem. Pumping additional water can lead to higher levels of contaminants in our residents' drinking water.

As you can see, the current water situation in Tulare County is in dire need of assistance. Losing water will affect agriculture and people. Our citizens will be left with a minimal supply of drinking water, and our farmers will not be able to irrigate their crops. Something must be done about this dangerous situation.

Enclosure 2

We urge you to support the Governor's plans for additional water storage and to impress upon your urban colleagues the need to endorse his plan. It is time to take action on this issue of great importance.

Sincerely,

Allen Ishida, Chairman
Tulare County Board of Supervisors

Connie Conway, Vice-Chairman
Tulare County Board of Supervisors

Phil Cox, District Three
Tulare County Board of Supervisors

J. Steven Worthley, District Four
Tulare County Board of Supervisors

Mike Ennis, District Five
Tulare County Board of Supervisors

CC: Tulare County Legislative Delegation

Public Comment to Board of Supervisors
concerning Planned Community Zoning Amendment

I see on today's agenda that the Board of Supervisors plans to approve a legislative letter regarding an impending water crisis facing Tulare County. If that is what the Water Commission and the Board of Supervisors believe, why are you considering a new town amendment permitting large scale development anywhere in the unincorporated areas of Tulare County? Shouldn't the Water Commission or a watershed council be surveying the watershed to identify its boundaries its groundwater supply, the extent of contamination of its wells and its natural areas that absorb runoff and filter pollutants FIRST?

The Ahwahnee Water Principles advise local government to perform a water supply and demand analysis when preparing a general plan update. This has not been done yet. We cannot sustain vibrant, livable communities if we cannot sustain clean and reliable water supplies. Water supply agencies like the Integrated Regional Water Management Commission created only two months ago in Tulare County should be consulted early in land use decisions like permitting future large planned community zones.

Delay consideration of this amendment until the General Plan update is completed.

Carole Clum
45638 South Fork Drive
Three Rivers, CA 93271
member of Tulare County Citizens for Responsible Growth

Enclosure 3

Enclosure 4

Bay-Delta Office
Department of Water Resources

1416 9th Street,
Sacramento, Ca 95814

Mailing Address:
P. O. Box 942836,
Sacramento, Ca
94236-0001

SWP Delivery Reliability Report

The *Draft State Water Project Delivery Reliability Report 2007* is available for public review. This report updates estimates of the current (2007) and future (2027) State Water Project delivery reliability and incorporates the recent federal court ruling for Delta pumping and potential impacts of future climate change.

The entire report can be accessed by clicking here (pdf download, 1.64 mb)
A summary of the report can be accessed by clicking here (pdf download, 78kb)

Comments to the report should be sent to:
California Department of Water Resources
SWP Delivery Reliability Report- Attn: Cynthia Pierson
P.O. Box 942836
Sacramento, CA 94236-0001

Or emailed to:
comments-on-2007drr@water.ca.gov

The deadline for comments is March 13, 2008.

Katherine Kelly, Chief
Bay-Delta Office
California Department of Water Resources
1416, 9th Street, Room 215-37
Sacramento, CA 95814

e-mail: kkelly@water.ca.gov
Telephone: (916) 653-1099
FAX: (916) 653-6077

California Department of Water Resources
Bay-Delta Office
January 22, 2008

Summary:
Draft State Water Project Delivery Reliability Report, 2007

The *Draft State Water Project Delivery Reliability Report 2007* updates DWR's estimate of current (2007) and future (2027) SWP delivery reliability and expands the conditions under which reliability is quantified. The report is produce every two years as part of a settlement agreement signed in 2003.

The report shows that future SWP deliveries will be impacted by two significant factors. The first is climate change, which is altering hydrologic conditions in the State. The second is significant restrictions on SWP and Central Valley Project (CVP) pumping in accordance with a December 2007 federal court imposed interim rules to protect delta smelt. The 2007 report incorporates future impacts on water deliveries to communities due to these factors.

This report represents the state of water affairs if no actions for improvement are taken. It shows a continued eroding of SWP water delivery reliability under the current method of moving water through the Delta.

The analysis shows that annual SWP deliveries (Table A and Article 21 amounts) would decrease virtually every year in the future (93% of future years). These reductions would be amount to a 20% reduction from current levels about one-fourth of the time, and greater than 30% in one-sixth of future years.

The report discusses areas of significant uncertainty to SWP delivery reliability:

- the recent and significant decline in pelagic organisms in the Delta (open-water fish such as delta smelt and striped bass);
- climate change and sea level rise; and
- the vulnerability of Delta levees' to failure due to floods and earthquakes.

As in previous reports, estimates of SWP deliveries are based upon operation simulations with DWR's CalSim II model using an extended record of runoff patterns. These patterns have been adjusted to reflect the levels of development in the source areas and, for future conditions, possible impact due to climate change. Potential deliveries under current conditions are estimated at the 2007 level and assume current methods of conveyance across the Delta and the interim operating rules defined by the recent court order to protect delta smelt. Potential deliveries under future conditions are estimated at the 2027 level and are also based on the assumption that no changes will be made in either the way water is conveyed across the Delta or in the interim operating rules to protect delta smelt. The analysis of future conditions incorporates climate change scenarios which correspond to the scenarios contained in DWR's 2006 report, *Progress on Incorporating Climate Change into Management of California's Water Resources*.

Under current conditions, annual SWP Table A deliveries from the Delta average 63% of the maximum Table A amount of 4,133 thousand acre-feet (taf) per year. Over the 82-year simulation period, annual SWP Table A deliveries range from a minimum of 6% to 90% of the maximum amount. Over multiple-year dry periods, average annual Table A deliveries are 34 or 35% of the maximum Table A amount, while average annual Table A deliveries over multiple-year wet periods range from 66 to 73% of the maximum Table A amount. Twenty-five percent of annual SWP Table A deliveries exceed 3,218 taf, 50 percent of deliveries exceed 2,976 taf and 75 percent exceed 2,168 taf.

Under current conditions, annual SWP Article 21 deliveries average 90 taf, ranging from 0 to 590 taf over the 82-year simulation period. Over the multiple-year wet period of 1978-1987, SWP Article 21 deliveries average 170 taf and range from 0 to 490 taf.

Due to the uncertainty of impacts by climate change on the availability of source water, SWP Table A and Article 21 deliveries under future conditions are expressed as a range in values. Under future conditions, annual SWP Table A deliveries from the Delta average from 66 to 69% of the maximum Table A amount. Although the estimated average annual amount of future SWP Table A deliveries increase when compared to current conditions, the amount of Article 21 deliveries decrease. Also, the amount of SWP Table A deliveries during multiple-dry periods in the future tend to decrease compared to current conditions. This decrease can be significant, depending upon the climate change scenario. This difference in future deliveries is reflected in lower SWP Table A delivery amounts associated with a 75% exceedence level (1,860 to 2,077 taf per year) than is for current conditions (2,168 taf per year).

Under future conditions, annual SWP Article 21 deliveries average 30 taf, ranging from 0 to 420 taf over the 82-year simulation period. Over the multiple-year wet period of 1978-1987, SWP article 21 deliveries average approximately 95 taf per year and range from 0 to 420 taf, depending upon the year and the climate change scenario.

The updated estimates of both current and future total annual SWP deliveries in *The Draft State Water Project Delivery Reliability Report, 2007* report are generally less than were estimated in the 2005 report, at times substantially so. As shown in the figure below, the current total annual SWP deliveries (Table A and Article 21 amounts) decrease in 93% of the years based on the historical data used in the analysis, when compared to the estimates in the 2005 report. Updated estimates for the current level of reliability show the total annual deliveries decrease over 20% in over one-quarter (28%) of the years analyzed and greater than 30% in one-sixth (16%) of the years, when compared to the estimates in the 2005 report. Water deliveries estimated for 20 years into the future show even greater decreases in a majority of years when compared to the estimates in the 2005 report.

The *Draft State Water Project Delivery Reliability Report, 2007* is available for public review via the DWR Home Page, http://www.water.ca.gov . The report is an update to the *State Water Project Delivery Reliability Report, 2005* issued as final in 2006. At least 30 days will be given for public review and comment.

Comments can be sent to:
California Department of Water Resources
SWP Delivery Reliability Report- Attn: Cynthia Pierson
P.O. Box 942836
Sacramento, CA 94236-0001

or emailed to:
comments-on-2007drr@water.ca.gov

Enclosure 4

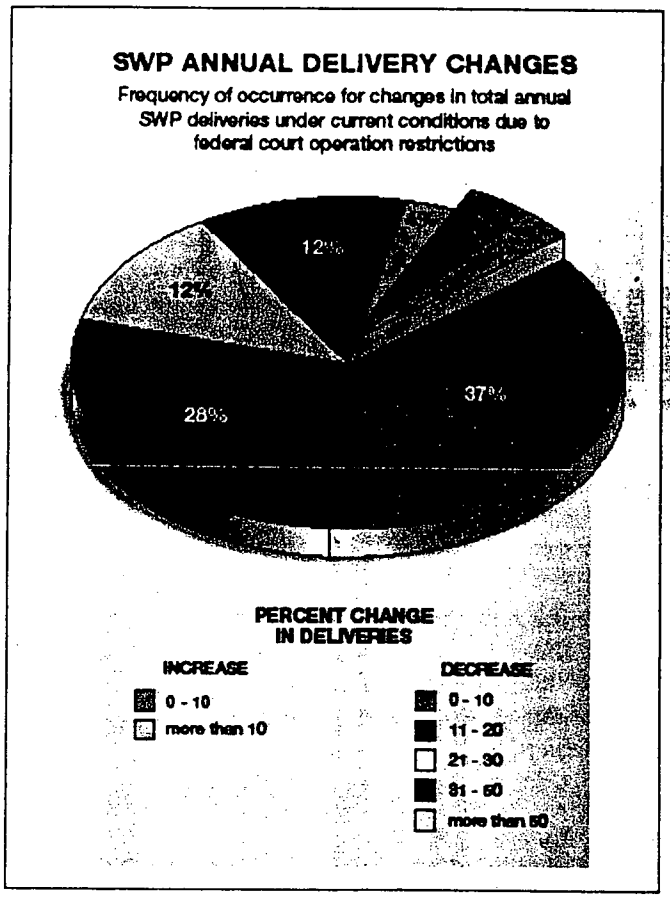

SWP ANNUAL DELIVERY CHANGES
Frequency of occurrence for changes in total annual SWP deliveries under current conditions due to federal court operation restrictions
12%
12%
37%
28%
PERCENT CHANGE IN DELIVERIES
INCREASE
0 - 10
more than 10
DECREASE
0 - 10
11 - 20
21 - 30
31 - 50
more than 50

Table 10-4. Irrigation Districts in Tulare County

Entity	Surface Water	Imported Water Source	Groundwater Extraction
Alpaugh Irrigation District	NA	Friant-Kern Canal (1,000af average)	19,000 af
Alta Irrigation District	King River	Friant-Kern Canal (surplus)	230,000 af
Delano-Earlimart Irrigation District	NA	Friant-Kern Canal (146,050 af average)	8,000 af
Exeter Irrigation District	NA	Friant-Kern Canal (1,000 af average)	14,000 af
Hills Valley Irrigation District	NA	Cross Valley Canal (2,000 af average)	1,000 af
Ivanhoe Irrigation District	Kaweah River	Friant-Kern Canal (11,650 af average)	15,000 af
Kaweah Delta Water Cons. District	Kaweah River	Friant-Kern Canal (24,000 af average)	130,000 af
Kern-Tulare Water District	Kern River	Cross Valley Canal (41,000 af average)	33,000 af
Lindmore Irrigation District	NA	Friant-Kern Canal (44,000 af average)	28,000 af
Lower Tulare River Irrigation Dist.	Tule River	Friant-Kern Canal (180,200 af average) Cross Valley Canal (31,000 af average)	NA
Lindsay-Strathmore Irrigation District	NA	Friant-Kern Canal (24,150 af average)	NA
Orange Cove Irrigation District	NA	Friant-Kern Canal (39,200 af average)	30,000 af
Pioneer Water Irrigation District	Tule River		3,000 af
Pixley Irrigation District	NA	Friant-Kern Canal (1,700 af average) Cross Valley Canal (31,000 af average)	130,000 af
Porterville Irrigation District	Tule River	Friant-Kern Canal (31,000 af average)	15,000 af
Rag Gulch Water District	Kern River	Friant-Kern Canal (3,700 af average) Cross Valley Canal (13,300 af average)	
Saucelito Irrigation District	Tule River	Friant-Kern Canal (37,600 af average)	15,000 af
Stone Corral Irrigation District	NA	Friant-Kern Canal (10,000 af average)	5,000 af
Teapot Dome Irrigation District	NA	Friant-Kern Canal (5,600 af average)	
Terra Bella Irrigation District	NA	Friant-Kern Canal (29,000 af average)	2,000 af
Tulare Irrigation District	Kaweah River	Friant-Kern Canal (100,500 af average)	65,000 af

Source: Bookman-Edmonston Engineering Inc. Water Resources Management in the Southern San Joaquin Valley, Table A-1.

Enclosure 5

California salmon population collapses

By Terence Chea
Associated Press

SAN FRANCISCO — The number of chinook salmon returning to California's Central Valley has reached a near-record low, pointing to an "unprecedented collapse" that could lead to severe restrictions on West Coast salmon fishing this year, according to federal fishery regulators.

INSIDE
Delta smelt numbers decline despite efforts to save fish. **Local & State, B1**

The sharp drop in chinook, or "king," salmon returning from the Pacific Ocean to spawn in the Sacramento River and its tributaries last fall is part of a broader decline in wild salmon runs in rivers across the West.

The population dropped more than 88% from its all-time high five years ago, according to an internal memo sent to members of the Pacific Fishery Management Council and obtained by The Associated Press.

Regulators are still trying to understand the reasons for the shrinking number of spawners; some scientists believe it could be related to changes in the ocean linked to global warming.

See **SALMON**, Page A10

Enclosure 6

Salmon: Juvenile figures are low

Continued from **Page A1**

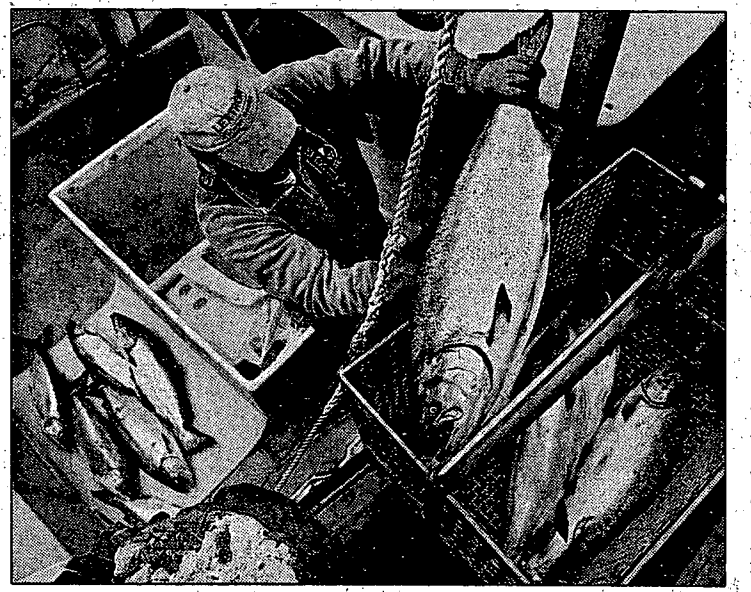
Some fishermen and environmentalists believe the sharp decline is related to increased water exports from the Sacramento-San Joaquin Delta, which supplies drinking water to millions of people in dry Southern California, as well as irrigation for America's most fertile farming region.

"It's time to reduce pumping of delta waters before we destroy the fish and wildlife species we appreciate so much in California," said Mike Sherwood, an attorney for Earthjustice.

Federal lawmakers, meanwhile, are considering how to pay for a plan to restore salmon to the San Joaquin River, which was North America's southernmost salmon run until Friant Dam was completed in 1944 and portions of the river dried up.

Environmentalists filed a federal lawsuit in 1988 and won, prompting Friant-area farmers to reach a settlement in 2006 that would reduce annual irrigation deliveries to free up more water for the river. The settlement also calls for channel improvements and other changes. If all goes as planned, salmon would be reintroduced in the San Joaquin by 2013.

But the federal fishery regulators' memo reports that only about 90,000 returning adult salmon were counted in the Central Valley in 2007, the second-lowest number on record. The population was at 277,000 in 2006 and 804,000 five years ago.



THE PRESS DEMOCRAT FILE

Salmon fisherman Dan Kleinman unloads his catch Aug. 8, 2005, at Tides Wharf in Bodega Bay. The number of chinook salmon returning to the Central Valley is at an all-time low that could lead to severe restrictions on West Coast salmon fishing this year.

In an e-mail to council members, Donald McIsaac, the agency's executive director, said he wanted to give them "an early alert to what at this point appears to be an unprecedented collapse in the abundance of adult California Central Valley ... fall Chinook salmon stocks."

"The magnitude of the low abundance ... is such that the opening of all marine and freshwater fisheries impacting this important salmon stock will be questioned," he said.

It's only the second time in 35 years that the Central Valley has not met the agency's conservation goal of 122,000 to 180,000 returning fish, according to the council, which regulates Pacific coast fisheries.

More worrisome is that only about 2,000 2-year-old juvenile chinooks — used to predict returns of adult spawners in the coming season — returned to the Central Valley last year, by far the lowest number ever counted. On average, about 40,000 juveniles, or "jacks," return each year.

Salmon that spawn in Central Valley rivers form the backbone of the West Coast's commercial and recreational salmon fishery and are caught by fishermen from Southern California to British Columbia.

"Sacramento fish are really what the fishery depends on," said Chuck Tracy, the council's salmon management officer.

Not long ago, salmon restoration efforts in the Sacramento watershed were being touted as a wildlife management success story.

But recent years have seen populations dwindle in many Western rivers, and scientists are trying to understand why.

The council plans to meet in Sacramento in March to discuss possible restrictions, including a complete closure of the salmon season that begins in May. Final decisions will be made in April.

Duncan MacLean, a Half Moon Bay fisherman who is on a team that advises the fishery council, said he is bracing for hard times.

"It's probably going to be worse than anything we've experienced before," said MacLean, 58, who relies on salmon fishing for as much as 70% of his income. "It's going to put a lot of us out of business."

▶ The Fresno Bee contributed to this report.

Delta smelt's numbers decline

Costly effort to save fish appears to be failing.

By Michael Doyle
Bee Washington Bureau

WASHINGTON — Millions of dollars and untold gallons of water have failed to stop a precipitous decline in the population of the endangered delta smelt, officials acknowledged Tuesday.

In a sobering assessment, state and federal officials told a House panel that their big investment in the tiny smelt hasn't paid off yet.

The concession comes as officials contemplate spending an additional $10 billion or more for new water-supply projects and environmental work to address California's long-term water problems.

The 3-inch-long smelt found in the sprawling estuary where the Sacramento and San Joaquin rivers meet is considered an indicator of the delta's health.

Starting in 1993, the smelt has been protected as threatened under the Endangered Species Act.

It has been a major beneficiary, although not the only one, of the 1.5 million acre-feet of Central Valley water set aside annually for environmental protection.

Even so, the smelt's popula-

Water: Valley residents testify in D.C.

Continued from Page B1

tion last year was only about 2.4% of the population noted when it was placed under federal protection in 1993.

"Obviously, we haven't had the success with the delta smelt that we would have wanted," Bureau of Reclamation Commissioner Robert Johnson said.

Johnson said he could not even estimate how much money has been spent on measures to protect the fish, although it's likely in the tens of millions of dollars.

"The [delta] system is still in decline," California Department of Water Resources Director Lester Snow told the House water and power subcommittee.

The House panel convened the hearing Tuesday in part to let San Joaquin Valley residents like Los Banos farmer Jean Sagouspe and Firebaugh City Manager Jose Ramirez vent about their region's water shortfalls.

In part, the hearing could set the stage for federal legislation, although nothing specific has been introduced yet.

The hearing also follows a ruling by Fresno-based U.S. District Judge Oliver Wanger. Last year, Wanger imposed tighter pumping limits in order to leave more water in the delta for protection of the smelt.

Wanger's ruling could cut irrigation deliveries south of the delta by between 20% and 30% annually.

Snow cautioned that "we don't know precisely how much water we will have year to year."

State and federal officials said they didn't know precisely how much of the smelt's population decline has been caused by something other than irrigation pumping.

Repeatedly Tuesday, Rep. Jim Costa, D-Fresno, and other San Joaquin Valley lawmakers insisted that numerous small pumps not part of the state and federal water projects could account for some of the delta's problems.

The political implication is that Valley farmers are shouldering too much of the burden for restoring the smelt's delta habitat.

The hearing also comes as legislators in Sacramento and Washington consider expensive fixes for California's long-term water problems. These proposed solutions cited Tuesday include an estimated $3.5 billion for new reservoirs, between $3 billion and $4.5 billion for a conveyance facility to haul water around the delta, and some $2.4 billion for various delta habitat improvements.

Federal funding, so far, hasn't met the state's anticipated needs, and California lawmakers pressed Bush administration officials Tuesday to provide more money.

"If we're going to make this happen, we have to get all the California folks to say this is a high priority for us," Costa said.

▶ The reporter can be reached at mdoyle@mcclatchydc.com or (202) 383-0006.

Enclosure 7

salt sinks. The remaining runoff (2 – 3 percent) is available as a renewable water supply for urban, agricultural, and environmental uses.

Table 10-1 shows California's estimated water supply, for average and drought years under 1995 and 2020 levels of development, with existing facilities and programs. This information is excerpted from the *California Water Plan,* prepared by the California Department of Water Resources. The state's 1995-level average year water supply was about 77.9 million acre-feet (maf), including about 31.4 maf of dedicated flows for environmental uses.

Table 10-1. California Water Supplies with Existing Facilities and Programs[a] Thousand Acre Feet (taf)

Supply	1995		2020	
	Average	Drought	Average	Drought
Surface				
CVP	7,004	4,821	7,347	4,889
SWP	3,126	2,060	3,439	2,394
Other Federal Projects	910	694	912	683
Colorado River	5,176	5,227	4,400	4,400
Local Projects	11,054	8,484	11,073	8,739
Required Environmental Flow	31,372	16,643	31,372	16,643
Reapplied	6,441	5,596	6,449	5,575
Groundwater[b]	12,493	15,784	12,678	16,010
Recycled and Desalted	324	333	415	416
Total (rounded)	**77,900**	**59,640**	**78,080**	**59,750**

[a] Bulletin 160-98 presents water supply data as applied water, rather than net water. This distinction is explained in a previous section. Past editions of Bulletin 160 presented water supply data in terms of net supplies.

[b] Excludes groundwater overdraft

Source: Department of Water Resources, California Water Plan.

Enclosure 8

The annual average statewide supply is projected to increase about 0.2 maf by 2020 without implementation of new water supply options. While the expected increase in average year water supplies is due mainly to higher Central Valley Project (CVP) and State Water Project (SWP) deliveries (in response to higher 2020-level demands), new water production will also result from groundwater and from recycling facilities currently under construction.

The state's 1995-level drought year water supply was about 59.6 maf, of which about 16.6 maf is dedicated for environmental uses. Annual drought year supply is expected to increase slightly by 2020 without implementation of new water supply options. The increase is expected to be created through higher CVP and SWP deliveries and new production from surface water, groundwater, and recycling facilities currently under construction.

Surface Water Supplies

Surface water supplies for the Tulare Lake Basin include developed supplies from the CVP, the SWP, rivers, and local projects. Surface water also includes the supplies for required environmental flows. Required environmental flows are comprised of undeveloped supplies designated for wild and scenic rivers, supplies used for instream flow requirements, and supplies used for Bay-Delta water quality and outflow requirements. Finally, surface water includes supplies available for reapplication downstream. Urban wastewater discharges and agricultural return flows, if beneficially used downstream, are examples of reapplied surface water.

Central Valley Project. The Legislature authorized the State Central Valley Project in 1933. Because California was unable to sell the bonds needed to finance the project during the Great Depression, the United States Bureau of Reclamation (USBR) initiated project construction. Initial congressional authorization for the CVP included facilities such as Shasta and Friant Dams, Tracy Pumping Plant, and the Contra Costa, Delta-Mendota, and Friant-Kern Canals.

The USBR's CVP is the largest water storage and delivery system in California, comprising of 29 of the state's 58 counties. The project's features include 18 federal reservoirs and 4 additional reservoirs jointly owned with the State Water Project. The keystone of the CVP is the 4.55 maf Lake Shasta, the largest reservoir in California. CVP reservoirs provide a total storage capacity of over 12 maf, nearly 30 percent of the total surface storage in California, and deliver about 7 maf annually for agricultural (6.2 maf), urban (0.5 maf), and wildlife refuge use (0.3 maf) (Table 10-2).

Enclosure 8

Enclosure 9

TABLE 4-4
GENERAL PLAN POPULATION ESTIMATES BY UNINCORPORATED COMMUNITY

Community	Domestic Water Service Provider	Existing Population (2003 TCAG Model)	Range of General Plan Population Estimates	Community Plan Last Updated
Alpaugh	Alpaugh JPA	761	849 to 975	None to Date
Cutler	Cuter PUD	4,962	10,245 to 11,763	1988
Orosi	Orosi PUD	8,086	16,694 to 19,169	1988
Ducor	Ducor CSD	504	592 to 680	2004
Earlimart	Earlimart PUD	7,393	13,034 to 14,965	1988
East Orosi	East Orosi CSD	426	N/A	None to Date
Goshen	Cal Water	2,473	4,258 to 4,889	1978
Ivanhoe	Ivanhoe PUD	4,524	6,302 to 7,236	1990
Lemon Cove	Lemon Cove SD	251	377 to 433	None to Date
London	London CSD	1,848	1,927 to 2,213	None to Date
Pixley	Pixley PUD	2,662	5,755 to 6,608	1997
Plainview	Plainview MWC	822	969 to 1,113	None to Date
Poplar-Cotton Center	Poplar CSD	1,789	3,067 to 3,521	1996
Richgrove	Richgrove CSD	2,723	3,315 to 3,806	1986
Springville	Springville PUD	2,755	3,274 to 3,759	1985
Strathmore	Strathmore PUD	2,800	4,166 to 4,783	1989
Terra Bella	Terra Bella ID	3,714	6,506 to 7,471	2004
Three Rivers	Mutual Water Companies/CSD	2,300	3,220 to 3,697	1980
Tipton	Tipton CSD	1,809	1,858 to 2,134	None to Date
Traver	Tito Balling, Inc. (Private Purveyor)	732	1,461 to 1,678	1989
Woodville	Woodville PUD	1,623	1,882 to 2,161	None to Date

Notes:
JPA: Joint Powers Authority
Cal Water: California Water Service Company (Private)
SD: Sanitary District
MWC: Mutual Water Company
N/A: Not Available
Sources: Existing Population obtained from 2000 Census Data; Range of General Plan Population Estimates based upon modeled General Plan Land Use Alternatives; Community Plan Status obtained from Goals & Policies Report (Revised July 8, 2007)

Table 4-5

SUMMARY OF DOMESTIC WATER SUPPLY CONDITIONS FOR UNINCORPORATED COMMUNITIES IN TULARE COUNTY

Domestic Water Service Provider	Water Supply Source From	Facilities Adequacy to Serve Projected General Plan Population Growth			
		More than Adequate[1]	Adequate[2]	Adequate w/ Concerns[3]	Significant Concerns[4]
Alpaugh JPA	Groundwater			X	
Cutler PUD	Groundwater			X	
Orosi PUD	Groundwater		X		
Ducor CSD	Groundwater			X	
Earlimart PUD	Groundwater			X	
East Orosi CSD	Groundwater			X	
Cal Water - Goshen	Groundwater			X	
Ivanhoe PUD	Groundwater	X			
Lemon Cove SD	Groundwater				X
London CSD	Groundwater			X	
Pixley PUD	Groundwater				X
Plainview MWC	Groundwater				X
Poplar CSD	Groundwater	X			
Richgrove CSD	Groundwater			X	
Springville PUD	Surface Water	X			
Strathmore PUD	Groundwater/		X		
Terra Bella ID	Groundwater/	X			
Three Rivers CSD	Groundwater/			X	
Tipton CSD	Groundwater			X	
Tito Balling - Traver	Groundwater			X	
Woodville PUD	Groundwater		X		

Notes:

1) "More than Adequate" means that facilities appear capable of serving growth beyond build-out of the General Plan.

2) "Adequate" means (1) apparent capacity to serve build-out growth with little financial, technical or environmental difficulty; and (2) clear capacity to serve projected growth.

3) "Adequate with Concerns" means that the provider either has the capacity to serve projected growth or is likely to solve capacity issues within the time horizon of the General Plan.

4) "Significant Concerns" means that the provider lacks capacity to serve projected growth and is likely to experience significant difficulties in expanding the system to meet projected demand.

5) Source of information is from Municipal Service Reviews Adopted by the Tulare County Local Agency Formation Commission (for applicable Districts) and from discussions with District staff members.

Enclosure 9

Carole Clum's Factchecking on
Tables 4-4 and 4-5 in Draft EIR

Table 4-4 General Plan Population Estimates by Unincorporated Communities

Table 4-5 Summary of Domestic Water Supply Conditions for Unincorporated Communities in Tulare County

Compiled on February 26, 2008
Updated in March 2008
Including Comments on Ability of Each Community to Serve Projected Growth of Updated General Plan For 2030 Buildout

Carole Clum
45638 S. Fork Drive
Three Rivers, CA 93271-9610

Carole A. Clum
February 26, 2008

Enclosure 10

person interviewed: Martha Howard
date: Feb 22, 2008
total population: 1000
how many water connections: 325
can you hook up any more homes: can serve 20 more
wells: 2, both have arsenic contamination

infrastructure pipes new
water tanks new

meters: yes. Read but not charging yet by volume flat rate

peak usage: at maximum capacity

water quality high in arsenic, no nitrates

grants: at top of the list for grant to treat arsenic
will use absorbtion method
Boyle Engineering

sewers: septic only

problems: Alpaugh's water system is 70 years old

Comments: This is an impoverished community with arsenic in water supply, old water system at maximum capacity during peak demand
SIGNIFICANT CONCERNS

person interviewed: Superintendent Junior
date: Jan 31, 2008
total population: 6300 in 2000 census
# of PUD water connections: 1200
can you serve any more homes: very few undeveloped lots
will annex more land
wells: 2 wells
lost 2 wells due to nitrate contamination
infrastructure pipes
water tank

meters: only on a few commercial accounts
will slowly install meters on domestic accounts in future

peak usage: at maximum capacity
Rationing landscape watering all year, odd and even days
water quality: nitrates

grants: engineers will apply for any grant they qualify for
want to drill another well. Will be blending water
well will cost $500,000

Sewers: at capacity now
moratorium on sewers since 2006

Comments: This is a poor community with nitrate contamination, almost no capacity to serve more connections, at maximum capacity during peak demand, at capacity for wastewater treatment
SIGNIFICANT CONCERNS

person interviewed: Melanie, bookeeper, and Pete Garga, manager 333-1448
date: Feb. 22, 2008
total population: 300
CSD water connections: 146
Can you serve any more homes: not many $2500 to hook up
wells: 2 wells. (1 well doesn't produce many gallons)
sometimes sulfur smell, sometimes bacteria
infrastructure: pipes - need new pipes
well - need new well

meters: yes. Not read. flat rate charged

peak usage: pumps run longer, costs run higher
in dry years wells pump less water

water quality: okay (except for occasional sulfur smell and bacteria)

grants: applying for grants for well, piping, meters, tank

sewers: no sewage treatment plant. All on septic systems

problems: infrastructure

Comments: This community has only 2 wells (1 doesn't produce much water), sometimes bacteria in water, little capacity to serve more with water, no sewage treatment plant, needs new well and new pipes.
SIGNIFICANT CONCERNS

person interviewed: Rachel Garcia
date: Jan. 31, 2008
total population: 8000
# of PUD water connections: 1600
Can you serve any more? at capacity now
annexing 2 parcels 300 houses
each lot will pay $8600 to hook up to water and sewer. (This will pay for infrastructure
wells: 3 wells, Well # 4 has choliform bacteria, not using this well. Will drill 5th well.
infrastructure: pipes
tank only have pressure tank, no storage tank
meters: just started using meters
peak usage: low water pressure on west side in summer
grants: none
sewers: at 100% capacity for sewage
485 sewer connections
comments: Impoverished farm town can not serve more water connections, at 100% sewage treatment, one well out of 4 has coliform bacteria, low water pressure on west side of town during peak demand.

SIGNIFICANT CONCERNS

GOSHEN CSD sewers only 651-0323
water comes from CALWATER 624-1650 in Visalia

person interviewed: Maria Garcia
date: Jan 31, 2008
total population: 2394 as of 2002
wastewater treatment: not a lot of capacity
planning to expand — new development of 300 homes will treat its own wastewater
Sewer connections: 947 commercial and industrial
760 residential
grants: applying for grant money from state for wastewater treatment enlargement
peak usage: odd and even days for watering landscaping all year

CALWATER supplies Goshen with water, cross connected to entire city of Visalia. As long as Visalia has water, Gosh has water

person interviewed: Jerry Neal 624-1650 operations center
date Jan. 31, 2008
water connections in Goshen entire city from Rd 64 east to Church Street
peak usage no problem. We have over 80 wells. Drill 2 new wells a year, each costing $1 million
potential growth no problem

water quality nitrates We filter it out from well in Patterson tract. MCL - keep lowering levels of contaminants allowable
DBCPs 3 or 4 wells have contamination
We drill wells 320-350' deep, seal upper and middle levels to avoid contamination
meters: charge 50¢ per 100 cubic feet

Comments: Goshen has adequate clean water but almost at capacity for wastewater treatment.
ADEQUATE WITH CONCERNS

Ivanhoe PUD 798-0512

person interviewed: Carol Fina

date: Jan. 31, 2008

total population 5000-6000 people within PUD

# of water connections to PUD 1112

can you serve any more homes: only 15 undeveloped lots, will not expand PUD

wells: 7 wells, 1 contaminated with nitrates

infrastructure: pipes 50 years old, breaking

meters: since 1989. charge 22¢ a cubic foot

peak usage: when PSI falls below 35, switch on backup well

water quality: good

grants: applying for grant for new well from State Reserve Fund

sewers: when it rains a lot, ponds start to fill up. To keep them from running over, we switch on the clarjester which digests sludge and makes it dry. Irrigate with remaining water and spread it on pasture.

comments: Can serve projected growth if grant is received to drill new well and sewage ponds are expanded or clarjester is run more often. Also pipes are old and breaking. Money will need to be found to repair water pipes

ADEQUATE WITH CONCERNS

Lemon Cove PUD 597-2504

person interviewed: Bill Pensar, board member

date: January 21, 2008

total population: less than 200

# of connections 41

can you serve more? 40

wells: 1 well searching for clean groundwater

3 wells with too much nitrate contamination, dormant or abandoned

infrastructure: new since 1992

meters: yes. read quarterly. Charge by cubic foot
Standby charge

peak usage: lots of water

water quality: nitrates above drinking water standards

grants: apply for many grants

sewers: at 3/4 capacity, 60 connections

comments: Almost all the land surrounding this small town is in the Williamson Act and can't easily be developed. Population has fallen since 2000 census. Nitrates above drinking water standards. Wastewater treatment at 3/4 capacity. This is a modest town.

SIGNIFICANT CONCERNS

London CSD 591-5142 Mon - Fri 10-4 9

person interviewed: Carolyn Thomas

date: Jan 31, 2008

total population: 2100

# of water connections 448

wells 3, good

infrastructure: pipes need to be replaced
need new well

meters:

peak usage: water pressure goes down. We encourage people not to waste water.

water quality: good

grants: applying for grant to drill well

Comments: This small modest town has infrastructure problems, including pipes that need to be replaced, a new well to be drilled and low water pressure at peak demand.

SIGNIFICANT CONCERNS

Orosi PUD 528-4262 M-F 8-12 1-5

person interviewed: Elaine Vidana, office manager

date: Jan. 31, 2008

total population: 7318 in 2000 census

how many water connections: 1700

can you serve any more homes:

wells: 4 active, drilling 5th well
abandoned wells on north side of town due to nitrate contamination

infrastructure pipes - replacing water mains, have the money
water tank - need another 750,000 gallon tank, have money

meters: had them 4-5 years, pay 76¢ per thousand gallon

peak usage: water pressure low

sewers: replacing sewer lines, 40 years old, seeping water, have the money
moratorium on sewer connections

grants: applying for grant now via Dennis Keller

Comments: This town has a moratorium on sewer connections. This town has raised money to replace pipes, water tank and sewer lines which were leaking, applying for grant for new wastewater treatment plant.
ADEQUATE WITH CONCERNS

Pixley PUD 757-3878

person interviewed: Randy Masters, manager 799-3196
Jan. 31, 2008

total population: 2584

# of water connections: 800

can you serve any more homes:

wells: 1 good well
3 wells, out of compliance with ARSENIC standards

infrastructure: pipes — distribution system old, small lines need to be upgraded
tank - elevated tank

meters: half of homes are metered flat rate $20, charged so much per gallon over 30,000 gallons a month

peak usage: haven't gotten to capacity

water quality arsenic problems

grants: applying for grants from USDA, state, and federal
engineer is Michael Taylor, Provost and Richard

Sewers: at capacity
got some grant money for bigger wastewater treatment plant, borrowed rest of money from USDA

Comments: This town has serious arsenic contamination problems and at capacity for wastewater treatment

SIGNIFICANT CONCERNS

Plainview MWC special district
a group of individuals

person interviewed: Lindsay utilities district which sends out water bills 562-5982

date: Feb. 25, 2008

total population:

total water hook ups: 168

can you serve any more homes:

wells:

infrastructure: new pipes

meters: yes

peak usage

water quality: their domestic wells had nitrates
Now they get water from Lindsay

Sewers: septic only

Comments: This is a very small community with Nitrate contamination problems.

SIGNIFICANT CONCERNS

person interviewed: Mike Clark, board president, cell 559-359-9918
date: Jan 31, 2008 and Feb 22, 2008
total population: 2500 in 2001
water connections: 596
wells: 3 wells, (2 good, 1 has nitrates)
at 80' deep there is standing water
Real good water supply
intrastructure: pipes - 1972
tank - 1972
pump - new

meters: yes. Don't read them. Flat rate

peak usage: unlimited water

water quality: good

grants: none

sewers: 1994
640 hook ups
71% of capacity
major expansion planned
2000 homes to be built
They will pay to be connected to water and sewage and they will pay for expansion of wastewater treatment plant

Comments: This small town has some nitrate contamination problem raring to build. No growth for 37 years. All land around community is zoned AE20. Can't wait to develop.

ADEQUATE

Richgrove CSD 1-661-725-5632 14

Mon, Wed, Fri 8-12

Friday only 1-5

person interviewed: Maria Pimentel

date: Feb. 22, 2008

total population: 2723

# of water connections: 532

can you serve more: NO

wells: 2

infrastructure:

meters: working on getting meters

peak usage: at capacity

water quality:

grants: applying for grant from state for new well

sewers: at capacity

Comments: This town cannot serve any more water connections. During peak demand they reach capacity. Waste water treatment plant is at capacity. Applying for grant to drill new well.

SIGNIFICANT CONCERNS

person interviewed: Nancy Bruce, board member, 539-3351
date: Jan. 22, 2008 and March 23, 2008
total population: 1500
# of water connections: 389
can you serve more: Don't know
wells: None. SPUD uses Tule River water.
infrastructure: Some very old water pipes laid in 1920's. Don't know where the pipes are. Mapping them now. Can't afford to replace them.
meters: Yes
peak usage: During peak demand, SPUD reaches the limits of its water rights to the Tule River.
water quality: good
grants: Applying for grants to replace old water pipes and improve wastewater treatment
sewers: Sewer moratorium for last 28 years. No place to grow wastewater treatment plant.
(375 sewer connections) Want to buy $500,000 ultraviolet light to zap all organisms in wastewater except cryptosporidium. SPUD's permit allows them to treat 100,000 gallons of effluent a day.
Comments: 50% of all private wells in Springville are contaminated with radon or nitrates. This community has severe constraints on growth. SIGNIFICANT CONCERNS

Strathmore PUD 559 568 1613

person interviewed: Adele Sanchez

date: Feb. 1, 2008

total population:

# of water connections: 487 to 700 dwellings (some share)

can you hook up more homes: yes. Just approved 41 homes + new school

wells: 5 wells, all high in nitrates
blending water with Friant-Kern canal water. Using only one well.
If water from canal is lost, they will install nitration filtration system

infrastructure: recently replaced 2/3 of water lines

meters: yes. 464 per 1000 gallons

peak usage: at capacity. Have to shut down. Ask customers to conserve.

water quality - Nitrates above standards until blending

grants: applied for several grants for nitrate filtration system
problem with disposing of heavily salt laden water

Sewers: old treatment facility
sewer lines need to be replaced
copper in wastewater - hazardous waste
clients pay progressive fee

LSID Lindsay Strathmore Irrigation District supplies water to part of Strathmore PUD.

Comments: All five wells contaminated with nitrates
Blending well water with FRIANT-KERN canal water.
During peak demand at capacity. Wastewater treatment plant old.
Sewer lines need to be replaced. SIGNIFICANT CONCERNS

person interviewed: Karen Kerwood
date: Jan. 31, 2008
total population: 3200
water connections: domestic treated in town 714
surface water untreated 500

wells: no. using water from Friant-Kern canal

infrastructure: established 1915, aging facilities constantly updated

meters: 900 irrigation meters for lawns and agriculture

peak usage: when near capacity, stop taking water orders from farmers

water quality: not an issue for irrigation

grants: applying for state grant for expansion of treated water

sewers: Terra Bella sewer maintenance district is maintained by Tulare County

Comments: Groundwater around Terra Bella is contaminated with Nitrates. This small irrigation district does NOT receive its water supply from groundwater but from Friant-Kern canal. It is vulnerable to 30% loss of water due to restoration of San Joaquin River. During peak demand it reaches capacity.

SIGNIFICANT CONCERNS

Three Rivers CSD

person interviewed: Randy Pares

date: Jan 21, 2008

total population: 2700

# of CSD water connections: 75 in Alta Acres subdivision

can you serve more homes: only 5 undeveloped lots

wells: 1 well

1 River well recently rebuilt for use during peak demand

infrastructure: all pipes need to be replaced. All homes assessed.

meters: yes. read bimonthly. Standard rate. For every gallon over they pay tiered rates

peak usage: exceeded maximum capacity until River well rebuilt in 2007

water quality: good

grants: got a loan for $2 million for rehabilitation of water pipes.
grant for $.5 million

sewers: septic only

comments: There are 35 small private, volunteer run water systems in Three Rivers. Most serve a very small number of homeowners, one motel, one school, one RV park. The great majority of private wells serve one home. These homes are on 1-5 acres or more. There is no capacity for the growth projected by the General Plan Update. Some wells are contaminated with radon, nitrates, fecal coliform, or arsenic. There is not reliable groundwater.
SIGNIFICANT CONCERNS.

Tipton CSD 752-4182 19
Mon-Thurs 8-3

person interviewed: Johnny Price, maintenance man, cell- 280-4217
date: Feb. 25, 2008
total population: 1792 in year 2000
# of water connections: 594 commercial and residential
wells: 2 wells, third well shut down due to contamination by oil and nitrates

water quality good
can you serve more? approximately 20-40 more connections

grants: no
meters: don't read meters, flat rate
peak usage: okay, as long as both wells are working

sewers: not maxed out yet, 3/4 capacity

infrastructure: need to drill another well

Comments: This small town could grow as long as both wells work or don't become contaminated. Sewer capacity is at 3/4 capacity. They need to drill another well.

ADEQUATE WITH CONCERNS

TRAVER - Tito Balling 559-935-2300 20

person interviewed: employee of Tito Balling

date: Feb 8, 2008

total population:

water connections: 180

can you serve more: yes

wells: 3, all good. Third well was needed for water pressure problems at school

infrastructure: pipes old, need to be replaced

meters: not metered

peak usage:

grants: applying for grant for meters

Sewer: operated by Tulare County "can't serve" order

comments: many people have their own wells.
impoverished community
The old water pipes need to be replaced.
The water system is under "can't serve" order

SIGNIFICANT CONCERNS

person interviewed: Ralph Guitierez 901-6097 manager

date: Jan 31, 2008, Feb 22, 2008

total population: 1678 according to 2000 census

water connections: 400

can you serve more: 5-10 houses

wells: 2 good wells, 1 well not used because of sand
sometimes only draw 5 gallons a minute
sometimes water is salty

infrastructure: would need another well if there were a new subdivision

meters: yes. read once a month. Minimum monthly charge plus 50¢ per 100 cubic feet
average water + sewer fee is $50 a month

peak usage: no problem

water quality: good

grants: applying for state money for new sludge beds

sewers: connection fee $7400 for water & sewer

Comments: This small town would need another good well if it were to expand water connections. PUD is applying for state grant money for new sludge beds. Old wells sometimes suck air, draw only 5 gallons a minute or draw up salty water. Only capacity for 5-10 more water connections

SIGNIFICANT CONCERNS

California

Income Inequality Grew in California Over the Past Two Decades

California's Richest Families vs. Poorest Families

- The *richest* 20 percent of families have average incomes **7.9** times as large as the *poorest* 20 percent of families.
- This ratio was **6.5** in the late 1980s.
- This growth in income inequality is the **18th** largest in the nation.
- The very richest families — top 5% — have average incomes **13.3** times as large as the poorest 20 percent of families.

The gap between California's richest and poorest families is 8th largest in the nation.

California's Richest Families vs. Families in the Middle

- The *richest* 20 percent of families have average incomes **2.9** times as large as the *middle* 20 percent of families.
- This ratio was **2.3** in the late 1980s.
- This growth in income inequality is the **5th** largest in the nation.

The gap between California's richest families and families in the middle is 3rd largest in the nation.

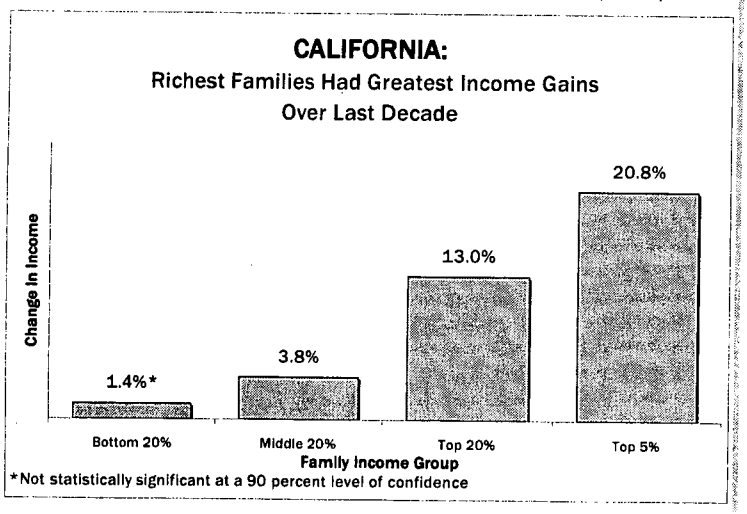
A Closer Look: Short- and Long-term Trends

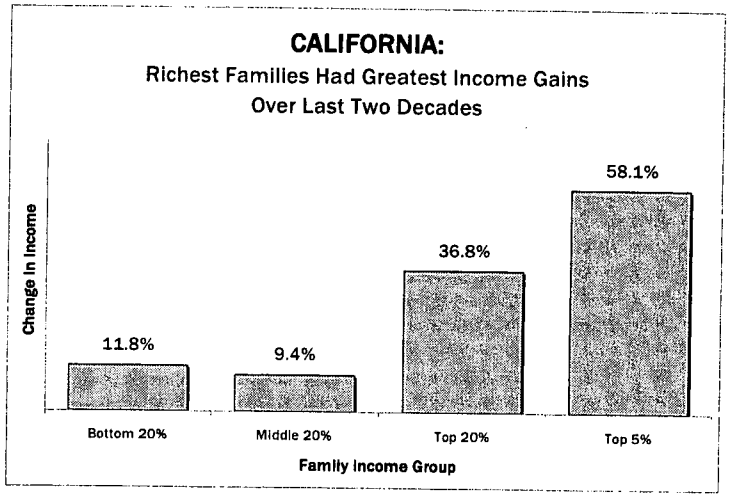
Late 1990s to mid-2000s

- The average income of the *poorest* fifth of families did not change significantly.
- The average income of the *middle* fifth of families increased by **$1,889**, from $49,092 to $50,981.
- The average income of the *richest* fifth of families increased by **$16,772**, from $128,587 to $145,358.
- The average income of the *richest* 5% of families increased by **$41,988**, from $201,397 to $243,386

Late 1980s to mid-2000s

- The average income of the *poorest* fifth of families increased by **$1,926**, from $16,386 to $18,312.
- The average income of the *middle* fifth of families increased by **$4,401**, from $46,580 to $50,981.
- The average income of the *richest* fifth of families increased by **$39,103**, from $106,255 to $145,358.
- The average income of the *richest* 5% of families increased by **$89,456**, from $153,929 to $243,386





Center on Budget and Policy Priorities

Economic Policy Institute

Based on the latest available data (2004-2006)
Source: Center on Budget and Policy Priorities and Economic Policy Institute
Pulling Apart: A State By State Analysis of Income Trends.
Available at: http://www.cbpp.org/4-9-08sfp.htm

Enclosure 11

Public Policy Institute *of* California

California Counts

POPULATION TRENDS AND PROFILES

Volume 1 Number 1 • October 1999

How Many Californians?

A Review of Population Projections for the State

By Hans P. Johnson

Summary

The level of plausible variation in California's future population requires serious consideration by policymakers and planners. Planning and building infrastructure for the wrong population can be costly. To give policymakers and others concerned with projecting population a sense of the range of projections and why the range is so wide, this report compares and analyzes population projections produced for the state by various organizations: the California Department of Finance, the U.S. Census Bureau, the U.S. Bureau of Economic Analysis, UCLA, and the Center for Continuing Study of the California Economy. Those projections are used in short- and long-range planning by local, state, and federal government agencies, as well as by private firms.

The current projections agree on some basic issues: Growth rates will be lower than in the past, but absolute levels of growth will remain high. Natural increase will have more effect than net migration on population growth. Domestic migration will be lower, while international migration will remain strong. California will still have higher growth rates than the rest of the country. However, the projections of future population and rates of population growth vary widely. For example:

- For 2025, the highest and lowest projections differ by more than 10 million people, with the lowest series projecting a population of 41.5 million and the highest projecting over 52 million. By 2040, the difference is over 16 million people (almost half the state's current population), with the lowest projection setting the state's future population at 46.8 million and the highest at 63.4 million.

- These projections imply very different rates of population growth between 1995 and 2025. In the highest projection, California will have another 20 million people by 2025,

Enclosure 12

The level of plausible variation in California's future population requires serious consideration by policymakers and planners.

or 64 percent of the state's 1995 population. The lowest projection suggests only about 8 million more, or 29 percent of that population.

- The projections differ substantially in some characteristics of the state's future population: e.g., the size of the state's white population and the age structure.

Each of the projections is plausible if you accept its assumptions regarding migration to and from California. The differences in migration assumptions drive almost all of the differences among the various projections. Over the past 15 years, domestic migration between California and other states has fluctuated dramatically. It is possible that California is on the verge of a new demographic era, one in which the state no longer attracts more domestic migrants than it sends out. It is also possible that the state will return to its longtime demographic history of being a place that attracts more migrants from other states than it sends to those states. The lowest projections assume the former, while the highest projections assume the latter. The most recent evidence indicates that the large domestic migration losses of the early 1990s have ceased, although the state has not returned to the positive flows of domestic migrants that characterize the state's past.

Planners need to be aware of the range of plausible future population levels of the state, and should, accordingly, consider alternative scenarios in their planning.

Enclosure 12

Context

The distinguishing feature of California's population is its tremendous dynamism. That dynamism is evident not only in California's rapid population growth, but also in the increasing diversity of the state's population. For decades, California's population growth rates have rivaled those of many less developed countries rather than typifying those of developed regions of the world. As recently as 1950, the state had only 10 million residents, less than one-third of today's 33 million. Over the past few decades, the state also experienced a dramatic increase in ethnic and cultural diversity. In 1970, white non-Hispanics accounted for almost 80 percent of the state's population; today, they account for approximately half of the state's population. By 2020, Latinos will be the single largest ethnic group in the state.

The sheer size of the state's population increase has important implications for almost all government services and functions including welfare, education, transportation, and corrections. Large increases in the state's population also have important implications for protection of natural resources, distribution of water, agriculture, and location and nature of development. No less important, but less predictable, is how the changing composition of the state's population will influence the state's economic evolution, its political representation, and its cultural identity or identities. Projections of 50 million Californians by 2025 suggest that policy issues related to population growth will become even more salient to policymakers. However, projecting future populations is an uncertain undertaking. The demographic future of California is very much in doubt. The recession of the early 1990s saw record numbers of domestic migrants leaving California. From 1990 through 1996, between 1 million and 2 million more people left California for other states than moved to California from the rest of the United States. At the same time, immigration (international migration) to the state increased substantially during the 1970s and 1980s and, though slowing, still remained substantial during the recession of the early 1990s. Some argue that the patterns of the early 1990s ushered in a new era of demographic change in California. Some predict that the state, once a magnet for migrants from the rest of the country as well as the world, will be the next demographic New York: a place that receives immigrants and sends out domestic migrants. Projections of the state's population are heavily influenced by assumptions about migration patterns.

In this report, we compare and analyze a number of long-term population projections for California. First, we discuss the projected populations, then compare the various methods and assumptions used to develop the projections, and finally discuss some implications of the comparisons. Additional charts, tables, and analyses are available on our website at *www.ppic.org*.

In California, domestic migration has been especially volatile over the past ten years.

Long-Term Projections for California

Three government agencies and two independent organizations produce long-term population projections for California: the California Department of Finance (DOF), the United States Census Bureau (CB), the United States Bureau of Economic Analysis (BEA), the Anderson Forecast at UCLA, and the Center for Con-

Enclosure 12

Projections of the state's population diverge widely over time.

tinuing Study of the California Economy (CCSCE). The Census Bureau produces two sets of state population projections: Series A, the "preferred" series, and Series B, the "alternative" series. CCSCE produces three series of projections: high, middle, and low. Projections are revised every few years as additional data become available (e.g., a new census) or as population trends diverge from earlier projections. The BEA has ceased making economic and population projections.

The length of the projection series and the level of demographic detail vary among the series (see Table 1). The projections produced by the California Department of Finance and the Census Bureau are most directly comparable in terms of demographic detail. The Census Bureau projections extend to 2025, whereas all the other series extend to at least 2040.

Total Population and Growth Rates

Projections of the state's population diverge widely over time (see Figure 1 and Table 2). By 2025, the difference between the highest and lowest projection is greater than 10 million people, with the

Table 1. Sources of Long-Term Population Projections for California

Source	Projection Years	Year Issued	Demographic Detail
California Department of Finance (DOF)	1998–2040	1998	Single year of age; five race/ethnic groups; 58 counties
United States Census Bureau (CB)	1995–2025	1996	Single year of age; five race/ethnic groups; two series: preferred and alternative
United States Bureau of Economic Analysis (BEA)	1993–2045	1995	Broad age groups
UCLA Anderson Forecast	1996–2050	1998	Eight regions within the state
Center for Continuing Study of the California Economy (CCSCE)	1997–2050	1998	Broad age groups; subregions;* three series: high, middle, low

*Only total population projections for the entire state were available for this report.

Enclosure 12

CB alternative series projecting a population of 41.5 million compared with UCLA's projection of over 52 million. The range in long-term projections is substantially less if we exclude the UCLA projections and all the alternative projections.[1] For example, the DOF projections, the CCSCE middle-series projections, and the CB preferred series agree that California will have almost 50 million residents by 2025, although they disagree about the timing of the

[1] By alternative projections, we mean the CB alternative projections and the CCSCE high and low series.

Figure 1. Total Population Projections for California

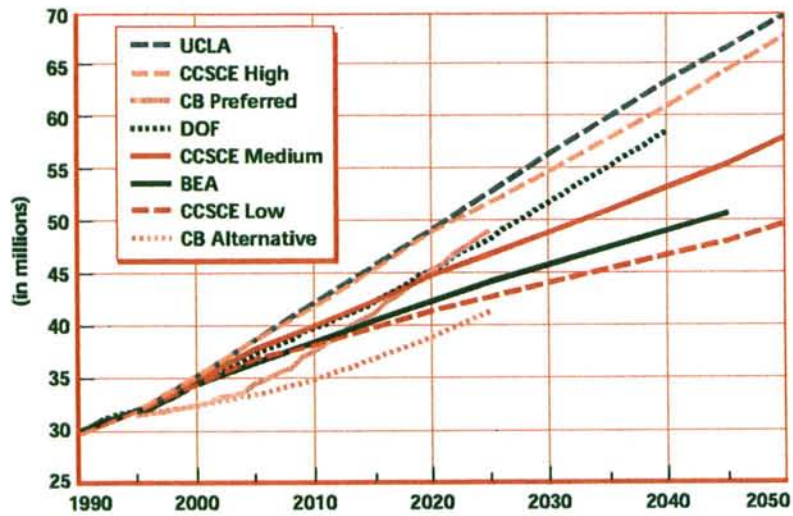
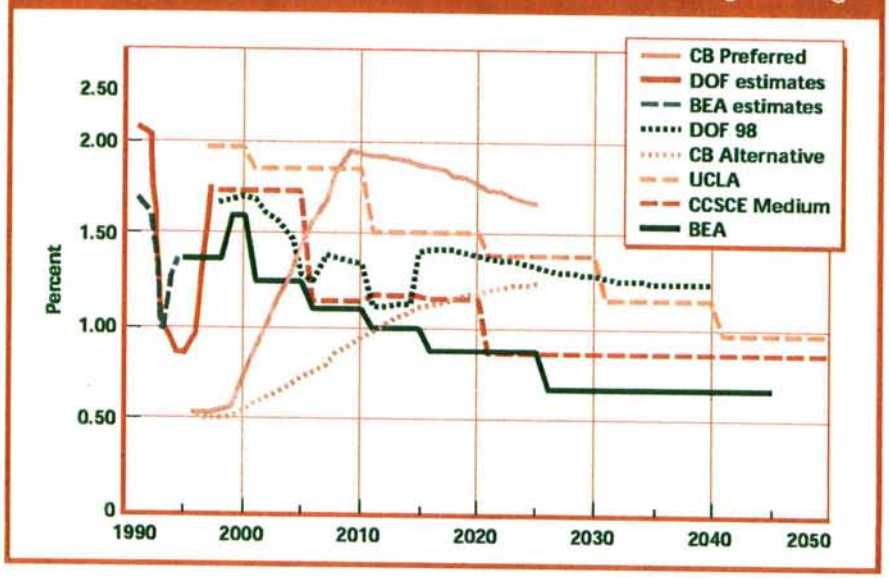


Table 2. Total Population Projections for California (in thousands)

Year	Department of Finance	Census Bureau Preferred	Census Bureau Alternative	BEA	UCLA	CCSCE Medium	CCSCE High	CCSCE Low
1990	29,942			29,905		29,758	29,758	29,758
1995	32,063	31,589	31,589					
1996	32,384	31,758	31,758		32,600			
1997	32,957	31,925	31,917			32,957	32,957	32,957
1998	33,506	32,100	32,078	33,398				
2000	34,653	32,521	32,423	34,470	35,247			
2005	37,372	34,441	33,511	36,657		37,800	38,769	36,831
2010	39,958	37,644	34,968	38,710	42,297	40,030	41,980	38,300
2015	42,371	41,373	36,838	40,686		42,432	45,439	39,850
2020	45,449	45,278	39,034		49,149	44,964	49,084	41,416
2025	48,626	49,285	41,480	44,372		46,917	51,846	42,706
2030	51,869				56,472	48,955	54,749	44,036
2035	55,210					51,081	57,798	45,407
2040	58,731				63,418	53,300	61,002	46,821
2045				50,731		55,615	64,367	48,277
2050					69,823	58,031	67,901	49,779

Enclosure 12

Figure 2. Population Growth Rates: Annual Percentage Change



state's population growth between now and 2025. By 2040, the difference between the highest and lowest projections increases to over 16 million people (almost half the state's current population), with UCLA projecting 63.4 million Californians and the CCSCE low series projecting only 46.8 million.

These projections imply very different levels of population growth. The highest projections suggest that California will need to accommodate another 20 million people by 2025, while the lowest suggest the state's population growth will total only about 8 million people between 1995 and 2025. Total population increases would amount to 29 percent of the state's 1995 population according to the lowest series, compared with 64 percent according to the highest series.

The projections show substantial differences even in the short run. Both Census Bureau series project substantially lower population totals than do the other series. For example, the CB series project fewer than 34.5 million California residents in 2005 whereas the DOF projects 37.4 million Californians. This short-term difference is a product of both differing projections of growth and differing current estimates of the state's population at the time the projections were made. During the 1990s, the Census Bureau estimates of the state's population have increasingly diverged from those produced by the DOF: By 1998, the Census Bureau estimates were lower than the DOF estimates by more than 800,000.

As shown in Figure 2, annual growth rates implied by these projections are substantially different—especially the initial projected growth rates, in which the CB projections are three times higher than the DOF projections. The large disparity in initial rates results from differing base years for the projections. The CB projections were developed at a time when the most recent estimates suggested substantial domestic out-migration from California and population growth in the state was quite slow by historic standards.

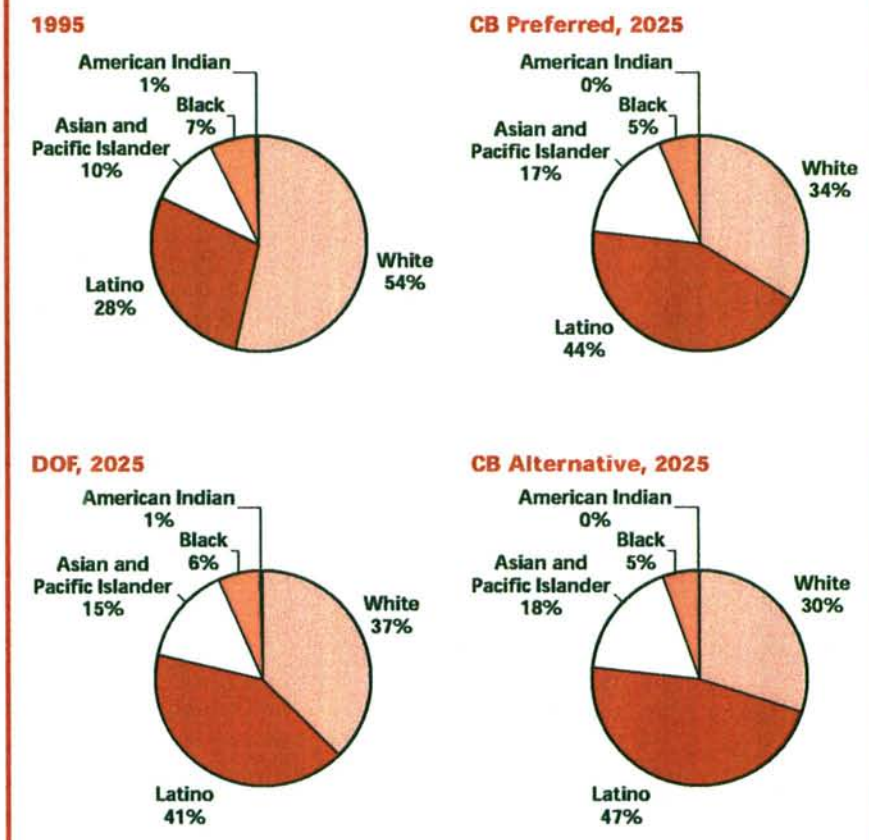
Enclosure 12

Although the CB projected growth rates are higher than growth rates experienced by the state in the recession, the CB projections did not anticipate the dramatic short-run change in growth rates that occurred between 1994 and 1998 (see Figure 2). Again, if we exclude the alternative series (CCSCE high, CCSCE low, and CB alternative), the range of long-term projections is substantially narrowed.

Population by Race/Ethnicity

Only the projections by the California Department of Finance and the Census Bureau provide race/ethnic detail. While the DOF and CB projections agree on the direction of race/ethnic distributional changes in the state's population, the projections differ on the magnitude of those changes (see Figure 3). In particular, the DOF projects that a somewhat larger share of the population will be white and a somewhat smaller share will be either Latino or Asian and Pacific Islander than the CB projects. According to the CB projections, no race/ethnic group currently constitutes a majority of California's population. According to the DOF projections, that state will be reached between July 2000 and July 2001. The CB preferred series projects that by 2014 Latinos will be the largest single race/ethnic group in the

Figure 3. California Population by Race/Ethnic Distribution



Enclosure 12

state, whereas the DOF projection places that date at around 2021.

In absolute terms, the difference between the CB alternative series and the DOF projections is especially pronounced for whites, with the DOF projecting almost 6 million more whites by 2025 than the CB alternative projections (see Table 3). The lower population of whites in the CB series can be attributed to projected continuing net domestic migration losses. Domestic migrants, both to and from California, are more likely to be white than are immigrants or non-migrants in the state.

Age Structure

An easy way to summarize the age structure of a population is to examine the dependency ratio. The dependency ratio is the number of people of nonworking age (less than 18 and over 65) for every 100 people of working age. It provides a rough indicator of a population's ability to support nonworking members. The DOF, CB, and BEA projections each provide projections by age. As shown in Figure 4, California's dependency ratio is projected to increase substantially after 2010,

Table 3. Population Projections by Race/Ethnicity (in thousands)

		1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
White	DOF	17,180	17,422	17,731	17,902	17,969	18,123	18,216	18,222	18,141	18,005
	CB Preferred	16,630	15,562	15,123	15,394	15,838	16,261	16,626			
	CB Alternative	16,631	15,501	14,537	13,771	13,201	12,788	12,477			
Latino	DOF	9,101	10,689	12,301	13,964	15,643	17,778	20,085	22,547	25,199	28,091
	CB Preferred	9,207	10,646	12,268	14,215	16,410	18,757	21,232			
	CB Alternative	9,206	10,628	12,101	13,691	15,433	17,289	19,243			
Asian and Pacific Islander	DOF	3,338	3,999	4,684	5,314	5,815	6,474	7,128	7,786	8,441	9,092
	CB Preferred	3,380	4,006	4,731	5,602	6,549	7,539	8,564			
	CB Alternative	3,379	3,995	4,635	5,309	6,026	6,786	7,582			
Black	DOF	2,251	2,338	2,434	2,541	2,691	2,806	2,918	3,024	3,128	3,234
	CB Preferred	2,184	2,138	2,158	2,268	2,406	2,544	2,679			
	CB Alternative	2,184	2,129	2,083	2,054	2,042	2,042	2,051			
American Indian	DOF	193	206	222	237	253	266	279	290	300	309
	CB Preferred	189	170	162	165	170	176	183			
	CB Alternative	189	169	154	143	135	130	127			

Enclosure 12

as large cohorts of baby boomers begin to enter retirement ages. Because of the certain aging of the baby boom, there is little variation in projections of overall dependency ratios.

To the state government, however, the most important component of the dependency ratio is that attributable to children, because the state is the primary provider of services to children (via education) and provides relatively few services to the elderly. After a substantial rise in the child dependency ratio during the 1990s, the DOF and BEA series project a decline to the mid-2010s, followed by an increase (see Figure 5). This is a welcome short-term trend for a state trying to catch up with large increases in public school attendance. The CB projections show an increase in the child dependency ratio from 1995 to the first few years of the next century, before declining to the mid-2010s. After 2015, however, all the series project that the child dependency ratio will increase substantially, rising to levels not seen since the early 1970s according to the DOF projections.[2] The BEA projections show the same long-term pattern, but the increases are substantially lower.

Figure 4.
Historic and Projected Dependency Ratios for California

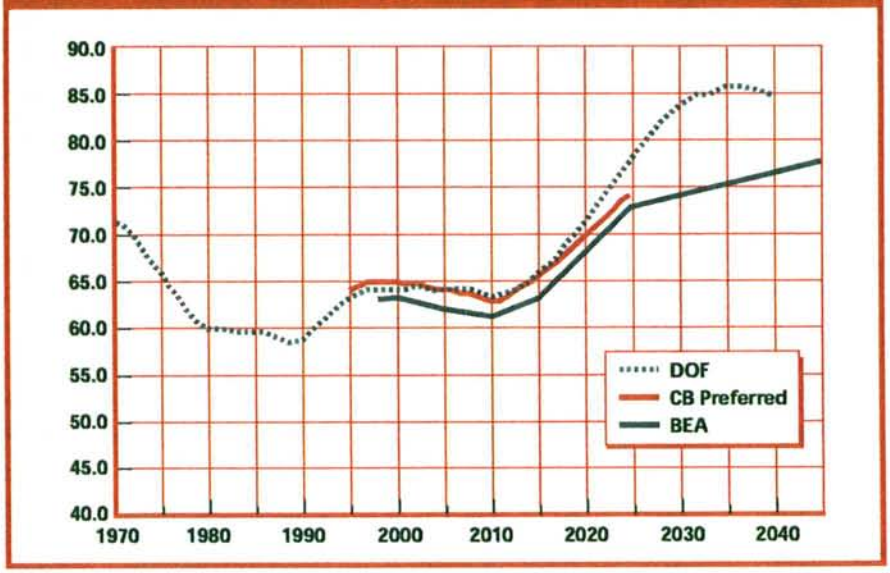
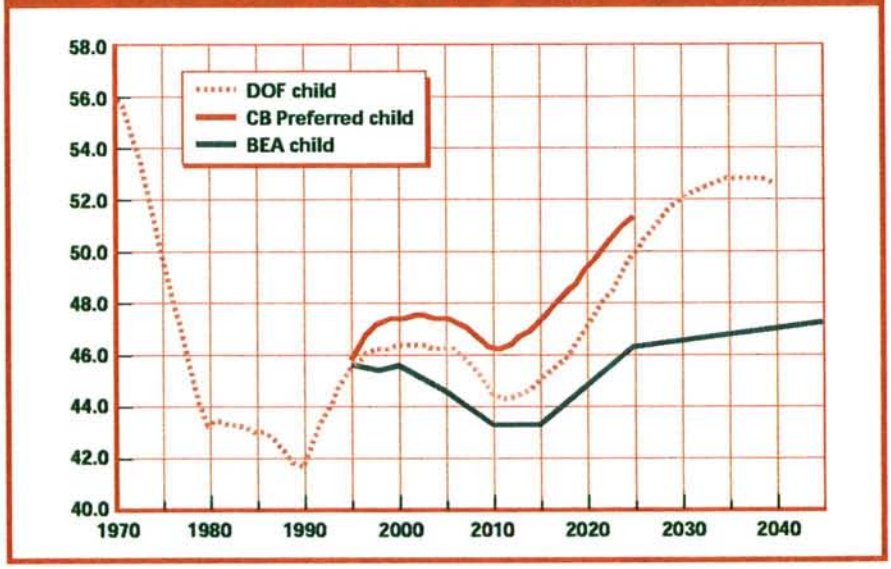


Figure 5.
Historic and Projected Child Dependency Ratios for California



[2] The higher child dependency ratio projections based on the CB preferred series are due to higher fertility projections. The lower BEA projections are based on a method that does not explicitly consider fertility.

Enclosure 12

Despite their wide disparities, the current projections agree on some basic issues.

Methods and Assumptions of the Projections

Although some of the variation in the population projections results from differing methodologies, the most important source of variation is differing assumptions. Assumptions differ largely because population trends differed when the projections were developed. Most projections weight recent trends heavily in forecasting long-term trends.

Methods

Methods used to project California's population range from the computationally complex "multi-state cohort component projection" technique employed by the Census Bureau to the simple derivative approach employed by UCLA. The projections can be classified into three types: (1) purely demographic (DOF, CB preferred); (2) demographic and economic (CB alternative, BEA, and CCSCE); and (3) derivative extrapolations (UCLA). The purely demographic approaches of the DOF and the CB preferred projections rely on an analysis of historical trends in the components of population change: births, deaths, and migration. This approach implicitly assumes that factors that led to such trends in the past will continue in the future. The methods that incorporate economic factors do so because employment is assumed to drive population growth through migration. Migration, especially domestic migration, to or from California responds strongly to employment opportunities in California versus the nation. The methods employed by CCSCE, BEA, and the CB alternative series use projections of employment to determine future populations of the state. UCLA's projections are primarily based on and extrapolated from an earlier set of projections produced by the Department of Finance, but also include a subjective assessment of recent economic conditions in the state. Finally, some of the state projections consider national population projections (CCSCE, BEA, CB), while others do not (DOF, UCLA).

More complex methods do not necessarily produce more accurate projections, although they might provide details (such as populations by age and gender) that are necessary to the user. Key sources of uncertainty are future employment, domestic migration, and fertility. For example, a decline in fertility rates could lead to substantially lower population projections over the long term for California than the DOF and CB projections currently envision.

Assumptions

When projections are developed partly explains differences between them. The most recent economic and demographic trends available at the time a projection is made are important factors in projecting future trends. In California, domestic migration has been especially volatile over the past ten years. The CB and BEA projections were developed when the most recent data showed massive domestic out-migration from California. Since those projections were developed, however, the large domestic migration outflows have ceased. The DOF, CCSCE, and UCLA projections were all developed after this turnaround, and thus show higher short-term projections. Figure 6 shows the importance of timing for the projections by comparing the DOF and CB migration estimates and projections.

Accuracy, Agreement, and Implications

Demographers have not been particularly successful in identifying and forecasting turning

Enclosure 12

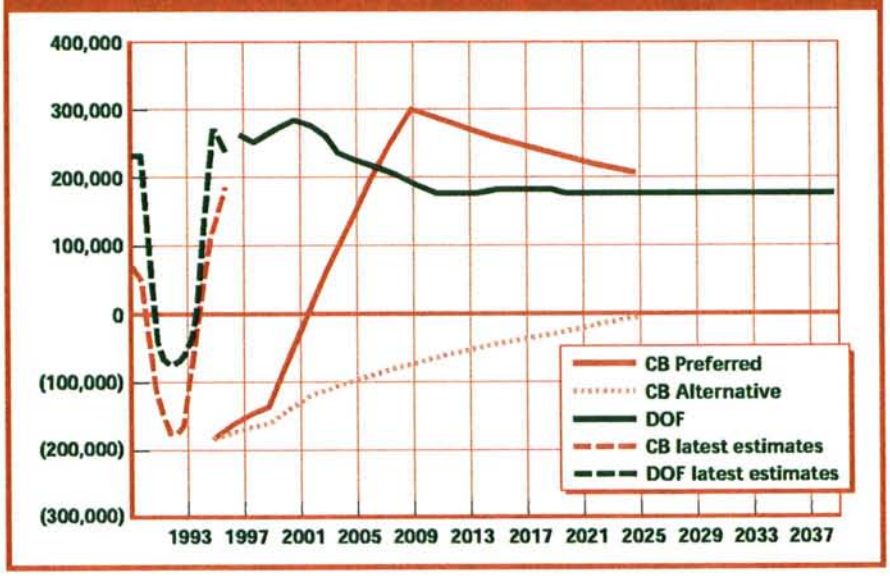
points in population growth. For example, two of the most profound demographic events in the last half of the twentieth century, the baby boom and the baby bust, were not accurately foreseen by demographers.

It is not clear which of the current projections for California are most accurate. Based on when the projections were developed, we can conclude that the CB and BEA projections are too low, at least in the short run. In the long run, the wide range of current population projections reflects the uncertainty of California's demographic future. Although the short-term projections of the CB and BEA are too low, any of the long-term population projections could be realized. None of the scenarios represented by the projections are unrealistic. The highest projection series (UCLA) implies annual growth rates for California that are lower than for any comparable historic period. The lowest projection series (CCSCE's low series) assumes that California's share of national employment growth will be only moderately lower than in the past.

Despite their wide disparities, the current projections agree on some basic issues:

- California's future growth rates will be generally lower than past rates, though absolute levels of growth will remain high.

Figure 6. Estimates and Projections of Net Migration
Census Bureau and Department of Finance



- Natural increase will be a greater source of population growth in the state than net migration.

- Domestic migration is not forecast to be as great as in the past, while international migration will remain strong.

- California growth rates will still exceed those of the rest of the nation.

The level of plausible variation in California's future population requires serious consideration by policymakers and planners. Prudent planners should consider several different future levels of California's population in developing their plans. Planning and building infrastructure for the wrong population can be costly. These costs should be explicitly considered and evaluated in developing plans for alternative future scenarios. ◆

In the long run, the wide range of current population projections reflects the uncertainty of California's demographic future.

Enclosure 12

References

Bolton, Nancy. 1999. *New California Projections: The UCLA Anderson Forecast for the Nation and California, December 1998.* Personal communication.

Campbell, Paul R. 1996. *Population Projections for States by Age, Sex, Race, and Hispanic Origin: 1995 to 2025*, U.S. Bureau of the Census, Population Division, PPL-47.

Center for Continuing Study of the California Economy. 1999. *California Economic Growth.* Palo Alto, CA.

Johnson, Hans P., and Richard Lovelady. 1995. *Migration between California and Other States: 1985–1994.* Sacramento, CA: California Department of Finance and California Research Bureau, California State Library.

Levy, Steve. 1999. Personal communication, March 1999.

State of California, Department of Finance. 1998. *County Population Projections with Age, Sex and Race/Ethnic Detail.* Sacramento, CA.

U.S. Dept. of Commerce, Bureau of Economic Analysis. 1995. *BEA Regional Projections to 2045; Volume 1, States.* Washington DC: U.S. Government Printing Office.

Our web site version of this report contains two appendices with additional tables, charts, and discussions of California population projections. We also provide links to the web sites of the organizations that produce population projections for California.

The Public Policy Institute of California is an independent, nonpartisan research organization established in 1994 with an endowment from William R. Hewlett. The Institute is dedicated to raising public awareness of issues and giving elected representatives and other public officials in California a more informed basis for developing policies and programs.

PUBLIC POLICY INSTITUTE OF CALIFORNIA
500 Washington Street, Suite 800 • San Francisco, California 94111
Telephone: (415) 291-4400 • Fax: (415) 291-4401
info@ppic.org • www.ppic.org