



**CITY OF SANTA CRUZ/SOQUEL CREEK WATER DISTRICT
REGIONAL SEAWATER DESALINATION PROJECT
JOINT TASK FORCE
Thursday, March 29, 2007, 4:00 P.M.
Soquel Creek Water District Board Room, 5180 Soquel Drive, Soquel,
California**

MEETING MINUTES

1. ROLL CALL and INTRODUCTIONS

The Regional Seawater Desalination Joint Task Force meeting was called to order at 4:06 p.m. by Director Kriege, Soquel Creek Water District.

Present:

Santa Cruz City Council: Mike Rotkin, Ed Porter and Cynthia Matthews (alternate)

Soquel Creek Water District Board of Directors: Bruce Daniels (President) and Dan Kriege

Staff: City of Santa Cruz Water Department: Bill Kocher, Director; Linette Almond, Deputy Director and Heidi Luckenbach, Associate Engineer

Soquel Creek Water District: Laura Brown, General Manager; Jeff Gailey, Engineering Manager and Denise Alexander, Executive Assistant

For the purpose of preparation of the minutes, the following terms will be used throughout the current and all future minutes. The Regional Seawater Desalination Project Task Force will be referred to as the "Task Force." The City of Santa Cruz will be referred to as the "City" and the City of Santa Cruz Water Department will be referred to as the "SCWD". The Soquel Creek Water District will be referred to as "SqCWD." A member from the Soquel Creek Water District Board of Directors will be referred to as "Director", and the Soquel Creek Water District General Manager will be referred to as "General Manager." A member of the Santa Cruz City Council will be referred to as "Councilmember"; the Director of the Santa Cruz Water Department will be referred to as "Water Director."

2. NOMINATE and ELECT CHAIR/VICE CHAIR

Director Kriege nominated Councilmember Rotkin to act as chair and Director Daniels as vice-chair of the task force. No other nominations were received.

MOTION: Director Kriege; Second: Councilmember Porter: By unanimous vote, Councilmember Rotkin was elected to serve as Chair and Director Daniels was elected to serve as Vice-Chair.

Chair Rotkin thanked Director Kriege for the vote of confidence. He stated this is one of those classic examples where both public agencies would benefit by the City and SqCWD working together on this project. He pledged not to look at this project from just what would be good for the City of Santa Cruz; our job is to come up with the best project that works best for both populations. Director Kriege concurred.

3. ORAL COMMUNICATIONS – There were no oral communications.

4. PRESENTATIONS

4.1 Presentation by City of Santa Cruz Staff about City of Santa Cruz water planning, the seawater desalination pilot plant and test program and progress, the desalination project schedule, update on significant changes in energy cost, efficiency and construction cost and public outreach program


A presentation was given by Deputy Water Director Linette Almond and Associate Engineer Heidi Luckenbach, attached as **Exhibit A**.

Discussion ensued regarding the following topics:

- SB32 Global Warming Act requirements regarding carbon emissions
- The solar project being pursued by the City would offset the energy required when the City would be benefiting from the desalination plant
- Options and issues with alternative power
- Status of proposed Moss Landing desalination plants
- Permitting process could take more than 2-3 years
- Estimated construction costs to be between \$55M and \$130M by 2011 when the full scale plant is built

Water Director Kocher commented that the four primary issues affecting the project are: growth; impingement and entrainment at the intake; energy and disposal of contaminants. He believes impingement and entrainment will be the most challenging issues to resolve.

Director Kriege opined that the primary concern expressed by the District's customers pertains to energy cost.

Chair Rotkin stated that the ~~\$100M figure anticipated to cover construction costs should be the amount quoted from now on.~~ 

4.2 Presentation by Soquel Creek Water District Staff about Soquel Creek Water District water supply issues and planning process, current state of the basin and groundwater management program

A presentation was given by General Manager Brown, attached as **Exhibit B**. She responded to questions regarding the SqCWD's Water Demand Offset Program and the ongoing concern with over pumping by private well users.

Chair Rotkin noticed the time and recommended that another more immediate meeting be scheduled to continue discussion of the remaining agenda items.

By consensus, it was agreed that the next meeting would primarily focus on governance and cost sharing for the regional desalination investigation.

Discussion ensued and several ideas to consider prior to the next meeting were: what level of authority and autonomy should the task force have; Joint Power Authority (JPA) would expedite the decision making process to enter into contracts, hire staff, expend funds and to make commitments without having to go back to the full Board and City Council for approval versus a Memorandum of Agreement (MOA) which would provide limited authority to the task force.

The task force briefly discussed the decision-making process for the next few years compared to the ongoing ownership and operation of a full scale desalination plant. Director Daniels stated that SqCWD would not be comfortable with contributing half of the cost unless the District would own an equal share.

General Manager Brown stated that a list of questions regarding the governance had been prepared for the task force to consider at this meeting and could be distributed for consideration prior to the next meeting.

Chair Rotkin suggested that the next Task Force meeting be scheduled. A brief discussion ensued and by consensus it was agreed that the next meeting to discuss Agenda Item 5.1 will be scheduled on April 18, 2007 at 4:00 p.m. at a city location to be determined. Director Daniels stated he would notify staff if he had a conflict on that day. All future task force meetings will be held on the third Thursday of each month at 4:00 p.m., alternating between the City and the SqCWD offices.

5. ADMINISTRATIVE BUSINESS

- 5.1 Preparing a Memorandum of Agreement Between the City of Santa Cruz and Soquel Creek Water District to Jointly Complete the Studies, Planning and Other Actions Necessary for Final Decisions to Implement Construction and Operation of a Regional Seawater Desalination Facility – Discuss provisions to be included in the agreement and the approval process and give direction to staff

Not discussed. No action taken.

- 5.2 Logistics for Future Task Force Meetings – Decide schedule, location, rules of conduct

No action taken.

- 5.3 Schedule next meeting and identify agenda items




As stated above. No action taken.

- 6. ADJOURNMENT** – Chair Rotkin adjourned the meeting at 6:30 p.m. The next meeting of the Regional Seawater Desalination Project Task Force will be held at 4:00 p.m. on Wednesday, April 18, 2007, at a city location to be determined.

**City of Santa Cruz/Soquel
Creek Water District
Joint Task Force**

Desalination Program Briefing

March 29, 2007

Introductions

Santa Cruz Water Department

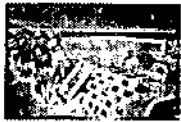
- Bill Kocher, SCWD Director
- Linette Almond, Deputy Water Director
- Heidi Luckenbach, Associate Engineer

Presentation Outline

- Process Background
- Pilot Test Program
- Project Schedule
- Significant Issues Update

Purpose of Briefing

- Provide background information on City of Santa Cruz water planning
- Provide details on the pilot plant and test program and progress
- Present current desalination program schedule
- Provide update on significant changes in energy cost, efficiency and construction cost



Initial Partner Roles

- City of Santa Cruz
 - Project sponsor and overall project management and project liaison to date
- Soquel Creek Water District
 - Coordinated use of potable water to maximize efficiency of desalination operations
- Task Force
 - Develop Memorandum of Agreement for sharing in decisions and funding of studies and design of full scale plant
 - Recommend governance structure for full scale plant

Completed Studies

- City of Santa Cruz Integrated Water Plan (IWP) Process (1997-2005)
 - Background reports on water demand, conservation, curtailment, and water supply
 - Balanced supply augmentation with water demand management
 - Evaluations assume an annual population growth goal of less than 1%

Integrated Water Plan (IWP)

- IWP Strategies:
 - Reduce drought year shortages
 - Provide a reliable water supply to meet long-term needs
 - Protect public health, safety, and economy of Santa Cruz community

Integrated Water Plan

- Implements the City's Water Conservation Plan
 - Invests \$8 million over 10 years to achieve 300 MGY savings
- Curtails water use during droughts by 15%
 - City will provide only 85% of demand during drought
- Develops supplemental water supply: desalination
 - 2.5 million gallons per day desalination facility
 - Supports cooperative desalination plant
 - Partnering with Soquel Creek Water District would assure water quality by protecting groundwater resources

Integrated Water Plan Program EIR

- City Council adopted the Integrated Water Plan and Program EIR in November 2005
 - Directed City staff to begin immediate implementation of the Water Conservation Plan
 - Initiated the Desalination Pilot Project to evaluate a flexible and reliable drought water source
 - Assures only 85% delivery of average daily water use in drought conditions

Potential Operational Sharing

- City/SqCWD will also evaluate opportunities to share facility and cost
- Opportunity for SCWD and SqCWD partnership:
 - SqCWD would use desalination facility to supply customers while resting existing wells to protect ground water resources
 - SqCWD and SCWD would coordinate use in drought periods

Desalination Pilot Test Program

1. Required by CA Dept of Health Services prior to design of a full-scale plant.
2. Thru ~12 mo of testing, compare and optimize treatment alternatives for use in full-scale plant design.
3. Includes source water quality monitoring at two locations:
 - Pilot plant source water intake
 - Proposed intake location for full-scale project

Pilot Plant Objectives Include...

- Pretreatment Comparison: Compare conventional vs. MF/UF pretreatment
- Algal Toxins and Emerging Contaminants: Investigate rejection efficacy by RO
- RO: Compare performance of different membranes & configurations and evaluate system performance
- Data Acquisition: For regulatory approval and permitting
- Boron Rejection: Investigate optimal conditions for removing boron (SWRO)
- Performance: Min energy, max boron removal, ... (pretreatment & BWRO/SWRO)

Meeting our Objectives

- Camp Dresser & McKee Inc. (Nov 2005)
 - Develop Plans and Specifications
 - Develop Testing Protocols
 - Construct Site Improvements/pilot plant
 - Operation/Data Acquisition

Pilot Plant Facility

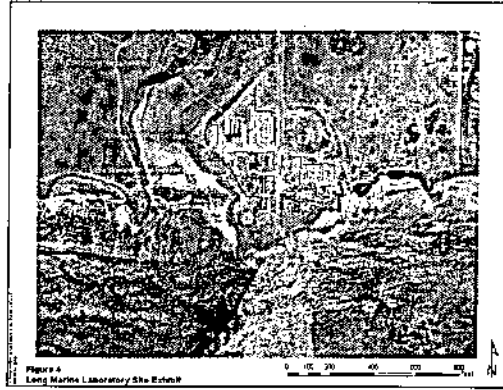


Figure 4
Long Marine Laboratory Site Exhibit

Pilot Plant Facility

- 2,400 square-foot temporary building
- Up to 50 gallons per minute flow treatment
- Custom fabricated pilot-scale treatment units
- Source seawater from Long Marine Laboratory's existing seawater intake

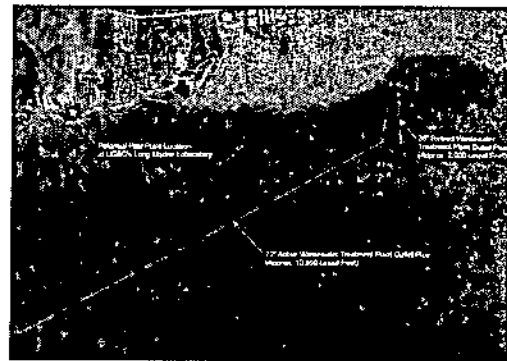
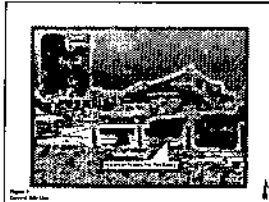


Figure 3
Santa Cruz Wastewater Treatment Plant Outlet Pipes Exhibit

Pilot Plant Approval Process A Foreshadow of the Full Scale Plant?

- CEQA – NOE (small structures/research)
- University of California – *Building Official*
- California Coastal Commission
- PG&E
- Central Coast Regional Water Quality Control Board
- City of Santa Cruz Wastewater Discharge Permit
- County of Santa Cruz HAZMAT Mgmt Plan
- Escalating Costs/Time Delays

Current Activities/Schedule

- Relocating Utilities in Conflict (gas)
 - Complete early April
- Complete *Plan Review and Permits*
 - April 2007
- Site Work/Erect Building
 - May ~ June 2007
- Install Testing Equipment
 - July 2007
- Begin Testing
 - August 2007

Public Outreach Goals

1. Provide information to public.
2. Engage interested groups early on in the process.
3. Establish effective tools now that could be used *during the full-scale plant process.*

Public Outreach Components

- Docent Training
- Displays at Seymour Center & Pilot Plant
- Information Handouts
- Open House
- Tours

Watershed Sanitary Survey

- Required by DHS for approval of new water source.
- Archibald Consulting (March 2007)
 - Watershed Delineation
 - Identification of Zone of Influence, including actual and potential sources of contamination.
 - Complement CDM Testing Protocols for source water characterization.
 - Recommendations: Treatment/Operation issues & watershed management.

Full-Scale Project

- 2.5 million gallons per day (mgd) desalination facility
 - Potential for modest expansion should growth occur
- Proposed sites
 - Industrial Park Area: Preliminary preferred option per Program EIR
 - Shaffer Road / Antonelli's Pond
 - UCSC Marine Science Campus

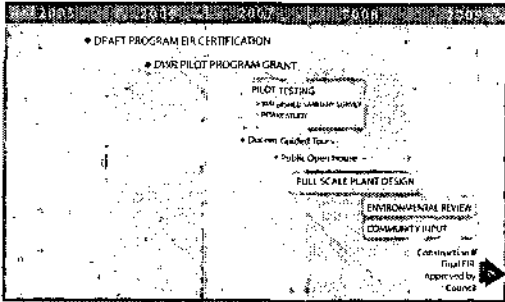
Next Steps

- Pilot testing to begin in summer and run for 12 months
- Full scale plant design to begin at midpoint of pilot testing
- Project level environmental review including:
 - Impacts to marine species: impingement / entrainment
 - Outfall water quality
 - Energy requirements
- Community input in the decision-making process surrounding a full-scale plant

Current Project Schedule

- | | |
|-----------------------------------|----------------|
| • Water Supply Evaluations | 1997 - 2000 |
| • Draft Program EIR Certification | Nov 2005 |
| • Pilot Plant Construction | Apr-Jun 2007 |
| • Pilot Plant Testing | July 2007-2008 |
- * Full-Scale Plant schedule pending pilot program completion, technical review, and approval.
- | | |
|-----------------------------|------------|
| • Full-Scale Plant | |
| – Technical Review / Design | 2008 |
| – Environmental Review | 2009 |
| – Construction | 2010 -2011 |

Project Milestones

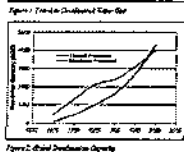
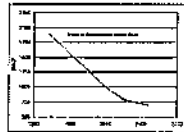


Significant Issues

- Energy
 - Reverse Osmosis continues to improve in efficiency
 - Cost of energy in California continues to rise
- Potential environmental impacts
 - Intake design and entrainment
- CEQA/permitting and mitigation costs
 - Undetermined due to rapidly changing permitting environment and no design level work
- Construction Costs
 - Last estimate 2002 Conceptual Level of ~\$35 Million
 - Cost escalation significantly higher than CPI (5-15% annually)

Cost and Energy Requirements

- Improvements in membrane efficiency have lead to:
 - reduced energy consumption
 - less expensive processing costs
 - higher quality water



Final Notes...

- Lessons learned
- Permitting
- Full scale

SqCWD's Historic Actions

- ◆ 1981– Began active monitoring of coastal groundwater conditions
- ◆ July 1994 – Established management authority for Soquel/Aptos Area Groundwater Basin as JPA with Central Water District
- ◆ 1996 – Began developing long-term Integrated Resources Plan (IRP) in response to groundwater overdraft and threat of seawater intrusion



Most Recent Actions

- ◆ Jan. 2006 – Adopted Integrated Resources Plan for 2050 est. build out
- ◆ Feb. 2007 – Completed revised Groundwater Management Plan
- ◆ Well Master Plan EIR to replace aging wells and redistribute pumping away from critical coastal areas (in progress)



Sustainable Groundwater Yield

- ◆ Sustainable yield of Purisima is estimated to be ~ 6,200 afy
- ◆ Sustainable yield of Aromas portion of basin is ~ 3,200 afy
- ◆ Combined sustainable yield is ~ 9,400 afy

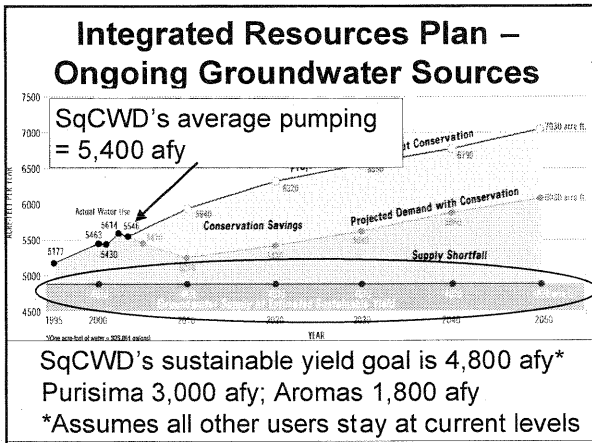
*An acre-foot = about 326,000 gal. or 0.1 mgd



How much is being pumped?

- ◆ Est. total pumping in Soquel-Aptos Area is 10,300 afy (Johnson 04)
 - ◎Historic maximum pumping by Public Purveyors was 6,900 afy
 - ◎Private pumping is unmetered
- ◆ ±10% overdraft with recent demand





2050 Supplemental Water Supply Needs (AFY)

$$7,030 - 950 - 4,800 + \underline{\quad} = 1,280^*$$

Avg Demand - Conservation - GW Yield + Restoration = Need for Water

*1,280 afy = 12 mgd or ~1/2 of initial desal capacity

- ### 2006 IRP Preferred Alternative
- ◆ Conjunctive Use Supply Project (upto 1.25 mgd)
 - ⊙ Development of Regional Seawater Desalination with the City of Santa Cruz
 - ◆ Demand Management (13.5% reduction at 2050)
 - ⊙ Existing and New Conservation
 - ⊙ Site-Specific Recycled Water for Irrigation
 - ⊙ Drought Curtailment up to 15%
 - ◆ Groundwater Management
 - ⊙ Monitoring of Groundwater Quality and Levels
 - ⊙ Redistribution of Groundwater Pumping
 - ⊙ Recharge Protection and Enhancement
-

- ### Status of Other IRP Elements
- ◆ Expanded Conservation Efforts
 - ⊙ Water Demand Offset Policy for New Development (i.e. retrofit to save 120% of projected use)
 - ⊙ Rebates:
 - High Efficiency Toilets
 - Cisterns
 - Turf replacement
 - ⊙ Irrigation (Federal Grant to install 325 weather-based controllers)
-

Satellite Recycling Plant (SRP)

- ◆ Pursuing State funding assistance for pilot study of SRP to serve Seascape Golf Course (currently served by a private, coastal well)



Groundwater Management Plan 2007 (GMP)

GOALS

- ◆ Ensure water supply reliability for current and future beneficial uses
- ◆ Maintain water quality to meet current and future beneficial uses
- ◆ Prevent adverse environmental impacts



GMP 2007 OBJECTIVES

Goal 1 – Water Quantity

- ◆ Pump within the sustainable yield
- ◆ Develop alternative water supplies to achieve a long-term balance between recharge and withdrawals
- ◆ Manage groundwater storage for future beneficial uses and drought reserve



GMP 2007 OBJECTIVES (cont.)

Goal 2 – Water Quality

- ◆ Meet existing water quality standards
- ◆ Maintain groundwater levels to prevent seawater intrusion
- ◆ Prevent and monitor contaminant pathways



**Groundwater Management Plan 2007
OBJECTIVES (cont.)**

Goal 3 – Prevent Environmental Impacts

- ◆ Maintain or enhance groundwater recharge
- ◆ Avoid alteration of stream flows that would adversely impact survival of aquatic and riparian organisms
- ◆ Protect the structure and hydraulic characteristics of the groundwater basin by avoiding land surface subsidence



Coordinating Groundwater Management

- ◆ Soquel-Aptos Groundwater Management Alliance (SAGMA)
 - ◎ City of Santa Cruz Water Dept.
 - ◎ County of Santa Cruz Environmental Health
 - ◎ Central Water District
 - ◎ Pajaro Valley Water Management Agency (included by invitation)



Coordinating Groundwater Management

- ◆ SAGMA will serve as Basin Advisory Group for implementation of the GMP
- ◆ Potential for expanding Soquel-Aptos Groundwater JPA to include the City of Santa Cruz

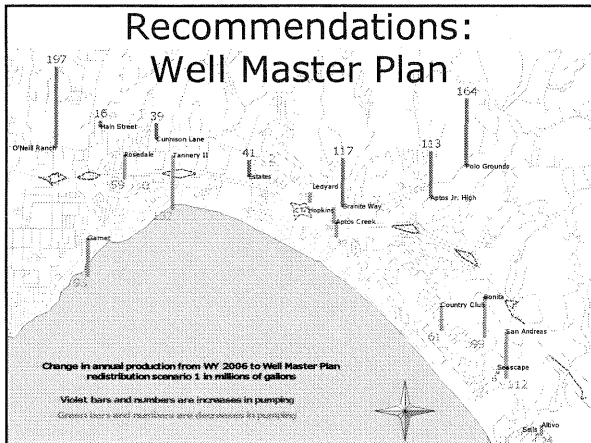


Well Master Plan EIR

Objective to Develop Four New Wells to:


1. Replace existing, aged wells near the coast
2. Improve uniform drawdown of the aquifers
3. Distribute pumping away from the coast
4. Limit pumping duration of individual wells
5. Provide adequate capacity and flexibility to respond to peak demand
6. Ensure reliable water supply when individual wells are out of service





Current State of the Basin

- ◆ SqCWD met sustainable pumping goal of 4,800 afy in 2006
- ◆ Groundwater conditions have not worsened
- ◆ Seawater intrusion has not advanced
- ◆ Coastal groundwater levels were maintained above sea level, but not necessarily at protective levels
- ◆ Coastal recovery is slow and limited



Conclusion

- ◆ SqCWD is committed to protecting the Soquel-Aptos Groundwater Basin
- ◆ Aggressive conservation program to avoid exacerbating overdraft
- ◆ Offset program for new services is limited by available retrofits and may not accommodate growth until the desal project is on-line
- ◆ SqCWD needs to move forward asap with the desalination project

