NIPOMO COMMUNITY SERVICES DISTRICT

DECEMBER 19, 2012

1:00 P.M.

SPECIAL MEETING NOTICE & AGENDA

SUPPLEMENTAL WATER ALTERNATIVES EVALUATION COMMITTEE

APPOINTED COMMITTEE MEMBERS
MICHAEL K. NUNLEY, CHAIRMAN (NON-VOTING)
PETER V. SEVCIK, VICE CHAIRMAN (NON-VOTING
DAN GARSON (VOTING)
DENNIS GRAUE (VOTING)
KATHIE MATSUYAMA (VOTING)
ROBERT MILLER (VOTING)
SAM SALTOUN (VOTING)
DAVE WATSON (VOTING)
DAN WOODSON (VOTING)

PRINCIPAL STAFF
MICHAEL S. LEBRUN, **GENERAL MANAGER**
LISA BOGNUDA, **ASST GM/FINANCE DIRECTOR**

MEETING LOCATION - District Board Room
148 S. Wilson Street, Nipomo, California

1. CALL TO ORDER, FLAG SALUTE AND ROLL CALL

2. PRESENTATION BY DR. BRADLEY NEWTON

RECOMMENDATION: Receive presentation from Dr. Newton and discuss.

3. GENERAL MANAGER'S REPORT

RECOMMENDATION: Receive updates and reports from the General Manager on items relevant to the Committee's work.

4. REVIEW DRAFT MINUTES FROM DECEMBER 7, 2012, COMMITTEE MEETING

RECOMMENDATION: Provide revisions or corrections to meeting minutes from the December 7, 2012, Committee meeting. Accept minutes as revised.

5. DISCUSS SUBCOMMITTEE PROGRESS

RECOMMENDATION: Review progress submittals provided by subcommittees. Review schedule for completion of the evaluation; discuss any data "gaps" or needs from subcommittees to meet schedule goals; and discuss and refine draft ranking and weighting criteria.

6. DISCUSS NEED FOR SPOKESPERSON TO PROVIDE UPDATE TO THE BOARD

RECOMMENDATION: Discuss whether an update should be provided by the Committee to the Board. Nominate a voting member of the committee to serve as spokesperson for an upcoming Board meeting, if desired.

7. PRESENT REFERENCE DOCUMENTS FOR REVIEW AND ACCEPTANCE

RECOMMENDATION: Identify and propose reference documents to be used by Committee members in the evaluation. Approve or reject these documents as acceptable reference materials for conducting the evaluation.

8. SET NEXT COMMITTEE MEETING DATE AND TIME

9. ADJOURN

TO: EVALUATION COMMITTEE

FROM: MICHAEL K. NUNLEY, PE
CHAIRMAN

DATE: December 17, 2012

AGENDA ITEM #2

DECEMBER 19, 2012

PRESENTATION FROM DR. BRADLEY NEWTON

ITEM

Bradley Newton, Ph.D, P.G., Principal Scientist with Wagner & Bonsigniore Consulting Civil Engineers and Nipomo Community Services District's advisor to the Nipomo Mesa Management Area (NMMA) Technical Group, will present an overview of groundwater basin issues.

BACKGROUND

On October 31, 2012, the Local Groundwater Subcommittee met with Dr. Bradley Newton to request his response to the following list of questions and comments:

1. We need to see the stratigraphic and structural cross sections showing the well logs to understand the flow of the water through the aquifer.
2. A 3D model should have been made of the basin and aquifer(s). Could we see it?
3. What are the fault regimes?
4. Which are right lateral strike-slip and which are normal?
5. Which are conducting and which are barriers to flow?
6. What analyses have been done to show the effects of the faults?
7. Many iso-water level maps show contours that are continuous across faults. Does that mean that a determination has been made that there is communication across those faults?
8. Where are the seafloor outcrops? How were they measured and mapped? Was seismic information used?
9. What are the lithologies of the aquitards? How were they mapped? In a 3-D Model?
10. How have ground water elevations and water compositions been used to investigate the effects on flow of the faults and aquitards?
11. Are there SCAL (special core analysis laboratory) data for the sands and aquitards?
12. What are porosity, permeability and capillary pressure curves by lithology?
13. If there are barriers to flow between shallow and deeper aquifers, how do the deeper aquifers recharge?
14. In June 10, 2007 in a tech memo from you to Mr. Nunley you recommended the siting of additional water wells east of Highway 1 and south of Blacklake Canyon. Is that still a good recommendation in light of the depression in the ground water elevations there and its proximity to the estimated salt water interface in the aquifer?
15. How are the groundwater elevation data collected?
16. How long are the wells shut in?
17. Which interpretative software is used to analyze the transient pressure data?
18. Comments were found about errors in ground levels of wells. Can they not be measured with a simple GPS device, or do the comments refer to levels in previous years where the ground level has changed?
19. A report stated that the database for the aquifer data is located in a MS Excel file. That is not a secure database platform – very prone to data contamination, accidental or

otherwise with no tracking capability. Better platforms would be SQL Server, Oracle or even MS Access. Can this change be made?

20. Can we get the estimated volumes for each of the flow streams in the NMMA 2011 report Figure 5-1?
21. We understand that several mathematical models are currently in use to study the Santa Maria basin aquifer. Are they competing with each other? How do they differ? Is this a duplication of effort? Is there a way to reconcile them?
22. Focusing on local shallow aquifer groundwater ("Shallow Aquifer Water"):
    a. Can this water source be defined? Is it truly a separate aquifer?
    b. Does the court or other legal source recognize this water source as unique or different such that it will not later be simply defined as a part of the larger, deeper groundwater basin?
    c. Has there been any mapping of this Shallow Aquifer Water (vertically and horizontally)?
    d. Have there been any tests of this Shallow Aquifer Water for quality or quantity?
    e. What feeds this Shallow Aquifer Water (i.e. what is its source)?
    f. Does this Shallow Aquifer Water feed the deeper aquifer?

Dr. Newton will provide an overview of his responses to these questions, focusing on the following general issues:

- Status of groundwater data collection and interpretation efforts by the NMMA Technical Group and others
- Which groundwater studies or sources of information are considered the "most reliable"?
- Pending or planned groundwater studies and their objectives
- Relationship between shallow groundwater and deeper aquifer water and whether shallow groundwater can be considered "supplemental water"

RECOMMENDATION

Receive the presentation from Dr. Newton.

ATTACHMENT

NONE

TO: EVALUATION COMMITTEE

FROM: MICHAEL K. NUNLEY, PE MKN
CHAIRMAN

DATE: December 17, 2012

AGENDA ITEM #3

DECEMBER 19, 2012

GENERAL MANAGER'S REPORT

ITEM

Nipomo CSD General Manager, Michael LeBrun, will provide an update to the Committee on activities relevant to the Committee's work.

BACKGROUND

The General Manager will present updates relevant to the Committee's work and will also respond to questions posed by the Committee to District staff at prior meetings. This is a standing item for each Committee meeting.

RECOMMENDATION

Receive the report from the General Manager

ATTACHMENT

NONE

TO: EVALUATION COMMITTEE

FROM: MICHAEL K. NUNLEY, PE
CHAIRMAN

DATE: December 17, 2012

AGENDA ITEM #4

DECEMBER 19, 2012

REVIEW DRAFT MINUTES FROM DECEMBER 7, 2012, COMMITTEE MEETING

ITEM

Review the Draft Meeting Minutes from the December 7, 2012, Supplemental Water Alternatives Evaluation Committee (Committee) meeting.

BACKGROUND

According to the Bylaws, the Committee must approve the meeting minutes. Draft minutes are to be posted online. If revised by the Committee during the approval process, final minutes will be posted to replace the draft minutes.

RECOMMENDATION

Provide revisions or corrections to the meeting minutes from the December 7, 2012, Committee meeting. Accept minutes as revised.

ATTACHMENT

DRAFT SWAEC Meeting Minutes – December 7, 2012

NIPOMO COMMUNITY SERVICES DISTRICT

DECEMBER 7, 2012

1:00 P.M.

MEETING MINUTES

SUPPLEMENTAL WATER ALTERNATIVES EVALUATION COMMITTEE

APPOINTED COMMITTEE MEMBERS
MICHAEL K. NUNLEY, CHAIRMAN (NON-VOTING)
PETER V. SEVCIK, VICE CHAIRMAN (NON-VOTING)
DAN GARSON (VOTING)
DENNIS GRAUE (VOTING)
KATHIE MATSUYAMA (VOTING)
ROBERT MILLER (VOTING)
DAVE WATSON (VOTING)
DAN WOODSON (VOTING)

PRINCIPAL STAFF
MICHAEL S. LEBRUN, **GENERAL MANAGER**
LISA BOGNUDA, **ASST GM/FINANCE DIRECTOR**

MEETING LOCATION - District Board Room
148 S. Wilson Street, Nipomo, California

1. CALL TO ORDER, FLAG SALUTE AND ROLL CALL

Chairman Nunley called the Special meeting of December 7, 2012, to order at 1:02 PM. and led the flag salute. At roll call, all Committee members were present except Member Matsuyama.

2. GENERAL MANAGER'S REPORT

General Manager Michael LeBrun provided an update to the Committee on items relevant to their work. In the District election on November 6, two new Directors were selected – Bob Blair and Craig Armstrong, and both took office today.

On December 4, Committee members Miller and Graue attended a meeting/conference call with the San Luis Obispo County Director of Public Works, Paavo Ogren, and Senior Utilities Engineer, Courtney Howard. Chairman Nunley, Vice Chair Sevcik, and Mr. LeBrun also attended. Mr. Ogren noted that the County was anxiously awaiting an update from the District regarding their plans to move forward with the Supplemental Water Project, since the District had been awarded a $2.3M grant specifically for that project through the state's Integrated Water Resources Management Plan program nearly one year ago. The grant amount had been reduced to $2.2M as a result of the Board seeking funding for a phased version of that project. The County will send a letter to the District Board requesting an update of project status. The Board is planning to release the phased project for bidding in early February but will not move forward with selecting a contractor and/or issuing a Notice of Award until the Committee completes its work.

Mr. LeBrun noted that he had conveyed the importance of the Committee's work to Mr. Ogren, and further noted that the Committee's completion of the evaluation in February is critical to keeping that grant if the Board reviews the Committee's ranking and elects to move forward with the phased Supplemental Water Project. Under the current schedule, the Board could be able to deliver water to customers via the phased project by June of 2014.

There was no public comment.

3. REVIEW DRAFT MINUTES FROM NOVEMBER 15, 2012, COMMITTEE MEETING
Chairman Nunley introduced the item.

Member Garson requested a change:

P. 5, last paragraph – revise to: Member Garson mentioned a cost projection of $5000/AF for a golf course at a Pebble Beach location to purchase recycled water.

The Committee voted to revise the draft notes as requested.

4. DISCUSS NOMINATION OF COMMITTEE MEMBER
Chairman Nunley presented this item. Member Garson asked why a second round of votes may be required, as mentioned by the Chairman during his presentation of the item. The Chairman replied that a second round may not be applied. Member Miller clarified that the Committee would not be appointing a member, only recommending a potential nominee to the Board for ratification.

Public Comment:

Bill Petrick, Nipomo Resident, asked if the open seat was for a person with a finance background since Mr. Armstrong was initially appointed as the Finance seat. Mr. Nunley responded there was no requirement in the Bylaws in that regard.

The Committee members each wrote their name, the name of their top selection, and the name of an alternate on a slip of paper and provided the paper to the Chairman. The votes were read by Chairman Nunley and recorded by Vice Chair Sevcik:

Committee Member	First Selection	Alternate Selection
Miller	Saltoun	Petrick
Garson	Saltoun	Petrick
Graue	Petrick	Saltoun
Watson	McCarthy	Petrick
Woodson	Saltoun	Dubois

The Committee voted unanimously to recommend Sam Saltoun as a Committee member for consideration by the Board with Bill Petrick as the alternate.

5. DISCUSS SUBCOMMITTEE PROGRESS
Chairman Nunley introduced the item.

State Water: Member Miller summarized the December 4 meeting with Paavo Ogren and Courtney Howard. He noted that Mr. Ogren was knowledgeable about State Water and had been involved during its planning and implementation in San Luis Obispo County in the early '90s. Member Miller discussed Mr. Ogren's responses to the following list of questions posed by the Committee:

1. Do any of the SLO agencies using SWP water have efforts in progress to acquire a larger share of SWP water (Table A or other) delivered by SLOCFC& WCD? *The County provided a table summarizing interest and/or efforts by State Water contractors to get additional supplies, including efforts noted by non-contractors such as Nipomo who had expressed interest. Member Miller suggested this list be included in*

subsequent updates. Mr. Ogren noted that the Board of Supervisors had directed to staff to begin considering how entities could acquire more State Water or could become customers if not already, in order to be prepared in case a party or parties came forward that were willing to invest resources in pursuing this option.

2. Is SLOCFC&WCD open to NCSD (1) acquiring unused or excess Table A amounts, (2) purchasing Table A amounts from SWP participants, or (3) directly participating in SWP? *Mr. Ogren noted only (1) and (2) were available for new entities to participate; he briefly discussed the process for either option. He first discussed the public process focused on CEQA (and reopening of that environmental process pursued in the early 90's). Mr. Miller noted that several votes to pursue State Water in Nipomo were unsuccessful and Mr. Ogren advised the Committee not to assume this would be an easy process. Mr. Ogren also discussed the different entities currently involved in State Water who would need to approve (or not disapprove) Nipomo becoming a customer. It would require formal transfer between the Santa Barbara and San Luis Obispo flood control districts if the "seller" was in Santa Barbara County.*

3. How long and what process would be involved with an NCSD request for Table A allocations?

4. What time-lines is the SLOCFC&WCD working under to evaluate and make a decision on existing contractor requests for additional Table A allocations? *Mr. Ogren responded to both questions 3 and 4 that the County would need to be in a lead role for the CEQA process and the County would expect to be reimbursed for staff time. There is no clear way to establish the timeline since it requires multi-party negotiation. Member Graue mentioned that the CEQA process had been described as the most important, but is only one of a number of important processes (including contract negotiation and others). A sequential process is not desirable - multiple, parallel processes would be necessary. Mr. Ogren noted the County was not working under a timeline for helping agencies acquire new or more State Water; the staff time and resources required for the County to initiate the CEQA process would require significant investment and financial risk by the entity expressing interest. The pursuit would require a multi-year investment.*

5. Does the County have an interest in the conservation and prudent management of the water resources in the Santa Maria Valley aquifer under the south SLO County? *Mr. Ogren had noted that the County does not usually step in to guide issues under the management of local agencies, with the exception of the Los Osos wastewater issues that required development of special legislation and other efforts lead by the County. Member Graue noted there had been a history of local agencies guiding these efforts and the County tends to wait until they are asked or invited to get involved. The County has a budget focused in certain areas but does not have a revenue stream to manage all of the water resource issues in the County that are under local control.*

6. Does the County have an interest in a state-of-the-art technical study to evaluate the management options of that aquifer? *Mr. Ogren had noted the County had been involved in supporting a grant request to study nutrient and salt issues in the Basin. The County had supported groundwater studies in the past, and noted it would be important to focus groundwater studies on specific objectives or goals.*

7. Does the County have any authority over the conservation and prudent management of that aquifer?

8. How do the authorities of the County over land use and aquifer management agree or differ? *Mr. Ogren responded to questions 7 and 8 together. In his mind, the County would retain land use authority and can pass and enforce ordinances related to water management but the County can only exercise jurisdiction over a groundwater basin if it is not adjudicated. The court has jurisdiction over the Nipomo Mesa Management Area (NMMA).*

9. The Committee is analyzing the cost of a direct connection to the State Water pipeline. Based on our research, the potential capital cost appears to depend on negotiated transactions within a likely range of $50M to $100M. Does the County have any feedback on the range of potential cost? *Mr. Ogren had noted agencies interested in selling may or may not want to be reimbursed for their past investments, and he did not expect that anyone could define the "cost estimate" since it would depend on multiple negotiations.*

In summary, Member Miller relayed that State Water participation is a very complicated process with significant uncertainty and would require significant investment by an interested party. A fatal flaw in contract negotiation or CEQA process could arise. Member Graue noted that acquiring water from SLO County State Water customers would require existing customers to allow that transfer to take place; acquiring water from Santa Barbara County would require similar considerations among State Water customers there.

Member Miller emphasized the importance of the February grant deadline expressed by the County, and discussed the potential for other projects (including Los Osos Wastewater) to receive the District's grant if the District does not move forward.

Member Matsuyama arrived to the meeting during discussion of this item. She asked if other agencies had been identified that would receive the District's grant if the District does not move forward. General Manager LeBrun emphasized that the County is developing a "plan B" for administering the District's grant if the District is not prepared to move forward with the project in February.

Member Graue thought Mr. Ogren felt the challenges with State Water participation would relate more to contractual and legal issues than technical constraints.

Conservation/Graywater: Member Graue presented updated slides.

Santa Maria Waterline Intertie Project: Member Miller noted that staff had performed some initial modeling to determine if delivery could be varied during the day in order to provide more water to the District under implementation of the phased project. A delivery scenario had been provided to Santa Maria to request their input.

Member Garson asked what the downside would be for the City of Santa Maria to vary deliveries throughout the day. Member Miller noted the City was charging a wholesale rate which assumed constant flows to maintain consistent operations, and the City was also concerned about impacts to their storage facilities. Members Garson and Miller clarified that the City would not want to compromise their reliability by varying flow rates to the District.

Chairman Nunley asked if the Committee would be comfortable with him updating the status reports with notes from Committee discussions. Member Miller expressed support.

Seawater: Member Graue presented updated slides. Chairman Nunley noted he had a list of agencies to be contacted to discuss seawater desalination, including San Diego County

Water Agency (customer of the Carlsbad desalination facility), and Metropolitan Water District of Orange County (planning a desalination facility at Dana Point). He thought MWDOC could describe the process an agency must follow to implement a desalination project. Member Graue was interested in finding out how the Carlsbad participants pulled together parties to implement the project, since Coastal Commission would encourage development of a regional facility over development of a single-agency or smaller plant.

Member Graue describe a summary table he prepared that organized various desalination projects by planned date for implementation. Member Miller asked if the column that shows "$/AFY" includes debt service. Member Graue was not sure, but wanted to talk to Carlsbad to determine if it was included. Chairman Nunley asked if the $/AFY referred to production capacity, and Member Graue stated that was his understanding but reiterated that he needed to find out what was included from the agencies. Chairman Nunley noted that the answers could vary for each project and each cost estimate.

Member Graue expressed he had more confidence in the reports produced by Separation Processes, Inc.., for the Monterey area projects since the reports were current and clearly defined the components of their cost opinions. Chairman Nunley noted these projects would have similar permitting issues to any that would be considered in the Nipomo area.

Public Comment:

Bill Petrick, Nipomo Resident, said he had looked at connecting to State Water years ago and had talked with Paavo Ogren and others, but asked if a connection to a San Luis Obispo County State Water participant (such as Oceano) would be less expensive than the connection to Santa Maria. In particular, consider whether Nipomo could acquire water during drought years when State Water deliveries are reduced.

Member Miller said the Committee was looking at options for northern interties and felt regional interties were a good water management tool. Member Watson noted that recycled water could be an opportunity for collaboration to address salt water intrusion as well as local groundwater depressions, and expects the Committee to have a series of recommendations that are both long-term and short-term.

Member Garson noted that Oceano CSD constituents were not offering long-term contracts to ensure reliability for a potential buyer or customer. Member Miller noted that recycled water had higher reliability and an adequate quantity to help meet the District's long-term demands.

Members Matsuyama and Watson noted a vote in Oceano would be required to transfer their State Water, and this would affect viability of this option.

6. DEVELOP RANKING CRITERIA

Chairman Nunley presented the item. Each Committee member was asked to present their lists of criteria, which they were directed to develop at the last Committee meeting.

Member Garson: Reliability and implementation speed.

Member Graue: Discussed probability of permitting "on time" and noted the Board needs to establish the schedule for compliance with the adjudication. He noted there may be interim goals for quantities that should be evaluated (short-term, intermediate-term, and long-term supply goals). He described cost and use of approved technologies as another

consideration. He said cost may not be as important as he initially thought, since the lowest cost project may not acquire permits in a reasonable amount of time.

Member Matsuyama: Ease of permitting and public acceptance or likelihood of public support

Member Miller: Prefers applying a weighting factor to each criterion and felt most considerations were included in the seven criteria listed as examples in the Staff Report. Discussed schedule (high weighting factor); reliability (high weighting – similar to schedule) including compliance with adjudication and ability to deliver required quantity of water each year; phasing (lower ranking but still important); cost (high weighting, possibly higher than schedule or reliability); water quality (lower weighting – similar to phasing); feasibility/permits (one of highest weighted criteria); and power/sustainability (similar weighting to other criteria, maybe not the highest). Member Matsuyama expressed support for a public opinion criterion.

Member Watson: Preferred an operations & maintenance criterion instead of power. He felt the most reasonable candidates would rise to the top and was not ready to discuss weighting in detail yet.

Member Woodson: Noted that feasibility, reliability, and lifecycle cost were the key criteria and all other criteria were elements of or related to these.

Chairman Nunley noted the Committee could provide the ranking matrix without assigning weighting factors, if desired, in order to allow the Board to determine what was important to them. Various members discussed this concept.

Member Miller discussed advantages of the Committee weighting and totalizing the ranking as opposed to readers of the report doing this on their own in order to make sure the readers understand what criteria the Committee felt were most important. Chairman Nunley noted that showing the "math" behind the ranking would allow the Board and others to understand the results. Member Garson supported weighting the ranking criteria.

Members Garson and Miller discussed whether power and operation/maintenance costs should be considered separate criteria. Power is related to sustainability or environmental concerns whereas the operation/maintenance costs could be incorporated in a $/AFY "lifecycle cost".

Public Comment:

San Saltoun, Nipomo resident, suggested that two cost columns (capital cost and operating cost for the water) could be considered as two separate criteria given the long-term nature of water commitments. He thanked the Committee for nominating him for the Committee and noted that all the applicants had something they could bring to the Committee.

The Committee voted unanimously to establish the draft ranking criteria of schedule, reliability, phasing, capital cost, operation & maintenance cost, water quality, feasibility /permits, sustainability, and public opinion. Member Graue said he would like to include sensitivity to cost changes (such as energy) in operating costs or to describe a range of operating costs. Member Garson clarified that he understood sustainability would include considerations under the "power" category discussed earlier and Member Miller agreed.

Public Comment:

George Dubois, Nipomo resident, said he serves on a committee that awards grants and that his committee refines the scale for their selection criteria after they have reviewed the applicants.

The Committee voted unanimously to weight the ranking criteria. Various members discussed whether to further define the weighting criteria but agreed to refine weighting as the evaluation moves forward. Member Watson would like to have a discussion about all the scenarios the Committee is evaluating within the context of the ranking criteria, but will support the motion. Member Matsuyama noted that the motion may be premature but she would support the motion.

7. DISCUSS NEED FOR SPOKESPERSON TO PROVIDE UPDATE TO THE BOARD
Chairman Nunley presented the item.

The Committee voted unanimously to send Dave Watson as their representative to the next Board meeting on December 12 to present the Committee's recommendation for a new member, Sam Saltoun, and the alternate, Bill Petrick.

8. PRESENT REFERENCE DOCUMENTS FOR REVIEW AND ACCEPTANCE
Chairman Nunley presented this item.

Member Matsuyama asked about the schedule to invite Brad Newton and Jacqueline Frederick to speak to the Committee.

Public Comment:

Jim Harrison, Board President and Nipomo Resident, recommended the Committee add the appellate court ruling to the list of references.

The Committee voted unanimously to add the appellate court ruling to the list of references.

9. SET NEXT COMMITTEE MEETING DATE AND TIME
The Committee voted to schedule the next meeting for December 19 at 1:00 PM.

There was no public comment.

10. ADJOURN
Chairman Nunley adjourned the meeting at 3:02 PM.

TO: EVALUATION COMMITTEE

FROM: MICHAEL K. NUNLEY, PE
CHAIRMAN

DATE: December 17, 2012

AGENDA ITEM #5

DECEMBER 19, 2012

DISCUSS SUBCOMMITTEE PROGRESS

ITEM

Subcommittees to present a progress report on development of their alternative evaluations.

BACKGROUND

At the October 2, 2012, Committee meeting, the following schedule was established for completion of the Committee's evaluation:

Selection of Subcommittees and Beginning of Evaluation	October 2, 2012
Development of Alternative Analysis by Subcommittees (Including Subcommittee Meetings)	October 2 through week of November 12th, 2012
Committee Meeting – Progress and Development of Ranking Criteria (if time allows)	November 1
Committee Meeting - Development of Ranking Criteria	Week of November 12th, 2012
Completion of Alternative Analysis by Subcommittees	Through Week of January 21st, 2012
Committee Meeting - Subcommittees to Present Alternatives	Week of January 21st, 2013
Committee Meeting – Perform Ranking	Week of January 28th, 2013
Committee Meeting – Review Rough Draft of Report	Week of February 11th, 2013
Committee Meeting – Finalize Report	Week of February 25th, 2013

It is requested that the subcommittees begin identifying additional data or information that may be required to complete the alternative evaluations for compliance with the schedule. Please forward these requests to the Chairman as your subcommittees are meeting and working through the evaluations. As discussed in our last Committee meeting, the Chairman will continue to add meeting notes to the update report as appropriate.

Each subcommittee will present updates to their prior work, in order to share information and receive feedback from the other Committee members and the public. Draft evaluation criteria have been added to the presentation for discussion and further refinement by the full Committee.

RECOMMENDATION

Review and discuss the updated progress report.

ATTACHMENT

Updated subcommittee progress report

Progress Report by Subcommittees

Supplemental Water Alternatives Evaluation Committee

December 19, 2012

State Water Project

TBD

Dennis Graue

Kathie Matsuyama

2a - State Water Project Description

State Water Project (SWP) Options

- Acquire unused or excess Table A amounts
- Purchase Table A amounts from CCWA participants (i.e., Santa Maria)
  - County has unused Table A amounts. Sufficient Polonio Pass WTF and pipeline capacity would be available except in years when approximately 95% of Table A amounts (excluding drought buffers and turn back sales is delivered (95% is based on Polonio Pass WTF capacity).
  - Per discussion with Bill Brennan of CCWA, a possible option would be to acquire excess pipeline capacity from CCWA and Table A amounts from SLOCFC& WCD. Mr. Brennan that there could be additional costs associated with buying some of the available capacity on the section of pipeline from Devils Den to Polonio Pass WTF.

2a - State Water Project Description (Cont'd)

- Acquire "other" water through participants in SWP (Santa Maria pipeline)
- Reactivate 3,000 AF desal plant in Santa Barbara and exchange for SWP water

2a - State Water Project Description (Cont'd)

- Purchase Table A amounts from CCWA participants (i.e., Santa Maria)

  County has unused Table A amounts. Sufficient Polonio Pass WTF and pipeline capacity would be available except in years when approximately 95% of Table A amounts (excluding drought buffers and turn back sales is delivered (95% is based on Polonio Pass WTF capacity).

  Per discussion with Bill Brennan of CCWA, a possible option would be to acquire excess pipeline capacity from CCWA and Table A amounts from SLOCFC& WCD. Mr. Brennan said that there could be additional costs associated with buying some of the available capacity on the section of pipeline from Devils Den to Polonio Pass WTF.

2b – State Water Project Supply

- SLO County has 17,530 AF in excess Table A amounts (per Boyle Tech Memo #1, page 4-3). Table A amounts are the number of acre feet each entity has agreed to purchase and is the basis for allocating actual water deliveries.

- Several agencies in SLO County (State Water participants and others) have expressed interest in acquiring (more) State Water.
  - Current participants have first rights of refusal

2c – State Water Project Quality

- State Water is chloraminated

2d – State Water Project Reliability

- Long term SWP delivery reliability through 2029 is 61% of Table A amounts. You would need 5,000 AF in Table A amounts to get 3,000 AF and 10,300 AF in Table A amounts to get 6,200 AF.

2e – State Water Project Required Facilities

- Requires both water and conveyance/treatment/pumping capacity procurement (CCWA facilities)
- Connection & transmission from CCWA pipeline facilities (or other tie-in location) to NCSD distribution system

2f – State Water Project Constraints

- Institutional
  - Any option involving state water (except the Santa Maria pipeline) would be subject to approval by various local and state agencies.
  - Reactivating 3,000 AF desal plant in Santa Barbara and exchange for SWP is not an option.
    - Rebecca Bjork in Santa Barbara advised that the city considers the plant to be part of its drought buffer and therefore would not be interested in reactivating its desalination plant and entering into a water exchange agreement.

2f – State Water Project Constraints (Cont'd)

- Further, delivery of Santa Barbara water in SLO County would conflict with the requirement that state water cannot be delivered in a county different that which originally contracted for the water. This would require transfer of Table "A" allocation between SBCFC&WCD and SLOCFC&WCD.

- Legal
  - Mr. Brennan stated that state water purchased by a contractor cannot be delivered outside of the boundary /service area of that contractor (e.g., water purchased by city of Santa Maria cannot be delivered directly to Nipomo via a turn-out from the SWP) without transfer between SW contractors.

2f – State Water Project Constraints (Cont'd)

Legal (continued)

- Contracts/Agreements required:
  - SLO County FC&WCD and SB County FC & WCD - contractors with DWR for State Water.
  - SB CFC&WCD Joint Powers Agreement (JPA) with CCWA
  - CCWA agreements with various participants.
  - CCWA-SLO County Water Treatment Agreement.
  - SLO County Water Service Agreements and Drought Buffer Agreements with various participants.
- Participation requires vote from community since voted down twice

2f – State Water Project Constraints (Cont'd)

- Regulatory
  - CEQA would be required, including public participation similar to first round of State Water hearings
- Capacity
  - Design capacity of Polonio Pass WTF is 43,900 AF. There is a possible 5,000 AF in excess capacity (per Boyle Tech Memo #1, page 4-9). Bill Brennan of CCWA confirmed excess capacity is available.
  - The SWP pipeline has 3,900 AF in unused capacity and up to 5,600 AF in excess capacity for a total of 9,500 AF (per Boyle Tech Memo #1, page 4-9). Bill Brennan of CCWA confirmed excess capacity is available but is "owned" by CCWA.

2f – State Water Project Constraints (Cont'd)

- Available capacity would be higher in those years when SWP is delivering less than 100% of Table A amounts.

2g – State Water Project Implementation Schedule

- 1000 AFY delivery
- 3000 AFY delivery
- 6200 AFY delivery

2h – State Water Project Cost Range

- Capital Cost
  - "Buy-in" costs for 3000 AF could vary from $0 to $50-100M according to estimates by City of Santa Maria and others. Carpinteria had requested $5000/AF for 1000 AF.
    - Buy-in cost is negotiable – no restrictions from DWR, etc.
  - Conveyance from connection point to District distribution system = XX
- Operating or ongoing cost
  - Variable and Fixed O&M costs
    - Nipomo CSD would likely receive responsibility of paying all O&M costs through the seller's turnout, or else seller would keep paying for this without receiving the water. This would be a concern if Santa Barbara County opportunities are considered.
  - Annual purchase

Demand Management - Conservation/Graywater

Dan Garson

Dennis Graue

Kathie Matsuyama

3a – Demand Management Description

- Current District conservation efforts/policies
  - Maintained compliance with CA Urban Water Conservation Council req'ts and Best Management Practice recommendations
  - Public outreach and education
    - Responded to 1,300 calls from customers with questions about saving water/money
    - Distributed "Water Ways" newsletter to all 3-6 grade teachers in area schools
    - Presented training to twelve classes, approximately 340 students
    - Participated with Countywide Partners for Water Conservation to implement County website to aid homeowners in plant selection and water conservation practices (www.slowaterlandscaping.com)

3a – Demand Management Description (Cont'd)

- Advertising
  - Maintained active reminders in billing, lobby area, and Adobe Press. Included seasonal reminders on irrigation practices and conservation-oriented bill inserts in two of six 2012 water bills
- Workshops
- Technical assistance (leak detection and water audits)
  - Each month, staff reviews water meter data and contacts owners if usage is abnormally high – 270 notifications this yr
  - 103 service calls to investigate leak reports/high water use as of October 16, 2012
- Conservation-based, four-tiered water rate structure
- Clothes washer rebates
  - 22 rebates issued through September 2012; 209 issued over life of program (>$15k)

3a – Demand Management Description (Cont'd)

- 2013 Conservation Program Direction
  - Developing tracking system to capture customer-staff interactions related to water conservation
  - Improving ongoing leak detection and tracking/reporting efforts
  - Will review, improve, and more aggressively promote water audit (exterior and interior) program
  - Five-year formal review of District's Water Conservation Program will be undertaken by April 2013
  - Hiring Assistant Engineer to provide technical support for administering conservation program
  - Hiring Public Information Assistant to focus on conservation-related outreach
- Options considered/evaluated

CONSERVATION REBATES -- HOW THEY STACK UP

SANTA CRUZ

Toilets: $150 for 1.28 gallon flush or dual flush, $200 for commercial
Energy Star washing machine: $100 for residential and $400 for commercial
Turf replacement: 50 cents per square foot up to $250 for single-family residential customers, $1,000 for multifamily and commercial
Rain barrels: During the rainy season, the city offers 65-gallon rain barrels at a discount, which in the past has been about $50 for a barrel that retails for $149.
Pressurized water broom: $50 for commercial
X-Ray film processor re-circulation system: $2,000 for commercial
Cooling tower conductivity controller: $900 or $1,200 for commercial

SOQUEL CREEK

Toilets: $150 for 1.28 gallon flush or dual flush
Energy Star washing machine: $100 for residential, $200 for commercial
Hot-water recirculation system: $75
Graywater to landscape: $75 per connection, up to three connections
Irrigation parts: $5 per part, maximum of $50 for residential and $250 for large sites
Drip irrigation retrofit: $20 per 100 square feet converted
Rain catchment system: $25 for 40-200 gallons, max $750 for 3,000 gallons
Weather-based irrigation controller: $75-$125
Turf replacement: $1,000 max for single-family home, $3,000 for nonsingle family; covers 50 percent of materials cost up to $1 per square foot of turf removed.

SOURCE: City of Santa Cruz, Soquel Creek Water District

TOILETS AND WASHING MACHINES

The city of Santa Cruz has offered rebates for toilet retrofits since 1995 and washing machines since 2000, reporting at least 11,000 and 7,200, respectively. Soquel Creek Water District issued an estimated 3,700 toilet rebates from 1997-2011, 4,915 washing machine rebates from 1999-2011 and directly installed 3,452 toilets from 2003 until 2010 when it stopped that program.

SOURCE: City of Santa Cruz, Soquel Creek Water District

Santa Cruz Statements

Goddard, the conservation director, said the desalination plant's environmental impact report will provide details about how much conservation there might be left. As part of updating its 10-year conservation plan, the department also will hire a consultant to survey households to determine how much untapped savings remains.

But Ricker, the county's water resources director, cautioned conservation has a limit.

"There has been a lot of wishful thinking that we could solve more problems by doing more conservation," he said. "Realistically, that just isn't there."

"I don't think we are going to come up with alternatives that are going to be cheaper than desal," Jan Bentley, retired Santa Cruz superintendent of water production. "But to utilize all the alternatives takes a policy decision and a commitment to do that."

"Desal is still the most expensive source of water," said Tom Luster, the state Coastal Commission's pointman on desalination, adding that any municipality will need to demonstrate it has exhausted its options. "Why go there if you have these far less expensive sources that aren't going to cause coastal impacts?"

3b – Demand Management Goals

3c – Demand Management Institutional Requirements

3d – Demand Management Legal Requirements

- Nipomo CSD has limited authority since SLO County is the governing entity for planning & land use

3e – Demand Management Cost Range & Responsibility

Agricultural and Industrial Reuse

Dennis Graue
Kathie Matsuyama

4a – Agricultural and Industrial Reuse Description

- Options considered/evaluated
  - Nipomo Refinery (Phillips 66) process water
  - Plains Exploration & Production Company (PXP) Arroyo Grande production wastewater

4b – Agricultural and Industrial Reuse Supply

- Nipomo Refinery has 220 AFY available for treatment and reuse
  - Approximately 325 AFY flows to the ocean via a diffuser assembly. Approximately 100 AFY must continue to flow to prevent sand from clogging diffusers

4c – Agricultural and Industrial Reuse Quality

4d – Agricultural and Industrial Reuse Reliability

- PXP Arroyo Grande production wastewater will be available for 10-12 years

4e – Agricultural and Industrial Reuse Required Facilities

- Nipomo Refinery
  - Treatment
  - Conveyance to NCSD distribution system

4f – Agricultural and Industrial Reuse Constraints

- Institutional
- Legal
- Regulatory
- Capacity
  - Nipomo Refinery can only provide 220 AFY

4g – Agricultural and Industrial Reuse Implementation Schedule

- 1000 AFY delivery
- 3000 AFY delivery
- 6200 AFY delivery

4h – Agricultural and Industrial Reuse Cost Range

- Capital cost
- Operating or ongoing cost

Santa Maria Waterline Intertie Project

Rob Miller

Dave Watson

Dan Woodson

5a – Santa Maria Waterline Intertie Project Description

- Options considered/evaluated
  - Full 3000 AFY delivery
  - Phased delivery

5b – Santa Maria Waterline Intertie Project Supply

- The City must maintain a blend of at least 50% State Water to meet water quality requirements at their wastewater treatment facility.
  - In order for the City to supply NCSD with 2,500-3,000 AFY, additional State Water Allocation must be acquired. It is estimated that this will take about 18 months for the City to complete.
  - The City can "bank" or carry over in one year up to 8,500 AF of unused water supplies, to improve reliability of City supplies and by extension, the Intertie water deliveries.

5c – Santa Maria Waterline Intertie Project Quality

5d – Santa Maria Waterline Intertie Project Reliability

5e – Santa Maria Waterline Intertie Project Required Facilities

5f – Santa Maria Waterline Intertie Project Constraints

- Institutional
- Legal
- Regulatory
- Capacity

5g – Santa Maria Waterline Intertie Project Implementation Schedule

- 1000 AFY delivery
- 3000 AFY delivery
- 6200 AFY delivery

5h – Santa Maria Waterline Intertie Project Cost Range

- Capital cost
  - Phased SM WIP = $13M
  - Full SM WIP = $18.3M
- Operating or ongoing cost
  - Purchase cost from Santa Maria = XX
  - Operation/maintenance

Recycled Wastewater from Municipal Facilities

Rob Miller
Dave Watson
Dan Woodson

6a – Recycled Wastewater from Municipal Facilities
Description

- Options considered/evaluated
  - Recycled water delivered from SSLOCSD and/or Pismo Beach
  - Delivery/User options:
    - Groundwater recharge via percolation
    - Phillips 66 direct reuse.
    - Agricultural use
    - Golf course use
    - Additional applications to parks, landscaping and Caltrans Hwy 1 and 101 parkways
    - Groundwater recharge from Pismo or SSLOCSD along the coast would be beneficial in managing saltwater intrusion impacts.
    - Can Nipomo receive credit for groundwater recharge applications of recycled water in the Santa Maria or Northern Cities areas?

6b – Recycled Wastewater from Municipal Facilities
Supply

- SSLOCSD has the potential for up to 2,250 AFY available

- Pismo has the potential for up to 1,450 AFY available.
  - Pismo has plans to reuse as much recycled water as possible, with the balance conveyed to the joint outfall with SSLOCSD for discharge to the ocean. Recycled water from Pismo can be made available at Oceano.

6c – Recycled Wastewater from Municipal Facilities
Quality

- Water quality is a constraint for both SSLOCSD and Pismo Beach WWTF sources, due to high chloride and sodium levels, and therefore reverse osmosis treatment is likely.
- Groundwater recharge for purposes other than disposal may require advanced treatment including demineralization and advanced oxidation.
- Phillips 66 Refinery - Water quality would need to be the same as they have now. P66 treats the water for use in boilers, so it has to be of good quality, or additional treatment would be necessary.

6d – Recycled Wastewater from Municipal Facilities
Reliability

6e – Recycled Wastewater from Municipal Facilities

Required Facilities

- Conveyance to NCSD Distribution system or suitable recharge/recovery location

6f – Recycled Wastewater from Municipal Facilities
Constraints

- Institutional
  - Groundwater recharge via percolation may be viable in the area of Mesa and Eucalyptus Roads, but the community opposition to this 24 acre site is expected to be substantial.
  - Golf course use is viable with demineralization, but the overall demand is limited (three courses)
  - Agricultural use is allowable, but based on local experience, may take years to develop willing users.
- Legal
- Regulatory
- Capacity

6g – Recycled Wastewater from Municipal Facilities
Implementation Schedule

- 1000 AFY delivery
- 3000 AFY delivery
- 6200 AFY delivery

6h – Recycled Wastewater from Municipal Facilities
Cost Range

Capital Cost and O&M

- SSLOCSD WWTF - The capital cost at the treatment plant, including demineralization, is on the order of $15 to $20M, not including any distribution piping. Costs per ac-ft are in the range of $4,000 to $6,000, depending on the final use. The costs are reported in 2008 dollars.
- Pismo Beach WWTF - The capital cost at the treatment plant for irrigation-ready applications is on the order of $4M, not including any distribution piping. Costs per ac-ft are in the range of $2,750 plus piping costs. The costs are reported in 2012 dollars.
- Additional input from the industrial group is needed on the Phillips 66 direct reuse option, which was estimated to cost $4,000 per acre-ft in 2008.

Local Groundwater

Dan Garson

Dennis Graue

Kathie Matsuyama

7a – Local Groundwater Description

- This topic should allow us to conserve water and lessen tendencies for seawater encroachment, but it does not meet the criterion of adding to water supplies.
- Options considered/evaluated
  - Dana wells
  - Local shallow aquifer
  - Riverside wells

7b – Local Groundwater Supply

- Past groundwater studies have been piecemeal, although helpful
- A state-of-the-art modeling study of the entire aquifer must be carried out to determine the water supply under various scenarios that include
  - More wells
  - Various pumping rates
  - Various distributions of well locations
  - Various rainfall amounts
  - Injection near the sea-water interface
  - Increased or decreased water pumping by neighbors in the aquifer

7b – Local Groundwater Supply (Cont'd)

- A concerted effort must be funded and implemented to acquire any data that would be particularly valuable in the model study. Based on the answers of Dr. Newton to our questions, data are very sparse and may be inadequate to enable a model to tell us what we need to know.

7c – Local Groundwater Quality

7d – Local Groundwater Reliability

7e – Local Groundwater Required Facilities

- Based on the information the Woodlands has received from Cleath on shallow groundwater as a source, one would need numerous low volume wells rather than one or two large wells to avoid creating depressions (this may be fine for small producers and a valuable resource, but probably not worthy of NCSD - discussion).

7f – Local Groundwater Constraints

- Institutional
- Legal
  - Riverside wells may not be an available water source
  - Dana wells are not a new water supply
  - Local shallow groundwater is already included in the groundwater budget used in the stipulation
- Regulatory
- Capacity

7g – Local Groundwater Implementation Schedule

- 1000 AFY delivery
- 3000 AFY delivery
- 6200 AFY delivery

7h – Local Groundwater Cost Range

- Capital cost
- Operating or ongoing cost

Surface Water

Rob Miller

Dave Watson

Dan Woodson

8a – Surface Water Description

- Options considered/evaluated
  - Oso Flaco Lake
  - Santa Maria River
  - Lopez Reservoir

    Surface waters presently released from Lopez Lake into Arroyo Grande creek could be partially offset by recycled water in the South County, thereby generating new water resources. At present, 4,200 AFY are released from Lopez Lake to meet contractual obligations of the Flood Control District.

8b – Surface Water Supply

- Study is underway for expansion of the capacity of Lopez reservoir. Potential ranges of yield could be ____ to ____ AFY. (range TBD)

8c – Surface Water Quality

- Oso Flaco Lake water quality – the source would likely require advanced treatment, such as reverse osmosis, which would give rise to the same brine management challenges as desalination. The brine waste stream may contain contaminants besides salts that could limit discharge options.

8d – Surface Water Reliability

- Santa Maria River - Flows that are in excess of environmental demands will be highly transient in nature (not yearly) and do not represent a viable surface water supply. In addition, the amount of storage necessary to impound the short term flows would be excessive.

8e – Surface Water Required Facilities

8f – Surface Water Constraints

- Institutional
- Legal
  - Existing water rights should be considered for any surface water supplies.
  - Santa Maria River - Surface water from normal Santa Maria River flows percolates into the basin and does not represent a supplemental supply.
  - Lopez Reservoir
    - Lopez supplies are not available to NCSD. Agreements for participation in either of these projects would need to be negotiated with the Flood Control District Zone 3 participants.
    - Additional Lopez reservoir supplies would need to be "wheeled" to NCSD via the SWP pipeline (to keep delivery infrastructure costs down), necessitating CCWA agreement to such a concept.

8f – Surface Water Constraints (Cont'd)

- Regulatory
  - Santa Maria River - Surface water from high flow events will be subject to environmental demands, including steelhead/salmon recovery planning that is on-going. (http://swr.nmfs.noaa.gov/recovery/)
  - Oso Flaco Lake
    - If reverse osmosis is required, the brine waste stream may contain contaminants besides salts that could limit discharge options.
    - Snowy Plover habitat and Coast Commission jurisdiction would be barriers to viability.
  - Lopez Reservoir - Completion of the County's HCP for the Lopez-Arroyo Grande Creek and Oceano Flooding projects is needed before determining quality parameters and what potential yield from substituting recycled water for downstream releases is possible.

8f – Surface Water Constraints (Cont'd)

- Capacity

8g – Surface Water Implementation Schedule

- 1000 AFY delivery
- 3000 AFY delivery
- 6200 AFY delivery

8h – Surface Water Cost Range

- Capital cost
- Operating or ongoing cost

Seawater

Dennis Graue
Kathie Matsuyama

9a – Seawater Description

Options

- Thermal using waste heat from Phillips 66 refinery – a possible 900 AFY – probably too costly and too complicated to integrate with the refinery
- A reverse osmosis process may desalinate the effluent brine from the refinery – a possible 300 AFY
- Other thermal applications using 1- solar distillation or 2- purchased energy (gas) to generate the heat
- Larger scale conventional Reverse Osmosis, like Santa Barbara
- Enhanced Reverse Osmosis using VSEP technology – a possible 170 AFY from 6 idle units in Orcutt Oil Field
- A newer technology: liquid-liquid extraction of water from brine is unproven at industrial scale
- DJG discussion with a Pacific Coast Energy representative suggested the possibility of purchasing 6 slightly used VSEP RO units for a possible gain of 170 AFY at lower cost

9a – Seawater Description (Cont'd)

- Major Considerations
  - Nipomo's proximity to seawater and brackish water
  - Insolation of south SLO County
  - Size of Santa Maria Basin aquifer
  - Rainfall volumes in the future
  - Price of purchased energy in the future
  - Availability of land for processes requiring a lot of it, like solar distillation

9a – Seawater Description (Cont'd)

- Other Considerations
  - Future rainfall volumes influence the availability of water from the aquifer and from the California Water Project
  - Operating costs of membrane separation methods and most distillation methods are very sensitive to energy costs
  - Amount of crude oil produced nearby as an energy source

9b – Seawater Supply

9c – Seawater Quality

9d – Seawater Reliability

9e – Seawater Required Facilities

- Intake
  - Beach wells or open ports with screening
- Conveyance to plant site
- Treatment plant
  - Pretreatment
  - Desalination technology
    - Solar distillation
    - Reverse Osmosis
  - Posttreatment
    - Buffering
    - Disinfection
- Brine Discharge
  - Conveyance to discharge facilities
  - Reverse collector wells
  - Diffuser assembly

9f – Seawater Constraints

- Institutional
- Legal
- Regulatory
  - RO desal permitting is a long and difficult process requiring demonstrating to the Coastal Zone Commission that all alternatives had been evaluated and desalination was the best process
- Capacity

9g – Seawater Implementation Schedule

- 1000 AFY delivery
- 3000 AFY delivery
- 6200 AFY delivery

9h – Seawater
Cost Range

- Capital and Operating Cost
  - Based on information reported in October and November by Chula Vista and Monterey projects based on RO, the capital costs could vary from $5,000/AFY to $25,000/AFY
  - From the above sources RO process operating costs could be ~$3,000/AF

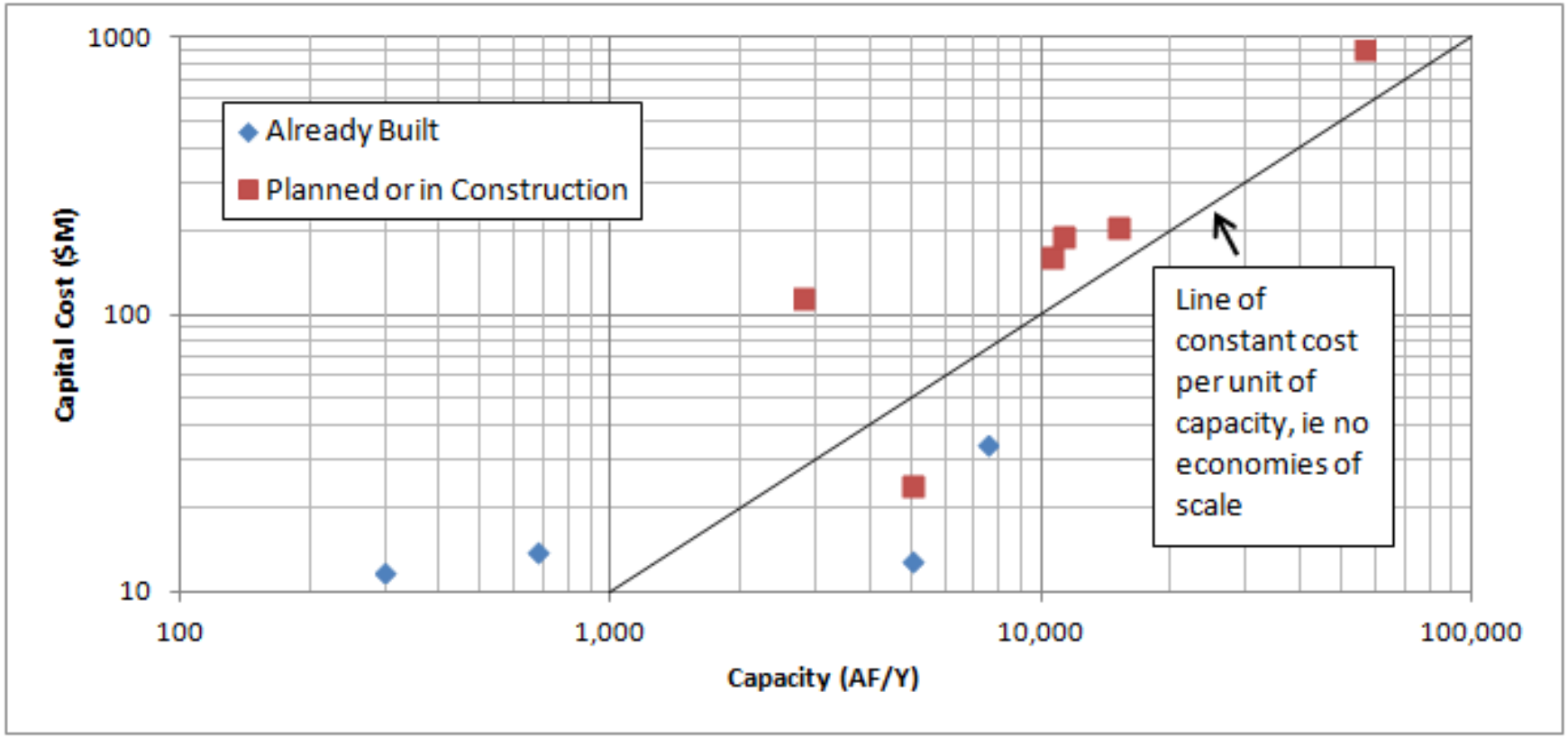
9h – Seawater
Cost Range (Cont'd)

- Capital and Operating Cost Summary

Reverse Osmosis		AFY	Mgpd	$M	$/AFY	$/AF	US$/M^3	Comment
Santa Barbara, CA	1991	7,500	6.7	34	4,533	1,918	1.55	
Chula Vista Sweetwater I, CA	1999	5,000	4.5	13	2,600	700	0.57	
Monterey - Marina	2006	673	0.6	14	20,815			
Sand City, CA	2010	300	0.3	12	39,667			
Carlsbad - Poseidon	2012	56,048	50.0	900	16,058	2,290	1.86	
Chula Vista Sweetwater II, CA	2013	5,000	4.5	24	4,800			
Santa Cruz Soquel Creek	2016	2,802	2.5	115	41,036	3,300	2.68	
Monterey - North Marina	2017	15,000	13.4	207	13,800	3,250	2.63	est by Separation Processes Inc
Monterey Regional Deep Water Project	2018	10,500	9.4	160	15,238	3,120	2.53	est by Separation Processes Inc
Monterey Moss Landing Peoples, CA	2019	11,210	10.0	190	16,950	2,980	2.42	est by Separation Processes Inc

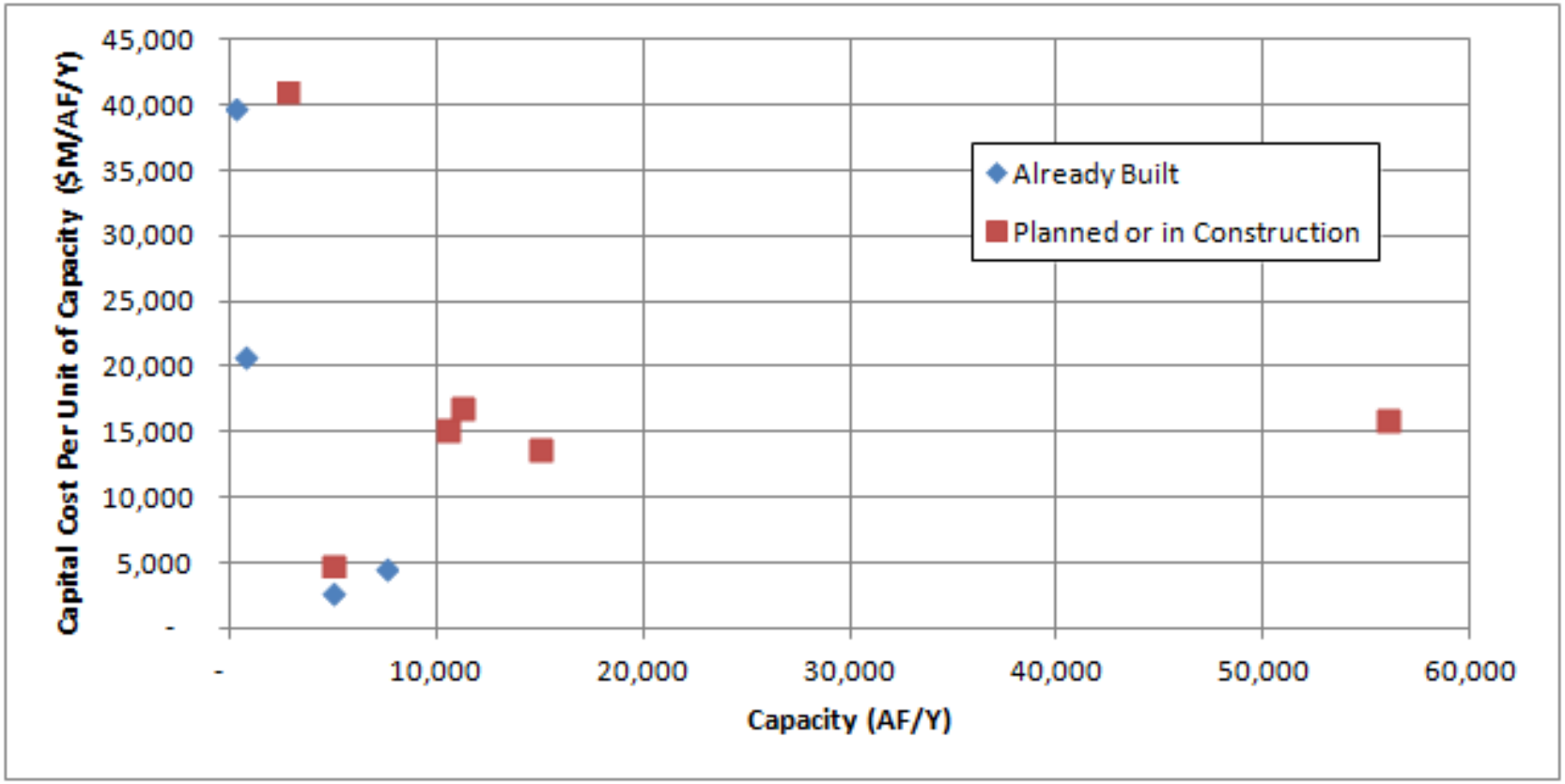
9h – Seawater
Cost Range (Cont'd)

Capital Costs for US RO Plants



9h – Seawater
Cost Range (Cont'd)

Economy of Scale



Needed for Evaluation

1. Discussion with experts (such as Veolia) to narrow the evaluation of thermal and membrane methods and solar distillation
2. Discussion with Poseidon, Chula Vista and Monterey representatives and with experts to narrow the evaluation of membrane methods, especially RO and Membrane Distillation

Persons Interviewed

- Mr. Dick Hart, Pacific Coast Energy Company
- Mr. Pete Corboy, New Logic
- Mr. Clay Bradfield, Cannon Engineering
- Mr. James Anderson, Phillips 66 Refinery

- VSEP RO devices they have as surplus
- Capacity and operating characteristics of VSEPs
- Learned that Cannon has no experience with solar distillation
- Phillips is interested in cooperating with NCSD

Ranking

10a - Ranking
Evaluation Criteria

- Schedule
- Reliability
- Phasing
- Capital Cost
- Operation & Maintenance Cost
  - Sensitivity to fluctuation will affect ranking
- Water Quality
- Feasibility/Permits
- Sustainability
  - Environmentally-friendly alternatives will rank higher
- Public Opinion

10b – Ranking
Priority and/or Weighting

10b – Ranking

Ranking Criteria and Topics

Option Ref #	Project Considered	Supply Potential			Cost Considerations		Complies w/Court	Critical Milestones for Delivery			Reliability	Phasing	Quality	Feasibility	Public Support
		1,000 afy	3,000 afy	6,200 afy	Capital	O&M		1,000 af by 2015	3,000 af by ASAP	6,200 af by ???		*details to be added…….*			
State Water Project															
1	Acquire Unused or Excess Table A Allocation from SLO County														
2	Acquire Unused or Excess Table A Allocation from SB County														
3	Reactivate Desal Plant in SB / Exchange for SWP Supplies														
Demand Management / Conservation / Graywater															
4	Conservation Programs (current and future)														
5	Graywater Programs														
Agricultural and Industrial Reuse															
6	Agricultural Reuse														
7	Industrial Reuse														
Santa Maria Waterline Intertie Project															
8	Acquire Water from Santa Maria														
Recycled Water Supplies															
9	Acquire Supply from South SLO County Sanitary District														
10	Acquire Supply from Pismo Beach														
Local Groundwater															
11	Local Shallow Aquifer														
12	Dana Wells														
13	Riverside Wells														
Surface Water															
14	Oso Flaco Lake														
15	Santa Maria River														
16	Lopez Reservoir														
Seawater/Brackish/Other Desalination Options															
17	Seawater Desalination Project														
18	Phillips 66 Refinery Thermal Waste Recapture														
20	Solar Distillation														
21	Enhanced Reverse Osmosis (VSEP) Orcutt Oil Fields														
22	Liquid-Liquid Extraction of Brine														

10c – Ranking
Summary of Ranking

Alternative	Schedule	Reliability	Phasing	Capital Cost	O&M Cost	Water Quality	Feasibility	Sustainability	Public Opinion

Appendix - Desalination Technologies

Dennis Graue

From Wikipedia

Water Desalination Methods: DESWARE.net

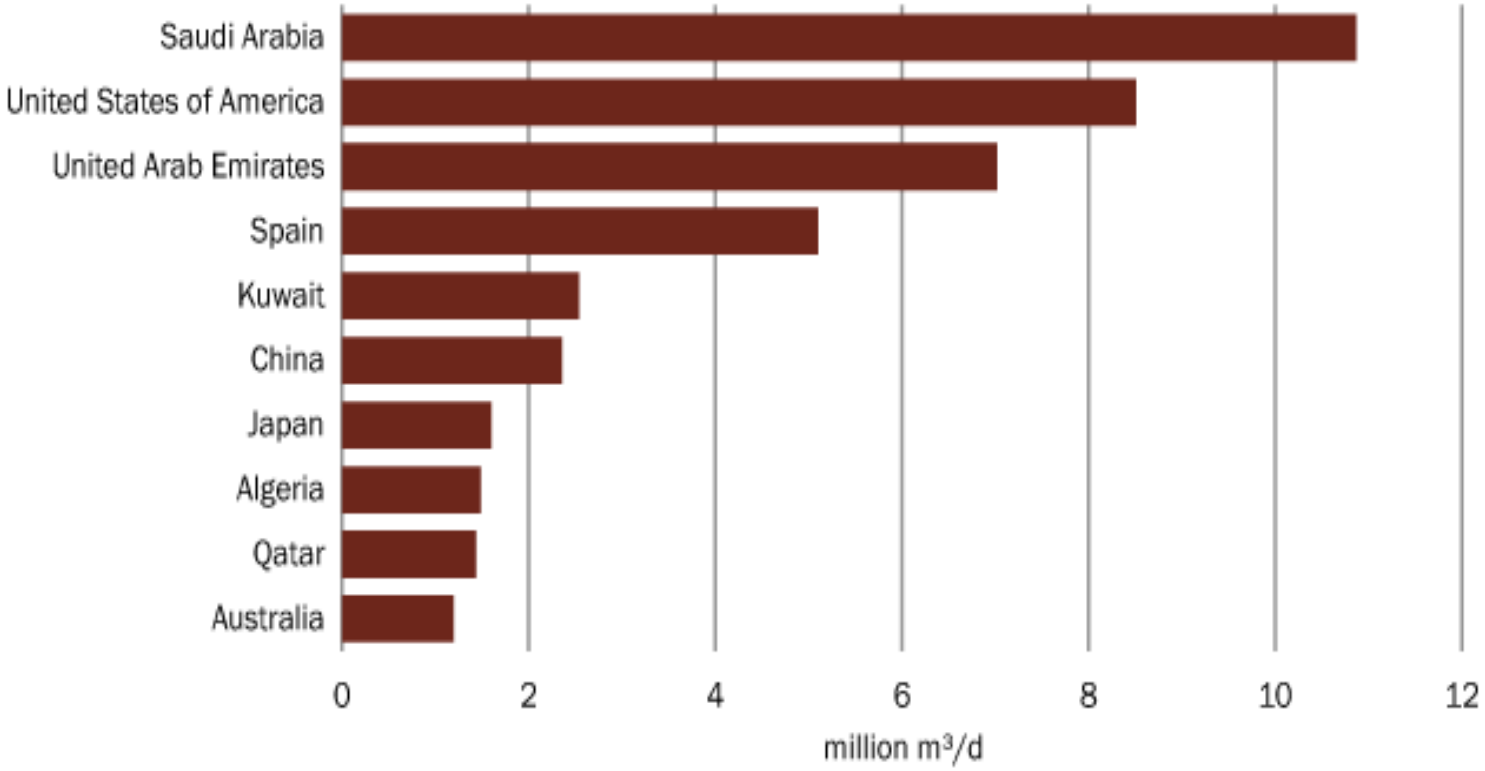
Encyclopedia of Desalination and Water Resources

Methods

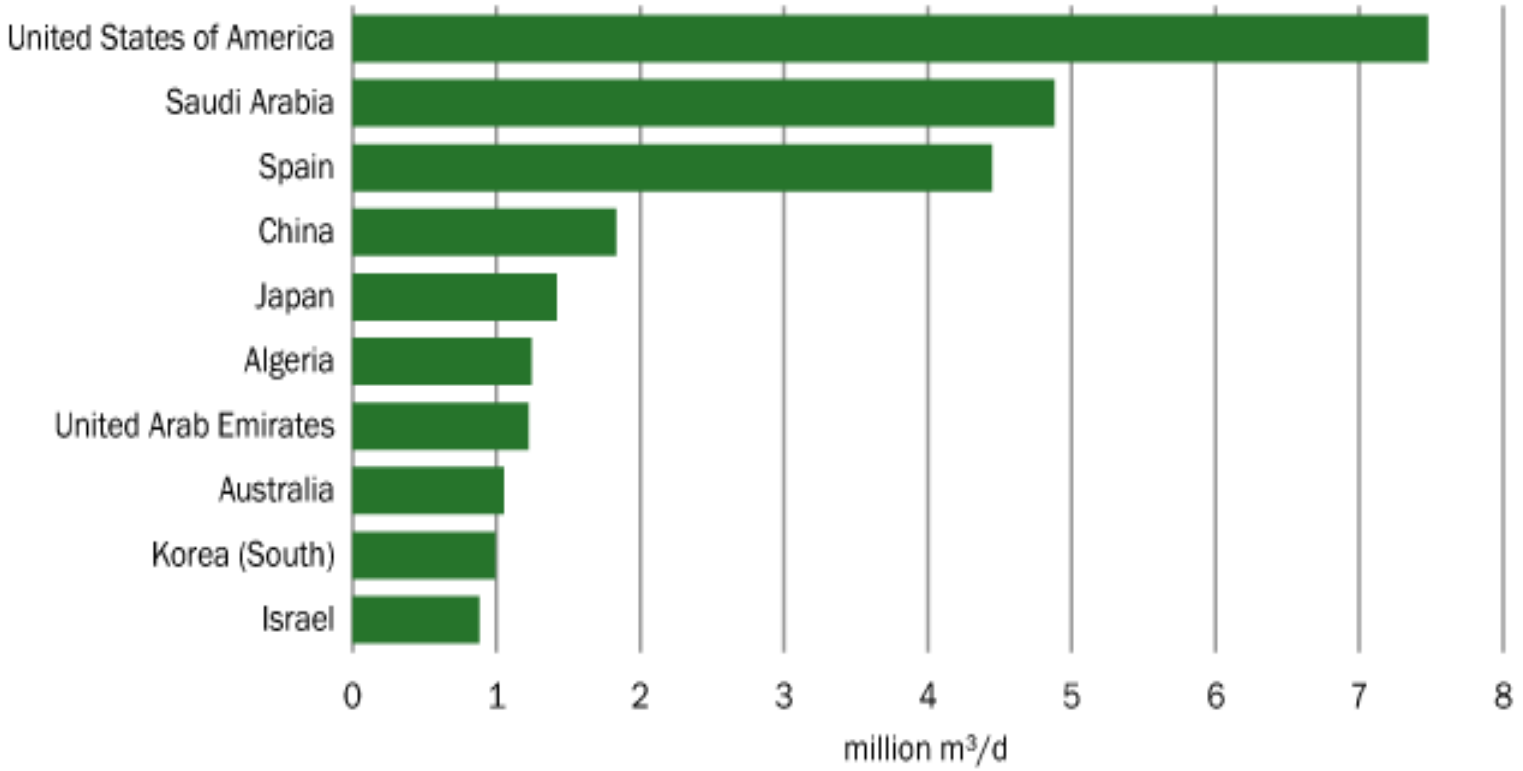
- Distillation
  - Multi-stage flash distillation (MSF)
  - **Multiple-effect distillation** (MED|ME)
  - Vapor-compression (VC)
- Ion exchange
- Membrane processes
  - Electrodialysis reversal (EDR)
  - Reverse osmosis (RO)
  - Nanofiltration (NF)
  - Membrane distillation (MD)
- Freezing desalination
- Geothermal desalination
- Solar desalination
  - Solar humidification-Dehumidification (HDH)
  - Multiple-effect humidification (MEH)
- Methane hydrate crystallization
- High grade water recycling
- Seawater greenhouse

Possibly liquid-liquid extraction

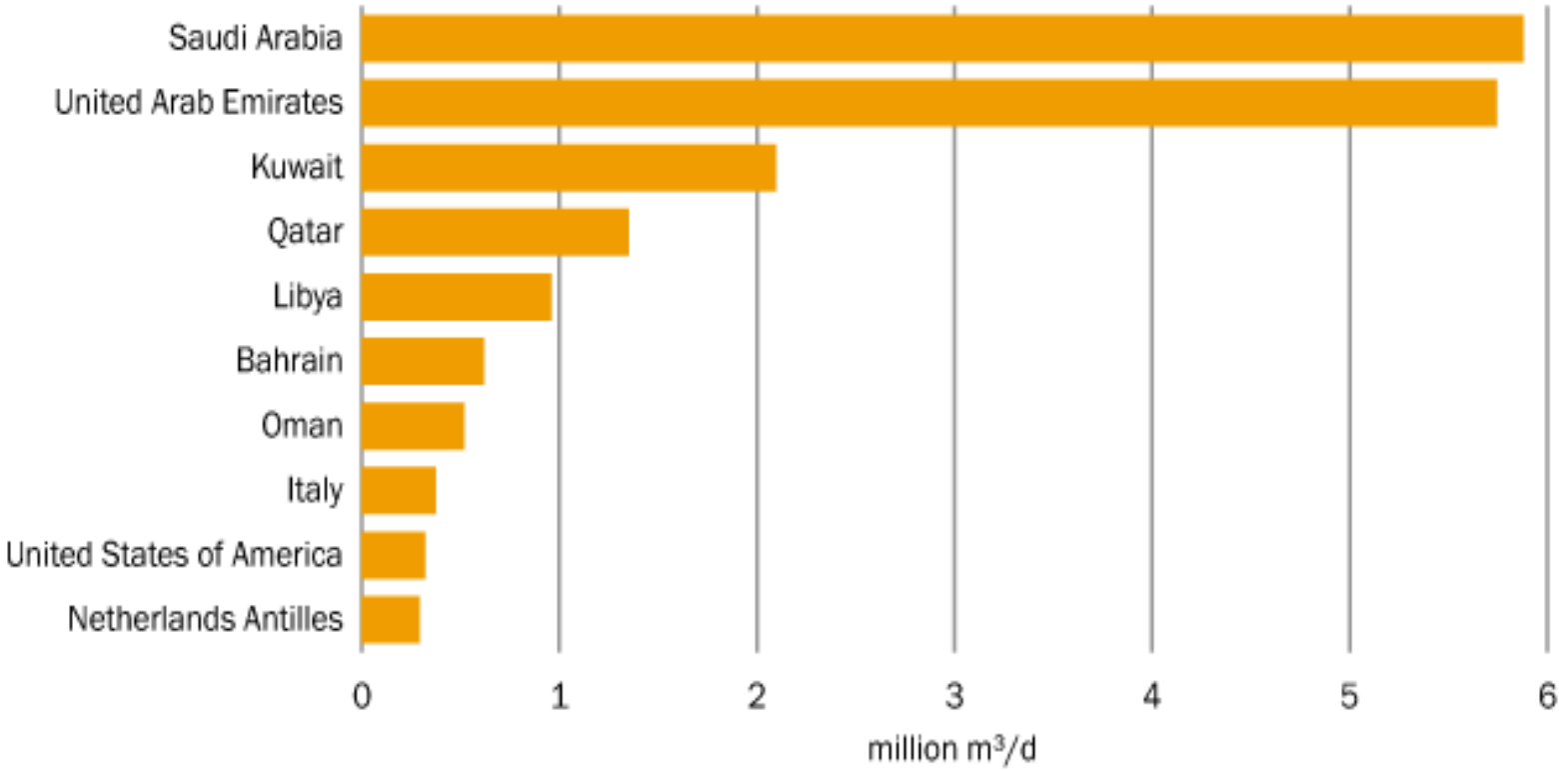
Top 10 countries by total installed capacity since 1945 - DesalData.com



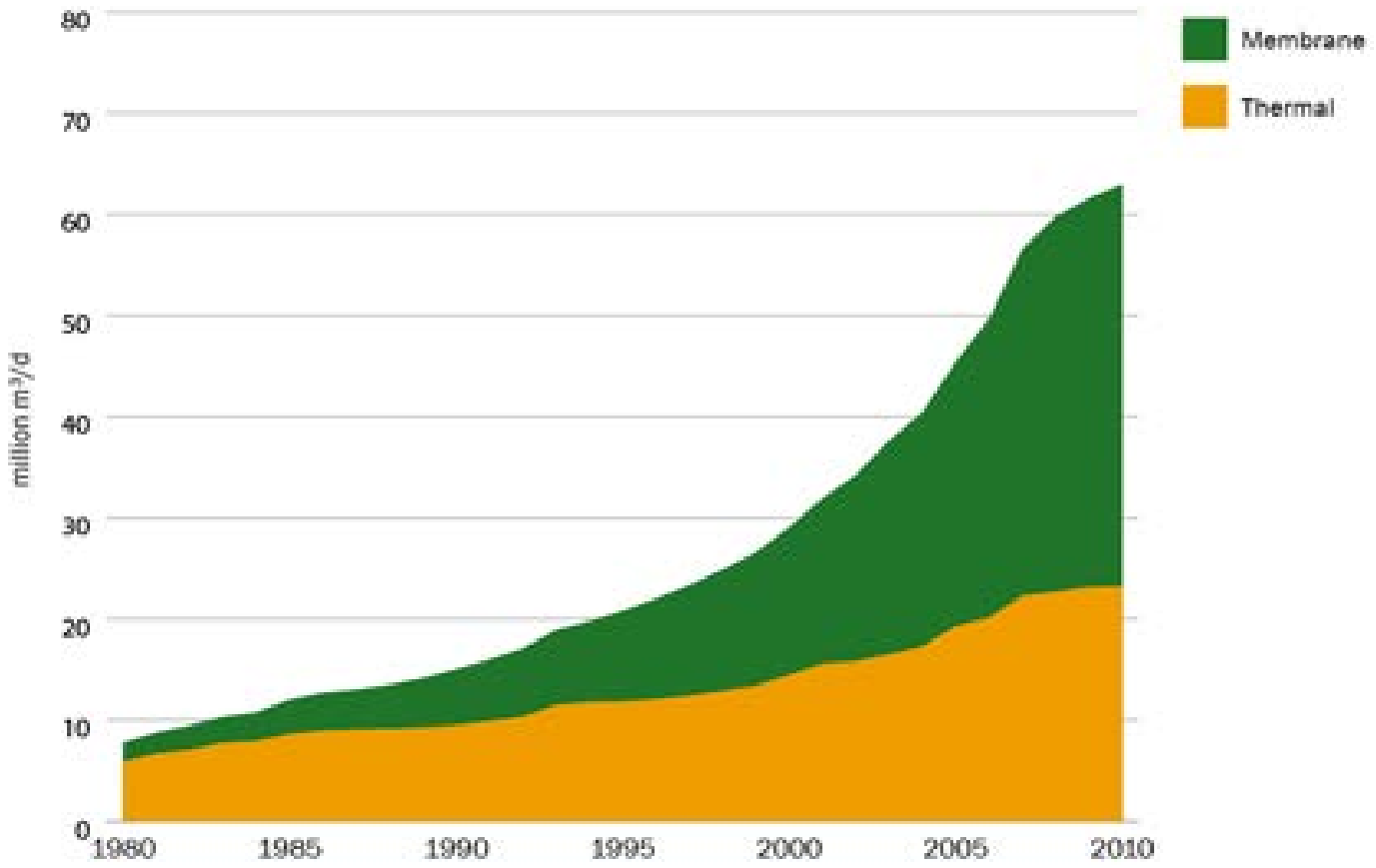
The US has led the membrane market, while Saudia Arabia and the United Arab Emirates have led the thermal market



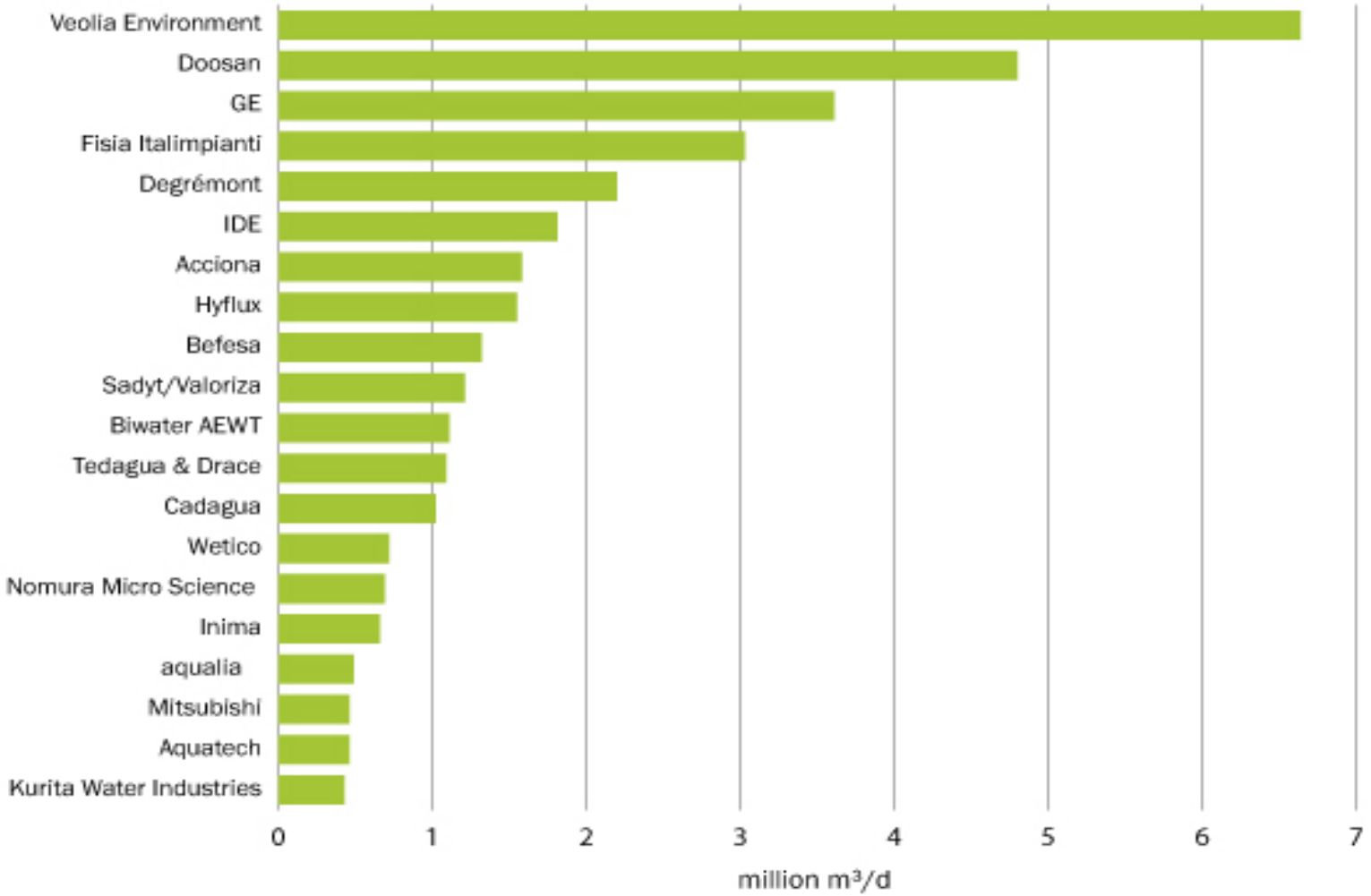
Top 10 countries by total installed thermal capacity since 1945 - DesalData.com



Installed membrane and thermal capacity, 1980-2010 (cumulative) - DesalData.com

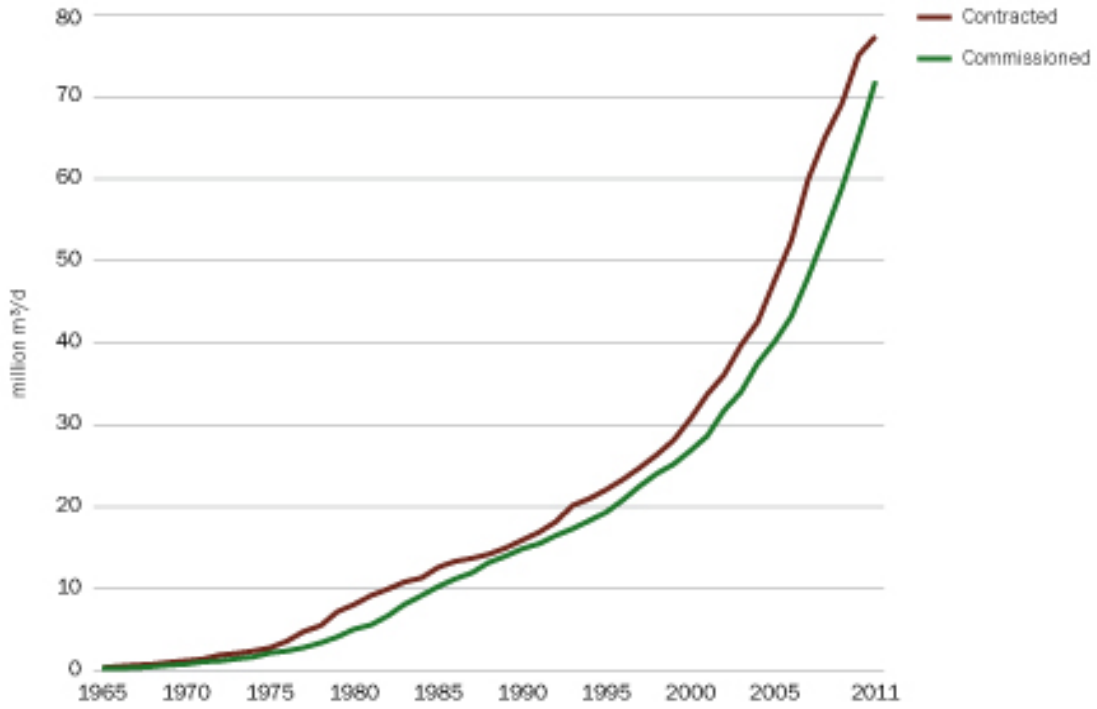


Desalination plants as created by engineering, procurement and construction (EPC) contractors.



Background on Reverse Osmosis

- To date over 16,000 reverse osmosis plants have been built in the world, capable of producing more than 17 million AFY of fresh water – DesalData.com



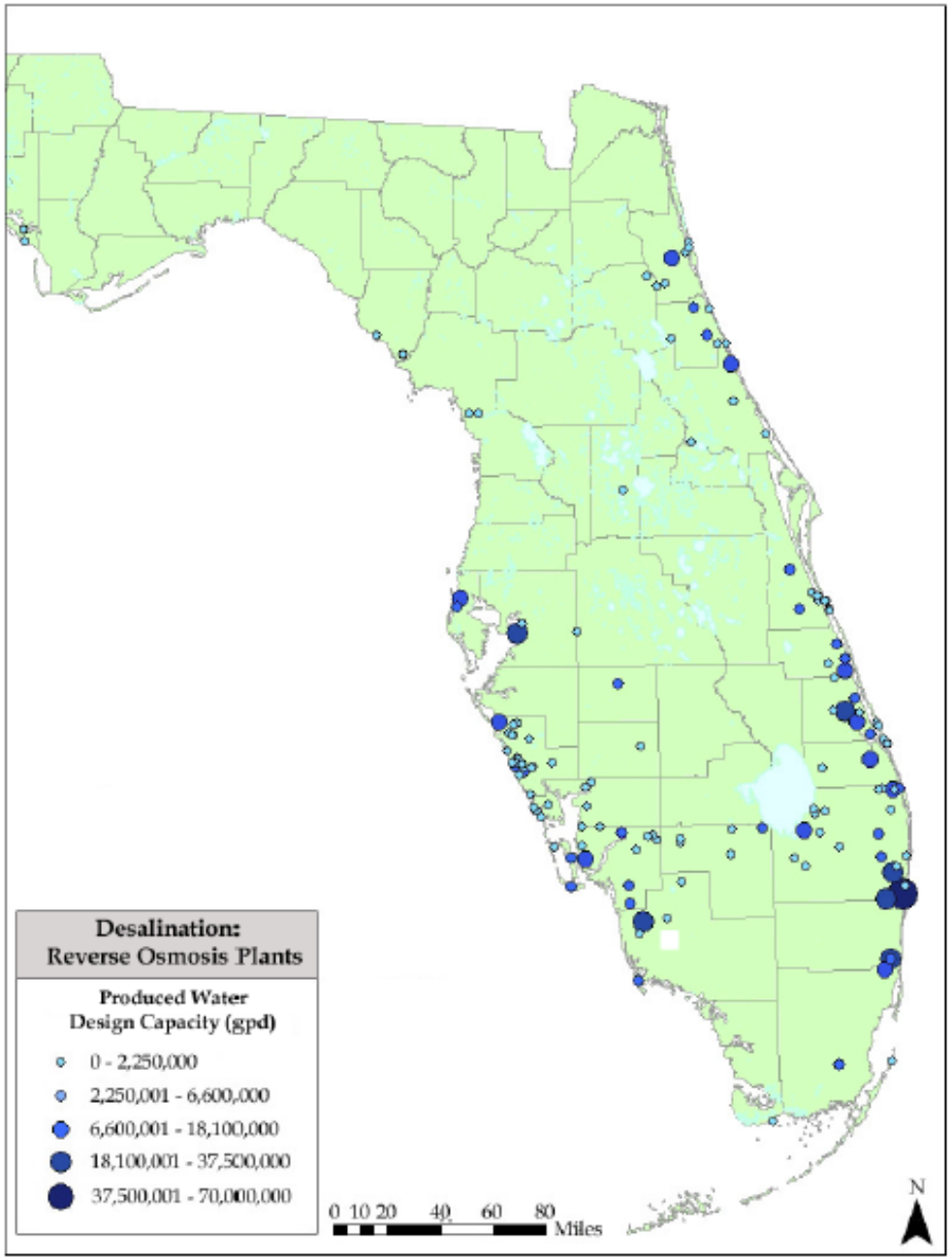


Figure 1-4. Desalination Facilities in Florida (FDEP, 2009)

TO: EVALUATION COMMITTEE

FROM: MICHAEL K. NUNLEY, PE
CHAIRMAN

DATE: December 17, 2012

AGENDA ITEM #6

DECEMBER 19, 2012

DISCUSS NEED FOR SPOKESPERSON TO PROVIDE UPDATE TO THE BOARD

ITEM

If determined appropriate by the Committee, identify and select a member of the Committee to serve as a spokesperson for the Committee at an upcoming Board meeting.

BACKGROUND

Paragraph 7A of the Bylaws requires that "The Committee will provide written reports and oral presentations to the NCSD Board of Directors". The Chairman's and Vice Chair's responsibilities do not include regular reporting and correspondence with the Board. The Committee can select a Spokesperson from among the voting members to represent them before the Board. The Spokesperson's responsibilities may include:

- Providing updates to the Board of Directors at major milestones in the evaluation process; and
- Leading the presentation of the findings of the Committee.

At the September 24, 2012, Committee meeting, the Committee decided to select a spokesperson on an "as-needed" basis, depending on whether an update should be provided to the Board at an upcoming meeting. A different Spokesperson could be selected for each update or presentation, if desired. This discussion and selection will be a standing item at each Committee meeting.

RECOMMENDATION

Discuss whether an update should be provided by the Committee to the Board. Nominate a voting member of the Committee to serve as Spokesperson, if desired by the Committee.

ATTACHMENT

NONE

TO: EVALUATION COMMITTEE

FROM: MICHAEL K. NUNLEY, PE
CHAIRMAN

DATE: December 17, 2012

AGENDA ITEM #7

DECEMBER 19 2012

PRESENT REFERENCE DOCUMENTS FOR REVIEW AND ACCEPTANCE

ITEM

Identify and propose reference documents to be used by Committee members in the evaluation.

BACKGROUND

The Bylaws list the following "primary" reference documents to be used in the Committee evaluation:

- *2010 Santa Maria Urban Water Management Plan*
- *2010 NCSD Urban Water Management Plan*
- *2010 CCWA Urban Water Management Plan*
- *2007 Boyle Alternatives Analysis*
- *2011 NMMA TG Annual Report*
- *2009 NCSD Supplemental Water Project EIR*
- *2005 Stipulation*
- *2008 Court Order*

The Bylaws also state that, "*Other published technical analyses may be used if the SWAEC finds them to be rigorously accurate.*" The list was amended at prior Committee meetings to include the following documents:

- *2011 Northern Cities Management Area Monitoring Report*
- *2011 Santa Maria Valley Management Area Monitoring Report*
- *Final Supplemental Water Project Phasing Study (August 8, 2012)*
- *Nipomo CSD Water Conservation Program (February, 2008)*
- *City of Arroyo Grande Recycled Water Distribution System Conceptual Plan – City of Pismo Beach WWTP (Wallace Group - June, 2010)*
- *City of Arroyo Grande Recycled Water Distribution System Conceptual Plan – South SLO County Sanitation District WWTP (Wallace Group - June, 2010)*
- *South SLO County Sanitation District Water Recycling Update Report (Wallace Group - January, 2009)*
- *Sweetwater Authority Groundwater Desalination Facility Brochures (provided by Director Eby at November 1, 2012, Committee Meeting)*
- *San Luis Obispo County Master Water Plan – May 2012*
- *San Luis Obispo County Conservation Manual*
- *Appellate Court Ruling (November 21, 2012)*

As discussed in our September 5, 2012, meeting, Committee members are encouraged to bring documents to Committee meetings for their consideration as additional reference documents. The Committee would need to determine that the documents are "rigorously accurate" as required in the Bylaws.

It is assumed this will be a standing item for each Committee meeting.

RECOMMENDATION

Identify, discuss, and vote on documents presented by Committee members for use as reference materials in the Committee's evaluation.

ATTACHMENT

NONE

TO: EVALUATION COMMITTEE

FROM: MICHAEL K. NUNLEY
CHAIRMAN

DATE: December 17, 2012

AGENDA ITEM #8

DECEMBER 19, 2012

SET NEXT COMMITTEE MEETING DATE AND TIME

ITEM

Committee members to set the next meeting date and time.

BACKGROUND

As directed by the Board, the Committee is directed to meet as needed to perform the Supplemental Water Alternatives Evaluation in an efficient and thorough manner.

RECOMMENDATION

Recommend that the Committee members schedule the next meeting during the week of January 7, 2013, if possible.

ATTACHMENT

NONE