

**MINUTES OF THE ENGINEERING SERVICES COMMITTEE MEETING
OF THE RAINBOW MUNICIPAL WATER DISTRICT
MARCH 7, 2018**

1. **CALL TO ORDER** – The Engineering Services Committee Meeting of the Rainbow Municipal Water District on March 7, 2018 was called to order by Chairperson Prince at 3:00 p.m. in the Board Room of the District, 3707 Old Highway 395, Fallbrook, CA 92028. Chairperson Prince, presiding.

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL:**

Present: Member Prince, Member Stitle, Member Taufer, Member Brazier, Member Ratican, Member Robertson, Member Marnett, Alternate Nelson.

Also Present: General Manager Kennedy, Interim Engineering Manager Gerdes, Associate Engineer Powers, Operations Manager Milner, Eng. Tech. Rubio, Director Stewart.

Absent: Alternate Kirby.

There were two members of the public present: Mr. Carey and Mr. Alspach (Arcadis).

4. **SEATING OF ALTERNATES**

There were no seating of alternates.

5. **ADDITIONS/DELETIONS/AMENDMENTS TO THE AGENDA (Government Code §54954.2)**

There were no changes to the agenda.

6. **PUBLIC COMMENT RELATING TO ITEMS NOT ON THE AGENDA**

There were no public comments.

COMMITTEE ACTION ITEMS

*7. **APPROVAL OF MINUTES**

A. January 3, 2018

Mr. Prince asked if the minutes were changed. Mr. Kennedy said there was a paragraph added to the HDR Condition Assessment Update agenda item regarding future savings discussion.

Mr. Taufer said he made a comment regarding the same presentation and it was not included in the minutes. Mr. Kennedy pointed out the discussion during the presentation was quite lengthy. He inquired if there was something else that needed to be added. Mr. Taufer said what triggered the issue was that there were “no objections”. Mr. Kennedy responded by addressing Mrs. Rubio asking if she heard objections, Mrs. Rubio responded no. Ms. Brazier added that she also listened to the recording and confirmed there were no objections. Mr. Taufer said he made a

comment regarding the report and it was not reflected in the minutes. Ms. Brazier responded the minutes do not include verbatim comments. Mr. Kennedy mentioned the minutes were to accurately reflect what was discussed with enough detail for the public to understand what was discussed, without having transcripts. Discussion ensued.

Mr. Prince suggested if a member feels there is a critical objection to note it in the minutes.

Mr. Kennedy suggested if a member feels they have an important comment to include in the minutes they should say during the recording "I want the minutes to reflect that I said this". He pointed out that the Board has given clear direction as to how to produce the minutes. Discussion ensued.

Mr. Taufer asked about the next steps for the HDR Condition Assessment program. Mr. Kennedy briefly went over the steps. Mr. Taufer said he thinks there were flaws with the program, but felt he was not given an opportunity to address them. Mr. Kennedy responded if there was something specific, to write them down, and submit them by email to him and Mr. Powers, prior to the next meeting. Discussion ensued.

Motion: Accept the minutes as approved.

Action: Approve, Moved by Member Stitle, Seconded by Member Brazier.

Vote: Motion passed (summary: Ayes = 6, Noes = 1, Abstain = 0).

Ayes: Member Prince, Member Stitle, Member Brazier, Member Ratican, Member Robertson, Member Marnett.

Noes: Member Taufer.

B. February 7, 2018

Motion: Accept the minutes as approved.

Action: Approve, Moved by Member Stitle, Seconded by Member Robertson.

Vote: Motion carried by unanimous roll call vote (summary: Ayes = 7).

Ayes: Member Prince, Member Stitle, Member Taufer, Member Brazier, Member Ratican, Member Robertson, Member Marnett.

8. PRESENTATION FROM BRENT ALSPACH REGARDING ZERO LIQUID DISCHARGE DESALTER OPTIONS

Mr. Kennedy introduced Mr. Alspach the author of the Membrane Infiltration Guidance Manual and nationwide leader. He said Mr. Alspach has identified different disposal methods for brine. Mr. Alspach said he was the Director of Applied Research for Arcadis and began his presentation by mentioning how drought and water stress were becoming prevalent around the globe. He pointed out the response to drought/water stress would be to increase the use of alternative supplies, which typically are challenging to treat and/or poorer quality. He listed the alternative supplies: Brackish groundwater, Saline surface water, Recycled wastewater and Seawater - all requiring desalination and concentrate management. He went over the concentrate management options as follows:

CONCENTRATE MANAGEMENT OPTIONS	
Strategy	Issues / Limitations
Surface Water Discharge	<ul style="list-style-type: none"> • Environmental permitting • Availability of suitable receiving bodies • Impact on downstream water supplies
Deep Well Injection	<ul style="list-style-type: none"> • Environmental permitting • Potential for inducing earthquakes
Evaporation Ponds	<ul style="list-style-type: none"> • Environmental permitting • Available area • Capital cost
Land Application	<ul style="list-style-type: none"> • Environmental permitting • Distribution • Requires salt-tolerant crops • Micro-pollutant toxicity • Increase in soil salinity
Zero Liquid Discharge (ZLD)	<ul style="list-style-type: none"> • Cost

Mr. Alspach defined zero liquid discharge as follows:

- Applied to desalination residuals from the treatment plant. Could also apply to conventional treatment residuals handling. ZLD literature could be vague. He clarified the ZLD he would be discussing in this presentation would be concentrating dissolved solids.
- Assumed 100% Recovery. Not near ZLD (NZLD). Solid slurry discharge transported offsite for beneficial use or disposal.
- Not a Boutique Process. Not limited to certain concentrate water quality characteristics. Applicable virtually anywhere.

Mr. Alspach pointed out the conventional ZLD concept has two steps - Advanced Concentration of a reverse osmosis (RO) brine and a Solids Generation. He listed the feasibility benefits: Application not limited by water quality, minimal environmental impact, few regulatory limitations and minimal practical restrictions. He stated the feasibility detriments were cost. Discussion ensued.

Mr. Alspach provided the following information on the brine concentrators:

- Utilize mechanical vapor compression (thermal) technology.
- Importance of pretreatment the process/additives and their purpose.
- Distillate (treated water) produced by the brine concentrators were low in solidity (Total Dissolve Solids (TDS) less than 10 mg/L.
- Brine TDS up to 250,000 mg/L. May achieve 300,000 mg/L with softening pretreatment.
- Specific energy requirements 60-90 kWh/kgal distillate. Higher specific energy requirements for higher degrees of concentration. Assumes the use of electric (grid) power (i.e. no waste heat).

Mr. Taufer asked if the mechanical vapor compression technology was new. Mr. Alspach responded no, but it concentrates the brine up to a degree that RO was not capable of doing.

Mr. Alspach provided the following disadvantages of Brine Concentrators:

- System complexity.
- Minimal institutional operations knowledge / experience.
- Responds slowly to flow changes – equalization storage required.
- Requires a source of steam for start-up, including after every maintenance event. Requires a dedicated boiler or other on-site steam generating process.
- Aesthetics.

Mr. Alspach provided the following information about the Crystallizers:

- Utilize mechanical vapor compression (thermal) technology.
- Pretreatment for scale control is not used.
- Distillate (treated water) TDS 30-50 mg/L.
- Centrifuges are used to dewater the solid slurry residuals.
- Specific energy requirements 180-250 kWh/kgal distillate. Higher specific energy requirements for more highly soluble species (e.g. higher concentration of nitrate salts). Assumes the use of electric (grid) power (i.e. no waste heat).

Mr. Alspach noted the disadvantages of the Crystallizers were similar to the brine concentrators.

Mr. Alspach said the desalination costs hinge on energy. He compared the specific energy desalination process of Seawater Desalination 10-15 kWh/kgal, Brine Concentrators 60-90 kWh/kgal, and Crystallizers 180-250 kWh/kgal. He also provided examples of their costs based on the USBR Desalination and Water Purification Research and Development Program. He pointed out ZLD being the highest cost and continued to present the comparisons and strategies.

Mr. Alspach stated in summary ZLD was an expensive option for concentrate management, but it offers several critical advantages that broadly enhance the viability of desalination. He listed the following ZLD advantages:

- Feasible deployment virtually independent of concentrate water quality.
- Lack of environmental and regulatory permitting constraints that inhibit many other concentrate management options.
- Overall costs (including primary RO plus ZLD) that are roughly comparable to seawater desalination.
- Virtual elimination of the problem of desalination concentrate, although at a high cost, but not prohibitively high.

Mr. Kennedy said the reason for this discussion/presentation was to determine what to do with the brine as the District works through the Bonsall Basin Desalter Project. Discussion ensued.

9. DISCUSSION AND POSSIBLE ACTION REGARDING CHANGING THE COMMITTEE CHARTER TO INCLUDE OPERATIONS

Mr. Kennedy asked the committee members to review the proposed revisions to the Admin Code to add Operations Services and return with comments or if acceptable to proceed with a vote.

Ms. Brazier suggested removing the word “Services”.

Mr. Robertson agreed with Ms. Brazier's modification, and suggested proceeding with the vote.

Mr. Stitle suggested allowing time to review and return next month.

Mr. Kennedy requested all comments be submitted by email to him and Mr. Powers as soon as possible.

10. RATE SETTING UPDATE

Mr. Kennedy said the rates were approved and six protest letters were received. He mentioned the Board voted to continue the yearly rate hearings.

Ms. Brazier asked if Mr. Roger's request had been addressed. Mr. Powers responded he has been communicating with Mr. Roger, and plans to provide information through the model. Discussion ensued.

Mr. Carey pointed out the high water main breaks during the Lilac fires and suggested labeling the high pressure fire hydrants. Mr. Kennedy said he would review the feasibility of his suggestion. Discussion ensued.

11. AMI/ABM PROJECT UPDATE

Mr. Kennedy said ITRON was falling behind and would not be ready until the Summer 2018. He mentioned due to SDG&E's security protocols in the shared network the products installed by AMI at the end of last year need to be replaced. He said the problem with ABM was that the schedule has been delayed to September 2018. He mentioned possibly breaking the work into two stages. Discussion ensued.

12. LIST OF SUGGESTED AGENDA ITEMS FOR THE NEXT SCHEDULED ENGINEERING SERVICES COMMITTEE MEETING

The following agenda items were suggested:

- Engineering Committee and Operations Charter Revision
- HDR Report Comments
- Sewer Service Agreements (Palomar College and Pala Mesa Highlands)
- Presentation on the Pankey LS
- ABM Update
- Floodway/Floodplain Report

13. ADJOURNMENT

Motion: To Adjourn the meeting.

Action: Approve, Moved by Member Prince, Seconded by Member Stitle.

Vote: Motion carried by unanimous roll call vote (summary: Ayes = 7).

Ayes: Member Prince, Member Stitle, Member Taufer, Member Brazier, Member Ratican, Member Robertson, Member Marnett.

Timothy Prince, Committee Chairperson

Dawn M. Washburn, Board Secretary