

**SPECIAL BOARD MEETING  
BOARD OF DIRECTORS  
ROSAMOND COMMUNITY SERVICES DISTRICT**

10:00 AM Special Board Meeting  
Friday, January 25, 2019  
District Board Room  
3179 35<sup>th</sup> Street West  
Rosamond, CA 93560

**Agenda**

**CALL TO ORDER**

**ROLL CALL**

President Greg Wood  
Vice President Russell Williford  
Director Rick Webb  
Director Byron Glennan  
Director Ben Stewart

**PLEDGE OF ALLEGIANCE**

**BOARD SECRETARY**

This portion of the agenda allows an individual the opportunity to address the Board on any item NOT ON THE AGENDA regarding District business. State law prohibits the District from taking any action on any items not on the agenda, unless authorized under §54954.2(b) of the Government Code, and your matter may be referred to the General Manager. An individual may also address the Board on any agenda item at the time the matter is discussed, and prior to Board consideration or action. Speakers will be limited to five (5) minutes. Your time will start when you approach the podium, and you will be given a 30 second warning before your time expires. If you choose to ask a question during this time, any response by the Board will not extend your time. Questions may be referred to the General Manager to be answered at a later time after the meeting. In order to allow for a smooth and orderly meeting, and allow each speaker the ability to address the Board, disruptions from the audience will not be tolerated and you could be asked to leave. We appreciate your cooperation in this democratic process.

**PUBLIC COMMENTS**

**NEW BUSINESS**

**NB 1.** Approve the Interim Legal Services Agreement from Klein, DeNatale, Goldner, Cooper, Rosenlieb, & Kimball, LLP. (Presenter: Ronald Smith, General Manager)

**NB 2.** Discussion regarding 2018-2019 CIP Budget. (Presenter: Ronald Smith, General Manager)

**ADJOURNMENT**

Requirements Regarding Disabled Access: In accordance with §54954.2(a), requests for a disability related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting, should be made to the RCSD Board Secretary/Assistant at least 48 hours in advance of the meeting to ensure availability of the requested service or accommodation. Please contact the Board Secretary/ Assistant by telephone at (661) 256-5808, Email: [lguerrero@rosamondcsd.com](mailto:lguerrero@rosamondcsd.com) or in writing at the Rosamond Community Services District, Attn: Board Secretary/Assistant; 3179 35<sup>th</sup> Street West, Rosamond, CA 93560.

Pursuant to Government Code Section 54957.5, any writing that: (1) is a public record; (2) relates to an agenda item for an open session of a regular meeting of the Board of Directors; and (3) is distributed less than 72 hours prior to that meeting, will be made available for public inspection at the time the writing is distributed to the Board of Directors. Any such writing will be available for public inspection at the District offices located at [3179 35th Street West, Rosamond, CA 93560](#). In addition, any such writing may also be posted on the District's web site.

# **STAFF REPORT**

## **Rosamond Community Services District**

**DATE:** January 25, 2016  
**TO:** Board of Directors  
**FROM:** Ronald D. Smith, General Manager  
**SUBJECT:** Waste Water Treatment Plant ("WWTP") Rehabilitation Project

### **EXECUTIVE SUMMARY**

This report is to give the new Board Members, and the public, the background, factors, and information, that led the District to make the decision to use the existing WWTP facility for the reduction of nitrates, which seep into the groundwater, and to create the ability for the District to receive substantial groundwater credits for production, rather than the limited and expensive amount of tertiary water.

### **BACKGROUND**

When I took the position as General Manager of the District, there were two issues at the WWTP:

- The District was close to receiving its discharge permit which included steps that were required to be taken to address the seepage of nitrates into the ground water.
- The existing WWTP was producing tertiary water and was taking the produced tertiary water and evaporating it; this was due to the lack of a Title 22, and the lack of the infrastructure to deliver to customers.

The District received its permit 2 months later, which required us to create a concept and project to reduce the contamination of nitrates caused by our evaporation ponds into the groundwater.

I made the decision to shutdown the WWTP and save approximately \$8,000 per month until which time the District had obtained its Title 22, and had the infrastructure in place to deliver the tertiary water.

After researching the WWTP, it was found that the Recycled Water Facilities Plan ("RWFP") of 2008 calculated that with the plant fully functional, and every AF of water sold, the cost of producing tertiary water was over \$3,000 AF. This did not make economic sense due the fact that the sewer rate payers did not need a tertiary plant, and the water rate payers should not spend \$3,000 AF for water when it was able to purchase potable water at 1/10th the price.

The RWFP made several assumption to justify the WWTP:

- Population growth would continue at the 2005 pace.
- Water demand would greatly increase.
- Cost of banking and delivering raw State Water Project ("SWP") water would be \$1800/AF.
- RCSD gets 40% of its water from AVEK which will become less reliable.
- There would be 17 new uses of tertiary water from 17 parks created from the 2006 Parks Master Plan

After the plan was written, and the plant was being built, there were unforeseen realities that set in by 2017:

- In 2008 the population growth slowed to almost a stand still due to the housing market collapse and world wide economic recession. Due to higher impact fees for water acquisition, housing has slowed.

- Water demand decreased due to conservation in response to the worse drought in California recorded history.
- Cost of banking and delivering raw SWP water is slightly higher than buying SWP potable water, and if banked for 4 years is cheaper to produced from our wells. Costs of banked water did not take into consideration the adjudication which allows extraction from RCSD wells.
- RCSD gets the majority of its water from wells and does not rely on AVEK for a large amount of water. RCSD will need to use more AVEK water in the future due to the Reduction of Production in the adjudication. AVEK has created a million AF water bank which will give reliability that was not anticipated in 2008.
- The 2006 parks plan was not based on reality and had a dream of 17 new parks without a dedicated revenue stream to pay for them.

**PROJECTIONS vs REALITY – 2008 vs 2017**

	<b>2008 RWFP</b>		<b>2017 UWMP</b>	
	<b>2005</b>	<b>2030</b>	<b>2015</b>	<b>2030</b>
Population	15,510	32,555	18,035	19,139
Water Demand	3,076 afy	4,900 afy	2,233 afy	2,376 afy

*2008 RWFP projected that water demand in 2015 would be 3,600 afy*

AVEK \$/AF	\$330	\$451
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*2008 RWFP projected that AVEK potable water in 2015 would cost \$1,650 / af*

AVEK Demand	1,197 afy 40%	0.92 afy
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Our secondary effluent is a resource that should be utilized. With new engineers on-board, I tasked them to look into how we could remedy our nitrate situation, and at the same time take advantage of the water resource in our secondary effluent. I had tossed around ideas ranging from a wetlands to alfalfa farming.

**CREATIVE SOLUTION**

A blue-ribbon panel of experts were put together to come up with a creative solution to remedy the nitrate seepage, and take advantage of our secondary water resource. The meeting was held at the District. Dr. George Tchobanoglous, a professor emeritus at UC Davis, is the Nations leading authority on waste water treatment. Dr. T led the panel of other experts (see bios attached) and all possibilities were explored (see meeting notes attached).

The factors considered were: the most economic method to remedy the nitrate issue, considering capital improvement outlay and annual O&M costs, and the most effective use of our secondary effluent resource.

The solution arrived at was to rehabilitate the WWTP to de-nitrify all of our secondary effluent (this process is what the WWTP was designed and built for, and has already been proven to accomplished by producing tertiary water) and dispose by percolation getting substantial groundwater credits for production of potable water.

## COMPARISON

The original plan for the District was to reline the ponds to remedy the nitrate issue, and produce tertiary water to save precious potable water. While that sounds good on paper, the results were a loss of precious water, and an excessive economic burden to the rate payers.

The following is a comparison of two alternatives:

- ALT 1-1 reline the evaporation ponds and ALT 1-2 produce tertiary water
- ALT 2 rehabilitate the WWTP to de-nitrify all of our secondary effluent and dispose by percolation, getting substantial groundwater credits for production of potable water.

The tertiary demand currently is not what was estimated in the 2008 RWFP:

TERTIARY DEMAND			
	2016 Demand AFY	EST % Tertiary use	Tertiary Demand AFY
Glendower park	23.6	95%	22.42
Rosamond Elementary	8.98	80%	7.18
Westpark Elementary	15.87	80%	12.70
Williford Park	12.11	100%	12.11
Retirement Home	21.33	60%	12.80
<b>Total Tertiary Demand AFY</b>			<b>67.21</b>

Additional operational costs for ALT 1-1:

ADDITIONAL OPERATING COSTS ALT 1-1	
Lab Tech	\$115,000.00
Edison	\$141,000.00
Chemicals	\$15,000.00
Repair and Replace	\$56,667
<b>Total Annual Costs</b>	<b>\$271,000.00</b>

For this report, full operating costs for all alternatives were not included since some of the same costs would occur with either alternative. ALT 2 is estimated to have the same costs as ALT 1-2.

The projects cost comparison:

PROJECTS ANNUAL COSTS COMPARISON

<b>Costs</b>	<b>ALT 1-1</b>	<b>ALT 1-2</b>	<b>ALT 2</b>
Cip	\$3,985,193	\$22,000,000	\$12,500,000
Annual Cip*	\$19,025	\$105,032	\$47,742
Additional Operations	\$271,000	\$0	\$0
Annual Repair and Replace	\$56,667	\$1,000,000	\$50,000
<b>Total</b>	<b>\$346,692</b>	<b>\$1,105,032</b>	<b>\$97,742</b>

\*based on 30 yr loan at 4% APR

ALT 1 VS ALT 2

<b>Costs</b>	<b>ALT 1</b>	<b>ALT 2</b>	<b>Difference</b>
Cip	\$25,985,193	\$12,500,000	-\$13,485,193
Annual Total Costs	\$1,451,724	\$97,742	-\$1,353,982
Water AFY	67.21*	1,529	1,461.79

\*non-potable water

Water production comparison:

WATER PRODUCTION COSTS

<b>Costs</b>	<b>ALT 1</b>	<b>ALT 2</b>
Ground Water	\$0	\$152,900
Alt 2 Ground Water	\$0	\$152,900
Tertiary Water	\$346,692	\$0
AVEK Water	\$880,124	\$0
Total Water Costs* <sup>A</sup>	\$1,226,816	\$305,800

<b>Ground Water AFY*<sup>1</sup></b>	<b>Tertiary Water AFY*<sup>2</sup></b>	<b>AVEK Water AFY*<sup>3</sup></b>	<b>ALT 2 Ground Water AFY*<sup>4</sup></b>
\$100.00	\$5,158	\$602	\$100

\*A: Based on the estimated groundwater return by percolation of 1529 AFY

\*1: Groundwater production + chlorination

\*2: Tertiary water production costs for 67.21 AF

\*3: Current price of AVEK potable water

\*4: Purchase price of buying stored water from the Sewer Fund created by percolation

With only 67.21 AFY of demand, the cost per AFY is \$5,158. If the estimated demand from the RWFP is used, 311 AFY, the cost of tertiary water would be \$1,115 AF. If the current debt service for the WWTP is considered, the real cost per AFY would be \$13,112 and \$2,833 respectively—RWFP estimated \$3,300.

The decision was easy: ALT 1 would cost substantially more while producing very little water for the community.

The following chart shows the effects on the water and sewer rate payers in the community:

#### SEWER AND WATER COMPARISON

<b>Costs</b>		<b>ALT 1</b>	<b>ALT 2</b>
Annual Costs Sewer	\$	(1,105,032) \$	55,158
Annual Costs Water	\$	(1,226,816) \$	(305,800)

Under Prop 218, the cost of a benefit must be placed on those that receive it. The water rate payers would need to pay for either the tertiary water, or the ground water that would be stored from percolation.

When the WWTP was proposed and built, its purpose was to use our secondary effluent resource to create more water. It was designed and built to de-nitrify the secondary effluent—it has been de-nitrifying the secondary effluent since 2013, taking the influent at an avg tkn (Total Kjeldahl Nitrogen) of 60.25 mg/L, and producing effluent at the avg level of tkn 0.73 mg/L; the standard for percolation is at or below tkn 10 mg/L.

The WWTP in its current designed and built configuration from the RWFP, can only handle less than a third of our effluent, which creates the need to reline the ponds to remedy the nitrate seepage.

Under the adjudication, after the Reduction of Production period, the District will only have the ability to produce approximately 766 AFY of ground water. With the District's current demand of 2,500 AFY, it leaves the District with a 1,733 AFY shortfall, forcing the District to purchase expensive and unreliable SWP water.

If the District receives the estimated water credits for ALT 2, the District's shortfall will only be 204 AFY of water supply.

ALT 2 greatly reduces costs, and protects our precious resource of ground water.

## Workshop Biographies

**Dr. George Tchobanoglous**, a professor emeritus in the UC Davis Department of Civil and Environmental Engineering, worries about how to deal with what we leave behind. Tchobanoglous — affectionately known by colleagues and students as “George T” — is an international authority on wastewater treatment, management and reuse. He’s widely recognized for promoting the use of new technologies in four key areas: the construction of wetlands for wastewater treatment; the application of alternative filtration technologies; ultraviolet (UV) disinfection for wastewater reuse applications; and decentralized wastewater management.

His ground-breaking work on the use of aquatic plant systems for wastewater treatment led to the first national conference on this topic, back in 1979. At that point, he was nearly a decade into a 35-year teaching career at UC Davis, which had begun in 1970. As chair of the National Water Research Institute’s UV committee, he helped draft the first UV guidelines for water reuse. His recognition as an expert on decentralized wastewater management systems led to his being drafted as a keynote speaker at numerous conferences.

Tchobanoglous has written more than 375 publications, including 14 textbooks and five engineering reference books. The textbooks are used in hundreds of college and universities throughout the United States, and by engineers in the States and abroad. He also served as editorial consultant for the McGraw-Hill book series, *Water Resources and Environmental Engineering*.

Tchobanoglous was elected to the National Academy of Engineering in early 2004, in recognition of his contributions to engineering education, engineering practice and public service in the field of environmental engineering. This honor followed numerous earlier accolades, such as the 2003 Athalie Richardson Irvine Clarke Prize for Excellence in Water Research, given to outstanding research scientists who have implemented better water-science research and technology.

**Dr. Jean Debroux** has been employed in the environmental field since 1987. After obtaining his undergraduate degree, he worked for five years for an environmental services firm prior to his tenure in graduate studies. Throughout his graduate education he worked with water utilities and research organizations in the fields of water treatment and water reuse. While at Stanford University, Jean performed research and co-taught a graduate course. The research concentrated on various aspects of water reuse, including identifying and monitoring trace levels of anthropogenic organic compounds through the subsurface during aquifer recharge and utilizing the fluorescing properties of naturally-occurring organic matter in waste water treatment plant effluents as a tracer during subsurface transport. The course taught by Jean, entitled "Analytical Techniques to Separate, Identify, and Quantify Environmental Organic Compounds," focused on the

environmental applications of analytical chemistry. As a past-member of the National Center for Sustainable Water Supply, he maintains professional relationships with water recycling professionals in the Western United States. Jean is an active member of the WaterReuse Foundation and is a member of the Research Advisory Committee for the Foundation. Jean is currently involved in various projects at Kennedy/Jenks Consultants, where he is utilized as a project manager, water quality expert, a research scientist, and as a design engineer. In addition, along with leading the Advanced Technologies Group, he is the company resource for trace level non-regulated contaminants in waters, a field commonly known as "emerging contaminants".

**Joe Wojslaw's** background in environmental engineering includes specialization in the planning, design, and construction management of wastewater, water, industrial waste and hazardous waste treatment facilities. Joe also specializes in alternative delivery strategies and the delivery of capital facilities through those means. In addition, Joe has been involved in the preparation of environmental impact reports, project reports, pilot studies, and other studies involving various aspects of wastewater treatment. Joe has over 30 years of experience in environmental engineering which includes specialization in the planning, design, and construction management of wastewater treatment facilities, primarily in Southern California. This has resulted in a number of significant treatment plant designs that have been in service for as many as several decades, demonstrating their longevity and long term operability. Designing and Constructing High Caliber Durable Reclamation Facilities for EVMWD for Over 30 Years. An obvious example of this is EVMWD's original 2 mgd RWRf that was designed in 1986 and placed on line in 1988. Lasting, Innovative Designs Tailored to Meet Las Virgenes MWD's Needs. Another example of the longevity of Joe's designs is the tertiary treatment works at the Las Virgenes MWD Tapia Water Reclamation Facility. Joe has over 14 years working with Las Virgenes MWD. His work began with pilot work in 1979 to win State approval for an alternate filter material designed specifically for Title 22 facilities for use throughout the industry. This was followed by the design and construction of a filtration/ disinfection facility that was put on line in 1982. Since that time, Joe was involved in the plant's expansion to 12 mgd in 1984 resulting in a facility that has been faithfully meeting discharge criteria for over 30 years in a trouble-free manner. At the same time that Las Virgenes was expanding their liquid treatment facilities, the District needed an alternative solution to their aerobic digestion and land application facilities that were running out of real estate for additional solids reuse. Joe was involved in this alternative solution involving anaerobic digestion and in-vessel composting. The design of the Rancho Las Virgenes composting facilities was the ultimate solution and represented the first facility of its kind in Southern California. This facility has operated 24/7 for the last 30 years. In addition there are numerous other smaller facilities designed by Joe in the 80's and 90's

that have been meeting their design objectives for the last few decades in an efficient, trouble free manner.

**Thomas (Tobie) Welgemoed** has more than 23 years' experience in projects within the water/wastewater industry. Tobie's experience has stretched over three continents; he has worked in Africa (eight years), United States (seven years), and Australia (eight years). Tobie's roles have mainly incorporated design management, technical project lead for feasibility studies and project management duties, with a focus on water and wastewater activities as a design leader. His duties have included all aspects of a typical project during feasibility studies; planning and detail design; execution/construction; commissioning; operations (operational management duties restricted to South African experience). Throughout these various project phases, Tobie has been responsible for the management and preparation of project execution plans, scopes of work, preliminary and concept design reports (feasibility studies) and detailed design reports. Further duties have extended to the preparation of project schedules and overseeing design activities for all disciplines including process, civil, mechanical, instrument and controls, electrical and structural. Tobie possesses strong leadership ability and is able to lead a team effectively to ensure goals are achieved, whilst remaining as cost effective as possible. During his professional career, Tobie has had extensive experience working on all major water treatment technologies and as a result can provide expertise on technologies including, but not limited to membranes, ion exchange, biological nutrient removal (BNR), Micro Biological Reactors (MBR), adsorption, solids handling/digestion, disinfection processes and precipitation applications.

**Meeting Time:** 9:00 AM to 1:00 PM  
**Meeting Location:** 3179 35th St W, Rosamond, CA  
**Meeting Date:** 4 April 2018  
**Project:** WWTP Conceptual Design

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**Date:** 5 April 2018  
**K/J Job No.:** 1844514\*00

**Persons Attending:**

<i>Kennedy/Jenks</i>	<i>Client/Contractor</i>	<i>Other</i>	<i>Organization</i>
Paul Chau	John Houghton	Andrea Bitterling	Helix
Jean Debroux	Brach Smith	George Tchobanoglous	UC Davis
David Ferguson	Ron Smith		
Lauren Everett			
Melanie Rivera			
Thomas Welgemoed			
Joe Wojslaw			

**Subject: WWTP Conceptual Design Workshop**

**Background**

- What we know
  - Flow rate = 1.1 to 1.2 MGD average
  - Going to have some population growth, but also some reductions in water use
  - Domestic contribution is going down
    - Can tell by nitrogen coming into facility
- Treatment plant details
  - Optimizes performance with respect to nitrate
  - No return sludge
  - Total Nitrogen (TN) reported as 30 to 73 mg/L – very large range
    - Is something else contributing?
  - Operators utilize first half of Biolac for nitrification, second half is for denitrification
  - TN in effluent was low at 4 to 5 mg/L
  - UV disinfection: dust gets on wipers; as wipers are pushed, unit is scored, which creates sites for nucleation; bacteria growth occurs
  - Plumbed for entire flow, numerous diversions
- Pond system
  - 175 ac of ponds x 6 ft average depth = 1100 AF
    - 0.33 MG/AF
    - 330 MG total
  - Ponds initially very effective; very little percolation
    - Clay liners promote denitrification, so in theory there should be no nitrogen accumulation in GW

## Meeting Memorandum

WWTP Conceptual Design

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- NOW: when ponds dried out, clay cracked, formed pores – does not reseal
  - If you line the ponds and utilize the same flow, the full 175 ac will be necessary, or even insufficient
  - >50% of flow now going to GW, some WW in wells that has not denitrified
- District goals
  - Satisfy regional board regarding accumulation of nitrate
  - Treat nitrate optimally and cost effectively
- Options overview
  - Relining ponds, 1.5 ft soil layer over clay = \$14 mil, but additional ponds would be needed if no percolation leakage
  - Resurrect treatment plant
    - Replace existing features (e.g. UV system needs to be covered, AC)
    - Utilize new technologies (e.g. cloth filters to reduce BOD)
  - Construct wetlands
- Regional Board background
  - Report was supposed to happen Nov. 2016 – GEI
  - Lahontan: it's a \$1000/day fine, up to \$220,000
  - Head of state cannot give continuance, but also won't enforce fine

## Alternatives

### Alternative 1 – Reline ponds

- Advantages
  - Easy to operate
  - Reduced staffing
  - Minimal O&M
- Disadvantages
  - No recharge credit
  - May not satisfy long term
  - Not acceptable for clay/dirt – need geomembrane liner
  - Geomembrane reduces percolation, existing capacity may not be sufficient
- Pond 3 was dug out in 2009, never repaired it

### Alternative 2 – Expand treatment plant for full 1 MGD & infiltrate effluent using ponds

- Plant currently not running b/c cost to treat is very high; cheaper to buy potable water
- Tertiary water percolating: will regional board be ok with this?
  - The word “recharge” may cause issues

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- "Waste disposal percolation": you can get waste discharge permit
- Even with ½ ft per day, perc is sufficient
- Potential recharge credit?
  - May run into issues with Regional Board blending requirements
- Advantages
  - Nitrogen requirement met at effluent
  - High quality effluent
  - Can be sold to farmers, etc.
  - Reliable performance
- Disadvantages
  - Increased O&M

### Alternative 3 – Agricultural irrigation

- Utilize existing aerators, create a settling pond, install cloth filter
- Could possibly use mechanics of plant
- Disadvantages
  - Have to store water during winter period
  - Still have capital cost of lining ponds
  - Infrastructure cost
  - Securing reliable contracts for water usage
  - Water quality
- O&M is made up of pumping to Ag
- Can get 32% return flow, but must reduce TDS

### Alternative 4 – Use existing plant for wetland

- Wetlands concern:
  - 73 mg/L TN is too high for wetlands
  - Unlined wetland will still leak nitrogen
- Meet requirement at end of treatment plant, no problems with Board and bird poop
- Big unknown: what is nitrogen coming into plant?
- Possibility: half of flow goes to (relined) ponds, half used for irrigation?
- Problem: Thatch layer, releases ammonia after 5 cloudy days
- Advantages
  - ½ potential irrigation supply
  - Aesthetic
- Maintenance:

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- Must even out the channels that form over time
- If mixing .5 MGD from plant with other .5 MGD that has gone through facultative pond; combine 2 flows – would ammonia and BOD be low enough for wetland treatment?
  - District doesn't measure quality in those ponds, so it's hard to say
- Question: what to do with effluent from wetland?
  - If wetland reduces nitrogen enough, you can put back in leaky evap ponds

### Alternative 5 –Rehabilitation of oxidation pond for treatment

- Fix a current pond, put in aerator, blend with tertiary
- Blend pond water with treatment plant water to dispose
- How close are nearest potable wells?
  - ¼ mi upgradient
  - Nitrate levels were ND at this well
- A couple houses .5 mi downgradient
- GW recharge involves a lot of testing

### Alternative 6 – Use two ponds for treatment, others for disposal

- Add aeration capacity to existing pond
- Followed by sedimentation pond, covered at one end (look at Melbourne, AU)
- Could go to disposal, could sell during summer

### Alternative 7 – Use existing ponds as aerobic lagoons with extended settling, effluent filtration if needed

- Develop farm nearby; partner with farmers or buy out land
- Land is part of whole disposal process
- May be return credit as result 32%
- Retrofitting pond system
- Ron has spoken with onion farmer – they can farm 80 acres

### Alternative 8 – Utilize Biolac system already in place; possibly set up another Biolac

- Don't need filtration & UV
- Could save quite a bit to retrofit ponds
- Cloth filters several times more water than sand

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- If you have to line another pond, might as well utilize another Biolac
- Blowers – could replace with more efficient units
- Possibly convert some basins into farm land or purchase another 80 ac next to current 80 ac

### Alternative 7/8 combination – Biolac, farming

- Farming is 5-6 AF/Ac (400 AF consumed)
- 800 AF going to farming
- Get 32% return flow: 256 AF/yr
- For 4 months in winter, store water in evap ponds
  - In winter, period of possible disposal so you don't have to line ponds
- Need to use 200 ac of farming
- Could be a couple seasonal storage ponds, couple of perc ponds
- Could possibly get full credit for percolating in the winter

### Alternative 9 – Full Advanced Treatment (FAT) and deep well injection w/ RO brine treatment

- Very expensive up front

### Alternative 10 – Electrodialysis Reversal Desalination (EDR) split stream with Biolac and cloth filter

- No farming
- EDR: uses membrane
- Could have lined pond specifically for septic dumping
- Have a split stream to treat part of flow to meet TDS requirements

## Alternatives Analysis

### Some thoughts on possible issues

- Question: how to reduce TDS?
  - Electrodialysis, membranes
  - Line ponds, don't let it get to GW
  - Treat a portion of flow, not entire thing
- Advanced treatment plant
  - Spend up front, recharge credit – don't want to go there

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- Issues
  - Wetlands without more treatment will likely require point of compliance at well
  - TDS and nitrogen – need clarity on these to move ahead
  - Contamination from upstream? Check wells for TDS (regional board assumes its coming from ponds, can prove if coming from elsewhere?)
  - Reline ponds less expensive than running plant
- They have debt service, ran cost for pumps/UV = \$3,000 +/- per AF, don't want to run plant
- Wetlands as full treatment for nitrate is questionable
  - Winter not as great
  - Birds adding to nitrate
  - High influent nitrogen could cause wetland not to work
  - No desire for wetland as aesthetic
- Pond system: evaporation 50%, percolating 50%
  - Must reline all, can't only do a few
- Ron's take:
  - \$14 mil to reline ponds = \$760,000/yr
  - Can he get more benefit from another option spending that same amount?
  - Value – consider regulatory longevity
- Costs
  - Alt 1
    - \$14 mil+ because not sure if they can meet capacity with current ponds
    - **Likely going to be closer to \$18-20 mil**
    - Debt service of \$1.3 mil/yr
    - No return flow credit
  - Alt 8
    - \$10 mil for refurbishment; \$2 mil for Ag
    - Get return, will go up
    - Operation a little more expensive
- Ron to go back to Regional Board for new schedule
  - Previous report and chosen alternative flawed
  - Ron, David, Joe to attend meeting
  - Go to board with Alt 1 and Alt 8
  - Waste discharge permit for secondary effluent that's been denitrified?
- Sampling to occur
  - Ammonia, TN, TDS TKN

Distribution:

By: Melanie Rivera

## **Meeting Memorandum**

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