RECORD OF PROCEEDINGS

MINUTES OF A REGULAR MEETING OF THE BOARD OF DIRECTORS OF THE GREATROCK NORTH WATER AND SANITATION DISTRICT HELD OCTOBER 6, 2015

A regular meeting of the Board of Directors (referred to hereafter as "Board") of the Greatrock North Water and Sanitation District (referred to hereafter as "District") was convened on Tuesday, October 6, 2015 at 5:30 P.M., at United Power, 500 Cooperative Way, Brighton, Colorado. The meeting was open to the public.

ATTENDANCE

Directors In Attendance Were:
John D. Wyckoff
Jeffrey Polliard
Brian K. Rogers

Following discussion, upon motion duly made by Director Polliard, seconded by Director Rogers and, upon vote, unanimously carried, the absences of Robert W. Fleck and Dave Lozano were excused.

Also In Attendance Were:
Lisa A. Johnson and Divena Mortimeyer (for a portion of the meeting); Special District Management Services, Inc.

Jennifer Gruber Tanaka, Esq.; White Bear Ankele Tanaka & Waldron, P.C.

Brad Simons, TZA Water Engineers

See list for other attendees

DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

Disclosures of Potential Conflicts of Interest: Ms. Johnson advised the Board that, pursuant to Colorado law, certain disclosures may be required prior to taking official action at the meeting. Ms. Johnson confirmed that disclosures of conflicts of interest were filed with the Secretary of State's Office and the Board at least 72 hours prior to the meeting for those Directors with potential conflicts of interest. The Board reviewed the Agenda for the meeting, following which, Directors Polliard, Rogers and Wyckoff each confirmed that they had no additional conflicts of interest in connection with any of the matters listed on the Agenda.

ADMINISTRATIVE MATTERS

Agenda: Ms. Johnson distributed for the Board's review and approval a proposed Agenda for the District's regular meeting.

Following discussion, upon motion duly made by Director Polliard, seconded by Director Rogers and, upon vote, unanimously carried, the Agenda was approved as amended.

Board of Directors' Report: There was nothing new to report.

Manager's Report: Ms. Johnson presented and the Board reviewed the October Manager's Report. A copy of the report is attached hereto and incorporated herein by this reference.

CONSENT AGENDA

Consent Agenda: The Board considered the following actions:

- Approve Minutes of the September 1, 2015 regular meeting.
- Ratify approval of payment of claims through the period ending September 10, 2015, as follows:

General Fund	$ 44,062.19
Debt Service Fund	$ -0-
Capital Projects Fund	$ -0-
Total Claims:	**$ 44,062.19**

- Accept cash position schedule and unaudited financial statements through the period ending August 31, 2015.
- Review operations and maintenance update and monthly work orders.
- Review monthly water quality report.

Following discussion, upon motion duly made by Director Rogers, seconded by Director Polliard and, upon vote, unanimously carried, the Board approved the consent agenda items.

ENGINEER'S REPORT

Concentrate Management:

Altela Reverse Osmosis Asset Recovery System: Mr. Simons gave a presentation to the residents in attendance of the Altela Reverse Osmosis Asset Recovery System as the option the Board has been exploring to mitigate the District's concentrate issue. A summary of the information presented is attached hereto and incorporated by this reference.

Residents in attendance asked questions and the Board and staff provided answers regarding the system and how it operates, the costs, location of building, etc.

FINANCIAL MATTERS

2016 Draft Budget: Ms. Mortimeyer presented and the Board reviewed the draft 2016 budget.

Following discussion, upon motion duly made by Director Rogers, seconded by Director Polliard and, upon vote, unanimously carried, the Board determined to hold the public hearing to adopt the 2016 budget on November 3, 2015 at 5:30 pm at United Power, 500 Cooperative Way, Brighton, CO 80603.

2015 Audit: The Board discussed soliciting proposals for the 2015 audit. There was a question by some of the Board Members as to whether the District was required to engage a new auditor after a certain number of years and was there a benefit to having a new auditor. Staff responded that there is not requirement to engage a new auditor after a certain period of time. The current auditor, Dawn Schilling, has suggested that as an option to engaging another firm and to address the Board's question regarding the benefit of a new auditor, she could assign the audit to be completed by a different auditor in her firm which would provide a fresh look at the annual financial statements.

The Board agreed with this approach and directed staff to communicate the direction to Ms. Schilling.

1stBank Acknowledgement: The Board reviewed a document prepared by 1stBank acknowledging a banking relationship between the District, Special District Management Services, Inc. and 1stBank.

Following discussion, upon motion duly made by Director Rogers, seconded by Director Polliard and, upon vote, unanimously carried, the Board approved and executed a document prepared by 1stBank acknowledging the banking relationship between the District, Special District Management Services, Inc. and 1stBank.

WATER MATTERS

Pending Water Court Cases: There was nothing new to report.

ENGINEER'S REPORT CONTINUED

Engineer's Report: Mr. Simons presented the Engineer's Report to the Board. A copy of the report is attached hereto and is incorporated herein by this reference.

OPERATONS/ MAINTENANCE

GIS Mapping: Director Polliard presented a free or low cost option for GIS Mapping Services. The Board discussed the responsibility for gathering and

MATTERS

managing GIS data and determined at this point the responsibility would likely fall with the District Engineer. The Board then asked Mr. Simons to provide a proposal for GIS Mapping Services to consider in the 2016 budget.

LEGAL MATTERS

There were no legal matters to present.

OTHER BUSINESS

Part-time Field Technician Position: The Board continued their discussions on the possibility of creating a part-time position to provide certain services that are currently provided by consultants in an effort to reduce annual operating costs.

COMMUNITY COMMENTS

There were no community comments.

ADJOURNMENT

There being no further business to come before the Board at this time, upon motion duly made, seconded and, upon vote, unanimously carried, the meeting was adjourned.

Respectfully submitted,

By _____

Secretary for the Meeting

THESE MINUTES APPROVED AS THE OFFICIAL OCTOBER 6, 2015 MINUTES OF THE GREATROCK NORTH WATER AND SANITATION DISTRICT BY THE BOARD OF DIRECTORS SIGNING BELOW:

_____
Robert William Fleck

_____
Jeffrey L. Polliard

_____
Brian K. Rogers

_____
John D. Wyckoff

_____
Dave Lozano

GREATROCK NORTH WATER & SANITATION DISTRICT

October 6, 2015 BOARD MEETING

Please ***print*** your name, address and phone number, and the issue(s) you are interested in addressing at this meeting.

NAME	ADDRESS (Postal and Email)	TELEPHONE	ISSUES TO BE ADDRESSED
Mark & Diane Hempel	markhempel@comcast.net 16231 Rayburn St	303-498-0762	
STEVE CHERESNICK	32285 E. 166TH CT	3-637-0079	
Sherry Greer	16385 Jalna Ct	303-6379200	
ALAN CARPENTER	16670 TREE HAVEN ST	303-656-1568	
Gary Harras	16250 Queensview St.	303-659-6227	
Robert Hines	16410 RAYBURN St	8158800909	BRINE TREATMENT
DIANE CROSSMAN	16620 SHALLOWAY ST	720-998-1300	

GREATROCK NORTH
WATER & SANITATION DISTRICT

Date: September 22, 2015

To: Greatrock North Water and Sanitation District, Board of Directors

From: Lisa A. Johnson, District Manager

Re: October 6, 2015 Manager's Report

Agenda Action Items

II.A. Consent Agenda

1. September 1, 2015 regular meeting minutes
2. September 10, 2015 Payment of Claims
3. August 31, 2015 Unaudited Financial Statements
4. Operations and Maintenance Update and monthly work orders
5. Water quality Report

I recommend approval of the consent agenda items.

III.A. Draft 2016 Budget

The Budget Committee has met on two occasions and has prepared the draft 2016 budget. Staff and the committee will present the draft budget to the Board at the meeting. The public hearing to consider adoption of the budget will occur at the November meeting.

Review of monthly Water Resumes and Other Water Related Matters

Attorney Poznanovic reviewed the July resume, and did not find any cases that he thinks the District would have an interest in opposing.

Ramey Environmental Compliance, Inc.
Management and Operation Solutions for
Water and Wastewater Treatment
303-833-5505

PO Box 99, Firestone, Colorado 80520
email: contact.us@RECinc.net
www.RECinc.net

Greatrock North W & S District
Monthly Activities
August 24th – September 18th

8/24/15: Regular checks and readings.

8/26/15: Regular checks and readings. RO did not run due to a low pressure alarm. Reset the alarm and the RO ran fine.

8/28/15: Regular checks and readings. No alarms on the RO. Cleaned and moved the aerator to the north pump. Pumped water from Alv #1 vault.

8/31/15: Regular checks and readings.

9/2/15: Regular checks and readings. Completed a water service line inspection at: 31393 E 163rd Ave. Completed a locate at 28655 E 163rd Pl.

9/4/15: Regular checks and readings. Assisted with calibrating the flow meters on Alv#1 & #2. Timberline repaired the box for the concentrate pond transducer. Removed bird's nest. Completed a locate at: 16225 Del Ray Ct.

9/7/15: Regular checks and readings. Collected and delivered monthly samples.

9/9/15: Regular checks and readings. Collected and delivered TDS and Total Hardness samples. Completed locates at: 31393 163rd Ave and 16180 Electra St.

9/11/15: Regular checks and readings. Checked the fluid levels on all generators. Repaired the rope on the aerator. Completed a locate at: 16740 Shadow Wood Ct.

9/14/15: Regular checks and readings.

9/16/15: Regular checks and readings. Completed locates at: 16530 Tree Haven St and 16735 Kenosha Ct.

9/18/15: Regular checks and readings.

Operations Maintenance issues:

- **Status of valve box inserts and markers project –** *still in progress*
- **RHF leaking radiator –** Final *agreement was signed by Rocky Mountain Power Generation and radiator is on order and will be replaced within the next two weeks.*

August 21st – September 18th

RO Run Time Hrs	187.10 hrs
RO Concentrate Flow – 1 pond (North)	370,458 gallons

8/19/15

Monthly Testing	TDS(mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Total Hardness(mg/L)
BE	469	4931	8.9	159.1
RHF	500	53.9	9.9	175.6
GRN	482	53.2	9.8	173.1

Completed Work Order List Report

Completed	Equipment Number	Task	Priority	WO#	Type
9/9/2015	Boxelder Pump Buildi	TDS and Hardness	1	544.01	Scheduled
9/9/2015	GRN Pump Building	TDS and Hardness	1	544.03	Scheduled
9/9/2015	RHF Building	TDS and Hardness	1	544.02	Scheduled
9/7/2015	Water Sampling	Bacti Bacti Sampling(069)	1	552.01	Scheduled
9/2/2015	Pond Aerator	Clean Clean	4	543.01	Scheduled
8/28/2015	Pond Aerator	Clean Clean	4	536.01	Scheduled
8/25/2015	Water Sampling 016	MPA MPA(069)	1	521.01	Scheduled
8/19/2015	Boxelder Pump Buildi	TDS and Hardness	1	541.01	Scheduled
8/19/2015	GRN Pump Building	TDS and Hardness	1	541.03	Scheduled
8/19/2015	RHF Building	TDS and Hardness	1	541.02	Scheduled
8/19/2015	RHF FH1	FH Flush Fire Hydrant Flush	2	537.01	Scheduled
8/14/2015	Water Sampling	TTHM/HAA5 TTHM/HAA5(069)	1	542.01	Scheduled

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12596 W. Bayaud Ave., Ste. 330
Lakewood, Colorado 80228
303-971-0030
tza4water.com

GREATROCK NORTH WATER AND SANITATION DISTRICT
ENGINEER'S REPORT
SEPTEMBER 21, 2015

Concentrate Management Options

As noted at the April 2015 Board meeting, we have shifted our attention from concentrate disposal to concentrate management and are looking at several options. The GridBee mixing equipment to enhance evaporation has been tabled due to questionable case history and additional cost considerations. The beneficial reuse applications by Industrial Water Permitting and Recycling have been placed on hold in light of limited use of any State approvals. In August of 2015, the Board and Altela, Inc. executed a Letter of Intent for establishing a Charter Customer Relationship with respect to the site development, installation, and related systems integration of an AltelaRain Reserve Osmosis Wastewater Concentrator Asset Recovery Facility.

Based upon the Letter of Intent, dated August 7, 2015, and executed by Altela, Inc. on August 17, 2015, the District has initiated efforts on a number of fronts, including:

- Application for a Preliminary Effluent Limitation (PEL) Determination – The PEL request was submitted to the Water Quality Control Division (Division) via e-mail on September 2, 2015, and a hard copy mailed to the Division that day. The Division acknowledged receipt of the hard copy on September 8. The District is awaiting issuance of an invoice from the Division for the PEL determination. Once the Division receives payment for the PEL determination, it will begin preparation of the PEL. The Division's intent is to prepare the PEL within 45 days, beginning with receipt of a complete application and receipt of payment. We have contacted the Division on numerous occasions requesting an invoice from the Division. Those contacts occurred on September 8, September 12, September 16, and September 18.
- Application for an Industrial Individual Wastewater Discharge Permit – The application has been drafted and was being circulated for signatures by John Wyckoff, as Owner, Lisa Johnson, as Applicant, and Wayne Ramey, as Operator, on September 21, 2015.
- Conceptual Floorplan Revisions – I have produced a more detailed conceptual floor plan, taking into consideration an office/meeting room, an operations office, a small lab, a restroom, a chemical room, a room for the distribution pumps, a boiler room, and floor space for two (2) reverse osmosis units, and two (2) AltelaRain units. I have asked Steve Griggs, of Altela, to provide some additional information on the AltelaRain footprint and the boiler footprint.
- Water Testing – Based upon the table of parameters provided in the Application for an Industrial Individual Wastewater Discharge Permit, I will confirm which parameters will be of primary interest to the Division once the permit application is submitted, then discuss those parameters and sampling and analysis protocols with Steve Cummings, of Altela.

Engineer's Report
September 21, 2015
Page Two

- Adams County Planning Department/Building Department Requirements – Based upon a September 18, 2015 telephone conversation with Adams County Planning, the proposed facility will require a major amendment to the PUD. The vacation of the lot line between Tracts C and F will require a plat correction. Both of these will require a public hearing but can be processed concurrently.

As for the evaporation ponds, attached is a memo from Lauren Goecke summarizing the evaporation pond activity, including a graph of documented pond levels in 2014 and 2015.

Greatrock North Pump Station Improvements

The design of the Greatrock North Pump Station Improvements has been put on temporary hold and may be combined for bidding purposes with the new water treatment facility being contemplated.

Alluvial Well Flow Meter Verifications

On September 4, 2015, TZA Water Engineers tested the accuracy of the flow meters for the two (2) alluvial wells. Copies of the reports to be filed with the Division of Water Resources will be provided to the District Manager once signed by Jeff Rabas.

2016 Water Rates

TZA Water Engineers has initiated a review of the District's water rates as part of the 2016 budget process. I will present my recommendations to the District Manager in advance of the October Board meeting.

Other Activities

Water Quality and Hardness – TZA is tracking the water production data and water quality results from a series of sampling events. Attached is a memo from Lauren Goecke summarizing the water production data, water quality results, and water treatment plant observations. The September water quality data had not been received as of the date of this month's Engineer's Report.

Engineer's Report
September 21, 2015
Page Three

Reverse Osmosis Condition Assessment – Pure Water Solutions conducted a condition assessment on May 27, 2015 and presented its findings and recommendations to the District on June 12. Those recommendations were discussed at the July Board meeting and my recommendation was that we delay any action on their recommendations pending receipt of additional information from Pure Water Solutions. In response to my request for additional information, Pure Water Solutions indicated the following:

- The sensors are the windows into the system and the replacements are a suggestion. However, maintaining the sensor calibrations helps document the overall RO unit operation.
- They do not have confidence in the current anti-scale chemical and dosing system.
- New membranes will make all the difference in the world.
- Accurate process readings, along with correct chemical and dosing, will helps improve on over-all recovery, but the exact percentages are to-be-determined.
- Lead times on membranes vary from in-stock to 8-10 weeks.

Storage Tank Rule – The Water Quality Control Division has adopted a new version of the Colorado Primary Drinking Water Regulations (Regulation 11). Effective April 1, 2016, the District will be required to have a written plan for finished water storage tank inspections. In addition to quarterly periodic (visual) inspections, the District will need comprehensive inspections to be scheduled at least every five years. Jeff Rabas has been securing proposals for the comprehensive inspections.

New Chlorine Residual Requirements – The Water Quality Control Division has adopted a new version of the Colorado Primary Drinking Water Regulations (Regulation 11). Effective April 1, 2016, the District will be required to maintain a minimum of 0.20 milligrams per liter chlorine residual throughout the distribution system. Ramey Environmental Compliance will record chlorine residuals at the extents of the distribution system for each subdivision on a periodic basis throughout the remainder of 2015, and Jeff Rabas and I will review the data in November of this year.

Warranty Inspections – Ramey Environmental Compliance is tracking the 11-month warranty inspections for the following projects:

- Rocking Horse Farms Pump Station – The warranty inspection was conducted by Jeff Rabas on July 18, 2014.
- Box Elder Creek Ranch Pump Station – The warranty inspection was conducted by Brad Simons on January 26, 2015.
- Rocking Horse Farms Tank Repainting – The improvements were inspected and accepted on June 11, 2014. A preliminary warranty inspection was conducted by Ramey Environmental Compliance on April 24, 2015 and Coblaco addressed some minor surface rust and some isolated coating repairs on August 5, 2015.

Engineer's Report
September 21, 2015
Page Four

Utility Billings and Energy Costs – TZA is tracking the United Power utility bills and associated water operations on a monthly basis. Attached is a memo from Lauren Goecke summarizing the monthly comparisons for July each year, as well as a summary of the seven-month periods for 2014 and 2015.

Curb Stop Box Specification – The recent issues with curb stop boxes witnessed by Director Wyckoff resulted in a review of the District's Rules and Regulations and the boxes specified. TZA's previous recommendations for a screw-style Buffalo-style box having an arch pattern base and an inside diameter of 2.5 inches has been further reinforced with the recommendation the pending revisions to the Rules and Regulations specify a 6500 Series Screw Type curb box, as manufactured by Castings, Inc. (970-243-3032), having a minimum internal diameter of 2.25 inches, or an approved equal. The part number is "C.I. 95-E" and includes a 30" top section and a 39" bottom section allowing for a bury depth of 41 inches to 64 inches. For deeper installations, Castings Inc. offers extensions in 9" (Item 151), 16" (Item 152), 28" (Item 153), and 30" (Item 154) heights.

Well, Pump, and Motor Replacements – The District has initiated efforts to better understand its well infrastructure and the potential need for replacement of pumps and motors, as well as the well structures themselves. As a part of that effort, TZA Water Engineers will need to work with Bishop-Brogden Associates to compile the historical aspects of the wells constructed, the pumps installed, and any other improvements (i.e. water level measuring devices) integrated at each site. This information will be used to evaluate the benefits of a pump, motor, and well maintenance program to detect changes in well performance. Early detection of deterioration in well performance will allow less expensive repairs, rehabilitation, or treatment procedures in order to maximize production capacity. This preventative maintenance program will be discussed with the District's Manager, and a formal proposal will be brought to the Board if deemed appropriate.

Engineer's Report
September 21, 2015
Page Five

Control Valves Evaluation – During the 3rd Quarter Operational Review Meeting, conducted on August 17, 2015, it was determined the District should develop a control valve evaluation plan. As the Board may recall, the District contracted with iSiWest in 2014 (July 14-15 and September 19), to inspect and service five (5) control valves, including one (1) at the Box Elder Creek Ranch Pump Station, one (1) at Rocking Horse Farms Pump Station, and three (3) at the Greatrock North Pump Station. On March 6, 2015, the District contracted with Ramey Environmental Compliance's Equipment Services Division to service one (1) pressure relief valve at the Box Elder Creek Ranch Water Treatment Plant. Since the District has an assortment of valves in a variety of locations throughout the District, REC will update the valve inventory in the Allmax software and work with Lisa Johnson, TZA, and the budget committee to prioritize the efforts for 2016 and beyond. A sample of the valves that could be addressed in the Box Elder Creek Ranch Pump Station are tabulated below.

Valve Location	Valve Type	Valve Size
UKA-3 Check	Cla-Val Hytrol	2"
UKA-3 Air/Vacuum	Val-Matic	1/2"
UKA-3 CRL	Cla-Val Pressure Relief	1/2"
LFH-3 Check	Cla-Val Hytrol	3"
LFH-3 Pressure Relief	Cla-Val Series 50	1-1/2"
LFH-3 CRL	Cla-Val Pressure Relief	1/2"
LFH-3 Air/Vacuum	Cla-Val Series 35	1/2"
Alluvial Wells Air/Vacuum	Cla-Val Series 35	2"

TZA Water Engineers
a Lamp Rynearson Company

12596 W. Bayaud Ave., Ste. 330
Lakewood, Colorado 80228
303-971-0030
tza4water.com

MEMORANDUM

To: Greatrock North Water and Sanitation District

From: TZA Water Engineers

Date: September 21, 2015

Re: Water Quality and Hardness Results

Water Quality and Hardness – Below are tables of water quality data from a series of sampling events:

Month	RO Permeate	Unfiltered UKA Water	Unfiltered ALV Wells
September (09/20/15)	17%	34%	49%
August (08/24/15)	10%	33%	57%
July (07/19/15)	17%	35%	48%
June (06/28/15)	23%	37%	40%
May (05/25/15)	39%	42%	19%
April (04/27/15)	37%	39%	24%
March (03/22/15)	41%	40%	19%

Total Dissolved Solids (TDS)			
Date	BECR Tanks	RHF Tank	GN Tank
September 2015	RESULTS PENDING		
08/19/15	469 mg/l	500 mg/l	482 mg/l
07/10/15	417 mg/l	449 mg/l	468 mg/l
06/11/15	369 mg/l	350 mg/l	341 mg/l
05/11/15	401 mg/l	347 mg/l	366 mg/l
04/13/15	386 mg/l	326 mg/l	322 mg/l
March 2015	274 mg/l	324 mg/l	302 mg/l
02/02/15	350 mg/l	394 mg/l	383 mg/l
01/14/15	350 mg/l	394 mg/l	417 mg/l
12/03/14	417 mg/l	552 mg/l	511 mg/l
10/01/14	538 mg/l	603 mg/l	594 mg/l
07/11/14	565 mg/l	597 mg/l	599 mg/l
03/05/14	586 mg/l	543 mg/l	566 mg/l
01/08/14	553 mg/l	559 mg/l	575 mg/l
10/28/13	677 mg/l	643 mg/l	594 mg/l

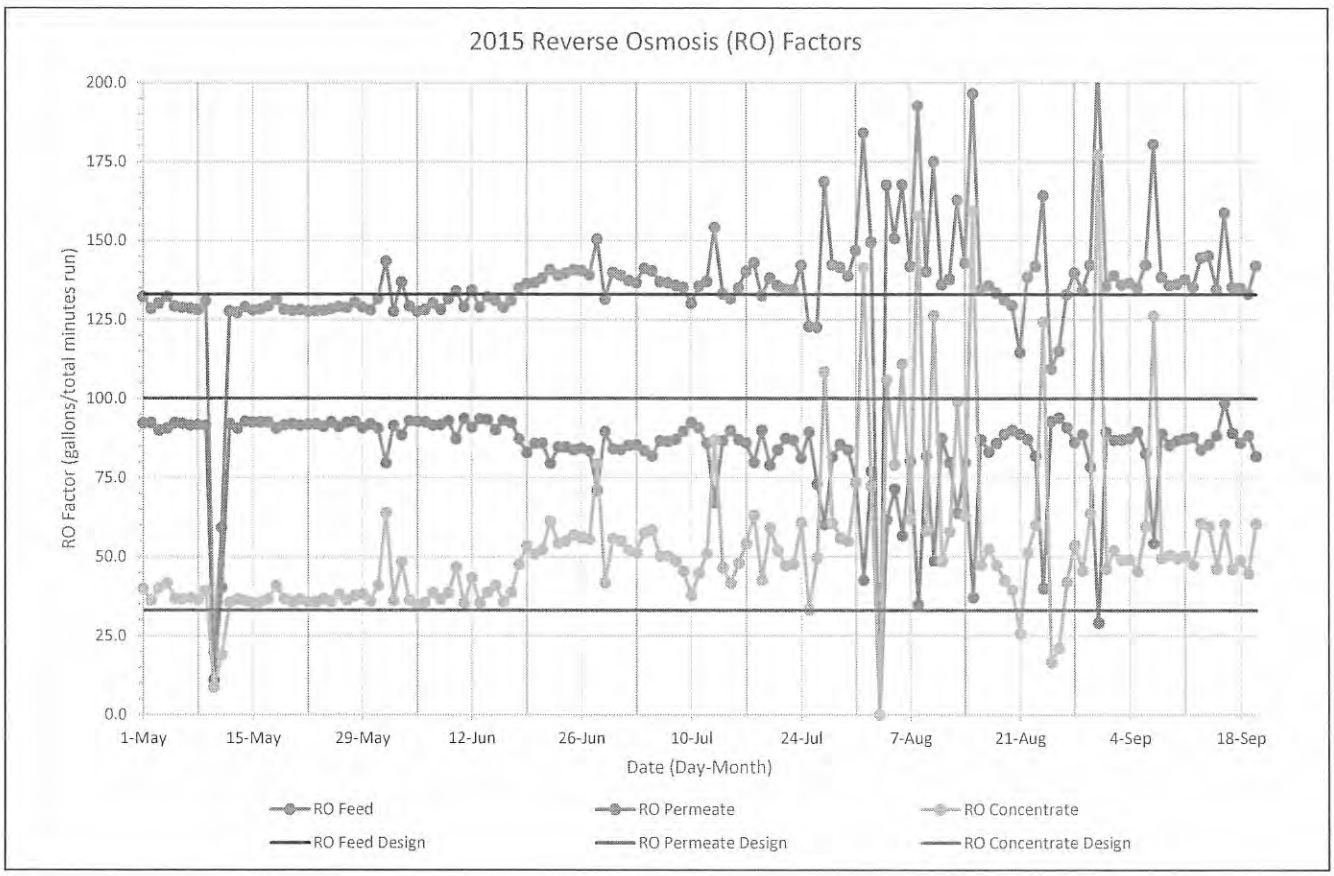
The total hardness results tabulated below reflect a hard water:

Total Hardness (as CaCO3)			
Date	**BECR Tanks**	**RHF Tank**	**GN Tank**
September 2015	RESULTS PENDING		
08/19/15	159.1 mg/l	175.6 mg/l	173.1 mg/l
07/10/15	136.2 mg/l	158.8 mg/l	156.5 mg/l
06/11/15	92.0 mg/l	78.0 mg/l	80.1 mg/l
05/11/15	84.8 mg/l	72.6 mg/l	73.9 mg/l
04/13/15	99.6 mg/l	67.7 mg/l	68.6 mg/l
March 2015	53.7 mg/l	68.3 mg/l	59.1 mg/l
02/02/15	83.4 mg/l	113.8 mg/l	104.6 mg/l
01/14/15	105.2 mg/l	123.0 mg/l	111.7 mg/l
12/03/14	115.3 mg/l	194.5 mg/l	169.8 mg/l
10/01/14	188.8 mg/l	231.7 mg/l	225.6 mg/l
07/11/14	221.5 mg/l	222.7 mg/l	220.4 mg/l
05/16/14	165.2 mg/l	209.6 mg/l	198.1 mg/l

For comparison, hardness values are generally classified as:

Classification	Mg/l
Soft	0 – 60
Moderately hard	61 – 120
Hard	121 – 180
Very hard	GTE 181

The RO production rates since June 18, 2015 have been very inconsistent with the design for the RO system. See the following figure for a graph of the RO feed, permeate, and concentrate so far this summer versus the design points of the system. Jeff Rabas indicated on September 21, 2015 that Mike Atwood is reviewing the data for a better understanding of the reporting and inconsistencies.


2015 Reverse Osmosis (RO) Factors
RO Factor (gallons/total minutes run)
200.0
175.0
150.0
125.0
100.0
75.0
50.0
25.0
0.0
1-May
15-May
29-May
12-Jun
26-Jun
10-Jul
24-Jul
7-Aug
21-Aug
4-Sep
18-Sep
Date (Day-Month)
RO Feed
RO Permeate
RO Concentrate
RO Feed Design
RO Permeate Design
RO Concentrate Design

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303-971-0030
tza4water.com

MEMORANDUM

To: Lisa Johnson, District Manager

From: Lauren Goecke, EI

Date: September 21, 2015

Re: Greatrock North Water and Sanitation District – Concentrate Management

Project No.: 0414018.01-002

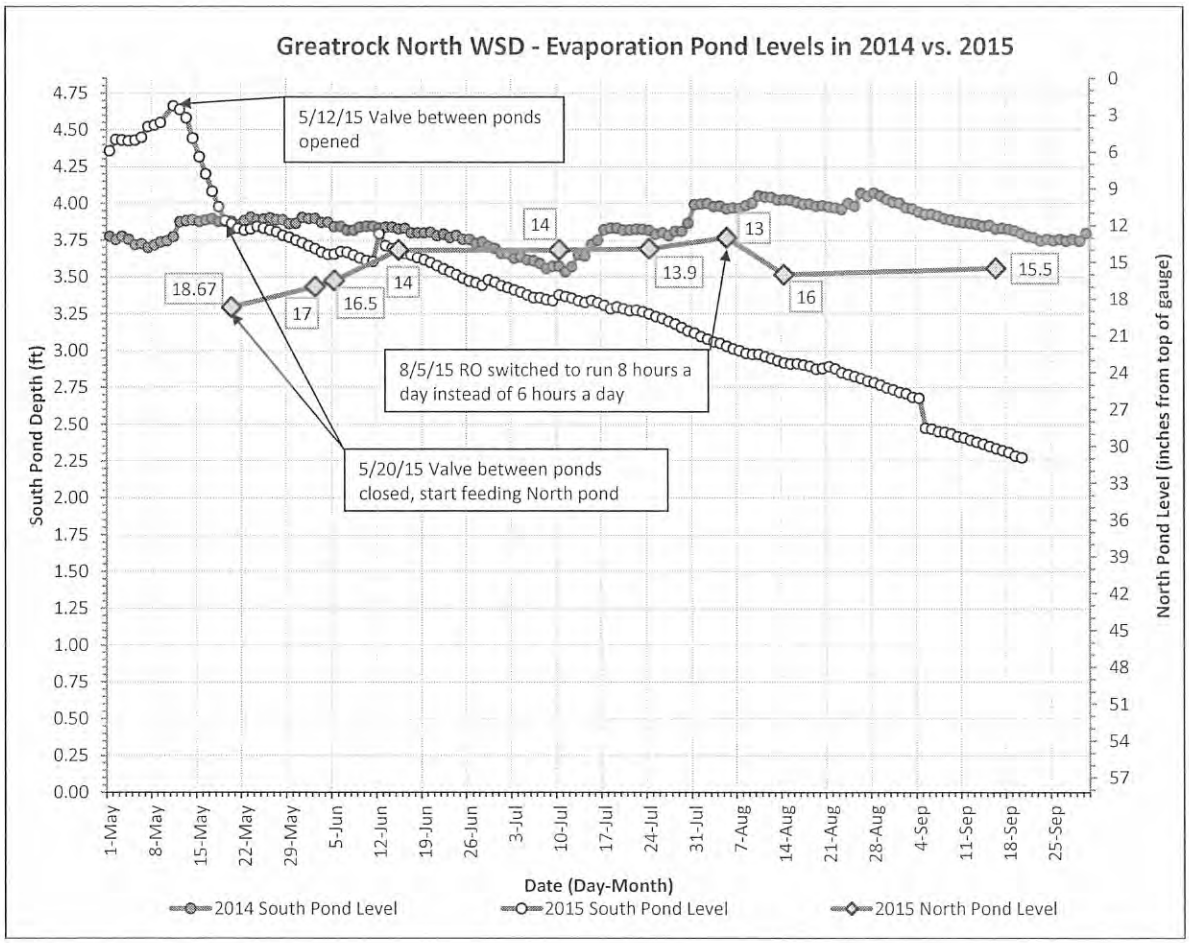
Evaporation Pond Summary: The south pond elevation was at 4.66 feet on May 11, 215 – an estimated 6 inches from overtopping the pond. The valve between the ponds was opened on May 12, 2015 to transfer water from the south pond to the north pond. The south pond was isolated on May 20, 2015 with a water elevation of 3.86 feet and the concentrate flows were directed to the north pond. The elevations in the south pond are tabulated below.

Date	Depth (feet, from daily SCADA report)
May 25, 2015	3.83
June 29, 2015	3.48
July 27, 2015	3.20
August 23, 2015	2.85
September 20, 2015	2.27

Jeff Rabas is providing the north pond elevations from visual observations of a temporary staff gauge:

Date	Measurement (inches, from top of gauge)
May 20, 2015	18"(+)
June 3, 2015	17"
June 8, 2015	16.5"
June 15, 2015	14"
July 10, 2015	14"
July 24, 2015	13.9"
August 5, 2015	13"
August 14, 2015	16"
September 16, 2015	15.5"

The following graph shows a comparison of the south pond levels in 2014, the south pond levels in 2015, and the north pond levels in 2015.


Greatrock North WSD - Evaporation Pond Levels in 2014 vs. 2015
5/12/15 Valve between ponds opened
8/5/15 RO switched to run 8 hours a day instead of 6 hours a day
5/20/15 Valve between ponds closed, start feeding North pond
18.67
17
16.5
14
14
13.9
13
16
15.5
South Pond Depth (ft)
North Pond Level (inches from top of gauge)
Date (Day-Month)
2014 South Pond Level
2015 South Pond Level
2015 North Pond Level

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303-971-0030
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MEMORANDUM

To: Lisa Johnson, District Manager

From: Lauren Goecke, EI

Date: September 16, 2015

Re: Greatrock North Water and Sanitation District – Utility Billings and Energy Costs

Project No.: 0414018.01-002

TZA is tracking the United Power utility bills and associated water operations on a monthly basis. Below are the monthly comparisons for August each year, as well as a summary of the eight-month periods for 2014 and 2015. The 2015 energy consumption for August is 74% of the 2014 energy consumption for the similar period. The 2015 billings for August are 97% of the 2014 billings for the similar period.

	August 2014 Billings				August 2015 Billings			
	On Peak	Off Peak	Total KWH	Billing	On Peak	Off Peak	Total KWH	Billing
Alluvial	4,646		4,646	$535.42	4,717		4,717	$543.36
BECR	4,400	18,960	23,360	$1,830.72	4,320	17,320	13,720	$1,721.92
GN	2,760	10,240	13,000	$1,070.15	2,520	9,120	10,720	$965.43
RHF	600	2,080	2,680	$237.31	920	2,800	3,360	$330.39
Totals			**43,686**	**$3,673.60**			**32,180**	**$3,561.10**

The 2015 year-to-date energy consumption is 92% of the 2014 energy consumption for the similar period. The 2015 year-to-date billings are 93% of the 2014 billings for the similar period despite the increase in the CTD2 rate from $0.049 per KWH to $0.05858 per KWH (20% increase).

	YTD 2014 Billings (8 months)				YTD 2015 Billings (8 months)			
	On Peak	Off Peak	Total KWH	Billing	On Peak	Off Peak	Total KWH	Billing
Alluvial	26,243		26,243	$3,061.96	24,401		24,401	$2,856.03
BECR	21,560	97,840	119,400	$9,034.76	20,440	98,280	118,720	$9,169.25
GN	12,600	49,000	61,600	$5,039.48	11,320	46,760	58,080	$4,784.96
RHF	9,480	24,840	34,320	$3,108.57	5,720	15,560	21,280	$1,981.53
Totals			**241,563**	**$20,244.77**			**222,481**	**$18,791.77**

TZA Water Engineer
a Lamp Rynearson Company
12596 W. Bayaud Ave., Ste. 330
Lakewood, Colorado 80228
[P] 303.971.0030
tza4water.com

MEMORANDUM

TO: Lisa Johnson, District Manager, Greatrock North Water and Sanitation District

FROM: Brad Simons

RE: Reverse Osmosis Asset Recovery Facility

DATE: October 5, 2015

TZA PROJ. NO.: 0414018.01/400

CC: Lauren Goecke

Below is a background of the Greatrock North Water and Sanitation District's conceptual Reverse Osmosis Asset Recovery Facility.

WHO: Greatrock North Water and Sanitation District.

WHAT: Concentrate management to meet the mission statement of the District.

WHY: District's Mission Statement - To provide the highest quality of water at the most affordable price for current customers and to provide for the expansion of the District as growth occurs.

The quality of water distributed by the District has improved from 2014 to 2015 as a result of operational enhancements, but those operational enhancements are at their limit in regard to further improving water quality.

Water Quality from Box Elder creek Ranch Tanks				
	Total Dissolved Solids (TDS), in mg/l		Total Hardness (as CaCO3), in mg/l	
Month	2014	2015	2014	2015
January	553	350	-	105
March	586	274	-	54
May	-	401	165	85
July	565	417	222	136
August	-	469	-	159
September	-	470	-	153
October	538	Pending	189	Pending
December	417	Pending	115	Pending

WHERE: Tract F of the Box Elder Creek Ranch subdivision and Box Elder Creek.

WHEN: TBD.

HOW: Treat the concentrate waste stream from the existing reverse osmosis (RO) water treatment plant (WTP) to reduce the inflow to the existing evaporation ponds, thereby allowing the existing RO WTP to operate longer hours during months of higher usage (i.e. irrigation season). Enhanced treatment of the existing RO WTP concentrate stream will reduce the amount of waste discharged to the existing evaporation ponds and will recover an asset. Treatment technologies available include additional membrane filtration and thermal distillation.

A number of disposal methods have been evaluated, including but not limited to, surface water discharge, hauling to a publicly owned treatment works (POTW), an additional evaporation pond, land application (i.e. irrigation), deep well injection, beneficial reuse (i.e. dust suppressant), and construction of a centralized POTW to treat domestic sewage. Each of these have been dismissed as viable alternatives to the current arrangement for a variety of reasons.

In April of 2015, the Board of Directors shifted its attention from concentrate disposal to concentrate management, no longer viewing the RO concentrate stream as a liability, but recognizing a potential asset for recovery. The thermal distillation process currently being evaluated is the AltelaRain system. The inputs to the AltelaRain System are reverse osmosis concentrate and steam, and the outputs are concentrate water (CW) and distilled water (DW). The concentrate water (CW) output is projected to be approximately six percent (6%) of the reverse osmosis concentrate input, while the distilled water (DW) output is projected to be approximately 47 percent of the reverse osmosis concentrate input. The remaining 47 percent of the reverse osmosis concentrate input will be consumed during the development of the steam input.

The AltelaRain concentrate water (CW) output will be discharged to the existing evaporation ponds, but the reduced volume will eliminate the need to construct a third impoundment.

The AltelaRain distilled water (DW) output will be discharged to Box Elder Creek Ranch under an industrial discharge permit from the State of Colorado's Water Quality Control Division. The District has requested a Preliminary Effluent Limit determination from the Division, and has applied for an industrial discharge permit to fully understand the project viability.