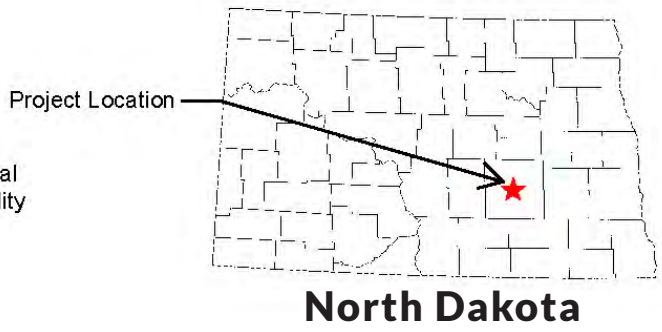
SPIRITWOOD REGIONAL WATER REUSE FACILITY PROJECT

March 2015 Project Information



CHS®

STUTSMAN RURAL WATER DISTRICT

Cargill™

DAKOTA SPIRIT AGENERGY

GREAT RIVER ENERGY®

A Touchstone Energy® Cooperative

City Of JAMESTOWN NORTH DAKOTA

SPIRITWOOD REGIONAL WATER REUSE FACILITY PROJECT

Industry and future development in and around Spiritwood, North Dakota, face significant water supply shortages at this time. The Spiritwood Water Reuse Facility (WRF) project, proposed by Stutsman Rural Water and discussed herein, would help to alleviate this problem while simultaneously solving many industrial wastewater issues and enabling CHS and others to stay on schedule for the construction of a large fertilizer production plant in North Dakota.

The Spiritwood WRF would utilize wastewater from Cargill Malt, Great River Energy (GRE), and Dakota Spirit Ag Energy (DSA), as well as aquifer water from the Spiritwood and Jamestown Aquifers, to provide source water to the new Spiritwood WRF. The Spiritwood WRF would treat these source waters to the water quality standards required in the CHS fertilizer production plant.

Stakeholders would benefit from the Spiritwood WRF in many ways:

BENEFITS LOCAL BUSINESSES AND THE AGRICULTURAL COMMUNITY

By constructing the Spiritwood WRF, the area groundwater resources will be properly managed and preserved for existing homeowners, farmstead owners, and businesses.

MEETS WASTEWATER TREATMENT NEEDS

Cargill, GRE, DSA, and CHS would be provided wastewater treatment service, as the wastewater generated within each of these important local industries would be beneficially reused to provide a source of water to the new CHS plant. So the facility will not only meet a water supply need, but it also provides a wastewater treatment and disposal service for each of these important local businesses.

ENABLES CHS AND OTHER NEW INDUSTRIAL GROWTH

The Spiritwood WRF will allow the CHS fertilizer production plant to be operational within the restrictions of a tight schedule. The CHS plant, a $3-4 billion dollar project, will bring significant economic growth to the entire region. By preserving the precious water resources through water reuse, the Spiritwood WRF will also effectively allow other industrial development to enter the region before alternative river water supply alternatives can be made available in the future.

If and when future alternative river water supply sources are available in the area, the Spiritwood WRF would begin processing river water in lieu of the initial groundwater supply component while continuing to satisfy the stakeholder's wastewater treatment and disposal needs.

An engineering study led by Stutsman Rural Water and Bartlett & West Inc. has estimated that the cost to construct the new Spiritwood WRF and the pumping and conveyance facilities required would fall between $90-$150 million, depending on the selection of the final waste disposal approach for the brine waste(s) generated and other design criteria.

The Spiritwood WRF is a key element allowing CHS to develop in Spiritwood, North Dakota. The treatment and reuse of gray water has become an essential way to protect one of our environment's most limited resources: water.

February 23, 2015

Mr. Jon Patch & Mr. Royce Cline
ND State Water Commission
900 East Boulevard Avenue
Bismarck, ND 58505-0850

Re: SRWD Spiritwood Reuse Facility 2015
Permit Revisions & Pump Management Plan
Project No.: 013704.044

Dear Mr. Patch & Mr. Cline:

This letter is being sent to inform the North Dakota State Commission (NDSWC) that Stutsman Rural Water District (SRWD) intends to implement a Conjunctive Pump Management Plan as their part in acquiring 1614 acre-feet/year under Permit # 6609 from the Spiritwood Aquifer and 2133 acre-feet/year under Permit # 6646 from the Jamestown Aquifer. SRWD will utilize and monitor the levels of the James River, typical seasonal weather patterns, levels of the Spiritwood Aquifer and any other data available to properly control and manage the quantities of water being pumped from either Permit # 6609 or Permit # 6646. The Conjunctive Pumping Plan of Permit # 6609 and Permit # 6646 will be used to insure the Spiritwood Aquifer is maintained at a satisfactory level to adequately supply water to the existing permittees of the aquifer. Under typical conditions the Pump Management Plan will operate with a flow of 1000 gpm under permit # 6609 and 1325 gpm under Permit # 6646.

Flow and pumping conditions during normal operating conditions time under permit # 6646 may range from 0 gpm to 2000 gpm with a maximum flow of 2500 gpm. SRWD anticipates the annual average flow to be 1325 gpm or a maximum of 2133 acre-feet/year.

Under normal operations flow and pumping conditions under permit # 6609 are expected to range from 0 gpm to 1500 gpm with a maximum flow of 3500 gpm. SRWD anticipates the average annual flow of 1000 gpm or a maximum of 1614 acre-feet/year.

If CHS would experience an upset condition that would require additional flows peaking up to 4200 gpm, SRWD will supervise and manage these peaking flows by adjusting flow rates from the multiple other sources accordingly (i.e. Cargill, Spiritwood and Jamestown Aquifers). During the upset condition period SRWD will increase pumping rates from the Cargill lagoons as the first option to supply CHS with the additional flows. If during these upset time periods water sources from Cargill are not able to provide adequate flows to CHS, pumping rates may be increased from permit #6609 up to 3500 gpm and up to 2500 gpm from Permit # 6646. Any amounts of water provided to CHS from the aquifers during these upset periods would be a conjunctive and balanced pumping effort between the aquifers. These upset conditions are expected to be rare and generally short lived. The upset conditions could happen multiple times a year with each occurrence lasting for a time period of a week or less. An estimate of the cumulative duration of these events would be a maximum of 2 days per month or 24 days per year. Under a very extreme condition or worst case

scenario, (once in 20 years), the CHS plant could experience an upset condition during the winter months. Under this condition the CHS plant would require peaks flows of 4200 gpm for the entire winter season or up to 4 months. The fore-mentioned pumping procedure would be also followed during the four month time period.

If the Water Re-Use Facility would experience an emergency condition preventing the Re-Use Plant from providing CHS with treated water, SRWD will utilize the Spiritwood Aquifer (Permit # 6609), and the Jamestown Aquifer (Permit # 6646) as the water sources to CHS. During this emergency condition pumping rates under Permit # 6609 and Permit # 6646 could conjunctively range up to 4200 gpm. This emergency condition is also expected to be rare and short lived but could last up to 30 days under a very extreme emergency situation.

The Conjunctive Pump Management Plan will ensure the Jamestown and Spiritwood Aquifer levels are carefully monitored in full cooperation with the Water Appropriations Division of the NDSWC. SRWD will reduce the flows from the aquifer during subsequent dates and supplement their required influent flows using alternate sources.

Sincerely,

Bartlett & West, Inc.

Bob Keller
Project Manager

cc: Stutsman – Geneva Kaiser
File: 13704.044: 1.0

STAKEHOLDERS

Stutsman Rural Water District Total System

- 1860 miles of pipeline
- 2190 users
- 4 bulk users
- 1 water treatment plant (2000 GPM)
- 12 pumping stations with underground reservoirs
- 2 above ground water storage tanks

Stutsman Rural Water District
Officers & Directors

• Terry Nieland	President
• Darrell Patzer	Vice President
• Mardee Heinrich	Secretary/Treasurer
• Nathan Hochhalter	Director
• Ron Wanzek	Director
• Roger Florhaug	Director
• Joel Lees	Director

Staff

• Geneva Kaiser	Manager
• Karen Smith	Office Manager
• Perry Kruss	Field Operations Supervision
• Steven Huebner	Operator
• Brent Harr	Operator

STAKEHOLDERS

Helping farmers raise healthy, profitable crops

CHS FERTILIZER PLANT AT SPIRITWOOD, N.D.

Plant Chronology

September 2012
Joint press announcement by North Dakota Governor Jack Dalrymple and CHS President and CEO Carl Casale

December 2012
Phase 1 (Pre-FEED) study completed – including economic feasibility, technology and safety considerations

January 2014
Phase 2 (FEED) – (Front End Engineering and Design) study completed – including preliminary engineering and facility layout, and related initial cost estimates

June 2014
Air permit granted by North Dakota Department of Health

September 2014
CHS Board of Directors approved plant construction

First Half 2018
Commissioning and start-up of plant

CHS Fertilizer Plant

- Will employ state-of-the-art safety and operational technologies — including features that will help reduce emissions — and will be a leader in process efficiency.
- Operate continuously 24 hours a day, 365 days a year
- Produce three types of fertilizers: anhydrous ammonia, urea and urea ammonia nitrate (UAN)
- Produce diesel exhaust fluid (DEF), used by the automotive industry as an additive to reduce NOx emissions
- CHS is committed to world class safety in both construction and operation of the plant. It will also follow the OSHA Voluntary Protection Program, which recognizes excellence in worker protection and safety
- The plant will produce 2,400 metric tons of anhydrous ammonia daily, which will be further processed into urea and UAN; DEF is a byproduct of the production process
- To produce this volume, the plant will require an estimated 88,000 MMBTU/day of natural gas, approximately 40 megawatt hours of electricity and 2,400-2,700 gallons/minute of water
- Will employ about 160-180 full-time employees

STAKEHOLDERS

Cargill™

Malthouse:

- Current production capacity is 27.3 million malt bushels (410,000 MT) per year.
- In process in the plant each day, there are about 560,000 bushels (8,400 MT).
- Produce enough malt per day to make 66,500 barrels of beer — 3,658,000 6-packs.
- Kilns remove about 325,000 gallons (12,350 HL) of moisture each day.

Barley Supply:

- Daily use of about 65,000 bushels (1,418 MT) of cleaned barley, which is 67,000 bushels of raw barley less 3% dockage.
- One-acre (0.405 hectares) makes about 4,400 6-packs of beer.
- If all barley were brought in by truck at 1,000 bushels (22 MT) it would take 95 trucks per day using a 5-day work week.

STAKEHOLDERS

GREAT RIVER ENERGY®
A Touchstone Energy® Cooperative

Spiritwood Station:

- Is a combined heat and power plant that generates two primary products – electricity and steam.
- Can generate up to 99 megawatts of competitively-priced electricity for the regional energy market.
- Generates steam that is used by Cargill Malt and that will be used by the Dakota Spirit AgEnergy ethanol biorefinery.

Highly efficient plant

- Is capable of achieving about 60 percent efficiency with its key partners
- Is highly energy efficient because it takes advantage of the energy in the steam, some of which is normally released to cooling towers.
- Sells some of that steam to Cargill Malt and Dakota Spirit AgEnergy for use in their production processes.

Clean plant

- Utilizes DryFineTM lignite that has a higher Btu value per pound so the plant burns less fuel. Also results in reduced emissions, lower transportation costs, and lower maintenance costs.
- Utilizes state-of-the-art control technologies to control emissions.

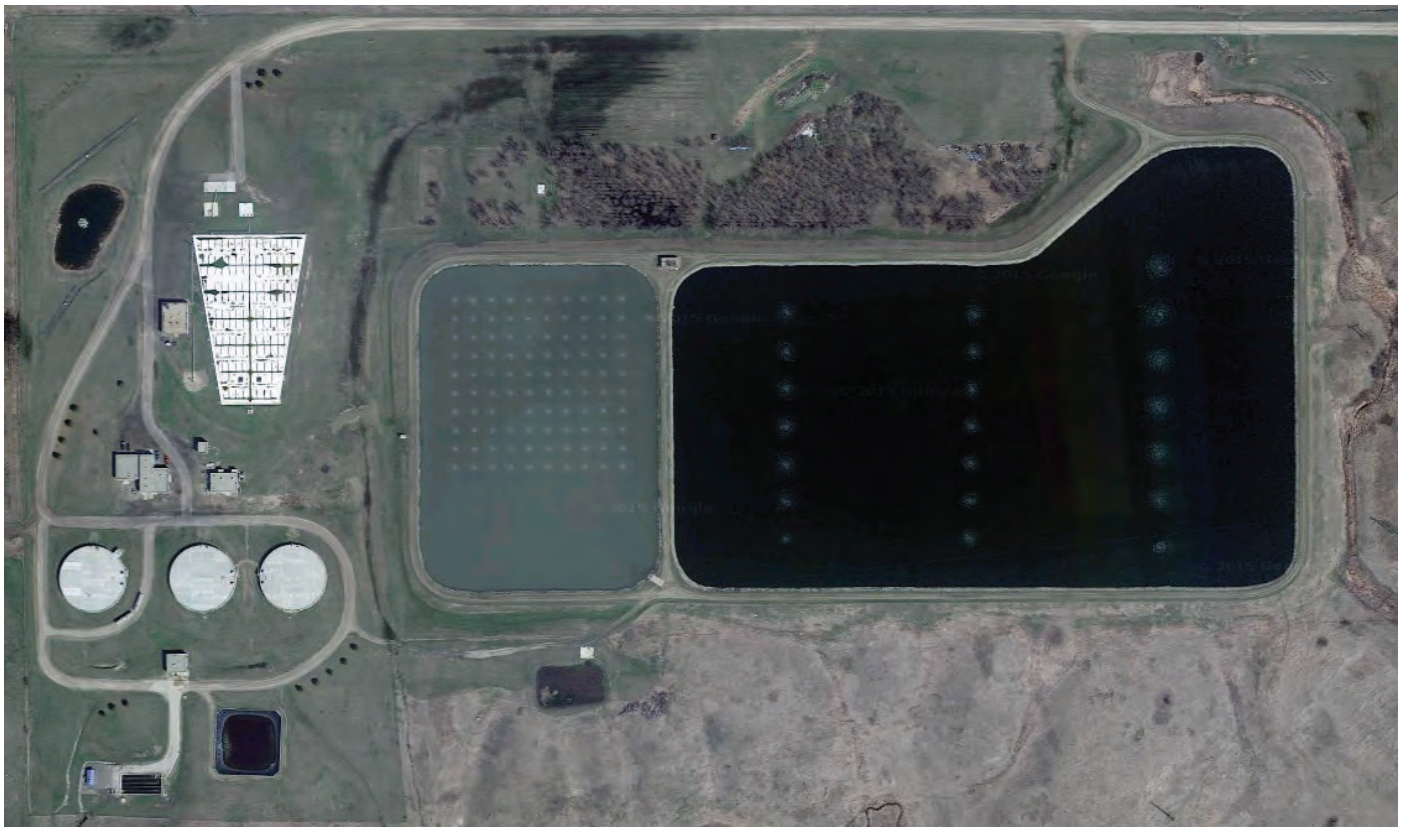
BARTLETT & WEST

STAKEHOLDERS

DAKOTA SPIRIT AGENERGY™

- Is a 65 million-gallon-per-year ethanol biorefinery co-located next to Great River Energy's Spiritwood Station combined heat and power plant.
- Will utilize about 200,000 pounds of steam per hour from Spiritwood Station as its primary energy source.
- Will purchase upwards of 23 million bushels of corn annually from a rich local corn production area.
- Will produce about 65 million gallons of ethanol, 198,000 tons per year of dried distillers grains and 6,900 tons per year of fuel-grade corn oil per year.
- Has its product – ethanol – certified under RFS2 as a renewable transportation fuel
- Will create 36 operating jobs
- Will begin operations second quarter 2015

STAKEHOLDERS



City Of JAMESTOWN NORTH DAKOTA

City of Jamestown Wastewater Treatment Plant

- Treats an average of 2.7 million gallons of water a day
- Has capacity to treat 4.5 million gallons of water a day
- Treats water from all city's sewage and from Cavendish Farms
- Heated via methane gas produced from high-strength potato waste
- Monitored discharge into the James River
- Staffed with four people
- Certified lab on site

Great River Energy

Dakota Spirit AgEnergy

Cargill

242 GPM

1250 GPM

300 GPM DISCHARGE

CHS

3800 GPM
4200 GPM (Peak Flow)

Spiritwood Regional
Water Reuse Facility

JAMESTOWN (CAVENDISH)
WATER TOWER

EXISTING 10"
PIPELINE

City of Jamestown

1325 GPM
2000 GPM (Peak Flow)

EXISTING 16"
PIPELINE

EXISTING 12"
PIPELINE

T140N

T139N

Interstate 94

CITY OF JAMESTOWN WWTP

Jamestown Aquifer
Well Field SRWD
Permit # 6646

SRWD WATER
TREATMENT PLANT

1000 GPM
3000 GPM (Peak Flow)

Spirtwood Aquifer
Well Field SRWD
Permit #6609

R63W

R62W

LEGEND

		FLOW RATE	PEAK FLOW RATE
18"	CHS FLOW FROM REUSE FACILITY	3800 GPM	4200 GPM
16"	FLOW FROM JAMESTOWN WWTP	1325 GPM	2000 GPM
16"	FLOW FROM SPIRITWOOD AQUIFER WELLS	1000 GPM	3000 GPM
12"	RETURN FLOW FROM GRE/DSA	242 GPM	242 GPM
6"	RETURN FLOW FROM CHS	300 GPM	300 GPM
12"	RETURN FLOW FROM CARGILL	1250 GPM	1250 GPM
16"	FLOW FROM JAMESTOWN AQUIFER WELLS		
14"	SERVICE TO GREAT RIVER ENERGY		
12"	RETURN LINE FROM GRE / DSA		
10"	SERVICE TO DAKOTA SPIRIT AGENERGY		
6"	SERVICE TO CHS		
	EXISTING STUTSMAN RURAL LINES		
	DIRECTION OF FLOW		

NORTH
NOT TO SCALE

TOTAL INLET FLOWS TO WATER REUSE FACILITY 4117 GPM 6792 GPM

BARTLETT & WEST

Stutsman Rural Water District
Water Supply to Spiritwood Project

SPIRITWOOD REGIONAL
WATER REUSE PROJECT

DESIGNED BY:	BJZ, RAK
DRAWN BY:	SMN
APPROVED BY:	RAK
DESIGN PROJ:	13704.044
CONST PROJ:	---
SCALE:	AS NOTED
DATE:	11/14
SHEET NUMBER	01
OF	1

Drawing name: F:\Proj\13000\13704\13704.034\AutoCad\Plan Set\13704.034 More Exhibits 11-24-2014.dwg Layout name: Exhibit 3-11-2015 Plotted by: jah01161 Plotted on: Mar 11, 2015 - 8:49am

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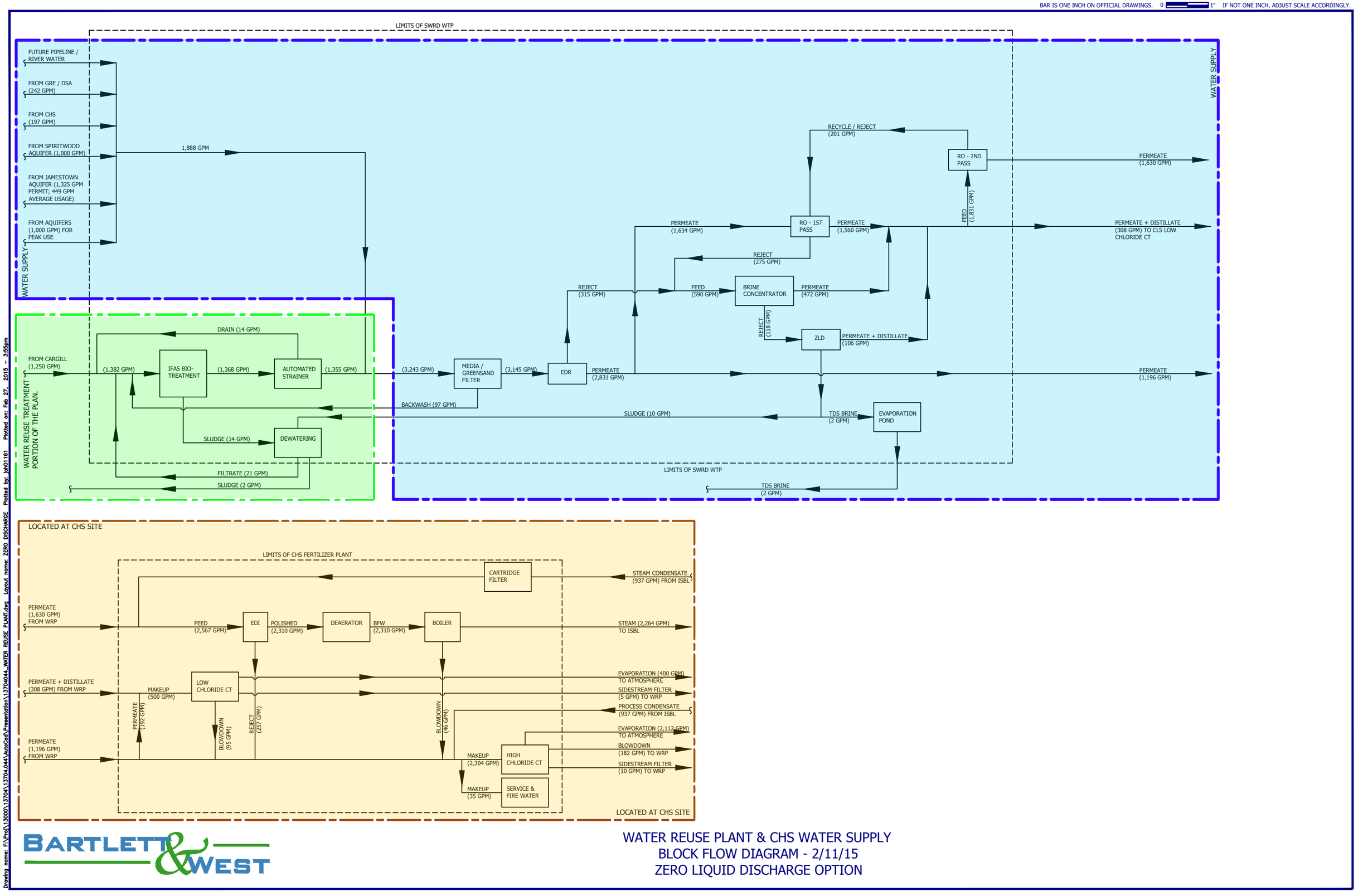

BARTLETT & WEST

WATER REUSE PLANT & CHS WATER SUPPLY
BLOCK FLOW DIAGRAM - 2/11/15
ZERO LIQUID DISCHARGE OPTION

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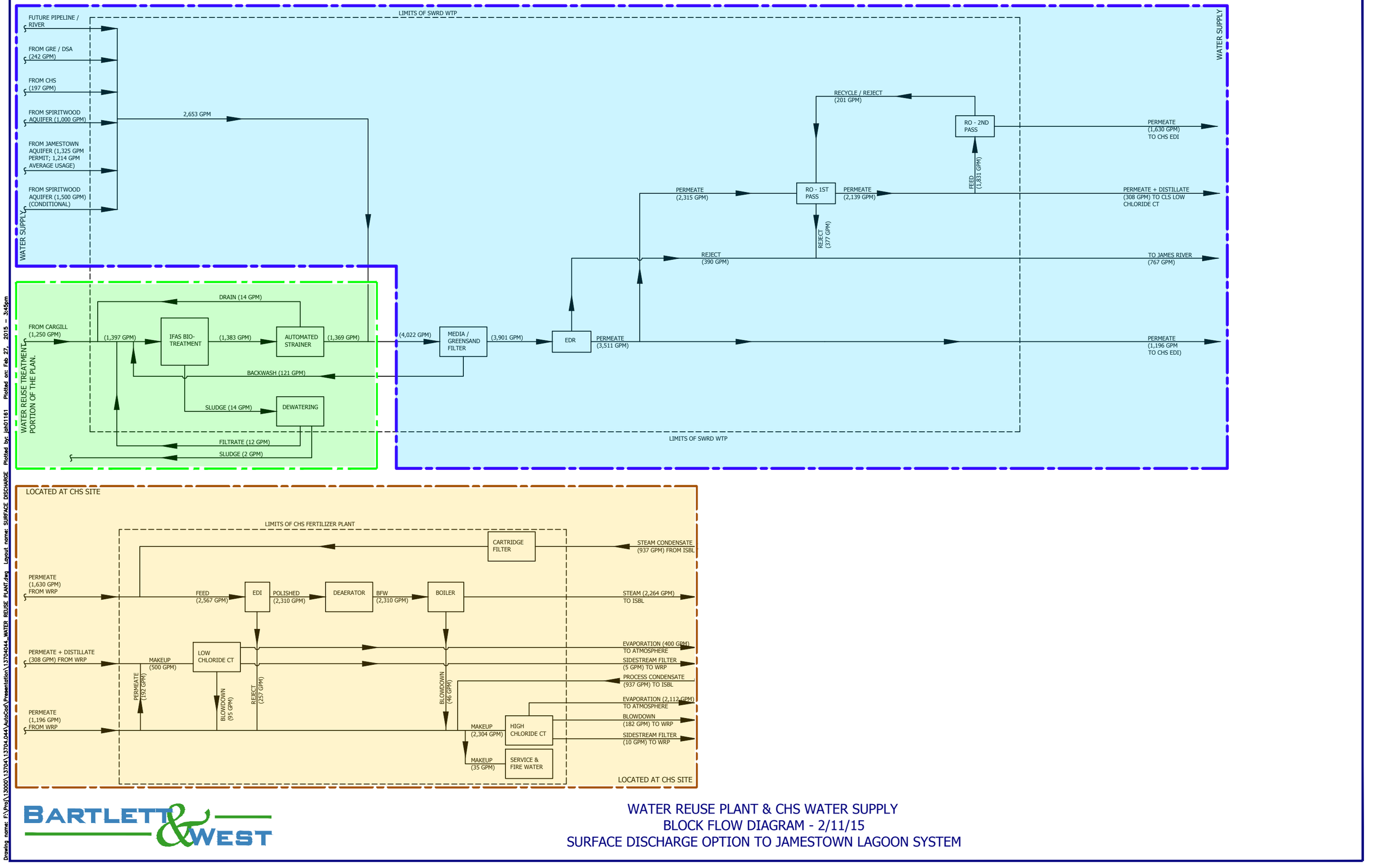

BARTLETT & WEST

WATER REUSE PLANT & CHS WATER SUPPLY
BLOCK FLOW DIAGRAM - 2/11/15
SURFACE DISCHARGE OPTION TO JAMESTOWN LAGOON SYSTEM

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PROJECT COST ESTIMATE

WATER REUSE FACILITY CAPEX & OPEX SUMMARY

Alternative No. 1 - Zero Liquid Discharge (Worst Case)	
Conveyance and Pumping	$21,000,000
DyVar	$10,150,000
Water Reuse Facility	
Wastewater Unit Processes	$22,000,000
Water Unit Processes	$66,000,000
HERO Unit Process	$25,000,000
Total Capital Cost	**$144,150,000**
Estimated Treatment Cost / 1,000 Gallons	**$3.25**

Alternative No. 2 - Surface Discharge of Waste (Best Case)	
Conveyance and Pumping	$22,500,000
DyVar	$0
Water Reuse Facility	
Wastewater Unit Processes	$23,000,000
Water Unit Processes	$69,000,000
HERO Unit Process	$0
Total Capital Cost	**$114,500,000**
Estimated Treatment Cost / 1,000 Gallons	**$1.75**

*Note all project costs include 20% contingency

SPIRITWOOD REGIONAL WATER REUSE FACILITY PROJECT