State of Utah
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Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF DRINKING WATER
Kenneth H. Bousfield, P.E.
Director

February 19, 2015

Cal Welling
Eden Waterworks
4786 East 2600 North
Eden, UT 84310

Dear Mr. Welling:

Subject: F**easibility**, Drinking Water Service from Eden Waterworks for the Sandhill Crane Cluster Subdivision, System #29005, File #9948

The Division of Drinking Water (the Division) received a request from John Reeve, P.E., concerning the capacity of Eden Waterworks to provide drinking water service to Sandhill Crane Cluster Subdivision in the water system's service area. Per the Division's database, the water system presently has 405 residential connections, and 22 commerical connections. The Sandhill Crane Cluster Subdivision will add 7 new residential connections. The number of connections that may be served is based on (1) source water capacity, (2) storage capacity, and (3) available water rights. The Drinking Water Rule, *R309-510* Minimum Sizing Requirements, requires a water system to be able to provide 800 gallons per day per equivalent residential connection (ERC) from its sources to meet peak day indoor demand, to be able to provide 400 gallons per ERC of storage for indoor use, and to be able to provide average yearly indoor demand which is 0.45 acre-feet per ERC based on water rights. Additional source capacity, storage, and water rights are required if the system provides water for outdoor use, such as irrigation. The water system component with the least capacity determines the allowable number of connections.

SOURCE CAPACITY

The water system has the following approved drinking water sources and approved safe yields:

Source Number	Source Name	Safe Yield gpm
WS001	Burnett Springs	135
WS005	Clarke East Well	200
	Total	335

Note: The Clarke East Well has a pump that will produced 270 gpm.

In addition, the water system provides outside irrigation water for some of their connections. There are three irrigation companies in the area that provide secondary water for most of the residents. The attached capacity calculation worksheet estimates the required source capacity is 250.6 gpm for indoor used and 34.6 gpm for outdoor use. Based on source capacity, the water system has 49.9 gpm excess source capacity which is adequate to serve the Sandhill Crane Cluster Subdivision.

STORAGE CAPACITY

The water system has the following approved storage tanks in service:

Storage Tank Number	Source Name	Volume gallons
ST001	Burnett Tank 1	110,000
ST003	Halderman Tank	500,000
ST004	Clarke Tank	1,000,000
	Total	1,610,000

The attached capacity calculation worksheet estimates the required storage capacity is 326,186 gallons. This is based on a reserve of 120,000 gallons of water storage for fire suppression, and the balance of the storage being used for indoor and outdoor use storage. Based on storage capacity, the water system has over 1.2 million gallons of excess storage capacity which is adequate to serve the Sandhill Crane Cluster Subdivision.

WATER RIGHTS

The water system has the following water rights for their sources:

Water Right Number	Amount (acre-feet)
35-7189	217.2
E5208	216.0
E3098	50.0
E3650	50.0
Total	533.2

Note: Water Right 35-7189 is for the Burnett Spring for 0.3 cfs, which is equivalent to 135 gpm or 217.2 ac-ft per year.

The attached capacity calculation worksheet estimates the required water rights of 220 acre-feet for indoor and outdoor use. Based on water rights, the water system has over 313.2 acre-feet of excess water rights which are adequate to serve the Sandhill Crane Cluster Subdivision.

SUMMARY

There is no limiting component at present, which would prevent the water system from providing adequate drinking water service to the Sandhill Crane Cluster Subdivision.

Please be aware that this feasibility letter is not a plan approval and does not allow the developer to start construction. You will need to **submit a project notification form and all final plans and specifications as well as meet requirements related to hydraulic modeling as found in the Utah Administrative Rules R309-511** in order to obtain a plan approval from the Division of Drinking Water prior to commencing construction of the Sandhill Crane Cluster Subdivision.

The Eden Waterworks system must also approve the design of the waterlines that will serve the the Sandhill Crane Cluster Subdivision before any construction is commenced.

If you have any questions regarding this letter, you can contact me either by phone at (801) 536-0054 or e-mail bhart@utah.gov.

Sincerely,

Bob Hart

Bob Hart, P.E.
Environmental Engineer III

Enclosure – Eden Waterworks Capacity Calculation

cc: Louis Cooper, Env. Director, Weber-Morgan Health Department, lcooper@co.weber.ut.us
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Division of Drinking Water Water System Capacity Calculation Sheet (revised June 23, 2011)

Enter the green cells only.

System Name: *Eden Water Works February 19, 2015* **System Number:** *29005*

1. Indoor Water Use

Convert "Number of other connections" (Cell E9) to ERCs here. (ERCs of other connection = peak day demand of other connections / 800 gal per day)

Number of residential connections ---------- 412

Number of other connections --- 22 ERCs of other connections 39.0 *(Example: water use of 2 factory is equivalent to 30 homes.)*

Enter number of non-residential connections (e.g., 2 factory connections).

Total Equivalent Residential Connections (ERCs) 451

MINIMUM REQUIREMENTS FOR INDOOR WATER USE					
Source		Storage		Water Rights	
Per ERC (gpd/ERC)	Total (gpm)	Per ERC (gallons/ERC)	Total (gallons)	Per ERC (ac-ft/yr)	Total (ac-ft/yr)
800	**250.6**	400	**180,400**	0.45	**202.95**

2. Outdoor Water Use

Enter estimated irrigated acre

Is the drinking water used for outdoor irrigation? ☑ Yes ☐ No

Residential ERCs using drinking water for irrigation ---> > > 102

Percentage of Residential ERCs using DW for irrigation ---> > > 25%

Average irrigated acreage per residential connection ---> > > 0.10

Total irrigated acreage of other connections. ---> > > 0.00

Irrigation zone 3

Thom Summers estimated that 25% of connections use drinking water for outside irrigation, and average amount watered is 0.1 acres.

Enter total irrigated acres of other connections here.

Select Irrigated Zone # from the list (see "Irrigation Demands & Map" tab on the bottom of the screen).

MINIMUM REQUIREMENTS FOR OUTDOOR WATER USE					
Source		Storage		Water Rights	
Per ERC (gpd/ERC)	Total (gpm)	Per ERC (gallons/ERC)	Total (gallons)	Per ERC (ac-ft/yr)	Total (ac-ft/yr)
488	**34.6**	253	**25,786**	0.17	**16.93**

3. Fire Flow Requirement

Enter fire flow in gpm.

Does the water system provide fire protection? ☑ Yes ☐ No

Maximum fire suppression **demand** for *water system* or *pressure zone* (gpm) 1,000

Maximum fire suppression **duration** for *water system* or *pressure zone* (hours) 2

Required Fire Suppression Storage (gallons) ---------- ---> > > 120,000

Enter duration in hours.

Weber Fire District has adopted Appendix B of the Fire Code which requires a minimum of 1000 gpm for two hours for fire flow.

Total Water System Requirements *(= indoor use + outdoor use + fire flow demand)*

MINIMUM REQUIREMENTS FOR WATER SYSTEM					
Source		Storage		Water Rights	
Per ERC (gpd/ERC)	Total (gpm)	Per ERC (gallons/ERC)	Total (gallons)	Per ERC (ac-ft/yr)	Total (ac-ft/yr)
1,288	**285.1**	653	**326,186**	0.62	**219.88**

Does this system have adequate source capacity per R309-510-7?

IPS points may be assessed for lacking adequate source capacity to meet peak day and/or average yearly flow requirements.

Linked to Cell I99 below.

Existing Sources: 335.0 gpm

Linked to Cell C51 above.

Required Source Capacity: 285.1 gpm

% of Req'd Capacity: **117.5%**

Difference: **50** gpm

Negative number means (1) additional source capacity is needed , and (2) IPS points should be assessed.

Does this system have adequate storage capacity per R309-510-8?

IPS points may be assessed for lacking adequate storage capacity.

Existing Storage:	1,610,000	gal
Required Storage Capacity:	326,186	gal
% of Req'd Capacity:	493.6%	
Difference:	1,283,814	gal

Linked to Cell I118 below.

Linked to Cell E51 above.

Negative number means (1) additional storage volume is needed, and (2) IPS points should be assessed.

Non-Community Water Systems, ERCs for Indoor Water Use (*See R309-510, Tables 510-1, 2, and 4, for other facility type calc.)

Facility Type	MINIMUM REQUIREMENTS FOR INDOOR USE: Source GPD/person*	Source Calculated GPD/site or pad	Storage GPD/person	Storage Gallon/site or pad	ERC/site or pad	# of Sites or pads	ERCs
Modern Recreation Camp	60	240	30	120	**0.30**	*8*	2.4
Semi-Developed Camp *w/ flush toilets*	20	80	10	40	**0.10**	*25*	2.5
Semi-Developed Camp *w/o flush toilets*	5	20	2.5	10	**0.03**	*20*	0.5
RV Park	N/A	100	N/A	50	**0.13**	*15*	1.9
*Number of people per camp site	*4*						

If applicable, enter number of people per camp site here.

	Source (GPD/vehicle)	Storage (Gal./vehicle)	ERC/1000 vehicles served	# of Vehicles served	ERCs
Roadway Rest Stop *w/ flushometer valves*	7	3.5	**8.75**	*800*	**7.00**

Eden Water Works ***February 19, 2015***

Equivalent Residential Connection Calc.	
Existing Residential Connections	412
Number of Obligated Future ERCs	7
Sandhill Crane Cluster Subdivision	*7*
Total Projected Number of ERCs	419

Linked to Cell I8 above.

If you need to calculate projected future demand (including existing & future connections), insert this number to Cell I8 "Number of residential connection."

Other Connections 2 schools (15 ERCs), 2 churches (4 ERCs), rest home (2 ERCs), fire station (2 ERCs), market (2 ERCs), seminary building (1 ERC), and 13 businesses (13 ERCs). Thom Summers said the Clarke East Well will pump 270 gpm.

Source		(in gallons per minute)
WS001	*Burnett Springs*	*135*
WS005	*Clarke East Well*	*200*
Total Source Capacity		335
Max. ERC allowed (for indoor use only)		*603*

Storage		(in gallons)
ST001	*Burnett Tank 1*	*110,000*
ST003	*Halderman Tank*	*500,000*
ST004	*Clarke Tank*	*1,000,000*
Total Storage Capacity		1,610,000

Diaphragm or air pressure tanks shall not be considered effective storage volume for community systems or NTNC with significant demand.