Chris B.

Antidegradation Review Form

Part A: Applicant Information

Facility Name: Brigham City Wastewater Treatment Division

Facility Owner: Brigham City Corporation

Facility Location: 675 North 1175 West, Brigham City, Utah 84302

Form Prepared By: Raymond N Poulson, Division Manger

Outfall Number: 001

Receiving Water: Old Box Elder Creek flowing into Box Elder Creek

What Are the Designated Uses of the Receiving Water (R317-2-6)?
Domestic Water Supply: None
Recreation: 2B - Secondary Contact
Aquatic Life: 3D - Waterfowl
Agricultural Water Supply: 4
Great Salt Lake: None

Category of Receiving Water (R317-2-3.2, -3.3, and -3.4): Category 3

UPDES Permit Number (if applicable): UT0022365

Effluent Flow Reviewed: Flow increase from 4/6 MGD to 6/9 MGD.
Typically, this should be the maximum daily discharge at the design capacity of the facility. Exceptions should be noted.

What is the application for? (check all that apply)

☐ A UPDES permit for a new facility, project, or outfall.

☒ A UPDES permit renewal with an expansion or modification of an existing wastewater treatment works.

☐ A UPDES permit renewal requiring limits for a pollutant not covered by the previous permit and/or an increase to existing permit limits.

☐ A UPDES permit renewal with no changes in facility operations.

Part B. Is a Level II ADR required?

This section of the form is intended to help applicants determine if a Level II ADR is required for specific permitted activities. In addition, the Executive Secretary may require a Level II ADR for an activity with the potential for major impact on the quality of waters of the state (R317-2-3.5a.1).

B1. The receiving water or downstream water is a Class 1C drinking water source.

☐ **Yes** A Level II ADR is required (Proceed to Part C of the Form)

☒ **No** (Proceed to Part B2 of the Form)

B2. The UPDES permit is new or is being renewed and the proposed effluent concentration and loading limits are higher than the concentration and loading limits in the previous permit and any previous antidegradation review(s).

☒ **Yes** (Proceed to Part B3 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

B3. Will any pollutants use assimilative capacity of the receiving water, i.e. do the pollutant concentrations in the effluent exceed those in the receiving waters at critical conditions? For most pollutants, effluent concentrations that are higher than the ambient concentrations require an antidegradation review? For a few pollutants such as dissolved oxygen, an antidegradation review is required if the effluent concentrations are less than the ambient concentrations in the receiving water. (Section 3.3.3 of Implementation Guidance)

☒ **Yes** (Proceed to Part B4 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

B4. Are water quality impacts of the proposed project temporary and limited (Section 3.3.4 of Implementation Guidance)? Proposed projects that will have temporary and limited effects on water quality can be exempted from a Level II ADR.

☐ **Yes** Identify the reasons used to justify this determination in Part B4.1 and proceed to Part G. No Level II ADR is required.

☒ **No** A Level II ADR is required (Proceed to Part C)

B4.1 Complete this question only if the applicant is requesting a Level II review exclusion for temporary and limited projects (see R317-2-3.5(b)(3) and R317-2-3.5(b)(4)). For projects requesting a temporary and limited exclusion please indicate the factor(s) used to justify this determination (check all that apply and provide details as appropriate) (Section 3.3.4 of Implementation Guidance):

☐ Water quality impacts will be temporary and related exclusively to sediment or turbidity and fish spawning will not be impaired.

Factors to be considered in determining whether water quality impacts will be temporary and limited:

a) The length of time during which water quality will be lowered:
b) The percent change in ambient concentrations of pollutants:
c) Pollutants affected:
d) Likelihood for long-term water quality benefits:
e) Potential for any residual long-term influences on existing uses:
f) Impairment of fish spawning, survival and development of aquatic fauna excluding fish removal efforts:

Additional justification, as needed:

Level II ADR

Part C, D, E, and F of the form constitute the Level II ADR Review. The applicant must provide as much detail as necessary for DWQ to perform the antidegradation review. Questions are provided for the convenience of applicants; however, for more complex permits it may be more effective to provide the required information in a separate report. Applicants that prefer a separate report should record the report name here and proceed to Part G of the form.

Optional Report Name: [ ]

Part C. Is the degradation from the project socially and economically necessary to accommodate important social or economic development in the area in which the waters are located?

The applicant must provide as much detail as necessary for DWQ to concur that the project is socially and economically necessary when answering the questions in this section. More information is available in Section 6.2 of the Implementation Guidance.

C1. Describe the social and economic benefits that would be realized through the proposed project, including the number and nature of jobs created and anticipated tax revenues.

Brigham City's Waste Treatment Plant was expanded to handle the increased wastewater flow from Proctor and Gamble (P&G). It anticipated that about 300 people will employeed with an expected pay more than 200 percent of the Box Elder Country median. P&G produces Bounty paper towels, Charmin toilet tissue and Puffs tissue. A tax rebate was given by the Governor of Utah expected to be worth as much as $85 million.

C2. Describe any environmental benefits to be realized through implementation of the proposed project.

The expanded capacity of the Brigham City facility will increase its ability to handle additional amounts of waste loads. This will benefit the environment by providing a treatment facility between the waste generators and the environment.

C3. Describe any social and economic losses that may result from the project, including impacts to recreation or commercial development.

P&G's facility was built on farm land 10 miles out of town. No projected social or economic losses are expected from this project.

C4. Summarize any supporting information from the affected communities on preserving assimilative capacity to support future growth and development.

The plant upgrade also took into account for projected and planned growth.

C5. Please describe any structures or equipment associated with the project that will be placed within or adjacent to the receiving water.

All structures and equipment has been installed within the Brigham City wastewater treatment facility. No structures or equipment will be placed within or adjacent to the receiving water.

Part D. Identify and rank (from increasing to decreasing potential threat to designated uses) the parameters of concern. *Parameters of concern are parameters in the effluent at concentrations greater than ambient concentrations in the receiving water. The applicant is responsible for identifying parameter concentrations in the effluent and DWQ will provide parameter concentrations for the receiving water. More information is available in Section 3.3.3 of the Implementation Guidance.*

Parameters of Concern:

Rank	Pollutant	Ambient Concentration	Effluent Concentration
1	Brigham City POC 2011		
2			
3			
4			
5			

Pollutants Evaluated that are not Considered Parameters of Concern:

Pollutant	Ambient Concentration	Effluent Concentration	Justification

Part E. Alternative Analysis Requirements of a Level II Antidegradation Review.

Level II ADRs require the applicant to determine whether there are feasible less-degrading alternatives to the proposed project. More information is available in Section 5.5 and 5.6 of the Implementation Guidance.

E1. The UPDES permit is being renewed without any changes to flow or concentrations. Alternative treatment and discharge options including changes to operations and maintenance were considered and compared to the current processes. No economically feasible treatment or discharge alternatives were identified that were not previously considered for any previous antidegradation review(s).

☐ **Yes** (Proceed to Part F)

☒ **No or Does Not Apply** (Proceed to E2)

E2. Attach as an appendix to this form a report that describes the following factors for all alternative treatment options (see 1) a technical description of the treatment process, including construction costs and continued operation and maintenance expenses, 2) the mass and concentration of discharge constituents, and 3) a description of the reliability of the system, including the frequency where recurring operation and maintenance may lead to temporary increases in discharged pollutants. Most of this information is typically available from a Facility Plan, if available.

Report Name: [ ]

E3. Describe the proposed method and cost of the baseline treatment alternative. The baseline treatment alternative is the minimum treatment required to meet water quality based effluent limits (WQBEL) as determined by the preliminary or final wasteload analysis (WLA) and any secondary or categorical effluent limits.

E4. Were any of the following alternatives feasible and affordable?

Alternative	Feasible	Reason Not Feasible/Affordable
Pollutant Trading	No	Currently there is not an effective mechanism to trade pollutants.
Water Recycling/Reuse	Yes	The P&G facility is recycling their water within their plant to the best of their ability. The wastewater was pumpled back to the Brigham City facility to allow for reuse in the future. Reuse will require additional treatment and distribution system such as installation of pipes throughout Brigham City currently not in place. The cost would be more than the facility system upgrades and new construction. However, one of the reasons the treatment is being done at the Brigham City facility is to allow for reuse in the future.
Land Application	No	Land application would require purchase of a large parcel of land. This would be to expensive.
Connection to Other Facilities	Yes	The selected alternative was to bring the P&G flow to Brigham City's treatment facility instead of construcitn a new facility.
Upgrade to Existing Facility	Yes	The existing Brigham Facility was upgraded to meet the needs of P&G.
Total Containment	Yes	The area required to evaporate 6 MGD would be several thousand acres. The land is not available and constructing ponds that large would be extremely expensive.
Improved O&M of Existing Systems	Yes	The improvement of the O&M existing systems which are decades old is not enough to handle the increased capacity of 2 MGD. New equipment is needed.
Seasonal or Controlled Discharge	Yes	A seasonal controlled systems was evaluated. However it would reqire a new discharge permit at P&G's site. It would also require the installation of a secondary irrigation system in the City.
New Construction	Yes	New headworks screens and washpactors are required to address the additional flow. A new intermediate pump is required. New construction of an additional clarifier and UV system is needed. Also one of the drying beds will be removed to make room for the new clarifier. Additional solids handling equipment will be required including a sludge press.
No Discharge	No	This is the same as total containment and there is not enough room

E5. From the applicant's perspective, what is the preferred treatment option?

The existing treatment methods are preferred.

E6. Is the preferred option also the least polluting feasible alternative?

☒ **Yes**

☐ **No**

If no, what were less degrading feasible alternative(s)?

If no, provide a summary of the justification for not selecting the least polluting feasible alternative and if appropriate, provide a more detailed justification as an attachment.

Part F. Optional Information

F1. Does the applicant want to conduct optional public review(s) in addition to the mandatory public review? Level II ADRs are public noticed for a thirty day comment period. More information is available in Section 3.7.1 of the Implementation Guidance.

☒ **No**

☐ **Yes**

F2. Does the project include an optional mitigation plan to compensate for the proposed water quality degradation?

☒ **No**

☐ **Yes**

Report Name: ☐

Part G. Certification of Antidegradation Review

G1. Applicant Certification

The form should be signed by the same responsible person who signed the accompanying permit application or certification.

Based on my inquiry of the person(s) who manage the system or those persons directly responsible for gathering the information, the information in this form and associated documents is, to the best of my knowledge and belief, true, accurate, and complete.

Print Name: Raymond N Poulson

Signature: Raymond N Poulson

Date: March 12, 2013

G2. DWQ Approval

To the best of my knowledge, the ADR was conducted in accordance with the rules and regulations outlined in UAC R-317-2-3.

Water Quality Management Section

Print Name: _____

Signature: _____

Date: _____

Brigham City POC 2011

Summary of Parameters of Concern

	Month	Parameter	Units	Permit Values	BC 2011 Values	Ambient Values	POC
Biochemical Oxygen Demand							Yes
	Winter			25	3.2		
	Spring			25	4.1		
	Summer			25	3.2		
	Fall			25	4.6		
Solids, Total Suspended (TSS)							Yes
	Winter	Solids, Total Susp	mg/l	25	6.1	9.2	
	Spring	Solids, Total Susp	mg/l	25	7.1	17.6	
	Summer	Solids, Total Susp	mg/l	25	5.7	40	
	Fall	Solids, Total Susp	mg/l	25	11.6	< 4	
E. coli				126	8.2		Yes
pH							Yes
	Winter	pH	S.U.	6.5 - 9.0	8.2	7.8 - 8.6	
	Spring	pH	S.U.	6.5 - 9.0	8.1	7.6 - 8.6	
	Summer	pH	S.U.	6.5 - 9.0	7.9	8.2 - 9.0	
	Fall	pH	S.U.	6.5 - 9.0	8.0	8.0 - 8.8	
Nitrogen, ammonia as N							Yes
	Winter	Nitrogen, ammoni	mg/l	9	< 0.1	0.09	
	Spring	Nitrogen, ammoni	mg/l	9	< 0.1	0.09	
	Summer	Nitrogen, ammoni	mg/l	9	< 0.1	0.06	
	Fall	Nitrogen, ammoni	mg/l	9	< 0.1	< 0.05	
Dissolved oxygen (DO)							Yes
	Winter	Dissolved oxygen	mg/l	4	9.0	9.2 - 13.9	
	Spring	Dissolved oxygen	mg/l	4	8.1	9.0 - 13.6	
	Summer	Dissolved oxygen	mg/l	4	8.5	7.6 - 11.8	
	Fall	Dissolved oxygen	mg/l	4	7.9	9.8 - 12.4	
Temperature, water							Yes
	Winter	Temperature, wat	°C	N/A	11.2	1.1 - 6.4	
	Spring	Temperature, wat	°C	N/A	16.0	6.4 - 14.8	
	Summer	Temperature, wat	°C	N/A	21.5	13.5 - 19.3	
	Fall	Temperature, wat	°C	N/A	15.8	1.8 - 12.4	
Metals (see table)							
Cyanide				25.6	< 0.002		Yes
Phenols					0.003		Yes
Phosphorus as P							Yes
	Winter	Phosphorus as P	mg/l	N/A		0.054	
	Spring	Phosphorus as P	mg/l	N/A		0.048	
	Summer	Phosphorus as P	mg/l	N/A		0.078	
	Fall	Phosphorus as P	mg/l	N/A		0.023	
Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N							Yes
	Winter	Nitrogen, Nitrite (N	mg/l	N/A		1.52	
	Spring	Nitrogen, Nitrite (N	mg/l	N/A		0.72	
	Summer	Nitrogen, Nitrite (N	mg/l	N/A		0.8	
	Fall	Nitrogen, Nitrite (N	mg/l	N/A		1.09	
Nitrogen, organic							Yes
	Winter	Nitrogen, organic	mg/l	N/A		1.56	
	Spring	Nitrogen, organic	mg/l	N/A		0.677	
	Summer	Nitrogen, organic	mg/l	N/A		0.806	
	Fall	Nitrogen, organic	mg/l	N/A		0.459	
Solids, Dissolved							Yes
	Winter	Solids, Dissolved	mg/l			318	
	Spring	Solids, Dissolved	mg/l			224	
	Summer	Solids, Dissolved	mg/l			198	
	Fall	Solids, Dissolved	mg/l			230	
Oil & Grease					No Film		Yes
Sulfate							Yes

	Month	Units	Permit Values	BC 2011 Values	Ambient Values	POC
Metals						
Antimony			5689.79	< 0.02		Yes
Arsenic			132.3	< 0.05		Yes
Beryllium				<0.001		Yes
Cadmium						Yes
	Winter	ug/l	7.6	< 0.005	< 1	
	Spring	ug/l	7.6	< 0.005	< 1	
	Summer	ug/l	7.6	< 0.005	< 1	
	Fall	ug/l	7.6	< 0.005	< 1	
Chromium						Yes
	Winter	ug/l	17.9	< 0.005	5.07	
	Spring	ug/l	17.9	< 0.005	3.48	
	Summer	ug/l	17.9	< 0.005	5.33	
	Fall	ug/l	17.9	< 0.005	4.98	
Copper						Yes
	Winter	ug/l	45.7	0.014	< 12	
	Spring	ug/l	45.7	0.11	2.86	
	Summer	ug/l	45.7	< 0.005	10.4	
	Fall	ug/l	45.7	0.011	29.4	
Lead						Yes
	Winter	ug/l	132.1	0.02	9.8	
	Spring	ug/l	132.1	<0.02	0.16	
	Summer	ug/l	132.1	0.02	0.303	
	Fall	ug/l	132.1	<0.02	1.1	
Mercury			0.198	< 0.0002		Yes
Molybdenum				< 0.01		Yes
Nickel						Yes
	Winter	ug/l	1380.4	< 0.005	< 10	
	Spring	ug/l	1380.4	< 0.005	< 10	
	Summer	ug/l	1380.4	< 0.005	< 10	
	Fall	ug/l	1380.4	< 0.005	< 10	
Silver			29.1	< 0.005		Yes
Thallium			8.3	< 0.02		Yes
Selenium						Yes
	Winter	ug/l	23.1	< 0.02	< 1	
	Spring	ug/l	23.1	< 0.02	< 1	
	Summer	ug/l	23.1	0.03	< 1	
	Fall	ug/l	23.1	0.02	< 1	
Zinc						Yes
	Winter	ug/l	353	0.06	25.1	
	Spring	ug/l	353	0.18	17	
	Summer	ug/l	353	0.03	22	
	Fall	ug/l	353	0.03	26.2	
Aluminum						
	Winter	ug/l	870.8		< 30	Yes
	Spring	ug/l	870.8		< 30	
	Summer	ug/l	870.8		20.7	
	Fall	ug/l	870.8		29.4	
Barium						Yes
	Winter	ug/l			< 100	
	Spring	ug/l			< 100	
	Summer	ug/l			41.3	
	Fall	ug/l			< 100	
Boron						Yes
	Winter	ug/l	992.4		< 30	
	Spring	ug/l	992.4		< 30	
	Summer	ug/l	992.4		< 30	
	Fall	ug/l	992.4		38.9	
Manganese						Yes
	Winter	ug/l			49.4	
	Spring	ug/l			15.8	
	Summer	ug/l			23.8	
	Fall	ug/l			10.3	

UPDES Permit UT0022365, August 15 2005
Brigham City STORET 4901190
Brigham City 2011 Data

AQUA ENGINEERING, INC.

MEMORANDUM

Date: **February 7, 2013**

To: **Raymond Poulson**

From: **Brad Rasmussen**

Re: **Brigham City Water Reclamation Facility Antidegradation Review Requirement for Facility Design Expansion**

cc:

Introduction:

Proctor and Gamble (P&G) selected a site near Brigham City to construct a new paper making facility. The new facility will have the capacity to make toilet paper and paper towels. The plan is to start with a single paper making machine and eventually add an additional paper making machine for a total of two machines. The paper making machines would be capable of making either paper towels or toilet paper, depending on how the paper pulp was set up to feed the machine. In addition to the paper making machines, P&G was going to set up a converting facility that would take the large paper rolls generated from the paper making machines and process them to be sold to consumers. This process included cutting the large 6 foot diameter by 6 foot long rolls down to conventional sizes for paper towels and toilet paper. In addition, the product would be packaged for retail sales at the facility.

The process would discharge about 1 million gallons per day (MGD) of wastewater from each of the paper making machines. The facility is going to install a pretreatment system prior to discharging to the Brigham City Water Reclamation Facility.

The pretreatment / recycling system P&G installed in their facility consisted of the following key items:

1. A rotary drum screen. The drum screen collected the majority of the paper pulp that came off the paper making machines. The pulp would be recycled back into the paper making process.
2. A recycling Dissolved Air Flotation (DAF) system. This DAF takes the water from the rotating drum screens and further removes paper pulp from the water stream. The pulp removed from this process is also returned back to the paper making process. Additional water is added at this point to make up for that which is lost in the process. In addition, a portion of the water from this DAF is wasted from the system.

533 W. 2600 S. – SUITE 275, BOUNTIFUL, UTAH 84010 PHONE (801) 299-1327 FAX (801) 299-0153

3. The water that is wasted from the recirculating DAF is then sent to a final DAF. The final DAF removes additional paper pulp from the wasted water diverted from the recycling DAF system. The solids removed in the final DAF are then dewatered and sent to disposal. The effluent from the final DAF is then sent to Brigham City for final treatment prior to discharge.

Design Requirements for P&G Process Water

P&G Effluent
Flow: 2 MGD
BOD: 35 mg/l
TSS: 40 mg/l
Ammonia: ND

The effluent from the P&G facility was going to have basically the same water that was delivered from the City's water supply with the addition of a little paper pulp and polymer from the DAF. In addition, the domestic wastewater stream from the employees at the facility is combined with the process water.

Influent to the Brigham City Water Reclamation Facility Including P&G Process Water
Design Flow: 6 MGD - Average
Design Flow: 9 MGD – Peak
BOD: 154 mg/l
TSS: 149 mg/l

Permit Requirements
BOD: 25 mg/l
TSS: 25 mg/l
Chlorine: 0.2 mg/l
E coli: 126 MPN/100ml
Ammonia: 9 mg/l
pH 6.5-9.0

For evaluation of different alternatives, the permit effluent requirements were used as the design basis. Because the light organic loading to the treatment facility, hydraulics are the primary design issue for the design.

Alternatives Evaluated

Treat the wastewater at the P&G facility, obtain a new discharge permit.

One of the options is to install a treatment facility just for the P&G facility. It was assumed that the strength of the wastewater was low and it would be fairly simple to

install a treatment system near the P&G facility. The Brigham City treatment facility is about 12 miles away from the P&G site. Treating the wastewater would eliminate a large lift station that would be required to pump the water back to the Brigham City Facility.

Brigham City determined that if they had the water sent back to the existing treatment facility there would be a potential in the future to reuse the water as part of a secondary irrigation system. However, at this time the secondary water system is not installed in the City. It was estimated to cost around $26 million to install the secondary system. The City was looking to the future when a system would be installed and wanted to have access to the water when the infrastructure was available for reuse. In addition to the pressure irrigation system, final filters will need to be installed at the wastewater facility to meet type I reuse requirements.

The estimated cost for constructing a new treatment facility at the P&G facility would be about $5.2 million.

Treat at P&G facility in winter and send flow to Brigham City in summer.

Another alternative that was evaluated was installing a treatment facility at the P&G facility and pump water to Brigham City in the summer. The cost of electricity to pump 2 MGD 12 miles to the Brigham City will be expensive. The strength of the wastewater from the P&G facility would meet the secondary standards for discharge most of the time from their pretreatment system. It would only take a small biological process to reduce the peak loadings from the P&G facility.

The reason Brigham City wanted the water in the summer was so they could use it in a pressure irrigation system. One advantage of this alternative would be that the lift station and pipe line would not need to be constructed until reuse was feasible. The secondary irrigation system could be installed in the future along with the lift station and pipeline. However, the City was concerned that they would not have access to the water for reuse in the future so there was a preference to pump the water back to the City's treatment facility all the time.

New lift station - $700,000
Sewer Force Main – $4.2 million
P&G treatment facility – $5.2 million
Brigham City Plant Upgrade – $2.7 million
Total Cost - $12.8 million

Do Nothing Alternative.

The existing facility was rated at 4 MGD. The average flow was around 2 MGD. Therefore, there was capacity in the treatment facility to add the additional 2 MGD to the existing facility. The reason this alternative was not feasible was because it

would eliminate expansion capability for the City in the future. The purpose of expanding the existing treatment facility was to ensure the future needs of the City and allow for the P&G facility to be constructed. Expanding the treatment facility allowed P&G to pay for the upgrade which did not impact the City's future growth potential. This alternative would have left additional biological capacity in the plant because of the organic loading from the P&G facility. However, the hydraulic capacity would be fully utilized.

Selected Alternative

The selected alternative included installing a new lift station at the P&G facility that would pump the water to the Brigham City Water Reclamation Facility. This will require the following:

- Lift station for process water and domestic wastewater.
- Approximately 12 miles of 14-inch pipe.

The Water Reclamation Facility was upgraded to treat the additional flow that would be generated at the P&G facility. The upgrade will need to increase the flow capacity at the treatment facility by 2 MGD. The following items will be upgraded to increase the hydraulic capacity.

- Headworks Screens – New screens are required to allow for the additional flow. They will be sized to meet a peak flow of 9 MGD. In addition, the existing flume will be submerged so a new flow metering device will be required. A new Flowdar flow meter will be installed upstream from the existing flume to monitor the influent flow to the treatment facility.

- Washpactors – New washpactors will be required to match up with the new screens.

- Intermediate Pump Station Pump – A new pump is required in the intermediate pump station. The new pump will allow the additional flow to be pumped to the oxidation ditches.

- New Final Clarifier – A new final clarifier is required to meet the additional hydraulic loading at the treatment facility. The new clarifier will be constructed in an existing drying bed which will reduce the dewatering capacity at the facility. A new RAS pump will be installed for the new clarifier.

- UV Disinfection System – The existing disinfection system is only sized to meet the 4 MGD design flow. Additional UV disinfection is required to meet the higher hydraulic loading. The existing UV system was installed in an old chlorine contact basin and there is no room for expansion in the existing channel. The north side of the chlorine contact basin will be used to expand

the UV System. A new building will be built over the existing chlorine contact basin which will house the UV system and the electrical controls.

The installation of the new clarifier where an existing sludge drying bed was located will require additional solids handling to offset the loss in drying beds. The existing WAS pumps will be upgraded so they can work with both the existing clarifiers and the new clarifier. The following are solids handling equipment that will need to be installed.

- WAS Pumps – the existing pen-valley pumps will be replaced with rotary lobe pumps. The pump capacity will be increased to meet the needs of the new facility.

- Dewatering Facility – A new building will be constructed to house dewatering equipment. Two new Huber screw thickeners will be installed along with a conveyance system to load the dewatered sludge into a truck used for transport. A new polymer feed system will be required for the system.

Brigham City Plant Upgrade – $2.7 million
New lift station - $700,000
Sewer Force Main – $4.2 million
Total – $7.6 million

Alternatives required by Antidegradation Review policy

Innovative or Alternative Treatment Options

When evaluating a new treatment facility for the P&G facility, only a new and innovative treatment alternative was evaluated. This process was a Multi-Stage Activated Biological Process (MSABP). This process is innovative because it has no clarifiers and no solids to manage from the treatment process. This was not selected because it was determined it would be best to send the wastewater to the City's facility so it could be reused in the future.

More Effective Treatment Options or Higher Treatment Levels

There were no more effective treatment options or higher treatment levels considered. It was assumed that it was best to utilize the existing treatment system without major process modifications.

Connection to Other Wastewater Treatment Facilities

Connecting the P&G facility to the Brigham City treatment facility was a connection to another wastewater facility.

Process Changes or Product or Raw Material Substitution

P&G has worked on the polymer they are using in their DAF to make the process work as efficiently as possible. However, the chemistry that is used in the paper making process is sensitive and cannot be easily changed.

Seasonal or Controlled Discharge Options to Minimize Discharging During Critical Water Quality Periods

Sending the water to Brigham City was intended to allow for reuse of the water in the future. There is a substantial infrastructure upgrade required to install a pressure irrigation system in the City before this can happen. When the pressure irrigation system is installed the water will be used in the summer which is typically the time when oxygen levels in the stream are at their lowest.

Pollutant Trading

Currently there is not an effective mechanism to trade pollutants so therefore this alternative was determined to be infeasible.

Water Conservation

All the water is coming from the new P&G facility. There are several economic incentives for P&G to conserve water. First, they are purchasing the water from the City which is an incentive to save water. Second, they process their water prior to use so the less they use, the more they save in water treatment for their process. Third, they pay to pump the water to the treatment facility prior to treatment. Finally, they are also charged to treat the water they send to the treatment facility. These factors will motivate P&G to conserve water.

Water Recycle and Reuse

P&G has an internal treatment system that they use to recycle both pulp and water. They try to recover as much treated water and pulp from their system as possible. The water that is sent to waste is minimized in this process.

One of the primary reasons to build the lift station and pipeline was to bring the water back to the City's treatment facility. The City would like to use the water in the future for reuse. However, until they can install a secondary irrigation system the water will need to be discharged.

Alternative Discharge Locations or Alternative Receiving Waters

The City has an existing discharge permit and it is not feasible for them to change their discharge location.

If a new facility was installed for P&G, they would have discharged to a different location. However, both locations are near the Great Salt Lake which would be the ultimate termination location for the discharge.

Land Application

Land application is not a feasible alternative because of the required land to dispose of the effluent from the treatment facility. If the design flow was used for land application, assuming 3 feet of water per acre, it would take a site that had 2,242 acres for disposal. If you could purchase the land for $10,000 an acre it would cost over $22 million for the property. In addition to the land, winter storage would be required. This is not a feasible alternative.

Total Containment

The land required to do total containment on a facility this size would cost too much to be practical.

Improved Operation and Maintenance of Existing Treatment Systems

One of the alternatives was to bring the additional flow to the existing treatment system. There was capacity to take the additional flow. However, the plant would be at hydraulic capacity and the City would be required to upgrade the plant to allow additional residential connections.

Other Appropriate Alternatives

There were no other appropriate alternatives that were evaluated.

Pretreatment Program

P&G paper making facility is a categorical facility. The plant was going to be expanded beyond 5 MGD. Because of these two reasons, a pretreatment program was required for the City. The antidegradation review is intended to reduce the degradation in the receiving waters. However, there is inherently a conflict with the requirements of a pretreatment program. Wastewater treatment facilities are designed to remove conventional pollutants such as BOD, TSS and sometimes nutrients. However, non-conventional pollutants such as metals are only removed

through luxury uptake. When the metals are removed from the wastewater they are then stored in the sludge.

The pretreatment program looks at the pollutants of concern and assumes that the water quality standard must be protected but the program allows the City to allocate the pollutants to industrial users. The allocation is set to protect either the water quality standard or the sludge whichever is most sensitive.

Because the City was required to implement a pretreatment program, it is assumed that all the assimilative capacity is being used as part of the pretreatment program.