

# CASE STUDY:

## CITY OF GRANTSVILLE, UTAH

START-UP DATE SEPTEMBER 1, 2010



### PROBLEM FACED

The facility operated on a lagoon aeration treatment system consisting of three treatment ponds with surface aerators and six storage ponds without any aeration equipment. The existing aeration system only allowed effluent to be discharged during summer months due to permit requirements. The city desired a more efficient system that would allow a continuous discharge of treated effluent and have the capacity to meet future requirements for ammonia removal. To do so, the city would have to increase the treatment volume by either converting existing non-aerated ponds to aeration or construct new ponds that met state requirements.

The facility's discharge permit required concentrations for BOD and TSS to be 30 mg/l or less, and to report ammonia concentrations in the final effluent. To design and upgrade the treatment plant's capacity, the city contracted with AQUA Engineering Inc, located in Bountiful, Utah.

### EDI'S SOLUTION

Responding to the city of Grantsville's wastewater treatment plant needs, Environmental Dynamics Inc. (EDI) proposed using the ATLAS DBBR. ATLAS DBBR is a lagoon-based extended aeration system that treats the raw wastewater using a batch reactor process. The technique provides continuous inflow of raw wastewater. It then undergoes a sequenced aeration reaction/mixing phase, followed by a settling phase. Finally, the water is decanted and discharged to treatment ponds. The effluent quality produced would meet the state requirements and allow continuous effluent discharge. It also creates nitrification that aids in the plant's future ammonia removal needs.

"EDI's hybrid extended aeration process allowed the plant to utilize their existing infrastructure to treat sewage without adding lagoon volume," Darin Starr, EDI Sales Manager, said. "The plant is now able to run more efficiently while reducing extra costs."

EDI ATLAS DBBR system equipment was installed in treatment lagoon #1 after removing the existing surface aerators. Equipment required for the upgrade included EDI's floating lateral aeration system with FlexAir 88S fine bubble diffuser assemblies, a BioReef Curtain, and four 24-inch diameter decant pipes with electric actuated valves, system control panel and three 220HP turbo blowers.



Environmental Dynamics International  
[wastewater.com](http://wastewater.com)

# CASE STUDY: CITY OF GRANTSVILLE, UTAH

## EDI'S SOLUTION

Site elevation = 4250 ft  
 Design Average Flow = 1.5 MGD  
 Design Peak Flow = 2.2 MGD

Design Average BOD = 200 mg/l  
 Design Average TSS = 200 mg/l  
 Design Average Ammonia = 40 mg/l

## TREATMENT

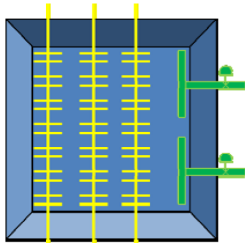
Achieved by the ATLAS DBBR system

Date	Monthly Average Flow (MGD)	Influent			Effluent		
		BOD (mg/l)	TSS (mg/l)	Ammonia (mg/l)	BOD* (mg/l)	TSS* (mg/l)	Ammonia* (mg/l)
10/13/2010	.714	117	150	38.9	ND	8	1.3
10/21/2010		118	129	30.6	ND	6	1.5
11/17/2010	.761	151	186	26.8	ND	13	ND
11/23/2010		151	149	23.8	ND	9	ND
12/1/2010	.854	183	269	42.4	ND	ND	ND
12/14/2010		177	153	40.7	6	7	ND
1/5/2011	.832	123	113	23.8	12	13	0.4

Lagoon #1 TSS ranges from 300 to 6,000 mg/L, however, sludge deposits were not removed at start-up and sample time is not coordinated with aeration cycle.

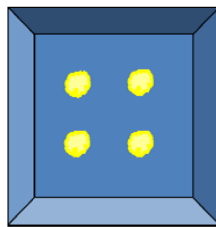
\*ND = Not detected at the corresponding minimum limit: BOD < 5 mg/l, TSS < 4 mg/l, Ammonia < 0.4 mg/l.

## PROCESS FLOW



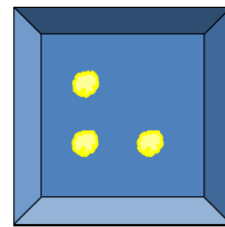
### Lagoon #1:

- 6 MG volume
- Complete Mix BioReactor
- Floating lateral aeration system
- Fine Bubble Diffusers
- BioCurtain
- Decant Pipe and Valves
- Process cycle
  - 2 hour aeration
  - 1 hour settling
  - 1 hour decant



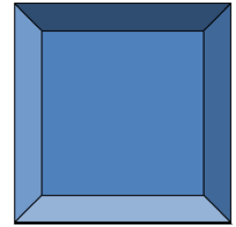
### Lagoon #2:

- 6 MG volume
- Partial Mix Aeration
- Solids settling and digestion



### Lagoon #3:

- 6.5 MG volume
- Partial Mix Aeration
- Solids settling and digestion



### Lagoon #4:

- 6.5 MG volume
- Quiescent zone
- Final solids settling prior to discharge

