

District of Columbia Water and Sewer Authority

Serving the Public • Protecting the Environment

ZONING COMMISSION
District of Columbia
Case 04-19
Exhibit 29

Blue Plains Advanced Wastewater Treatment Plant

Biosolids Management Program

Frequently Asked Questions

Blue Plains is the largest advanced wastewater treatment facility in the world. It serves more than two million Washington metro area customers, and treats more than 330 million gallons a day of raw sewage from area jurisdictions, including Montgomery and Prince George's Counties in Maryland, and Fairfax and Loudoun Counties in Virginia. It has been a leader in environmental protection and in restoring the Chesapeake Bay and its watershed since 1938. In 1996, the District of Columbia Water and Sewer Authority (WASA) assumed management of the plant.

As part of an ambitious program to improve the way it processes and handles biosolids, in 1998 WASA developed a new, long-range, biosolids management program, or BMP. Following are answers to some of the most frequently asked questions about this program.

How does the current treatment process work?

First, debris and grit are removed from the sewage and trucked to a landfill. The resulting wastewater goes to tanks where solids are separated from the liquid. The liquid is cleaned by beneficial bacteria and is disinfected before it goes to the Potomac River. The residual solids - or sludge - are further dewatered and thickened to reduce volume. Lime is added to remove harmful organisms and reduce odors. The result is biosolids - a safe, organic product used mainly by farmers to fertilize land.

What challenges does the current biosolids process face?

On- and offsite challenges include biosolids that sometimes are inconsistent and odorous, increasing customer demand, aging sludge-processing facilities and structures, limited biosolids storage, high operating and maintenance costs, noise and pollution from trucks, increasing haul costs, and increasingly restrictive local, state, and national environmental regulations for onsite operations and for offsite use.

How does the BMP address these challenges?

The BMP is an action plan being implemented in three phases over several years. The first phase involves efforts to improve biosolids quality, odors, and processing reliability in the near future. In the second phase, the following major construction projects will be undertaken:



- New egg-shaped anaerobic digesters with storage facilities
- New solids-thickening facilities
- Expansion of and improvements to the dewatering systems
- Associated projects to improve biosolids and the solids handling processes, and to reduce odors onsite and offsite

The third phase of the plan will provide the flexibility to meet changing requirements, regulations, or needs in the future. Examples include use of digester gas for power generation or for thermal drying of biosolids should these options become attractive.

How is the new biosolids treatment process different from the current one?

The main difference is that the new process will use anaerobic digestion in egg-shaped digesters rather than lime addition (100+ tons a day) to treat the sludge and reduce odors.

What is anaerobic digestion and what are the benefits?

Anaerobic digestion is an environmentally sound, technologically proven biological process that reduces sludge volume up to half of what's now produced. It destroys pathogenic organisms, produces clean digester gas for heating or power generation, and produces a stable, far less odorous material for agricultural purposes.

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From across the Potomac River, a view of the Blue Plains Advanced Wastewater Treatment Plant.

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Why is the egg shape of the digester important?

Egg-shaped digesters provide higher treatment capacity on less land so that all the digesters can fit on the limited Blue Plains plant site. They need less cleaning and less downtime - big savings in operations and maintenance costs. Contents are mixed more efficiently and there is less heat loss, saving energy. They provide for varied architectural treatments and are used at hundreds of sites worldwide.

How will the process benefit the environment?

- It dramatically reduces the volume of biosolids that must be recycled through land application.



- Biosolids will be more stable and less odorous, increasing demand for beneficial reuse.
- Less product means less truck traffic, odor, and associated pollution - saving more than 1.2 million truck miles per year.
- Digestion produces a clean-burning fuel source - digester gas - that can supply more than one-third of the Blue Plains AWTP energy requirements.

What would happen if WASA didn't implement the BMP?

First, the biosolids that weren't applied to land would have to be incinerated or sent to a landfill. This is expensive and environmentally undesirable. Second, the plant eventually would run out of capacity to treat wastewater from the area's growing population. Third, the plant may not meet future environmental regulatory requirements.

How was the decision made to go forward with this program?

Dozens of stakeholders, including representatives from WASA, local jurisdictions, and regulators, met over several months to develop the BMP. Through a consensus process, they developed criteria for a successful program based on financial, community, operational, environmental, and other factors. They analyzed 15 alternative plans. The new BMP was the highest-ranked plan.

How much does the BMP cost and what are the savings?

The projected cost of the entire program is $440 million, with about $260 million dedicated to the digesters and storage facilities, and the remaining $180 million dedicated to odor control, dewatering, thickening, and miscellaneous projects. There also will be savings of about $10 million a year in hauling and land application costs resulting from reduced sludge volume.The total annual operations and maintenance cost savings is expected to be about $16 million (at current costs). In addition, the annual economic benefit of using digester gas is several million dollars a year, depending on gas or electrical energy costs.

How will this program affect the local economy?



This program will have a positive effect on the local and regional economy by creating approximately 450 new jobs over a five-year period. In keeping with WASA's procurement policy, participation of local qualified minority, women-owned, and local disadvantaged business enterprises will be encouraged. This project also will reduce biosolids management costs and keep water and sewer rates comparatively low.

How long will it take to implement the BMP?

The BMP will take about nine years to complete. The first phase - baseline improvements - has begun, and odor control is an important part of this phase.

In short, what are the main benefits of the biosolids management program?

1. **It addresses customer needs and community concerns, including odor.**
2. **It is comprehensive and cost-effective.**
3. **It has the flexibility to reduce risk and future uncertainty.**
4. **It takes advantage of top-line technology.**
5. **It reuses resources.**
6. **It reduces pollution and waste.**
7. **It came about by consensus among all stakeholders.**

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