GOVERNMENT OF THE DISTRICT OF COLUMBIA
OFFICE OF PLANNING

Office of the Director

Memorandum

TO: Zoning Commission

FROM: Andrew Altman, Director
Office of Planning

DATE: October 19, 2004

SUBJECT: Variance Application - ZC 04-19 (WASA Digesters)
5000 Overlook Drive, S.W. (Square 28, Lots 169 and 828)

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APPLICATION

The District of Columbia Water and Sewer Authority (WASA) (Applicant) has petitioned the Zoning Commission for approval of a consolidated Planned Unit Development (PUD) to facilitate the construction of its Egg-Shaped Digester Facility. The applicant is requesting variances from the height requirements concurrent with the PUD. The subject property is in the C-M-3 district that allows a maximum height of 90-feet. The applicant is requesting variances from Section 840.1 to allow an increase in height of up to 118-feet.

SUMMARY RECOMMENDATION

The central location of the digesters has helped to minimize the impact of the egg-shaped digesters and their support structures. The digesters will not be detrimental to the public good and in fact, will greatly support the public good by increasing efficiency, reducing cost to the consumer, and improvements to the environment. The Office of Planning therefore recommends **approval** of the requested variances.

SITE AND AREA DESCRIPTION

The subject property is part of the 159-acre Blue Plains Advanced Wastewater Treatment Plant in southwest Washington, D.C. The facility is developed with a number of buildings and facilities that are used in wastewater treatment and processing. The Plant is generally located south of Bolling Air Force Base and the U.S. Naval Research Laboratory; west of the Anacostia Parkway, DC Village, and Oxon Run Park; and east and north of the Potomac River. The uses surrounding the property are generally large public uses away from residential areas.

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PROPOSAL

The applicant has submitted a PUD application for the development of its egg-shaped digester facility. These structures are distinctive and their shape and size are dictated by the functions they perform. As part of the PUD, the applicant has requested flexibility in the required zoning requirements to accommodate the facility. However, the PUD process does not provide sufficient flexibility to permit the height necessary for all the structures. Sections 2405.1 and 2405.3 clearly states that the height flexibility is limited to 5% for the maximum permitted, which in this case is 90-feet plus 4.5-feet for a total of 94.5-feet.

> *2405.1 No building or structure shall exceed the maximum height permitted in the least restrictive zone district within the project area as indicated in the following table; provided, that the Commission may authorize minor deviations for good cause Section 2405.3:*
>
> *2405.3 The Commission may authorize an increase of not more than five percent (5%) in the maximum height or floor area ratio; provided, that the increase is essential to the successful functioning of the project and consistent with the purpose and evaluation standards of this chapter.*

The applicant is therefore seeking variances to allow structures of up to 118-feet.

ANALYSIS

Section 11 DCMR limits roof structure and penthouse to a maximum height of 18.5 feet above the height limits prescribed by the zoning district. This site is zoned C-M-3 which has a height limit of 90-feet. Including the potential 5% flexibility allowed through the PUD, the maximum height for a building and its roof structure would be 98.5-feet plus 18.5-feet for a total of 113-feet.

Egg Digesters and Gas Domes

The biosolids treatment facility is composed of a number of facilities and buildings. The eight egg-shaped digesters have a number of structures that make up the system. The egg-shaped digesters themselves are 145-feet high with 44-feet below ground and 101-feet above. On top of the digesters are six-foot high gas domes that house mechanical equipment. Although the gas domes house mechanical equipment for the operation of the digester and may be classified as a roof structure the applicant has included it in the overall height of the digester and seek a variance to the height requirements in combination with the access towers.

Elevated Walkways

The digesters are connected by walkways that are 101-feet above the ground.

Access Towers

Four access towers are proposed to provide vertical access up to the walkways and eventually to the digesters and gas domes. These towers are at a height of 118-feet and accommodate elevators as well as stairs. The applicant has included the area of the elevator override in the total height and identified it for variance relief.

Silos
Four silos, at a height of 101-feet each, will be constructed to store digested biosolids.

The table below shows the heights of the structures above adjacent finished grade.

Table 1

	Height above finished grade	Excess Above permitted 90-Feet
Egg digesters/Gas Domes	101 ft./107 ft.	11 ft./17 ft.
Elevated walkways	101 ft.	11 ft.
Access Towers	118 ft.	28 ft.
Silos	101 ft.	11 ft.
Other structures	60 ft. or less	N/A

The wastewater treatment facility is the only public facility in the District and serves some suburban jurisdiction. The proposed egg-shaped digester is the latest, start-of-the-art facility that is used worldwide in wastewater treatment. It is more cost effective, more environmentally sensitive, and produces less residue. Due to required engineering and in order to achieve the necessary capacity for chemical functioning of the digesters their height cannot be designed to be shorter. The gas domes, access towers, and walkways are necessary for servicing the digesters and have to be placed above the digesters and therefore require additional height.

As required by Section 3103.2 the applicant has to demonstrate that:

> **The property is unique by reason of its exceptional narrowness, shallowness, shape, topography or other extraordinary or exceptional situation or condition;**

The subject property is unique because of the exceptional situation as the Blue Plains property has a high water table that limits placing additional portions of the digesters below ground without incurring great cost. This wastewater treatment facility is also the only public facility within the District that processes the great volume of wastewater.

> **By reason of the aforementioned unique or exceptional condition of the property, the strict application of the Zoning Regulations will result in peculiar and exceptional practical difficulties or to exceptional and undue hardship upon the owner of the property.**

The high water table presents an exceptional practical difficulty as the digesters are by nature large, tall structures. In order to remain within the permitted height limit, a large portion of the digester would have to be placed below ground. This is unachievable because of the high water table on the property. Just going an additional 4-feet would cost approximately 11 million dollars which would not be cost effective. This would also mean that underground pipe connections would be affected, as the pipes would be at different elevations.

> **The variance will not cause substantial detriment to the public good and will not impair the intent, purpose and integrity of the zone plan as embodied in the Zoning Regulations and Map.**

The proposed facilities will not be detrimental to the public good as the proposed digesters will have a greater processing capacity and will lessen by half the volume of biosolids produced. This reduction in volume will mean less truck traffic to the site to haul away the residue. The new facility will have less impact on the environment, as the residue produced will be less than currently produced and odor emissions will be reduced. Additionally, the digester gas produced in the processing is anticipated to be harnessed for power generation on the site at a future date. Together, the operation and maintenance of the new facility will lead to an estimated saving of approximately 16 million annually to WASA. The structures are located away from any residences and the impact of their height will be minimized, as they will be substantially setback from adjacent public right-of-ways such as I-295. The structures greatly exceed the height allowed in the industrial zone district but the structures are located on the property so that the height impact will be minimized and the intent of the height requirement will be honored. The proposed facility is of great importance to the City and as demonstrated will provide significant public good.

SUMMARY AND RECOMMENDATION

The proposed digesters have a unique function and will provide an improvement in service to the residents of the City. Recognizing the overall low elevation of the property, the engineering dictates of the structures locations and the high water table that limits how far the digesters can be lowered the applicant has demonstrated the uniqueness of the site. The digesters will not be detrimental to the public good and in fact will greatly be in support of the public good both in terms of efficiency, cost to the consumer, and preservation of the environment. The Office of Planning therefore recommends approval of the requested variances.

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