

TOWN OF CHAPEL HILL

CONCEPT PLAN PROPOSAL

Applicant Information

Name: Orange Water and Sewer Authority - Ed Kerwin Executive Director
Address: 400 Jones Ferry Road
City: Carrboro State: NC Zip: 27150
Phone (Work): (919) 968-4421 FAX: (919) 968-4464 E-Mail: ekerwin@owasa.org

Property Owner Information (included as attachment if more than one owner)

Name: N/A Phone: N/A
Address: N/A
City: N/A State: N/A Zip: N/A

Development Information

Name of Development: Mason Farm Wastewater Treatment Plant
Tax Map: 7 Block: 66 Lot(s): 9A Parcel ID #: 9798213071
Address/Location: 100 Old Mason Farm Road
Existing Zoning: I New Zoning District if Rezoning Proposed N/A
Proposed Size of Development (Acres / Square Feet): 23.432 AC / 1,020,697.92 SF
Permitted / Proposed Floor Area (Square Feet): 72,469.6 SF / 13,654 SF
Minimum # Parking Spaces Required: 0 #Proposed 0
Proposed Number of Dwelling Units: 0 # Units per Acre 0
Existing / Proposed Impervious Surface Area (Square Feet): 126,764 SF / 196,294 SF*
Is this Concept Plan subject to additional review by Town Council? yes

The undersigned applicant hereby certifies that: a) the property owner authorizes the filing of this proposal b) authorizes on-site review by authorized staff; and c) to the best of his/her knowledge and belief, all information supplied with this proposal is true and accurate.

Signature: M. Ahmad Date: 12/1/2003

Please submit **20 sets** of all materials, or **30⁵ sets of all materials including reduced (8 1/2" by 11") copies of all plans if the Concept Plan is subject to additional review by the Town Council**, no later than the first day of the month. Materials must be collated and folded to fit into a 12" x 15" envelope.

The Community Design Commission meets regularly on the third Wednesday of each month. Meetings with the Town Council will be scheduled after the Community Design Commission meeting. For confirmation of a meeting dates and the placement of your request on the agenda, please call the Planning Department at (919) 968-2728.

Revised February 20, 2003

***See attachment for description of impervious areas.**

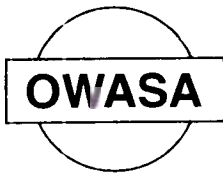
Attachment to Concept Review Application OWASA Mason Farm WWTP

Most of the land within the property boundary of the Mason Farm WWTP was developed and improved as part of past projects at the facility. These areas are maintained cleared and accessible by plant operations staff. Unimproved land within the property boundary is limited, most of which will remain as such after construction of this project, expanding the plant's capacity to 14.5 MGD.

Stormwater that falls on the existing facility is either:

- Captured in open process tankage, detained, treated, and discharged with the plant's final effluent,
- Collected from impervious areas (pavement, building roofs, and sidewalks) through a storm water piping network, or
- Runs-off pervious unimproved and other grassed areas with only a fraction infiltrating to ground water because of the existing soil types.

Existing and proposed impervious area calculations for the site include all pavement, buildings, and sidewalks. Open process tanks on the site have not been included as impervious area. Because rainfall captured in these basins is detained for several hours through the network of piping and treatment process tankage and is treated within the plant, it should not be considered as stormwater runoff. It is more appropriate that these facilities be considered as pervious surfaces not impervious surfaces.



ORANGE WATER & SEWER AUTHORITY

Quality Service Since 1977

December 1, 2003

Mr. Roger Waldon
Planning Director
Town of Chapel Hill
306 North Columbia Street
Chapel Hill, North Carolina 27516

Subject: Orange Water and Sewer Authority
Mason Farm Wastewater Treatment Plant Expansion
Application Package for Concept Review

Dear Mr. Waldon:

Enclosed please find 35 copies of the Concept Plan Proposal for the Mason Farm Wastewater Treatment Plant (WWTP) Expansion to 14.5 MGD. In this package we are including a completed application, aerial photograph of the plant, a U. S. G. S. topographic map of the plant vicinity, a zoning map, and a site plan showing the existing and proposed development. Following is some general information regarding the project including a project summary and purpose, existing conditions and surroundings, further details on the conceptual site plan, and a brief description of exemptions from Chapel Hill's Land Use Management Ordinance we anticipate requesting.

Project Summary and Purpose

The Orange Water and Sewer Authority (OWASA) plans to upgrade and expand the existing Mason Farm WWTP from its current capacity of 12 million gallons per day (MGD) to a capacity of 14.5 MGD by 2007. The proposed additional treatment capacity is needed to meet the needs of our customers. Due to the size and complexity of this project, and projected increases in demands, it is important that construction begin as soon as possible.

The upgrades to the Mason Farm WWTP will plan important environmental benefits. Ultraviolet disinfection will replace the current chlorine disinfection system, which will eliminate the potential for chlorine to enter Morgan Creek. Effluent filters will be installed to further improve the quality of the discharge to provide additional nutrient removal, and to help support the establishment of a reclaimed water system. Other upgrades will

eliminate existing bottlenecks, increase operational flexibility, improve plant reliability and provide on-site full power generation. The improvements will be designed to readily accommodate further upgrades that may be needed to meet future, more stringent nutrient limits that may be forthcoming once the Jordan Lake Nutrient Management Strategy is developed and approved by the North Carolina Environmental Management Commission.

Existing Conditions and Surroundings

The Mason Farm WWTP is located in a sparsely developed area of southeastern Chapel Hill, and is accessed from Old Mason Farm Road (SR 1900) north of the WWTP. To the west and south of the site is steep forested land owned by UNC and managed as a natural area by the UNC Botanical Garden. The flatter land to the north and east of the WWTP is in recreational use, including UNC's Finley Golf Course to the east and soccer and baseball fields to the north. The University also owns a small parcel of land within the WWTP property. This parcel contains UNC Wastewater Research Center. The only rights-of way impacting the property are two overhead electrical utilities on the northern portion of the property. One is a Duke Power transmission main and the other is an electric service owned by the University, which supplies power to the golf course.

Based on the Orange County Soil Survey, the predominant soils on the WWTP property are Goldston slaty silt loam on the slopes along the southern edge of the site and Chewacla loam on the floodplain.

Site Summary

The existing site is essentially located on an island of land, which is surrounded by Morgan Creek on the west, north and east and by a side stream, referred to as the bypass channel, on the south. The Morgan Creek bypass channel was created in the late 1960s, prior to the formation of OWASA. Elevations on the WWTP property range from 245 feet above mean sea level along the banks of Morgan Creek to 270 feet on the southwestern portion of the site. The FEMA 100-year flood elevation varies between 265 and 261 feet across the WWTP property, according to the most recently published FEMA Flood Insurance Rate Maps. Most of the WWTP property was in the floodplain prior to original WWTP construction in 1948. Approximately 75% of the plant is contained within an earthen dike, which is constructed above the floodplain. This dike is located along the aeration basins and continues along the entrance road to the north, along Morgan Creek on the west, and along the bypass channel on the south. All structures located outside of this dike are constructed so that flood waters will not inhibit their function. For example, the tops of the secondary clarifiers are located above the floodplain, thus preventing flood waters from spilling over into the tanks. Elevated walkways exist for access during flood events.

There are several visual buffers located on the property. On the north, the plant is screened from the golf course and athletic fields by evergreen trees and bushes planted

Mr. Roger Waldron

December 1, 2003

Page 3

just outside the perimeter fence line. There are also natural wooded areas on the northeast, southeast, and southwest corners of the property consisting primarily of hardwood trees with some underbrush. Additional screening is provided by wooded properties adjacent to the plant.

Conceptual Site Plan

As shown on the Conceptual Plan drawing, the existing site consists of an administrative building, which contains staff offices and a laboratory. There are also structures that house process equipment such as intermediate pumping stations and aeration blowers. The remaining structures on site are treatment *unit process basins*. A unit process is a general term for any device that is used in the treatment of wastewater. Some of the larger unit process basins are the aeration basins, primary clarifiers, secondary clarifiers, sludge fermenter, and sludge digesters.

The Conceptual Plan also shows the planned locations of the proposed structures. The proposed development at the site will include a new generator facility, a new electrical switchgear facility, a new secondary clarifier, a new influent pump station, a new headworks complex, additional aeration basins, UV Disinfection, a new effluent filter complex and an effluent pump station / post aeration tank. Together, these improvements will allow the plant to reliably treat a larger volume of wastewater than the current plant. Although some limited clearing will be necessary to construct the new filter complex, most of the existing vegetation will remain in place.

Requested Exceptions to Chapel Hill's Land Use Management Ordinance

We respectfully request exemption from the Resource Conservation District (RCD) and from the Watershed Protection District (WPD) rules. The entire plant property is located within the RCD, so there is no feasible alternative to expand the plant without constructing within the RCD. In April 2003, we conducted a floodplain study of the area around the plant to ensure that the plant upgrades would not effect the floodplain elevations in the area. This report was submitted to Chapel Hill's Stormwater Engineer, Mr. Fred Royal. Mr. Royal reviewed the report and found the proposed project to be in compliance with the flood impact requirements of the Land Use Management Ordinance.

Portions of the property are located within the WPD stream buffer. Current impervious area at the property site is 126,764 square feet. The proposed impervious surface area following construction will be 196,294 square feet. The impervious area includes all pavements, buildings, and sidewalks on the site. Given that the property area is 23.4 acres, the post construction impervious area percentage is 19.3%. Therefore, the plant is considered a low density development requiring a 30-foot wide stream buffer be maintained. All structures are located outside the 30 foot buffer. An exemption will be requested if a larger buffer is required.

Mr. Roger Waldron
December 1, 2003
Page 4

Thank you for your consideration of our proposed project. We look forward to presenting the project in further detail at the Community Design Commission meeting on December 17, 2003. If you require any additional assistance, please do not hesitate to contact me at (919) 968-4421.

Best regards,

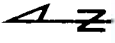
Handwritten signature of M. Imtiaz Ahmad, dated 12/1/2003.

M. Imtiaz Ahmad, P. E.
Director of Engineering and Planning

Enclosures

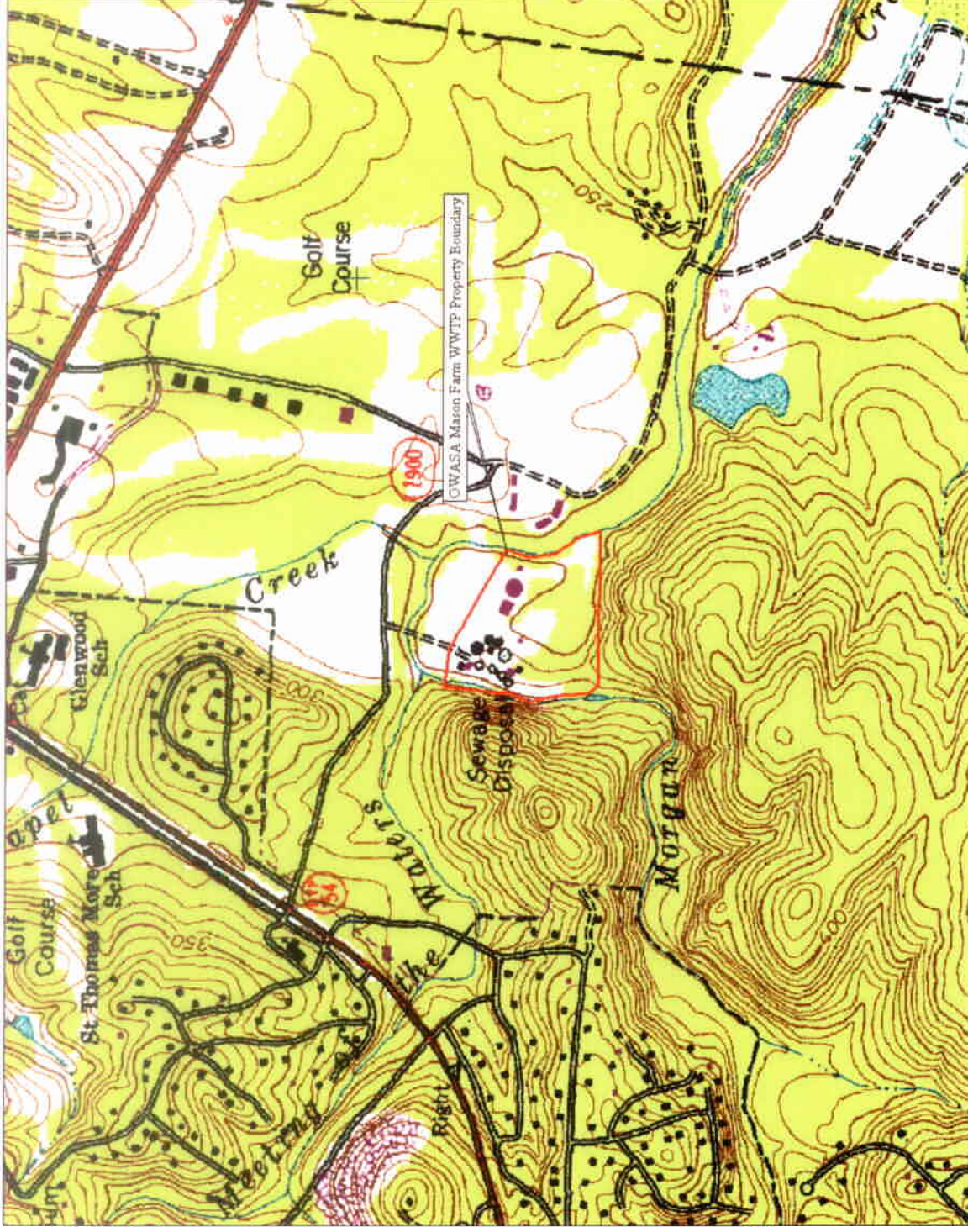
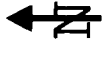
Cc: Ed Kerwin, Executive Director
Ken Bruce, Brown and Caldwell
Peter Schuler, Brown and Caldwell

Mason Farm - Wastewater Treatment Plant



Aerial Photo taken March 2003

**Mason Farm – Wastewater Treatment Plant
USGS Topographic Map of Plant Vicinity**



Scale: 1-inch = 1,200-feet

Map Reference: Chapel Hill, North Carolina

Mason Farm - Wastewater Treatment Plant

1000 FOOT BUFFER FROM WWTP BOUNDARY

