

**ORANGE WATER & SEWER AUTHORITY***Quality Service Since 1977*

November 4, 2005

The Honorable Kevin C. Foy, Mayor
Members of the Town Council
Town of Chapel Hill
405 Martin Luther King Jr. Boulevard
Chapel Hill, NC 27514

**SUBJECT: PROGRESS REPORT ON ELIMINATING OFF-SITE ODOR FROM
THE MASON FARM WASTEWATER TREATMENT PLANT (WWTP)**

Dear Mayor Foy and Town Council Members:

In preparation for your Public Forum on November 14, 2005 regarding this matter, we would like to provide information about the current status of our odor elimination improvements and our plan for an odor study, monitoring and evaluation process.

Ed Kerwin, Executive Director, will make a presentation at the Public Forum on our progress in completing odor improvements at the WWTP.

Status of Odor Elimination Improvements

In February, 2004, OWASA completed installation of an odor scrubber and biosolids storage tank covers at the WWTP. With that work now completed, we believe the key remaining source of off-site odor has been our four "solids digesters." The digesters are large storage tanks that we use to treat solids separated from wastewater so that they can be recycled as biosolids on farmlands to improve the soil and provide nutrients to help grow crops.

The solids digesters were initially constructed with floating covers that rise and fall with changes in the volume of the solids stored in the tank. Because the covers were not sealed, odors leaked from the top of the digesters. To address this source of odor, the current project to upgrade and expand the WWTP includes a \$4 million investment for installation of fixed, sealed cover structures for each of our four digesters.

As indicated in previous reports to the Town Council, our contractor continues to be on schedule to complete the installation of the new digester cover structures by the end of November, 2005 in accord with the timeline envisioned in Stipulations 5 and 6 of the Town Council's Special Use Permit.

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Also, we plan to complete additional odor-related improvements by May, 2007 including installation of covered preliminary treatment tanks and a new sewage pump station. Foul air from both of these facilities will be contained and then treated in our existing odor scrubber.

Proposed Monitoring and Evaluation Process

We believe that the digester cover improvements will eliminate off-site odor. We are also committed to the follow-up evaluation process in cooperation with our neighbors and the Town Council to determine whether additional odor-related improvements are needed.

We have therefore prepared the attached plan for odor monitoring and evaluation. This plan includes on- and off-site monitoring of the WWTP area by OWASA, follow-up investigation and action as needed whenever odor is noticed, and a consultant study; but we believe the most important consideration in evaluating odor-related improvements is and will be feedback from our neighbors.

OWASA representatives discussed drafts of this plan at a preliminary meeting on August 17th with a small group of citizens and at a community meeting on September 15th. The OWASA Board carefully considered the comments from the September 15th community meeting as well as additional public comments we received (one in person and one in writing) at our October 13th Board meeting. The OWASA Board agrees with and supports the attached plan which was revised following the public discussions.

We appreciate the opportunity to provide information to you and to the community at the Public Forum on November 14, and we look forward to your comments and questions and further discussion with you.

Sincerely,



Michael A. (Mac) Clarke, Chair
Board of Directors

Enclosure: Odor Elimination Compliance Monitoring Program

c: Mr. W. Calvin Horton, Chapel Hill Town Manager (w/enclosures)
OWASA Board of Directors (w/enclosures)
Ed Kerwin, Executive Director (w/enclosures)

ODOR ELIMINATION COMPLIANCE MONITORING PROGRAM

ORANGE WATER AND SEWER AUTHORITY
NOVEMBER 4, 2005

Purpose

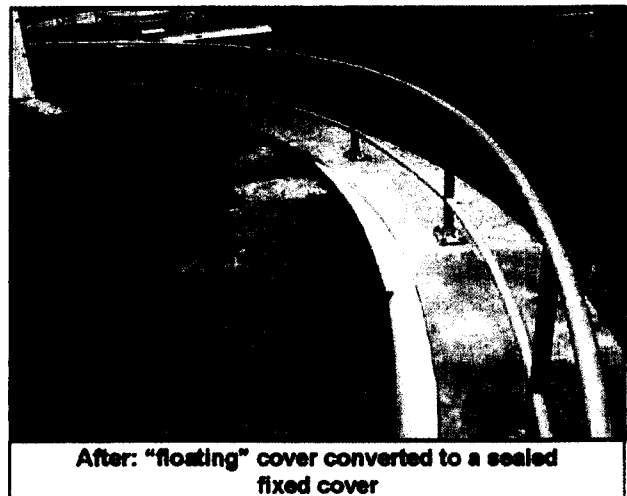
The purpose of this report is to explain the measures that OWASA has put in place and plans to implement to help determine our effectiveness in eliminating off-site odor from the Mason Farm Wastewater Treatment Plant (WWTP).

Background

In March 2004, the OWASA Board of Directors formally adopted and reaffirmed a goal of no off-site objectionable odors from the WWTP. The most important improvement needed to allow OWASA to meet this goal is to stop odor release from the WWTP's digesters. The digesters are large storage tanks that are used to treat solids separated from wastewater so that they can be recycled as "biosolids" on farmlands to improve the soil. *Improvements currently underway at the WWTP to fix the digesters are on schedule for completion by the end of November, 2005.*



Before: "floating" cover allowed solids and odorous gas to escape from digesters



After: "floating" cover converted to a sealed fixed cover

In addition to the digester repairs, other WWTP improvements are on schedule for completion by May 2007 to further reduce the potential for release of off-site objectionable odors:

- ✓ The new preliminary treatment tanks where the raw sewage first enters the plant will be covered. The foul air from them will be treated in our existing odor scrubber.
- ✓ The new raw sewage pumping station being constructed to replace an aging facility will be covered. The foul air from the station will be treated in our existing odor scrubber.
- ✓ A new foam removal system will be provided for large treatment tanks called aeration basins. This new feature will allow the floating material on the surface of these tanks to be removed, thereby reducing the potential for odor.

Community Involvement

The OWASA staff presented a conceptual draft of the Odor Elimination Compliance Monitoring Program at the August 25, 2005 OWASA Board meeting. This document and an invitation to a community meeting on September 15, 2005 were mailed to approximately 750 residents within a 4,400 foot radius of the WWTP. Six residents attended the September 15th community meeting and provided comments on the conceptual draft (meeting summary attached).

The OWASA Board carefully considered the comments from the September 15th community meeting as well as additional public comments they received (one in person and one in writing) at the October 13, 2005 Board meeting and agreed with staffs proposed approach for Odor Elimination Compliance Monitoring.

OWASA Self-Monitoring for Odor Elimination Compliance

OWASA staff will maintain a self-monitoring program as one tool to measure our compliance with the odor elimination goal. Odor monitoring will occur at the WWTP property boundary and at locations within a secondary boundary that encompasses our nearest neighbors. Training of the OWASA staff on proper odor monitoring will be provided.

In addition to routine monitoring of WWTP equipment and processes that are potential sources of odor, the on-duty plant Operator will conduct a "sniff-test" at multiple predetermined locations within the WWTP property boundary at least once every 8 hours (normally at the beginning of an Operator's work shift) to determine the presence/absence of detectable odor (Map #1). If odor is detected at any location, the Operator will classify the detectable odor as minimal, moderate, or severe. Additionally, staff will use a portable hydrogen sulfide monitor to help determine the presence/absence of odor. If odor is detected at the plant boundary, the Operator will:

- ✓ have the monitoring locations within the secondary boundary (Map #2) checked by other OWASA staff to determine the presence/absence of odor as soon as practical. If odor is detected at any secondary boundary location, an e-mail notification to the neighbors for whom we have e-mail addresses on file and to the Town of Chapel Hill will be sent promptly to provide information about the odor release; and
- ✓ immediately check the plant to determine the cause or potential cause of the odor source and quickly take corrective actions to minimize or eliminate the problem.

On-line Hydrogen Sulfide Monitor

Hydrogen sulfide is an odorous byproduct of biological decomposition. OWASA plans to install a stationary hydrogen sulfide monitor in the area of the digesters as an early indication device for leaks of digester gas. The stationary monitor will be incorporated into the WWTP's computerized monitoring and alarm system. A portable hydrogen sulfide monitor has also been purchased and will be used throughout the plant as an additional check for odor (as discussed above).

Community Feedback for Odor Elimination Compliance

The neighbors of OWASA's WWTP are the most important judge of our effectiveness in eliminating off-site odor. All neighbors are encouraged to contact OWASA immediately by calling the **Mason Farm WWTP Hotline at (537-4376)** if odor from the WWTP is detected. All odor-related inquiries from neighbors will be promptly addressed as follows:

- ✓ record the relevant information from the neighbor and conditions such as wind direction and speed, temperature, etc.;
- ✓ immediately begin the process of checking the plant, operating records, etc. to determine the cause or potential cause of the odor source and take corrective action;
- ✓ if the source of the odor is not determined, have the area of the odor inquiry and the other monitoring locations at the secondary boundary checked to determine the location of odor as soon as practical;
- ✓ unless the neighbor has indicated otherwise, follow-up with the neighbor (by phone or e-mail) to report the cause if known, and what has or will be done to resolve the problem; and
- ✓ if odor is detected at any secondary boundary location, OWASA will promptly send an e-mail notification to the neighbors for whom we have e-mail addresses on file, and to the Town of Chapel Hill to provide relevant information about the odor release.

Reporting of Odor Elimination Compliance

OWASA will record all self-monitoring and community-reported compliance monitoring information in a database. A monthly summary of the data will be provided electronically to anyone who expresses an interest in receiving the report. This data will also be included in OWASA's Performance Measurement Report, which is provided to the OWASA Board of Directors every six months; and in our Annual Odor Elimination Report, which is submitted to the Chapel Hill Town Council each January.

The table below summarizes the number of calls from customers reporting odor releases in recent years. We recognize that the number of calls is not an accurate indication of the number or severity of odor releases, because customers do not always report odor when OWASA had anticipated it, etc. (We advised the community to expect occasional odor releases during the last year or so related to the construction of digester improvements.) However, we believe the decline in calls in 2005 is consistent with comments from citizens indicating that conditions have improved in recent months.

WWTP-RELATED ODOR REPORTS 2002-2005

YEAR	TOTAL	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC
2002	55	27	19	4	5
2003	25	8	3	5	9
2004	37	18	7	8	4
2005	13 *	1	6	5	1 *

*Reported events as of November 3, 2005

Odor Assessment Study

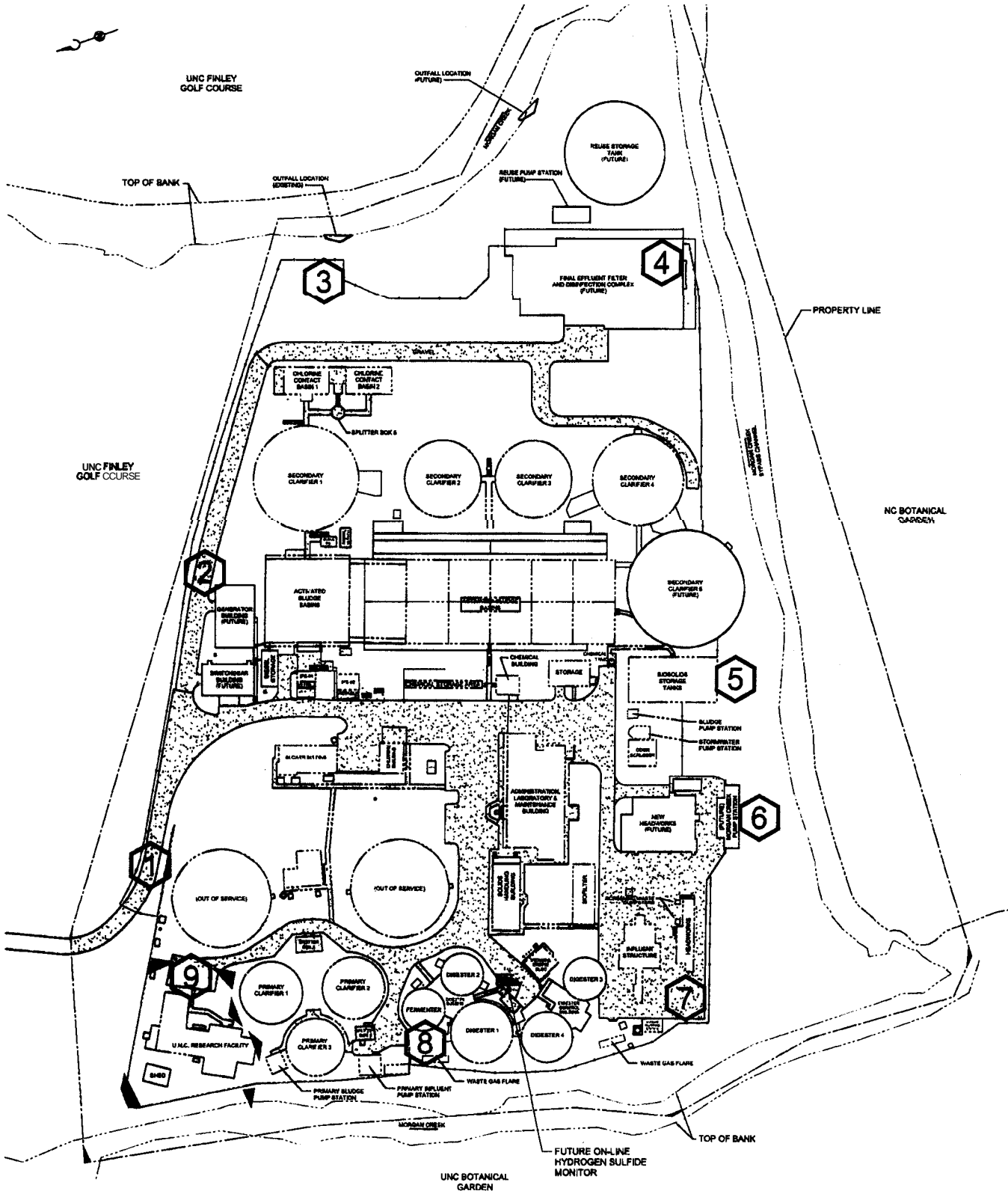
OWASA plans to hire an independent consultant to perform an odor assessment of the WWTP upon the completion of the digester improvements (November 2005). Early in this study, the consultant will review the Odor Elimination Compliance Monitoring Program and may suggest improvements to same.

Since it is desirable to assess odor in both hot and cold weather, it is proposed that the study period be from approximately this winter through the summer of 2006. This independent study will provide information regarding the effectiveness of the odor elimination improvements specifically related to the digesters as well as other potential odor sources at the plant. The consultant's study will evaluate all self-monitoring and neighbor-reported odor monitoring data. The neighbors will be provided an opportunity to provide input directly to the consultant and the results of this study will be shared with the community.

A second odor assessment study may be conducted at the conclusion of the overall WWTP project, which is on schedule for completion by May 2007.

Public Forum

OWASA will address our off-site odor elimination goal in a Public Forum conducted by the Chapel Hill Town Council on Monday, November 14, 2005. At this meeting, we plan to update the Council on the progress of our improvements at the WWTP and our work with the neighbors regarding the monitoring and evaluation program.

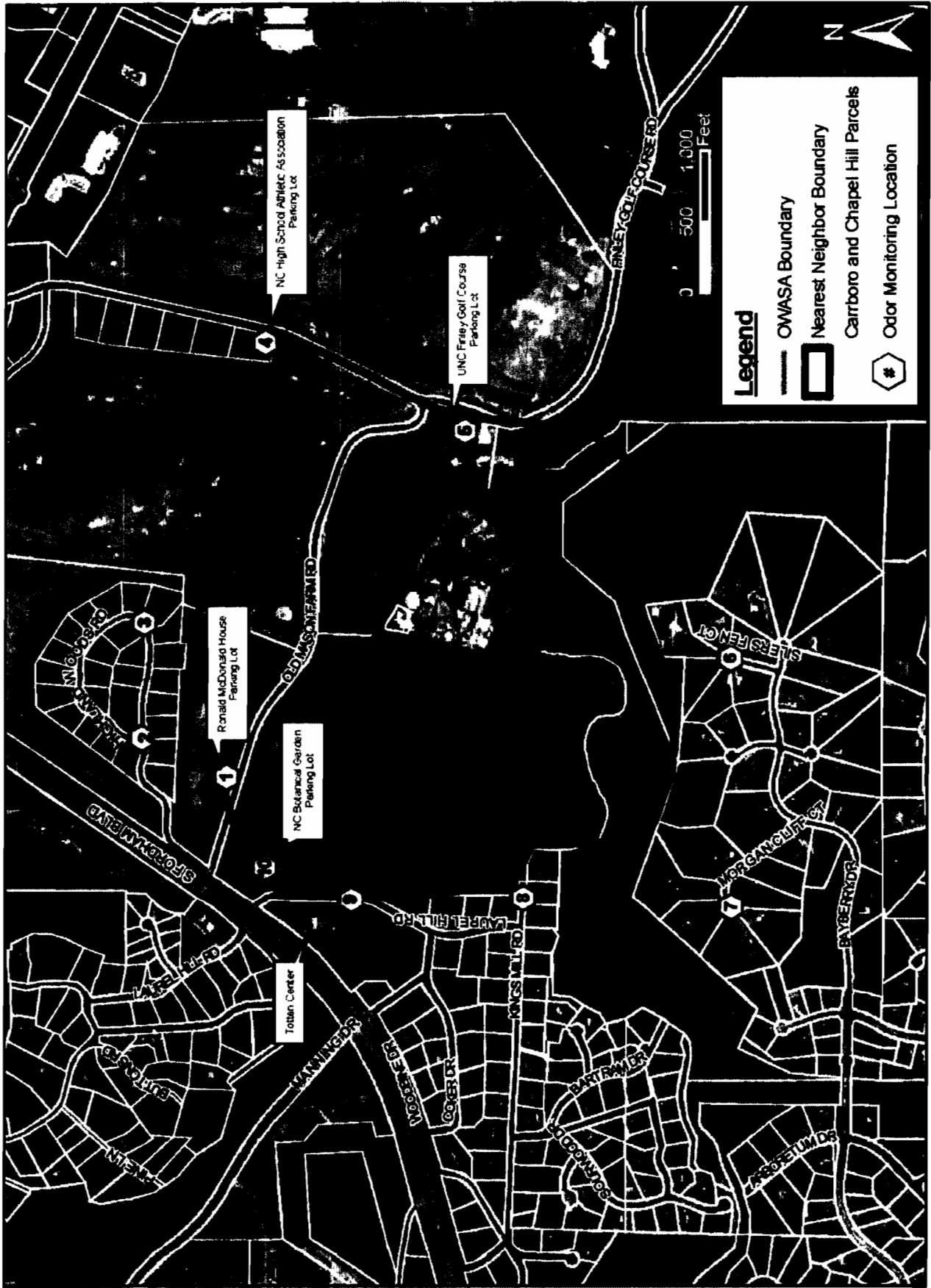


= OWASA ODOR MONITORING LOCATIONS

**OWASA MASON FARM WWT
ODOR MONITORING SITE PLAN**

OWASA Odor Monitoring Site Plan

Map #2



SUMMARY OF COMMUNITY MEETING

regarding odor elimination at the Mason Farm Wastewater Treatment Plant and
a draft plan for evaluation and monitoring of odor-related improvements

7:00 pm, Thursday, September 15, 2005, in the Community Room,
OWASA Administration Building, 400 Jones Ferry Road, Carrboro

Participants

Barnes Bierck, 3 Hampton Hill Place, Chapel Hill
Randy Kabrick, OWASA Board Member
Sian Kwa, 109 Pine Lane, Chapel Hill
Peg Parker, 1010 Highland Woods Road, Chapel Hill
Gary Richman, 1008 Highland Woods Road, Chapel Hill
Jim Ward, Curator, North Carolina Botanical Garden; Chapel Hill Town Council Member
Mark Witcher, 101 Siler's Fen Court, Chapel Hill

OWASA staff:

Ed Kerwin, Executive Director
John Greene, P.E., General Manager of Operations
Imtiaz Ahmad, P.E., Director of Planning and Engineering
Walter Gottschalk, Manager of Wastewater Treatment and Biosolids Recycling
Greg Feller, Public Affairs Administrator

Introduction

Ed Kerwin welcomed the citizens and said that the meeting's primary purpose was to receive feedback about a draft plan for monitoring and evaluating odor at the Mason Farm Wastewater Treatment Plant (WWTP) after scheduled completion of odor-related improvements to four solids digesters by the end of November, 2005

Mr. Kerwin presented a map of key facilities in the WWTP site and reviewed odor control improvements at the plant in recent years.

Summary of Comments by Citizens

Notes: Comments below are paraphrased and not in actual order. This summary focuses on comments received from citizens and OWASA staff's responses to questions below are intentionally not included.

- ✓ OWASA personnel at the WWTP are desensitized to odor and the draft monitoring plan should take a different approach. Monitoring should include getting wind direction and speed, etc. Non-operations personnel should do odor surveys under stable atmospheric conditions to check for continuous odor sources.
- ✓ Having WWTP personnel monitor on-site odor is an acceptable management approach that does no harm.

Summary of September 15, 2005 Community Meeting
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- ✓ What are the operating options for monitoring odor? Failure of a pump motor should trigger an alarm in the WWTP control room. Time and money are needed to monitor factors such as temperature and pressure data, but this effort will be rewarded with better operation.
- ✓ The odor monitoring and evaluation system should be more than a good, quick response system when odor occurs. The missing component is measurement of odor elimination.
- ✓ Who judges whether odor is strong or mild? When odor is released, OWASA should dig into the operating records, interview staff, go to the house where odor is reported and use a 0-5 scale for rating the odor level.
- ✓ Solids in the fermenter have an unpleasant smell and they should be targeted for odor elimination. The consultant hired by OWASA in 2004 identified the first aeration basin as odorous because it receives fermentation products. Biological systems are tricky.
- ✓ Does the plant have a variable feedstock pattern? Influent monitoring is needed if so.
- ✓ How effective is hydrogen sulfide monitoring? Will it be continuous? How many monitors will be used? Have they been used before? How long will they be used?
- ✓ There were differences between OWASA staff and OWASA's consultant in 2004 about appropriate investments to eliminate odor. If the goal of odor elimination is not met, OWASA has an implied obligation to do more.
- ✓ Odor elimination can include parallel tracks of operational and capital improvements.
- ✓ Odor can result from improper design or operation—take a hard look at both of those. An odor consultant should identify pumps where careful monitoring of pressure is needed.
- ✓ OWASA appears to be doing a good job in making odor-related improvements at a cost of \$5 million. Perfect odor elimination is not expected. OWASA should notify its neighbors when there is an odor event so that citizens will know that it is not necessary to report odor to OWASA. Pro-active notices by OWASA to customers should be part of the monitoring process. OWASA should also notify the Town Manager's office when there is an odor event; the Town Council should be kept informed about OWASA's progress.
- ✓ There will always be some odor.
- ✓ (From a resident who has lived in the area since 1958) Odor has been noticeable in the last 15 years.
- ✓ Odor was noticeable 20 years ago at times.
- ✓ Odor has not been as bad recently.

Summary of September 15 Community Meeting
Page 3 of 3

- ✓ Why did OWASA begin operating the digesters at a higher temperature in 2001? To inactivate pathogens.
- ✓ Instruments should indicate odor releases and the need to follow up before odor reaches overload levels.
- ✓ Will OWASA have high odor alarms? Refineries use alert, action and shut down levels.
- ✓ How is the Mason Farm Plant protected from flooding? How does the elevation of tanks at the plant compare to Jordan Lake's level? The community has seen 100-year flood levels multiple times; a 500-year flood level criterion should be used in planning and design work.
- ✓ Can plant operators get to the plant during flood conditions?
- ✓ When will the Mason Farm plant run out of capacity??

Greg Feller

Prepared by Greg Feller, Public Affairs Administrator