OWASA

ORANGE WATER & SEWER AUTHORITY

Quality Service Since 1977

January 25, 2008

Mr. Roger Stancil, Town Manager
Town of Chapel Hill
405 Martin Luther King Jr. Boulevard
Chapel Hill, NC 27514

Dear Mr. Stancil:

RE: ANNNUAL REPORT ON ODOR ELIMINATION PROGRAM AT THE MASON FARM WASTEWATER TREATMENT PLANT

In accord with the amended Special Use Permit for our Mason Farm Wastewater Treatment Plant (WWTP), we are pleased to submit the enclosed annual report on our odor elimination program at the WWTP and related items.

Some of the key points in the attached report include:

- ✓ In June, 2007, we completed the drafting of a Definition of Odor Elimination in consultation with representatives of the Highland Woods neighborhood and the North Carolina Botanical Garden.

- ✓ OWASA's contractors completed a new, enclosed headworks on schedule in July, 2007 and in December, 2007 completed supplemental odor elimination improvements involving wastewater flows to and from the primary clarifiers, the wastewater held in tanks at a pump station inside the WWTP site, and wastewater flow in a channel leading to our biological treatment tanks. These improvements cost about $2.6 million.

- ✓ The 15-year Capital Improvement Program adopted by the OWASA Board in June, 2007 includes plans to cover our three primary clarifiers and 8 of our 16 biological treatment tanks by 2010-11 at a cost of about $5 million. Design work for the latter work has begun.

- ✓ We are continuing to investigate and address causes of a recent increase in off-site odor events.

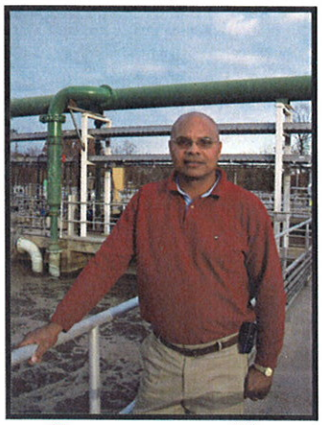
Please let us know if you have any questions or comments, and if an OWASA presentation at a Council meeting is desired.

Sincerely,

Ed Kerwin
Executive Director

c: OWASA Board of Directors
Robert L. Epting, Esq., General Counsel
John M. Greene, P.E., General Manager of Operations
Damon Forney, Wastewater Treatment and Biosolids Recycling Manager

The new, enclosed "headworks" completed in July, 2007 to address a major odor source identified in a consultant's odor study.



Mr. Damon Forney, our new Wastewater Treatment and Biosolids Recycling Manager, began work on November 5, 2007.

THE ODOR ELIMINATION PROGRAM AT OWASA'S MASON FARM WASTEWATER TREATMENT PLANT

2007 ANNUAL REPORT TO THE TOWN OF CHAPEL HILL

January, 2008

Dedication of the Mason Farm Wastewater Treatment Plant on November 8, 2007 to recognize completion of the 3-year, $50 million upgrade and expansion project.

Aerial view of the Mason Farm Wastewater Treatment Plant, October 2007.

Highlights

- ✓ In May, 2007, the consulting firm of Black & Veatch completed the second odor study at the Mason Farm Wastewater Treatment Plant (WWTP) in recent years. The study assessed odor sources, evaluated options and provided estimated costs for corrective actions, and reviewed industry standards for odor elimination.

- ✓ On June 14, 2007, the OWASA Board adopted a 15-year Capital Improvement Program including plans to cover 8 of our 16 aeration basins by 2008-2009 and our three primary clarifiers (settling tanks) by 2010-2011. Preliminary design work for these improvements, which were recommended based on the consultant's odor study, is underway.

- ✓ In June, 2007, we completed the drafting of a Definition of Odor Elimination in consultation with representatives of the Highland Woods neighborhood and the North Carolina Botanical Garden including public comments in the April 12, 2007 Board meeting. The definition includes performance standards and odor monitoring requirements.

- ✓ In July, 2007, our contractor completed on schedule the new, enclosed "headworks" structure at the WWTP. The headworks is the area where wastewater enters the plant. Foul air is contained in the headworks and treated in an odor scrubber. Testing of hydrogen sulfide levels had shown that the original headworks was a major odor source.

- ✓ In December, 2007, our contractor completed on schedule three additional improvements to enclose and treat the odor from (a) "splitter boxes" that carry wastewater to and from our primary clarifiers, (b) the wastewater holding tanks at pump stations inside the WWTP site, and (c) a channel that carries wastewater for biological treatment in tanks called aeration basins.

- ✓ We are continuing to investigate the source(s) of the recent increase in odor events. We believe some of these events can be resulting from odor sources not yet covered at the WWTP (aeration basins and primary clarifiers). We have made it a priority to carefully evaluate previously completed improvements (especially the headworks) to make sure they were installed and are performing as designed. We will keep our WWTP neighbors informed on the status of this work.

Background

In March, 2004, the Chapel Hill Town Council amended the Special Use Permit for the Mason Farm Wastewater Treatment Plant to allow an upgrade an expansion of the plant with conditions including requirements involving odor elimination. Please see Attachment 1.

Following a public forum in November, 2006, the Town Council directed OWASA to develop a definition of odor elimination in consultation with WWTP neighbors and to develop a plan and timetable for odor elimination.

Improvements completed at the WWTP before 2007 included the following for odor elimination:

1. Covering of tanks that hold treated wastewater solids (biosolids) before they are recycled on farmland.
2. Installation of an odor scrubber which receives and treats odor from the biosolids tanks.
3. Installation of fixed covers on all four of our wastewater solids treatment buildings called "digesters."
4. Installation of aboveground pipes to carry foul air away from the digesters. The condition of the previously used underground pipes restricted the flow of methane gas, which resulted in odor releases.
5. Installation of equipment to remove foam from the surface of our aeration basins.

The overall WWTP improvements since the spring of 2004 have included:

1. Expansion of the plant's rated capacity from 12 to 14.5 million gallons per day (peak monthly average).
2. Installation of an ultraviolet light facility to significantly improve wastewater disinfection. (Chlorine was previously used.)
3. Installation of wastewater filters to improve water quality and to allow for nitrogen removal in the future.
4. Addition of a second large generator to help ensure reliable plant operation if conventional power is interrupted.
5. As part of our biosolids management program, and in addition to the $50 million upgrade and expansion of the WWTP, we installed and began operating biosolids dewatering equipment in the fall of 2007. Our dewatered biosolids are recycled by a firm in Chatham County which composts organic matter to produce a soil additive used in landscaping. This use of biosolids complements our recycling of biosolids as an agricultural nutrient on farmland. The latter option can be limited by farmers' operating schedules for use of fields, wet soil conditions, limits on biosolids application rates at a given location, etc.

The above improvements enhanced the quality of treated wastewater that we release to Morgan Creek, a tributary of the Jordan Lake regional water supply; and

- Enable OWASA to meet State standards for use of highly treated or "reclaimed" wastewater for certain non-drinking purposes such as operation of chiller plants, irrigation, flushing toilets and street sweeping.

- Are designed to meet expected wastewater treatment standards for several years into the future to help protect water quality in Jordan Lake. (When flows to our WWTP reach its current capacity of 14.5 million gallons per day, additional treatment costs or improvements would likely be necessary; current flows average about 8 million gallons per day.)

The reclaimed water system that will initially serve the University's south campus is under construction and expected to be complete in the spring of 2009. The reclaimed water system, which may reduce the future use of drinking water for non-drinking purposes by 2 million gallons per day, is a key part of our long-term water supply plan.

Capital Improvements

Headworks

The headworks is the area where wastewater enters the plant and undergoes initial treatment (screening to remove objects and removal of small stones and other grit). The odor study by Black & Veatch showed that hydrogen sulfide levels at the previous headworks were typically elevated from the evening through early morning hours, and were therefore a major odor source at the WWTP. The new, enclosed headworks captures foul air for treatment in our odor scrubber.

Cover over new headworks structure

The new headworks was completed on schedule at a cost of about $2.2 million.

Carbon filter unit and cover at pump station

Enclosing "splitter boxes" for the primary clarifiers, pump station tanks and the channel to the aeration basins; with foul air treatment

In December, a contractor completed these improvements, which were approved in the spring of 2007 as a result of the odor study. The cost was about $481,000.

New septage-receiving facility

In December, a contractor completed construction of a new septage-receiving facility. Odor from the new septage structure is captured and treated in the odor scrubber.

New septage receiving facility

Covering the aeration basins is scheduled for 2008-2009 and covering the primary clarifiers is scheduled for 2010-2011

Preliminary design work has begun for these improvements, which will cost about $5 million. The 2007 odor study identified these needs, and the OWASA Board included them in the Capital Improvement Program adopted in June, 2007 for 2008-2022.

Definition of Odor Elimination

In June, 2007, we completed a draft definition of odor elimination (Attachment 2) in consultation with representatives of the Highland Woods neighborhood northwest of the WWTP and with the North Carolina Botanical Garden, which is west of the WWTP.

The odor elimination definition is marked as a draft because we see it as a dynamic document that should be reviewed and improved in the future based on experience and future availability of new odor elimination technology.

Operational requirements

- Continuous monitoring of hydrogen sulfide levels with at least four devices in addition to plant operators' checks every 8 hours for odor at the boundary of the WWTP site
- Evaluation of portable odor testing equipment (the "Nasal Ranger").

Hydrogen Sulfide Monitor

Performance requirements/odor monitoring program

1. Hydrogen sulfide limit: 0.0 parts per million
2. Number of verified off-site odor events per year: three
3. For other odors, a criterion called the "dilution to threshold" ratio shall be 5 or less (as further discussed in Attachment 2).

Portable Odor Monitor
(Nasal Ranger)

Status of odor monitoring

- The four hydrogen sulfide monitors were put into operation in July, 2007. These monitors communicate with the plant's control and monitoring system and alert the plant operator if the hydrogen sulfide levels exceed the standard. The monitors record hydrogen sulfide levels with temperature, wind direction and speed.

- Our evaluation of the portable odor testing equipment (Nasal Ranger) to date has not resulted in a conclusion that it will be an effective tool for detecting low levels of odor. Unlike the hydrogen sulfide monitors, which do chemical analysis of air samples, the Nasal Ranger involves human evaluation of the odor level in the air. Nasal Ranger results are therefore subjective and their

effectiveness can be affected if the equipment user has a cold, is fatigued, etc. Recent discussions with the Nasal Ranger manufacturer revealed that the method for sampling has changed since we received our unit in June 2007. We will continue our evaluation of the effectiveness of the Nasal Ranger to monitor compliance through the use of the newly identified procedures, training of additional users and continued discussions with the Nasal Ranger manufacturer.

Actions to evaluate recent increased odor releases

We are continuing to investigate the source(s) of the recent increase in odor events. We believe some of these events can be resulting from odor sources not yet covered at the WWTP (aeration basins and primary clarifiers). We have made it a priority to carefully evaluate previously completed improvements (especially the headworks) to make sure they were installed and are performing as designed. We will keep our WWTP neighbors informed on the status of this work.

Other

New Wastewater Treatment and Biosolids Recycling Manager

Mr. Damon Forney, who has over 25 years of experience in the water resources and environmental protection fields, began work on November 5, 2007 as OWASA's Wastewater Treatment and Biosolids Recycling Manager. He previously worked in private industry positions involving wastewater treatment, biosolids recycling, air quality, health and safety, process optimization, solid and hazardous waste management, training and professional development as well as executive level management.

Before joining OWASA, he was the Environmental, Health and Safety Manager for the ArrMaz Custom Chemicals Co. of Lobeco, SC. Mr. Forney received a Bachelor of Science degree in biology from Greensboro College in 1981 and he has professional certifications in Wastewater Management, Advanced Hazardous Waste Management and General Industry Safety.

Dedication ceremony on November 8, 2007

On November 8th, OWASA held a dedication ceremony to recognize completion of the $50 million, three-year improvement and expansion project at the WWTP. The Honorable Joe Hackney, Speaker of the N.C. House of Representatives, was the keynote speaker and OWASA officials made remarks to several dozen participants including WWTP neighbors, elected officials and OWASA Board Members. Tours of the plant followed the ceremony.

Other public communications

As requested in a neighborhood meeting in 2004, we communicate primarily by e-mail to WWTP neighbors. We have invited neighbors to meetings of the OWASA Board to discuss odor issues on January 11 and April 12, 2007; gave notices of the expected odor events due to maintenance and construction; distributed our quarterly and annual reports to the Chapel Hill

Town Council; and reported on project milestones such as completion of the headworks and splitter/wetwell/channel improvements noted above. We maintain a 24-hour hotline (537-4376) for citizens to report WWTP odor and receive information about WWTP improvements and have posted information on our Website, www.owasa.org, about the odor elimination program.

Conclusion

The OWASA Board and staff remain committed to the odor elimination objective through actions discussed above including $5 million of improvements scheduled for completion by 2011 and addressing the recent increase in odor events.

We plan to have an open house for the community to review and discuss the recent improvements later this year.

We would be glad to respond to any questions regarding this report and the Mason Farm WWTP, and to receive feedback regarding our actions, performance and plans.

Attachments:

1. Excerpt from the Special Use Permit for the Mason Farm WWTP as amended on March 1, 2004

2. Draft Definition of Odor Elimination – May 2007

3. Summary of odor reports to OWASA from WWTP neighbors

4. Summary of odor monitoring in 2007

5. Boundaries of areas where odor standard is met with current conditions and planned odor elimination improvements (based on computer modeling).

Attachment 1

Excerpt from the Special Use Permit for the Mason Farm WWTP
as amended on March 1, 2004

Stipulations Specific to the Development

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4. Offsite Odor Elimination, Monitoring and Annual Report: That OWASA shall present an annual report to the Town Council regarding progress in meeting their offsite odor elimination goal to report on progress during construction, and to report on maintenance and the continuing efficacy of the program post-construction. The Town Council may reduce the frequency or end the annual report requirement at such time as it determines reasonable.

5. Offsite Odor Elimination, Public Forum: That OWASA shall address their offsite odor elimination goal in a Public Forum, scheduled and conducted by the Town Council, to be held no later than November, 2005, the projected completion of improvements related to odor elimination, or upon completion of the construction work on the digesters, whichever is later. The applicant shall report either it has achieved the goal of offsite odor elimination or has not achieved offsite odor elimination. The Town Council shall make a finding based on information submitted at the Forum. If the Council finds that the goal of off-site odor elimination has been attained, OWASA will not be required to perform additional odor control work.

   If the Council finds that the goal of off-site odor elimination has not been attained, then the Council shall direct OWASA to perform such additional work OWASA determines is necessary to eliminate off-site odor and the Council shall establish such reporting requirements as it deems reasonable. OWASA agrees to perform such work as may be necessary to eliminate off-site odor to the satisfaction of the Council.

6. Odor Elimination Construction Schedule Reporting: That the applicant shall report on the progress of the proposed odor elimination construction completion date of November, 2005 as part of the annual report on the Mason Farm wastewater treatment plant to be submitted in January of each year. The applicant shall present an action plan if it projects not meeting the proposed construction completion date of November 2005, to be approved by the Town Council.

Attachment 2

DRAFT

Definition of Odor Elimination – May 2007
Mason Farm Wastewater Treatment Plant (WWTP)

We are proposing a set of standards and measures pursuant to the commitment OWASA made during the Town of Chapel Hill's Special Use Permitting process for the upgrade and expansion of the Mason Farm Wastewater Treatment Plant (WWTP):

Operating Measures and Performance Standards Provide Two Benefits:

1) Give WWTP staff a set of alerts to monitor normal operating parameters, identify out of standard conditions in real time and enable corrective action to eliminate off-site odor.

2) Determine whether the physical changes made to the plant structures and processes given increased and projected increases in volume are adequate to eliminate off-site odor or whether additional potential improvements should be made.

Based on odor measurements made during the summer of 2006 and software modeling of expected odor following current plant expansion and improvements the following additional odor elimination measure have been found to be necessary. These improvements have been included in the draft Capital Improvements Plan which the OWASA Board expects to consider at their June 14, 2007 Board meeting:

- Covering 8 (of 16) aeration basins in FY 2009
- Covering the 3 primary clarifiers in FY 2010/2011

Odor monitoring and measuring proposed in this standard would continue for at least three years beyond the completion of these projects.

Impact Performance Standard:

The goal of odor elimination is fully embraced by OWASA. Ultimately the measure of success of odor elimination is the absence of odor from the experience of OWASA neighbors.

OWASA's goal is zero off-site odor so that the quality of life for those living in close proximity to the WWTP is not adversely impacted.

Like OWASA's goal of zero wastewater spills/overflows, there may be occasions when, despite OWASA's best efforts to prevent or minimize the duration and intensity of any odor releases, there may be occasional odor releases during scheduled (preventive maintenance) and unscheduled (failure of equipment) maintenance events at the WWTP.

The Performance Standard proposed by OWASA for verified odor events experienced by WWTP neighbors is three (3) or less per year.

OWASA continues to encourage the WWTP neighbors to immediately contact OWASA by telephone at 537-4376 to report that an objectionable odor has been detected at their home

and/or in the vicinity of the WWTP. One or more odor reports timely received during a 24 hour period from WWTP neighbor(s) shall be considered as a single odor event. OWASA will also track the number of odor reports in intervals of four and eight hours. Each odor event shall be considered to be "verified" unless OWASA determines conclusively that an alternative source other than the WWTP created the odor.

OWASA will undertake operating, engineering, structural and funding measures necessary to minimize the frequency, duration and intensity of odor releases associated with instances of scheduled and unscheduled maintenance events. OWASA will provide WWTP neighbors timely notice in advance of scheduled events and as soon as possible for unscheduled off-site odor events.

Monitoring Standards for Odor Elimination

1) The "rotten egg" smell associated with hydrogen sulfide is generally accepted as the primary cause of WWTP odors. Hydrogen sulfide is relatively easy to measure and an industry accepted compound for monitoring odor.

OWASA will continuously measure hydrogen sulfide at or near the WWTP property boundary at a minimum of four locations. OWASA staff has consulted with the hydrogen sulfide monitor manufacturer regarding the optimum placement of these monitors. These monitors are solar powered and will transmit the hydrogen sulfide measurements to the WWTP's process monitoring system which will alarm the on duty operator of any high readings. This hydrogen sulfide monitoring system is projected to be fully operational by May 31, 2007.

Standard: hydrogen sulfide measured at or near the WWTP property boundary shall be 0.0 parts per million.

2) Compounds other than hydrogen sulfide can produce odor at the WWTP, but are more difficult to measure. To determine the overall odor level, an air sample is collected in a bag and sent to a specialized laboratory which performs sensory analysis (nose testing) using a dilution apparatus known as a dynamic olfactometer. The dynamic olfactometer delivers odorous air in a range of dilutions to trained panelists who then determine the Dilution-to-Threshold ratio (D/T). The D/T is a measure of the number of dilutions needed to make the odorous ambient air non-detectable.

Standard: D/T measured at or near the WWTP property boundary shall be 5 or less

OWASA has purchased a portable olfactometer (Nasal Ranger) which is expected to be delivered by early June 2007. OWASA staff will evaluate the effectiveness of this device as a possible improvement over the current "sniff tests" which are routinely conducted by WWTP staff. The Nasal Ranger will also be evaluated in an attempt to quantify (measure D/T) at the WWTP boundary and/or at the site of reported odor. The OWASA staff expects to complete its initial evaluation of the Nasal Ranger by October 26, 2007 and will share this information with the WWTP neighbors.

Attachment 3

SUMMARY OF ODOR REPORTS TO OWASA FROM WWTP NEIGHBORS AND EVENTS AS DEFINED BY THE DEFINITION FOR ODOR ELIMINATION

	2002 Reports	2003 Reports	2004 Reports	2005 Reports	2006 Reports	2007 Reports	2007 Events
January	11	3	9	0	8	3	3
February	7	5	2	0	8	0	0
March	9	0	7	1	10	6	4
April	9	2	4	0	9	3	3
May	6	0	2	5	8	4	3
June	4	1	1	1	5	1	1
July	1	0	2	0	0	4	2
August	1	0	4	3	11	2	2
September	2	5	2	2	9	3	3
October	2	6	1	1	8	9	8
November	0	0	1	7	2	11	6
December	3	3	2	5	8	16	10
TOTALS	**55**	**25**	**37**	**25**	**86**	**62**	**45**

An "odor event" is defined as: One or more odor reports received during a 24 hour period from WWTP neighbor(s). Each odor event shall be considered to be "verified" unless OWASA determines conclusively that an alternative source other than the WWTP created the odor.

Attachment 4

SUMMARY OF ON-SITE AND OFF-SITE ODOR INSPECTIONS AND NUMBER OF TIMES ODOR WAS DETECTED AT THE VARIOUS MONITORING SITES

ON-SITE:

Month and year	Total Inspections	Entrance Gate (1)	Generator Bldg. (2)	Old Outfall (3)	UV Complex (4)	Solids Tanks (5)	Odor Scrubber (6)	Head-works (7)	Digesters (8)	UNC Bldg. (9)
Jan. 07	96	17	0	0	0	19	0	28	30	9
Feb. 07	85	16	13	0	0	15	12	25	19	4
Mar. 07	96	11	18	1	0	16	6	27	14	5
Apr. 07	92	18	25	3	4	20	13	32	21	10
May 07	94	23	20	1	0	20	5	32	14	17
June 07	95	21	18	0	0	18	13	31	10	9
July 07	97	23	19	1	0	15	26	28	20	9
Aug 07	96	19	18	0	0	35	49	46	41	10
Sept 07	96	36	28	9	0	40	45	65	54	6
Oct 07	93	23	23	6	2	25	26	40	32	18
Nov 07	86	8	11	0	9	16	19	33	38	16
Dec 07	89	17	26	2	23	23	34	45	42	14
Totals	1115	232	219	23	38	262	248	432	335	127
%	----	12%	11%	1%	2%	14%	13%	23%	17%	7%

Notes:

1) All on-site odor events were characterized by the WWTP Operators as "Mild" with odors that would not be expected to create an off-site problem except October 25, 2007 at 7:15 AM when the odor was characterized as "Strong" at the Headworks (7) and Digesters (8).

OFF-SITE:

Month and year	Total Inspections	Mc Donald House (1)	Highland Woods-A (2)	Highland Woods-B (3)	Athletic Assoc. (4)	Finley GC (5)	Silers Fen Ct. (6)	Morgan Cliff Ct. (7)	Kings Mill Rd. (8)	Laurel Hill Rd. (9)	Botanical Garden (10)
Jan. 07	2	0	0	0	0	1	0	0	0	0	0
Feb. 07	0	-	-	-	-	-	-	-	-	-	-
Mar. 07	4	1	1	1	1	1	1	1	1	0	0
Apr. 07	1	0	0	0	0	1	0	0	0	0	0
May 07	3	1	1	1	1	2	0	0	0	0	0
June 07	3	0	1	2	1	0	0	0	0	0	0
July 07	3	0	0	0	1	1	0	0	0	0	0
Aug 07	1	0	0	0	1	0	0	0	0	0	0
Sept 07	3	0	0	0	0	1	0	0	0	0	0
Oct 07	7	2	1	0	3	5	0	0	0	0	0
Nov 07	8	2	1	1	2	2	0	0	1	1	1
Dec 07	11	4	2	3	1	5	1	0	0	0	1
Totals	**46**	**10**	**7**	**8**	**11**	**19**	**2**	**1**	**2**	**1**	**2**
%	----	16%	11%	13%	17%	30%	3%	2%	3%	2%	3%

Notes:

1) All off-site odor events were characterized by the Collections Staff as "Mild" except for the following dates:

March 26, 2007 - odor was characterized as "Strong" at the Ronald McDonald House (1) and Finley Golf Course (5)
May 30, 2007 - odor was characterized as "Strong" at the Athletic Association (4) and Finley Golf Course (5)
October 13, 2007 - odor was characterized as "Strong" at the Finley Golf Course (5)
October 20, 2007 - odor was characterized as "Strong" at the Finley Golf Course (5)
November 13, 2007 – odor was characterized as "Strong" at the McDonald House (1)
December 10, 2007 – odor was characterized as "Strong" at the Highland Woods-A (2)
December 12, 2007- odor was characterized as "Very Strong" at McDonald House (1), Athletic Assoc. (4) and Finley Golf Course (5)
December 14, 2007 - odor was characterized as "Strong" at the Finley Golf Course (5)
December 18, 2007 - odor was characterized as "Strong" at the Highland Woods-B (3) and Finley Golf Course (5)
December 19, 2007 - odor was characterized as "Strong" at the Finley Golf Course (5)

Attachment 5

BOUNDARIES OF AREAS WHERE THE "D/T" ODOR LIMIT OF 5 IS MET WITH CURRENT CONDITIONS AND PLANNED ODOR ELIMINATION IMPROVEMENTS AT THE MASON FARM WASTEWATER TREATMENT PLANT

Based on computer modeling, the rings below indicate areas within which an odor measurement called the "dilution to threshold ratio" ("D/T") is expected to be 5 or greater under certain weather conditions. The area outside a ring indicates the area where the D/T is expected to be less than 5 and therefore in compliance with the standard in the draft definition of odor elimination. Area 1 indicates the boundary for the current conditions with the aeration basin influent channel covered, the primary clarifier splitter boxes covered and the pump station wet wells covered. Area 2 shows the boundary after the eight (8) aeration basins are covered (2009), and Area 3 indicates the boundary when all planned odor improvements are completed (2011).